

State of Florida



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COMMISSION  
CLERK

# Public Service Commission

CAPITAL CIRCLE OFFICE CENTER • 2540 SHUMARD OAK BOULEVARD  
TALLAHASSEE, FLORIDA 32399-0850

**-M-E-M-O-R-A-N-D-U-M-**

---

**DATE:** March 3, 2009  
**TO:** Ann Cole, Commission Clerk - PSC, Office of Commission Clerk  
**FROM:** Patricia L. Brady, Regulatory Analyst IV, Division of Economic Regulation *PB/ks*  
**RE:** Docket No. 090019-WS

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Please add the attached correspondence from Richard Lot, dated March 20, 2006, regarding the replacement of a reverse osmosis system to the above docket. Thanks.

PB:kb

DOCUMENT NUMBER-DATE  
01712 MAR-3 8  
FPSC-COMMISSION CLERK

SERVICE MANAGEMENT SYSTEMS, INC.

**SMS**

March 20, 2006

Richard Lot  
Dept. of Environmental Protection  
3319 Maguire Boulevard  
Suite 232  
Orlando, Florida 32803-3767

RE: PWSID Number 3054060


Dear Mr. Lot:

Service Management Systems, Inc. is replacing our 25-year-old reverse osmosis treatment with a new US Filter reverse osmosis system. Our old system using Dow membranes is obsolete.

The new equipment is going into the exact location as the old treatment equipment is located in the Aquarina community in South Melbourne Beach, Florida.

The new equipment complies with all DEP rules.

Sincerely yours,



James H. Bates  
President

/gak

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MAR 23 2006  
Central Dist. - DEP

DOCUMENT NUMBER-DATE

01712 MAR-3 8

FPSC-COMMISSION CLERK

7500 S. Highway A1A • Melbourne Beach, Florida 32951 • (321) 723-2447

March 20, 2006

Richard Lot  
Dept. of Environmental Protection  
3319 Maguire Boulevard  
Suite 232  
Orlando, Florida 32803-3767

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James H. Bates  
President

/gak

THIS IS NOT ALLOWED UNTIL THE DEP IS SATISFIED THAT THE NEW FACILITIES ARE OF THE SAME DESIGN AND CAPACITY.  
SUBMIT ALL RELEVANT SPECIFICATIONS, DESIGN AND ENGINEERING DETAILS FOR REVIEW.  
IF NO PERMIT WILL BE REQUIRED, YOU WILL BE REQUIRED TO SUBMIT A SET OF ALL TECHNICAL DATA SHEETS AND RECORD DRAWINGS TO REPLACE WHAT IS ON FILE.

MAR 23 2006

central Dist. - DEP

## Orobitg, Johanna

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**From:** System Administrator  
**To:** jimbates@infi.net  
**Sent:** Thursday, March 23, 2006 3:52 PM  
**Subject:** Undeliverable:SMS Att: James H. Bates

Your message did not reach some or all of the intended recipients.

Subject: SMS Att: James H. Bates  
Sent: 3/23/2006 3:52 PM

The following recipient(s) could not be reached:

jimbates@infi.net on 3/23/2006 3:52 PM

The e-mail account does not exist at the organization this message was sent to. Check the e-mail address, or contact the recipient directly to find out the correct address.

<thexprot2.floridadep.net #5.1.1 smtp;550 5.1.1 <jimbates@infi.net>... User unknown>

## Orobitg, Johanna

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**From:** NET SatisFAXtion [postmaster@fax1.dep.state.fl.us]  
**Sent:** Thursday, March 23, 2006 3:54 PM  
**To:** Orobitg; Orobitg, Johanna  
**Subject:** DELIVERED: SMS Att: James H. Bates

This is a DELIVERY notification from NET SatisFAXtion

Your message:

**Subject:** SMS Att: James H. Bates  
**Sent:** 3/23/2006 3:51 PM

Was delivered to the following recipient(s):

3217233304@fax1.dep.state.fl.us on 3/23/2006 3:52 PM  
Total pages: 2 of 2  
CSID: 3217233304  
Transfer time: 0:01:47  
Transfer rate: 9600  
Retries: 0  
Error count: 2  
Port used: BT\_E814



RECEIVED  
MAR 27 2006  
Central Dist. - DEP

**EQUIPMENT PROPOSAL FOR:**



Service Management Systems, Inc.  
7500 South A1A  
Melbourne Beach, Florida 32951

Attn: Jim Bates

Reverse Osmosis System Upgrade

USFilter/Process Water Systems  
Proposal #: 0510-018, Rev. 1

Dated: 10/13/05

For additional information, please contact:

**Joey Tippett, Sales, Orlando Florida**

**Tel: 407.650.3570**  
**Fax: 407.650.3565**  
**Email: [tippettj@usfilter.com](mailto:tippettj@usfilter.com)**

SERVICE MANAGEMENT SYSTEMS, INC.  
7500 S. Highway A1A  
Melbourne Beach, Florida 32951



## **Proposal – Table of Contents**

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Joey Tippett  
SALES REPRESENTATIVE  
E-Mail: [tippettj@usfilter.com](mailto:tippettj@usfilter.com)

USFilter CORPORATION  
4506 LB. McLeod, Suite C  
Orlando, Florida 32811

TELEPHONE 407.650.3570  
FACSIMILE 407.650.3565  
CELL PHONE 407.509.4162

October 12, 2005

Service Management Systems, Inc.  
7500 South A1A  
Melbourne Beach, Florida 32951

Attn: Jim Bates

Subject: Water Treatment System  
USFilter Proposal # 0510-018, Rev. 1

Dear Mr. Bates,

USFilter is pleased to submit the attached proposal in response to your request for proposal. Our technical offering is designed to cost effectively accomplish the objectives of meeting treated water supply quantity and quality in accordance with your requirements.

