

**AWARD - CONTRACT
FOR SCADA SYSTEM**

Agenda item K-1 "Award Contract for SCADA System" was introduced by Staff who apprised the Council that this project includes the replacement of the present separate Electric and Water telemetering control systems with a single, state-of-the-art system. Phase I is the design and purchase of the equipment. The data base and this equipment along with the necessary transducers and wiring will be installed by the City under Phase II of the project.

The specifications described both necessary and preferable performance and operational criteria for the City's systems. The bidders were requested to describe their system and to note any exceptions where they deviated from the specifications.

Plans and specifications for this project were approved on December 7, 1983.

The City has received the following 7 bids for this project:

<u>BIDDER</u>	<u>BID</u>	<u>Ultimate System</u>
Multitronics, Inc.	\$199,375.86	\$241,044.90
Moore Systems, Inc.	\$229,824.00	\$269,137.00
Northwest Utilities/ Andover Controls	\$232,020.66	\$277,020.00
Tejas Controls, Inc.	\$272,145.00	\$314,510.00
Tessmer, Inc. (TESCO)	\$276,010.00	\$374,600.90
QUE, Inc.	\$300,577.00	\$325,869.00
BIF/ACCUTEL	\$499,052.18	\$625,280.20
Engineer's Estimate	\$275,000.00	

All of the proposals were reviewed. The three lowest bids were evaluated in depth. The review indicated none of the top four offered a substantially improved system for the additional cost. The specifications included six major areas on which the evaluations were based.

- (1) Supplier background including a proven track record with the equipment being proposed;
- (2) System function;
- (3) Master station hardware;
- (4) Remote terminal hardware;
- (5) Support services;
- (6) Price.

The system proposed by Northwest Utilities/Andover Controls does not meet the specifications in the first three areas. The system is a building monitoring and control system in which automatic control routines are loaded into the Remote Terminal units by the Master. Thus, the Master Station processor is very small and relatively slow. This is unacceptable for the Utility Department's operation. In addition, the proposal indicated the system has not been used in electric distribution or water distribution field. Thus, the system is not recommended.

The system proposed by Moore Systems substantially meets or exceeds the specifications. The company's experience is primarily in electric distribution, monitoring and control including hydroelectric facilities. They have sold over 30 systems similar to the one proposed, including one at the City of Roseville. Our contacts at Roseville expressed a high degree of satisfaction with both the equipment and the company.

Moore's equipment will support many more inputs than the number required, which provides future flexibility. The hardware is entirely modular consisting of plug-in circuit cards and components built by Moore. The price includes approximately \$10,000 for a complete set of spare circuit cards (one or more of each type), including the central processors. Thus, city personnel will be able to correct any malfunctions of nearly all of the equipment in-house.

The system proposed by Multitronics is new in that they have not delivered a system like it. Further, they have not delivered any complete systems to an electric distribution

CITY COUNCIL MEETING
FEBRUARY 15, 1984

utility. Based on this alone, we would not recommend award, particularly when the difference in price is as small as it is (\$28,092.10). When long term costs associated with the proposed hardware are considered, the price difference essentially disappears.

The Multitronics system utilizes general purpose computers built by Digital Equipment Corporation (DEC). Parts for the computer are not included as they are normally serviced by DEC under a service contract. This cost is presently \$5,615/yr. With the Moore system, the City would do its own periodic maintenance and repair (which consists of removing and replacing a plug-in card and sending it to San Jose for repair). This cost is estimated to be just under \$1,000/yr. Based on 10 years life at 10% interest, the present worth of these two schemes are \$34,500 and \$6,100 respectively, a difference of \$28,400.

Based on the above, it is felt the Moore proposal is the most advantageous to the City. Thus, it is recommended that they be awarded the contract to provide the SCADA system for the City's Electric and Water Utilities.

It is further recommended that the "ultimate" system be purchased. This will provide capacity for expansions to the electric and water systems. This capacity includes both additional stations (i.e., wells or other pump stations) and additional points at existing stations (i.e. new circuits at substations, power consumption at wells and other status information). This will allow gradual improvement of the utilities' operating efficiencies.

