Evaluation of the Port Hueneme Demonstration Plant

An Analysis of 1 MGD Reverse Osmosis, Nanofiltration and Electrodialysis Reversal Plants Run under Essentially Identical Conditions

Prepared by
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Desalination and Water Purification Research and Development
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The Port Hueneme Demonstration Plant was established to supply neighboring communities with increased quantities of high quality water and to provide a comparison of three membrane desalting processes. Comparison of these processes is the subject of this paper. The processes used were reverse osmosis, nanofiltration, and electrodialysis reversal. Data on plant operation were supplied to Reclamation by the Port Hueneme Water Authority. For the purpose of this analysis, records that were much more detailed than usual were kept on equipment performance, chemical consumption and labor. The evaluation period used ran from March 1999 to February 2000. Calculated water treatment costs are expressed as 1999 dollars per thousand U.S. gallons. For this period nanofiltration was shown to be less costly than reverse osmosis and both were lower in cost than electrodialysis reversal. Overall each process worked well, once the startup problems were resolved. This demonstration clearly shows that a low-TDS brackish water can be desalted for an all-inclusive cost under $0.90 per thousand gallons.

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Abbreviations

BWRDF	Brackish Water Reclamation Demonstration Facility
CIBCSD	Channel Islands Beach Community Services District
COPH	City of Port Hueneme
CRF	Capital Recovery Factor
EDR	Electrodialysis Reversal
$gal/day \cdot ft^2$	gallon per day - square foot
kgal	kilogallon = 1000 gallons
kWh	kilowatt hour
mg/L	milligrams per liter
MGD	million gallons per day
n	number of years over which a capital expenditure is amortized
NF	nanofiltration
O&M	operation and maintenance
PHWA	Port Hueneme Water Agency
psi	pounds force per square inch
r	interest rate for amortization of capital
RO	reverse osmosis
SCADA	supervisory control and data acquisition
TDS	total dissolved solids
μS/cm	microsiemens per centimeter

Executive Summary

The Port Hueneme Demonstration Plant was established to supply communities neighboring Port Hueneme with increased quantities of high quality water and to provide a comparison of three membrane processes operating as nearly as possible on the same water under identical conditions. This second objective is the subject of this paper. The raw feed water is typical of brackish water in southern California.

Three different desalination processes were used: reverse osmosis, nanofiltration, and electrodialysis reversal. Each desalting process has the same production capacity to facilitate the comparative evaluation of performance and costs. Since the desalted product is of higher quality than the 370 mg/L quality required, some water could be bypassed around the plant to be blended with the desalted product. The Port Hueneme Water Agency has collected data on the chemical usage and power consumption, and has tracked the other operating and maintenance costs for each of the three membrane sections.

Data on plant operation were supplied to Reclamation by the agency. Most of these data were accumulated by the plant automated data accumulation and storage system. This record that Reclamation received during the evaluation period had been reduced to one point for each parameter per day. Selected values were manually entered into a spread sheet from which analysis proceeded.

For the purpose of this analysis, records that were much more detailed than usual were kept on how the labor was employed at the plant. This information in itself may find wide utility for individuals tasked with estimating the number of staff hours required for operation of a desalting facility. Data were extracted from monthly labor reports and daily operator logs to assemble a spreadsheet itemizing staff-hours and labor costs for each of the separate desalting sections and for the plant. The last category covers operations that were common to all sections or that could not be separately allocated.

The evaluation period used ran from March 1999 to February 2000. Calculated water treatment costs are expressed as 1999 dollars per thousand U.S. gallons.

The procedure used ran as follows:

- Determine the quantity and concentration of water produced by each desalting section.
- Determine the effective flow, i.e., product plus blend flow for each section.
- Calculate the cost of energy and chemicals used in each section and in the plant.
- Allocate the costs attributable to the plant evenly to the three sections.
- Calculate the cost of labor in the same fashion.
- Determine the amortized cost of capital from the three sections.
- Sum the cost components to get an (almost) all-inclusive cost of desalting.

The costs of desalination determined in this manner were 72.6¢/kgal for nanofiltration, 74.7¢/kgal for reverse osmosis and 79.6¢/kgal for electrodialysis reversal. The unsatisfying part of this analysis is that membrane replacement is not included. A rough estimate of membrane replacement is about 10¢/kgal. However, they would probably not be the same for the three processes. It would be interesting to see what a similar comparison would show at a time when the membrane element replacement rate could reasonably be calculated.

Overall each process worked well, once the startup problems were resolved. This demonstration clearly shows that a low-TDS brackish water can be desalted for an all-inclusive cost less than $0.90 per thousand gallons.

1.0 Background

The Port Hueneme Demonstration Plant was established to fulfill two objectives. The first was to supply the neighboring communities with high quality water. In this the plant has been highly successful, having produced typically over 3 million gallons of blended product water per day during the evaluation period. The second was to provide a comparison of three membrane processes operating as nearly as possible on the same water under identical conditions. This second objective is the subject of this paper.

To provide this information has required the close cooperation of the operating entity, the Port Hueneme Water Agency (PHWA). This plant is probably unique in the detail in which operating data has been collected.

The PHWA was formed in 1994 by the City of Port Hueneme (COPH) and the Channel Islands Beach Community Services District (CIBCSD). The agency was formed to implement a water quality improvement program, which included a project designed to improve the quality and reliability of drinking water supplies for current and projected water demands for the project participants. These project participants included the COPH, the CIBCSD, the Naval Construction Battalion Center - Port Hueneme, and the Naval Air Weapons Station - Point Mugu. The project involved the construction of a brackish water reclamation demonstration facility (BWRDF) and various pipelines to treat groundwater imported from the United Water Conservation District to meet current and anticipated drinking water standards and to import State Water Project water from the Calleguas Municipal Water District.

The participating water utilities use highly mineralized groundwater from the overdrafted Oxnard Plain Groundwater Basin. It has a cloudy appearance and a bad taste and causes damage to infrastructure. Although this groundwater supply is reliable, it is unappealing. Prior to construction of the BWRDF, many water customers were burdened with the costs of water softeners and/or bottled water. In addition, there were indirect costs to water users that included shortened plumbing and appliance life and stains on glassware and laundry. Table 1.1 shows the raw water quality data for the source water and the design criteria for treating water at the BWRDF. The PHWA determined that the most cost-effective and dependable way to provide area residents with a reliable, high-quality water was to blend desalted local groundwater produced at the BWRDF with imported surface water from the California State Water Project.

Table 1.1. Raw and Treated Water Quality Criteria

Parameter	Raw Water	Average	Treated Water Criteria
TDS, mg/L	1320	1015	<370
Total Hardness, mg/L as	680	450	<150
Alkalinity, mg/L as $CaCO_3$	215	200	50-75 (1)
Temperature, ^{o}C	13-20	13-20	
Magnesium, mg/L	58	47	-
Calcium, mg/L	175	0.025	40-50 (1)
Barium, mg/L	<0.1	0.025	<1
Sodium, mg/L	170	93	-
Potassium, mg/L	8	6	-
Manganese, mg/L	<0.1	0.04	<0.05
Iron, mg/L	<0.7	0.1	<0.3
Silica, mg/L	28	-	-
Bicarbonate, mg/L	260	250	50-75 (1)
Carbonate, mg/L	ND	-	-
Sulfate, mg/L	670	450	<250
Nitrate, mg/L as Nitrogen	11	4	<10
Fluoride, mg/L	0.6	0.6	1.2-2.4
Chloride, mg/L	72	51	<50
Turbidity	<1	0.3	<0.1
pH	7.5-8.5	7.6	7.5-8.0

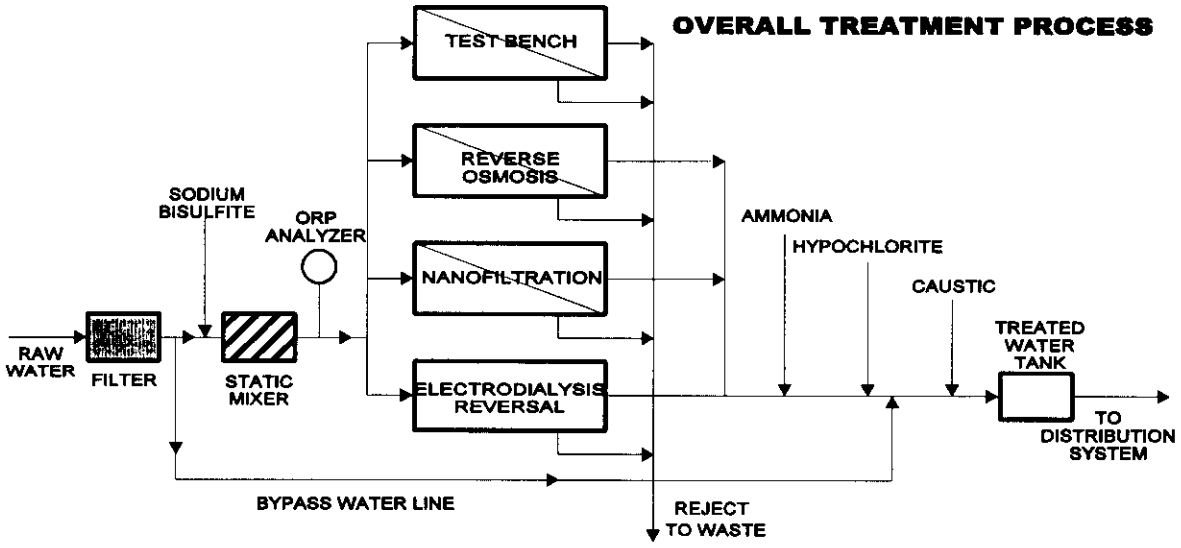
Note: (1) Goal, not a requirement

In a cooperative effort with the United States Bureau of Reclamation (Reclamation), the BWRDF is also serving in an investigative capacity. Three commercially-available membrane technologies are being compared in a full-scale, side-by-side brackish water desalting application under nearly identical test conditions. The project is comparing and evaluating the long-term operating and economic data of each selected membrane technology in order to identify the most cost effect and appropriate treatment process. Because of their interest in improving water quality in a cost-effective manner and belief in the potential for widespread use of groundwater desalination throughout the region, Reclamation cost-shared, through its Title XVI "Reclamation Wastewater and Groundwater Studies" program, approximately one-quarter of the funding to construct the facility.

2.0 The Plant

The Brackish Water Reclamation Demonstration Facility, shown in Figure 2.1, is designed to produce 3 MGD of blended desalted brackish groundwater. While there are over 170 potable water desalting plants operating in the United States, the use of desalination on brackish groundwater is relatively new in southern California. Water agencies like the PHWA are faced with a variety of desalination technologies, but have access to only limited data on their relative performance and cost-effectiveness on this type of water supply.

Three different desalination technologies are being used: reverse osmosis (RO), nanofiltration (NF), and electrodialysis reversal (EDR). These membrane processes are being operated in parallel to provide high-quality water to the communities in the area. Each desalting process has the same production capacity to facilitate the comparative evaluation of long-term performance and costs over a range of raw brackish water quality conditions typical in southern California. PHWA has collected data on the chemical usage and power consumption, and has tracked the other operating and maintenance (O&M) costs for each of the three membrane systems. The operational data will be used to evaluate the operating characteristics and economics of the three brackish water membrane treatment technologies. Each of the three membrane technologies is designed to produce water that meets the treated water total dissolved solids (TDS) and total hardness criteria presented in Table 1.1.



While there are many facilities in the United States that use RO, NF or EDR to desalt water, it is difficult to compare the different membrane systems at these facilities because raw water sources, water characteristics, plant capacities, and operational costs for power, chemicals, and labor differ at each plant. The membrane treatment technologies used to treat brackish water at the facility are being evaluated using the same brackish water source, membrane

system capacity, and chemical, electric power, and labor costs. Operating parallel systems in a single facility will permit a direct comparison of the operational costs, maintenance costs, and overall performance of the three membrane technologies.

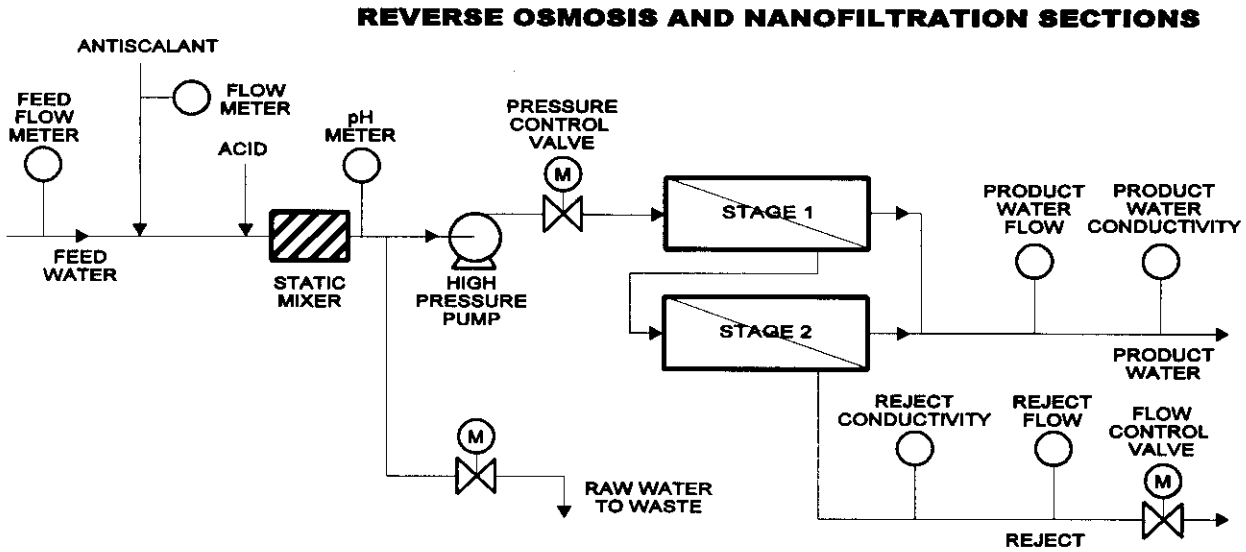
2.1 Pretreatment. Groundwater, containing some chlorine, is delivered to the treatment plant via the Oxnard-Hueneme pipeline belonging to the United Water District. At the plant, the raw brackish water is filtered to remove suspended matter and chemically treated to remove chlorine and to adjust the water chemistry to avoid scale formation in the membrane elements. The filter used is an automatic backwashing bag filtration system with a 5-micron nominal removal. This filter is shown in Figure 2.2. By economic analysis, the automatic backwashing filter system was shown to have a lower present worth cost than either a cartridge or a bag filter system. In addition, this type of system permits uninterrupted plant operation and requires a minimum of plant maintenance time.

Polyamide based thin-film composite RO and NF membranes are vulnerable to oxidation damage. Consequently, sodium bisulfite, a reducing agent, is added to the raw water after filtration to remove any free chlorine present. Acid and anti-scalant can also be added to the raw water to help reduce deposits of sparingly soluble salts, like calcium sulfate, as scale on the membrane surfaces. Each membrane treatment section has a dedicated acid chemical metering pump and an anti-scalant feed pump to permit the addition of different dosages of anti-scalant and to accurately monitor the usage of chemicals. Figure 2.3 shows the metering pumps and Figure 2.4 shows the chemical tanks located behind the facility.

2.2 Reverse Osmosis. The basic process in reverse osmosis is that water is forced through a membrane which allows the passage of water but rejects the passage of ionic materials, salts as well as larger uncharged molecules. Commercial reverse osmosis equipment is most commonly packaged as spiral wound elements in which the membranes are wrapped in a spiral fashion around a central product tube. The salt rejection is typically very high, 98 to 99% or higher.

Typically four to six such elements are placed in a pressure vessel. Each vessel is operated at a flow such that about half of the water is recovered as product and half becomes concentrate or reject. This constitutes the first stage. The first stage reject is then directed to a second set of element containing vessels where another half is recovered as product and the remaining half becomes plant reject. The product from such units is of considerably better quality than is required so a certain fraction of untreated water is blended with the product to arrive at the finished product.

The RO section consists of 21 pressure vessels arranged in a two-stage array with 14 vessels in the first stage and 7 vessels in the second stage. Each pressure vessel holds six FilmTec model BWLE440 reverse osmosis elements. Each element is 40 inches long with a nominal diameter of 8 inches. Fully loaded the section contains 126 elements.



The RO section, shown pictorially in Figure 2.5 and schematically in the sketch above, produces 1 MGD of treated water and is designed as a two-stage process with a minimum product recovery of 75 percent. The system operates at a first-stage feed operating pressure of approximately 150 psi (10.3 bar) and has an average membrane flux of 15 gal/day·ft^2. To economically produce 1 MGD of treated water, approximately 0.25 MGD of filtered raw water is bypassed and blended with the low TDS RO product water to produce the final blended water TDS of 370 mg/L.

2.3 Nanofiltration. This process is similar to that of reverse osmosis. However, the membrane is made slightly less rejecting of salt. This change in membrane properties allows a greater product flow per unit membrane and per unit driving force but it produces a product with a higher salinity. In principle the rejection of the membrane could be tailored to give just the product salinity desired. In commercial operation this is not done, rather a better product is made than is required and this is blended with some untreated water to arrive at the desired product salinity.

The NF section consists of 22 pressure vessels arranged in a two-stage array with 15 vessels in the first stage and 7 vessels in the second stage. Each pressure vessel holds six FilmTec model NF80-400 nanofiltration elements. Each element is 40 inches long and with a nominal diameter of 8 inches. Fully loaded the section contains 132 elements.

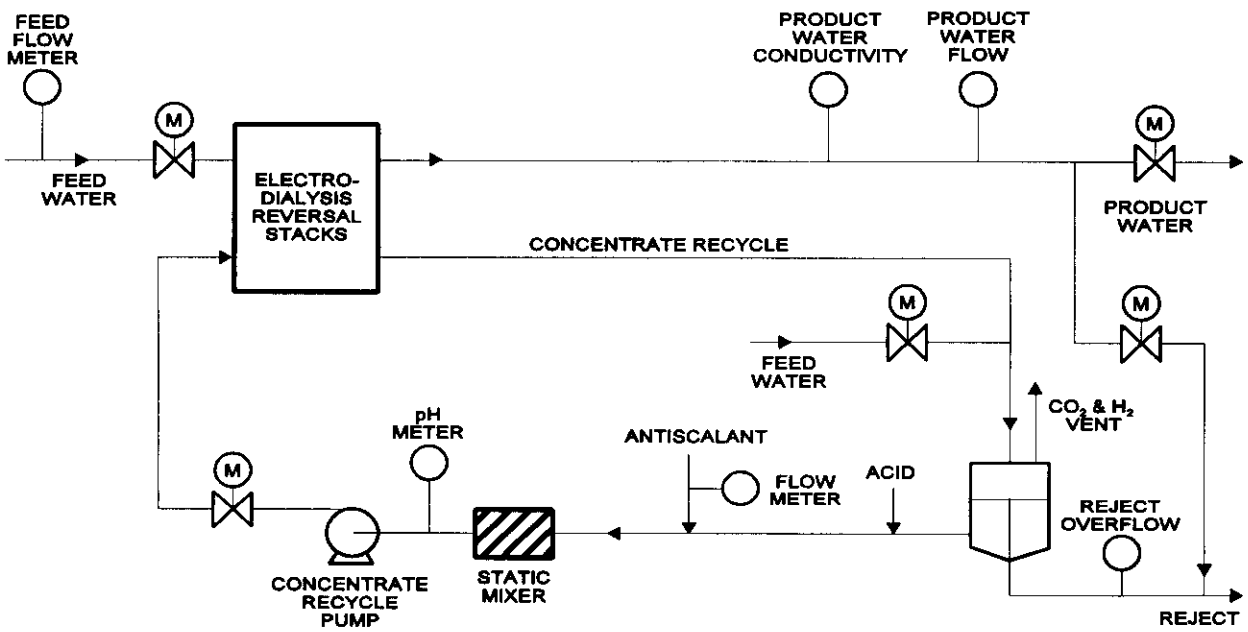
The NF section is similar to the RO system, also producing 1 MGD of treated water. It is designed as a two-stage process with a minimum recovery of 75 percent. This system operates at a first-stage feed water pressure of approximately 100 psi and has an average membrane flux of 15 gal/day·ft^2. NF membranes have greater permeability than RO membranes, which permits lower operating pressures but allows more dissolved ions to pass

through the membrane to the product water side. As a result, TDS levels are higher in NF product water than in RO product water, and less raw water is bypassed to achieve the treated water TDS objective of 370 mg/L.

2.4 Electrodialysis Reversal. EDR is similar to RO and NF only in that membranes are used. The membranes are considerably different, consisting of ion-exchange materials in sheet form, and the process is driven by a direct current potential across a stack of membranes. Commercial equipment consists of stacks of such membranes and electrodes. Each stack can accomplish up to a 30% reduction in salinity. The stacks are plumbed and the feed velocity selected so that the desired product salinity is obtained at the outlet of the last stack in series. Thus no blending is required to produce the desired 370 mg/L TDS.

The EDR section consists of five lines of three stacks each. Each stack contains 600 cell pairs of CR67HM cation and AR204SXZL anion membranes with Mark IV spacers in between.

ELECTRODIALYSIS REVERSAL SECTION



The EDR system produces 1 MGD of treated water and is designed to have a minimum product recovery of 85 percent. The EDR membrane treatment system, unlike the RO and NF systems, does not bypass any filtered raw water to blend with the EDR system product water. The controls in the EDR system adjust the electrical current, which varies the voltage field potential to meet the treated water quality objectives. The electrical efficiency of the EDR treatment system is optimized by producing water with a TDS concentration that just meets the treated water quality criteria. Figures 2.6 show a photograph of the EDR system.

The plant was procured by open competition among a number of prequalified bidders, based on a detailed specification produced by Kennedy/Jenks Consultants of Ventura, California. Five separate sections were biddable: site preparation, plant, reverse osmosis, nanofiltration and electrodialysis. Ionics, Incorporated, of Watertown, Massachusetts, was selected to provide the three membrane process sections. The treatment building and site work were completed by Pascal & Ludwig Engineers of Ontario, California.

The economics of these processes are such that, in general, the overall cost per unit of water treated is similar for each. This similarity is sufficiently close that it has not been possible to compare these processes at different sites because of the influence of site variables on total cost. A major purpose of the plant was to provide a comparison between these three processes under conditions that were as close to identical as possible.

2.5 Disposal of Reject Water. The concentrated brine reject water from the Facility is discharged to a sanitary sewer where it is blended with raw wastewater, treated at a nearby wastewater treatment plant, and ultimately discharged to the ocean through an existing outfall. Studies have been conducted on the possibility of using the reject water for aquaculture or restoration of local brackish wetlands. The results of these studies are beyond the scope of this paper.

2.6 Clean-in-Place System. The Facility has a single Clean-in-Place System that can be used to clean membranes in any of the three desalination processes. The system is capable of operating in a pH range of 2 to 12 and at temperatures of up to 140°F (60°C). The cleaning solution used depends on the type of foulant or scaling material encountered. Materials used for cleaning in various applications include caustic soda, citric acid, sulfuric acid, hydrochloric acid, trisodium phosphate, detergents, and ethylenediamine tetraacetic acid.

2.7 Membrane Test Bench. The Bureau of Reclamation built and installed a skid-mounted 6 gal/min membrane test bench at the Facility that can be used for screening alternative RO and NF elements for the demonstration plant. This is shown in Figures 2.7 and 2.8. A separate clean-in-place skid, shown on the left side of Figure 2.7, is provided for evaluating membrane cleaning strategies. The 18-element test bench, employing 2.5-inch elements, is configured in a 2:1 array to achieve 75 to 80 percent recovery. Pretreatment includes the addition of acid and anti-scalant, as well as cartridge filtration. The test bench is fully instrumented and compatible, via an on-board programmable logic controller (PLC), with the plant's Data Acquisition and Control System. Operation and cost of this unit have not been factored into plant operating cost.

3.0 Data and Operation

Plant data were supplied to Reclamation by the agency (Port Hueneme Water Agency, 1999-2000). Most of these data were accumulated by the plant supervisory control and data acquisition (SCADA) system. This record that we received during the evaluation period contained one (averaged or total) point for each parameter per day. These data were sent to Reclamation in a large packet along with manual data, analyses and copies of correspondence between PHWA and others pertinent to operations. Selected values were manually entered into a spreadsheet from which the graphs in this report were generated. For the most part the data appear accurate although Reclamation could not perform checks on the accuracy of the readings. On occasion the SCADA system returned values that reflect a temporary flaw in the operation of the system. Such values included negative values of flows or operating periods exceeding 24 hours per day. Where obviously incorrect values were discovered, they were eliminated from the record. Although considerable care was exercised in transcribing of the data, we acknowledge that transcription is a possible source of error.

The evaluation period selected was March 1999 to February 2000. The plant actually began operating in December 1998 and January 1999. However, since there were the usual startup problems, we chose to start the evaluation period when the initial teething problems had been solved and operation had become fairly smooth.

As the reader will see in examining the data presented, there is considerable variation in the values used in the evaluation. This means that a certain amount of judgement had to be exercised in selecting the single value of a parameter, say the RO product flow or the NF product salinity, that best represents the performance of the section over the entire evaluation period. The values that we have selected are clearly expressed. These can be compared with the performance curves, which are collected at the back of the text. They can also be compared with the numbers in the Data Appendix that were used to generate these performance curves. We acknowledge that there may be other ways of interpreting these data and have tried to make the way clear for whoever would like to make an alternative interpretation.

Figure 3.1 shows the conductivity and calculated concentration of the feed water to the plant, before chemical addition. Numerical data used in the construction of this and subsequent figures appear in the Data Appendix, pp. B - 1 et seq. Conductivity is an easily monitored measurement. Concentration of TDS is related to this by means of an empirical factor determined by comparison of measurements of concentration and conductivity taken on the same sample. The factor used to relate TDS to conductivity of the feed water is 0.719 (mg/L)/(μS/cm). The average feed concentration, C_F, was determined to be 980 mg/L. Values of the factor for product from the various sections are tabluated below. These were calculated from data supplied by PHWA.

Table 3.1 Factors Relating Conductivity to Total Dissolved Solids

	Feed	RO	NF	EDR
Ratio of TDS to Concentration ((mg/L)/(μS/cm))	0.719	0.670	0.580	0.630

Total product flow and product concentration for the RO section are shown in Figures 3.2 and 3.3. In this and subsequent figures relating to the RO sections, the data points are depicted as red triangles. Total product flow and product concentration for the NF section are shown in Figures 3.4 and 3.5. The data points for the NF section are depicted as green diamonds. Total product flow and product concentration for the EDR section are shown in Figures 3.6 and 3.7. The data points for the EDR section are depicted as purple squares. From these data the following values were extracted:

Table 3.2 Flow and Concentration of Product Stream

	RO	NF	EDR
Product Flow, gallons per day	727,000	768,000	1,010,000
Product Concentration, mg/L	12.1	18	365

Flow of blend water was not separately measured. Instead, the flow from the three sections was combined and the blend flow was adjusted to give a final salinity of 370 mg/L. Using a mass balance on flow and salinity, we can calculate the effective flow from each section. The equation used is the following:

$$Q_{E,S} = Q_S (C_F - C_S) / (C_F - C_B) \tag{3.1}$$

where Q = flow in gallons per day, C = concentration in mg/L. Subscript E indicates effective flow, i.e., the sum of product flow and blended flow to produce a mixture containing 370 mg/L of TDS. Subscript S is an index subscript referring to any one of the three desalting sections. Subscripts F and B refer to Feed and Blended product, respectively. Using C_F as 980 mg/L and C_B as 370 mg/L, this reduces to:

$$Q_E = Q_S (980 - C_S) / 610 \tag{3.2}$$

Applying this to each of the three sections, we calculate the effective flows shown in Table 3.3. From this point on references to unit volumes refer to effective flow as defined in equation 3.2 and as shown in Table 3.3.

Table 3.3 Effective Flow of Product

	RO	NF	EDR
Effective Product Flow, gallons per day	1,153,000	1,211,000	1,018,000

Note that while the EDR section was to have been run so as not to require blending, the product salinity was slightly below 370 mg/L. We treated this in the same manner as the other sections, getting an effective product flow a little above 1 million gallons per day. The RO and NF sections were originally to have been run to produce an effective flow of 1 million gallons per day. However, since the water was needed, the plant was run at the higher productivity indicated.

4.0 Operating Cost

Calculated water treatment costs are expressed as 1999 dollars per thousand U.S. gallons. Plant costs and unit chemical and energy costs are taken from data provided by The Port Hueneme Water Agency and by Ionics, Incorporated. The method of cost evaluation used is that of the authors who accept the responsibility for any errors that may have found their way into the calculations.

4.1 Energy. Energy consumption for the three sections are shown in Figures 4.1 and 4.2. The first graph shows daily consumption for each section. The second shows energy consumption per thousand gallons of product for each section. Note that Figure 4.2 is the only point in this report where the unit in the denominator is actual product rather than effective product.

The energy cost used is $0.069/kWh. From Figure 4.1 the following daily energy consumption figures were drawn. The energy consumption in kWh/kgal is obtained by dividing the energy consumption in kWh/day by the number of kilogallons of effective product per day shown in Table 3.3.

Table 4.1 Daily Energy Consumption

	RO	NF	EDR
Energy Consumption, kWh/day	1,690	1,462	1,358
Energy Consumption, kWh/kgal	1.47	1.21	1.33
Energy Cost, $/kgal	$0.1011	$0.0833	$0.0920

Unit costs are expressed to four decimal places, not because we believe the costs are known to this degree of accuracy, but rather because we want to show at least one non-zero digit for any entry for comparison purposes.

4.2 Chemicals. Chemicals used in the plant include acid for pH adjustment, anti-scalant to prevent precipitation of sparingly soluble salts like calcium carbonate and calcium sulfate, sodium bisulfite for dechlorination of the feed water, sodium hypochlorite to leave a residual disinfectant in the product water, sodium hydroxide for pH adjustment of the product water, hydrofluosilicic acid for adding small quantities of fluoride to the finished water, and ammonia for converting the chlorine residual in the water to chloramines.

The first two, acid and anti-scalant, were designed to be fed directly ahead of the individual units. Consequently these could be metered separately. The original design called for use of sulfuric acid, but hydrochloric acid was used in operation. During the test period, acid feed to the RO and NF sections was not used.

Antiscalant feed to the RO, NF and EDR sections is shown in Figures 4.3, 4.4 and 4.5, respectively. Acid feed to the EDR section is shown in Figure 4.6. The other chemicals are fed at points which do not allow segregation by process. Sodium bisulfite, sodium hypochlorite and sodium hydroxide consumption are plotted in Figure 4.7. Hydrofluosilicic acid and ammonia usage are plotted in Figure 4.8. All chemical usage is expressed in units of gallons per day.

The chemical costs used in this analysis are:

Table 4.2 Unit Costs of Chemicals

Anti-scalant AS12OUL Hypersperse polymer	$ 11.00 per gallon
Hydrochloric acid, 31%	$ 0.72 per gallon
Sodium bisulfite	$ 0.68 per gallon
Sodium hypochlorite	$ 0.70 per gallon
Ammonium hydroxide	$ 2.30 per gallon
Sodium hydroxide	$ 0.95 per gallon
Hydrofluosilicic acid	$ 2.40 per gallon

From the figures cited above, the following chemical usages can be calculated:

Table 4.3 Chemical Usage

	RO	NF	EDR	Plant
Anti-scalant, gallons per day	3.9	3.6	0.2	
Hydrochloric acid, gallons per day	0.0	0.0	21.5	
Sodium bisulfite, gallons per day				42.0
Sodium hypochlorite, gallons per day				69.0
Ammonium hydroxide, gallons per day				13.0
Sodium hydroxide, gallons per day				110.0
Hydrofluosilicic acid, gallons per day				10.6

Combining the data in Tables 4.2 and 4.3, we can calculate the daily plant chemical costs.

Table 4.4 Plant Daily Chemical Costs

Sodium bisulfite, $ per day	28.56
Sodium hypochlorite, $ per day	48.30
Ammonium hydroxide, $ per day	29.90
Sodium hydroxide, $ per day	104.50
Hydrofluosilicic acid, $ per day	25.44

Costs for Clean-in-Place chemicals are taken from Passanisi et al.(2000).

Table 4.5 Clean-in-Place Chemical Costs

	RO	NF	EDR
Chemical Costs, $/year	$841	$12,635	$1,302
Chemical Costs, $/kgal	$0.0020	$0.0286	$0.0035

Using data from Tables 4.2, 4.3, 4.4, 4.5 and 3.2, we calculate the chemical costs per kilogallon of effective product. In this table we have somewhat arbitrarily chosen to divide the costs for the plant chemical feeds equally among the sections.

Table 4.6 Chemical costs per Kilogallon of Effective Product

	RO	NF	EDR
Anti-scalant, $/kgal	$0.0372	$0.0327	$0.0022
Hydrochloric acid, $/kgal	$0.0000	$0.0000	$0.0153
Sodium bisulfite,$/kgal	$0.0083	$0.0079	$0.0094
Sodium hypochlorite, $/kgal	$0.0140	$0.0133	$0.0158
Ammonium hydroxide, $/kgal	$0.0086	$0.0082	$0.0098
Sodium hydroxide, $/kgal	$0.0302	$0.0288	$0.0342
Hydrofluosilicic acid, $/kgal	$0.0074	$0.0070	$0.0083
Clean-in-Place Chemicals $/kgal	$0.0020	$0.0286	$0.0035
Total Chemical Cost, $/kgal	$0.1077	$0.1264	$0.0985

4.3 Replacement Membrane Elements. The major cost item that was not measured is the cost of replacement membrane elements. This is always a significant operating cost. However, it will be several years before reasonable data are available that would allow us to

estimate an average lifetime for a membrane element in any of the units in this plant. Because the purpose of this study is to present real data, we have not attempted to estimate this item for the three processes.

5.0 Analysis of Labor Costs

For the purpose of this analysis, records that were much more detailed than usual were kept on how the labor was employed at the plant. Information was extracted from monthly labor reports and daily operator logs to assemble a spreadsheet itemizing staff-hours and labor costs for each of the separate sections (RO, NF and EDR), and for the plant (TP). The last category covers operations that were common to all sections or that could not be separately allocated. Except for the plant data, the data cover the full evaluation period, March 1999 to February 2000. Insufficient information was provided for the last four months of the evaluation period to correlate plant costs with selected labor categories, i.e., the monthly labor reports did not provide any comments, nor were the operator logs detailed enough to make reasonable determinations. Consequently, the analyses for plant labor costs were limited to the first eight months of the year.

Bar charts are presented in Figures 5.1, 5.2, 5.3 and 5.4 showing monthly average labor costs, by category, for the RO, NF, EDR and TP sections, respectively. The labor categories used for the desalting systems were fairly similar, except that "Stack Washdown/Probing" was added as an EDR-specific function. Also, the category "Data Entry/Reporting" was dropped for the EDR section because no staff-hour/cost allocations were indicated. Thus, a total of five categories were used for each of the desalting sections. Because overhead-type activities were charged to the TP system, two additional labor categories were added: "Meetings/Training/Safety" and "Receiving/Shipping."

Table 5.1 shows the number of staff hours, separated by category of labor, devoted to each process.

Table 5.1 Distribution of Staff Hours per Month

	RO	NF	EDR	Plant
Rounds, SDI, Sampling	14.52	14.15	10.71	28.41
Data Entry & Reporting	3.56	3.86	0.00	8.43
Cleaning-in-Place	18.54	18.48	12.67	
Upgrades and Modifications	0.79	1.29	1.40	25.94
Repairs and Modifications	6.65	10.52	19.69	91.32
Stack Washdown and Probing			7.75	
Meetings, Training and Safety				23.13
Receiving and Shipping				4.41
Total Staff Hours	44.06	48.30	52.22	181.64

Figure 5.5 graphically summarizes the labor data in terms of monthly averages. Several trends can be seen from the graph and tabular data. Perhaps the most significant is the

average amount of monthly labor charges for "Repairs/Maintenance" for the pretreatment system ($3,452 compared to a combined $1,515 for the three desalting sections). The same is true for "Upgrades/Modifications," with average monthly pretreatment labor charges of $970 compared to a combined $147 for the three desalting sections. These differences most probably can be explained by the proportionally greater amounts of equipment and instrumentation associated with the pretreatment system, and also by the fact that the pretreatment system was custom built whereas the three desalting sections were supplied in "package" configurations. In any event, the plant as a whole required about 70 percent of its budget for these maintenance-related categories for pretreatment.

As shown in Figure 5.5, EDR required a greater expenditure for "Repairs/Maintenance" than the RO and NF sections, 16.2 percent compared to 5.5 and 8.8 percent, respectively. On the other hand, EDR required less expenditure for "Clean-in-Place" activities than their counterparts by about 10 percent. As was mentioned earlier, no staff-hours or costs were shown for EDR "Data Entry/Reporting." It appears that operational data was collected electronically.

A summary of monthly averages for selected labor categories in shown in Table 5.2. The total labor for each section is the total of section specific labor cost plus one third of the plant labor cost.

Table 5.2 Labor Costs

	RO	NF	EDR	Plant
Section Specific, $/year	$21,177	$22,949	$2,550	$83,127
Total $/year	$48,886	$50,658	$30,259	
Total, $/kgal	$0.1162	$0.1146	$0.0814	

6.0 Capital Costs

The trade-off between capital and operation and maintenance costs involves a depreciation period and an interest rate. Since these generally will not be the same for every plant, the calculations below are shown in sufficient detail to permit total costs to be calculated for other depreciation periods and other interest rates.