Please note the following key aspects of our offering.

- The proposed Reverse Osmosis system will be Value-Max Low Energy Series unit. The RO unit will use (12) BWLE-440 Membranes a 2:2:1-3M Array. The unit is capable of producing 70 GPM continuously of product water.
- The Reverse Osmosis System is manufactured in our ISO Certified Colorado Springs manufacturing facility to the highest quality standards as noted in the proposal.
- Local service and Installation services are provided from our Tampa branch location with experienced sales, engineering, project managers, and service technicians who are on-call around the clock to support our customers.

Thank you for considering USFilter for your water treatment needs. We look forward to the opportunity to meet with you personally to review the technical and commercial aspects of our proposal, and answer any questions you may have.

Sincerely,

Joey Tippett  
S&P Sales  
USFilter



# **USFilter**

**Section 2 – Equipment and Pricing**

To: Joey Tippett

**Major Equipment, Documents and Services:**

**ITEM 1 Reverse Osmosis System**  
**Function: Remove suspended and dissolved solids**

- USFilter: VL-3-12-AAAF
- 70 GPM Product Flow at 18.94 Gallons/ft<sup>2</sup>-day flux
- USFilter MC10 Microcontroller.
- Vessel Array: 2:2:1-3M with 3 Membranes per vessel
- Twelve (12) Filmtec BWLE-440 Membranes or equal
- 300 PSIG Design Pressure Membrane Housings
- See section 9 for additional information

- Process and Instrumentation Diagram
- General Arrangement Drawings
- Schematics for Electrical Enclosures
- Layout Drawings for Electrical Enclosures
- Cleaning Instructions
- Spare Parts and Consumables List
- Operation & Maintenance Manuals

<b>Total</b>	<b>Major</b>	<b>Equipment</b>
<b>Price.....</b>		
.....\$ 48,670.00		

<b>Adder</b>	<b>Estimated</b>	<b>Freight</b>	<b>(FCA,</b>
<b>Melbourne</b>			<b>Beach</b>
<b>FL).....</b>	<b>\$ 2,900.00</b>		

Price is valid for 60 days.

Prices do not include any taxes, duties.

**ITEM 2 Installation Services**

USFilter will provide the following:

- Installation of the RO System
- Installation of the Membranes
- Electrical connection from fused disconnect and all low voltage connections between pretreatment and R.O.
- Forklift rental for setting system in place
- Complete start-up and customer training

**ITEM 3 Engineering and Documentation**

USFilter will provide on CD ROM (1) and (1) Hard Copy

*Joey Tippett*  
2/6/06



Proposed payment terms are as follows:

- 20% billed upon Acceptance of Purchase Order
- 70% billed upon Equipment Shipment.
- 10% billed upon Completion of Start-Up, not to exceed 60 days from shipment.

Net 30 Days.

Estimated project schedule after receipt and acceptance of order:

- Shipment of equipment: 8-10 Weeks
- Installation: 2 Days
- Start-up: 2 Days

Field Service, Start-up and/or Training are per the enclosed Field Service Policy, located in Section 5.

# **USFilter**

**Section 3 – Scope of Supply by  
USFilter**

The following is a table of responsibilities that USFilter has included within our offering.

<u>No.</u>	<u>Work Scope Item</u>	<u>SMS</u>	<u>USFilter</u>
1.	All proposed equipment with valve nests, fittings, and piping		X
2.	Equipment and instrumentation quality assurance check in factory		X
3.	Finish painting of the equipment		X
4.	Site for the US Filter equipment that complies with the requirements of the hydraulic profile, process flow, or special design requirements	X	
5.	Permanent electrical service, terminated at the disconnect switch of the main power distribution or control panel within the US Filter equipment battery limit. 480 V, 3 PH, 30 AMPS.	X	
6.	Valved supply of feed water to the US Filter equipment battery limit. See P&I Drawings for flow and pressure requirements.	X	
7.	Discharge of effluent waters such as process return, outfall, or sewer tie-in outside of the US Filter equipment battery limit.	X	
8.	Valved supply of permanent compressed and/or instrument quality air to the US Filter equipment battery limit. Volume and flow TBD.	X	
9.	Instrumentation field calibration		X
10.	Reinstallation of interconnecting piping and any items removed from the equipment for shipping purposes		X
11.	Wiring of loose instruments to control panels and between skids for alarms, interlocks, etc.		X
12.	Interconnecting conduit and wiring between unit components that are not skid mounted		X
13.	Field touch-up painting, (If Required)**		X
14.	Field testing of unit assemblies and interconnecting piping**	X	
15.	System chemicals, as required		
16.	Labor for loading membranes in the RO Units and filters		X
17.	Supervision for loading of Membranes and filters		
18.	Technical direction of start-up**	X	
19.	Training of operators, as part of start-up**		X
20.	Installation and Wiring of loose shipped instruments and valves		X
21.	Manual valves outside equipment boundary limits	X	
22.	Supply of monitoring system for the treatment system by local panel display.		X

\*\* Available from USFilter at the per diem rate listed in Section 5 of this proposal.

