

## Bayfront Medical Center, Inc.

Bayfront Medical Center Special Services

750 5th Avenue South

St. Petersburg, FL 33701

# OPERATION AND MAINTENANCE PLAN

Loy Energy Systems, Inc., Model 1500 TE, Serial No. 15-TE-91-20,

Calvert Flux force/Condensation collision Scrubber System, Model FC. Serial No. 1280.

## CALVERT RECOMMENDED O&M PLAN

**APPROVED**

### Quench

nozzles  
pump  
dump valve  
pH probe  
caustic hoses

#### Daily

Observe for normal operation:  
level detection operation  
pH monitoring system  
temperature indication  
pump pressure  
operation of dump valves

#### Weekly

Check belts and oil levels on pumps  
Inspect/clean nozzles  
visual inspection of tower  
clean pH probe  
inspect hoses for deterioration

#### Monthly

Clean, lubricate and Inspect pumps  
Clean and Calibrate pH probe  
Clean and Inspect tower

#### Quarterly

acid clean nozzles  
Check seals and bearing on pumps  
Check D/P connections  
Inspect fasteners and electrical connections

### CA

pump  
pH probe  
dump valve  
fill

#### Daily

Observe for normal operation:  
level detection operation  
pH monitoring system  
temperature indication  
pump pressure  
operation of dump valves

#### Weekly

Check belts and oil levels on pumps  
visual inspection of tower  
clean pH probe

#### Monthly

Clean, lubricate and Inspect pumps  
Clean and Calibrate pH probe  
Visual inspection of fill material  
visual inspection of spray nozzle

#### Quarterly

acid clean fill material  
Check D/P connections  
Inspect fasteners and electrical connections

## ES

pump  
pH probe  
dump valve  
wave forms

### Daily

Observe for normal operation:  
level detection operation  
temperature indication  
pump pressure  
operation of dump valves

### Weekly

Check belts and oil levels on pumps

### Monthly

Clean, lubricate and Inspect pumps  
Clean and Inspect wave forms  
Clean and inspect spray nozzles  
Inspect/adjust timer to fan spray nozzle

### Quarterly

acid clean wave forms and nozzles  
Check D/P connections  
Inspect fasteners and electrical connections

## Equipment

Cooling tower  
Heat exchanger  
caustic tank  
caustic pumps  
control panel  
reflux damper

### Daily

Check caustic tank level  
Observe operation of reflux damper

### Weekly

Clean heat exchanger  
Clean and inspect caustic pumps

### Monthly

Clean and Inspect CT  
Inspect gaskets on Heat Exchanger  
Inspect fan blades  
Clean scrubber control panel  
Inspect control panel for evidence of  
moisture or excessive heat  
Clean and inspect reflux blades

### Quarterly

Calibrate reflux damper  
Inspect fasteners and electrical connections

fan

motor  
coupling  
damper  
starter  
fan assembly

Daily

Check position of damper  
Inspect for proper fan operation

Weekly

inspect and lubricate coupling  
grease motor bearings  
wipe down fan assembly blades

Monthly

Open casing - clean fan housing  
Wash down fan assembly  
Clean and inspect damper