Information on capital cost was supplied by Ionics, Incorporated, the supplier of all three desalting units. The capital cost of each section is not equal to the contract price for each section. This is because the contract for the EDR section contained the cost of instrumentation for all three sections. The allocation of costs among the three sections was made by Ionics, Incorporated. The efforts of Edward Geishecker (1999) in providing this information is gratefully acknowledged.

To relate capital costs to operating costs, we use the CRF (capital recovery factor). This is related to the interest rate and period of amortization by the following equation.

$$CRF = r/[1-(1+r)^{-n}] \qquad (6.1)$$

where r is the interest rate per year and n is the number of years. The CRF can be looked at as the payment due at the end of each year, i.e., amount of money you would pay at the end of each year for n years. The relationship between the capital recovery factor, interest rate and number of years is shown in Figure 6.1.

The value used for amortization of capital investment in the BWRDF is 0.1019. This corresponds to r = 8% and n = 20 years. In allocating

Table 6.1 Capital Costs

	RO	NF	EDR	Plant
Capital cost of Section	$726,724	$723,951	$894,867	$3,054,458
Amortized Cost, $/year	$74,018	$73,736	$91,144	$311,108
Total Amortized Cost, $/year	$177,721	$177,439	$194,847	
Total Amortized Cost, $/kgal	$0.4223	$0.4014	$0.5244	

7.0 Total Costs

The total cost is the sum of the individual costs. The unit costs used have been detailed to allow costs for other conditions to be determined. We recognize that for different feed water compositions the power consumption would be different. Table 7.1 provides a summation of the costs established above.

Table 7.1 Total Costs per Kilogallon of Effective Product

	RO	NF	EDR
Energy, $/kgal	$0.1011	$0.0833	$0.0920
Chemicals, $/kgal	$0.1077	$0.1264	$0.0985
Labor, $/kgal	$0.1162	$0.1146	$0.0814
Membrane Element Replacement, $/kgal	??	??	??
Amortization of Capital, $/kgal	$0.4223	$0.4014	$0.5244
Total, $/kgal	$0.7472	$0.7258	$0.7963

The striking feature is that costs are dominated by amortization of capital. Under the particular conditions of this plant, the economic analysis indicates an advantage for nanofiltration in this application. The difference of 1.9¢ per thousand gallons is modest, amounting to less than $7,000 per year for a million gallon per day plant. It is so small that there is considerable doubt that the data overall have sufficient accuracy to say that there is a real difference. Electrodialysis reversal is more expensive by slightly less than 7 cents per thousand gallons. This appears to be a real difference. It is important to keep in mind, however, that costs of equipment, which are the dominant factors in the total cost, are not fixed and that interesting differences can develop in a competitive bidding situation. It is also important to recognize that during the evaluation period the membrane elements were essentially new. This is when the best performance can be expected.

The unsatisfying part of this analysis is that membrane replacement is not included. As a rough estimate one would expect membrane replacement to amount to some 10 cents per thousand gallons. This would be the result of replacing all of the elements in the RO or NF section every three years at $1,000 per element. While it is reasonable to expect that membrane replacement costs would be similar for RO and NF, this would not be a good assumption for electrodialysis, which operates in a very different manner. It would be interesting to see what a similar comparison would show in perhaps five years or when the membrane element replacement rate could reasonably be calculated.

Overall each process worked well, once the startup problems were resolved. What this demonstration clearly shows is that for this application, and presumably for similar ones, a low-TDS brackish water can be desalted for an all-inclusive cost less than $0.80 to $0.90.

8.0 References

Thompson, C., T. Reynolds and B. Boegli, Compare Performance & Cost for Brackish Water Treatment, Desalination and Water Reuse, Vol. 7/2, 1997.

Port Hueneme Water Agency, Brackish Water Reclamation Demonstration Facility, Monthly Reports for March 1999 to February 2000.

Passanisi, J., J. Persechino and T. Reynolds, *EDR, NF and RO at a Brackish Water Reclamation Facility*, The American Water Works Association Proceedings, June 2000.

Ed Geishecker, private correspondence, 1999

Figure Appendix

For technical reasons the figures have been grouped together in this section.

Figure 2.1. Port Hueneme Brackish Water Reclamation Demonstration Facility

Figure 2.2. Automatic Backwash Bag Filtration System

Figure 2.3. Chemical Metering Pumps and Controls.

Figure 2.4. Chemical Storage Tanks Located behind Facility.

Figure 2.5. Reverse Osmosis and Nanofiltration Systems.

Figure 2.6. Electrodialysis Reversal System

Figure 2.7. Membrane Test Bench (Front View)

Figure 2.8. Membrane Test Bench (Rear View)