# **USFilter**

## **Section 4 – Engineering Documentation**

This section includes specifications for the engineering documentation. The documentation titles appearing in bold and italic text are included as part of this Proposal Offering. Further detailed information can be provided upon request.

***P&ID (Process & Instrumentation Diagram)*** – A project plan drawing which provides a detailed flow schematic and instrumentation arrangement process symbology. P&ID's include specific flow data, component and instrument tagging information, etc.

**Tagged Component List** – A detailed list of system components which is cross-referenced by component tag number, and includes a description of the component (its purpose in system), manufacturer, model number, and available operating range.

**Sequence of Operating Chart** – A tabular form representation of the system alarms or condition, their set points, descriptions, program delays, and control responses.

**Alarm/Condition Response Chart** – A tabular form representation of the system alarms or conditions, their set points, description, program delays, and control responses.

**Pump Chart** – A table containing detailed information about the system pumps including: tag number, design flow, design head pressure, horsepower, impeller size, power requirement, etc.

**Component Cut Sheets** – A compilation of vendor sales data for all process components.

***Piping and General Arrangement Drawing(s)*** – Drawing(s) which detail(s) the physical relationship between all mechanical skids as they will be

installed, including minimum relationship to walls, columns, existing piping and ductwork as made accessible from the customer.

**Mechanical Construction Drawings(s) – Shop drawing(s)** required to fabricate all mechanical skids.

**Interconnecting Piping Drawing(s) – Mechanical Layout Drawing(s)** with detail of piping interconnections between skids added.

**Interconnecting Electrical Drawing** – A single drawing showing all the wire runs between terminals located in separate enclosures or remote mounted instrumentation.

**Electrical Construction Drawing(s) – Shop drawing(s)** required to fabricate electrical control panels including: face & back panel layouts and wiring schematic.

**Analog Loop Diagrams** - An individual diagram for each analog loop indicating all the components within that loop and how they are connected.

**Program Flow Charts** – Diagrams utilizing standard logic flow symbology to graphically detail sequence and decision making logic of the PLC program.

**NIST Instrument Certification** – A certificate of calibration for each measuring instrument in the system, which is traceable to an instrument, registered with the National Institute of Standards.

***Written Control Description*** – A written description of how the controls of a system are programmed, including the relationship between valves (and/or electrically controlled components) and the modes and phases of normal operation, the system alarm conditions and responses, system interlocks, etc.



**Material Certification** – A certificate of material traceability for all materials in contact with the process fluid.

**PLC Program Check-Out Certification** – A single page certificate signed by the person responsible for debugging the PLC program, which states that, the debugging has been performed utilizing USFilter standard procedures.

**PLC Program Individual Function Certification** – A sign-off of all tested program function, by the person responsible for debugging the PLC program, indicating the expected and achieved results of each test, and accompanied by an explanation of corrective action taken where the achieved results do not meet the expected results.



## **Section 5 – Field Service Policy**

### ***Field Services***

The services of a PWS Factory Service Engineer are available on an hourly or contract basis for supervision of equipment installation, start-up supervision, start-up labor, troubleshooting and/or training.

### ***Authorization***

Authorization is limited to maximum amount of this Purchase Order. If additional Purchase Order is required, customer will be notified when 75% of allocated monies have been used on the original Purchase Order. Additional work will not be performed until receipt of additional Purchase Order.

### ***Responsibility***

Unless otherwise specifically authorized in writing, the Factory Service Engineer may act only in an advisory capacity interpreting drawings, recommending sequence of work in erection, installation, start-up and repairs.

USFilter shall not be responsible for any acts, omissions or workmanship of employees, subcontractors or agents of the owner or for their failure to follow the advice or instructions of the Factory Service Engineer.

The customer at its own cost and expense shall supply all labor, materials (e.g. chemicals), tools, equipment, and facilities necessary for the execution of the work, unless agreed to otherwise in writing.

### ***Reports***

Daily summary reports are completed by the Factory Service Engineer and require an approved signature by customer's job superintendent.

### ***Travel Time***

Travel time to destination depends on availability of personnel, but will vary and shall be at USFilter's discretion. Any travel to a foreign country other than Canada or Mexico requiring at least 6 hrs will be business class and charged to the customer. Travel time is included in any quotes provided (e.g. five (5) days typically includes two (2) days travel, three (3) days on-site).

### ***Rates***

Factory Service Engineer rates apply in the manner set forth below.

