To Fire Protection

Up to 2000gpm

BACKWASH AND RINSE WATER

1

POTABLE WATER

2

POTABLE WATER USES

2

ONSITE SEPTIC SYSTEM

FIRE/SERVICE WATER TANK

MULTI MEDIA FILTER

104

972

WELL WATER SUPPLY

869

EVAPORATION AND DRIFT

947

234

OIL/WATER SEPARATOR

20

PLANT DRAINS

35

BLOWDOWN

COOLING TOWER

20

6

103

Blowdown 237

81

1st Pass RO

61

2nd Pass RO

55

EDI

52

DEMINERALIZED WATER STORAGE TANK

52

STEAM CYCLE

17

LOSSES

25

3

SERVICE WATER USES

MISC FLOOR DRAINS

5

DUST CONTROL (AS NEEDED)

0

Sidestream Softener

59

Two Pass Reverse Osmosis

6

Brine Concentrator / Crystallizer

6

53

177

231

Recycle Sump

242

4

ASH DUST CONTROL

4

WOODYARD DUST CONTROL

5000 GALLON DRAIN SUMP

NON CONTACT STORMWATER

STORM WATER BASIN

STORM WATER TO OUTFALL

Notes:
1. All values in gpm unless otherwise noted.
2. Dashed lines indicate that the flow is expected to be intermittent.
3. Assumed inputs are listed on page 2.
4. Cooling tower calculations per SPX Cooling Technologies BEST program.

WorleyParsons
resources & energy

EMI
Florida Clean Energy Center
Preliminary Water Balance- Design Condition
Page 1 of 2

DWG No:	Rev	Date:
FCEC-1-SK-021-305-001	B	4/9/2008

Cycles of Concentration: 5

Assumed Inputs

Plant Drains	20
Fire Protection	0
Service Water	25
Cycles of Concentration	5
EDI Rejection Rate	10%
Demin RO Rejection Rate	25%
Sludge Dewatering Recovery	60%
Clarifier Bottoms	2%
Coal Pile Runoff	0
Steam Cycle Blowdown	2.00%
Misc. Losses	1.00%

Cooling Tower Inputs:

Wet Bulb Temperature	82	°F
Hot Side Temp	107	°F
Cold Side Temp	92	°F
Circ water flowrate (gpm)	70000	*Attachment B
RH%	92	
Evaporation	943	*Attachment C
Feed Water Flowrate	8.65E+05	*Attachment B
lb/hr =	1728	
Drift (gpm)	4	
WW RO Permeate	90%	

OVERALL BALANCE

INS	OUTS
972	0
20	0
5	4
0	4
2	947
	17
	2
	25
	0

TOTAL:	999	999

Balance is Acceptable

Consumptive Usage
0.00 MGPD   *Base on 24 hours of operation

Notes:

1 Plant drains are collected in the oil/water separator and pumped back in to the system at an average rate of 20 gpm.

2 Drift is assumed to be 0.005% Recirculation Rate.

3 Potable Water estimated by 50 gallons/day per person, site personnell is assumed as follows:

Plant Staff	31 people
Fuel/Ash	10 people
Visitors	7 people
Other	2 people

4 Boiler makeup is assumed to be 2% Steam Production at MCR boiler blowdown plus 1% Steam Production at MCR Misc. Steam Losses.
   Misc, Steam cycle losses include Sampling losses, Air evacuation losses, Misc. Seal Leakage, Misc. Leaks and Closed cycle cooling makeup.

5 Multimedia filter backwash assumed to require 6485 gallons approximately 1 time per week.

6 Demineralized Water System Water Recovery is as follows:
   1st Pass RO System - 75% Recovery
   2nd Pass RO System Recovery 90% Recovery
   EDI System 95% Water Recovery

7 Water required for ash wetting is the maximum of the 10% to 30% acceptable range.

8 Storm water runoff is collected in the storm water basin. The pumps out of this basin are designed to empty the pond in 10 days.

9 Circ water flowrate is per heat balance.