Figure 3.1 Conductivity and (Calculated) Concentration of Plant Feed

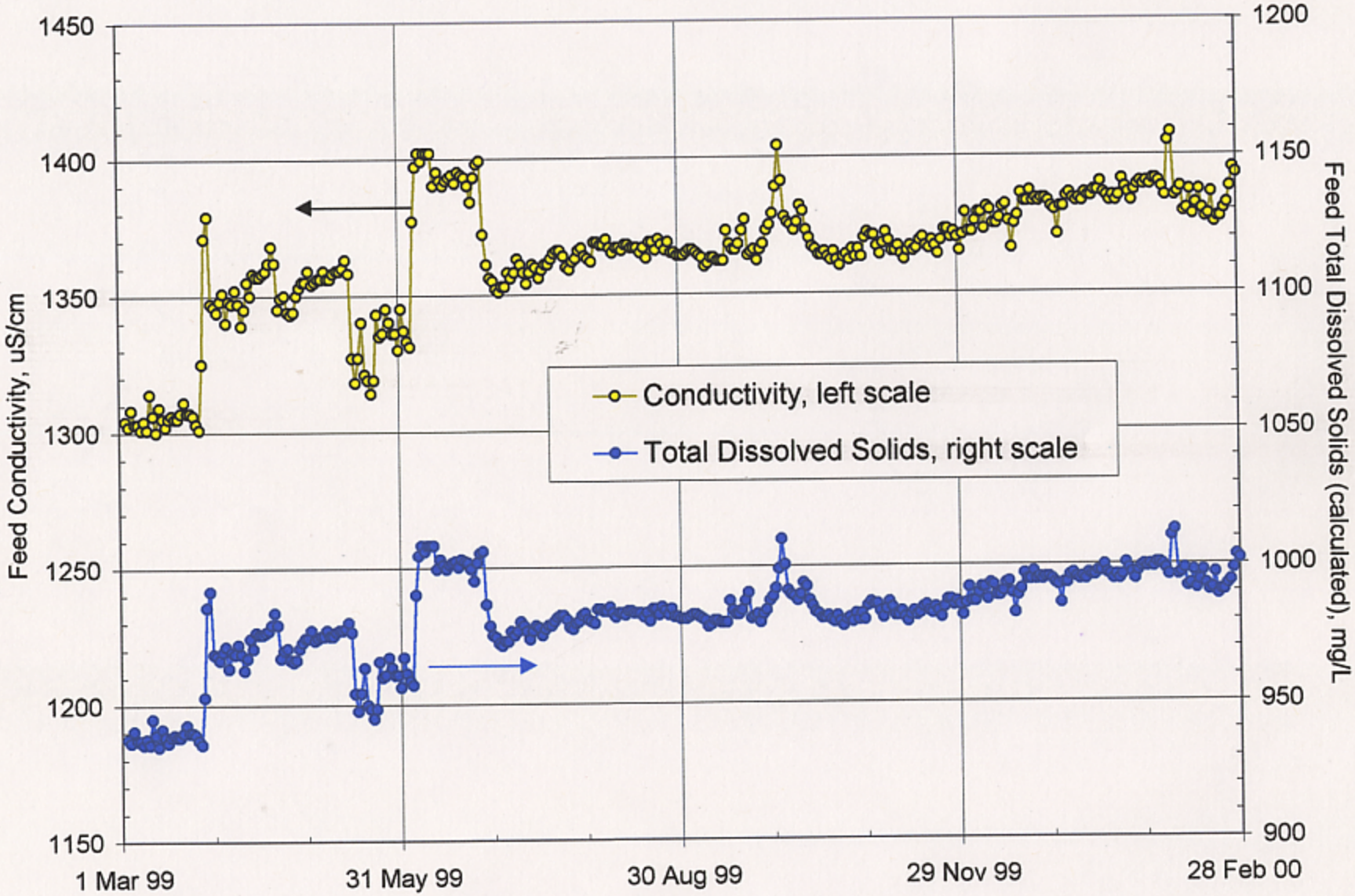


Figure 3.2 Production from Reverse Osmosis Section

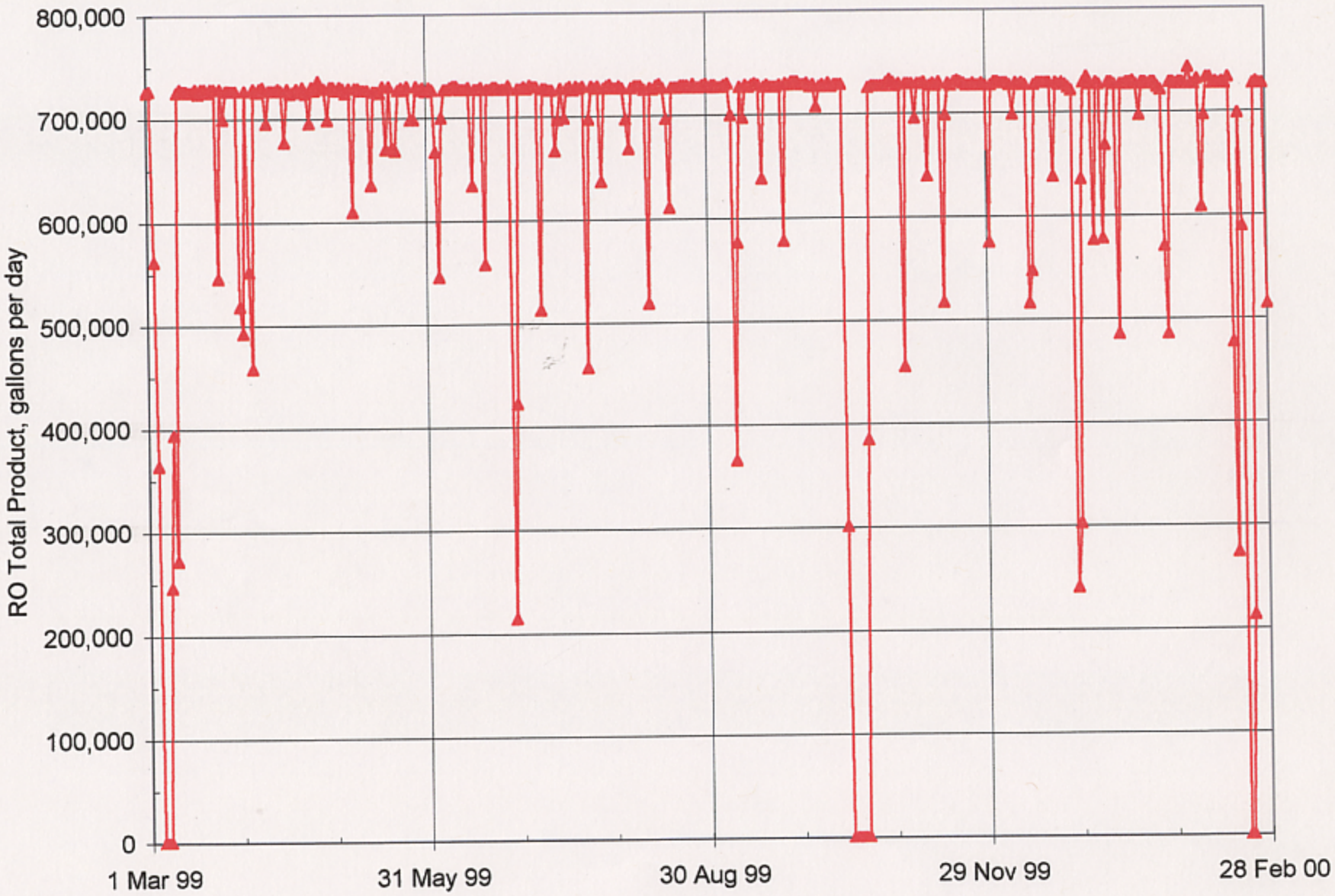


Figure 3.3 Quality of Product from Reverse Osmosis Section

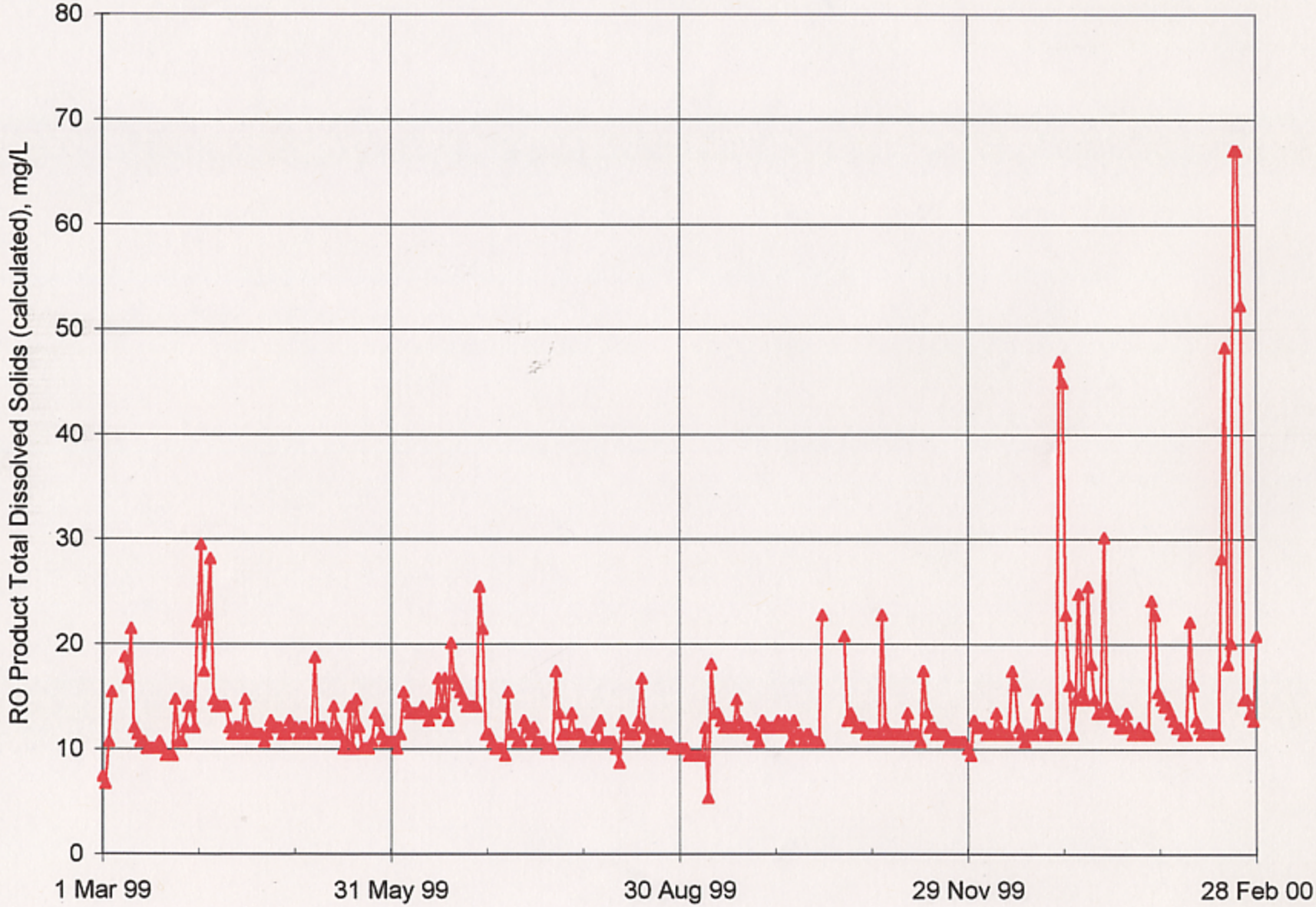


Figure 3.4 Production from Nanofiltration Section

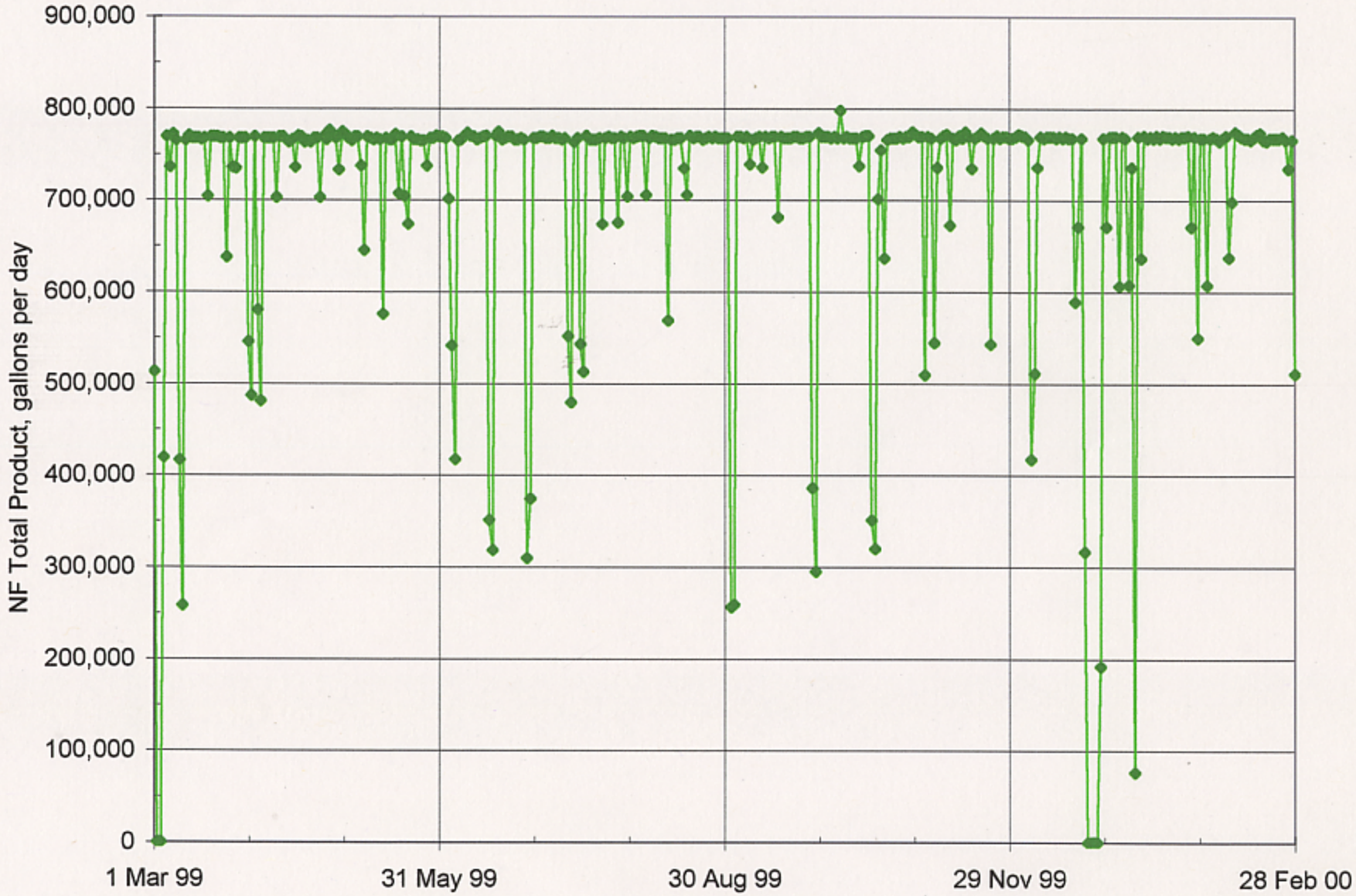


Figure 3.5 Quality of Product from Nanofiltration Section

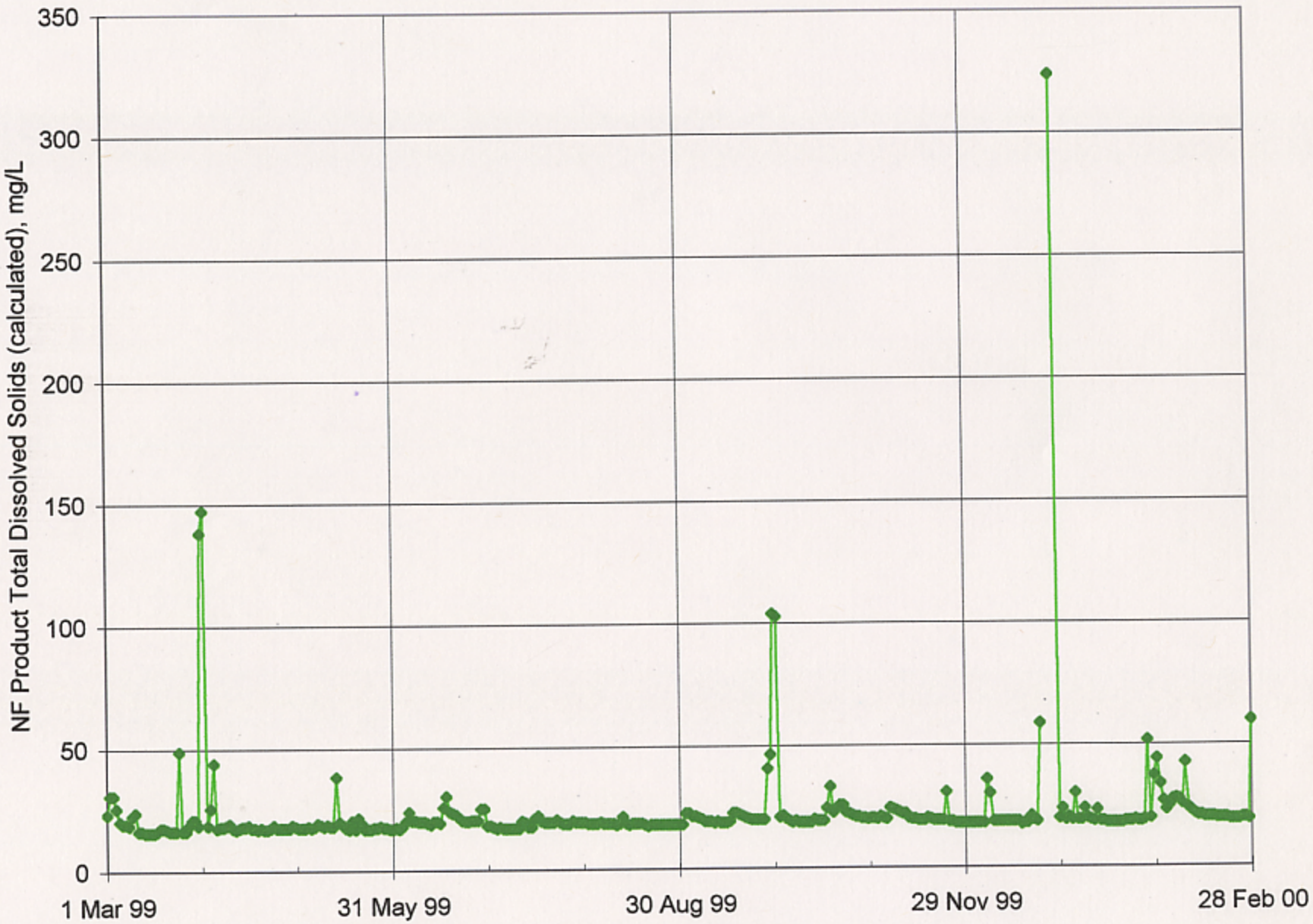


Figure 3.6 Productivity of Electrodialysis Reversal Section

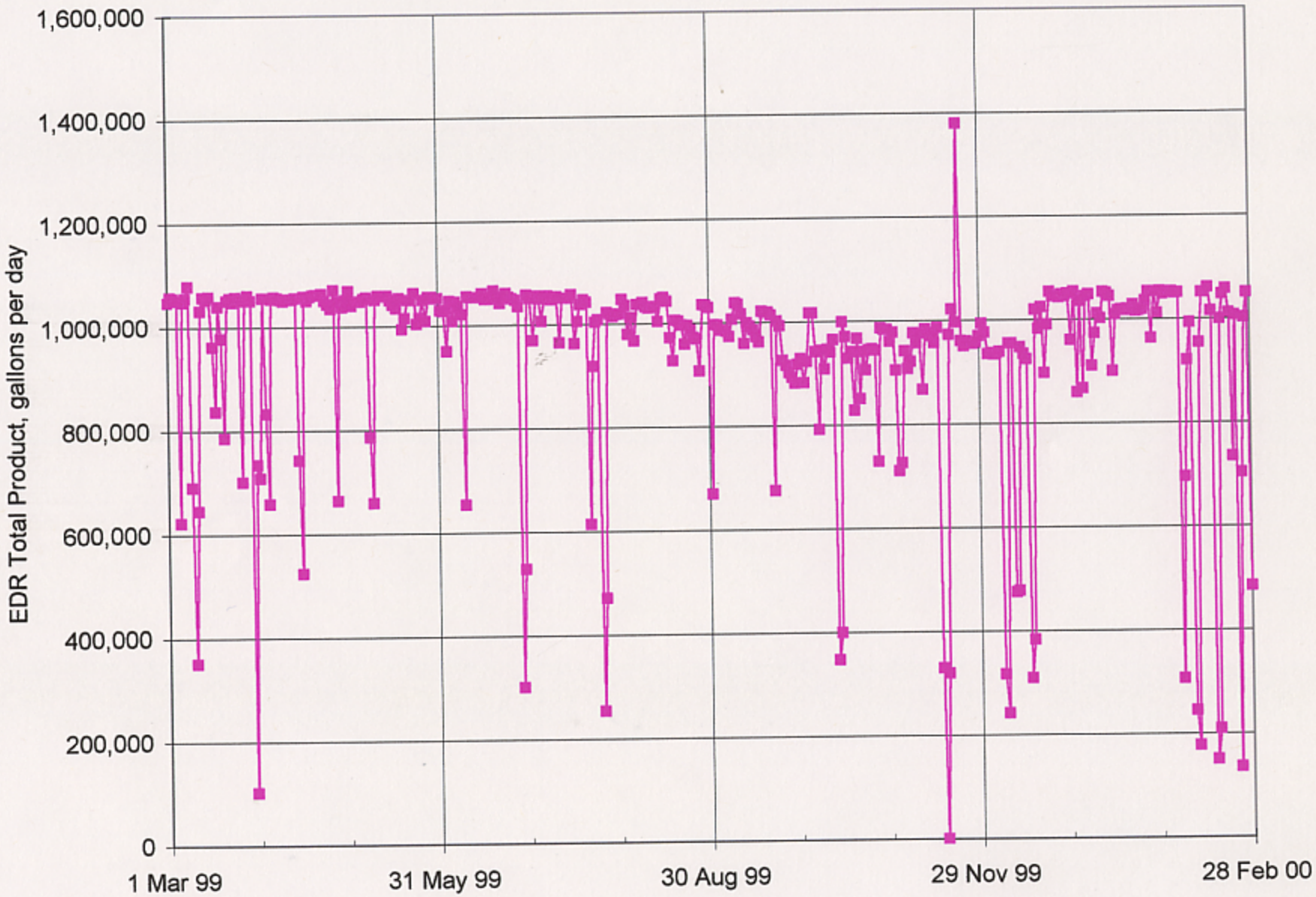


Figure 3.7 Quality of Product from Electrodialysis Reversal Section

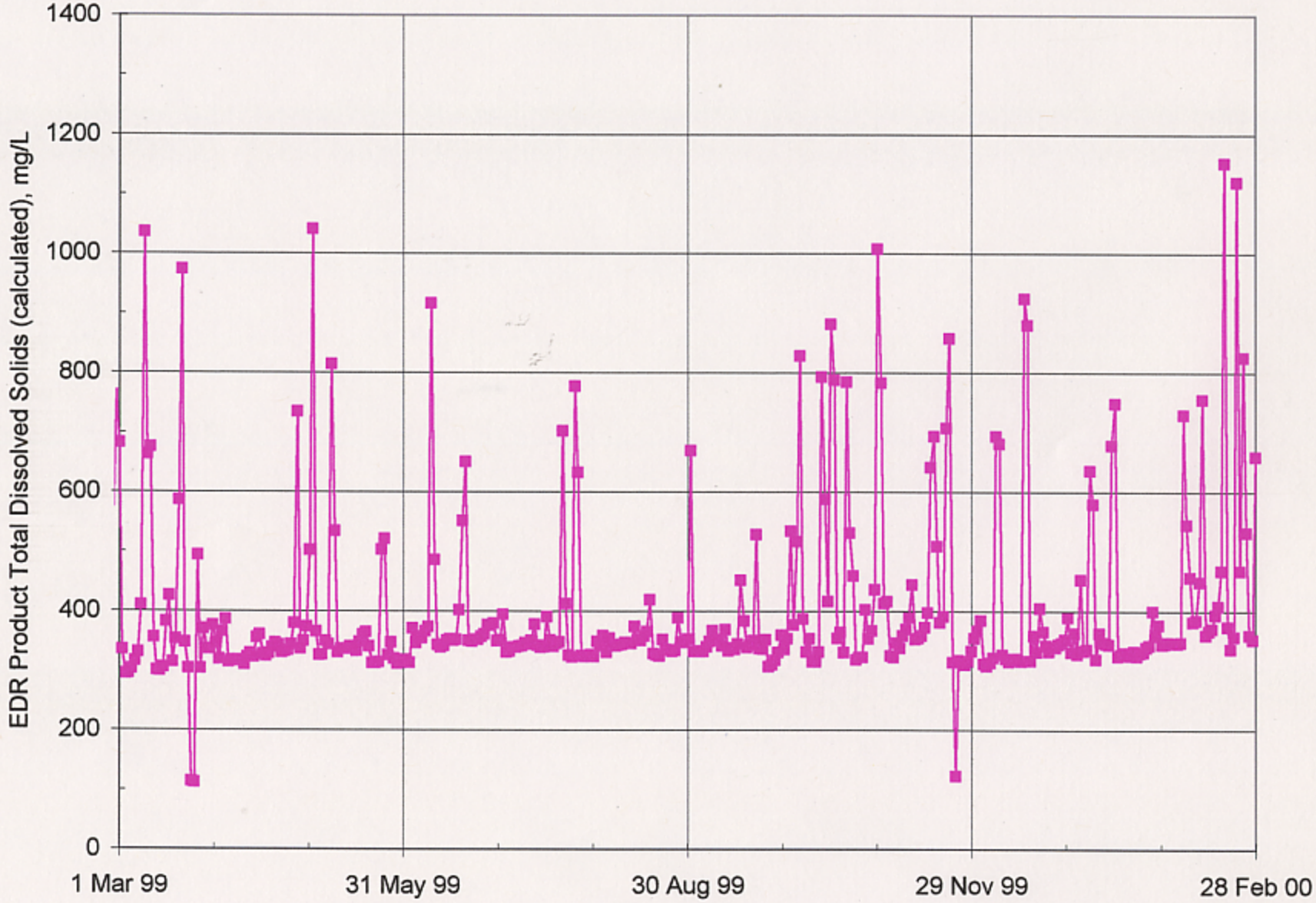


Figure 4.1 Energy Consumption per Day in Plant Sections

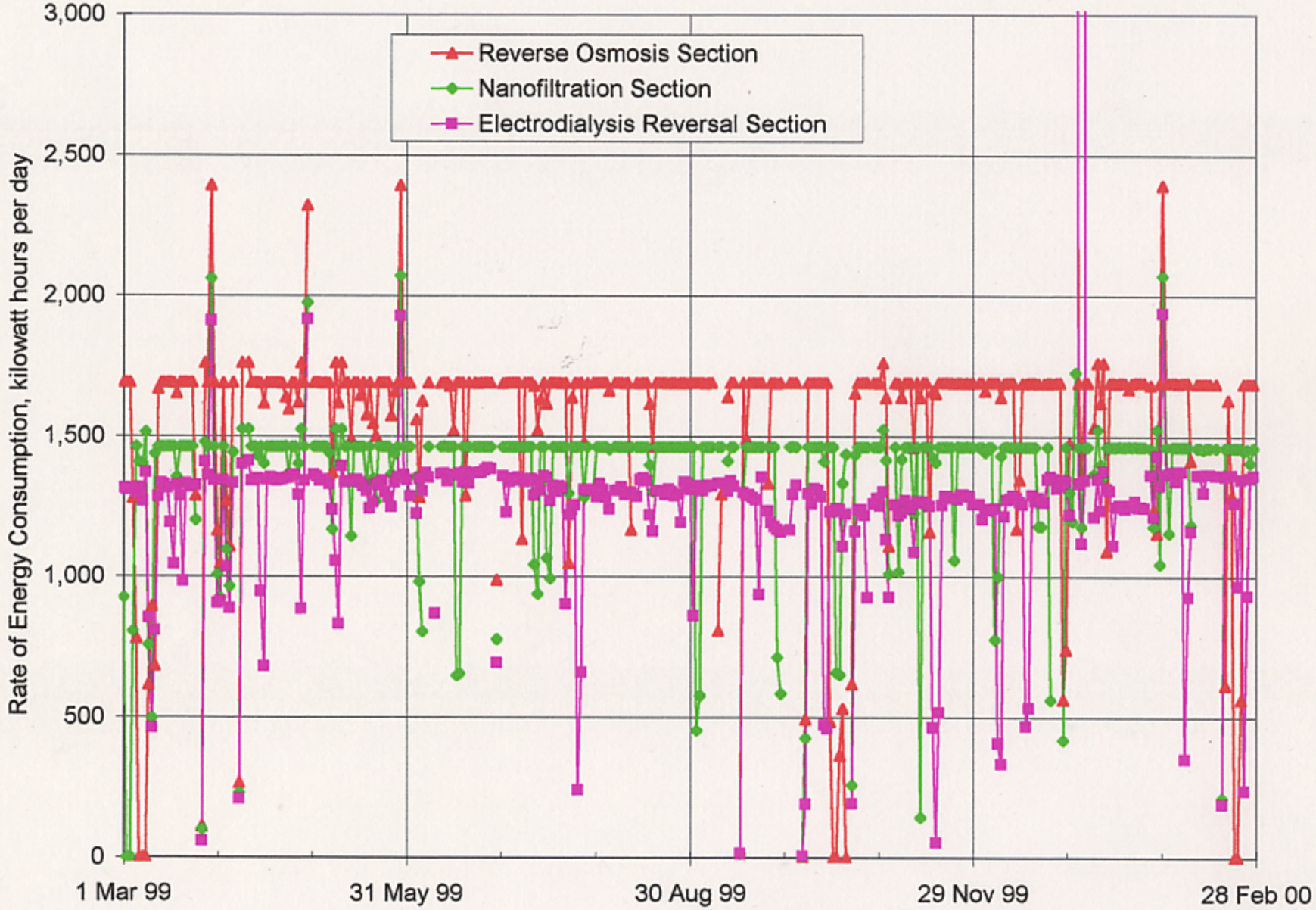


Figure 4.2 Energy Consumption per Unit Product in Plant Sections

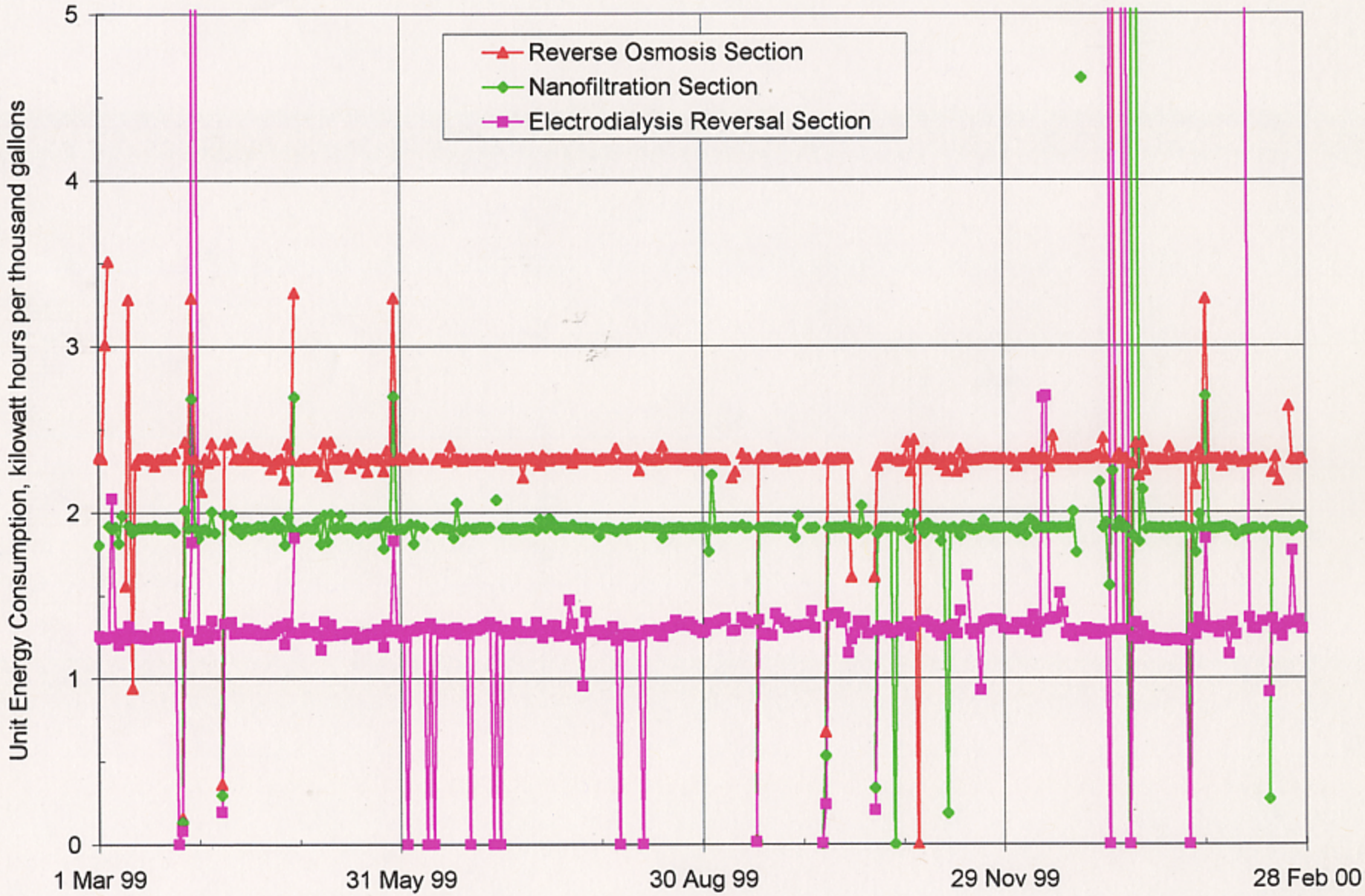


Figure 4.3 Chemical Consumption in Reverse Osmosis Section

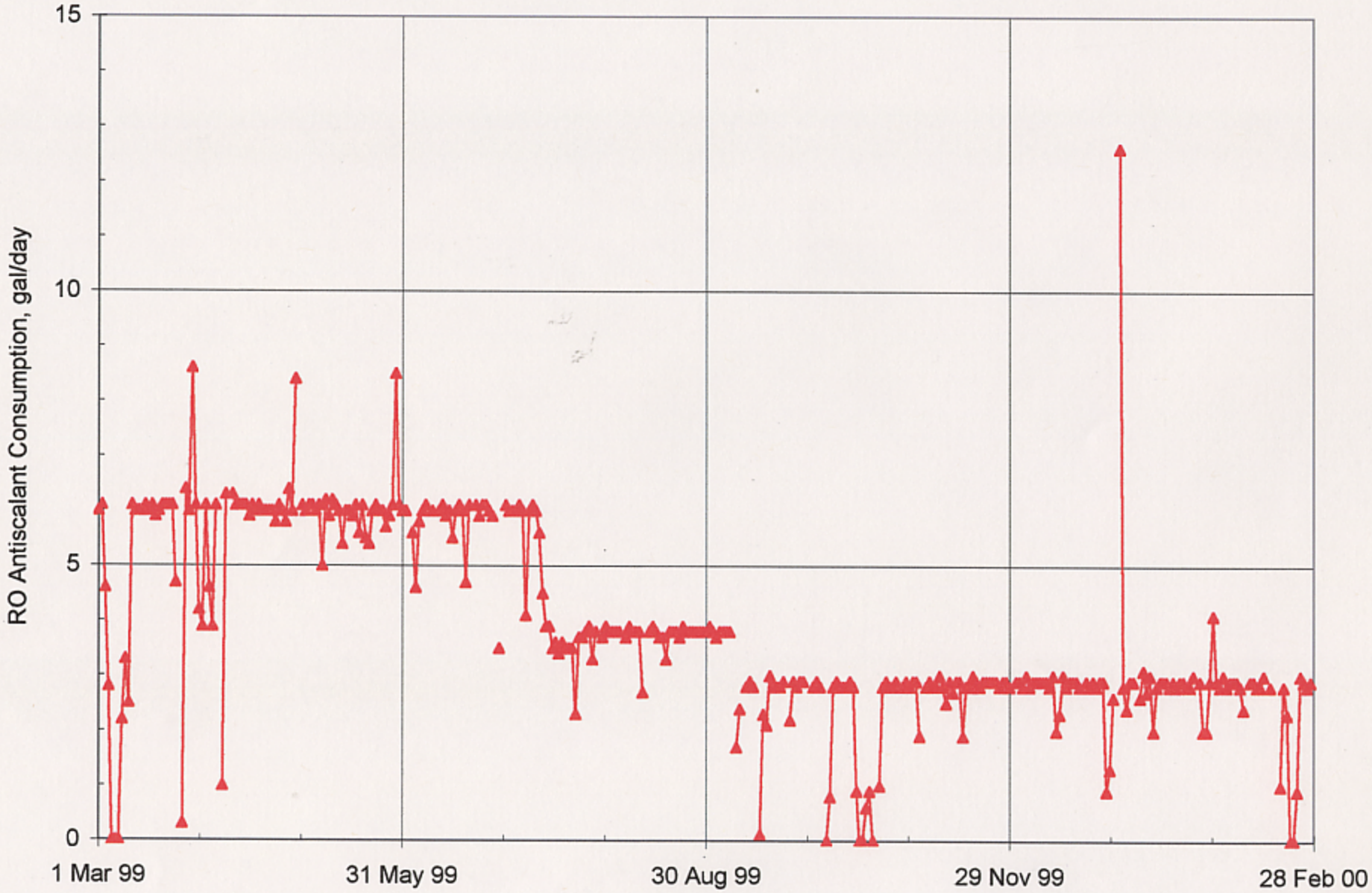


Figure 4.4 Chemical Consumption in Nanofiltration Section

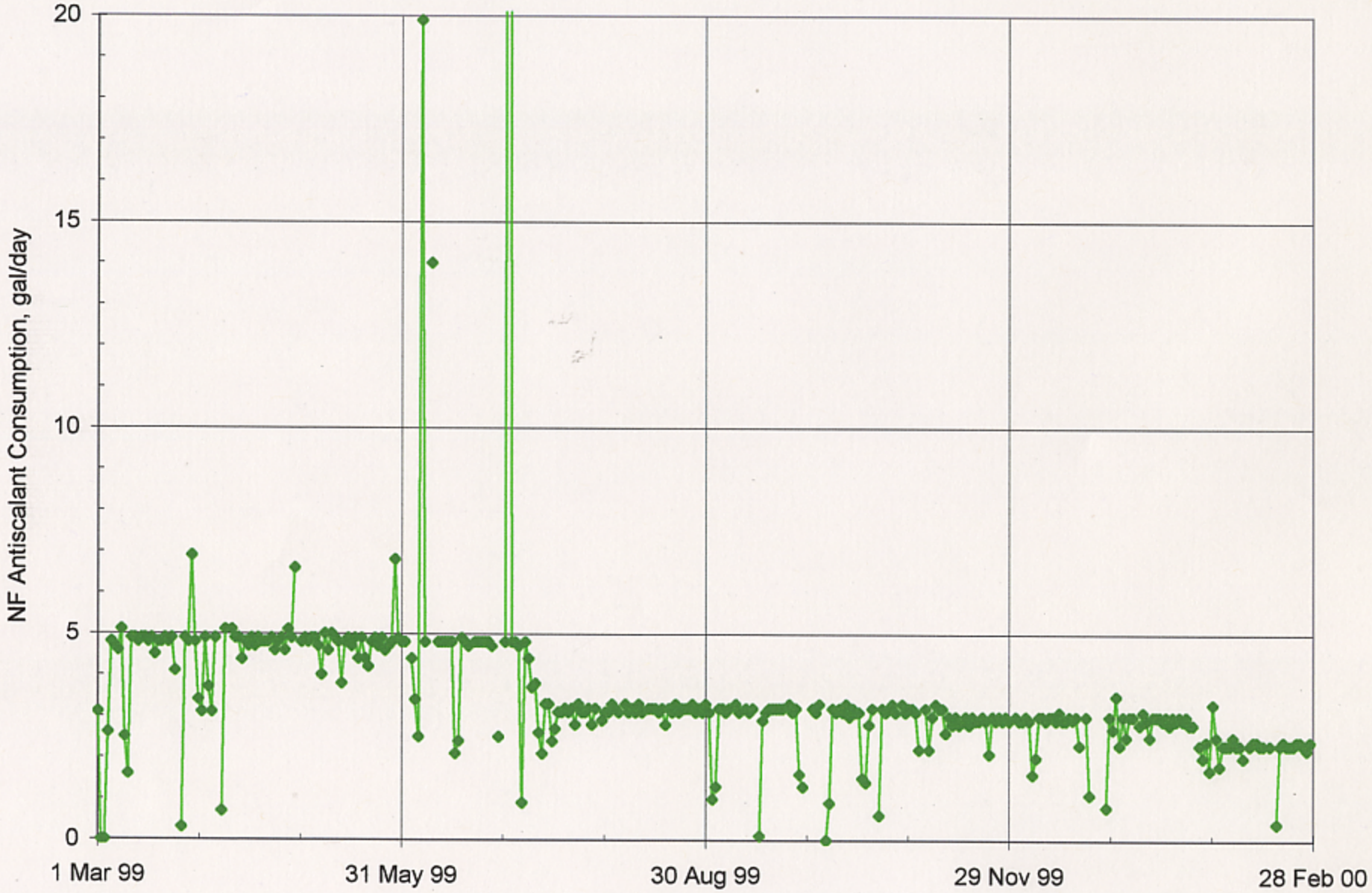


Figure 4.5 Chemical Consumption (Antiscalant) in Electrodialysis Reversal Section