**Straight Time** – Straight time is defined as time worked or traveled on a regular (non-holiday) schedule of eight (8) hours per day between 7:00 A.M. and 6:00 P.M., Monday through Friday, or for the time worked on any other agreed upon schedule of eight (8) hours per day, Monday through Friday.

**Overtime** – The rates below are based on an eight (8) hour day (10 hours per day International). Overtime is defined as time worked in excess of, or at times other than, the regular straight time schedule, including travel hours. Work or travel on Saturdays and for overtime up to four (4) hours per day will be charged at one and one-half times straight time rates. Holiday work, travel, and overtime in excess of four (4) hours will be charged at double straight time rates. A "holiday" is Sunday and any day observed by USFilter as a holiday.

As long as the Factory Service Engineer is retained by the customer, the minimum charge for weekdays will be the hourly rates as described below, plus expenses, whether requested to work or not. If a Factory Service Engineer is retained over a weekend but does not work, the charge for the weekend will be limited to expenses incurred by the Factory Service Engineer.

USFilter's standard daily Factory Service rates at the time of this proposal are:

Straight time rate Within the 50 States, Puerto Rico, Mexico and Canada: \$125.00/hr

Straight time rate, International: \$140.00/hr

Minimum billing is for a 4-hour day; all time worked in excess of 4 hours, up to 8 hours, will be billed as an 8-hour day.

The Customer shall be charged for the services of the Factory Service Engineer at the job site when service cannot be rendered because of delays or conditions beyond USFilter's control. In cases of undue delay, USFilter reserves the right to recall the Factory Service Engineer. The Customer shall cover expenses for a return trip

Where start-up services or training services of USFilter personnel are included in the purchase price of the equipment, the terms governing such service shall be as set forth in our proposal and based on a normal 5 day work week. Weekends and holidays worked will be charged at the corresponding rates. Any additional service, overtime and travel shall be invoiced at the hourly rates in effect at

# **USFilter**

the time the service is performed, plus expenses. If additional service is required due to problems that are USFilter's responsibility, an appropriate adjustment will be made.

## **Expenses**

The hourly rates for services of USFilter personnel do not include travel and living expenses. Actual living expense incurred will be added at cost, and shall be reimbursed by the Customer.

Factory Service personnel have the option of returning to their base USFilter facility every two weeks. The customer will be charged actual travel time at the straight time rate per day plus expenses.

## **Invoicing**

Invoices will be rendered depending upon contracted or otherwise agreed upon terms.

## **Default Provision:**

Upon the failure of Purchasers to make payment for service, or any part thereof, when due or upon breach of this agreement or upon the filing of a Petition in Bankruptcy, whether voluntary or involuntary; the filing of any proceedings under the provisions of Bankruptcy Act; a common law extension; Assignment for the Benefit of Creditor; receivership liquidation; dissolution; or any act of Bankruptcy, the entire unpaid balance shall, at the option of USFilter, at once become due and payable. In the event of litigation, Purchaser shall be liable for all of USFilter's costs and expense, including but not limited to, reasonable attorney's fees. Further, upon default, interest on the unpaid balance shall accrue at the rate of one percent (1%) per month, or the maximum allowable by law, whichever is lower.

## **Advance Notice and Preparation**

Supervision of Start-up – Due to the indefinite nature of many field service calls, precise scheduling of service engineering time is difficult. As sufficient advance notice is the customer's best means of ensuring an on target visit, USFilter recommends a minimum of four (4) weeks advance notice of the intended start-up date.

Adequate preparation is equally important to a good start-up. Failure to complete the equipment installation in all respects may result in serious delays. Typical deficiencies encountered are failure to pipe in drain lines, inadequate drain facilities, no regenerant chemicals on hand, inadequate inlet supply

pressure, no operating personnel available, etc. A general list of preliminary start-up requirements and precautions is included in USFilter's operating manual.

When Purchaser or Purchaser's agent is responsible for installation, this shall include unloading and setting up the equipment, assembling loose items, calibration of instruments, and all other labor not included in the proposal, which is required to make the equipment ready for operation.

In the even that adjustments to the controls or to other components in the system are required during start-up, Purchaser or the authorized contractor should make these adjustments promptly to avoid delays which will be charged at the hourly rate if delays are the result of improper preparation and/or delays in making necessary adjustments.

Other Field Service – Routine service calls are scheduled in the same way as start-ups. Four (4) weeks notice should be given. Urgent trouble calls are handled on an emergency basis and, in most cases; an engineer can be dispatched within 48 hours. However, a large share of these problems can be dealt with effectively through telephone consultation with our area Engineer or one of our Field Service Department personnel.

## **Acceptance of Equipment**

Upon completion of start-up, the Purchaser will be asked to accept the equipment and release USFilter personnel. This written acceptance serves as an acknowledgment that the equipment was brought into satisfactory operation, the customer's operations personnel were fully instructed in its operation and suitable arrangements were made for correction of any outstanding problems.