Quarterly

Vibration Analysis  
Inspect fasteners and electrical connections

# Calvert Wet Scrubber

## 11.0 Recommended Spare Parts List

<u>Description</u>	<u>Material</u>	<u>Qty</u>	<u>Part Number</u>	<u>Supplier</u>	<u>Stock</u>
Rebuild unit for 1.5VRA Pump	Carbon/Ceramic	1	MJ3G2985AH3	Hudson	2
Rebuild unit for 2.0VRA Pump	Carbon/Ceramic	1	MJ3G4250AAJ	Hudson	2
Shaft for 1.5VRA Pump	Hastalloy	1	13914	Hudson	2
Shaft for 2.0VRA Pump	Hastalloy	1	15053	Hudson	4
Flow Meter Spare/repair kit	PVC/Ceramic	1	Installed Spare	Quinn	1
Fresh Water spray nozzle	Teflon	1	Varies	Barnes/McMaster	2
Recirc spray nozzle	Hastalloy	1	Varies	Barnes/McMaster	3
Washdown spray nozzle	Teflon	1	Varies	Barnes/McMaster	1
ID Fan Wheel spray nozzle	Teflon	1	Varies	Barnes/McMaster	1
pH probe	Polymer	1	GLI#PD1R1	Aquasure	2
pH Analyzer	N/A	1	GLI# P53A2A1N		1
Dump Valve	CPVC	1	PASTB107STVA3	Barnes Ind	1
3/4" ball valve	CPVC	1	Varies	Barnes/McMaster	4
Rebuild kit for Caustic Pump	Varies	1	kit for G528548P	Aquasure	2
Chem injection Pump	N/A	1	Pulsatron A Plus	Aquasure	1
UDC 3300 Contoller	N/A	1	305Y357959000003	Valve & Control	4

### Recommended supplies

### On Hand

PVC Glue/Primer	Yes
Stock PVC/CPVC piping and fittings	Yes
1/4" soft rubber gasket material	Yes
Temperature resistant gasket material	Yes
Assortment of Stainless Steem Hex Bolts and Nuts	Yes
16 AWG, 14 AWG, 12 AWG and 10 AWG wire (red,white,black)	Yes

# Bayfront Medical Center

Special Services Department - Facility ID Number 1030095 - 002  
 750 5th Ave, South  
 St. Petersburg, FL 33701

## Scrubber

Cooling tower      caustic pumps  
 Heat exchanger    control panel  
 caustic tank        reflux damper

## Daily/Weekly PM for Scrubber

For the week ending: \_\_\_\_\_

### Initial box for completion (First shift Incinerator Operator)

Daily	Initial box for completion (First shift Incinerator Operator)					
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
Check caustic tank level						
Observe operation of reflux damper						

## Weekly

Clean heat exchanger  
 Clean and inspect caustic pumps

Initial for completion

Date

_____	_____
_____	_____

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## Scrubber

Cooling tower	caustic pumps
Heat exchanger	control panel
caustic tank	reflux damper

## Monthly PM for Scrubber

### Monthly

Initial for completion

Date

Clean and inspect CT	_____	_____
Inspect gaskets on Heat Exchanger	_____	_____
Inspect fan blades	_____	_____
Clean scrubber control panel (inspect for moisture or excessive heat)	_____	_____
Clean and inspect reflux blades	_____	_____

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**Scrubber**

Cooling tower	caustic pumps
Heat exchanger	control panel
caustic tank	reflux damper

**Quarterly PM for Scrubber**

**Monthly**

Calibrate reflux damper

Inspect fasteners and electrical connections

Initial for completion

Date

_____	_____
_____	_____



## Special Services Department - Facility ID Number 1030095 - 002

**750 5th Ave. South**

**St. Petersburg, Fl. 33701**

Daily/Weekly PM for Quench Tower

**For the week ending:** \_\_\_\_\_

## nozzles

pump  
tower

dump valve

pH probe

caustic hoses

Observe for normal operation:

## Sunday

Monday

Tuesday

Wednesday

Thursday

**Friday**

Saturday

level detection operation								
pH monitoring system (6 - 9)								
temperature indication (137°F Max)								
pump pressure (25 - 49 psig)								
operation of dump valves								

**Initial for completion**

Date

Check belts and oil levels on pump

inspect/clean nozzles

visual inspection of tower

clean pH probe

inspect hoses for deterioration

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## Quench

nozzles  
pump  
tower  
dump valve  
pH probe  
caustic hoses

## Monthly PM for Quench Tower

## Monthly

Clean, lubricate and inspect pumps  
Clean and Calibrate pH probe  
Clean and inspect tower

### Initial for completion

_____
_____
_____

### Date

_____
_____
_____

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## Quarterly PM for Quench Tower