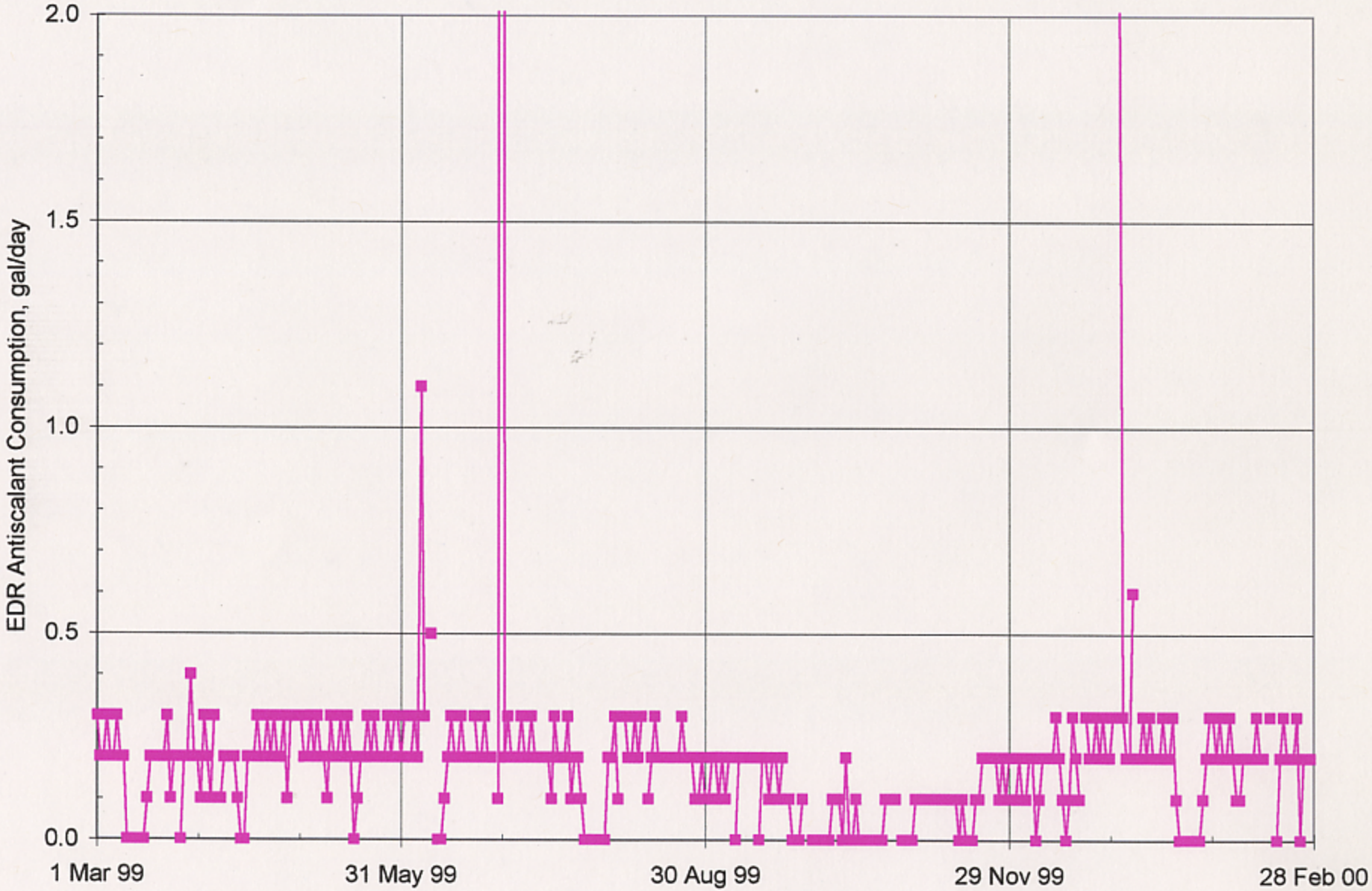


Figure 4.6 Chemical Consumption (Acid) in Electrodialysis Reversal Section

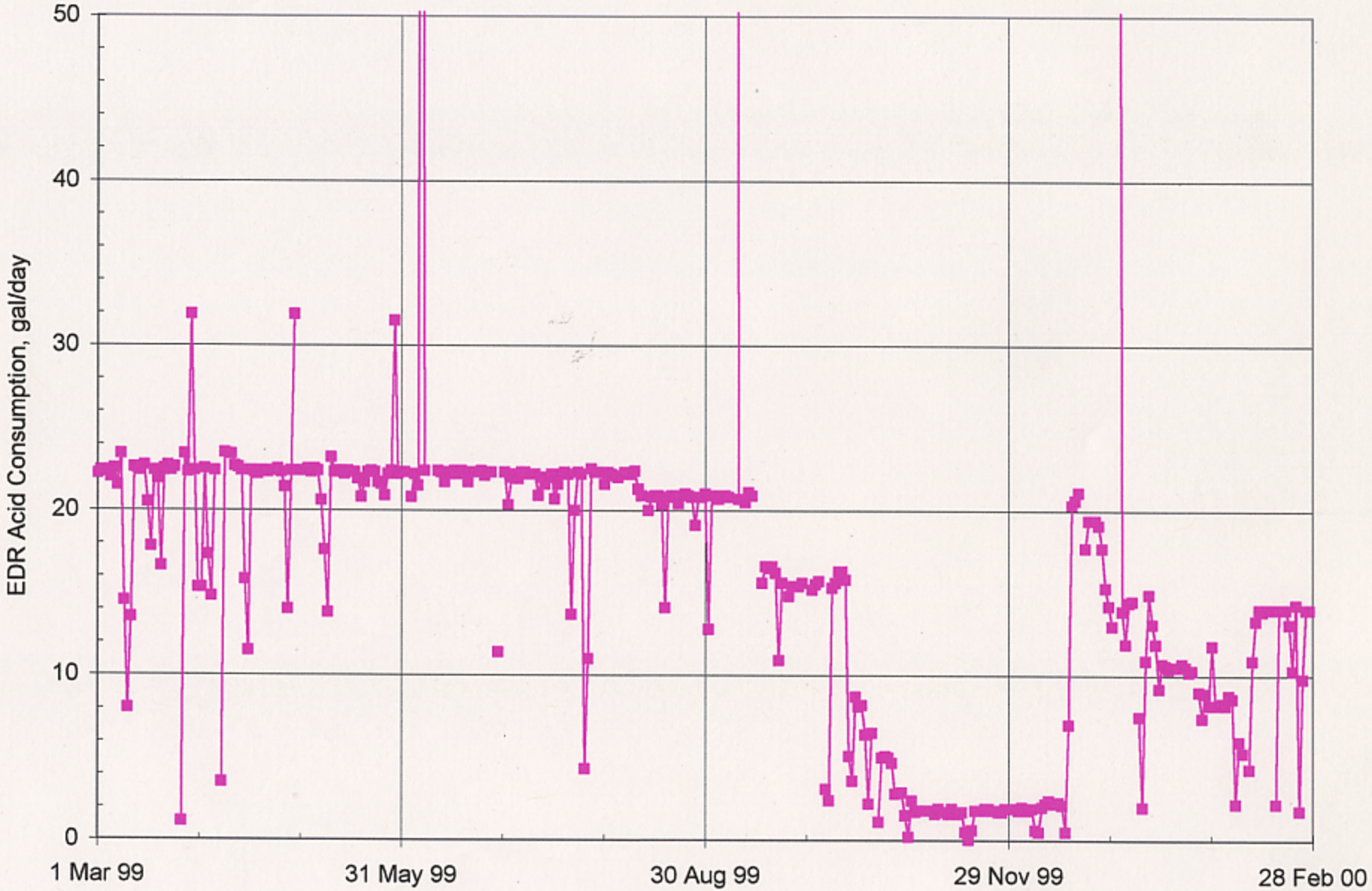


Figure 4.7 Plant Chemical Consumption - I

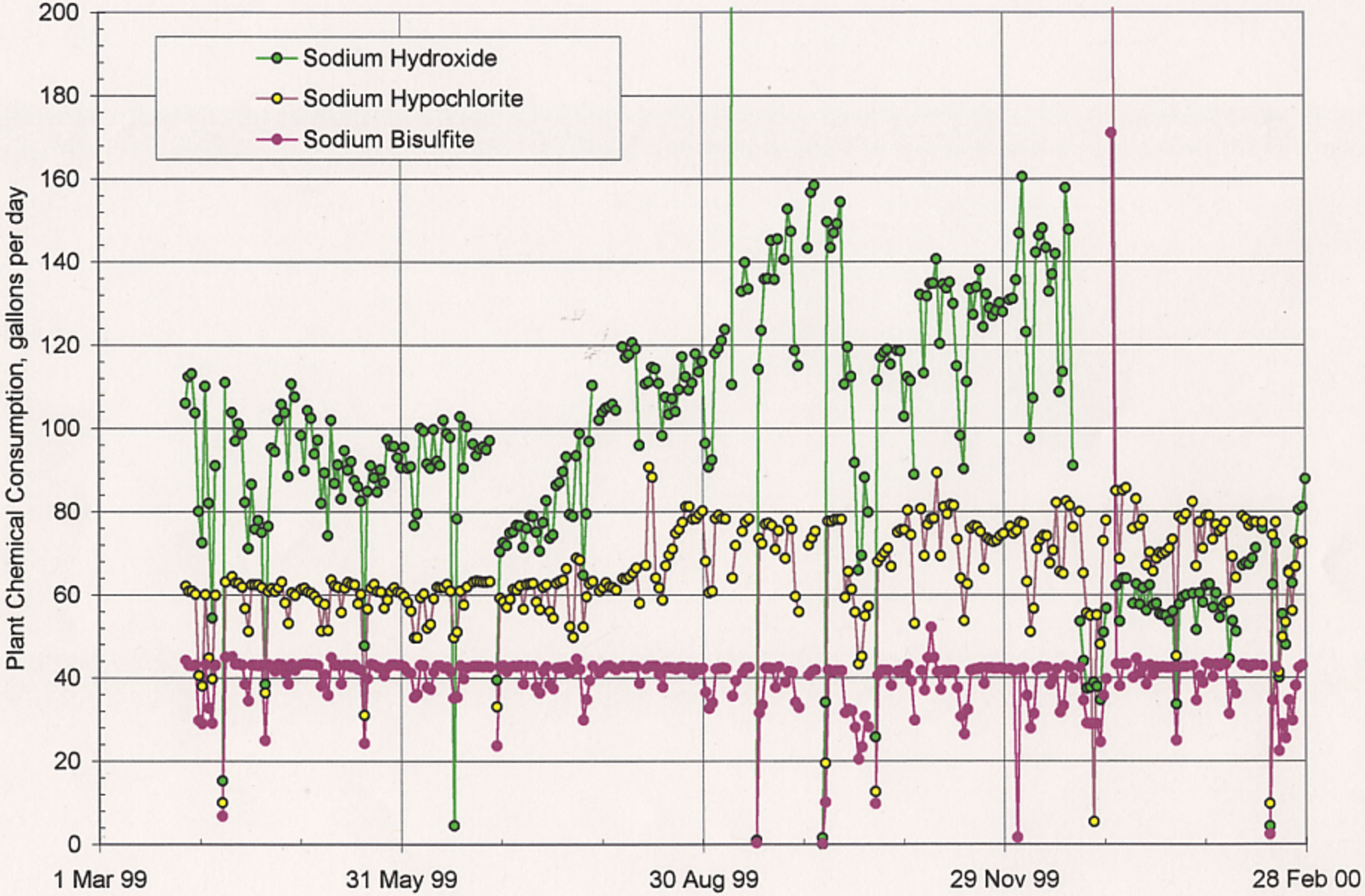


Figure 4.8 Plant Chemical Consumption - II

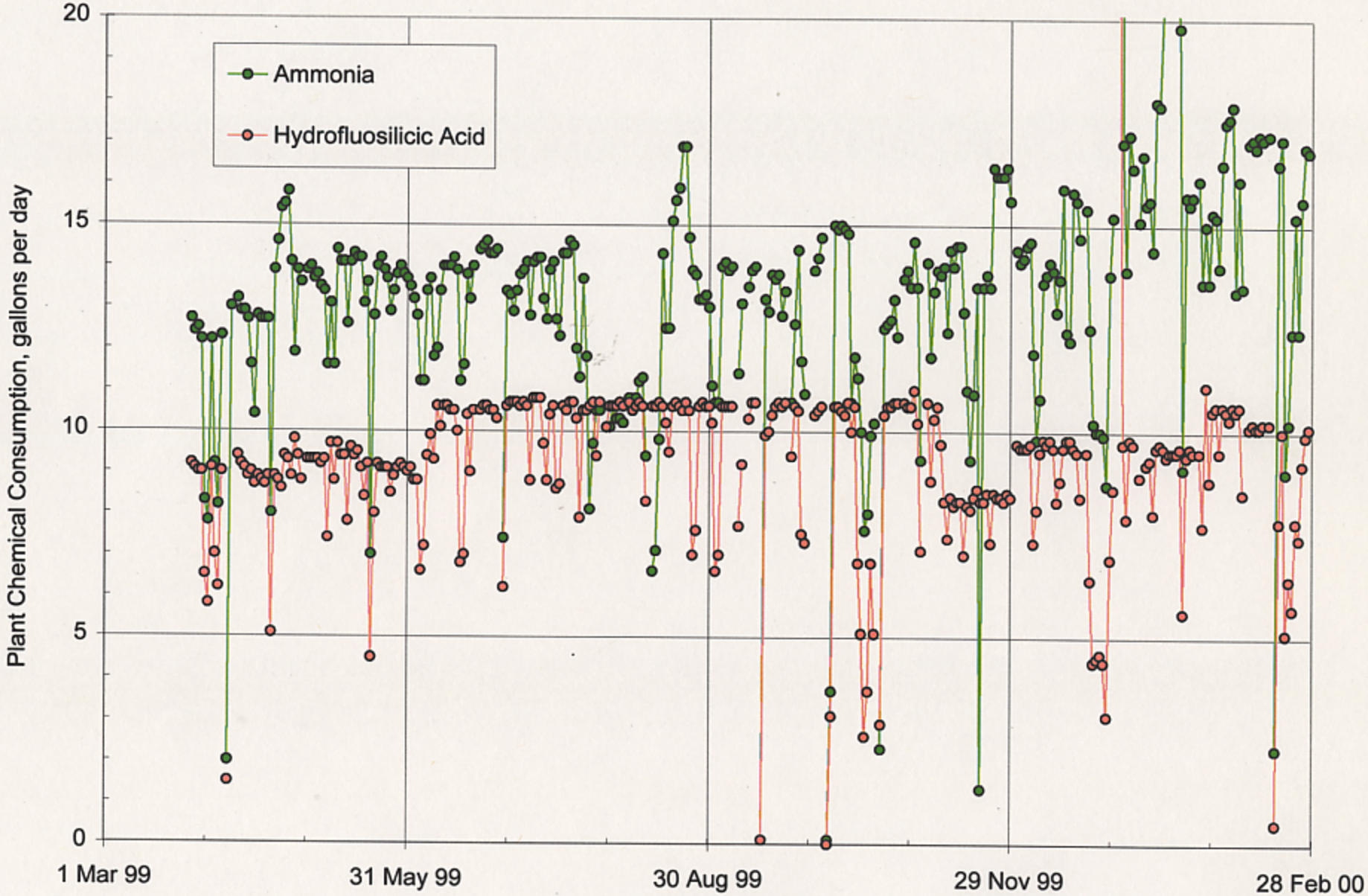


Figure 5.1 Monthly Labor Costs for Reverse Osmosis

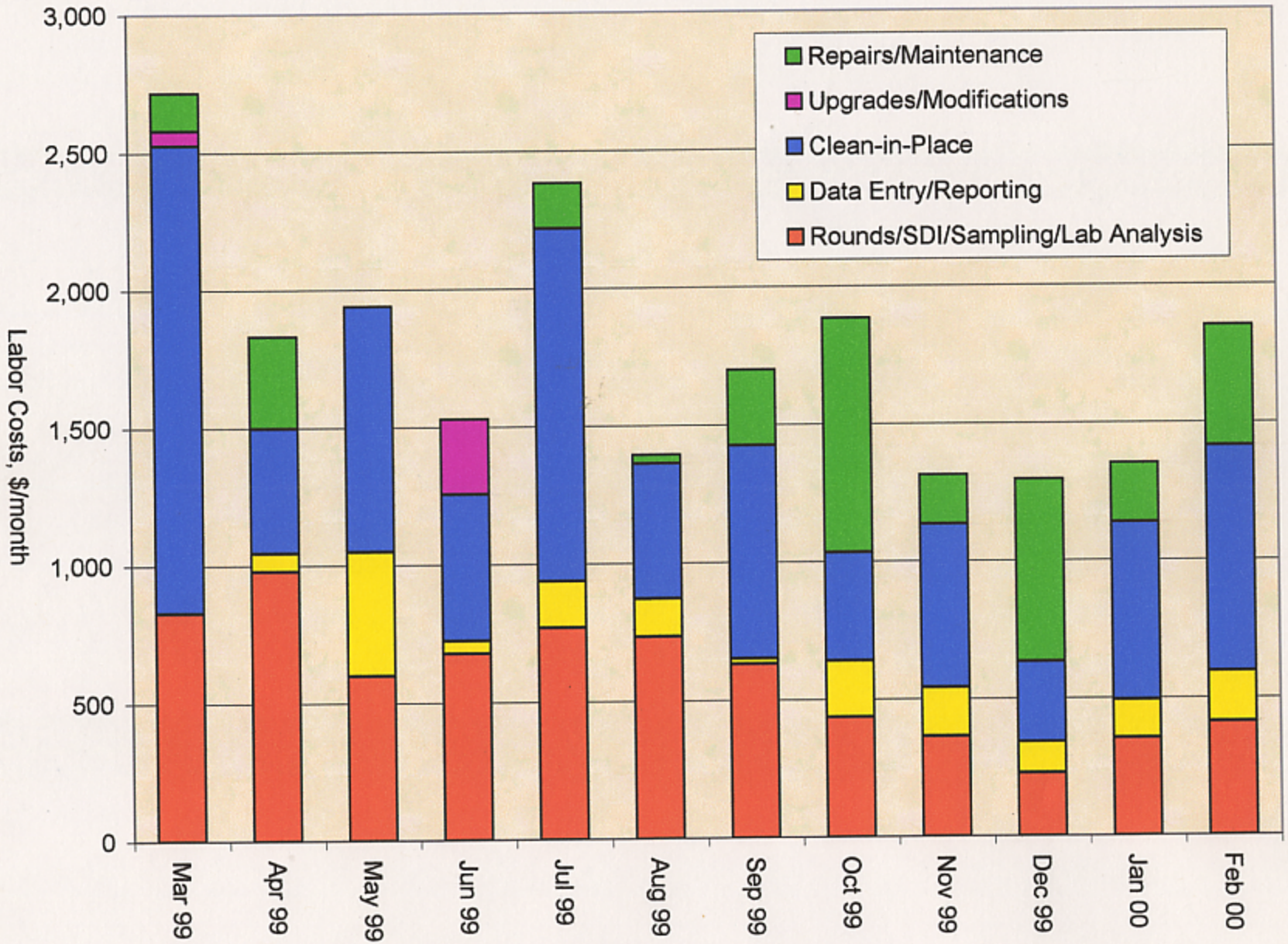


Figure 5.2 Monthly Labor Costs for Nanofiltration

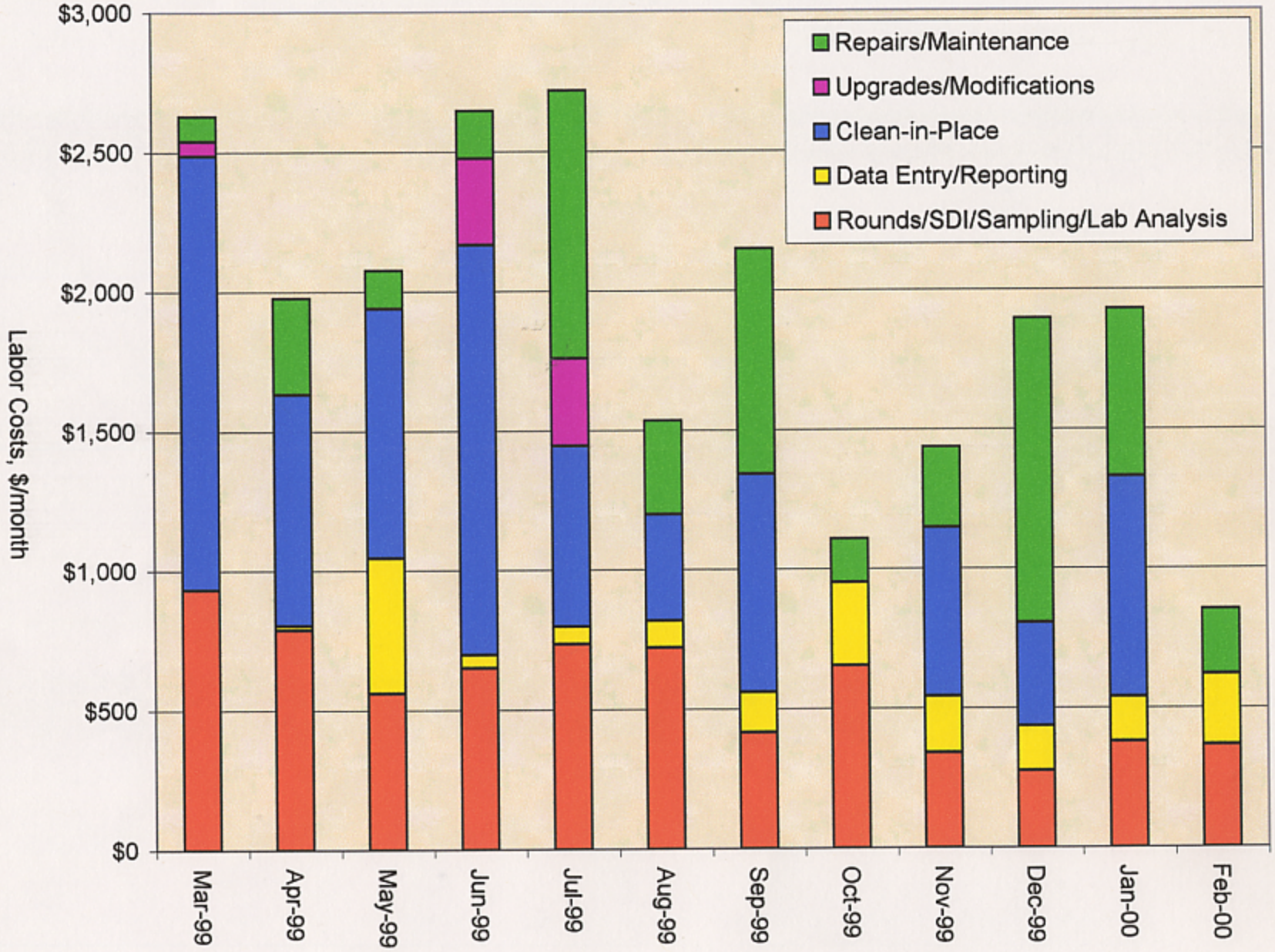


Figure 5.3 Monthly Labor Costs for Electrodialysis Reversal

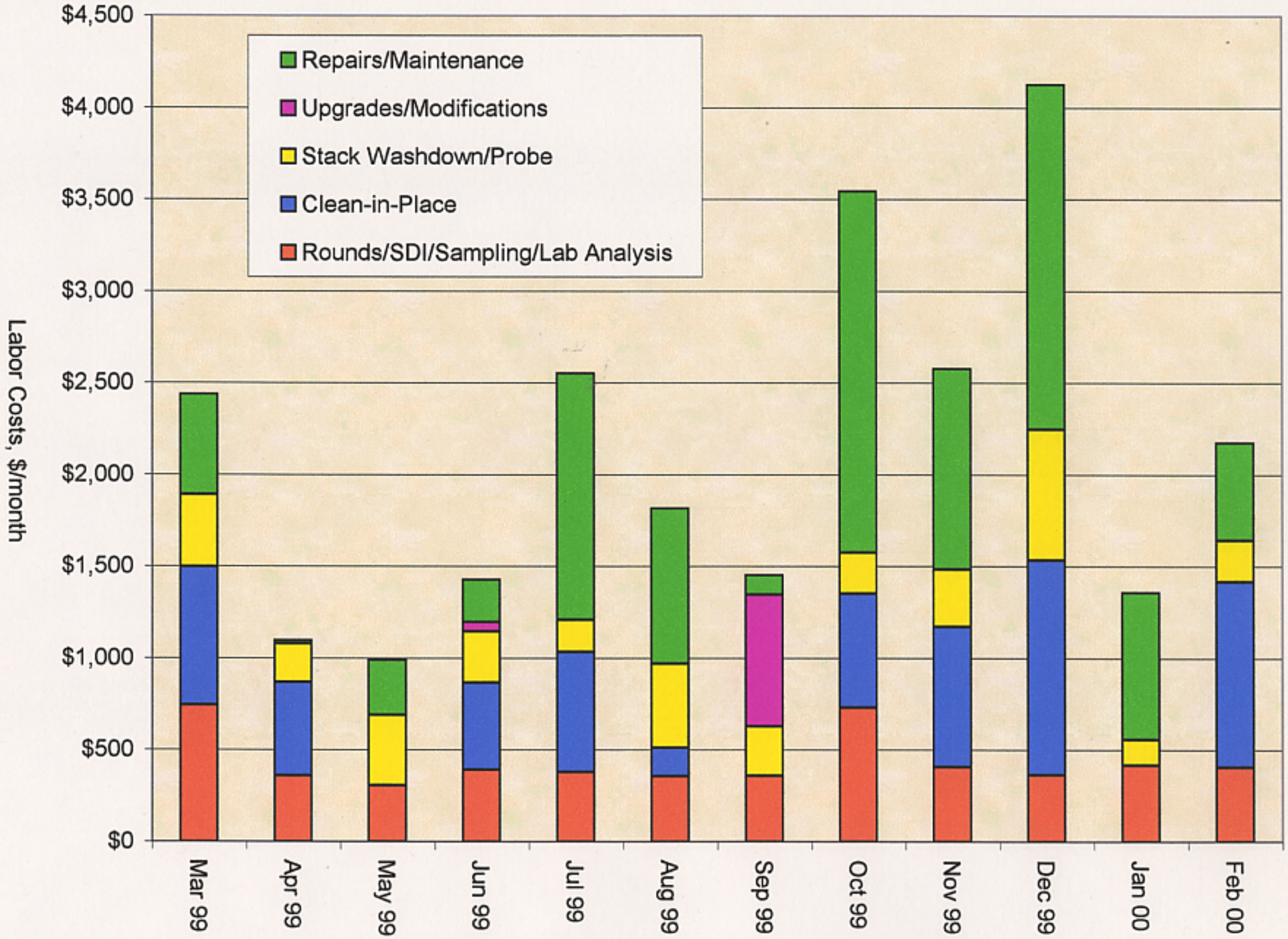


Figure 5.4 Monthly Labor Costs for Plant

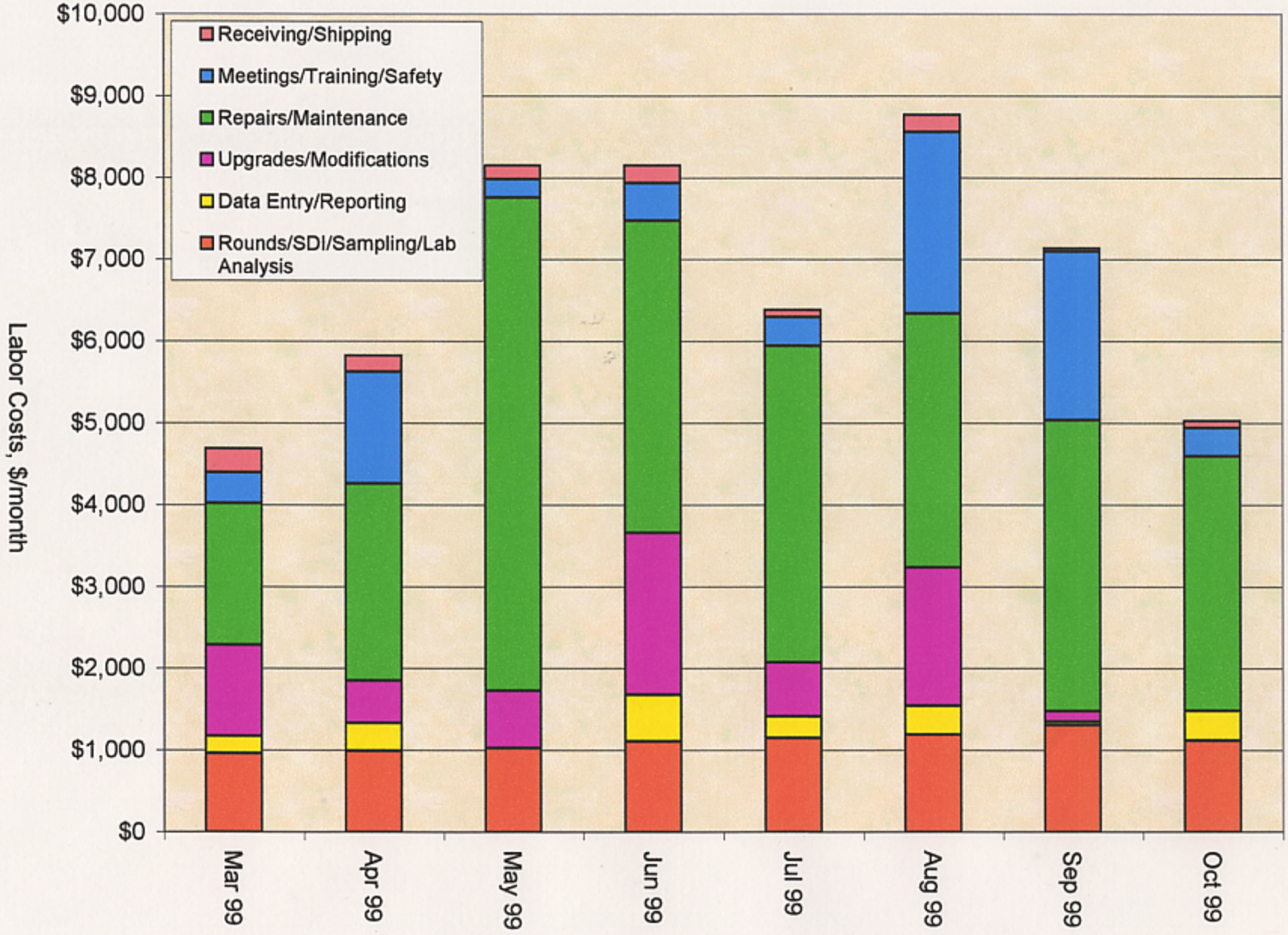


Figure 5.5 Comparison of Average Monthly Labor Costs

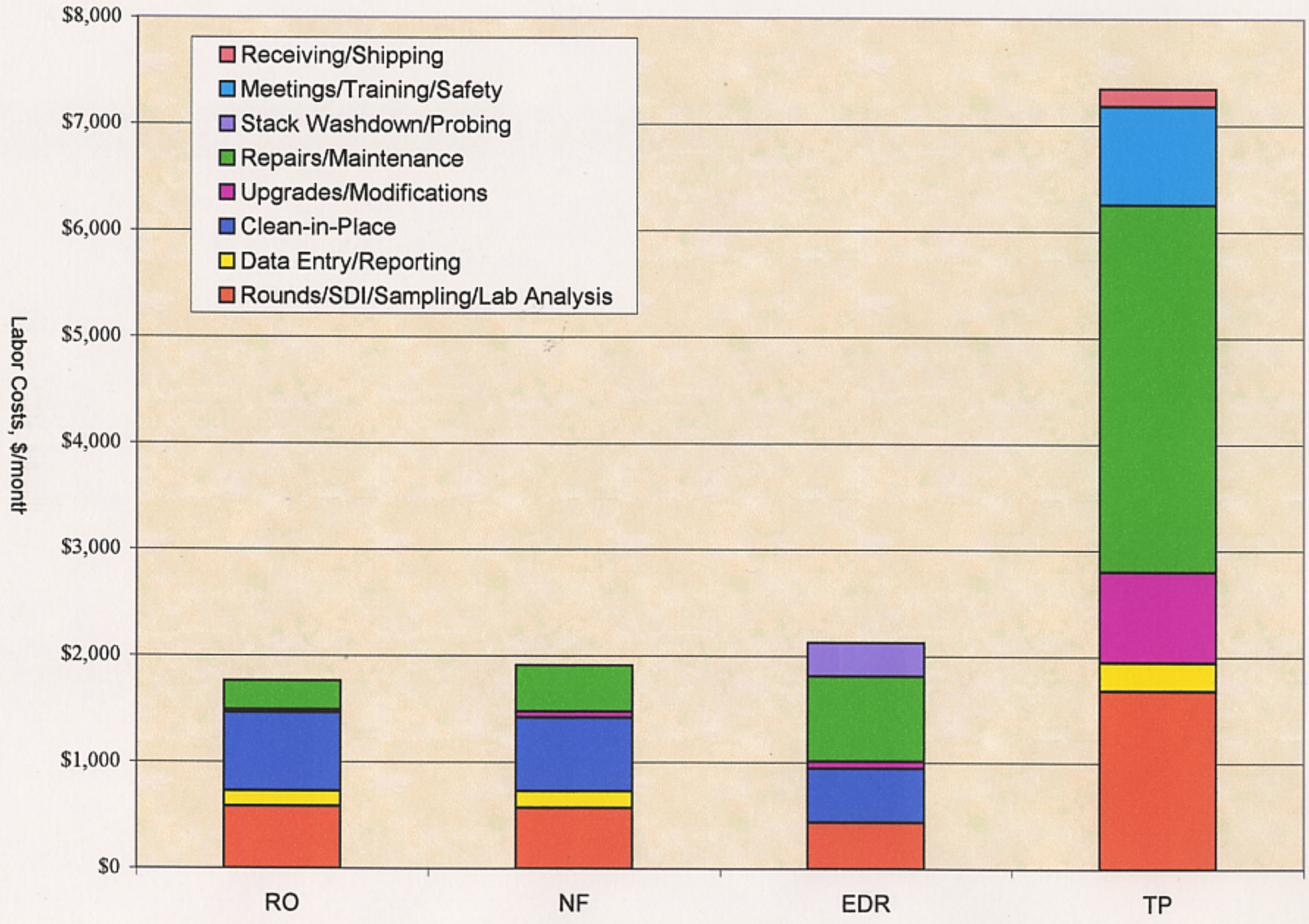
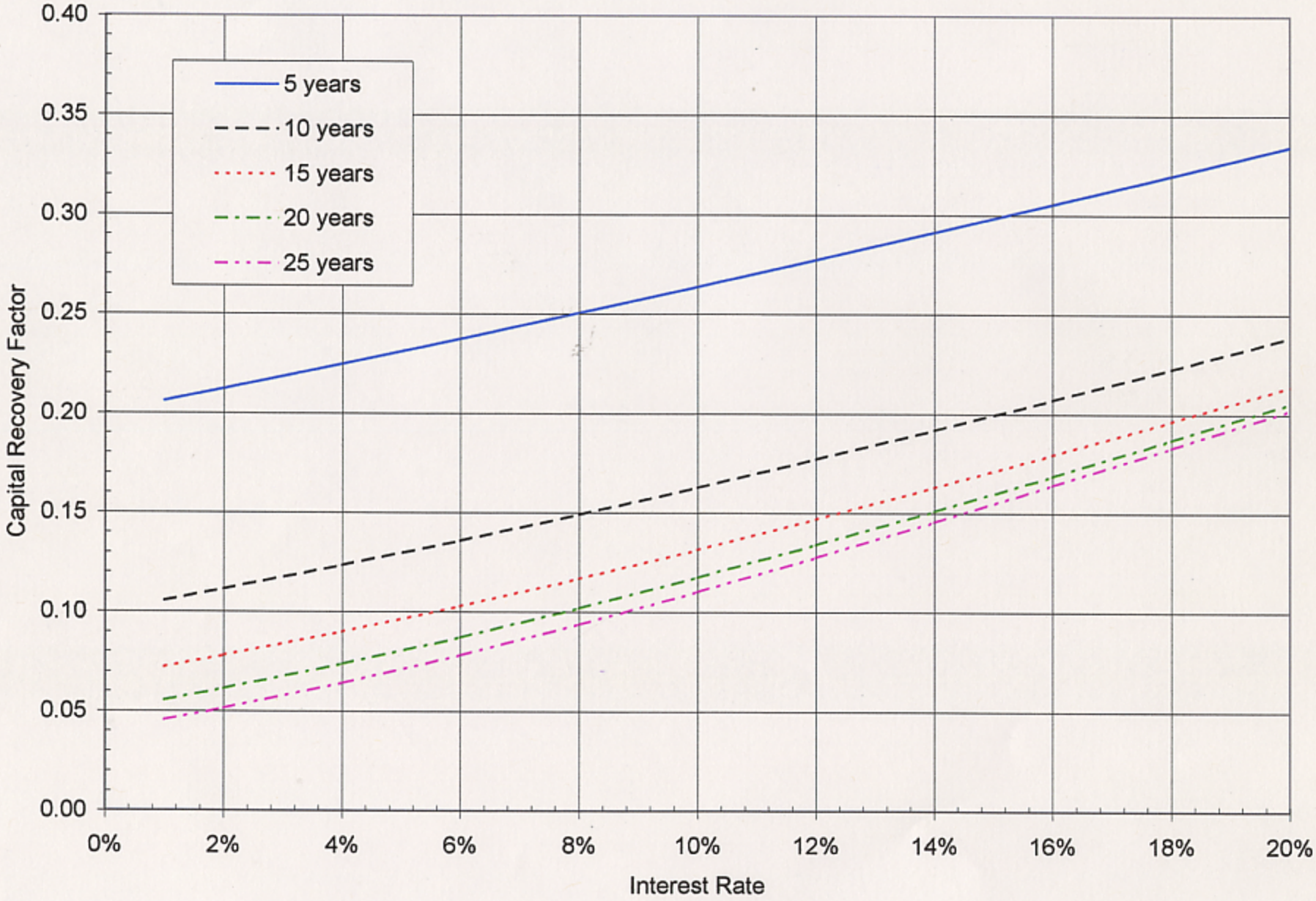


Figure 6.1. Capital Recovery Factor



Data Appendix

Tabulated on the following pages are the numerical values used to create the figures in this report. At the beginning of each column is the figure number to which the numbers refer. Because a great deal of data was used in many of the figures, the columns commonly extend over several pages.

Data for a particular presentation will be found in the Data Appendix Table beginning on the indicated page or pages.

Figure 3.1	B - 2
Figure 3.2	B - 11
Figure 3.3	B - 11
Figure 3.4	B - 11
Figure 3.5	B - 11
Figure 3.6	B - 11
Figure 3.7	B - 11
Figure 4.1	B - 2
Figure 4.2	B - 19
Figure 4.3	B - 19
Figure 4.4	B - 19
Figure 4.5	B - 19
Figure 4.6	B - 19
Figure 4.7	B - 27
Figure 4.8	B - 27
Table 5.1	B - 41, B - 47, B-53 & B - 58
Figure 5.1	B - 35
Figure 5.2	B - 41
Figure 5.3	B - 47
Figure 5.4	B - 53 & B - 58

Figure 6.1 is a graphical exposition of Equation 6.1.

FEED CONDUCTIVITY AND ENERGY CONSUMPTION PER DAY

Relevant Presentation	Figure 3.1	Figure 3.1	Figure 4.1	Figure 4.1	Figure 4.1
Date	Feed Conductivity uS/cm	Feed Concentration mg/L	Energy Consumption per Section, kWh/day		
			RO Section	NF Section	EDR Section
01 Mar 99			1690	924	1314
02 Mar 99			1690	0	1308
03 Mar 99	1304	938	1690	0	1309
04 Mar 99	1302	936	1279	803	1313
05 Mar 99	1308	940	779	1461	1295
06 Mar 99	1303	937	0	1407	1315
07 Mar 99	1303	937	0	1400	1267
08 Mar 99	1301	935	0	1513	1370
09 Mar 99	1304	938	614	756	852
10 Mar 99	1301	935	893	495	462
11 Mar 99	1314	945	682	1436	808
12 Mar 99	1306	939	1667	1462	1284
13 Mar 99	1300	935	1690	1462	1332
14 Mar 99	1309	941	1690	1462	1325
15 Mar 99	1305	938	1690	1462	1313
16 Mar 99	1302	936	1690	1462	1191
17 Mar 99	1305	938	1689	1462	1043
18 Mar 99	1306	939	1651	1352	1324
19 Mar 99	1305	938	1690	1462	1285
20 Mar 99	1305	938	1690	1462	982
21 Mar 99	1307	940	1690	1462	1330
22 Mar 99	1311	943	1690	1462	1319
23 Mar 99	1307	940	1690	1462	1324
24 Mar 99	1307	940	1287	1200	1324
25 Mar 99	1306	939	0	0	0
26 Mar 99	1303	937	111	99	59
27 Mar 99	1301	935	1761	1477	1408
28 Mar 99	1325	953	1690	1462	1359
29 Mar 99	1371	986	2393	2060	1911
30 Mar 99	1379	992	1690	1462	1342
31 Mar 99	1347	968	1164	1007	906
01 Apr 99	1346	968	1047	922	912
02 Apr 99	1344	966	1689	1461	1343
03 Apr 99	1348	969	1269	1094	1035
04 Apr 99	1351	971	1107	963	886
05 Apr 99	1340	963	1690	1441	1333
06 Apr 99	1348	969	0	0	0
07 Apr 99	1347	968	265	229	208
08 Apr 99	1352	972	1761	1523	1400
09 Apr 99	1347	968	0	0	0

Date	Feed Conductivity uS/cm	Feed Concentration mg/L	Energy Consumption per Section, kWh/day		
			RO Section	NF Section	EDR Section
10 Apr 99	1339	963	1761	1524	1411
11 Apr 99	1345	967	1690	1462	1340
12 Apr 99	1355	974	1690	1462	1340
13 Apr 99	1350	971	1690	1428	1347
14 Apr 99	1358	976	1689	1461	946
15 Apr 99	1357	976	1617	1401	680
16 Apr 99	1357	976	1690	1462	1344
17 Apr 99	1358	976	1690	1462	1353
18 Apr 99	1359	977	1690	1462	1349
19 Apr 99	1362	979	1690	1462	1341
20 Apr 99	1368	984	1690	1462	1344
21 Apr 99	1362	979	1689	1461	1346
22 Apr 99	1345	967	1639	1463	1350
23 Apr 99	1349	970	1595	1366	1351
24 Apr 99	1350	971	1690	1462	1362
25 Apr 99	1344	966	1689	1461	1360
26 Apr 99	1343	966	1619	1401	1291
27 Apr 99	1344	966	1761	1524	884
28 Apr 99	1350	971	1690	1462	1341
29 Apr 99	1353	973	2320	1974	1915
30 Apr 99	1355	974	0	0	0
01 May 99	1355	974	1690	1462	1361
02 May 99	1359	977	1690	1462	1354
03 May 99	1354	974	1690	1462	1341
04 May 99	1355	974	1689	1462	1344
05 May 99	1356	975	1690	1462	1343
06 May 99	1356	975	1689	1439	1329
07 May 99	1359	977	1370	1167	1238
08 May 99	1356	975	1761	1524	1055
09 May 99	1356	975	1618	1400	831
10 May 99	1358	976	1761	1524	1392
11 May 99	1359	977	1689	1461	1335
12 May 99	1359	977	1690	1463	1338
13 May 99	1360	978	1488	1142	1338
14 May 99	1363	980	1690	1462	1344
15 May 99	1358	976	1690	1462	1345
16 May 99	1327	954	1643	1462	1334
17 May 99	1318	948	1690	1462	1321
18 May 99	1327	954	1575	1327	1305
19 May 99	1340	963	1690	1462	1242
20 May 99	1321	950	1546	1348	1264
21 May 99	1319	948	1500	1266	1325
22 May 99	1314	945	1690	1463	1331
23 May 99	1319	948	1690	1462	1341
24 May 99	1343	966	1690	1462	1299

Date	Feed Conductivity uS/cm	Feed Concentration mg/L	Energy Consumption per Section, kWh/day		
			RO Section	NF Section	EDR Section
25 May 99	1335	960	1690	1462	1283
26 May 99	1336	961	1571	1363	1248
27 May 99	1345	967	1657	1436	1335
28 May 99	1340	963	1690	1462	1352
29 May 99	1336	961	2393	2070	1928
30 May 99	1336	961	1690	1462	1361
31 May 99	1330	956	1690	1462	1344
01 Jun 99	1345	967	1689	1461	1285
02 Jun 99	1337	961	0	0	0
03 Jun 99	1333	958	1557	1352	1223
04 Jun 99	1331	957	1283	981	1348
05 Jun 99	1377	990	1625	803	1305
06 Jun 99	1397	1004	0	0	1369
07 Jun 99	1402	1008	1690	1462	1353
08 Jun 99	1399	1006	0	0	0
09 Jun 99	1402	1008	0	0	869
10 Jun 99	1402	1008	0	0	0
11 Jun 99	1402	1008	1689	1461	1365
12 Jun 99	1390	999	1690	1463	1366
13 Jun 99	1395	1003	1690	1462	1339
14 Jun 99	1392	1001	1679	1462	1361
15 Jun 99	1390	999	1520	1461	1359
16 Jun 99	1392	1001	1690	648	1361
17 Jun 99	1393	1002	1690	654	1366
18 Jun 99	1394	1002	1690	1462	1336
19 Jun 99	1391	1000	1288	1462	1372
20 Jun 99	1395	1003	1690	1462	1332
21 Jun 99	1394	1002	0	0	0
22 Jun 99	1393	1002	1690	1462	1369
23 Jun 99	1390	999	1689	1462	1369
24 Jun 99	1384	995	1690	1462	1370
25 Jun 99	1393	1002	1690	1462	1379
26 Jun 99	1398	1005	1690	1462	1388
27 Jun 99	1399	1006	1690	1462	1384
28 Jun 99	1372	986	0	0	0
29 Jun 99	1361	979	988	776	694
30 Jun 99	1356	975	0	0	0
01 Jul 99	1355	974	1689	1462	1358
02 Jul 99	1352	972	1690	1462	1229
03 Jul 99	1351	971	1690	1462	1338
04 Jul 99	1353	973	1689	1462	1350
05 Jul 99	1353	973	1690	1462	1343
06 Jul 99	1358	976	1690	1462	1352
07 Jul 99	1356	975	1132	1461	1346
08 Jul 99	1358	976	1690	1462	1338

Date	Feed Conductivity uS/cm	Feed Concentration mg/L	Energy Consumption per Section, kWh/day		
			RO Section	NF Section	EDR Section
09 Jul 99	1363	980	1690	1462	1342
10 Jul 99	1361	979	1690	1462	1347
11 Jul 99	1358	976	1678	1043	1288
12 Jul 99	1354	974	1521	938	1343
13 Jul 99	1358	976	1631	1462	1307
14 Jul 99	1361	979	1690	1462	1358
15 Jul 99	1360	978	1614	1065	1354
16 Jul 99	1356	975	1690	993	1271
17 Jul 99	1359	977	1690	1462	1323
18 Jul 99	1361	979	1690	1462	1303
19 Jul 99	1361	979	1690	1462	1322
20 Jul 99	1363	980	1689	1462	1314
21 Jul 99	1365	981	1690	1462	902
22 Jul 99	1366	982	1048	1296	1220
23 Jul 99	1366	982	1637	1462	1238
24 Jul 99	1364	981	1690	1462	1254
25 Jul 99	1360	978	1688	1461	242
26 Jul 99	1359	977	1690	1462	659
27 Jul 99	1362	979	1477	1283	1309
28 Jul 99	1363	980	1689	1462	1306
29 Jul 99	1366	982	0	0	0
30 Jul 99	1367	983	1690	1306	1311
31 Jul 99	1364	981	1690	1462	1285
01 Aug 99	1363	980	1690	1462	1331
02 Aug 99	1362	979	1690	1462	1310
03 Aug 99	1369	984	1690	1462	1282
04 Aug 99	1369	984	1660	1452	1241
05 Aug 99	1368	984	0	0	0
06 Aug 99	1368	984	1690	1463	1307
07 Aug 99	1370	985	1690	1462	1309
08 Aug 99	1367	983	1690	1462	1319
09 Aug 99	1365	981	1689	1462	1293
10 Aug 99	1367	983	1690	1462	1293
11 Aug 99	1367	983	1168	1462	1301
12 Aug 99	1366	982	0	0	0
13 Aug 99	1368	984	1690	1462	1287
14 Aug 99	1368	984	1689	1462	1346
15 Aug 99	1367	983	1690	1462	1352
16 Aug 99	1367	983	1690	1462	1340
17 Aug 99	1367	983	1614	1397	1221
18 Aug 99	1365	981	1463	1303	1162
19 Aug 99	1367	983	1690	1462	1307
20 Aug 99	1363	980	1690	1462	1305
21 Aug 99	1369	984	1690	1462	1306
22 Aug 99	1369	984	1690	1462	1293

Date	Feed Conductivity uS/cm	Feed Concentration mg/L	Energy Consumption per Section, kWh/day		
			RO Section	NF Section	EDR Section
23 Aug 99	1366	982	1689	1462	1311
24 Aug 99	1370	985	1690	1462	1303
25 Aug 99	1368	984	1690	1462	1288
26 Aug 99	1366	982	1689	1462	1294
27 Aug 99	1369	984	1690	1462	1193
28 Aug 99	1365	981	1690	1462	1337
29 Aug 99	1365	981	1689	1461	1335
30 Aug 99	1364	981	1690	1463	1310
31 Aug 99	1364	981	1690	1462	861
01 Sep 99	1364	981	1690	452	1324
02 Sep 99	1365	981	1690	576	1320
03 Sep 99	1366	982	1690	1462	1307
04 Sep 99	1366	982	1689	1462	1320
05 Sep 99	1365	981	1690	1462	1325
06 Sep 99	1364	981	1690	1462	1323
07 Sep 99	1363	980	0	0	0
08 Sep 99	1360	978	807	1462	1332
09 Sep 99	1361	979	1292	1462	1333
10 Sep 99	1363	980	0	0	0
11 Sep 99	1363	980	1638	1412	1305
12 Sep 99	1362	979	1690	1462	1341
13 Sep 99	1362	979	1690	1462	1321
14 Sep 99	1362	979	0	0	0
15 Sep 99	1373	987	16	14	15
16 Sep 99	1368	984	1690	1298	1299
17 Sep 99	1366	982	1491	1462	1289
18 Sep 99	1366	982	1690	1462	1293
19 Sep 99	1368	984	1690	1462	1283
20 Sep 99	1373	987	1690	1462	1274
21 Sep 99	1377	990	1690	1462	936
22 Sep 99	1364	981	1690	1462	1355
23 Sep 99	1365	981	0	0	0
24 Sep 99	1366	982	1332	1462	1234
25 Sep 99	1362	979	1690	1462	1193
26 Sep 99	1366	982	1690	1462	1179
27 Sep 99	1368	984	1689	712	1168
28 Sep 99	1373	987	1690	583	1160
29 Sep 99	1375	989	0	0	0
30 Sep 99	1379	992	0	0	0
01 Oct 99	1389	999	1690	1462	1167
02 Oct 99	1404	1009	1690	1463	1293
03 Oct 99	1391	1000	1689	1462	1325
04 Oct 99	1378	991	0	0	0
05 Oct 99	1376	989	2	2	6
06 Oct 99	1375	989	492	425	191

Date	Feed Conductivity uS/cm	Feed Concentration mg/L	Energy Consumption per Section, kWh/day		
			RO Section	NF Section	EDR Section
07 Oct 99	1373	987	1690	1462	1296
08 Oct 99	1376	989	1690	1462	1259
09 Oct 99	1382	994	1690	1462	1313
10 Oct 99	1380	992	1689	1462	1307
11 Oct 99	1373	987	1690	1462	1286
12 Oct 99	1370	985	1690	1410	473
13 Oct 99	1367	983	1690	1462	460
14 Oct 99	1366	982	483	1462	1231
15 Oct 99	1364	981	0	1462	1232
16 Oct 99	1364	981	0	658	1243
17 Oct 99	1365	981	366	651	1239
18 Oct 99	1363	980	530	1332	1108
19 Oct 99	1362	979	0	1436	1224
20 Oct 99	1365	981	0	0	0
21 Oct 99	1362	979	618	258	194
22 Oct 99	1360	978	1653	1434	1162
23 Oct 99	1363	980	1690	1462	1239
24 Oct 99	1364	981	1690	1462	1239
25 Oct 99	1362	979	1690	1462	1219
26 Oct 99	1366	982	1690	1462	925
27 Oct 99	1363	980	0	0	0
28 Oct 99	1366	982	1690	1462	1259
29 Oct 99	1363	980	1689	1462	1279
30 Oct 99	1370	985	1689	1461	1253
31 Oct 99	1372	986	1761	1523	1303
01 Nov 99	1371	986	1636	1415	1133
02 Nov 99	1371	986	1108	1011	927
03 Nov 99	1367	983	0	0	0
04 Nov 99	1364	981	1690	1462	1257
05 Nov 99	1368	984	1689	1018	1218
06 Nov 99	1372	986	1638	1418	1229
07 Nov 99	1369	984	1690	1462	1272
08 Nov 99	1365	981	1690	1462	1257
09 Nov 99	1365	981	1690	1462	1242
10 Nov 99	1367	983	1459	1225	1087
11 Nov 99	1364	981	1690	1462	1269
12 Nov 99	1362	979	1636	142	1264
13 Nov 99	1365	981	1690	1462	1267
14 Nov 99	1367	983	1690	1462	1261
15 Nov 99	1365	981	1159	1462	1251
16 Nov 99	1366	982	1660	1425	463
17 Nov 99	1369	984	1651	1406	53
18 Nov 99	1370	985	1690	1462	517
19 Nov 99	1367	983	1690	1462	1255
20 Nov 99	1366	982	1690	1462	1287

Date	Feed Conductivity uS/cm	Feed Concentration mg/L	Energy Consumption per Section, kWh/day		
			RO Section	NF Section	EDR Section
21 Nov 99	1369	984	1690	1462	1285
22 Nov 99	1367	983	1690	1462	1278
23 Nov 99	1364	981	1689	1058	1280
24 Nov 99	1369	984	1690	1463	1275
25 Nov 99	1373	987	1690	1462	1291
26 Nov 99	1373	987	1689	1461	1292
27 Nov 99	1370	985	1690	1463	1290
28 Nov 99	1372	986	1689	1462	1286
29 Nov 99	1370	985	1690	1462	1258
30 Nov 99	1365	981	0	0	0
01 Dec 99	1371	986	1689	1462	1259
02 Dec 99	1379	992	1690	1462	1205
03 Dec 99	1372	986	1661	1442	1241
04 Dec 99	1372	986	1690	1462	1235
05 Dec 99	1376	989	1690	1462	1241
06 Dec 99	1379	992	1690	777	1242
07 Dec 99	1379	992	1690	999	408
08 Dec 99	1373	987	1639	1430	333
09 Dec 99	1381	993	1689	1462	1215
10 Dec 99	1380	992	1690	1463	1273
11 Dec 99	1375	989	1689	1462	1276
12 Dec 99	1375	989	1690	1462	1290
13 Dec 99	1377	990	1171	1462	1280
14 Dec 99	1381	993	1346	1462	1267
15 Dec 99	1382	994	1688	1461	1259
16 Dec 99	1376	989	1689	1462	468
17 Dec 99	1366	982	1690	1462	534
18 Dec 99	1375	989	1690	1462	1291
19 Dec 99	1378	991	1690	1462	1268
20 Dec 99	1386	997	1689	1180	1280
21 Dec 99	1383	994	0	1180	0
22 Dec 99	1383	994	1689	0	1266
23 Dec 99	1387	997	1690	1462	1348
24 Dec 99	1383	994	1690	561	1357
25 Dec 99	1384	995	1689	0	1348
26 Dec 99	1383	994	1690	0	1315
27 Dec 99	1384	995	1690	0	1322
28 Dec 99	1384	995	564	418	1345
29 Dec 99	1383	994	740	1462	1339
30 Dec 99	1381	993	1476	1299	1221
31 Dec 99	1380	992	0	1197	0
01 Jan 00	1371	986	7376	1727	8044
02 Jan 00	1381	993	1690	1462	1332
03 Jan 00	1381	993	1352	1177	1119
04 Jan 00	1385	996	1690	1462	1345

Date	Feed Conductivity uS/cm	Feed Concentration mg/L	Energy Consumption per Section, kWh/day		
			RO Section	NF Section	EDR Section
05 Jan 00	1386	997	1690	1462	13583
06 Jan 00	1384	995	0	0	0
07 Jan 00	1383	994	1531	1365	1213
08 Jan 00	1384	995	1760	1523	1347
09 Jan 00	1383	994	1618	1400	1235
10 Jan 00	1386	997	1760	1358	1376
11 Jan 00	1385	996	1092	1462	1313
12 Jan 00	1385	996	1690	1462	1306
13 Jan 00	1387	997	1690	1462	1112
14 Jan 00	1387	997	1689	1461	1247
15 Jan 00	1390	999	1690	1463	1254
16 Jan 00	1386	997	1690	1462	1254
17 Jan 00	1385	996	1689	1461	1241
18 Jan 00	1383	994	1667	1463	1255
19 Jan 00	1385	996	1689	1461	1251
20 Jan 00	1383	994	1690	1463	1269
21 Jan 00	1385	996	1690	1462	1246
22 Jan 00	1391	1000	1690	1462	1248
23 Jan 00	1388	998	1690	1462	1244
24 Jan 00	1386	997	0	0	0
25 Jan 00	1383	994	1682	1456	1362
26 Jan 00	1387	997	1235	1178	1214
27 Jan 00	1389	999	1155	1524	1431
28 Jan 00	1390	999	1689	1044	1323
29 Jan 00	1389	999	2393	2070	1938
30 Jan 00	1390	999	1690	1462	1364
31 Jan 00	1389	999	1690	1155	1365
01 Feb 00	1391	1000	1690	1462	1372
02 Feb 00	1391	1000	1690	1462	1341
03 Feb 00	1390	999	1689	1462	1374
04 Feb 00	1388	998	1690	1462	1374
05 Feb 00	1385	996	1690	1462	351
06 Feb 00	1405	1010	1690	1462	927
07 Feb 00	1408	1012	1413	1185	1162
08 Feb 00	1385	996	0	0	0
09 Feb 00	1386	997	1686	1458	1361
10 Feb 00	1388	998	1686	1458	1360
11 Feb 00	1379	992	1686	1453	1299
12 Feb 00	1380	992	1686	1458	1364
13 Feb 00	1387	997	1686	1458	1363
14 Feb 00	1378	991	0	0	0
15 Feb 00	1382	994	1686	1458	1359
16 Feb 00	1387	997	0	0	0
17 Feb 00	1380	992	0	211	191
18 Feb 00	1377	990	612	1457	1356

Date	Feed Conductivity uS/cm	Feed Concentration mg/L	Energy Consumption per Section, kWh/day		
			RO Section	NF Section	EDR Section
19 Feb 00	1378	991	1628	1459	1361
20 Feb 00	1386	997	1288	1458	1361
21 Feb 00	1375	989	0	1458	1264
22 Feb 00	1377	990	0	1458	968
23 Feb 00	1377	990	562	1458	1346
24 Feb 00	1380	992	1686	1447	239
25 Feb 00	1382	994	1686	1452	933
26 Feb 00	1388	998	1686	1404	1351
27 Feb 00	1395	1003	1686	1458	1360
28 Feb 00	1393	1002	0	0	0

DESALINATION EQUIPMENT PERFORMANCE

Relevant Presentation	Figure 3.2	Figure 3.3	Figure 3.4	Figure 3.5	Figure 3.6	Figure 3.7
Date	RO Product Flow, GPD	NF Product Flow, GPD	EDR Product Flow, GPD	RO Product TDS, mg/L	NF Product TDS, mg/L	EDR Product TDS, mg/L
01 Mar 99	725,760	512,640	1,046,880	7.37	23.20	681.66
02 Mar 99	727,200	0	1,056,960	6.70	30.74	334.53
03 Mar 99	561,600	0	1,055,520	10.72	30.74	294.21
04 Mar 99	364,320	419,040	1,051,200	15.41	25.52	294.84
05 Mar 99	0	768,960	622,080	0.00	20.30	302.40
06 Mar 99	0	735,840	1,048,320	0.00	19.14	315.63
07 Mar 99	0	771,840	1,055,520	0.00	19.14	330.12
08 Mar 99	246,240	764,640	1,078,560	18.76	18.56	409.50
09 Mar 99	394,560	416,160	691,200	16.75	22.62	1035.72
10 Mar 99	272,160	257,760	351,360	21.44	23.78	662.76
11 Mar 99	725,760	764,640	645,120	12.06	16.24	674.73
12 Mar 99	728,640	770,400	1,031,040	11.39	16.24	355.32
13 Mar 99	727,200	767,520	1,056,960	10.72	15.66	299.88
14 Mar 99	727,200	767,520	1,052,640	10.72	15.66	299.25
15 Mar 99	725,760	767,520	1,058,400	10.05	15.66	304.92
16 Mar 99	725,760	766,080	961,920	10.05	15.66	381.78
17 Mar 99	728,640	767,520	836,640	10.05	16.24	425.25
18 Mar 99	724,320	704,160	1,039,680	10.05	17.40	313.74
19 Mar 99	728,640	768,960	977,760	10.72	17.40	352.80
20 Mar 99	728,640	768,960	786,240	10.05	16.82	585.90
21 Mar 99	725,760	768,960	1,051,200	9.38	16.24	973.35
22 Mar 99	728,640	767,520	1,055,520	9.38	16.24	346.50
23 Mar 99	728,640	767,520	1,048,320	9.38	16.24	303.03
24 Mar 99	545,760	637,920	1,056,960	14.74	48.72	113.40
25 Mar 99	728,640	767,520	1,051,200	10.72	16.24	112.14
26 Mar 99	699,840	735,840	701,280	10.72	16.24	493.92
27 Mar 99	727,200	734,400	1,054,080	12.06	18.56	303.03
28 Mar 99	727,200	767,520	1,059,840	14.07	20.88	369.81
29 Mar 99	727,200	767,520	1,051,200	14.07	20.88	336.42
30 Mar 99	727,200	767,520	102,240	12.06	18.56	335.79
31 Mar 99	518,400	545,760	734,400	22.11	138.04	376.11
01 Apr 99	492,480	486,720	708,480	29.48	147.32	345.87
02 Apr 99	727,200	768,960	1,055,520	17.42	18.56	318.78
03 Apr 99	551,520	580,320	832,320	22.78	25.52	364.77
04 Apr 99	457,920	480,960	658,080	28.14	44.08	385.56
05 Apr 99	728,640	767,520	1,054,080	14.74	17.40	313.74
06 Apr 99	725,760	767,520	1,056,960	14.07	17.98	316.89
07 Apr 99	728,640	767,520	1,055,520	14.07	17.98	315.63
08 Apr 99	730,080	767,520	1,052,640	14.07	18.56	316.89
09 Apr 99	695,520	702,720	1,049,760	14.07	19.14	316.26
10 Apr 99	727,200	768,960	1,054,080	12.06	17.40	309.96
11 Apr 99	727,200	768,960	1,054,080	11.39	16.82	322.56
12 Apr 99	727,200	766,080	1,052,640	12.06	17.40	328.86