# **USFilter**

**Section 6 – Proposed System**  
**Drawings**

See the enclosed Drawings:

S8600-014, Sheet 1, Rev C  
P&I Drawing,  
ValueMAX™

S8601-073, Sheet 1, Rev D  
General Arrangement, VL3-12



# **USFilter**

## **Section 7 – Proposal Qualifications and Exceptions**

The proposed equipment is performance guaranteed to meet the following requirements for quality and quantity of water:

### **Flowrate**

Average flow rate of 70 GPM product flow from Reverse Osmosis System.

### **Quality**

See Table 1 in Section 8 for estimated product water quality.

The equipment design described in this proposal is based on the water analysis detailed herein. If the actual feedwater at time of start-up differs significantly from the attached analysis, the system design may require re-evaluation.

### **General Exclusions**

Unless stated otherwise, the following work is by others or does not apply:

- USFilter cannot determine compliance with specifications referenced but not supplied.
- Permits, Duties and Sales Taxes
- Freight
- Civil & Concrete Work
- Floor Drains & Trenches
- Water & Sewer Charges
- We do not guarantee compliance with all referenced codes and standards. In general, we are in compliance with relevant portions of UL, National Electrical Code, and OSHA.
- Nested specifications not provided/listed
- Hazardous Area
- Media Loading
- Construction Supervision
- Factory Mutual Certifications
- Secondary Containment

# US Filter

## Section 8 – Process Data

Table I lists the feedwater quality, product water specifications, and projected product quality.

**Table-I Water Quality Table**

Constituent	Units	Feed Water Design Basis**	Product Water Specifications	Estimated Product Water Quality*
Calcium (Ca)	ppm as ion	58.1		
Magnesium (Mg)	ppm as ion	42.2		
Sodium, (Na)	ppm as ion	100		
Potassium (K)	ppm as ion	9.17		
Ammonium (NH <sub>4</sub> )	ppm as ion	---		
Barium (Ba)	ppm as ion	---		
Strontium (Sr)	ppm as ion	---		
Aluminum (Al)	ppm as ion	---		
Manganese Mn)	ppm as ion	---		
Copper (Cu)	ppm as ion	---		
Iron (Fe)	ppm as ion	---		
Bicarbonate (HCO <sub>3</sub> )	ppm as CaCO <sub>3</sub>	138		
Carbonate (CO <sub>3</sub> )	ppm as CaCO <sub>3</sub>	---		
Sulfate (SO <sub>4</sub> )	ppm as ion	77.9		
Chloride (Cl)	ppm as ion	44.8		
Fluoride (F)	ppm as CaCO <sub>3</sub>	---		
Nitrate (NO <sub>3</sub> )	ppm as CaCO <sub>3</sub>	---		
Silica (SiO <sub>2</sub> )	ppm as CaCO <sub>3</sub>	---		
Phosphorus (P)	ppm as ion	---		
TOC	Ppm	< 3.0		
Conductivity (@25°C)	uS/cm	1,050		< 100
pH	Standard Unit	7.5		
Carbon Dioxide (CO <sub>2</sub> )	ppm as CaCO <sub>3</sub>	3.0		
Turbidity	NTU	< 3.0		
SDI	15 Minute Basis	< 3.0		
Hardness	ppm as CaCO <sub>3</sub>	282		
Temperature	°F	70		70

Notes:

\*\*The above water analysis is from Accurate Utilities Analysis Report, Sample Date: Dec 22, 2004.

ND = no data provided; --- = no data available

***US Filter***  
**Section 9 – Proposed Equipment**  
**Specifications**



**ValueMAX™ Reverse Osmosis  
Products  
VL Low Pressure Series**

**General Description:**

USFilter ValueMAX™ Reverse Osmosis units are economically designed and manufactured for industrial applications. These units are available standard with low energy membrane elements. The systems are horizontal vessel configurations utilizing vertical multistage pumps. They are pre-engineered, pre-assembled units that minimize installation and start-up costs. They are fully tested at the factory and require simple utility connections and with minor set up and adjustment are ready for immediate on-line service. Their simple designs maximize reliability of the Reverse Osmosis unit.

Each unit is a single pass RO system mounted on a polyurethane coated structural steel frame. The RO unit includes a high pressure feed pump, FRP, side entry pressure vessels, spiral wound thin film composite RO membranes, PVC low pressure feed piping, stainless high pressure piping, PVC reject and piping, PVC product piping, and a microprocessor controller.

**Mechanical Description:**

The major components of the ValueMAX™ VL Series are supported by the polyurethane coated carbon steel frame and designed in such a way to provide easy access for servicing, maintenance, and monitoring system performance.

The feed, low-pressure reject and product piping is Sch 80 PVC. The high-pressure piping is constructed of welded Sch10 Stainless Steel. The piping connections on the high-pressure manifold are Victaulic and threaded NPT. The inlet and outlet piping connections to the unit are PVC flanges. A single stainless steel valve is used for pump

discharge flow control and a single stainless steel valve is used for reject flow control. Sample valves are provided for the RO unit's feed and product lines. An individual sample valve is also located on the product line of each pressure vessel for analyzing individual vessel performance. Cleaning connections are provided to clean the RO membranes. All of the cleaning connections are Victaulic rolled groove type.