It has been the City's experience that purchasing additional components as they are needed is costly - both from the standpoint of staff and scheduling time and actual hardware costs. In fact, individual remote terminal units for the City's four-year old storm and wastewater data acquisition system cost roughly three times as much as when the system was purchased.

AWARD - CONTRACT
FOR SCADA SYSTEM

A lengthy discussion followed with questions being directed to Staff.

RES. NO. 84-014

On motion of Council Member Reid, Murphy second, Council adopted Resolution No. 84-014 awarding the contract for the SCADA System (Ultimate System) to Moore Systems, Inc., in the amount of \$269,137.00.



CITY OF LODI

PUBLIC WORKS DEPARTMENT

COUNCIL COMMUNICATION

1984 FEB -6 AM 10:22

ALICE M. REMISHE
CITY CLERK
Project Data

TO: City Council

FROM: City Manager

DATE: February 6, 1984

SUBJECT: SUPERVISORY CONTROL & DATA ACQUISITION (SCADA) SYSTEM FOR THE ELECTRIC & WATER UTILITIES

Approved in F.Y. Budget: 1983
Fund: Elec. & Water Capital Outlay
Amount Budgeted: Electric: \$144,800
Water: \$424,000
Total Project Estimate: Phase I: \$275,000; Phase II: \$170,000
Bid Opening Date: January 25, 1984

RECOMMENDED ACTION: That the City Council award the contract for the above project to Moore Systems, Inc. in the amount of \$269,137.00, which is the most advantageous bid to the City.

BACKGROUND INFORMATION: This project includes the replacement of the present separate Electric and Water telemetering control systems with a single, state-of-the-art system. Phase I is the design and purchase of the equipment. The data base and this equipment along with the necessary transducers and wiring will be installed by the City under Phase II of the project.

The specifications described both necessary and preferable performance and operational criteria for the City's systems. The bidders were requested to describe their system and to note any exceptions where they deviated from the specifications.

Plans and specifications for this project were approved on December 7, 1983.

The City has received the following 7 bids for this project:

<u>BIDDER</u>	<u>LOCATION</u>	<u>BID</u>	
		<u>Initial System</u>	<u>Ultimate System</u>
Multitronics, Inc.	Dublin, CA	\$199,375.86	\$241,044.90
Moore Systems, Inc.	San Jose, CA	229,824.00	269,137.00
Northwest Utilities/ Andover Controls	Sacramento, CA/ Andover, MA	232,020.66	277,020.00
Tejas Controls Inc.	Houston, TX	272,145.00	314,510.00
Tessmer, Inc. (TESCO)	Sacramento, CA	276,010.00	374,600.00
QEI, Inc.	Springfield, NJ	300,577.00	325,869.00
BIF/Accutel	Newbury Park, CA	499,052.18	625,280.20
Engineer's Estimate		275,000.00	

A tabulation of the bids is attached.

APPROVED:

HENRY A. GLAVES, City Manager

FILE NO.

All of the proposals were reviewed. The three lowest bids were evaluated in depth. The review indicated none of the top four offered a substantially improved system for the additional cost. The specifications included six major areas on which the evaluations were based.

- (1) Supplier background including a proven track record with the equipment being proposed;
- (2) System function;
- (3) Master station hardware;
- (4) Remote terminal hardware;
- (5) Support services;
- (6) Price.

The system proposed by Northwest Utilities/Andover Controls does not meet the specifications in the first three areas. The system is a building monitoring and control system in which automatic control routines are loaded into the Remote Terminal units by the Master. Thus, the Master Station processor is very small and relatively slow. This is unacceptable for the Utility Department's operation. In addition, the proposal indicated the system has not been used in electric distribution or water distribution field. Thus, the system is not recommended.