Date	RO Product Flow, GPD	NF Product Flow, GPD	EDR Product Flow, GPD	RO Product TDS, mg/L	NF Product TDS, mg/L	EDR Product TDS, mg/L
13 Apr 99	728,640	763,200	1,055,520	12.06	17.98	321.93
14 Apr 99	727,200	766,080	743,040	11.39	17.98	355.32
15 Apr 99	676,800	735,840	524,160	14.74	18.56	359.73
16 Apr 99	728,640	770,400	1,058,400	12.06	17.40	326.97
17 Apr 99	724,320	768,960	1,049,760	11.39	17.40	323.82
18 Apr 99	725,760	763,200	1,056,960	11.39	16.82	328.86
19 Apr 99	728,640	764,640	1,059,840	11.39	17.40	338.31
20 Apr 99	725,760	763,200	1,061,280	11.39	16.82	345.87
21 Apr 99	730,080	767,520	1,061,280	10.72	16.82	342.72
22 Apr 99	724,320	767,520	1,062,720	11.39	17.40	330.75
23 Apr 99	695,520	702,720	1,049,760	12.73	18.56	332.01
24 Apr 99	730,080	768,960	1,042,560	12.06	17.40	333.90
25 Apr 99	727,200	766,080	1,033,920	12.06	17.40	343.35
26 Apr 99	735,840	776,160	1,069,920	12.06	17.40	379.26
27 Apr 99	730,080	771,840	663,840	11.39	17.40	734.58
28 Apr 99	728,640	767,520	1,048,320	11.39	17.40	335.79
29 Apr 99	698,400	732,960	1,036,800	12.73	18.56	349.65
30 Apr 99	730,080	774,720	1,051,200	12.06	17.98	373.59
01 May 99	730,080	771,840	1,068,480	12.06	17.40	501.48
02 May 99	727,200	767,520	1,039,680	11.39	17.40	1040.76
03 May 99	730,080	764,640	1,048,320	12.06	17.40	365.40
04 May 99	728,640	768,960	1,048,320	12.06	17.98	325.08
05 May 99	724,320	768,960	1,048,320	11.39	17.40	326.34
06 May 99	728,640	737,280	1,052,640	11.39	17.98	349.02
07 May 99	609,120	645,120	1,055,520	18.76	19.14	343.35
08 May 99	728,640	768,960	786,240	12.06	18.56	813.96
09 May 99	728,640	767,520	659,520	12.06	17.98	534.24
10 May 99	727,200	766,080	1,051,200	12.06	18.56	330.12
11 May 99	727,200	767,520	1,058,400	11.39	17.98	336.42
12 May 99	727,200	766,080	1,056,960	11.39	17.98	335.79
13 May 99	635,040	576,000	1,056,960	14.07	38.28	336.42
14 May 99	725,760	767,520	1,058,400	12.06	19.72	340.20
15 May 99	725,760	766,080	1,049,760	11.39	18.56	339.57
16 May 99	724,320	766,080	1,041,120	10.05	17.40	333.27
17 May 99	730,080	771,840	1,033,920	10.72	16.82	347.76
18 May 99	669,600	707,040	1,054,080	14.07	20.30	360.36
19 May 99	730,080	768,960	993,600	10.05	16.82	364.14
20 May 99	671,040	704,160	1,015,200	14.74	21.46	340.20
21 May 99	668,160	673,920	1,049,760	12.06	19.14	312.48
22 May 99	727,200	768,960	1,049,760	10.05	16.82	312.48
23 May 99	728,640	766,080	1,062,720	10.05	16.82	313.74
24 May 99	727,200	766,080	1,003,680	10.05	16.82	502.74
25 May 99	730,080	764,640	1,015,200	10.72	17.40	520.38
26 May 99	698,400	764,640	1,049,760	13.40	17.40	325.08
27 May 99	698,400	737,280	1,009,440	12.73	17.98	347.13
28 May 99	730,080	767,520	1,055,520	11.39	17.40	319.41
29 May 99	727,200	767,520	1,055,520	10.72	17.40	311.85
30 May 99	728,640	770,400	1,052,640	10.72	16.82	312.48

Date	RO Product Flow, GPD	NF Product Flow, GPD	EDR Product Flow, GPD	RO Product TDS, mg/L	NF Product TDS, mg/L	EDR Product TDS, mg/L
31 May 99	725,760	768,960	1,052,640	10.72	16.82	318.15
01 Jun 99	728,640	768,960	1,029,600	10.72	17.40	316.89
02 Jun 99	727,200	767,520	1,028,160	10.05	16.82	313.11
03 Jun 99	666,720	701,280	950,400	11.39	17.98	371.07
04 Jun 99	545,760	541,440	1,046,880	15.41	19.72	345.87
05 Jun 99	699,840	417,600	1,008,000	14.07	23.78	357.21
06 Jun 99	727,200	764,640	1,045,440	13.40	20.30	354.06
07 Jun 99	727,200	766,080	1,036,800	13.40	20.30	366.03
08 Jun 99	728,640	770,400	1,020,960	13.40	19.72	373.59
09 Jun 99	730,080	773,280	653,760	13.40	19.72	916.02
10 Jun 99	730,080	770,400	1,055,520	14.07	19.72	485.73
11 Jun 99	727,200	768,960	1,054,080	13.40	19.14	342.72
12 Jun 99	727,200	766,080	1,054,080	12.73	18.56	338.94
13 Jun 99	727,200	767,520	1,054,080	13.40	19.72	341.46
14 Jun 99	728,640	768,960	1,054,080	13.40	19.72	350.28
15 Jun 99	633,600	770,400	1,061,280	16.75	19.14	352.80
16 Jun 99	727,200	351,360	1,049,760	14.07	25.52	350.28
17 Jun 99	727,200	318,240	1,049,760	16.75	30.16	352.17
18 Jun 99	728,640	770,400	1,054,080	12.73	23.78	401.31
19 Jun 99	557,280	774,720	1,067,040	20.10	23.20	551.25
20 Jun 99	727,200	766,080	1,051,200	16.75	22.62	650.16
21 Jun 99	727,200	767,520	1,042,560	16.08	21.46	350.28
22 Jun 99	728,640	768,960	1,055,520	15.41	20.30	348.39
23 Jun 99	728,640	768,960	1,061,280	14.74	19.72	352.17
24 Jun 99	727,200	766,080	1,054,080	14.07	19.72	352.17
25 Jun 99	727,200	766,080	1,051,200	14.07	20.30	357.21
26 Jun 99	727,200	767,520	1,048,320	14.07	20.30	360.99
27 Jun 99	730,080	766,080	1,035,360	14.07	20.30	376.74
28 Jun 99	214,560	309,600	300,960	25.46	24.94	376.11
29 Jun 99	421,920	374,400	528,480	21.44	24.94	379.26
30 Jun 99	727,200	767,520	1,056,960	11.39	17.98	349.02
01 Jul 99	727,200	767,520	1,051,200	11.39	17.98	350.91
02 Jul 99	728,640	768,960	969,120	10.72	17.40	393.75
03 Jul 99	727,200	768,960	1,055,520	10.05	16.82	330.12
04 Jul 99	730,080	767,520	1,049,760	10.05	17.40	332.01
05 Jul 99	728,640	767,520	1,006,560	10.05	16.82	338.31
06 Jul 99	728,640	770,400	1,055,520	9.38	16.82	338.94
07 Jul 99	512,640	767,520	1,055,520	15.41	16.82	340.20
08 Jul 99	727,200	767,520	1,048,320	11.39	16.82	340.83
09 Jul 99	727,200	766,080	1,052,640	11.39	16.82	345.87
10 Jul 99	725,760	767,520	1,054,080	10.72	16.82	343.98
11 Jul 99	725,760	551,520	964,800	10.72	19.72	350.28
12 Jul 99	666,720	479,520	1,051,200	12.73	19.14	377.37
13 Jul 99	696,960	763,200	1,051,200	12.06	17.40	342.09
14 Jul 99	727,200	767,520	1,051,200	11.39	17.40	338.94
15 Jul 99	698,400	542,880	1,056,960	12.06	20.88	339.57
16 Jul 99	727,200	512,640	963,360	10.72	22.04	389.97
17 Jul 99	728,640	770,400	1,005,120	10.72	19.72	350.91

Date	RO Product Flow, GPD	NF Product Flow, GPD	EDR Product Flow, GPD	RO Product TDS, mg/L	NF Product TDS, mg/L	EDR Product TDS, mg/L
18 Jul 99	725,760	766,080	1,038,240	10.72	19.14	340.20
19 Jul 99	728,640	766,080	1,046,880	10.05	19.14	345.24
20 Jul 99	727,200	766,080	1,042,560	10.05	19.14	347.76
21 Jul 99	728,640	767,520	613,440	10.05	19.14	701.82
22 Jul 99	456,480	673,920	918,720	17.42	20.30	412.02
23 Jul 99	696,960	767,520	1,003,680	13.40	19.14	325.08
24 Jul 99	728,640	768,960	1,008,000	11.39	18.56	321.93
25 Jul 99	727,200	767,520	253,440	11.39	18.56	777.42
26 Jul 99	728,640	767,520	470,880	11.39	18.56	631.89
27 Jul 99	636,480	675,360	1,022,400	13.40	19.72	324.45
28 Jul 99	727,200	768,960	1,019,520	11.39	19.14	323.19
29 Jul 99	728,640	767,520	1,013,760	11.39	19.14	323.82
30 Jul 99	730,080	704,160	1,018,080	11.39	19.14	326.34
31 Jul 99	727,200	768,960	1,019,520	10.72	19.14	323.19
01 Aug 99	727,200	767,520	1,046,880	10.72	18.56	348.39
02 Aug 99	728,640	768,960	1,035,360	10.72	18.56	340.83
03 Aug 99	727,200	770,400	979,200	10.72	18.56	358.47
04 Aug 99	696,960	770,400	1,012,320	12.06	18.56	330.12
05 Aug 99	668,160	705,600	966,240	12.73	19.14	354.06
06 Aug 99	727,200	767,520	1,036,800	10.72	18.56	342.09
07 Aug 99	728,640	770,400	1,036,800	10.72	18.56	340.83
08 Aug 99	728,640	768,960	1,041,120	10.72	18.56	342.72
09 Aug 99	728,640	767,520	1,032,480	10.72	18.56	343.35
10 Aug 99	725,760	767,520	1,029,600	10.05	17.98	346.50
11 Aug 99	518,400	767,520	1,031,040	8.71	18.56	345.87
12 Aug 99	727,200	568,800	1,032,480	12.73	21.46	345.24
13 Aug 99	725,760	766,080	1,003,680	12.06	18.56	374.22
14 Aug 99	728,640	766,080	1,046,880	11.39	17.98	350.91
15 Aug 99	730,080	767,520	1,049,760	11.39	18.56	350.28
16 Aug 99	727,200	767,520	1,042,560	11.39	18.56	357.84
17 Aug 99	696,960	734,400	972,000	12.73	18.56	365.40
18 Aug 99	610,560	705,600	927,360	16.75	18.56	418.95
19 Aug 99	727,200	770,400	1,005,120	12.06	17.98	327.60
20 Aug 99	727,200	767,520	1,003,680	10.72	17.40	325.71
21 Aug 99	727,200	768,960	996,480	11.39	17.98	323.82
22 Aug 99	728,640	768,960	959,040	11.39	17.98	351.54
23 Aug 99	728,640	766,080	995,040	10.72	17.98	335.16
24 Aug 99	728,640	767,520	987,840	11.39	17.98	334.53
25 Aug 99	727,200	768,960	972,000	10.72	17.98	332.01
26 Aug 99	730,080	767,520	969,120	10.72	17.98	333.90
27 Aug 99	727,200	768,960	907,200	10.72	17.98	388.08
28 Aug 99	727,200	767,520	1,035,360	10.05	17.98	347.76
29 Aug 99	728,640	767,520	1,033,920	10.05	17.98	346.50
30 Aug 99	730,080	767,520	1,029,600	10.05	17.98	352.80
31 Aug 99	727,200	767,520	669,600	10.05	17.98	669.06
01 Sep 99	728,640	256,320	996,480	10.05	22.62	332.01
02 Sep 99	728,640	259,200	995,040	9.38	22.62	332.01
03 Sep 99	727,200	768,960	984,960	9.38	21.46	333.27

Date	RO Product Flow, GPD	NF Product Flow, GPD	EDR Product Flow, GPD	RO Product TDS, mg/L	NF Product TDS, mg/L	EDR Product TDS, mg/L
04 Sep 99	727,200	768,960	984,960	9.38	21.46	332.01
05 Sep 99	728,640	767,520	983,520	9.38	20.88	339.57
06 Sep 99	730,080	768,960	973,440	9.38	20.30	348.39
07 Sep 99	699,840	738,720	1,006,560	12.06	19.14	366.66
08 Sep 99	365,760	766,080	1,038,240	5.36	19.14	350.91
09 Sep 99	576,000	767,520	1,035,360	18.09	19.14	351.54
10 Sep 99	727,200	768,960	1,016,640	13.40	18.56	340.83
11 Sep 99	696,960	735,840	959,040	13.40	19.14	368.55
12 Sep 99	728,640	768,960	999,360	12.73	18.56	332.64
13 Sep 99	727,200	767,520	992,160	12.06	18.56	337.68
14 Sep 99	728,640	768,960	984,960	12.06	18.56	335.16
15 Sep 99	730,080	768,960	972,000	12.06	19.14	344.61
16 Sep 99	728,640	681,120	961,920	12.06	22.62	451.71
17 Sep 99	637,920	768,960	1,020,960	14.74	22.62	383.04
18 Sep 99	727,200	767,520	1,019,520	12.73	22.04	338.31
19 Sep 99	728,640	767,520	1,019,520	12.06	21.46	342.72
20 Sep 99	727,200	767,520	1,013,760	12.06	20.88	350.28
21 Sep 99	727,200	768,960	675,360	12.06	20.30	528.57
22 Sep 99	727,200	768,960	1,002,240	11.39	19.72	337.05
23 Sep 99	728,640	767,520	992,160	11.39	19.72	335.79
24 Sep 99	577,440	767,520	925,920	10.72	19.72	351.54
25 Sep 99	730,080	768,960	915,840	12.73	19.72	306.81
26 Sep 99	728,640	768,960	901,440	12.06	19.72	309.96
27 Sep 99	731,520	385,920	892,800	12.06	40.60	316.89
28 Sep 99	731,520	295,200	881,280	12.06	46.40	330.75
29 Sep 99	731,520	773,280	917,280	12.06	103.82	359.10
30 Sep 99	728,640	768,960	928,800	12.73	102.66	335.16
01 Oct 99	728,640	768,960	882,720	12.06	20.88	353.43
02 Oct 99	730,080	768,960	923,040	12.73	21.46	534.24
03 Oct 99	727,200	767,520	1,016,640	12.06	20.30	376.74
04 Oct 99	728,640	768,960	1,016,640	10.72	19.14	516.60
05 Oct 99	707,040	767,520	941,760	12.73	18.56	828.45
06 Oct 99	727,200	797,760	792,000	11.39	19.14	386.82
07 Oct 99	728,640	767,520	944,640	11.39	18.56	331.38
08 Oct 99	727,200	768,960	908,640	10.72	18.56	353.43
09 Oct 99	730,080	767,520	946,080	11.39	18.56	315.00
10 Oct 99	727,200	767,520	940,320	11.39	18.56	315.00
11 Oct 99	728,640	767,520	964,800	10.72	18.56	331.38
12 Oct 99	728,640	737,280	347,040	10.72	19.72	792.54
13 Oct 99	728,640	768,960	400,320	10.72	19.14	587.16
14 Oct 99	300,960	770,400	999,360	22.78	19.14	416.43
15 Oct 99	0	770,400	970,560	0.00	19.14	881.37
16 Oct 99	0	351,360	928,800	0.00	24.36	788.13
17 Oct 99	0	319,680	940,320	0.00	33.06	354.69
18 Oct 99	0	701,280	828,000	0.00	22.62	364.14
19 Oct 99	0	754,560	966,240	0.00	24.36	330.12
20 Oct 99	0	636,480	849,600	0.00	25.52	784.35
21 Oct 99	384,480	766,080	940,320	20.77	25.52	530.46

Date	RO Product Flow, GPD	NF Product Flow, GPD	EDR Product Flow, GPD	RO Product TDS, mg/L	NF Product TDS, mg/L	EDR Product TDS, mg/L
22 Oct 99	725,760	767,520	905,760	12.73	22.62	458.64
23 Oct 99	727,200	767,520	944,640	13.40	22.04	318.15
24 Oct 99	727,200	767,520	946,080	12.73	21.46	321.93
25 Oct 99	727,200	768,960	943,200	12.06	20.88	322.56
26 Oct 99	727,200	767,520	728,640	12.06	20.88	401.94
27 Oct 99	727,200	768,960	986,400	12.06	20.30	353.43
28 Oct 99	730,080	768,960	983,520	11.39	20.30	366.66
29 Oct 99	732,960	774,720	983,520	11.39	19.72	435.96
30 Oct 99	730,080	771,840	960,480	11.39	20.30	1007.37
31 Oct 99	727,200	768,960	977,760	11.39	20.30	783.09
01 Nov 99	728,640	768,960	904,320	11.39	19.72	412.65
02 Nov 99	455,040	509,760	709,920	22.78	20.88	416.43
03 Nov 99	728,640	768,960	725,760	12.06	20.30	324.45
04 Nov 99	728,640	767,520	941,760	11.39	19.72	322.56
05 Nov 99	728,640	544,320	907,200	11.39	24.36	345.87
06 Nov 99	695,520	735,840	921,600	11.39	23.78	337.68
07 Nov 99	728,640	767,520	976,320	11.39	23.20	358.47
08 Nov 99	728,640	770,400	956,160	11.39	22.62	369.18
09 Nov 99	730,080	771,840	974,880	11.39	22.04	389.34
10 Nov 99	639,360	672,480	866,880	13.40	22.04	444.15
11 Nov 99	727,200	767,520	983,520	11.39	20.30	352.80
12 Nov 99	728,640	766,080	976,320	11.39	19.72	354.06
13 Nov 99	727,200	770,400	969,120	11.39	19.72	358.47
14 Nov 99	730,080	767,520	956,160	10.72	19.14	372.33
15 Nov 99	516,960	774,720	986,400	17.42	19.14	397.53
16 Nov 99	698,400	768,960	329,760	13.40	19.14	641.34
17 Nov 99	728,640	734,400	0	12.06	20.30	693.00
18 Nov 99	727,200	767,520	319,680	12.06	19.72	508.41
19 Nov 99	730,080	770,400	972,000	11.39	19.14	380.52
20 Nov 99	731,520	773,280	1,020,960	11.39	19.14	390.60
21 Nov 99	730,080	770,400	996,480	11.39	19.14	706.86
22 Nov 99	728,640	767,520	1,379,520	11.39	19.14	858.06
23 Nov 99	727,200	542,880	960,480	10.72	30.74	313.74
24 Nov 99	727,200	767,520	950,400	10.72	18.56	122.85
25 Nov 99	728,640	770,400	959,040	10.72	18.56	316.89
26 Nov 99	727,200	767,520	956,160	10.72	17.98	313.74
27 Nov 99	727,200	768,960	954,720	10.72	17.98	309.96
28 Nov 99	728,640	768,960	956,160	10.72	17.98	315.63
29 Nov 99	727,200	767,520	969,120	10.05	17.98	333.27
30 Nov 99	574,560	767,520	993,600	9.38	17.98	354.06
01 Dec 99	727,200	768,960	976,320	12.73	17.98	366.66
02 Dec 99	730,080	771,840	934,560	12.06	17.98	384.30
03 Dec 99	730,080	770,400	936,000	12.06	17.98	311.85
04 Dec 99	728,640	768,960	933,120	12.06	17.98	307.44
05 Dec 99	728,640	766,080	936,000	11.39	17.98	313.11
06 Dec 99	728,640	417,600	938,880	11.39	35.96	321.30
07 Dec 99	727,200	511,200	316,800	11.39	30.16	693.00
08 Dec 99	698,400	735,840	241,920	13.40	18.56	681.03

Date	RO Product Flow, GPD	NF Product Flow, GPD	EDR Product Flow, GPD	RO Product TDS, mg/L	NF Product TDS, mg/L	EDR Product TDS, mg/L
09 Dec 99	728,640	768,960	954,720	12.06	18.56	326.34
10 Dec 99	727,200	767,520	954,720	11.39	18.56	319.41
11 Dec 99	728,640	768,960	475,200	11.39	18.56	315.00
12 Dec 99	727,200	768,960	478,080	11.39	18.56	316.89
13 Dec 99	515,520	768,960	947,520	17.42	18.56	320.04
14 Dec 99	547,200	767,520	934,560	16.08	18.56	317.52
15 Dec 99	727,200	768,960	924,480	12.06	18.56	315.63
16 Dec 99	728,640	767,520	309,600	11.39	18.56	924.21
17 Dec 99	728,640	768,960	383,040	10.72	17.40	880.11
18 Dec 99	728,640	767,520	1,019,520	11.39	17.98	316.26
19 Dec 99	728,640	767,520	982,080	11.39	17.98	358.47
20 Dec 99	728,640	588,960	1,023,840	11.39	20.88	331.38
21 Dec 99	637,920	671,040	897,120	14.74	19.14	404.46
22 Dec 99	728,640	767,520	990,720	12.06	18.56	364.77
23 Dec 99	727,200	316,800	1,054,080	12.06	58.58	342.09
24 Dec 99	728,640	0	1,044,000	11.39	0.00	332.01
25 Dec 99	727,200	0	1,044,000	11.39	0.00	339.57
26 Dec 99	724,320	0	1,042,560	11.39	0.00	338.31
27 Dec 99	721,440	0	1,048,320	11.39	0.00	343.98
28 Dec 99	240,480	191,520	1,044,000	46.90	323.64	345.87
29 Dec 99	302,400	767,520	1,049,760	44.89	19.72	351.54
30 Dec 99	635,040	671,040	960,480	22.78	23.78	389.34
31 Dec 99	728,640	768,960	1,054,080	16.08	19.14	330.12
01 Jan 00	734,400	768,960	859,680	11.39	20.30	362.88
02 Jan 00	727,200	768,960	1,035,360	14.74	19.14	326.97
03 Jan 00	576,000	606,240	866,880	24.79	30.16	452.34
04 Jan 00	728,640	768,960	1,044,000	15.41	19.14	332.64
05 Jan 00	727,200	767,520	1,048,320	14.74	19.14	335.16
06 Jan 00	577,440	607,680	910,080	25.46	23.78	635.67
07 Jan 00	668,160	735,840	973,440	18.09	19.72	579.60
08 Jan 00	728,640	76,320	1,010,880	14.74	19.14	318.78
09 Jan 00	728,640	768,960	1,002,240	13.40	18.56	362.88
10 Jan 00	727,200	636,480	1,052,640	13.40	23.20	346.50
11 Jan 00	485,280	770,400	1,051,200	30.15	18.56	345.24
12 Jan 00	727,200	767,520	1,044,000	14.07	18.56	343.98
13 Jan 00	727,200	768,960	900,000	13.40	17.98	677.88
14 Jan 00	728,640	767,520	1,009,440	12.73	17.98	748.44
15 Jan 00	728,640	770,400	1,016,640	12.73	17.98	323.82
16 Jan 00	730,080	767,520	1,018,080	12.06	17.98	326.34
17 Jan 00	727,200	770,400	1,016,640	12.06	17.98	329.49
18 Jan 00	696,960	768,960	1,019,520	13.40	17.98	325.71
19 Jan 00	728,640	768,960	1,016,640	12.06	18.56	324.45
20 Jan 00	728,640	767,520	1,028,160	11.39	18.56	332.01
21 Jan 00	727,200	768,960	1,015,200	11.39	18.56	323.82
22 Jan 00	728,640	767,520	1,016,640	12.06	19.14	328.86
23 Jan 00	728,640	768,960	1,018,080	11.39	18.56	330.75
24 Jan 00	724,320	768,960	1,035,360	11.39	18.56	338.94
25 Jan 00	721,440	770,400	1,052,640	11.39	19.14	342.09

Date	RO Product Flow, GPD	NF Product Flow, GPD	EDR Product Flow, GPD	RO Product TDS, mg/L	NF Product TDS, mg/L	EDR Product TDS, mg/L
26 Jan 00	570,240	671,040	963,360	24.12	51.62	399.42
27 Jan 00	485,280	768,960	1,052,640	22.78	19.72	358.47
28 Jan 00	728,640	550,080	1,010,880	15.41	37.12	376.74
29 Jan 00	728,640	767,520	1,054,080	14.74	44.08	343.35
30 Jan 00	727,200	767,520	1,048,320	14.07	33.64	344.61
31 Jan 00	728,640	607,680	1,051,200	14.07	26.68	347.13
01 Feb 00	728,640	767,520	1,052,640	13.40	23.20	345.87
02 Feb 00	727,200	768,960	1,052,640	12.73	24.94	345.87
03 Feb 00	743,040	767,520	1,049,760	12.06	27.26	345.24
04 Feb 00	727,200	764,640	1,051,200	12.06	27.84	346.50
05 Feb 00	727,200	767,520	306,720	11.39	27.26	728.91
06 Feb 00	731,520	770,400	695,520	11.39	25.52	544.32
07 Feb 00	607,680	637,920	920,160	22.11	42.34	456.12
08 Feb 00	696,960	698,400	992,160	16.08	23.78	381.78
09 Feb 00	732,960	774,720	244,800	12.73	22.62	383.67
10 Feb 00	732,960	771,840	177,120	12.06	21.46	447.93
11 Feb 00	727,200	768,960	953,280	11.39	20.88	754.74
12 Feb 00	728,640	767,520	1,051,200	11.39	20.88	359.10
13 Feb 00	727,200	767,520	1,051,200	11.39	20.30	366.03
14 Feb 00	728,640	766,080	1,059,840	11.39	20.30	369.81
15 Feb 00	727,200	768,960	1,015,200	11.39	20.30	393.12
16 Feb 00	732,960	771,840	149,760	11.39	20.30	407.61
17 Feb 00	476,640	773,280	208,800	28.14	19.72	467.46
18 Feb 00	273,600	766,080	999,360	48.24	19.72	1151.64
19 Feb 00	698,400	764,640	1,046,880	18.09	19.72	372.96
20 Feb 00	588,960	767,520	1,056,960	20.10	19.72	336.42
21 Feb 00	0	767,520	1,010,880	67.00	19.14	356.58
22 Feb 00	0	767,520	734,400	67.00	19.14	1120.14
23 Feb 00	213,120	767,520	1,006,560	52.26	19.14	466.83
24 Feb 00	727,200	768,960	135,360	14.74	19.14	825.30
25 Feb 00	728,640	766,080	702,720	14.74	19.72	531.72
26 Feb 00	727,200	734,400	1,002,240	13.40	19.72	359.10
27 Feb 00	727,200	766,080	1,049,760	12.73	19.14	351.54
28 Feb 00	514,080	511,200	483,840	20.77	59.74	659.61

DESALINATION EQUIPMENT ENERGY AND CHEMICAL FEEDS

Relevant Presentation	Figure 4.2	Figure 4.2	Figure 4.2	Figure 4.3	Figure 4.4	Figure 4.5	Figure 4.6
Date	RO Unit Energy kWh/kgal	NF Energy kWh/kgal	EDR Energy kWh/kgal	RO Antiscalant gal/day	NF Antiscalant gal/day	EDR Antiscalant gal/day	EDR Acid gal/day
1 Mar 99	2.33	1.80	1.26	6.00	3.10	0.30	22.20
2 Mar 99	2.32	0.00	1.24	6.10	0.00	0.20	22.40
3 Mar 99	3.01	0.00	1.24	4.60	0.00	0.20	22.30
4 Mar 99	3.51	1.92	1.25	2.80	2.60	0.30	22.40
5 Mar 99	0.00	1.90	2.08	0.00	4.80	0.20	22.00
6 Mar 99	0.00	1.91	1.25	0.00	4.70	0.20	22.50
7 Mar 99	0.00	1.81	1.20	0.00	4.60	0.30	21.50
8 Mar 99	0.00	1.98	1.27	2.20	5.10	0.20	23.40
9 Mar 99	1.56	0.00	1.23	3.30	2.50	0.20	14.50
10 Mar 99	3.28	1.92	1.31	2.50	1.60	0.00	8.00
11 Mar 99	0.94	1.88	1.25	6.10	4.90	0.00	13.50
12 Mar 99	2.29	1.90	1.25	6.00	4.90	0.00	22.60
13 Mar 99	2.32	1.90	1.26	6.00	4.80	0.00	22.50
14 Mar 99	2.32	1.90	1.26	6.00	4.90	0.00	22.40
15 Mar 99	2.33	1.90	1.24	6.10	4.90	0.00	22.70
16 Mar 99	2.33	1.91	1.24	6.00	4.80	0.10	20.50
17 Mar 99	2.32	1.90	1.25	6.10	4.90	0.20	17.80
18 Mar 99	2.28	1.92	1.27	5.90	4.50	0.20	22.40
19 Mar 99	2.32	1.90	1.31	6.00	4.80	0.20	21.90
20 Mar 99	2.32	1.90	1.25	6.10	4.80	0.20	16.60
21 Mar 99	2.33	1.90	1.27	6.10	4.90	0.20	22.50
22 Mar 99	2.32	1.90	1.25	6.10	4.80	0.30	22.70
23 Mar 99	2.32	1.90	1.26	6.10	4.90	0.10	22.40
24 Mar 99	2.36	1.88	1.25	4.70	4.10	0.20	22.60
25 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26 Mar 99	0.16	0.13	0.08	0.30	0.30	0.00	1.10
27 Mar 99	2.42	2.01	1.34	6.40	4.90	0.20	23.40
28 Mar 99	2.32	1.90	1.28	6.00	4.80	0.20	22.30
29 Mar 99	3.29	2.68	1.82	8.60	6.90	0.40	31.90
30 Mar 99	2.32	1.90	13.13	6.10	4.80	0.20	22.40
31 Mar 99	2.25	1.85	1.23	4.20	3.40	0.20	15.30
1 Apr 99	2.13	1.89	1.29	3.90	3.10	0.10	15.30
2 Apr 99	2.32	1.90	1.27	6.10	4.90	0.30	22.50
3 Apr 99	2.30	1.89	1.24	4.60	3.70	0.20	17.30
4 Apr 99	2.42	2.00	1.35	3.90	3.10	0.10	14.80
5 Apr 99	2.32	1.88	1.26	6.10	4.90	0.30	22.40
6 Apr 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Apr 99	0.36	0.30	0.20	1.00	0.70	0.10	3.50
8 Apr 99	2.41	1.98	1.33	6.30	5.10	0.20	23.50
9 Apr 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Apr 99	2.42	1.98	1.34	6.30	5.10	0.20	23.40
11 Apr 99	2.32	1.90	1.27	6.10	4.90	0.20	22.69
12 Apr 99	2.32	1.91	1.27	6.10	4.90	0.10	22.60

Date	RO Unit Energy kWh/kgal	NF Energy kWh/kgal	EDR Energy kWh/kgal	RO Antiscalant gal/day	NF Antiscalant gal/day	EDR Antiscalant gal/day	EDR Acid gal/day
13 Apr 99	2.32	1.87	1.28	6.10	4.38	0.00	22.40
14 Apr 99	2.32	1.91	1.27	6.10	4.80	0.00	15.80
15 Apr 99	2.39	1.90	1.30	5.90	4.70	0.20	11.50
16 Apr 99	2.32	1.90	1.27	6.10	4.90	0.20	22.40
17 Apr 99	2.33	1.90	1.29	6.00	4.70	0.20	22.30
18 Apr 99	2.33	1.92	1.28	6.10	4.90	0.30	22.20
19 Apr 99	2.32	1.91	1.27	6.00	4.80	0.20	22.40
20 Apr 99	2.33	1.92	1.27	6.00	4.80	0.20	22.30
21 Apr 99	2.31	1.90	1.27	6.00	4.80	0.30	22.30
22 Apr 99	2.26	1.91	1.27	6.00	4.90	0.20	22.40
23 Apr 99	2.29	1.94	1.29	5.80	4.60	0.30	22.40
24 Apr 99	2.31	1.90	1.31	6.10	4.80	0.20	22.50
25 Apr 99	2.32	1.91	1.32	6.00	4.90	0.20	22.30
26 Apr 99	2.20	1.81	1.21	5.80	4.60	0.30	21.40
27 Apr 99	2.41	1.97	1.33	6.40	5.10	0.10	14.00
28 Apr 99	2.32	1.90	1.28	6.00	4.90	0.30	22.40
29 Apr 99	3.32	2.69	1.85	8.40	6.60	0.30	31.90
30 Apr 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 May 99	2.31	1.89	1.27	6.10	4.80	0.30	22.40
2 May 99	2.32	1.90	1.30	6.00	4.90	0.20	22.40
3 May 99	2.31	1.91	1.28	6.10	4.80	0.20	22.50
4 May 99	2.32	1.90	1.28	6.10	4.90	0.30	22.30
5 May 99	2.33	1.90	1.28	6.00	4.90	0.20	22.50
6 May 99	2.32	1.95	1.26	6.10	4.70	0.30	22.40
7 May 99	2.25	1.81	1.17	5.00	4.00	0.20	20.60
8 May 99	2.42	1.98	1.34	6.20	5.00	0.20	17.60
9 May 99	2.22	1.82	1.26	5.90	4.60	0.10	13.80
10 May 99	2.42	1.99	1.32	6.20	5.00	0.30	23.20
11 May 99	2.32	1.90	1.26	6.10	4.90	0.20	22.30
12 May 99	2.32	1.91	1.27	6.00	4.80	0.20	22.40
13 May 99	2.34	1.98	1.27	5.40	3.80	0.30	22.40
14 May 99	2.33	1.90	1.27	6.00	4.80	0.20	22.20
15 May 99	2.33	1.91	1.28	6.00	4.90	0.30	22.40
16 May 99	2.27	1.91	1.28	5.90	4.70	0.20	22.30
17 May 99	2.31	1.89	1.28	6.10	4.90	0.00	22.30
18 May 99	2.35	1.88	1.24	5.60	4.40	0.10	21.90
19 May 99	2.31	1.90	1.25	6.10	4.90	0.20	20.80
20 May 99	2.30	1.91	1.25	5.50	4.40	0.20	21.70
21 May 99	2.24	1.88	1.26	5.40	4.20	0.30	22.30
22 May 99	2.32	1.90	1.27	6.00	4.80	0.20	22.40
23 May 99	2.32	1.91	1.26	6.10	4.90	0.30	22.30
24 May 99	2.32	1.91	1.29	6.00	4.70	0.20	21.70
25 May 99	2.31	1.91	1.26	6.00	4.90	0.20	21.60
26 May 99	2.25	1.78	1.19	5.70	4.60	0.20	20.90
27 May 99	2.37	1.95	1.32	5.90	4.70	0.30	22.20
28 May 99	2.31	1.90	1.28	6.10	4.80	0.20	22.40
29 May 99	3.29	2.70	1.83	8.50	6.80	0.30	31.50

Date	RO Unit Energy kWh/kgal	NF Energy kWh/kgal	EDR Energy kWh/kgal	RO Antiscalant gal/day	NF Antiscalant gal/day	EDR Antiscalant gal/day	EDR Acid gal/day
30 May 99	2.32	1.90	1.29	6.10	4.90	0.30	22.20
31 May 99	2.33	1.90	1.28	6.00	4.80	0.20	22.30
1 Jun 99	2.32	1.90	1.25	6.00	4.80	0.30	22.30
2 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Jun 99	2.34	1.93	1.29	5.60	4.40	0.20	20.80
4 Jun 99	2.35	1.81	1.29	4.60	3.40	0.30	22.20
5 Jun 99	2.32	1.92	1.29	5.80	2.50	0.20	21.50
6 Jun 99	0.00	0.00	1.31	6.00	19.90	1.10	108.40
7 Jun 99	2.32	1.91	1.30	6.10	4.80	0.30	22.40
8 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 Jun 99	0.00	0.00	1.33	6.00	14.00	0.50	54.30
10 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 Jun 99	2.32	1.90	1.29	6.00	4.80	0.00	22.40
12 Jun 99	2.32	1.91	1.30	6.10	4.80	0.00	22.30
13 Jun 99	2.32	1.90	1.27	5.90	4.80	0.10	21.70
14 Jun 99	2.30	1.90	1.29	6.00	4.80	0.20	22.20
15 Jun 99	2.40	1.90	1.28	5.50	4.80	0.30	22.30
16 Jun 99	2.32	1.84	1.30	6.00	2.10	0.20	22.40
17 Jun 99	2.32	2.06	1.30	6.10	2.40	0.20	22.20
18 Jun 99	2.32	1.90	1.27	6.00	4.90	0.30	22.40
19 Jun 99	2.31	1.89	1.29	4.70	4.80	0.20	22.30
20 Jun 99	2.32	1.91	1.27	6.10	4.70	0.20	21.70
21 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Jun 99	2.32	1.90	1.30	6.10	4.80	0.30	22.30
23 Jun 99	2.32	1.90	1.29	5.90	4.80	0.20	22.30
24 Jun 99	2.32	1.91	1.30	6.10	4.80	0.20	22.40
25 Jun 99	2.32	1.91	1.31	6.10	4.80	0.30	22.10
26 Jun 99	2.32	1.90	1.32	6.00	4.80	0.20	22.30
27 Jun 99	2.31	1.91	1.34	5.90	4.70	0.20	22.30
28 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 Jun 99	2.34	2.07	1.31	3.50	2.50	0.10	11.40
30 Jun 99	0.00	0.00	0.00	0.00	0.00	10.90	0.00
1 Jul 99	2.32	1.90	1.29	6.10	4.80	0.20	22.30
2 Jul 99	2.32	1.90	1.27	6.00	48.00	0.30	20.30
3 Jul 99	2.32	1.90	1.27	6.00	4.80	0.20	22.00
4 Jul 99	2.31	1.90	1.29	6.00	4.80	0.20	22.20
5 Jul 99	2.32	1.90	1.33	6.10	4.70	0.20	21.90
6 Jul 99	2.32	1.90	1.28	6.00	0.90	0.30	22.30
7 Jul 99	2.21	1.90	1.27	4.10	4.80	0.20	22.30
8 Jul 99	2.32	1.90	1.28	6.00	4.40	0.20	22.20
9 Jul 99	2.32	1.91	1.27	6.10	3.70	0.30	22.20
10 Jul 99	2.33	1.90	1.28	6.00	3.80	0.20	22.20
11 Jul 99	2.31	1.89	1.34	5.60	2.60	0.20	20.90
12 Jul 99	2.28	1.96	1.28	4.50	2.10	0.20	22.00
13 Jul 99	2.34	1.92	1.24	3.90	3.30	0.20	21.60
14 Jul 99	2.32	1.90	1.29	3.90	3.30	0.20	22.00
15 Jul 99	2.31	1.96	1.28	3.50	2.40	0.10	22.20

