

HYDROPRO, INC.  
**DESIGN GUIDELINE QUESTIONNAIRE**

CLIENT \_\_\_\_\_ ADDRESS|\_\_\_\_\_

DATE \_\_\_\_\_ PHONE: \_\_\_\_\_ FAX: \_\_\_\_\_ |\_\_\_\_\_

The information and data requested by this form are essential to properly size and apply Hydropro, Inc. Membrane Process systems. Each Membrane Process system is custom engineered for a given application and water supply. This insures proper feed water pretreatment, and that the system is designed for maximum performance at minimum cost. Submit this data from the installation site and the results of the Silt Density Index (SDI) Test for a complete Reverse Osmosis, Ultrafiltration, or Membrane Softening water treatment system quotation. The SDI Test is a critical factor in determining to what extent pretreatment equipment might be required. The Hydropro, Inc. Silt Density Index Test Kit is available for purchase or for rent. If rental is required, contact the factory for details.

Send this Information to **Fax 561-881-0315 or mail Hydropro, Inc. - 990 West 15th Street - Riviera Beach, Florida 33404**

**A. FEED WATER**

1. Analysis of Raw Feed Water (page 4) Completed: Yes \_\_\_\_\_ No \_\_\_\_\_  
(a) Self-analysis (by client) of raw feed water attached: Yes \_\_\_\_\_ No \_\_\_\_\_
2. Feed Water Supply: Well \_\_\_\_\_ Surface \_\_\_\_\_ Municipal \_\_\_\_\_ Well-Artesian \_\_\_\_\_ Pressure \_\_\_\_\_ (psig) (kPa)
3. Is there a history of seasonal fluctuations? Yes \_\_\_\_\_ No \_\_\_\_\_  
Is so, describe \_\_\_\_\_  
\_\_\_\_\_  
If municipal, describe any treatment and/or chemicals added by municipality: \_\_\_\_\_  
\_\_\_\_\_
4. Maximum feed water pH: \_\_\_\_\_ Maximum Total Dissolved Solids (TDS): \_\_\_\_\_
5. Feed water pH at site: \_\_\_\_\_
6. Is chlorine fed upstream into water supply? Yes \_\_\_\_\_ No \_\_\_\_\_
7. Amount of chlorine in water sample at installation site: \_\_\_\_\_
8. Feed water temperature at installation site: \_\_\_\_\_ (°F) (°C)
9. Feed water temperature Maximum \_\_\_\_\_ (°F) (°C) Minimum \_\_\_\_\_ (°F) (°C)
10. Can feed water be heated? Yes \_\_\_\_\_ No \_\_\_\_\_
11. Feed water pressure \_\_\_\_\_ (psig)(kPa)
12. Frequency of line pressure loss: \_\_\_\_\_ time(s) per year.
13. Is hydrogen sulfide present? Yes \_\_\_\_\_ [If so, Amount \_\_\_\_\_ ppm] No \_\_\_\_\_
14. Well and feed pipe details: Depth of well \_\_\_\_\_ Well casing inside diameter \_\_\_\_\_ Well casing Material \_\_\_\_\_  
Feed pipe inside diameter \_\_\_\_\_ Depth of well casing \_\_\_\_\_ Min. water depth static \_\_\_\_\_ dynamic \_\_\_\_\_

**B. RO SYSTEM SIZING**

1. Average daily (24 Hr.) product water requirements (USGPD) \_\_\_\_\_ (M3/D) \_\_\_\_\_  
Initially \_\_\_\_\_ After 1 Yr. \_\_\_\_\_ (USGPD)(M3/D) After 3 Yrs. \_\_\_\_\_ (USGPD)(M3/D)
2. Peak daily (24 Hr.) product water requirements (USGPD) \_\_\_\_\_ (M3/D) \_\_\_\_\_  
Initially \_\_\_\_\_ After 1 Yr. \_\_\_\_\_ (USGPD)(M3/D) After 3 Yrs. \_\_\_\_\_ (USGPD)(M3/D)
3. Days per week product water required: \_\_\_\_\_ Days
4. Number of hours per day product water required: \_\_\_\_\_ Hours
5. Maximum off period (plant shut-down, vacations): \_\_\_\_\_ (Hrs., Days, Weeks, Months)
6. Is product water usage constant? Yes \_\_\_\_\_ No \_\_\_\_\_
7. Product water flow rate required: Max: \_\_\_\_\_ (USGPM) \_\_\_\_\_ (M3/D)  
Min: \_\_\_\_\_ (USGPM) \_\_\_\_\_ (M3/D)
8. Product water pressure required: \_\_\_\_\_ psig \_\_\_\_\_ kPa
9. How will product water be used? \_\_\_\_\_  
\_\_\_\_\_
10. (a) Product storage facilities available: Yes \_\_\_\_\_ No \_\_\_\_\_ If so, volume \_\_\_\_\_  
Materials of construction \_\_\_\_\_ How far away? \_\_\_\_\_ How high to inlet? \_\_\_\_\_ Ht. of drain \_\_\_\_\_  
(b) Distribution piping: Material \_\_\_\_\_ Inside diameter \_\_\_\_\_ Working pressure \_\_\_\_\_ (psig)(kPa)
11. Final product water quality required: \_\_\_\_\_
12. Special instrumentation and controls required: \_\_\_\_\_  
\_\_\_\_\_
13. Concentrate discharge - where? (Restrictions: municipal or other codes on concentration of discharge) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**C. MISCELLANEOUS**