The system proposed by Moore Systems substantially meets or exceeds the specifications. The company's experience is primarily in electric distribution, monitoring and control including hydroelectric facilities. They have sold over 30 systems similar to the one proposed, including one at the City of Roseville. Our contacts at Roseville expressed a high degree of satisfaction with both the equipment and the company.

Moore's equipment will support many more inputs than the number required, which provides future flexibility. The hardware is entirely modular consisting of plug-in circuit cards and components built by Moore. The price includes approximately \$10,000 for a complete set of spare circuit cards (one or more of each type), including the central processors. Thus, City personnel will be able to correct any malfunctions of nearly all of the equipment in-house.

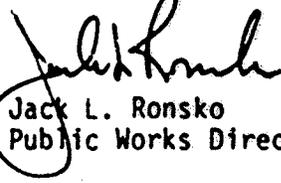
The system proposed by Multitronics is new in that they have not delivered a system like it. Further, they have not delivered any complete systems to an electric distribution utility. Based on this alone, we would not recommend award, particularly when the difference in price is as small as it is (\$28,092.10). When long term costs associated with the proposed hardware are considered, the price difference essentially disappears.

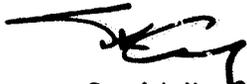
The Multitronics system utilizes general purpose computers built by Digital Equipment Corporation (DEC). Parts for the computer are not included as they are normally serviced by DEC under a service contract. This cost is presently \$5615/yr. With the Moore system, the City would do its own periodic maintenance and repair (which consists of removing and replacing a plug-in card and sending it to San Jose for repair). This cost is estimated to be just under \$1000/yr. Based on 10 years life at 10% interest, the present worth of these two schemes are \$34,500 and \$6,100 respectively, a difference of \$28,400.

Based on the above, it is felt the Moore proposal is the most advantageous to the City. Thus, it is recommended that they be awarded the contract to provide the SCADA system for the City's Electric and Water Utilities.

It is further recommended that the "ultimate" system be purchased. This will provide capacity for expansions to the electric and water systems. This capacity includes both additional stations (i.e., wells or other pump stations) and additional points at existing stations (i.e., new circuits at substations, power consumption at wells and other status information). This will allow gradual improvement of the utilities' operating efficiencies.

It has been the City's experience that purchasing additional components as they are needed is costly - both from the standpoint of staff and scheduling time and actual hardware costs. In fact, individual remote terminal units for the City's four-year old storm and wastewater data acquisition system cost roughly three times as much as when the system was purchased.


Jack L. Ronsko
Public Works Director


David K. Curry
Utility Director

cc: Assistant Finance Director
Assistant Utility Director

Enclosure

JLR:RCP:dmw

SCADA (Supervisory, Control and Data Acquisition System for the Electric and Water Utilities)