**Electrical Description:**

To control the operational sequences of the ValueMAX™ Reverse Osmosis unit, a highly reliable solid-state microprocessor controller is employed that monitors and protects the system from damage to itself or nearby equipment systems and/or personnel. The motor starter and controller are housed in separate NEMA 1 enclosures.

**Operational Description:**

ValueMAX™ VL Series Reverse Osmosis systems operate continuously and are monitored by the instruments and microprocessor. The microprocessor will alarm on non-critical conditions such as poor quality or shut down the RO system on critical conditions such as low suction pressure or high discharge pressure. All alarm and shut down conditions are indicated on the microprocessor. Contacts are provided to confirm the operation of the pretreatment equipment. Contacts are provided that will put the RO into a stand-by mode such as a high level in a storage tank. While in Standby mode, the Reverse Osmosis unit will be rinsed at the service flow rate for up to 6 minutes at a user settable interval to reduce the possibility of biological fouling.

**Product Offering Overview:**

Model Number*	Product Flow Rate
VL3-12	70 GPM @ 18.9psi

\* The number after VL denotes vessel lengths 3M or 4M, and the -XX denotes number of 8x40 elements



**Design Parameters:**

Configuration	Multi-Stage, Single Pass
Inlet Pressure Requirements	25 – 60 PSIG
Feed Water Temperature	15 °C (60 °F)
Feed Water Source	Well
Prefiltration Requirements	5 $\mu$ nominal
Feed Water Fouling Index	Silt Density Index (SDI) < 3
System Recovery (Nominal)	75%
Product Pressure Available	25 PSIG
Membrane Salt Rejection	99% nominal (based on 2000ppm NaCl @ 225 PSI, 77 degrees F, pH 8, and 15% recovery)
Performance Basis	A specific computer projection must be run for each individual application



**General Specifications:**

<b>Frame</b>	
Materials	Structural carbon steel and clamp type strut
Paint	Polyurethane coated, textured finish
Color	USFilter Blue, Federal Standard 25052
<b>Pump</b>	
Manufacturer	Grundfos CRN Series or equal, Victaulic connections
Motor	High efficiency, 3500 RPM, TEFC
<b>Membranes</b>	
Manufacturer	FilmTec
Model	BW30-440LE
Materials	Thin Film Composite (TFC)
Type	Spiral wound
<b>Pressure Vessels</b>	
Manufacturer	Codeline or equal
Model	8" Diameter, 80R Series or equal
Materials	Fiberglass reinforced plastic (FRP)
Rating	300 PSIG Non-Code
Process Connections	Side entry feed/concentrate Victaulic
<b>Piping Systems</b>	
Feed piping	PVC, Schedule 80, Solvent weld w/ minimal threads
High pressure piping	316L SS, Schedule 10, butt-welded w/ minimal threads
Product piping	PVC, Schedule 80, Solvent weld w/ minimal threads
Cleaning connections	Victaulic- feed & high pressure (Product is field installed)
<b>Automatic Process Valves</b>	
Inlet valve	(1/2"-2") AquaMatic, actuated diaphragm (>2") Actuated butterfly, spring assist closed
Product valve	Not included with unit – to be purchased separately, pilot solenoid valve and control logic is included with the unit (pneumatic - AO/SC)
Product rinse valve	Not included with unit – to be purchased separately, pilot solenoid valve and control logic is included with the unit (pneumatic - AC/SO)
<b>Manual Valves</b>	
Pump throttling valve	Apollo 316SST Ball Valve, socket weld, manual
Reject valve	Sam Flow 60-700 series, globe type, 316 SS, manual
Reject recycle valve	Sam Flow 60-700 series, globe type, 316 SS, manual
Sample valve (feed)	Asahi 1/4" PVC spigot
Sample valve (high pressure)	Nupro 1/4", 316SST plug valve
Sample valve (product)	Asahi 1/4" PVC spigot (One on each product tube and one common)



**Factory Procedures:**

**Instrumentation Specifications:**

<b>Pressure</b>		Assembly	Fully assembled
		Wiring	Fully wired at the factory
Indicators	Ashcroft SL1008 Test King 316SS, 63mm dial, 1/4" NPT	Testing	glycerol filled, electric pressure
Low Feed Switch	United Electric, 4-50 PSIG, 1/4" MNPT		Electrical integrity
High Discharge Switch	United Electric, 30-600 PSIG, 1/4" MNPT	Membrane Elements	Factory simulated
			Membrane elements for installation on
<b>Quality</b>		Membrane Shipping	Dry
Conductivity monitor	USFilter MC10 controller	Condition	20/208/230VAC
Conductivity sensor (feed)	USFilter C273 or equal, 1/4" MNPT	Shipping	Heat shrink protection for protection price
Conductivity sensor (product)	USFilter C273 or equal, 1/4" MNPT		
<b>Flow</b>			
Indicator (reject)	King K72 rotameter	Regulations and Standards	connections
Indicator (product)	King K72 rotameter	Quality System	ISO 9001, certified
	Blue White 451 series stainless steel pipe connections (Only utilized on units with recycle - see flow specifications)	Stainless Steel Pipe Finish	Interior - Mill Finish Exterior - Mill Finish
		Welding	Factory standard
		Electrical and Controls	National Electrical
		NEMA rating	NEMA 1
		Seismic rating	None