Date	RO Unit Energy kWh/kgal	NF Energy kWh/kgal	EDR Energy kWh/kgal	RO Antiscalant gal/day	NF Antiscalant gal/day	EDR Antiscalant gal/day	EDR Acid gal/day
16 Jul 99	2.32	1.94	1.32	3.60	2.70	0.30	20.70
17 Jul 99	2.32	1.90	1.32	3.40	3.10	0.20	21.60
18 Jul 99	2.33	1.91	1.26	3.60	3.10	0.20	22.20
19 Jul 99	2.32	1.91	1.26	3.50	3.20	0.20	22.30
20 Jul 99	2.32	1.91	1.26	3.50	3.10	0.30	22.20
21 Jul 99	2.32	1.90	1.47	3.50	3.20	0.10	13.70
22 Jul 99	2.30	1.92	1.33	2.30	2.80	0.20	20.00
23 Jul 99	2.35	1.90	1.23	3.70	3.30	0.20	22.30
24 Jul 99	2.32	1.90	1.24	3.70	3.10	0.10	22.20
25 Jul 99	2.32	1.90	0.95	3.80	3.10	0.00	4.30
26 Jul 99	2.32	1.90	1.40	3.90	3.20	0.00	11.00
27 Jul 99	2.32	1.90	1.28	3.30	2.80	0.00	22.50
28 Jul 99	2.32	1.90	1.28	3.80	3.20	0.00	22.30
29 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 Jul 99	2.31	1.85	1.29	3.70	2.90	0.00	22.30
31 Jul 99	2.32	1.90	1.26	3.90	3.10	0.00	21.60
1 Aug 99	2.32	1.90	1.27	3.80	3.10	0.20	22.30
2 Aug 99	2.32	1.90	1.27	3.80	3.30	0.20	22.20
3 Aug 99	2.32	1.90	1.31	3.80	3.20	0.30	22.10
4 Aug 99	2.38	1.89	1.23	3.80	3.10	0.10	22.00
5 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 Aug 99	2.32	1.91	1.26	3.70	3.30	0.30	22.30
7 Aug 99	2.32	1.90	1.26	3.90	3.10	0.20	22.20
8 Aug 99	2.32	1.90	1.27	3.80	3.20	0.20	22.20
9 Aug 99	2.32	1.90	1.25	3.80	3.10	0.30	22.40
10 Aug 99	2.33	1.90	1.26	3.80	3.30	0.20	21.30
11 Aug 99	2.25	1.90	1.26	2.70	3.10	0.30	20.90
12 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 Aug 99	2.33	1.91	1.28	3.80	3.20	0.10	20.00
14 Aug 99	2.32	1.91	1.29	3.90	3.20	0.20	20.80
15 Aug 99	2.31	1.90	1.29	3.80	3.20	0.30	20.90
16 Aug 99	2.32	1.90	1.29	3.70	3.10	0.20	20.90
17 Aug 99	2.32	1.90	1.26	3.70	3.20	0.20	20.30
18 Aug 99	2.40	1.85	1.25	3.30	2.80	0.20	14.10
19 Aug 99	2.32	1.90	1.30	3.80	3.20	0.20	20.80
20 Aug 99	2.32	1.90	1.30	3.80	3.10	0.20	20.90
21 Aug 99	2.32	1.90	1.31	3.80	3.30	0.20	20.90
22 Aug 99	2.32	1.90	1.35	3.70	3.10	0.20	20.40
23 Aug 99	2.32	1.91	1.32	3.90	3.20	0.30	20.90
24 Aug 99	2.32	1.90	1.32	3.80	3.20	0.20	21.00
25 Aug 99	2.32	1.90	1.32	3.80	3.20	0.20	20.90
26 Aug 99	2.31	1.90	1.34	3.80	3.30	0.20	20.80
27 Aug 99	2.32	1.90	1.32	3.80	3.10	0.10	19.10
28 Aug 99	2.32	1.90	1.29	3.80	3.20	0.10	20.80
29 Aug 99	2.32	1.90	1.29	3.80	3.10	0.20	20.80
30 Aug 99	2.32	1.91	1.27	3.80	3.30	0.10	21.00
31 Aug 99	2.32	1.90	1.29	3.90	3.10	0.10	12.80

Date	RO Unit Energy kWh/kgal	NF Energy kWh/kgal	EDR Energy kWh/kgal	RO Antiscalant gal/day	NF Antiscalant gal/day	EDR Antiscalant gal/day	EDR Acid gal/day
1 Sep 99	2.32	1.76	1.33	3.80	1.00	0.20	20.90
2 Sep 99	2.32	2.22	1.33	3.70	1.30	0.20	20.90
3 Sep 99	2.32	1.90	1.33	3.80	3.20	0.10	20.70
4 Sep 99	2.32	1.90	1.34	3.80	3.20	0.20	20.90
5 Sep 99	2.32	1.90	1.35	3.80	3.10	0.10	20.90
6 Sep 99	2.31	1.90	1.36	3.80	3.20	0.20	20.80
7 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 Sep 99	2.21	1.91	1.28	1.70	3.30	0.00	196.00
9 Sep 99	2.24	1.90	1.29	2.40	3.10	0.20	20.70
10 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 Sep 99	2.35	1.92	1.36	2.80	3.20	0.20	20.50
12 Sep 99	2.32	1.90	1.34	2.90	3.10	0.20	21.10
13 Sep 99	2.32	1.90	1.33	2.80	3.20	0.20	20.90
14 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Sep 99	0.02	0.02	0.02	0.10	0.10	0.00	0.00
16 Sep 99	2.32	1.91	1.35	2.30	2.90	0.20	15.60
17 Sep 99	2.34	1.90	1.26	2.10	3.10	0.20	16.60
18 Sep 99	2.32	1.90	1.27	3.00	3.20	0.10	16.50
19 Sep 99	2.32	1.90	1.26	2.80	3.20	0.20	16.60
20 Sep 99	2.32	1.90	1.26	2.80	3.20	0.20	16.20
21 Sep 99	2.32	1.90	1.39	2.80	3.20	0.10	10.90
22 Sep 99	2.32	1.90	1.35	2.90	3.20	0.20	15.60
23 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24 Sep 99	2.31	1.90	1.33	2.20	3.30	0.10	14.80
25 Sep 99	2.31	1.90	1.30	2.90	3.10	0.00	15.40
26 Sep 99	2.32	1.90	1.31	2.80	3.20	0.00	15.40
27 Sep 99	2.31	1.84	1.31	2.90	1.60	0.00	15.40
28 Sep 99	2.31	1.97	1.32	2.90	1.30	0.10	15.60
29 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Oct 99	2.32	1.90	1.32	2.80	3.20	0.00	15.20
2 Oct 99	2.32	1.90	1.40	2.90	3.10	0.00	15.50
3 Oct 99	2.32	1.90	1.30	2.80	3.30	0.00	15.70
4 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Oct 99	0.00	0.00	0.01	0.00	0.00	0.00	3.10
6 Oct 99	0.68	0.53	0.24	0.80	0.90	0.00	2.40
7 Oct 99	2.32	1.90	1.37	2.80	3.20	0.10	15.30
8 Oct 99	2.32	1.90	1.39	2.90	3.10	0.10	15.60
9 Oct 99	2.31	1.90	1.39	2.80	3.20	0.10	16.30
10 Oct 99	2.32	1.90	1.39	2.80	3.10	0.00	16.30
11 Oct 99	2.32	1.91	1.33	2.80	3.30	0.20	15.80
12 Oct 99	2.32	1.91	1.36	2.90	3.00	0.00	5.10
13 Oct 99	2.32	1.90	1.15	2.80	3.20	0.00	3.60
14 Oct 99	1.61	1.90	1.23	0.90	3.10	0.10	8.70
15 Oct 99	0.00	1.90	1.27	0.00	3.10	0.00	8.10
16 Oct 99	0.00	1.87	1.34	0.00	1.50	0.00	8.20
17 Oct 99	0.00	2.04	1.32	0.60	1.40	0.00	6.40

Date	RO Unit Energy kWh/kgal	NF Energy kWh/kgal	EDR Energy kWh/kgal	RO Antiscalant gal/day	NF Antiscalant gal/day	EDR Antiscalant gal/day	EDR Acid gal/day
18 Oct 99	0.00	1.90	1.34	0.90	2.80	0.00	2.20
19 Oct 99	0.00	1.90	1.27	0.00	3.20	0.00	6.50
20 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21 Oct 99	1.61	0.34	0.21	1.00	0.60	0.00	1.10
22 Oct 99	2.28	1.87	1.28	2.80	3.20	0.00	5.00
23 Oct 99	2.32	1.90	1.31	2.90	3.10	0.10	5.10
24 Oct 99	2.32	1.90	1.31	2.80	3.20	0.10	5.00
25 Oct 99	2.32	1.90	1.29	2.80	3.30	0.10	4.70
26 Oct 99	2.32	1.90	1.27	2.90	3.10	0.10	2.80
27 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28 Oct 99	2.31	1.90	1.28	2.80	3.30	0.00	2.90
29 Oct 99	2.30	1.89	1.30	2.90	3.10	0.00	1.50
30 Oct 99	2.31	1.89	1.30	2.80	3.20	0.00	0.20
31 Oct 99	2.42	1.98	1.33	2.90	3.20	0.00	2.40
1 Nov 99	2.25	1.84	1.25	2.90	3.10	0.10	1.70
2 Nov 99	2.43	1.98	1.31	1.90	2.20	0.10	1.80
3 Nov 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Nov 99	2.32	1.90	1.33	2.80	3.20	0.10	1.80
5 Nov 99	2.32	1.87	1.34	2.90	2.20	0.10	1.80
6 Nov 99	2.36	1.93	1.33	2.80	3.00	0.10	1.80
7 Nov 99	2.32	1.90	1.30	2.80	3.30	0.10	1.60
8 Nov 99	2.32	1.90	1.31	3.00	3.20	0.10	1.90
9 Nov 99	2.31	1.89	1.27	2.80	3.20	0.10	1.70
10 Nov 99	2.28	1.82	1.25	2.50	2.60	0.10	1.70
11 Nov 99	2.32	1.90	1.29	2.90	3.00	0.10	1.60
12 Nov 99	2.25	0.19	1.29	2.70	2.80	0.10	1.90
13 Nov 99	2.32	1.90	1.31	2.90	3.00	0.10	1.70
14 Nov 99	2.31	1.90	1.32	2.90	2.80	0.00	1.60
15 Nov 99	2.24	1.89	1.27	1.90	2.90	0.10	1.70
16 Nov 99	2.38	1.85	1.40	2.80	3.00	0.00	0.50
17 Nov 99	2.27	1.91	0.00	2.80	2.80	0.00	0.00
18 Nov 99	2.32	1.90	1.62	3.00	3.00	0.00	0.60
19 Nov 99	2.31	1.90	1.29	2.90	2.90	0.10	1.80
20 Nov 99	2.31	1.89	1.26	2.80	2.90	0.10	1.80
21 Nov 99	2.31	1.90	1.29	2.90	3.00	0.20	1.80
22 Nov 99	2.32	1.90	0.93	2.90	2.90	0.20	1.90
23 Nov 99	2.32	1.95	1.33	2.90	2.10	0.20	1.90
24 Nov 99	2.32	1.91	1.34	2.90	3.00	0.20	1.80
25 Nov 99	2.32	1.90	1.35	2.90	2.90	0.20	1.80
26 Nov 99	2.32	1.90	1.35	2.80	3.00	0.10	1.70
27 Nov 99	2.32	1.90	1.35	2.90	2.90	0.20	1.70
28 Nov 99	2.32	1.90	1.34	2.90	3.00	0.10	1.90
29 Nov 99	2.32	1.90	1.30	2.80	2.90	0.20	1.90
30 Nov 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Dec 99	2.32	1.90	1.29	2.90	3.00	0.10	1.90
2 Dec 99	2.31	1.89	1.29	2.90	2.90	0.20	1.80
3 Dec 99	2.27	1.87	1.33	2.80	2.90	0.10	2.00

Date	RO Unit Energy kWh/kgal	NF Energy kWh/kgal	EDR Energy kWh/kgal	RO Antiscalant gal/day	NF Antiscalant gal/day	EDR Antiscalant gal/day	EDR Acid gal/day
4 Dec 99	2.32	1.90	1.32	3.00	3.00	0.10	1.80
5 Dec 99	2.32	1.91	1.33	2.80	2.90	0.20	1.80
6 Dec 99	2.32	1.86	1.32	2.90	1.60	0.20	1.90
7 Dec 99	2.32	1.95	1.29	2.90	2.00	0.00	0.60
8 Dec 99	2.35	1.94	1.38	2.90	3.00	0.10	0.50
9 Dec 99	2.32	1.90	1.27	2.90	3.00	0.20	2.00
10 Dec 99	2.32	1.91	1.33	2.90	2.90	0.20	2.20
11 Dec 99	2.32	1.90	2.69	2.80	3.00	0.20	2.40
12 Dec 99	2.32	1.90	2.70	3.00	3.00	0.20	2.20
13 Dec 99	2.27	1.90	1.35	2.00	2.90	0.30	2.20
14 Dec 99	2.46	1.90	1.36	2.30	3.10	0.20	2.30
15 Dec 99	2.32	1.90	1.36	3.00	2.90	0.10	2.10
16 Dec 99	2.32	1.90	1.51	2.80	2.90	0.00	0.50
17 Dec 99	2.32	1.90	1.39	2.90	3.00	0.10	7.00
18 Dec 99	2.32	1.90	1.27	2.90	2.93	0.30	20.30
19 Dec 99	2.32	1.90	1.29	2.90	3.00	0.20	20.60
20 Dec 99	2.32	2.00	1.25	2.80	2.30	0.10	21.10
21 Dec 99	0.00	1.76	0.00	0.00	0.00	0.00	0.00
22 Dec 99	2.32	0.00	1.28	2.90	3.00	0.30	17.70
23 Dec 99	2.32	4.61	1.28	2.80	1.10	0.20	19.40
24 Dec 99	2.32	0.00	1.30	2.90	0.00	0.20	19.40
25 Dec 99	2.32	0.00	1.29	2.80	0.00	0.30	19.40
26 Dec 99	2.33	0.00	1.26	2.90	0.00	0.20	19.10
27 Dec 99	2.34	0.00	1.26	2.90	0.00	0.30	17.70
28 Dec 99	2.34	2.18	1.29	0.90	0.80	0.20	15.30
29 Dec 99	2.45	1.90	1.28	1.30	3.00	0.20	14.20
30 Dec 99	2.32	1.94	1.27	2.60	2.70	0.30	13.00
31 Dec 99	0.00	1.56	0.00	0.00	3.50	0.00	0.00
1 Jan 00	10.04	2.25	9.36	12.60	2.30	2.40	99.90
2 Jan 00	2.32	1.90	1.29	2.80	3.00	0.30	13.90
3 Jan 00	2.35	1.94	1.29	2.40	2.50	0.20	11.90
4 Jan 00	2.32	1.90	1.29	2.90	3.00	0.20	14.40
5 Jan 00	2.32	1.90	12.96	2.90	3.00	0.60	14.50
6 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Jan 00	2.29	1.86	1.25	2.60	2.80	0.20	7.50
8 Jan 00	2.42	19.96	1.33	3.10	3.10	0.30	2.00
9 Jan 00	2.22	1.82	1.23	2.70	2.90	0.20	10.90
10 Jan 00	2.42	2.13	1.31	3.00	2.50	0.30	14.90
11 Jan 00	2.25	1.90	1.25	2.00	3.00	0.20	13.10
12 Jan 00	2.32	1.90	1.25	2.80	3.00	0.20	11.90
13 Jan 00	2.32	1.90	1.24	2.90	3.00	0.20	9.20
14 Jan 00	2.32	1.90	1.24	2.90	2.90	0.30	10.70
15 Jan 00	2.32	1.90	1.23	2.90	3.00	0.20	10.60
16 Jan 00	2.31	1.90	1.23	2.80	2.80	0.20	10.40
17 Jan 00	2.32	1.90	1.22	2.90	3.00	0.30	10.50
18 Jan 00	2.39	1.90	1.23	2.80	2.90	0.10	10.50
19 Jan 00	2.32	1.90	1.23	2.90	3.00	0.00	10.50

Date	RO Unit Energy kWh/kgal	NF Energy kWh/kgal	EDR Energy kWh/kgal	RO Antiscalant gal/day	NF Antiscalant gal/day	EDR Antiscalant gal/day	EDR Acid gal/day
20 Jan 00	2.32	1.91	1.23	2.90	2.90	0.00	10.70
21 Jan 00	2.32	1.90	1.23	2.80	3.00	0.00	10.50
22 Jan 00	2.32	1.90	1.23	2.80	2.80	0.00	10.20
23 Jan 00	2.32	1.90	1.22	3.00	2.80	0.00	10.30
24 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25 Jan 00	2.33	1.89	1.29	2.90	2.30	0.00	9.00
26 Jan 00	2.17	1.76	1.26	2.00	2.00	0.10	7.40
27 Jan 00	2.38	1.98	1.36	2.00	2.40	0.20	8.90
28 Jan 00	2.32	1.90	1.31	2.90	1.70	0.30	8.20
29 Jan 00	3.28	2.70	1.84	4.10	3.30	0.30	11.80
30 Jan 00	2.32	1.90	1.30	2.90	2.50	0.20	8.20
31 Jan 00	2.32	1.90	1.30	2.80	1.80	0.30	8.20
1 Feb 00	2.32	1.90	1.30	3.00	2.30	0.20	8.30
2 Feb 00	2.32	1.90	1.27	2.80	2.30	0.20	8.20
3 Feb 00	2.27	1.90	1.31	2.90	2.30	0.30	8.80
4 Feb 00	2.32	1.91	1.31	2.90	2.50	0.20	8.60
5 Feb 00	2.32	1.90	1.14	2.90	2.30	0.10	2.20
6 Feb 00	2.31	1.90	1.33	2.80	2.30	0.10	6.00
7 Feb 00	2.33	1.86	1.26	2.40	2.00	0.20	5.30
8 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 Feb 00	2.30	1.88	5.56	2.90	2.30	0.20	4.30
10 Feb 00	2.30	1.89	7.68	2.90	2.40	0.20	10.90
11 Feb 00	2.32	1.89	1.36	2.80	2.40	0.30	13.30
12 Feb 00	2.31	1.90	1.30	2.80	2.30	0.20	14.00
13 Feb 00	2.32	1.90	1.30	3.00	2.30	0.20	13.90
14 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Feb 00	2.32	1.90	1.34	2.80	2.30	0.30	14.00
16 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 Feb 00	0.00	0.27	0.91	0.00	0.40	0.00	2.20
18 Feb 00	2.24	1.90	1.36	1.00	2.30	0.20	14.00
19 Feb 00	2.33	1.91	1.30	2.80	2.40	0.30	14.00
20 Feb 00	2.19	1.90	1.29	2.30	2.30	0.20	14.00
21 Feb 00	0.00	1.90	1.25	0.00	2.30	0.20	13.10
22 Feb 00	0.00	1.90	1.32	0.00	2.30	0.20	10.30
23 Feb 00	2.64	1.90	1.34	0.90	2.40	0.30	14.30
24 Feb 00	2.32	1.88	1.77	3.00	2.40	0.00	1.80
25 Feb 00	2.31	1.90	1.33	2.90	2.30	0.20	9.80
26 Feb 00	2.32	1.91	1.35	2.80	2.20	0.20	14.00
27 Feb 00	2.32	1.90	1.30	2.90	2.40	0.20	14.00
28 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

PLANT CHEMICAL CONSUMPTION

Relevant Presentation	Figure 4.7	Figure 4.7	Figure 4.7	Figure 4.8	Figure 4.8
Date	Sodium Hydroxide gals/day	Sodium Hypochlorite gals/day	Sodium Bisulfite gals/day	Ammonia gals/day	Hydrofluosilicic Acid gals/day
15 Mar 99	0.0	0.0	0.0	0.0	0.0
16 Mar 99	0.0	0.0	0.0	0.0	0.0
17 Mar 99	0.0	0.0	0.0	0.0	0.0
18 Mar 99	0.0	0.0	0.0	0.0	0.0
19 Mar 99	0.0	0.0	0.0	0.0	0.0
20 Mar 99	0.0	0.0	0.0	0.0	0.0
21 Mar 99	0.0	0.0	0.0	0.0	0.0
22 Mar 99	0.0	0.0	0.0	0.0	0.0
23 Mar 99	0.0	0.0	0.0	0.0	0.0
24 Mar 99	0.0	0.0	0.0	0.0	0.0
25 Mar 99	0.0	0.0	0.0	0.0	0.0
26 Mar 99	0.0	0.0	0.0	0.0	0.0
27 Mar 99	106.0	62.0	44.2	12.7	9.2
28 Mar 99	112.3	60.8	43.0	12.4	9.1
29 Mar 99	113.0	60.8	42.9	12.5	9.0
30 Mar 99	103.7	60.1	43.0	12.2	9.0
31 Mar 99	80.0	40.5	29.8	8.3	6.5
01 Apr 99	72.4	38.0	28.9	7.8	5.8
02 Apr 99	110.1	59.9	43.1	12.2	9.1
03 Apr 99	81.9	44.7	32.7	9.2	7.0
04 Apr 99	54.3	39.7	29.1	8.2	6.2
05 Apr 99	91.0	59.8	43.0	12.3	9.0
06 Apr 99	0.0	0.0	0.0	0.0	0.0
07 Apr 99	15.2	9.9	6.8	2.0	1.5
08 Apr 99	111.0	63.1	45.0	13.0	0.0
09 Apr 99	0.0	0.0	0.0	0.0	0.0
10 Apr 99	103.8	64.3	45.1	13.2	9.4
11 Apr 99	96.9	62.8	43.3	12.9	9.2
12 Apr 99	101.0	62.7	43.3	12.9	9.1
13 Apr 99	98.6	61.8	43.0	12.7	8.9
14 Apr 99	82.2	56.6	38.4	11.6	9.0
15 Apr 99	71.0	51.2	34.4	10.4	8.7
16 Apr 99	86.5	62.3	43.0	12.8	8.9
17 Apr 99	75.7	62.4	43.0	12.7	8.8
18 Apr 99	77.8	62.3	42.9	12.7	8.7
19 Apr 99	74.9	61.7	43.0	12.7	8.9
20 Apr 99	38.5	36.4	25.0	8.0	5.1
21 Apr 99	76.4	60.8	43.1	13.9	8.9
22 Apr 99	95.2	61.4	42.8	14.6	8.8
23 Apr 99	94.4	60.7	41.6	15.4	8.6

Date	Sodium Hydroxide gals/day	Sodium Hypochlorite gals/day	Sodium Bisulfite gals/day	Ammonia gals/day	Hydrofluosilicic Acid gals/day
24 Apr 99	102.0	61.7	43.2	15.5	9.4
25 Apr 99	105.7	63.0	43.1	15.8	9.3
26 Apr 99	103.8	58.0	41.3	14.1	8.9
27 Apr 99	88.5	53.1	38.6	11.9	9.8
28 Apr 99	110.6	60.4	43.3	13.9	9.4
29 Apr 99	107.5	59.8	41.9	13.6	8.8
30 Apr 99	0.0	0.0	0.0	0.0	0.0
01 May 99	98.3	61.3	43.1	13.9	9.3
02 May 99	89.8	61.5	43.2	14.0	9.3
03 May 99	104.2	60.6	43.2	13.7	9.3
04 May 99	102.4	60.3	43.1	13.8	9.3
05 May 99	93.8	59.6	43.1	13.5	9.2
06 May 99	97.1	58.5	42.9	13.4	9.3
07 May 99	81.9	51.3	38.0	11.6	7.4
08 May 99	89.2	57.7	40.7	13.1	9.7
09 May 99	74.1	51.4	35.8	11.6	8.8
10 May 99	101.9	63.5	44.8	14.4	9.7
11 May 99	86.7	62.1	43.0	14.1	9.4
12 May 99	91.2	61.8	43.0	14.1	9.4
13 May 99	83.0	55.7	38.6	12.6	7.8
14 May 99	94.6	61.5	43.0	14.1	9.6
15 May 99	89.9	62.9	43.0	14.3	9.4
16 May 99	92.0	62.5	42.7	14.2	9.5
17 May 99	87.4	62.4	43.0	14.2	9.1
18 May 99	85.9	57.8	42.1	13.1	8.4
19 May 99	82.5	60.1	41.9	13.6	9.2
20 May 99	47.7	31.0	24.3	7.0	4.5
21 May 99	84.8	56.5	39.8	12.8	8.0
22 May 99	91.0	61.5	43.2	14.0	9.2
23 May 99	88.1	62.5	43.0	14.2	9.1
24 May 99	84.7	60.8	42.6	13.9	9.1
25 May 99	90.0	60.6	42.3	13.7	9.1
26 May 99	86.9	56.7	40.5	12.9	8.5
27 May 99	97.2	58.7	42.5	13.4	8.9
28 May 99	95.8	60.8	43.1	13.8	9.1
29 May 99	95.7	61.7	43.1	14.0	9.2
30 May 99	92.9	60.6	43.0	13.8	9.1
31 May 99	90.5	60.4	43.0	13.7	9.0
01 Jun 99	95.4	59.6	42.7	13.5	9.1
02 Jun 99	90.4	58.1	41.5	13.2	8.8
03 Jun 99	90.7	56.1	41.1	12.8	8.8
04 Jun 99	76.7	49.6	35.4	11.2	6.6
05 Jun 99	79.4	49.6	36.0	11.2	7.2
06 Jun 99	100.0	59.3	43.0	13.4	9.4
07 Jun 99	99.3	60.2	42.9	13.7	9.9

Date	Sodium Hydroxide gals/day	Sodium Hypochlorite gals/day	Sodium Bisulfite gals/day	Ammonia gals/day	Hydrofluosilicic Acid gals/day
08 Jun 99	91.4	52.0	37.8	11.8	9.3
09 Jun 99	90.4	52.9	37.3	12.0	10.6
10 Jun 99	99.6	59.0	41.4	13.4	10.1
11 Jun 99	92.1	61.8	42.9	14.0	10.6
12 Jun 99	91.1	61.7	42.9	14.0	10.6
13 Jun 99	101.9	61.8	42.5	14.0	10.5
14 Jun 99	98.7	62.5	42.6	14.2	10.5
15 Jun 99	97.8	60.9	41.5	13.9	10.0
16 Jun 99	4.5	49.6	35.1	11.2	6.8
17 Jun 99	78.3	51.0	35.4	11.6	7.0
18 Jun 99	102.8	60.9	42.9	13.8	10.4
19 Jun 99	90.4	57.5	39.8	13.2	9.0
20 Jun 99	100.5	61.9	42.5	14.0	10.5
21 Jun 99	0.0	0.0	0.0	0.0	0.0
22 Jun 99	96.2	63.0	42.8	14.4	10.5
23 Jun 99	93.5	63.3	42.8	14.5	10.6
24 Jun 99	95.1	63.2	42.8	14.6	10.6
25 Jun 99	95.5	63.0	42.7	14.3	10.5
26 Jun 99	94.9	63.0	42.8	14.3	10.5
27 Jun 99	97.0	63.2	42.7	14.4	10.3
28 Jun 99	0.0	0.0	0.0	0.0	0.0
29 Jun 99	39.5	33.1	23.7	7.4	6.2
30 Jun 99	70.4	59.1	42.8	13.4	10.6
01 Jul 99	72.5	58.4	42.9	13.3	10.7
02 Jul 99	71.9	57.0	41.5	12.9	10.7
03 Jul 99	74.8	58.9	42.6	13.4	10.7
04 Jul 99	75.2	61.3	42.8	13.8	10.6
05 Jul 99	76.7	61.1	42.7	13.9	10.7
06 Jul 99	76.6	62.1	42.9	14.1	10.6
07 Jul 99	71.4	56.5	38.6	12.8	8.8
08 Jul 99	76.0	62.5	42.8	14.1	10.8
09 Jul 99	78.9	62.6	42.7	14.2	10.8
10 Jul 99	78.8	62.7	42.8	14.2	10.8
11 Jul 99	75.1	58.2	37.8	13.2	9.7
12 Jul 99	70.5	56.4	36.4	12.7	8.8
13 Jul 99	77.4	61.8	41.7	13.9	10.4
14 Jul 99	82.6	62.4	42.7	14.1	10.6
15 Jul 99	73.6	56.0	38.5	12.7	8.6
16 Jul 99	74.4	54.4	37.4	12.3	8.7
17 Jul 99	86.3	62.7	42.3	14.3	10.6
18 Jul 99	86.9	63.2	42.4	14.3	10.5
19 Jul 99	89.6	63.5	42.6	14.6	10.7
20 Jul 99	93.1	66.2	42.7	14.5	10.7
21 Jul 99	79.3	52.3	41.2	12.0	10.3
22 Jul 99	78.8	49.8	42.0	11.3	7.9

Date	Sodium Hydroxide gals/day	Sodium Hypochlorite gals/day	Sodium Bisulfite gals/day	Ammonia gals/day	Hydrofluosilicic Acid gals/day
23 Jul 99	93.4	68.8	44.5	13.7	10.5
24 Jul 99	98.7	68.3	42.1	11.8	10.5
25 Jul 99	64.7	52.2	29.9	8.1	10.6
26 Jul 99	79.4	59.5	34.8	9.7	10.7
27 Jul 99	96.8	62.6	39.4	10.5	9.4
28 Jul 99	110.3	63.2	42.8	10.5	10.7
29 Jul 99	0.0	0.0	0.0	0.0	0.0
30 Jul 99	102.0	60.9	41.1	10.1	10.1
31 Jul 99	103.9	61.7	42.1	10.1	10.6
01 Aug 99	104.8	62.8	42.8	10.6	10.6
02 Aug 99	105.2	61.9	42.9	10.3	10.6
03 Aug 99	105.7	61.7	42.5	10.3	10.7
04 Aug 99	104.3	61.1	42.0	10.2	10.6
05 Aug 99	0.0	0.0	0.0	0.0	0.0
06 Aug 99	119.6	63.9	42.8	10.8	10.7
07 Aug 99	117.1	63.7	42.5	10.7	10.5
08 Aug 99	117.7	64.3	42.8	10.8	10.6
09 Aug 99	120.6	65.2	42.7	11.2	10.7
10 Aug 99	119.1	66.4	42.7	11.3	10.6
11 Aug 99	95.9	57.9	38.7	9.4	8.3
12 Aug 99	0.0	0.0	0.0	0.0	0.0
13 Aug 99	110.6	67.1	42.2	6.6	10.6
14 Aug 99	111.1	90.6	42.8	7.1	10.6
15 Aug 99	114.6	88.2	42.8	9.8	10.7
16 Aug 99	114.3	64.0	42.8	14.3	10.6
17 Aug 99	110.7	61.6	40.8	12.5	10.2
18 Aug 99	98.2	58.7	37.8	12.5	9.5
19 Aug 99	107.4	66.9	42.4	15.1	10.6
20 Aug 99	103.3	69.4	42.5	15.6	10.7
21 Aug 99	107.1	70.9	42.3	15.9	10.6
22 Aug 99	104.0	74.7	42.1	16.9	10.5
23 Aug 99	109.3	75.6	42.5	16.9	10.7
24 Aug 99	117.2	77.3	42.6	14.7	10.5
25 Aug 99	112.4	81.1	42.2	13.9	7.0
26 Aug 99	109.2	81.1	42.3	13.8	7.6
27 Aug 99	110.9	78.1	40.8	13.2	10.6
28 Aug 99	117.9	78.3	42.3	13.2	10.7
29 Aug 99	113.5	79.3	42.0	13.3	10.6
30 Aug 99	116.0	80.1	42.3	13.0	10.6
31 Aug 99	96.3	68.0	36.5	11.1	10.2
01 Sep 99	90.6	60.4	32.6	10.7	6.6
02 Sep 99	92.3	60.7	34.0	10.7	7.0
03 Sep 99	118.0	78.3	42.1	14.0	10.6
04 Sep 99	119.1	79.1	42.2	14.1	10.6
05 Sep 99	121.0	78.3	42.3	13.9	10.6

Date	Sodium Hydroxide gals/day	Sodium Hypochlorite gals/day	Sodium Bisulfite gals/day	Ammonia gals/day	Hydrofluosilicic Acid gals/day
06 Sep 99	123.7	78.2	42.2	14.0	10.6
07 Sep 99	0.0	0.0	0.0	0.0	0.0
08 Sep 99	110.4	64.0	35.6	11.4	7.7
09 Sep 99	423.3	71.7	39.3	13.1	9.2
10 Sep 99	0.0	0.0	0.0	0.0	0.0
11 Sep 99	132.8	75.2	41.2	13.5	10.3
12 Sep 99	139.8	77.5	42.3	13.9	10.7
13 Sep 99	133.4	78.2	42.4	14.0	10.7
14 Sep 99	0.0	0.0	0.0	0.0	0.0
15 Sep 99	0.9	0.7	0.3	0.1	0.1
16 Sep 99	114.1	73.5	31.6	13.2	9.9
17 Sep 99	123.5	72.2	33.5	12.9	10.0
18 Sep 99	135.8	76.9	42.3	13.8	10.4
19 Sep 99	135.9	77.1	42.3	13.7	10.6
20 Sep 99	145.1	76.6	42.2	13.8	10.7
21 Sep 99	135.7	70.8	37.7	12.8	10.6
22 Sep 99	145.4	75.3	42.6	13.4	10.7
23 Sep 99	0.0	0.0	0.0	0.0	0.0
24 Sep 99	140.5	68.7	38.9	10.7	9.4
25 Sep 99	152.6	77.7	41.4	12.6	10.6
26 Sep 99	147.2	75.8	41.2	14.4	10.5
27 Sep 99	118.6	59.5	34.1	11.7	7.5
28 Sep 99	115.0	55.8	32.8	10.9	7.3
29 Sep 99	0.0	0.0	0.0	0.0	0.0
30 Sep 99	0.0	0.0	0.0	0.0	0.0
01 Oct 99	143.3	71.8	40.6	13.9	10.4
02 Oct 99	156.6	73.6	41.5	14.2	10.5
03 Oct 99	158.4	75.2	41.9	14.7	10.6
04 Oct 99	0.0	0.0	0.0	0.0	0.0
05 Oct 99	1.5	0.0	0.1	0.1	0.0
06 Oct 99	34.1	19.4	10.1	3.7	3.1
07 Oct 99	149.5	77.6	41.9	15.0	10.6
08 Oct 99	143.4	77.6	41.2	14.9	10.6
09 Oct 99	146.9	78.0	41.7	15.0	10.5
10 Oct 99	149.1	78.0	41.7	14.9	10.4
11 Oct 99	154.4	78.0	41.6	14.8	10.7
12 Oct 99	110.5	59.3	31.6	10.7	10.0
13 Oct 99	119.5	65.5	32.4	11.8	10.6
14 Oct 99	112.4	61.2	32.0	11.3	6.8
15 Oct 99	91.7	55.7	28.0	10.0	5.1
16 Oct 99	65.8	43.2	20.4	7.6	2.6
17 Oct 99	69.3	45.1	23.3	8.0	3.7
18 Oct 99	88.1	54.8	30.7	9.9	6.8
19 Oct 99	79.8	57.1	28.2	10.2	5.1
20 Oct 99	0.0	0.0	0.0	0.0	0.0

Date	Sodium Hydroxide gals/day	Sodium Hypochlorite gals/day	Sodium Bisulfite gals/day	Ammonia gals/day	Hydrofluosilicic Acid gals/day
21 Oct 99	25.7	12.6	9.7	2.3	2.9
22 Oct 99	111.4	67.8	40.6	12.5	10.4
23 Oct 99	117.0	69.0	41.8	12.6	10.6
24 Oct 99	118.2	70.0	41.8	12.7	10.6
25 Oct 99	118.9	71.1	41.8	13.2	10.7
26 Oct 99	115.3	66.7	38.1	12.3	10.7
27 Oct 99	0.0	0.0	0.0	0.0	0.0
28 Oct 99	118.6	74.9	41.5	13.7	10.7
29 Oct 99	118.5	75.5	41.6	13.9	10.6
30 Oct 99	102.8	75.5	41.2	13.5	10.6
31 Oct 99	112.2	80.2	43.0	14.6	11.0
01 Nov 99	111.3	74.2	39.1	13.5	10.2
02 Nov 99	88.8	53.0	29.7	9.3	7.1
03 Nov 99	0.0	0.0	0.0	0.0	0.0
04 Nov 99	132.0	80.6	41.7	14.1	10.7
05 Nov 99	113.2	69.2	36.9	11.8	8.8
06 Nov 99	131.7	76.8	44.7	13.4	10.3
07 Nov 99	134.7	78.1	52.1	13.9	10.6
08 Nov 99	134.8	78.3	44.8	13.8	9.7
09 Nov 99	140.6	89.3	41.4	14.0	8.3
10 Nov 99	120.3	69.2	37.2	12.4	7.4
11 Nov 99	134.5	81.0	41.6	14.4	8.4
12 Nov 99	133.6	79.3	41.1	14.0	8.2
13 Nov 99	135.0	81.6	41.6	14.5	8.3
14 Nov 99	129.9	81.3	41.6	14.5	8.3
15 Nov 99	114.9	73.2	37.5	12.9	7.0
16 Nov 99	98.2	63.8	30.7	11.0	8.2
17 Nov 99	90.2	53.7	26.4	9.3	8.1
18 Nov 99	111.1	62.5	32.4	10.9	8.4
19 Nov 99	133.4	75.9	41.8	13.5	8.6
20 Nov 99	127.2	76.4	42.0	1.3	8.3
21 Nov 99	133.9	76.2	42.1	13.5	8.3
22 Nov 99	138.0	75.1	42.3	13.8	8.5
23 Nov 99	124.3	66.1	38.6	13.5	7.3
24 Nov 99	132.1	73.4	42.3	16.4	8.5
25 Nov 99	128.8	73.0	42.3	16.2	8.4
26 Nov 99	126.9	72.7	42.2	16.2	8.4
27 Nov 99	128.2	73.0	42.2	16.2	8.3
28 Nov 99	130.1	74.0	42.3	16.4	8.5
29 Nov 99	127.9	74.6	42.1	15.6	8.4
30 Nov 99	0.0	0.0	0.0	0.0	0.0
01 Dec 99	130.8	76.3	42.1	14.4	9.7
02 Dec 99	131.1	74.6	41.7	14.1	9.6
03 Dec 99	135.6	75.3	1.6	14.2	9.6
04 Dec 99	146.8	77.3	42.0	14.5	9.6