Tabulation of bids received January 25, 1984

	MOORE SYSTEMS	MATHEONICS	ALBERTSON SYSTEMS	TEXAS	TRICO	GEI	BIF/ACCUR
SCHEDULE I - WATSON							
1. Master Station	LS 83681	100300	82533	139530	101000	108882	169079
2. Remote Display Terminal	1 8180	5767	10233.70	8670	5500	9257	6390
3. Substation RTU (Kilbuck)	1 10484	738	10609.70	17250	9770	8379	31419
4. (McLara)	1 8668	5312	10091.0	12590	9770	7372	21760
5. (Hanning)	1 9291	7420	10277.99	12965	9770	7801	29799
6. Coprocessor RTU	1 2108	602	11170	770	5000	2018	7530
7. Wall RTU	21 59176 (200 ea)	10818.00 (200 ea)	97447.50 (200 ea)	40200 (190 ea)	117600 (300 ea)	207700 (200 ea)	160320
8. Wall RTU & T-R	1 2019	751	1110	0	5600	2410	7932
9. Input Devices	LS 88271	6222	7000.03	5130	7000	8447	15073
10. Support Services	LS -	578	12921.90	27000	1700	23031	40980
	Sub Total						
	Adjustment						
	Total						
	Del Time						
SCHEDULE II - WATSON							
1. Master Station	LS 83960	159996	82538	139530	104000	108695	169079
2. Remote Display Terminal	1 8180	5767	10233.70	8670	5500	9259	6390
3. Substation RTU (Kilbuck)	1 10512	13937	25020.70	25230	10500	10690	63050
4. (McLara)	1 2983	10073	29001.76	20210	10500	9666	27119
5. (Hanning)	1 10048	11839	25077.99	20280	10500	11878	12514
6. Coprocessor RTU	1 28161	2602	213750	1030	6100	2361	7780
7. Wall RTU	30 84549 (200 ea)	23688.00 (200 ea)	82125.00 (200 ea)	57000	183700 (200 ea)	108300 (200 ea)	204550
8. Wall RTU & T-R	1 2019	751	1110	193	6100	261	7932
9. Input Devices	LS 88271	6222	5000	6680	7000	4107	15073
10. Support Services	LS -	578	12921.90	27000	1700	23031	40980
	Sub Total						
	Adjustment						
	Total						
	Del Time						
1. del/SPU							
Adjustment Details							
	2229						
	1832						
	1500						
	2610						
	4099						
	513						
	16200						
	26300						
	16322						
	40560						
	128						
	90900						

RESOLUTION NO. 84-01

AWARD - CONTRACT FOR SCADA SYSTEM
(ALTERNATE SYSTEM)

WHEREAS, in answer to notice duly published in accordance with law and the order of this City Council, sealed bids were received and publicly opened by the City Clerk of this City on January 25, 1984 at 11:00 a.m. for the contract for SCADA System (Alternate System) as described in the specifications therefor approved by the City Council February 15, 1984; and

WHEREAS, said bids have been compared, checked, and tabulated and a report thereof filed with the City Manager as follows:

<u>BIDDER</u>	<u>AMOUNT</u>	
	<u>Schedule I</u>	<u>Schedule II</u>
BIF Accutel	\$499,052.18	\$625,280.20
Northwest Utilities	\$232,020.66	\$277,020.00
Moore Systems	\$229,824.00	\$269,137.00
QEI	\$300,577.00	\$325,869.00
Tejas Controls, Inc.	\$272,145.00	\$314,510.00
Multitronics	\$199,375.86	\$241,044.90
Tessmer, Inc. (TESCO)	\$276,010.00	\$374,600.00

WHEREAS, the City Manager recommends that award be made to the low bidder, Moore Systems, Inc.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Lodi that award of contract for SCADA System (Alternate System) be and the same is hereby made to Moore Systems, Inc., the low bidder, in the amount of \$269,137.00.

Dated: February 15, 1984

I hereby certify that Resolution No. 84-014 was passed and adopted by the City Council of the City of Lodi in a regular meeting held February 15, 1984 by the following vote:

Ayes: Council Members - Reid, Snider, Murphy,
Pinkerton & Olson (Mayor)