1. Available installation space (Unit and Product Water Storage): Length \_\_\_\_\_ Height \_\_\_\_\_ Depth \_\_\_\_\_  
Maximum door opening: Width \_\_\_\_\_ Height \_\_\_\_\_ Minimum door opening: Width \_\_\_\_\_ Height \_\_\_\_\_

2. Available Resources:

a. Electricity: Voltage \_\_\_\_\_ Phase \_\_\_\_\_ Cycles \_\_\_\_\_

Max. Current available \_\_\_\_\_ Amps Cost per KWH \_\_\_\_\_ (US Dollars)

b. Air: ( ) Plant \_\_\_\_\_ psig \_\_\_\_\_ kPa \_\_\_\_\_ scfm \_\_\_\_\_ scmm \_\_\_\_\_

( ) Instrument \_\_\_\_\_ psig \_\_\_\_\_ kPa \_\_\_\_\_ scfm \_\_\_\_\_ scmm \_\_\_\_\_

Cost per Cubic Foot \_\_\_\_\_ (US Dollars) Cost per Cubic Meter \_\_\_\_\_ (US Dollars)

c. Steam: ( ) Saturated \_\_\_\_\_ psig \_\_\_\_\_ kPa \_\_\_\_\_ °F \_\_\_\_\_ °C \_\_\_\_\_

Lbs./Hr \_\_\_\_\_ Cost per Lb. \_\_\_\_\_ (US Dollars) Kgs./Hr \_\_\_\_\_ Cost per Kg. \_\_\_\_\_ (US Dollars)

d. Chemicals: Type Purity Cost per Lb or Kg. (US Dollars)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

e. Labor: Classification Cost/Hour (US Dollars)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

f. Fuel: Diesel \_\_\_\_\_ Natural Gas \_\_\_\_\_ Cost/BTU \_\_\_\_\_ (US Dollars)

g. Other: Raw Water Cost \_\_\_\_\_ (US Dollars per 1000 US Gallons)

Sewage Charge \_\_\_\_\_ (US Dollars per 1000 US Gallons)

3. Environment: (Describe situation - Indoor or Outdoor installation - Is the atmospheric condition corrosive, non-corrosive, damp, dusty, etc.) \_\_\_\_\_

4. Power Generation requirements (in addition to membrane treatment) \_\_\_\_\_ kw \_\_\_\_\_ KVA \_\_\_\_\_ volts

Largest motor demand \_\_\_\_\_ HP \_\_\_\_\_ phase \_\_\_\_\_ Hertz

Primary use: Prime \_\_\_\_\_ Stand-by \_\_\_\_\_ Over-design percentage: \_\_\_\_\_ %

Number of Units \_\_\_\_\_ Capacity each (circle one) 25% 33% 50% 100%

**D. SILT DENSITY INDEX**

The SDI is used to determine the proper feed water pretreatment, if required. NOTE: If there is a seasonal fluctuation in the feed water supply, it is advisable to develop a history of Silt Density Index.

\_\_\_\_\_ (1st Test) \_\_\_\_\_ (2nd Test) \_\_\_\_\_ (3rd Test)

# ANALYSIS OF RAW FEED WATER

Source of Raw Water: 1. \_\_\_\_\_  
 2. \_\_\_\_\_

Date of Analysis: \_\_\_\_\_

CONSTITUENT in mg/l

ION [ ] CaCO<sub>3</sub> [ ] ION [ ] CaCO<sub>3</sub> [ ]

ION [ ] CaCO<sub>3</sub> [ ] ION [ ] CaCO<sub>3</sub> [ ]

**CATION**

Ca <sup>++</sup>	2.5/4		
Mg <sup>++</sup>	4.12/24		
Na <sup>+</sup>	2.18/46		
K <sup>+</sup>	1.28/78		
Ba <sup>++</sup>	0.73/137		
SR <sup>++</sup>	1.14/88		
<b>TOTAL</b>			

**ANION**

HCO <sub>3</sub> <sup>-</sup>	.82/1.22		
CO <sub>3</sub> <sup>--</sup>	1.67/60		
OH <sup>-</sup>	2.94/34		
Cl <sup>-</sup>	1.41/71		
SO <sub>4</sub> <sup>--</sup>	1.04/96		
NO <sub>3</sub> <sup>-</sup>	.81/1.24		
PO <sub>4</sub> <sup>---</sup>	1.58/63		
F <sup>-</sup>	2.66/38		
<b>TOTAL</b>			

SiO <sub>2</sub> as Ion		
TDS		
P Alk. as CaCO <sub>3</sub>		
M Alk. as CaCO <sub>3</sub>		
CO <sub>2</sub> as ION [ ]		
pH [ ]		
Total Fe as Ion		
Fe as Fe <sup>+++</sup> ION		
Mn as ION		
Color		
Turbidity		
Suspended Solids mg/l		
Total Organic Carbon-TOC		
H <sub>2</sub> S [ ]		
Residual Cl <sub>2</sub> [ ]		
Temp. °F		
Silt Density Index (SDI)		
Total Hardness mg/l		

Assumed [A] Calculated [C] When drawn [D] Laboratory [L]