Date	Sodium Hydroxide gals/day	Sodium Hypochlorite gals/day	Sodium Bisulfite gals/day	Ammonia gals/day	Hydrofluosilicic Acid gals/day
05 Dec 99	160.4	77.0	42.2	14.6	9.7
06 Dec 99	123.1	63.0	35.7	11.9	7.3
07 Dec 99	97.6	51.0	27.9	9.8	8.1
08 Dec 99	107.2	56.6	31.3	10.8	9.5
09 Dec 99	142.2	71.0	42.0	13.6	9.8
10 Dec 99	146.3	73.1	42.6	13.8	9.7
11 Dec 99	148.1	74.1	42.5	14.1	9.8
12 Dec 99	143.4	74.0	42.5	13.9	9.6
13 Dec 99	132.8	67.5	38.5	12.9	8.3
14 Dec 99	137.0	70.6	39.8	13.7	8.8
15 Dec 99	141.9	82.0	42.1	15.9	9.6
16 Dec 99	108.7	65.5	31.7	12.4	9.8
17 Dec 99	113.5	65.0	33.3	12.2	9.8
18 Dec 99	157.8	82.4	42.8	15.8	9.6
19 Dec 99	147.7	81.4	42.5	15.6	9.5
20 Dec 99	91.0	76.2	39.9	14.7	8.4
21 Dec 99	0.0	0.0	0.0	0.0	0.0
22 Dec 99	53.6	79.9	42.4	15.4	9.5
23 Dec 99	44.0	65.1	34.5	12.5	6.4
24 Dec 99	37.4	55.5	29.1	10.2	4.4
25 Dec 99	37.7	54.9	29.0	10.0	4.5
26 Dec 99	38.9	5.4	28.9	10.0	4.6
27 Dec 99	37.9	55.0	28.9	9.9	4.4
28 Dec 99	34.7	48.1	24.6	8.7	3.1
29 Dec 99	50.9	72.9	35.7	13.8	6.9
30 Dec 99	56.6	77.8	39.7	15.2	8.6
31 Dec 99	0.0	0.0	0.0	0.0	0.0
01 Jan 00	0.0	362.8	170.9	72.6	20.7
02 Jan 00	62.1	84.9	43.2	17.0	9.7
03 Jan 00	53.5	68.5	38.0	13.9	7.9
04 Jan 00	63.8	85.0	43.3	17.2	9.8
05 Jan 00	63.8	85.6	43.3	16.4	9.7
06 Jan 00	0.0	0.0	0.0	0.0	0.0
07 Jan 00	57.8	75.9	40.0	15.1	8.9
08 Jan 00	62.5	82.9	44.6	16.7	0.0
09 Jan 00	57.5	76.6	41.0	15.5	9.2
10 Jan 00	61.5	78.0	42.6	15.6	9.3
11 Jan 00	56.2	67.0	38.5	14.4	8.0
12 Jan 00	62.2	70.1	43.0	18.0	9.6
13 Jan 00	57.4	65.6	40.7	17.9	9.7
14 Jan 00	57.8	68.6	42.6	20.2	9.6
15 Jan 00	55.3	70.0	42.4	21.4	9.4
16 Jan 00	55.0	69.7	42.6	21.4	9.5
17 Jan 00	54.9	70.3	42.5	21.4	9.5
18 Jan 00	53.6	71.1	42.4	21.1	9.5

Date	Sodium Hydroxide gals/day	Sodium Hypochlorite gals/day	Sodium Bisulfite gals/day	Ammonia gals/day	Hydrofluosilicic Acid gals/day
19 Jan 00	56.0	73.2	42.6	19.8	9.6
20 Jan 00	33.6	45.2	25.0	9.1	5.6
21 Jan 00	57.7	78.7	42.6	15.7	9.4
22 Jan 00	59.4	78.0	42.7	15.5	9.6
23 Jan 00	59.8	79.3	42.7	15.7	9.5
24 Jan 00	0.0	0.0	0.0	0.0	0.0
25 Jan 00	60.2	82.3	42.9	16.1	9.5
26 Jan 00	51.5	66.8	34.6	13.6	7.7
27 Jan 00	60.3	77.4	40.4	15.0	11.1
28 Jan 00	58.1	71.0	38.8	13.6	8.8
29 Jan 00	62.2	78.9	43.5	15.3	10.5
30 Jan 00	62.5	78.9	43.3	15.2	10.6
31 Jan 00	56.9	73.2	40.3	14.0	9.5
01 Feb 00	60.3	76.8	43.2	16.5	10.6
02 Feb 00	54.5	75.2	42.8	17.5	10.5
03 Feb 00	56.9	75.7	43.3	17.6	10.3
04 Feb 00	57.9	77.3	43.2	17.9	10.6
05 Feb 00	44.5	58.2	31.4	13.4	10.5
06 Feb 00	53.7	69.1	38.3	16.1	10.6
07 Feb 00	51.2	64.1	36.3	13.5	8.5
08 Feb 00	0.0	0.0	0.0	0.0	0.0
09 Feb 00	67.0	78.8	43.1	17.0	10.1
10 Feb 00	67.6	78.1	43.0	17.1	10.2
11 Feb 00	67.3	76.5	42.4	16.9	10.1
12 Feb 00	68.7	77.3	43.0	17.2	10.1
13 Feb 00	71.2	77.3	43.0	17.1	10.2
14 Feb 00	0.0	0.0	0.0	0.0	0.0
15 Feb 00	75.9	77.3	42.9	17.2	10.2
16 Feb 00	0.0	0.0	0.0	0.0	0.0
17 Feb 00	4.3	9.7	2.4	2.3	0.5
18 Feb 00	62.4	74.3	34.5	16.5	7.8
19 Feb 00	72.3	77.3	42.6	17.1	10.0
20 Feb 00	40.1	41.3	22.4	9.0	5.1
21 Feb 00	55.3	49.8	28.8	10.2	6.4
22 Feb 00	47.9	53.3	25.5	12.4	5.7
23 Feb 00	65.7	65.1	34.5	15.2	7.8
24 Feb 00	62.7	56.1	29.8	12.4	7.4
25 Feb 00	73.0	66.7	38.1	15.6	9.2
26 Feb 00	80.3	72.2	42.4	16.9	9.9
27 Feb 00	81.0	72.5	43.0	16.8	10.1
28 Feb 00	87.8	0.0	0.0	0.0	0.0

REVERSE OSMOSIS SECTION LABOR

Relevant Presentation	Table 5.1	Figure 5.1	Table 5.1	Figure 5.1	Table 5.1	Figure 5.1	Table 5.1	Figure 5.1	Table 5.1	Figure 5.1
Date	**RO Rounds, SDI, Sampling**		**RO Data Entry**		**RO Clean-in-Place**		**RO Upgrades Modifications**		**RO Repairs, Maintenance**	
	Staff-hours	**Labor Costs, $**	**Staff-hours**	**Labor Costs, $**	**Staff-hours**	**Labor Costs, $**	**Staff-hours**	**Labor Costs, $**	**Staff-hours**	**Labor Costs, $**
1 Mar 99		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 Mar 99	2.00	68.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Mar 99	2.00	68.93	0.00	0.00	8.00	265.42	0.00	0.00	0.00	0.00
5 Mar 99	0.00	0.00	0.00	0.00	1.00	29.47	0.00	0.00	0.00	0.00
6 Mar 99	0.00	0.00	0.00	0.00	1.00	29.47	0.00	0.00	0.00	0.00
7 Mar 99	0.00	0.00	0.00	0.00	1.00	29.47	0.00	0.00	0.00	0.00
8 Mar 99	0.00	0.00	0.00	0.00	14.00	482.51	0.00	0.00	0.00	0.00
9 Mar 99	0.00	0.00	0.00	0.00	8.00	275.72	0.00	0.00	0.00	0.00
10 Mar 99	0.00	0.00	0.00	0.00	7.75	268.54	0.00	0.00	0.00	0.00
11 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12 Mar 99	2.00	68.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	84.54
15 Mar 99	1.00	33.32	0.00	0.00	0.00	0.00	0.00	0.00	0.50	17.81
16 Mar 99	1.00	34.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 Mar 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 Mar 99	2.00	68.94	0.00	0.00	4.25	212.26	0.00	0.00	0.00	0.00
19 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Mar 99	3.25	112.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 Mar 99	2.00	70.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25 Mar 99	1.00	35.61	0.00	0.00	0.00	0.00	1.50	53.43	1.00	35.61
26 Mar 99	2.00	68.94	0.00	0.00	3.00	104.54	0.00	0.00	0.00	0.00
27 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 Mar 99	2.00	71.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 Mar 99	2.00	71.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31 Mar 99	1.00	35.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Apr 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 Apr 99	1.00	35.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Apr 99	1.00	35.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Apr 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Apr 99	2.75	96.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 Apr 99	1.25	44.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Apr 99	2.00	38.93	0.00	0.00	1.50	53.42	0.00	0.00	0.00	0.00
8 Apr 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 Apr 99	2.00	68.15	0.00	0.00	3.00	99.18	0.00	0.00	0.00	0.00
12 Apr 99	2.00	68.93	0.00	0.00	2.00	71.22	0.00	0.00	0.00	0.00
13 Apr 99	1.50	53.42	0.00	0.00	1.75	62.32	0.00	0.00	4.50	149.94
14 Apr 99	1.50	53.42	0.00	0.00	2.00	71.22	0.00	0.00	4.50	149.94
15 Apr 99	2.00	68.93	0.00	0.00	2.25	77.83	0.00	0.00	0.00	0.00
16 Apr 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 Apr 99	1.25	41.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 Apr 99	0.75	24.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21 Apr 99	1.25	41.65	2.00	66.64	0.00	0.00	0.00	0.00	0.00	0.00

Date	RO Rounds, SDI, Sampling		RO Data Entry		RO Clean-in-Place		RO Upgrades Modifications		RO Repairs, Maintenance	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
22 Apr 99	1.75	58.31	0.00	0.00	0.00	0.00	0.00	0.00	1.00	33.32
23 Apr 99	0.25	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24 Apr 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26 Apr 99	0.30	17.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27 Apr 99	0.45	26.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28 Apr 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 Apr 99	0.75	53.17	0.00	0.00	0.50	16.66	0.00	0.00	0.00	0.00
4 May 99	1.00	35.62	2.50	83.30	1.00	35.61	0.00	0.00	0.00	0.00
5 May 99	1.00	35.62	2.50	83.30	0.00	0.00	0.00	0.00	0.00	0.00
6 May 99	1.00	35.62	2.00	66.64	0.00	0.00	0.00	0.00	0.00	0.00
7 May 99	1.00	35.62	0.00	0.00	3.00	189.87	0.00	0.00	0.00	0.00
8 May 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 May 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 May 99	1.00	35.62	2.00	66.64	1.00	35.61	0.00	0.00	0.00	0.00
11 May 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12 May 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 May 99	1.00	35.62	0.00	0.00	8.00	333.37	0.00	0.00	0.00	0.00
16 May 99	1.00	28.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 May 99	1.00	35.62	2.00	66.64	2.50	87.88	0.00	0.00	0.00	0.00
18 May 99	1.00	35.62	1.00	33.32	0.00	0.00	0.00	0.00	0.00	0.00
19 May 99	1.00	35.62	0.50	16.66	0.00	0.00	0.00	0.00	0.00	0.00
20 May 99	1.00	35.62	0.50	16.66	0.00	0.00	0.00	0.00	0.00	0.00
21 May 99	1.00	35.62			6.00	179.09	0.00	0.00	0.00	0.00
22 May 99	0.00	0.00	0.00	0.00	1.00	29.47	0.00	0.00	0.00	0.00
23 May 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24 May 99	1.00	35.62	0.50	16.66	0.00	0.00	0.00	0.00	0.00	0.00
25 May 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26 May 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27 May 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Jun 99	1.00	35.62	0.00	0.00	7.50	249.90	0.00	0.00	0.00	0.00
5 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Jun 99	1.50	53.42	0.50	14.09	0.00	0.00	0.00	0.00	0.00	0.00
11 Jun 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14 Jun 99	1.00	35.62	0.50	16.66	0.00	0.00	0.00	0.00	0.00	0.00
15 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16 Jun 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 Jun 99	0.00	0.00	0.00	0.00	7.00	197.26	0.00	0.00	0.00	0.00
20 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21 Jun 99	1.00	35.62	0.00	0.00	2.50	83.30	0.00	0.00	0.00	0.00
22 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	1.00	34.47	0.00	0.00

Date	RO Rounds, SDI, Sampling		RO Data Entry		RO Clean-in-Place		RO Upgrades Modifications		RO Repairs, Maintenance	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
23 Jun 99	1.00	35.62	0.50	16.66	0.00	0.00	0.00	0.00	0.00	0.00
24 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28 Jun 99		0.00	0.00	0.00	0.00	0.00	7.00	237.82	0.00	0.00
29 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Jul 99	1.00	44.72	1.00	42.50	0.00	0.00	0.00	0.00	0.00	0.00
3 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 Jul 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Jul 99	1.00	44.72	0.00	0.00	15.00	628.48	0.00	0.00	0.00	0.00
8 Jul 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12 Jul 99	1.00	44.72	2.50	106.35	0.00	0.00	0.00	0.00	2.00	87.25
13 Jul 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.50	22.36
14 Jul 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.50	22.36
15 Jul 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16 Jul 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 Jul 99	1.00	44.72	0.50	21.27	0.00	0.00	0.00	0.00	0.00	0.00
20 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21 Jul 99	2.00	89.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Jul 99	1.00	44.72	0.00	0.00	16.00	650.27	0.00	0.00	0.00	0.00
23 Jul 99	1.00	33.25	0.00	0.00	0.00	0.00	0.00	0.00	1.00	33.25
25 Jul 99			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26 Jul 99	1.00	42.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27 Jul 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28 Jul 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 Jul 99	0.50	21.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 Aug 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Aug 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Aug 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Aug 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 Aug 99	0.75	33.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Aug 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 Aug 99	0.50	22.36	0.00	0.00	11.50	489.21	0.00	0.00	0.00	0.00
12 Aug 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 Aug 99	1.00	44.72	1.00	42.54	0.00	0.00	0.00	0.00	0.00	0.00
14 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16 Aug 99	0.75	31.91	0.50	21.27	0.00	0.00	0.00	0.00	0.00	0.00
17 Aug 99	1.00	42.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 Aug 99	0.50	21.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 Aug 99	0.50	22.36	0.50	21.27	0.00	0.00	0.00	0.00	0.00	0.00

Date	RO Rounds, SDI, Sampling		RO Data Entry		RO Clean-in-Place		RO Upgrades Modifications		RO Repairs, Maintenance	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
24 Aug 99	1.00	44.72	0.25	10.64	0.00	0.00	0.00	0.00	0.00	0.00
25 Aug 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26 Aug 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27 Aug 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 Aug 99	0.00	0.00	1.00	42.54	0.00	0.00	0.00	0.00	0.75	33.00
31 Aug 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Sep 99	1.00	44.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 Sep 99	1.00	44.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Sep 99		0.00	0.25	10.64	0.00	0.00	0.00	0.00	0.00	0.00
8 Sep 99	0.00	0.00	0.00	0.00	5.00	212.70	0.00	0.00	1.00	42.54
9 Sep 99	0.00	0.00	0.00	0.00	7.00	297.78	0.00	0.00	0.00	0.00
10 Sep 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 Sep 99	0.50	22.36	0.25	10.64	0.00	0.00	0.00	0.00	0.00	0.00
14 Sep 99	1.00	42.54	0.00		0.00	0.00	0.00	0.00	0.00	0.00
15 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16 Sep 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00	233.17
20 Sep 99	1.00	44.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Sep 99	1.00	43.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 Sep 99	1.50	68.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24 Sep 99	0.50	22.95	0.00	0.00	6.00	261.78	0.00	0.00	0.00	0.00
25 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27 Sep 99	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28 Sep 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 Sep 99	1.50	68.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 Sep 99	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Oct 99					0.00	0.00	0.00	0.00	0.00	0.00
2 Oct 99			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Oct 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00
6 Oct 99	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Oct 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00
9 Oct 99					0.00	0.00	0.00	0.00	0.00	0.00
10 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 Oct 99	0.50	22.95	0.50	21.82	0.00	0.00	0.00	0.00	0.00	0.00
12 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 Oct 99	1.00	45.89	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00
14 Oct 99	0.00	0.00	0.00	0.00	9.00	392.67	0.00	0.00	2.00	91.78
17 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	130.89
19 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	358.08
20 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	179.04
21 Oct 99	1.00	43.63	0.00	0.00	0.00	0.00	0.00	0.00	2.00	91.78
22 Oct 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00
25 Oct 99	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26 Oct 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00

Date	RO Rounds, SDI, Sampling		RO Data Entry		RO Clean-in-Place		RO Upgrades Modifications		RO Repairs, Maintenance	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
27 Oct 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00
28 Oct 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00
1 Nov 99	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 Nov 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Nov 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Nov 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	1.00	45.89
5 Nov 99	1.00	45.89	0.50	22.85	0.00	0.00	0.00	0.00	0.00	0.00
6 Nov 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Nov 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 Nov 99	1.00	45.90	0.50	21.82	0.00	0.00	0.00	0.00	0.00	0.00
9 Nov 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Nov 99	0.50	22.95	0.50	22.95	0.00	0.00	0.00	0.00	1.00	43.63
12 Nov 99			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Nov 99	0.50	22.95	0.00	0.00	8.00	349.04	0.00	0.00	0.00	0.00
16 Nov 99	1.00	45.89	0.50	21.82	0.00	0.00	0.00	0.00	1.00	45.89
17 Nov 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	43.63
18 Nov 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 Nov 99	0.50	21.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Nov 99	0.50	21.82	0.50	21.82	0.00	0.00	0.00	0.00	0.00	0.00
23 Nov 99	0.50	21.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24 Nov 99	0.50	21.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 Nov 99	0.50	22.95	1.00	43.63	0.00	0.00	0.00	0.00	0.00	0.00
30 Nov 99	0.00	0.00	0.00	0.00	5.50	243.36	0.00	0.00	0.00	0.00
1 Dec 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00
2 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 Dec 99	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 Dec 99	0.50	22.95	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00
10 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 Dec 99	0.00	0.00	0.00	0.00	3.50	152.71	0.00	0.00	0.00	0.00
14 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	174.52
15 Dec 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00
16 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 Dec 99	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21 Dec 99	1.00	43.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Dec 99	0.50	22.95	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00
23 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28 Dec 99	0.00	0.00	0.00	0.00	3.00	137.67	0.00	0.00	3.00	137.67
29 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	349.04
30 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Jan 00					0.00	0.00	0.00	0.00	0.00	0.00

Date	RO Rounds, SDI, Sampling		RO Data Entry		RO Clean-in-Place		RO Upgrades Modifications		RO Repairs, Maintenance	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
2 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Jan 00	1.00	45.95	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00
6 Jan 00	0.50	22.98	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00
7 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 Jan 00	0.00	0.00	0.00	0.00	5.50	238.68	0.00	0.00	0.00	0.00
12 Jan 00	0.25	11.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 Jan 00	0.50	22.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14 Jan 00	1.00	45.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 Jan 00	0.50	22.98	1.00	45.95	0.00	0.00	0.00	0.00	3.00	126.15
19 Jan 00	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 Jan 00	1.00	45.95	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00
24 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	90.02
25 Jan 00	1.00	45.95	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00
26 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27 Jan 00	0.50	22.98	0.00	0.00	9.00	405.09	0.00	0.00	0.00	0.00
28 Jan 00	1.00	45.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 Feb 00	1.00	45.95	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00
3 Feb 00	1.00	45.95	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00
5 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Feb 00	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 Feb 00	1.00	45.95	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00
9 Feb 00	0.50	22.98	1.00	45.95	0.00	0.00	0.00	0.00	0.00	0.00
10 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	91.90
11 Feb 00	1.00	45.95	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00
14 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Feb 00	1.00	45.95	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00
16 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.50	160.83
17 Feb 00	0.00	0.00	0.00	0.00	18.00	818.64	0.00	0.00	0.00	0.00
19 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	113.00
20 Feb 00	1.00	66.07			0.00	0.00	0.00	0.00	2.00	72.00
21 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Feb 00	0.50	22.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25 Feb 00	1.00	45.95	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00
26 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

NANOFILTRATION SECTION LABOR

Relevant Presentation	Table 5.1	Figure 5.2	Table 5.1	Figure 5.2	Table 5.1	Figure 5.2	Table 5.1	Figure 5.2	Table 5.1	Figure 5.2
Date	**NF Rounds, SDI, Sampling**		**NFData Entry**		**NF Clean-in-Place**		**NF Upgrades Modifications**		**NF Repairs, Maintenance**	
	Staff-hours	**Labor Costs, $**	**Staff-hours**	**Labor Costs, $**	**Staff-hours**	**Labor Costs, $**	**Staff-hours**	**Labor Costs, $**	**Staff-hours**	**Labor Costs, $**
1 Mar 99	0.00	0.00	0.00	0.00	11.00	382.55	0.00	0.00	0.00	0.00
2 Mar 99	0.00	0.00	0.00	0.00	6.00	206.79	0.00	0.00	0.00	0.00
4 Mar 99	2.00	68.93	0.00	0.00	3.00	103.40	0.00	0.00	0.00	0.00
5 Mar 99			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 Mar 99	2.00	66.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 Mar 99	1.00	34.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 Mar 99	0.00	0.00	0.00	0.00	8.00	275.72	0.00	0.00	0.00	0.00
10 Mar 99	0.00	0.00	0.00	0.00	7.75	268.54	0.00	0.00	0.00	0.00
11 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12 Mar 99	2.00	68.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Mar 99	1.00	34.47	0.00	0.00	0.00	0.00	0.00	0.00	0.50	17.81
16 Mar 99	1.00	34.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 Mar 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 Mar 99	2.00	68.94	0.00	0.00	4.25	212.26	0.00	0.00	0.00	0.00
19 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Mar 99	3.25	112.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 Mar 99	2.00	70.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25 Mar 99	1.00	35.61	0.00	0.00	0.00	0.00	1.50	53.43	1.00	35.61
26 Mar 99	2.00	68.94	0.00	0.00	3.00	104.54	0.00	0.00	0.00	0.00
27 Mar 99	2.00	71.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 Mar 99	2.00	71.22	0.00	0.00	0.00	0.00	0.00	0.00	1.00	35.61
30 Mar 99	2.00	71.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31 Mar 99	1.00	35.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Apr 99	0.00	0.00	0.00	0.00	1.50	53.42	0.00	0.00	0.00	0.00
2 Apr 99	1.00	35.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Apr 99	1.00	35.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Apr 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Apr 99	2.00	71.23	0.00	0.00	0.00	0.00	0.00	0.00	4.75	178.49
6 Apr 99	1.25	44.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Apr 99	3.50	122.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 Apr 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 Apr 99	1.00	35.61	0.00	0.00	5.25	182.37	0.00	0.00	0.00	0.00
12 Apr 99	1.00	35.61	0.00	0.00	3.00	104.54	0.00	0.00	0.00	0.00
13 Apr 99	1.50	53.42	0.00	0.00	4.50	149.94	0.00	0.00	1.75	62.32
14 Apr 99	1.50	35.42	0.00	0.00	4.50	149.94	0.00	0.00	2.00	71.22
15 Apr 99	1.25	42.22	0.00	0.00	3.00	104.54	0.00	0.00	0.00	0.00
16 Apr 99		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 Apr 99	1.25	41.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 Apr 99	0.75	24.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21 Apr 99	0.75	24.99	0.50	16.65	0.00	0.00	0.00	0.00	0.00	0.00

Date	NF Rounds, SDI, Sampling		NFData Entry		NF Clean-in-Place		NF Upgrades Modifications		NF Repairs, Maintenance	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
22 Apr 99	0.25	8.33	0.00	0.00	0.00	0.00	0.00	0.00	1.00	33.32
23 Apr 99	0.25	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24 Apr 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26 Apr 99	0.50	17.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27 Apr 99	0.75	26.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28 Apr 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 Apr 99	1.00	33.32	0.00	0.00	2.50	83.30	0.00	0.00	0.00	0.00
4 May 99	1.00	35.62	2.50	83.30	1.00	35.61	0.00	0.00	0.00	0.00
5 May 99	0.75	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 May 99	1.00	35.62	5.00	166.60	0.00	0.00	0.00	0.00	0.00	0.00
7 May 99	1.00	35.62	0.00	0.00	6.00	206.79	0.00	0.00	0.00	0.00
8 May 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 May 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 May 99	1.00	35.62	2.00	66.64	1.00	35.61	0.00	0.00	0.00	0.00
11 May 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12 May 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 May 99	0.75	26.70	0.00	0.00	3.00	99.96	0.00	0.00	4.00	137.86
16 May 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 May 99	1.00	35.62	2.50	83.30	2.00	71.22	0.00	0.00	0.00	0.00
18 May 99	1.00	35.62	1.00	33.32	0.00	0.00	0.00	0.00	0.00	0.00
19 May 99	1.00	35.62	0.50	16.66	0.00	0.00	0.00	0.00	0.00	0.00
20 May 99	1.00	35.62	0.50	16.66	0.00	0.00	0.00	0.00	0.00	0.00
21 May 99	1.00	35.62	0.00	0.00	12.00	409.00	0.00	0.00	0.00	0.00
22 May 99	0.00	0.00	0.00	0.00	1.00	35.61	0.00	0.00	0.00	0.00
23 May 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24 May 99	1.00	35.62	0.50	16.66	0.00	0.00	0.00	0.00	0.00	0.00
25 May 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26 May 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27 May 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 Jun 99	1.00	35.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Jun 99	1.00	35.62	0.00	0.00	3.50	101.20	0.00	0.00	0.00	0.00
5 Jun 99	0.00	0.00	0.00	0.00	4.00	112.72	0.00	0.00	0.00	0.00
7 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Jun 99	1.50	44.21	0.50	14.09	0.00	0.00	0.00	0.00	0.00	0.00
11 Jun 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14 Jun 99	1.00	35.62	0.50	16.66	0.00	0.00	0.00	0.00	0.00	0.00
15 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16 Jun 99	1.00	35.62	0.00	0.00	16.00	506.50	0.00	0.00	0.00	0.00
17 Jun 99	0.00	0.00	0.00	0.00	15.00	513.76	0.00	0.00	0.00	0.00
18 Jun 99	1.00	35.62	0.00	0.00	7.00	233.24	0.00	0.00	0.00	0.00
19 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	1.00	34.47	0.00	0.00

Date	NF Rounds, SDI, Sampling		NFData Entry		NF Clean-in-Place		NF Upgrades Modifications		NF Repairs, Maintenance	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
23 Jun 99	1.00	35.62	0.50	16.66	0.00	0.00	0.00	0.00	0.00	0.00
24 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28 Jun 99		0.00	0.00	0.00	0.00	0.00	8.00	275.72	0.00	0.00
29 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	5.00	171.18
30 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Jul 99	1.00	44.72	1.00	42.54	0.00	0.00	0.00	0.00	0.00	0.00
3 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 Jul 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Jul 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 Jul 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	166.39
12 Jul 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	4.50	191.43
13 Jul 99	1.50	67.08	0.00	0.00	0.00	0.00	0.00	0.00	9.00	388.28
14 Jul 99	1.50	67.08	0.00	0.00	0.00	0.00	0.00	0.00	4.00	170.16
15 Jul 99	1.00	44.72	0.00	0.00	11.00	472.28	0.00	0.00	1.00	44.71
16 Jul 99	0.00	0.00	0.00	0.00	4.00	174.50	5.00	312.45	0.00	0.00
18 Jul 99					0.00	0.00	0.00	0.00	0.00	0.00
19 Jul 99	1.00	44.72	0.50	21.27	0.00	0.00	0.00	0.00	0.00	0.00
20 Jul 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21 Jul 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Jul 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26 Jul 99	1.00	42.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27 Jul 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28 Jul 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 Jul 99	0.50	21.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 Aug 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Aug 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Aug 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Aug 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 Aug 99			0.00	0.00	0.00	0.00	0.00	0.00		
9 Aug 99	0.75	33.54	0.00	0.00	0.00	0.00	0.00	0.00	5.75	248.40
10 Aug 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 Aug 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12 Aug 99	1.00	44.72	0.00	0.00	8.50	380.04	0.00	0.00	0.00	0.00
13 Aug 99	0.50	22.36	1.00	42.54	0.00	0.00	0.00	0.00	0.00	0.00
14 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16 Aug 99	0.75	31.91	0.50	21.27	0.00	0.00	0.00	0.00	0.00	0.00
17 Aug 99	1.00	42.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 Aug 99	0.50	21.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 Aug 99	0.50	22.36	0.50	21.27	0.00	0.00	0.00	0.00	0.00	0.00

Date	NF Rounds, SDI, Sampling		NFData Entry		NF Clean-in-Place		NF Upgrades Modifications		NF Repairs, Maintenance	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
24 Aug 99	1.00	44.72	0.25	10.64	0.00	0.00	0.00	0.00	0.00	0.00
25 Aug 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26 Aug 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27 Aug 99	1.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 Aug 99	0.75	33.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31 Aug 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	2.00	89.42
1 Sep 99	0.50	22.36	2.00	89.42	0.00	0.00	0.00	0.00	9.00	382.86
2 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.00	382.86
7 Sep 99	0.00	0.00	0.25	10.64	0.00	0.00	0.00	0.00	0.00	0.00
8 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	42.54
9 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Sep 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 Sep 99					0.00	0.00	0.00	0.00	0.00	0.00
13 Sep 99	0.25	10.64	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00
14 Sep 99	1.00	42.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Sep 99			0.00	0.00			0.00	0.00	0.00	0.00
16 Sep 99	0.50	22.36	0.00	0.00	4.00	170.16	0.00	0.00	0.00	0.00
17 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 Sep 99	0.50	22.95	0.50	21.82	0.00	0.00	0.00	0.00	0.00	0.00
21 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Sep 99	1.00	43.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 Sep 99	1.50	68.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24 Sep 99	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27 Sep 99	0.00	0.00	0.00	0.00	9.00	392.67	0.00	0.00	0.00	0.00
28 Sep 99	0.00	0.00	0.00	0.00	5.00	218.15	0.00	0.00	0.00	0.00
29 Sep 99	1.50	68.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 Sep 99	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Oct 99					0.00	0.00	0.00	0.00	0.00	0.00
2 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Oct 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00
6 Oct 99	0.50	22.95	0.50	22.95	0.00	0.00	0.00	0.00	0.50	22.95
7 Oct 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00
9 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 Oct 99	0.30	22.95	0.50	21.82	0.00	0.00	0.00	0.00	0.00	0.00
12 Oct 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00
13 Oct 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14 Oct 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00
17 Oct 99	1.00	34.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 Oct 99	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 Oct 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00
20 Oct 99	0.50	22.95	0.50	22.95	0.00	0.00	0.00	0.00	1.00	45.89
21 Oct 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00
22 Oct 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00
25 Oct 99	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00	2.00	87.26
26 Oct 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00

Date	NF Rounds, SDI Sampling		NFData Entry		NF Clean-in-Place		NF Upgrades Modifications		NF Repairs, Maintenance	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
27 Oct 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00
28 Oct 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00
1 Nov 99	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 Nov 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Nov 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Nov 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00		
5 Nov 99	0.50	22.95	0.00	0.00	12.00	452.36	0.00	0.00	0.00	0.00
6 Nov 99			0.00	0.00	0.00	0.00	0.00	0.00		
7 Nov 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 Nov 99	1.00	45.90	1.00	44.77	0.00	0.00	0.00	0.00		
9 Nov 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Nov 99	0.50	22.95	0.50	22.95	0.00	0.00	0.00	0.00	2.00	89.52
12 Nov 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Nov 99	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16 Nov 99	0.50	22.95	0.50	21.82	0.00	0.00	0.00	0.00	1.00	45.89
17 Nov 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	43.63
18 Nov 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 Nov 99	0.50	21.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Nov 99	0.50	21.82	0.50	21.82	0.00	0.00	0.00	0.00	0.00	0.00
23 Nov 99	0.00	0.00	0.00	0.00	3.50	152.71	0.00	0.00	1.00	43.63
24 Nov 99	0.50	21.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 Nov 99	0.50	22.95	1.00	43.63	0.00	0.00	0.00	0.00	1.50	65.45
30 Nov 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00
1 Dec 99	0.50	22.95	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00
2 Dec 99		0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
3 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 Dec 99	0.50	22.95	0.00	0.00	4.00	174.52	0.00	0.00	0.00	0.00
7 Dec 99			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 Dec 99	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 Dec 99	0.50	22.95	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00
10 Dec 99					0.00	0.00	0.00	0.00	0.00	0.00
13 Dec 99			0.00	0.00			0.00	0.00		
14 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Dec 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00
16 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 Dec 99	0.50	21.82	0.00	0.00	4.50	196.34	0.00	0.00	3.00	130.89
21 Dec 99					0.00	0.00	0.00	0.00	2.00	68.76
22 Dec 99	0.50	22.95	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00
23 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	130.89
24 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.00	760.02
29 Dec 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 Dec 99	1.00	45.89	0.50	22.95	0.00	0.00	0.00	0.00	0.00	0.00
31 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date	NF Rounds, SDI, Sampling		NFData Entry		NF Clean-in-Place		NF Upgrades Modifications		NF Repairs, Maintenance	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
2 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Jan 00	0.50	22.98	1.00	45.95	0.00	0.00	0.00	0.00	0.00	0.00
6 Jan 00	1.00	45.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Jan 00	0.00	0.00	0.00	0.00	7.00	315.07	0.00	0.00	0.00	0.00
11 Jan 00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12 Jan 00	0.25	11.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 Jan 00	0.50	22.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14 Jan 00	0.50	22.51	0.50	22.51	0.00	0.00	0.00	0.00	0.00	0.00
18 Jan 00	1.00	45.95	0.50	22.98	0.00	0.00	0.00	0.00	3.50	148.66
19 Jan 00	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 Jan 00	1.00	45.95	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00
24 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25 Jan 00	1.00	45.95	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00
26 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27 Jan 00	1.00	45.95	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00
28 Jan 00	1.00	45.95	0.00	0.00	9.00	406.03	0.00	0.00		
31 Jan 00	0.00	0.00	0.00	0.00	1.50	68.93	0.00	0.00	10.00	451.98
1 Feb 00					0.00	0.00	0.00	0.00	0.00	0.00
2 Feb 00	1.00	45.95	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00
3 Feb 00	1.00	45.95	0.50	45.95	0.00	0.00	0.00	0.00	0.00	0.00
5 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Feb 00	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 Feb 00	0.50	22.98	1.00	45.95	0.00	0.00	0.00	0.00	0.00	0.00
9 Feb 00	1.00	45.95	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00
10 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	91.90
11 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	68.93
14 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Feb 00	1.00	45.95	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00
16 Feb 00	1.00	45.95	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00
17 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Feb 00	0.50	22.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 Feb 00	0.50	22.98	1.00	45.95	0.00	0.00	0.00	0.00	0.00	0.00
24 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25 Feb 00	1.00	45.95	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00
26 Feb 00					0.00	0.00	0.00	0.00	2.00	72.26
28 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