Noes: Council Members - None

Absent: Council Members - None

Alice M. Reimche
ALICE M. REIMCHE
City Clerk

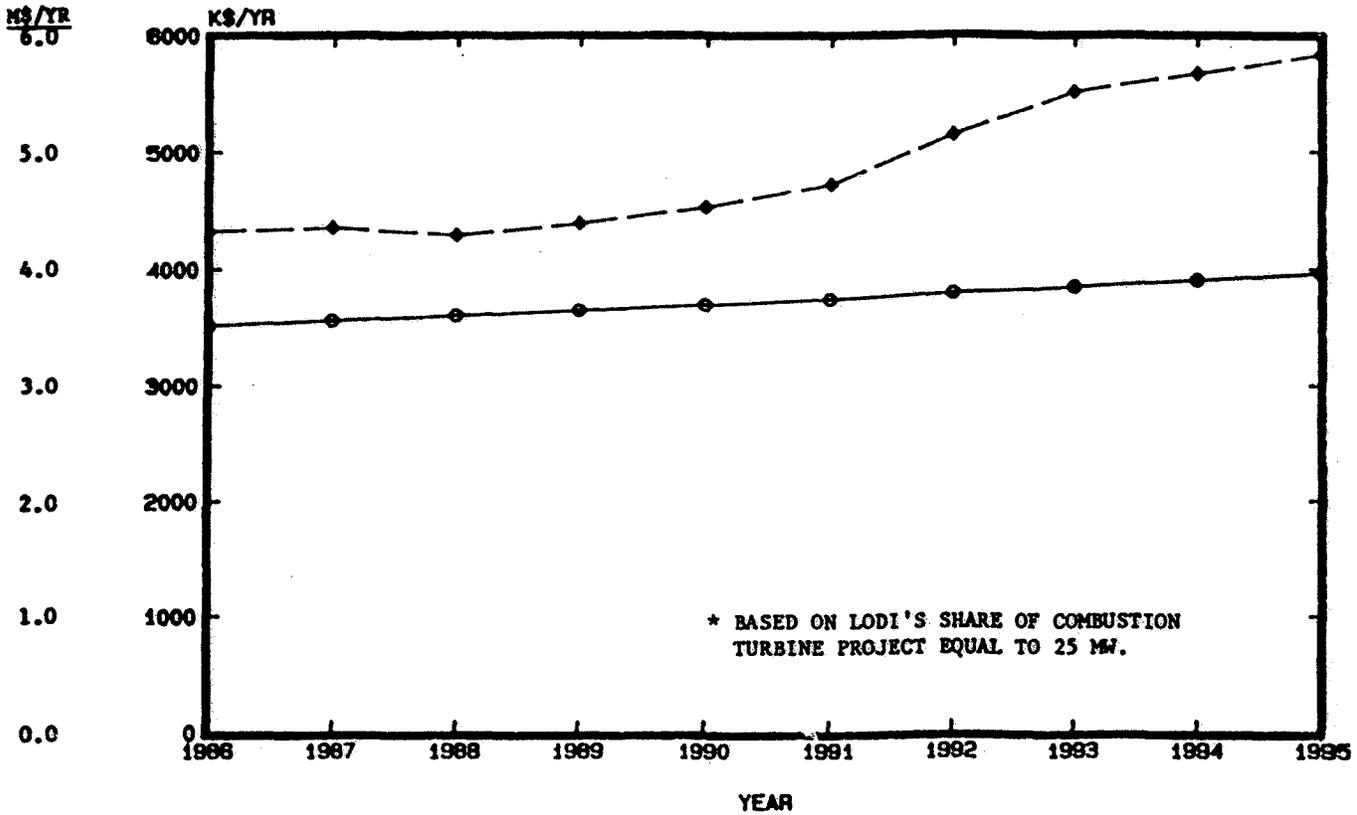
COMBUSTION TURBINE VS PG&E AS PEAKING RESOURCE 1986-1995*

GAS TURBINE

PG&E

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2/7/84

PUBLIC FACILITIES PROJECT DESCRIPTION	Project Cost	PROJECT YEAR & COSTS (\$000)					REMARKS & FUNDING	
		Jan '84	1984	1985	1986	1987		1988
			1.00	1.05	1.10	1.15		1.20
• MSC - Paving and Landscaping	9	9						
a. Paving	\$8,000							
b. Landscaping	1,000							
c. Additional Covered Storage	80		84					
• Fuel Dispensing System	60	60						
• Softball Complex, Additional Storage	8	8						
• Softball Complex, New Restrooms	70		77					
• Salas Park								
a. Walkway Ramp Modification	9	9						
b. Sprinkler Booster Pump Structure	3	3						
c. Restrooms	75	75						
• Stadium								
a. Restrooms & Concession Stand	145	145						
b. Fence Areas where Seats Removed	14	14						
c. Remove & Replace Fence on Rim	20		22					
d. Resurface Walkways & Ramps	33.6		37					
• Lodi Lake								
a. Remove Vines & Fence West 13 Acres	16	16						
b. Install Water Main	50			55				
c. Install 5-gang Slide at Beach	25			30				
d. Plans for Total Park Development	20			24				
e. Phase I of 13 Acre W/Side Development (engineering, grading, sprinkler, curbing, and turfing)	135			163				
f. Phase II, Redesign Roadway & Relocate Entrance	150				195			
g. Install Curbing as Needed	50				65			
h. Renovate Sprinkler System - So. Side	50				65			
i. Install New Parking Facilities	25				32.5			
j. Renovate Restrooms	75				97.5			
k. Install Lighting System - So. Side	50				65			
l. 13 Acres - Roadways & Parking	125					175		
m. 13 Acres - Restrooms	100					140		
n. 13 Acres - Power and Lights	25					35		
o. 13 Acres - Misc. Facilities (Picnic Tables, Play Equipment, Etc.)	35					49		
p. Restrooms, No. Side	100					175		