### Quench

nozzles  
pump  
tower  
dump valve  
pH probe  
caustic hoses

### Monthly

acid clean nozzles  
Check seals and bearing on pumps  
Check D/P connections  
Inspect fasteners and electrical connections

Initial for completion

Date

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

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ES  
nozzles  
pump  
wave forms  
dump valve

## Daily/Weekly PM for ES Tower

For the week ending: \_\_\_\_\_

### Daily

Observe for normal operation:	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
level detection operation							
spray action for ID fan							
temperature indication (155°F Max)							
pump pressure (18 - 33 psig)							
operation of dump valves							

### Weekly

Initial for completion

Date

Check belts and oil levels on pump

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## Monthly PM for ES Tower

ES  
nozzles  
pump  
wave forms  
dump valve  
pH probe

### Monthly

Clean, lubricate and inspect pumps  
Clean and inspect wave forms  
Clean and inspect spray nozzles  
inspect/adjust timer to fan spray nozzle

Initial for completion

Date

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

# Bayfront Medical Center

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## ES

nozzles  
pump  
wave forms  
dump valve  
pH probe

## Quarterly PM for ES Tower

### Monthly

acid clean wave forms and nozzles  
Check D/P connections  
Inspect fasteners and electrical connections

Initial for completion

_____
_____
_____

Date

_____
_____
_____

# Bayfront Medical Center

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## Daily/Weekly PM for C/A Tower

C/A  
pump fill  
dump valve pH probe  
tower

For the week ending: \_\_\_\_\_

### Initial box for completion (First shift Incinerator Operator)

#### Daily

Observe for normal operation:	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
level detection operation							
pH monitoring system (6 - 9)							
temperature indication (155°F Max)							
pump pressure (36 - 68 psig)							
operation of dump valves							

#### Weekly

#### Initial for completion

#### Date

Check belts and oil levels on pump  
visual inspection of tower  
clean pH probe

_____	_____
_____	_____
_____	_____

# Bayfront Medical Center

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CA

CA  
pump fill  
dump valve pH probe  
tower

Monthly PM for CA Tower

## Monthly

Clean, lubricate and inspect pumps  
Clean and Calibrate pH probe  
Visual inspection of fill material  
Visual inspection of spray nozzle

Initial for completion

Date

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CA

CA  
pump  
dump valve  
tower

fill

pH probe

Quarterly PM for CA Tower

## Monthly

acid clean fill material

Check D/P connections

Inspect fasteners and electrical connections

Initial for completion

Date

_____
_____
_____

_____
_____
_____

# Bayfront Medical Center

Special Services Department - Facility ID Number 1030095 - 002  
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## ID Fan

motor starter  
coupling fan assembly  
damper

## Daily/Weekly PM for ID Fan

For the week ending: \_\_\_\_\_

### Initial box for completion (First shift Inclinerator Operator)

<u>Daily</u>	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Check position of damper							
Inspect for proper fan operation							

## Weekly

inspect and lubricate coupling  
grease motor bearings  
wipe down fan assembly blades

### Initial for completion

### Date

_____	_____
_____	_____
_____	_____

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## ID Fan

motor                      starter  
coupling                      fan assembly  
damper

## Monthly PM for ID Fan

### Monthly

Open casing - clean fan housing  
Wash down fan assembly  
Clean and inspect damper

### Initial for completion

_____
_____
_____

### Date

_____
_____
_____

# Bayfront Medical Center

Special Services Department - Facility ID Number 1030095 - 002  
760 5th Ave. South  
St. Petersburg, FL 33701

## ID Fan

motor                      starter  
coupling                  fan assembly  
damper

## Quarterly PM for ID Fan

### Monthly

Vibration Analysis (Vibratech)

Inspect fasteners and electrical connections

Initial for completion

_____
_____
_____

Date

_____
_____
_____

**Order:**

☐ Pumps Stopped

[illegible]