**Controls Specifications:**

Motor starter	NEMA 1 enclosure		
Controller	USFilter MC10 controller	Control Panel Package (Included)	NEMA 4X
Shutdown conditions	Low feed pressure High pump discharge pressure Overload condition Pretreatment out of service High temperature Tank full	with standard O&M Manual): Drawings	Installation procedures, functional specifications, Support services
Status indicator lights	Low feed pressure High pump discharge pressure Overload condition Pretreatment out of service High temperature Tank full Flush ON Product quality below set point	Quality Assurance	specification, electrical

**Operating Limits:**

Feed Temperature*	60 - 113 °F
Feed Pressure	25 - 90 PSIG

**Feedwater Requirements:**

Maximum SDI Rating	3
Maximum Turbidity	1 NTU
Maximum Free Chlorine and/or chloramine	<0.1 PPM
pH (continuous)	4 - 11
pH (cleaning - 30 min.)	1 - 12



**Flow Rate Specifications:**

Model			VL3-12		
Product (GPM)			70		
Feed (GPM)			95		
Reject (GPM)			25		
Reject recycle (GPM)			7		

**Unit Configuration Specifications:**

Model			VL3-12		
Vessel array staging			2:2:1		
Vessel diameter			8"		
Membranes / vessel			3		
Membrane quantity			12		
Vessel quantity			4		
Pump model (VM)			CRN16-100		

**Pipe Connection Specifications:**

Model			VL3-12		
Feed			2		
Product			2		
Reject			1		

**Cleaning Connection Specifications:**

Model			VL3-12		
Feed (VIC)			1.5		
Interstage (VIC)			1.5		
Reject (VIC)			1.5		
Product			Field installed		

**Utility Requirements:**

Model			VL3-12		
High voltage service			480VAC		
High voltage amp draw			27		
Motor HP (ref.)			20		
Waste drain max gpm			120		

\* A floor drain (in addition to a waste drain) should be supplied for general maintenance purposes.

**Physical Dimension Specifications:**

Model			VL3-12		
Length (in)			150		
Width (in)			44		
Height (in)			73		
Shipping weight (lbs)			2700		





**Standard Product Ordering Information:**

<b>Sample Part Number</b>		<b>67/VL</b>	<b>3 - 12</b>	<b>-</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>F</b>
<b>67/NL</b>	Standard ValueMAX™ Low Pressure RO							
<b>Vessel Length – Membrane Quantity</b>								
<b>3-XX</b>	3 each 8x40" elements per RO vessel – total number of membranes (09, 12, 18)							
<b>4-XX</b>	4 each 8x40" elements per RO vessel – total number of membranes (24, 28)							
<b>Membranes Supplied</b>								
<b>A</b>	Standard – RO membranes and product tube adapters will be loose shipped							
<b>B</b>	RO membranes and product tube adapters factory installed							
<b>X</b>	RO membranes and product tube adapters are not supplied							
<b>Control Options</b>								
<b>A</b>	Standard – MC10 Controller							
<b>B</b>	Monitors/switches/lights and terminal strips provided							
<b>C</b>	CPU to be changed to a A-B 1747-ASB remote IO adapter module							
<b>D</b>	PLC to be upgraded to Allen Bradley SLC 5/04							
<b>F</b>	PLC to be upgraded to Allen Bradley SLC 5/05							
<b>Voltage</b>								
<b>A</b>	Standard – 460VAC/60Hz/3ph							
<b>B</b>	230VAC/60Hz/3ph							
<b>C</b>	380VAC/50Hz/3ph							
<b>D</b>	575VAC/60Hz/3ph							
<b>G</b>	208VAC/60Hz/3ph							
<b>Options</b>								
<b>X</b>	Standard – No Options							
<b>F</b>	Filter housing for vertical pump skid only							
<b>P</b>	pH monitor							

*Note: Not all model number combinations are available. For non-standard options, contact USFilter Applications Engineering.*