PUBLIC FACILITIES (continued) PROJECT DESCRIPTION	Project Cost Jan '84	PROJECT YEAR & COSTS (\$000)					REMARKS & FUNDING
		1984	1985	1986	1987	1988	
		1.00	1.05	1.10	1.15	1.20	
• Abandon City Wells	6	2		4			
• City Hall Parking Lot Expansion	127			135			
a. Property Acquisition \$105,000							
b. Demolition & Construction 22,000							
• Legion Park, Resurface Tennis Courts	20		20				
• Blakely Park Pool, Resurface	25		27.5				
• Hale Park Building, Remodel Kitchen	10			12			
• English Oaks Common, Renovate Lighting	8			8			
• Recreation Office, Carpeting	5			6			
• Handicapped Requirements	7						
• Hutchins Square							
a. 2.8 Acre Park, Athletic Facilities, Parking	212	212					
b. Renovate Cafeteria Building - Music Building	408						
c. Renovate Gymnasiums	1100						
Add Recreation Department Office	433						

2/1/84

WATER PROJECT DESCRIPTION	Project Cost	PROJECT YEAR & COSTS (\$000)					REMARKS & FUNDING
	Jan '84	1984	1985	1986	1987	1988	
		1.00	1.05	1.10	1.15	1.20	
DISTRIBUTION SYSTEM IMPROVEMENTS							
• Miscellaneous Watermains	5/yr	5	5	5	6	6	By City Forces
• Oversized Watermains	10/yr	10	10	11	12	12	
• Major Water Crossings	10/yr	10	10	11	12	12	
• Water Meters	50/yr	50	50	40	35	30	
• Elimination of Dead-ends	10/yr	10	10	11	12	12	
1. E/Neplus Court to Lockeford							
2. Bel Air Court to Daisy							
3. Cardinal Street to Fairmont							
4. Tokay Street E. & W/California							
TOTAL		425	85	85	78	77	72

WATER PROJECT DESCRIPTION	Project Cost	PROJECT YEAR & COSTS (\$000)					REMARKS & FUNDING
	Jan '84	1984	1985	1986	1987	1988	
		1.00	1.05	1.10	1.15	1.20	
FIRE PROTECTION IMPROVEMENTS							
• Miscellaneous Fire Hydrants	10/yr						
1. Loma Drive between Lake and Holly	3	10					
2. Turner Road at Loma	3						
3. Daisy Ave. between Grant and Crescent	3		10				
4. Turner Road W/Laurel	3						
5. Sacramento Street N/Tamarack	3			11			
6. Sacramento Street S/Tamarack	3						
7. Sacramento Street N/Park	3				12		
8. Sacramento Street at Vine	3						
9. Victor Road 450' E/Beckman	3						
10. Lockeford Street W/Highway 99	4					13	
11. Other Miscellaneous Fire Hydrants	380						
• Fire Hydrant and Distribution System Upgrading							
1. Beckman Road Watermain 1000' S/Vine to Vine	41	41					
2. Lower Sacramento Frontage Road 150' N to 700' N/Yosemite	20			20			
3. Palm and Grant Watermains 600' W/Roper to California Louie to Palm	112		117				
4. Locust Watermain Fairmont to Crescent	45			50			
5. Lincoln and Edgewood Watermains Turner to Midvale	79				91		
6. Elliot and Kimberly Watermains Orange to Crescent	34					41	
7. Other Watermain Projects	1,895						
TOTAL	2,656	51	127	81	103	54	