ELECTRODIALYSIS REVERSAL SECTION LABOR

Relevant Presentation	Table 5.1	Figure 5.3	Table 5.1	Figure 5.3	Table 5.1	Figure 5.3	Table 5.1	Figure 5.3	Table 5.1	Figure 5.3
Date	**EDR Rounds, SDI, Sampling**		**EDR Clean-in-Place**		**EDR Stack Washdown Probing**		**EDR Upgrades Modifications**		**EDR Repairs, Maintenance**	
	Staff-hours	**Labor Costs, $**	**Staff-hours**	**Labor Costs, $**	**Staff-hours**	**Labor Costs, $**	**Staff-hours**	**Labor Costs, $**	**Staff-hours**	**Labor Costs, $**
1 Mar 99	2.00	68.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 Mar 99	2.00	68.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Mar 99	1.00	34.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Mar 99	1.00	33.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 Mar 99	1.00	34.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 Mar 99	1.00	34.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Mar 99	0.00	0.00	0.50	16.66	0.00	0.00	0.00	0.00	0.00	0.00
11 Mar 99	0.00	0.00	22.00	735.67	0.00	0.00	0.00	0.00	0.00	0.00
12 Mar 99	0.50	16.66	0.00	0.00	9.00	310.19	0.00	0.00	0.00	0.00
13 Mar 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Mar 99	1.50	51.13	0.00	0.00	0.00	0.00	0.00	0.00	2.00	71.22
16 Mar 99	1.00	34.47	0.00	0.00	0.00	0.00	0.00	0.00	7.00	241.26
17 Mar 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	5.00	178.05
18 Mar 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 Mar 99	1.00	28.18	0.00	0.00	0.00	0.00	0.00	0.00	1.00	28.18
20 Mar 99	1.00	28.18	0.00	0.00	0.00	0.00	0.00	0.00	1.00	28.18
22 Mar 99	1.25	43.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 Mar 99	1.50	52.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25 Mar 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26 Mar 99	0.50	17.81	0.00	0.00	2.50	83.30	0.00	0.00	0.00	0.00
27 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 Mar 99	1.00	35.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 Mar 99	1.00	35.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31 Mar 99	1.00	35.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Apr 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 Apr 99	1.00	35.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Apr 99	1.00	35.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Apr 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Apr 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.50	17.81
6 Apr 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Apr 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 Apr 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 Apr 99	1.00	35.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12 Apr 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 Apr 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14 Apr 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Apr 99	0.25	8.90	0.00	0.00	6.00	209.08	0.00	0.00		
16 Apr 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 Apr 99	0.50	16.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 Apr 99	0.50	16.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21 Apr 99	0.25	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date	EDR Rounds, SDI, Sampling		EDR Clean-in-Place		EDR Stack Washdown Probing		EDR Upgrades Modifications		EDR Repairs, Maintenance	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
22 Apr 99	0.25	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 Apr 99	0.25	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24 Apr 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26 Apr 99	0.25	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27 Apr 99	0.75	26.70	14.00	508.41	0.00	0.00	0.00	0.00	0.00	0.00
28 Apr 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 Apr 99	0.25	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 May 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 May 99	0.75	26.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 May 99	0.50	17.81	0.00	0.00	6.00	209.08	0.00	0.00		
7 May 99	0.25	8.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 May 99	0.50	17.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 May 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 May 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 May 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12 May 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 May 99	0.25	8.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16 May 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 May 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 May 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 May 99	0.50	17.81	0.00	0.00	0.00	0.00			7.00	272.34
20 May 99	0.50	17.81		0.00	5.00	175.76	0.00	0.00		
21 May 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 May 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 May 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24 May 99	1.50	45.99	0.00	0.00	0.00	0.00	0.00	0.00	1.00	28.18
25 May 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26 May 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27 May 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	1.50	51.12	0.00	0.00
2 Jun 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Jun 99	0.50	17.81	0.00	0.00	3.00	105.69	0.00	0.00		
4 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	0.50	17.80
5 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Jun 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 Jun 99	1.00	35.62	14.50	473.17	0.00	0.00	0.00	0.00	0.00	0.00
10 Jun 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 Jun 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	56.36
14 Jun 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00		0.00
15 Jun 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16 Jun 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 Jun 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 Jun 99	0.50	17.81	0.00	0.00	5.00	175.76	0.00	0.00		
19 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	56.36
21 Jun 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Jun 99	0.50	16.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date	EDR Rounds, SDI, Sampling		EDR Clean-in-Place		EDR Stack Washdown Probing		EDR Upgrades Modifications		EDR Repairs, Maintenance	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
23 Jun 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24 Jun 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 Jun 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00	3.00	99.96
30 Jun 99	0.50	17.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Jul 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	66.78
5 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	66.78
6 Jul 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Jul 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 Jul 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	66.50
12 Jul 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 Jul 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
14 Jul 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Jul 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16 Jul 99	0.50	22.36	0.00	0.00	4.00	176.67	0.00	0.00	3.50	116.38
18 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 Jul 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 Jul 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21 Jul 99	0.50	22.36	16.00	654.61	0.00	0.00	0.00	0.00	0.00	0.00
22 Jul 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	455.60
26 Jul 99	0.50	21.27	0.00	0.00	0.00	0.00	0.00	0.00	9.00	415.50
27 Jul 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	1.00	44.71
28 Jul 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	1.00	44.71
29 Jul 99	0.50	21.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	66.50
1 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 Aug 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Aug 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	6.00	229.54
4 Aug 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	1.00	42.54
5 Aug 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	3.00	129.79
6 Aug 99			0.00	0.00	0.00	0.00	0.00	0.00		
9 Aug 99	0.25	11.18	0.00	0.00	0.00	0.00	0.00	0.00	1.50	64.90
10 Aug 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 Aug 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12 Aug 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	4.00	151.58
13 Aug 99	0.50	22.36	0.00	0.00	4.50	196.86	0.00	0.00	0.00	0.00
14 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
15 Aug 99			0.00	0.00	0.00	0.00	0.00	0.00	2.00	66.50
16 Aug 99	0.25	10.64	0.00	0.00	0.00	0.00	0.00	0.00	1.75	74.45
17 Aug 99	0.50	21.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 Aug 99	0.50	21.27	0.00	0.00	0.00	0.00	0.00	0.00	0.50	21.27
19 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	66.50
23 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date	EDR Rounds, SDI, Sampling		EDR Clean-in-Place		EDR Stack Washdown Probing		EDR Upgrades Modifications		EDR Repairs, Maintenance	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
24 Aug 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25 Aug 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26 Aug 99	0.50	22.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27 Aug 99	0.50	22.36	0.00	0.00	6.00	261.75	0.00	0.00	0.00	0.00
30 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31 Aug 99	0.50	22.36	3.50	156.49	0.00	0.00	0.00	0.00	0.00	0.00
1 Sep 99	1.00	44.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 Sep 99	1.00	44.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Sep 99	1.00	44.71	0.00	0.00	3.00	131.96	0.00	0.00	0.00	0.00
11 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	85.08
14 Sep 99	0.50	21.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16 Sep 99	1.00	44.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	21.82
21 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	16.00	716.16	0.00	0.00
22 Sep 99	0.50	21.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 Sep 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24 Sep 99	0.00	0.00	0.00	0.00	3.00	137.67	0.00	0.00	0.00	0.00
25 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28 Sep 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 Sep 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Oct 99	2.00	91.78	0.00	0.00	0.00	0.00	0.00	0.00	2.00	91.78
2 Oct 99	2.00	91.78	0.00	0.00	0.00	0.00	0.00	0.00	2.00	91.78
3 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Oct 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	45.89
7 Oct 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	218.15
12 Oct 99	0.00	0.00	14.00	622.12	0.00	0.00	0.00	0.00	0.00	0.00
13 Oct 99	0.00	0.00			0.00	0.00	0.00	0.00	10.00	420.06
14 Oct 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	1.50	68.84
17 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 Oct 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 Oct 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21 Oct 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Oct 99	1.00	45.89	0.00	0.00	5.00	222.67	0.00	0.00		
25 Oct 99	2.00	87.26	0.00	0.00	0.00	0.00	0.00	0.00		
26 Oct 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	12.50	553.29

Date	EDR Rounds, SDI, Sampling		EDR Clean-In-Place		EDR Stack Washdown Probing		EDR Upgrades Modifications		EDR Repairs, Maintenance	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
27 Oct 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	5.00	218.15
28 Oct 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	6.00	261.78
1 Nov 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	321.29
2 Nov 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	218.15
3 Nov 99		0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.50	221.47
4 Nov 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	4.50	201.99
5 Nov 99	0.00	0.00	0.00	0.00	4.00	181.30	0.00	0.00	0.00	0.00
6 Nov 99			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Nov 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 Nov 99	1.00	45.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 Nov 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Nov 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12 Nov 99			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Nov 99	1.00	43.63			0.00	0.00	0.00	0.00		
16 Nov 99	1.00	45.89	5.00	218.15	0.00	0.00	0.00	0.00	1.00	45.89
17 Nov 99	0.00	0.00	3.50	152.71	0.00	0.00	0.00	0.00	0.00	0.00
18 Nov 99	0.00	0.00	9.00	392.67	0.00	0.00	0.00	0.00	0.00	0.00
19 Nov 99	0.50	21.82	0.00	0.00	3.00	130.89	0.00	0.00	0.00	0.00
22 Nov 99	0.50	21.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 Nov 99	0.50	21.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24 Nov 99	0.50	21.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 Nov 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	2.00	87.26
30 Nov 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Dec 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	179.04
3 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.50	736.85
8 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.00	920.75
9 Dec 99	1.00	45.89	0.00	0.00	8.00	353.56	0.00	0.00	0.00	0.00
10 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Dec 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16 Dec 99	0.00	0.00	15.00	674.79	0.00	0.00	0.00	0.00	0.00	0.00
17 Dec 99	0.00	0.00	12.00	495.98	0.00	0.00	0.00	0.00	0.00	0.00
18 Dec 99	1.00	43.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 Dec 99	1.00	43.63	0.00	0.00	0.00	0.00	0.00	0.00	1.00	43.63
20 Dec 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Dec 99	1.00	0.00	0.00	0.00	8.00	358.08	0.00	0.00	0.00	0.00
23 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 Dec 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 Dec 99	1.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31 Dec 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date	EDR Rounds, SDI, Sampling		EDR Clean-In-Place		EDR Stack Washdown Probing		EDR Upgrades Modifications		EDR Repairs, Maintenance	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
2 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Jan 00	1.00	45.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 Jan 00	0.50	22.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Jan 00	0.50	18.07	0.00	0.00	0.00	0.00	0.00	0.00	1.50	54.20
9 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 Jan 00	1.00	45.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12 Jan 00	0.25	11.25	0.00	0.00	0.00	0.00	0.00	0.00	2.00	90.02
13 Jan 00	0.50	22.51	0.00	0.00	0.00	0.00	0.00	0.00	5.00	207.29
14 Jan 00	0.50	22.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 Jan 00	1.00	45.95	0.00	0.00	0.00	0.00	0.00	0.00	3.00	135.03
19 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 Jan 00	1.00	45.95	0.00	0.00	0.00	0.00	0.00	0.00	2.00	90.02
24 Jan 00	1.00	45.95	0.00	0.00	0.00	0.00	0.00	0.00	5.00	225.99
25 Jan 00	1.00	45.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27 Jan 00	1.00	45.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28 Jan 00	0.00	0.00	0.00	0.00	3.00	137.85	0.00	0.00	0.00	0.00
31 Jan 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	68.93
3 Feb 00	1.00	45.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Feb 00	1.00	45.01	0.00	0.00	0.00	0.00	0.00	0.00	1.00	45.01
6 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 Feb 00	1.00	45.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 Feb 00	1.00	45.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Feb 00	1.00	45.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 Feb 00	0.00	0.00	0.00	0.00	5.00	227.87	0.00	0.00	0.00	0.00
14 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Feb 00	1.00	45.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16 Feb 00	1.00	45.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21 Feb 00	0.50	18.07	0.00	0.00	0.00	0.00	0.00	0.00	1.50	54.20
22 Feb 00	0.50	22.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 Feb 00	0.00	0.00	4.00	183.80	0.00	0.00	0.00	0.00	2.00	90.02
24 Feb 00	1.00	45.01	19.00	825.61	0.00	0.00	0.00	0.00	4.00	182.86
25 Feb 00		0.00			0.00	0.00	0.00	0.00	0.00	0.00
26 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	90.02
28 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 Feb 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

PLANT LABOR

Relevant Presentation	Table 5.1	Figure 5.4	Table 5.1	Figure 5.4	Table 5.1	Figure 5.4	Table 5.1	Figure 5.4
Date	**Plant Rounds, SDI, Sampling**		**Plant Laboratory Water Analysis**		**Plant Data Entry Reporting**		**Plant Meetings, Training, Safety**	
	Staff-hours	**Labor Costs, $**	**Staff-hours**	**Labor Costs, $**	**Staff-hours**	**Labor Costs, $**	**Staff-hours**	**Labor Costs, $**
1 Mar 99	2.00	68.93	0.00	0.00	4.00	112.72	0.00	0.00
2 Mar 99	2.00	71.22	0.00	0.00	2.00	66.64	2.00	66.64
4 Mar 99	2.00	68.93	0.00	0.00	0.00	0.00	0.00	0.00
5 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 Mar 99	2.00	68.93	0.00	0.00	0.00	0.00	0.00	0.00
9 Mar 99	1.00	34.47	0.00	0.00	0.00	0.00	0.00	0.00
10 Mar 99		0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12 Mar 99	2.00	68.93	0.00	0.00	0.00	0.00	0.00	0.00
13 Mar 99		0.00	0.00	0.00	0.00	0.00	0.50	29.47
14 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Mar 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
16 Mar 99	2.00	68.93	0.00	0.00	0.00	0.00	0.00	0.00
17 Mar 99	1.50	51.13	0.00	0.00	0.00	0.00	0.00	0.00
18 Mar 99	2.00	68.93	0.00	0.00	0.00	0.00	4.00	142.44
19 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Mar 99	2.00	71.22	0.00	0.00	0.00	0.00	0.00	0.00
23 Mar 99	2.00	68.93	0.00	0.00	0.00	0.00	1.00	34.47
25 Mar 99	2.00	71.22	0.00	0.00	0.00	0.00	0.00	0.00
26 Mar 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
27 Mar 99			0.00	0.00	0.00	0.00	0.00	0.00
29 Mar 99	1.00	35.61	0.00	0.00	1.00	35.61	1.00	35.61
30 Mar 99	1.00	35.61	0.00	0.00	0.00	0.00	0.00	0.00
31 Mar 99		0.00	0.00	0.00	0.00	0.00	2.00	70.65
1 Apr 99	2.00	71.22	0.00	0.00	0.00	0.00	0.00	0.00
2 Apr 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Apr 99	2.00	71.22	0.00	0.00	0.00	0.00	0.00	0.00
4 Apr 99	2.00	71.22	0.00	0.00	0.00	0.00	0.00	0.00
5 Apr 99	2.00	71.22	0.00	0.00	4.00	133.28	3.50	116.62
6 Apr 99	1.75	62.32	0.00	0.00	0.00	0.00	4.50	155.09
7 Apr 99	2.00	71.22	0.00	0.00	0.00	0.00	0.00	0.00
8 Apr 99	2.00	71.22	0.00	0.00	0.00	0.00	0.00	0.00
9 Apr 99	0.75	26.71	0.00	0.00	0.00	0.00	0.00	0.00
12 Apr 99	1.25	44.51	0.00	0.00	3.00	99.96	4.00	133.28
13 Apr 99	2.00	71.22	0.00	0.00	0.00	0.00	0.00	0.00
14 Apr 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
15 Apr 99	1.75	51.17	0.00	0.00	0.00	0.00	0.00	0.00
16 Apr 99	0.00	0.00	0.00	0.00	2.00	56.36	2.00	56.36
19 Apr 99	1.25	41.65	0.00	0.00	0.00	0.00	4.00	133.28
20 Apr 99	1.00	33.32	0.00	0.00	1.00	33.32	0.00	0.00
21 Apr 99	0.25	8.33	0.00	0.00	0.00	0.00	0.00	0.00

Date	Plant Rounds, SDI, Sampling		Plant Laboratory Water Analysis		Plant Data Entry Reporting		Plant Meetings, Training, Safety	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
22 Apr 99	0.75	24.99	0.00	0.00	0.00	0.00	0.00	0.00
23 Apr 99	1.00	33.32	0.00	0.00	0.00	0.00	0.00	0.00
24 Apr 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26 Apr 99	0.50	17.80	0.00	0.00	0.00	0.00	14.00	477.93
27 Apr 99	0.75	26.71	0.00	0.00	0.00	0.00	0.00	0.00
28 Apr 99	1.00	35.62	0.00	0.00	0.00	0.00	8.50	293.53
29 Apr 99	1.00	33.32	0.00	0.00	0.50	16.66	0.00	0.00
4 May 99	1.50	68.16	0.00	0.00	0.00	0.00	0.00	0.00
5 May 99	1.00	35.62	0.00	0.00	0.00	0.00	3.50	116.62
6 May 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00
7 May 99	1.25	44.52	0.00	0.00	0.00	0.00	0.00	0.00
8 May 99	1.75	62.32	0.00	0.00	0.00	0.00	0.00	0.00
9 May 99	1.75	62.32	0.00	0.00	0.00	0.00	0.00	0.00
10 May 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
11 May 99	2.00	77.99	0.00	0.00	0.00	0.00	0.00	0.00
12 May 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
13 May 99	1.00	35.62	0.00	0.00	0.00	0.00	0.00	0.00
16 May 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 May 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
18 May 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
19 May 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
20 May 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
21 May 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
22 May 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 May 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24 May 99	1.50	53.42	0.00	0.00	0.00	0.00	3.00	106.83
25 May 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
26 May 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
27 May 99	2.00	71.22	0.00	0.00	0.00	0.00	0.00	0.00
1 Jun 99	1.50	53.42	0.00	0.00	4.00	133.28	0.00	0.00
2 Jun 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
3 Jun 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
4 Jun 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
5 Jun 99	0.00	0.00	0.00	0.00	4.00	133.28	0.00	0.00
7 Jun 99	2.00	71.23	0.00	0.00	4.00	170.41	0.00	0.00
8 Jun 99	1.00	35.61	0.00	0.00	0.00	0.00	0.00	0.00
9 Jun 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
10 Jun 99	2.00	71.23	0.00	0.00	0.00	0.00	0.00	0.00
11 Jun 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14 Jun 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
15 Jun 99	2.50	89.03	0.00	0.00	0.00	0.00	0.00	0.00
16 Jun 99	1.00	35.61	0.00	0.00	0.00	0.00	0.00	0.00
17 Jun 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
18 Jun 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
19 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21 Jun 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00

Date	Plant Rounds, SDI, Sampling		Plant Laboratory Water Analysis		Plant Data Entry Reporting		Plant Meetings, Training, Safety	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
22 Jun 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
23 Jun 99	1.50	53.42	0.00	0.00	4.00	133.28	0.00	0.00
24 Jun 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
28 Jun 99	2.00	56.36	0.00	0.00	0.00	0.00	0.00	0.00
29 Jun 99	1.50	53.42	0.00	0.00	0.00	0.00	0.00	0.00
30 Jun 99	1.50	53.42	0.00	0.00	0.00	0.00	13.50	460.13
1 Jul 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00
3 Jul 99			0.00	0.00			0.00	0.00
5 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 Jul 99	1.50	67.07	0.00	0.00	4.00	170.16	0.00	0.00
7 Jul 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00
8 Jul 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00
11 Jul 99			0.00	0.00	0.00	0.00	0.00	0.00
12 Jul 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00
13 Jul 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00
14 Jul 99	1.50	67.07	0.00	0.00	0.00	0.00	5.00	212.70
15 Jul 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00
16 Jul 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00
18 Jul 99	0.00	0.00	0.00	0.00	3.00	99.75	0.00	0.00
19 Jul 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00
20 Jul 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00
21 Jul 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00
22 Jul 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00
23 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	1.00	33.25
25 Jul 99	1.00	33.25	0.00	0.00	0.00	0.00	0.00	0.00
26 Jul 99	1.50	63.81	0.00	0.00	0.00	0.00	0.00	0.00
27 Jul 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00
28 Jul 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00
29 Jul 99	1.00	42.54	0.00	0.00	0.00	0.00	0.00	0.00
30 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	2.50	106.35
31 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 Aug 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00
3 Aug 99	1.50	67.07	0.00	0.00	0.00	0.00	4.00	170.16
4 Aug 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00
5 Aug 99	1.50	67.07	0.00	0.00	0.00	0.00	7.00	306.46
6 Aug 99	0.00	0.00	0.00	0.00	6.00	199.50	0.00	0.00
9 Aug 99	1.00	44.72	0.00	0.00	0.00	0.00	3.00	127.62
10 Aug 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00
11 Aug 99	1.50	67.07	0.00	0.00	0.00	0.00	2.00	85.08
12 Aug 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00
13 Aug 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00
14 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16 Aug 99	0.50	21.27	0.00	0.00	0.00	0.00	0.00	0.00
17 Aug 99	1.50	63.81	0.00	0.00	0.00	0.00	0.00	0.00
18 Aug 99	1.50	63.81	0.00	0.00	0.00	0.00	0.00	0.00
19 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	9.00	382.86

Date	Plant Rounds, SDI, Sampling		Plant Laboratory Water Analysis		Plant Data Entry Reporting		Plant Meetings, Training, Safety	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
22 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 Aug 99	3.00	127.62	0.00	0.00	1.50	63.81	5.00	215.96
24 Aug 99	1.50	67.07	0.00	0.00	0.00	0.00	6.00	263.92
25 Aug 99	1.50	64.90	0.00	0.00	0.00	0.00	14.00	606.41
26 Aug 99	1.50	67.07	0.00	0.00	0.00	0.00	0.00	0.00
27 Aug 99	1.50	67.07	0.00	0.00	2.00	89.42	0.00	0.00
30 Aug 99	1.50	67.08	0.00	0.00	0.00	0.00	1.50	63.81
31 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Sep 99			1.00	44.71	0.00	0.00	0.00	0.00
2 Sep 99	0.00	0.00	1.00	44.71	0.00	0.00	0.00	0.00
7 Sep 99	1.00	42.54	1.00	44.71	0.00	0.00	2.50	106.35
8 Sep 99			0.00	0.00	1.00	42.54	0.00	0.00
9 Sep 99	0.00	0.00	2.00		0.00	0.00		
10 Sep 99	0.00	0.00	2.00	85.08	0.00	0.00	1.00	42.54
11 Sep 99	0.00	0.00			0.00	0.00	0.00	0.00
13 Sep 99	0.00	0.00	1.00	42.54	0.00	0.00	0.00	0.00
14 Sep 99	1.00	42.54	0.00	0.00	0.00	0.00	0.00	0.00
15 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	3.00	127.62
16 Sep 99	1.00	42.54	2.00	89.42	0.00	0.00	2.00	85.08
17 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 Sep 99	3.00	130.89	2.00	91.78	0.00	0.00	1.00	45.82
21 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 Sep 99	1.50	65.45	0.00	0.00	0.00	0.00	1.50	65.45
23 Sep 99	1.00	45.89	3.00	137.67	0.00	0.00	4.50	197.47
24 Sep 99	3.00	22.95	1.00	45.89	0.00	0.00	3.00	134.29
25 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27 Sep 99	0.00	0.00	1.00	45.89	0.00	0.00	1.00	45.89
28 Sep 99	0.00	0.00	1.00	43.63	0.00	0.00	4.00	176.78
29 Sep 99	0.00	0.00	3.00	130.89	0.00	0.00	9.00	403.97
30 Sep 99	0.50	22.95	1.00	45.89	0.00	0.00	14.00	626.64
1 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 Oct 99	0.00	0.00	1.00	45.89	1.00	45.89	0.00	0.00
5 Oct 99	1.00	45.89	1.00	45.89	1.00	45.89	0.00	0.00
6 Oct 99	1.00	45.89	0.50	22.95	0.50	22.95	0.00	0.00
7 Oct 99	0.50	22.95	0.50	22.95	0.50	22.95	0.00	0.00
9 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 Oct 99	0.50	22.95	2.00	91.78	0.00	0.00	0.00	0.00
12 Oct 99	0.50	22.95	0.50	22.95	0.50	22.95	0.00	0.00
13 Oct 99	0.00	0.00	2.00	87.26	0.00	0.00	1.00	45.89
14 Oct 99	0.50	22.95	0.50	22.95	0.00	0.00	1.00	45.89
17 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 Oct 99	1.00	45.89	1.00	45.89	0.50	22.95	0.00	0.00
19 Oct 99	1.00	45.89	1.00	45.89	0.50	22.95	0.00	0.00
20 Oct 99	0.50	22.95	0.00	0.00	1.00	45.89	1.00	45.89
21 Oct 99	0.50	22.95	1.00	45.89	1.00	45.89		

Date	Plant Rounds, SDI, Sampling		Plant Laboratory Water Analysis		Plant Data Entry Reporting		Plant Meetings, Training, Safety	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
22 Oct 99	0.50	22.95	1.00	45.89	0.50	22.95	2.00	91.78
25 Oct 99	1.00	45.89	0.00	0.00	0.50	22.95	2.50	114.73
26 Oct 99	0.50	22.95	1.00	45.89	0.00	0.00	0.00	0.00
27 Oct 99	0.50	22.95	1.00	45.89	0.00	0.00	0.00	0.00
28 Oct 99	1.00	45.89	0.00	0.00	0.50	22.95	0.00	0.00

PLANT LABOR (continued)

Relevant Presentation	Table 5.1	Figure 5.4	Table 5.1	Figure 5.4	Table 5.1	Figure 5.4
Date	**Plant Receiving Shipping**		**Plant Upgrades Modifications**		**Plant Repairs, Maintenance**	
	Staff-hours	**Labor Costs, $**	**Staff-hours**	**Labor Costs, $**	**Staff-hours**	**Labor Costs, $**
1 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00
2 Mar 99	0.00	0.00	0.00	0.00	2.00	71.22
4 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00
5 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00
6 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00
7 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00
8 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00
9 Mar 99	0.00	0.00	0.00	0.00	1.50	53.67
10 Mar 99	2.00	66.64	0.00	0.00		
11 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00
12 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00
13 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00
14 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00
15 Mar 99	0.00	0.00	1.50	49.98	3.00	99.96
16 Mar 99	0.00	0.00	0.00	0.00	6.00	206.79
17 Mar 99	2.00	71.22	2.00	66.64	2.00	66.64
18 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00
19 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00
20 Mar 99	0.00	0.00	0.00	0.00	0.00	0.00
22 Mar 99	1.00	33.32	0.00	0.00	4.25	146.19
23 Mar 99	0.00	0.00	0.00	0.00	9.50	324.56
25 Mar 99	3.50	124.64	20.50	613.53	18.50	601.04
26 Mar 99	0.00	0.00	5.00	205.70	1.50	49.98
27 Mar 99	0.00	0.00				
29 Mar 99	0.00	0.00	0.00	0.00		0.00
30 Mar 99	0.00	0.00	2.00	71.22	1.00	35.61
31 Mar 99	0.00	0.00	3.00	105.97	2.00	70.65
1 Apr 99	0.00	0.00	0.00	0.00	4.00	142.44
2 Apr 99	0.00	0.00	0.00	0.00	0.00	0.00
3 Apr 99	0.00	0.00	0.00	0.00	2.00	71.22
4 Apr 99	0.00	0.00	0.00	0.00		0.00
5 Apr 99	0.00	0.00	0.00	0.00	2.00	82.28
6 Apr 99	0.00	0.00	4.00	137.86		
7 Apr 99	0.00	0.00	0.00	0.00	8.50	286.66
8 Apr 99	0.00	0.00	6.50	224.60	5.00	166.60
9 Apr 99	0.00	0.00	4.75	158.27	6.00	189.64
12 Apr 99	0.00	0.00	0.00	0.00	1.25	44.51
13 Apr 99	0.00	0.00	0.00	0.00	0.00	0.00
14 Apr 99	0.00	0.00	0.00	0.00	2.00	71.56
15 Apr 99	0.00	0.00	0.00	0.00	3.00	99.96
16 Apr 99	0.00	0.00	0.00	0.00	0.00	0.00
19 Apr 99	0.00	0.00	0.00	0.00	0.00	0.00
20 Apr 99	0.00	0.00	0.00	0.00	3.00	99.96
21 Apr 99	0.00	0.00	0.00	0.00	7.00	287.98

Date	Plant Receiving Shipping		Plant Upgrades Modifications		Plant Repairs, Maintenance	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
22 Apr 99	0.00	0.00	0.00	0.00	12.00	462.40
23 Apr 99	0.00	0.00	0.00	0.00	1.00	41.14
24 Apr 99	0.00	0.00	0.00	0.00	8.00	225.44
26 Apr 99	2.25	80.12	0.00	0.00	0.00	0.00
27 Apr 99	1.00	33.32	0.00	0.00	0.00	0.00
28 Apr 99	0.00	0.00	0.00	0.00	4.00	135.57
29 Apr 99	2.50	83.30	0.00	0.00	0.00	0.00
4 May 99	0.00	0.00	0.00	0.00	7.00	240.11
5 May 99	0.00	0.00	0.00	0.00	4.75	162.28
6 May 99	0.00	0.00	0.00	0.00	3.00	99.40
7 May 99	0.00	0.00	0.00	0.00	4.00	148.92
8 May 99	0.00	0.00	0.00	0.00		0.00
9 May 99	0.00	0.00	0.00	0.00	0.00	0.00
10 May 99	0.00	0.00	0.00	0.00	10.00	355.71
11 May 99	0.00	0.00	0.00	0.00	24.50	903.86
12 May 99	0.00	0.00	0.00	0.00	23.00	848.19
13 May 99	0.00	0.00	0.00	0.00	9.00	370.26
16 May 99	0.00	0.00	0.00	0.00	1.00	28.18
17 May 99	0.00	0.00	0.00	0.00	9.00	281.61
18 May 99	0.00	0.00	14.00	499.10	1.00	35.61
19 May 99	0.00	0.00	0.00	0.00	15.00	542.53
20 May 99	0.00	0.00	0.00	0.00	5.50	185.55
21 May 99	0.00	0.00	0.00	0.00	7.00	287.98
22 May 99	0.00	0.00	0.00	0.00	9.50	274.81
23 May 99	0.00	0.00	0.00	0.00	2.00	56.36
24 May 99	0.00	0.00	6.00	199.92	4.00	137.86
25 May 99	0.00	0.00	0.00	0.00	16.00	534.29
26 May 99	0.00	0.00	0.00	0.00	14.00	477.93
27 May 99	4.00	168.98	0.00	0.00	2.00	59.94
1 Jun 99	0.00	0.00	6.00	209.08	0.00	0.00
2 Jun 99	0.00	0.00	7.00	244.69	6.00	194.78
3 Jun 99	0.00	0.00	0.00	0.00	10.00	331.50
4 Jun 99	0.00	0.00	0.00	0.00	3.00	106.83
5 Jun 99	0.00	0.00	0.00	0.00	3.00	84.54
7 Jun 99	1.00	35.61	0.00	0.00	5.50	184.71
8 Jun 99	0.00	0.00	16.00	663.76	16.00	534.29
9 Jun 99	2.00	68.93	3.00	116.29	0.00	0.00
10 Jun 99	0.00	0.00	0.00	0.00	16.50	539.82
11 Jun 00	4.00	115.30	0.00	0.00	7.00	212.44
13 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00
14 Jun 99	0.00	0.00	13.00	444.61		
15 Jun 99	0.00	0.00	0.00	0.00	18.00	629.01
16 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00
17 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00
18 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00
19 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00
20 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00
21 Jun 99	0.00	0.00	0.00	0.00	9.50	323.41

Date	Plant Receiving Shipping		Plant Upgrades Modifications		Plant Repairs, Maintenance	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
22 Jun 99	0.00	0.00	0.00	0.00	7.00	242.40
23 Jun 99	0.00	0.00	4.00	133.28	0.00	0.00
24 Jun 99	0.00	0.00	5.00	166.60	7.00	242.40
28 Jun 99	0.00	0.00	0.00	0.00		
29 Jun 99	0.00	0.00	0.00	0.00	5.50	188.99
30 Jun 99	0.00	0.00	0.00	0.00	0.00	0.00
1 Jul 99	0.00	0.00	0.00	0.00	10.00	436.25
3 Jul 99	0.00	0.00	0.00	0.00		
5 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00
6 Jul 99	0.00	0.00	0.00	0.00	5.00	212.70
7 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00
8 Jul 99	0.00	0.00	0.00	0.00	11.00	478.79
11 Jul 99	0.00	0.00	0.00	0.00		
12 Jul 99	0.00	0.00	0.00	0.00	1.00	42.54
13 Jul 99	0.00	0.00	0.00	0.00	2.50	106.35
14 Jul 99	0.00	0.00	0.00	0.00	4.00	178.84
15 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00
16 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00
18 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00
19 Jul 99	0.00	0.00	0.00	0.00	9.00	385.03
20 Jul 99	0.00	0.00	0.00	0.00	11.50	500.06
21 Jul 99	0.00	0.00	0.00	0.00	2.00	85.08
22 Jul 99	2.00	89.42	0.00	0.00	0.50	21.27
23 Jul 99	0.00	0.00	0.00	0.00	8.00	266.00
25 Jul 99	0.00	0.00	0.00	0.00	3.00	99.75
26 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00
27 Jul 99	0.00	0.00	0.00	0.00	13.00	561.70
28 Jul 99	0.00	0.00	11.00	455.87	4.00	172.33
29 Jul 99	0.00	0.00	5.00	203.41	2.50	139.41
30 Jul 99	0.00	0.00	0.00	0.00	4.50	182.14
31 Jul 99	0.00	0.00	0.00	0.00	0.00	0.00
1 Aug 99	0.00	0.00	0.00	0.00	2.00	66.78
2 Aug 99	0.00	0.00	0.00	0.00	4.00	153.75
3 Aug 99	0.00	0.00	7.00	306.46	0.00	0.00
4 Aug 99	0.00	0.00	12.00	521.33	1.00	42.54
5 Aug 99	0.00	0.00	0.00	0.00	4.00	170.16
6 Aug 99	0.00	0.00	0.00	0.00	8.50	283.54
9 Aug 99	1.00	42.54	0.00	0.00	0.00	0.00
10 Aug 99	0.00	0.00	0.00	0.00	16.00	672.91
11 Aug 99	0.00	0.00	0.00	0.00	1.00	42.54
12 Aug 99	0.00	0.00	1.00	42.54	1.30	67.07
13 Aug 99	0.00	0.00	4.00	170.16	0.00	0.00
14 Aug 99	0.00	0.00	0.00	0.00	7.50	249.38
15 Aug 99	0.00	0.00	0.00	0.00	4.00	133.00
16 Aug 99	0.00	0.00	0.00	0.00	1.00	42.54
17 Aug 99	0.00	0.00	5.00	212.70	0.00	0.00
18 Aug 99	0.00	0.00	4.30	172.85	2.00	85.08
19 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00

Date	Plant Receiving Shipping		Plant Upgrades Modifications		Plant Repairs, Maintenance	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
22 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00
23 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00
24 Aug 99	0.00	0.00	1.00	42.54	6.50	278.68
25 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00
26 Aug 99	2.00	85.08	5.00	223.55	7.00	297.78
27 Aug 99	0.00	0.00	0.00	0.00	8.00	340.32
30 Aug 99	2.00	85.08	0.00	0.00	4.00	174.50
31 Aug 99	0.00	0.00	0.00	0.00	0.00	0.00
1 Sep 99	0.00	0.00	0.00	0.00	4.00	178.84
2 Sep 99	0.00	0.00	0.00	0.00	4.00	178.84
7 Sep 99	0.00	0.00	0.00	0.00	5.00	212.70
8 Sep 99	0.00	0.00	0.00	0.00	4.00	170.16
9 Sep 99	0.00	0.00	0.00	0.00		
10 Sep 99	0.00	0.00	0.00	0.00	6.00	259.58
11 Sep 99	0.00	0.00	0.00	0.00	7.00	297.78
13 Sep 99	0.00	0.00	0.00	0.00	8.50	368.10
14 Sep 99	0.00	0.00	0.00	0.00	5.50	233.97
15 Sep 99	0.00	0.00	3.00	127.62	3.00	127.62
16 Sep 99	0.00	0.00	0.00	0.00	6.50	263.36
17 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00
20 Sep 99	0.00	0.00	0.00	0.00	5.50	242.24
21 Sep 99	0.00	0.00	0.00	0.00	2.00	89.52
22 Sep 99	1.00	43.63	0.00	0.00	2.50	109.08
23 Sep 99	0.00	0.00	0.00	0.00	8.50	344.24
24 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00
25 Sep 99	0.00	0.00	0.00	0.00	5.50	189.09
27 Sep 99	0.00	0.00	0.00	0.00	3.50	160.62
28 Sep 99	0.00	0.00	0.00	0.00	1.00	45.89
29 Sep 99	0.00	0.00	0.00	0.00	2.00	87.26
30 Sep 99	0.00	0.00	0.00	0.00	0.00	0.00
1 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00
2 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00
3 Oct 99	0.00	0.00	0.00	0.00	4.00	183.56
4 Oct 99	0.00	0.00	0.00	0.00	2.00	91.78
5 Oct 99	0.00	0.00	0.00	0.00	1.00	45.89
6 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00
7 Oct 99	0.00	0.00	0.00	0.00	2.50	114.73
9 Oct 99	0.00	0.00	0.00	0.00	2.00	69.14
10 Oct 99	0.00	0.00	0.00	0.00	2.00	69.14
11 Oct 99	0.00	0.00	0.00	0.00	3.50	153.84
12 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00
13 Oct 99	1.00	45.89	0.00	0.00	0.00	0.00
14 Oct 99	1.00	45.89	0.00	0.00	0.00	0.00
17 Oct 99	0.00	0.00	0.00	0.00	1.00	34.57
18 Oct 99	0.00	0.00	0.00	0.00	8.00	353.56
19 Oct 99	0.00	0.00	0.00	0.00	5.00	218.15
20 Oct 99	0.00	0.00	0.00	0.00	10.50	443.01
21 Oct 99			0.00	0.00	7.00	309.93

Date	Plant Receiving Shipping		Plant Upgrades Modifications		Plant Repairs, Maintenance	
	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $	Staff-hours	Labor Costs, $
22 Oct 99			0.00	0.00	5.00	199.65
25 Oct 99	0.00	0.00	0.00	0.00	5.00	218.15
26 Oct 99	0.00	0.00	0.00	0.00	0.00	0.00
27 Oct 99	0.00	0.00	0.00	0.00	7.50	335.14
28 Oct 99	0.00	0.00	0.00	0.00	6.00	268.56