**Section 10 – US Filter Standard  
Terms and Conditions**

1. Applicable Terms. These terms govern the purchase and sale of the equipment and related services, if any (collectively, "Equipment"), referred to in Seller's purchase order, quotation, proposal or acknowledgment, as the case may be ("Seller's Documentation"). Whether these terms are included in an offer or an acceptance by Seller, such offer or acceptance is conditioned on Buyer's assent to these terms. Seller rejects all additional or different terms in any of Buyer's forms or documents.
2. Payment. Buyer shall pay Seller the full purchase price as set forth in Seller's Documentation. Unless Seller's Documentation provides otherwise, freight, storage, insurance and all taxes, duties or other governmental charges relating to the Equipment shall be paid by Buyer. If Buyer chooses to delay shipment of Equipment, Buyer shall pay for the same as if the equipment had been delivered as originally scheduled, and in addition may be subject to fees for storage and any increase in costs of shipment. If Seller is required to pay any such charges, Buyer shall immediately reimburse Seller. All payments are due within 30 days after receipt of invoice. Buyer shall be charged the lower of 1 ½% interest per month or the maximum legal rate on all amounts not received by the due date and shall pay all of Seller's reasonable costs (including attorneys' fees) of collecting amounts due but unpaid. All orders are subject to credit approval.
3. Delivery. Delivery of the Equipment shall be in material compliance with the schedule in Seller's Documentation. Unless Seller's Documentation provides otherwise, Delivery terms are F.O.B. Seller's facility.
4. Ownership of Materials. All devices, designs (including drawings, plans and specifications), estimates, prices, notes, electronic data and other documents or information prepared or disclosed by Seller, and all related intellectual property rights, shall remain Seller's property. Seller grants Buyer a non-exclusive, non-transferable license to use any such material solely for Buyer's use of the Equipment. Buyer shall not disclose any such material to third parties without Seller's prior written consent.
5. Changes. Seller shall not implement any changes in the scope of work described in Seller's Documentation unless Buyer and Seller agree in writing to the details of the change and any resulting price, schedule or other contractual modifications. This includes any changes necessitated by a change in applicable law occurring after the effective date of any contract including these terms.
6. Warranty. Subject to the following sentence, Seller warrants to Buyer that the Equipment shall materially conform to the description in Seller's Documentation and shall be free from defects in material and workmanship. The foregoing warranty shall not apply to any Equipment that is specified or otherwise demanded by Buyer and is not manufactured or selected by Seller, as to which (i) Seller hereby assigns to Buyer, to the extent assignable, any warranties made to Seller and (ii) Seller shall have no other liability to Buyer under warranty, tort or any other legal theory. If Buyer gives Seller prompt written notice of breach of this warranty within 18 months from shipment or 1 year from start-up, whichever occurs first (the "Warranty Period"), Seller shall, at its sole option and as Buyer's sole remedy, repair or replace the subject parts or refund the purchase price therefor. If Seller determines that any claimed breach is not, in fact, covered by this warranty, Buyer shall pay Seller its then customary charges for any repair or replacement made by Seller. Seller's warranty is conditioned on Buyer's (a) operating and maintaining the Equipment in accordance with Seller's instructions, (b) not making any unauthorized repairs or alterations, and (c) not being in default of any payment obligation to Seller. Seller's warranty does not cover damage caused by chemical action or abrasive material, misuse or improper installation (unless installed by Seller). THE WARRANTIES SET FORTH IN THIS SECTION ARE SELLER'S SOLE AND EXCLUSIVE WARRANTIES AND ARE SUBJECT TO SECTION 10 BELOW. SELLER MAKES NO OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE.
7. Indemnity. Seller shall indemnify, defend and hold Buyer harmless from any claim, cause of action or liability incurred by Buyer as a result of third party claims for personal injury, death or damage to tangible property, to the extent caused by Seller's negligence. Seller shall have the sole authority to direct the defense of and settle any indemnified claim. Seller's indemnification is conditioned on Buyer (a) promptly, within the Warranty Period, notifying Seller of any claim, and (b) providing reasonable cooperation in the defense of any claim.
8. Force Majeure. Neither Seller nor Buyer shall have any liability for any breach (except for breach of payment obligations) caused by extreme weather or other act of God, strike or other labor shortage or disturbance, fire, accident, war or civil disturbance, delay of carriers, failure of normal sources of supply, act of government or any other cause beyond such party's reasonable control.
9. Cancellation. If Buyer cancels or suspends its order for any reason other than Seller's breach, Buyer shall promptly pay Seller for work



performed prior to cancellation or suspension and any other direct costs incurred by Seller as a result of such cancellation or suspension.

10. LIMITATION OF LIABILITY.

NOTWITHSTANDING ANYTHING ELSE TO THE CONTRARY, SELLER SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, SPECIAL, PUNITIVE OR OTHER INDIRECT DAMAGES, AND SELLER'S TOTAL LIABILITY ARISING AT ANY TIME FROM THE SALE OR USE OF THE EQUIPMENT SHALL NOT EXCEED THE PURCHASE PRICE PAID FOR THE EQUIPMENT. THESE LIMITATIONS APPLY WHETHER THE LIABILITY IS BASED ON CONTRACT, TORT, STRICT LIABILITY OR ANY OTHER THEORY.

11. Miscellaneous. If these terms are issued in connection with a government contract, they shall be deemed to include those federal acquisition regulations that are required by law to be included. These terms, together with any quotation, purchase order or acknowledgement

issued or signed by the Seller, comprise the complete and exclusive statement of the agreement between the parties (the "Agreement") and supersede any terms contained in Buyer's documents, unless separately signed by Seller. No part of the Agreement may be changed or cancelled except by a written document signed by Seller and Buyer. No course of dealing or performance, usage of trade or failure to enforce any term shall be used to modify the Agreement. If any of these terms is unenforceable, such term shall be limited only to the extent necessary to make it enforceable, and all other terms shall remain in full force and effect. Buyer may not assign or permit any other transfer of the Agreement without Seller's prior written consent. The Agreement shall be governed by the laws of the State of Delaware without regard to its conflict of laws provisions.

Accepted by: \_\_\_\_\_

Print \_\_\_\_\_

Date \_\_\_\_\_

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