WATER (Continued) PROJECT DESCRIPTION	Project Cost Jan '84	PROJECT YEAR & COSTS (\$000)					REMARKS & FUNDING
		1984	1985	1986	1987	1988	
		1.00	1.05	1.10	1.15	1.20	
<u>WATER WELLS</u>							
Well Control Valve Upgrading							
• Well #1	13		14				
• Well #12	14	14					
• Well #4	19			21			
Well Replacement	400			220		240	
Well Abandonment (old Well #7)	2	2					
<u>WATER TANK IMPROVEMENTS</u>							
Water Tank Replacement							
• Engineering	16	16					
• Construction	320		336				
TOTAL	784	32	350	241	0	240	

WASTEWATER PROJECT DESCRIPTION	Project Cost Jan '84	PROJECT YEAR & COSTS (\$000)					REMARKS & FUNDING
		1984	1985	1986	1987	1988	
		1.00	1.05	1.10	1.15	1.20	
• Miscellaneous Sanitary Sewer	10/yr	10	10	11	12	12	Specific manholes to be constructed over a three-year period.
• Oversize Sanitary Sewer Mains	5/yr	5	5	6	6	6	
• Miscellaneous Sanitary Sewer Manholes	10/yr				12	12	
1. Willow Glen Dr. W/Green Oaks Way	2						
2. Holly Drive E/Fairmont	2						
3. Orange Ave. S/Mariposa Way	2						
4. Locust St. E/Fairmont Ave.	2	10					
5. Shady Acres Pump Station	2						
6. Normandy Lane E/Normandy Court	4		12				
7. Walnut St. E/Ham Lane	2						
8. Tamarack Dr. E/Lee Avenue	2						
9. Pine St. W/Corinth Avenue	2						
10. Edgewood Dr. N/Turner and California	2			11			
11. California N/Eureka	2						
12. Rose Street N/Tokay Street	2						
• Beckman Road Sanitary Sewer Pine to Lodi	55				63		
• Lining Outfall Line	285			313			
• Hutchins Street Line Replacement Tokay Street to Lodi Avenue	83		83			Line will be TV'd to determine actual condition. Estimate reflects complete replacement.	
• Stockton Street Line Replacement Kettleman Lane to Lodi Avenue	240	240				Line will be TV'd to determine actual condition. Estimate reflects complete replacement.	
TOTAL	788	265	110	341	93	30	

WASTEWATER PROJECT DESCRIPTION	Project Cost Jan '84	PROJECT YEAR & COSTS (\$000)					REMARKS & FUNDING
		1984	1985	1986	1987	1988	
		1.00	1.05	1.10	1.15	1.20	
WHITE SLOUGH FACILITY							
• Roadway Paving	15	5	5	5			To be completed over 3 years. This has been reduced from \$400,000
• Replacement Methane Gas Compressor	15	15					
• Overhaul Instrument Air Compressors	10	10					
• Overhaul Industrial Waste Pump #2	12	12					
• Repair Doors & Windows on Outlying Buildings	7	6					
• Electric Pump Controller Replacement	14	14	15	15			
• Rebuild Chlorine Monitoring Equipment	9	9					
• Replacement of Monitoring & Alarm System	50	50					
• Development of Auxiliary Well	45		47				
• Replace Air Duct Piping in Headworks	12		13				
• Replace Fresh Air Blower in Main Pump Room and Boiler Room	10			11			
• Roof Repair on Control Building, Chlorine Building and Headworks Building	29				33		
TOTAL	228	121	80	31	33		