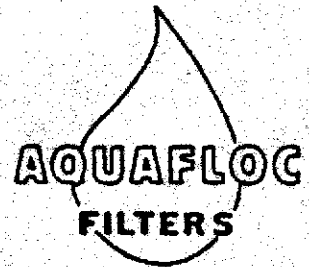


# FILTER TECH SYSTEMS

6711 East 50th Avenue  
Commerce City, Colorado 80022  
(303) 287-8292  
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Designers and Suppliers of  
AQUAFLOC Water-Treatment Systems

9 June 1992 (Rev 7/9/92)  
Date

## DATA SHEET GRAVITY FILTER

AQUAFLOC Complete Filtration

Ashley National Forest  
Project: Ross Springs WTP

Series 30-TSA-HF2-HFM-FSW

F.T.S.: 1999

### 1) General

Flow Rate (design): 30 gpm

Influent pressure required at module entrance: 2-3 psi

### 1) Design Dimensions:

Width: 4' Length: 11.4' Height: 7.3'

Weights:	Shipping (module):	<u>1,900</u>	lb.
	Media :	<u>3,400</u>	lb.
	Operating :	<u>22,100</u>	lb.

### 2) Equipment to be included:

a. 1.5 " Influent Rate-Control Valve

b. 1.5 " Influent Flowmeter

c. 1.25 " Effluent-Modulating Valve

### 3) Flocculator

#### X (a) Hydraulic

2 # of compartments

30 Minutes total detention (at rated flow)

120 Cu.Ft. (all compartments)

Floc Elbows & piping: Schedule 40 PVC

Tapered velocities:

	fps	G
Compartment #1:	<u>4.3</u>	<u>87</u>

"	#2:	<u>2.2</u>	<u>72</u>
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4) Clarifier

36.7 Sq.Ft. clarifier surface area  
100 Cu.Ft. volume (clarifier compartment)  
25 Minutes detention (at design rate)  
1.8 GPM/sq.ft. Upflow Rate (Basis:clarifier surface area)  
24 " Length of settling tubes (60 degree type)  
185 GPD/sq.ft Overflow Rate (Basis:sq.ft. of tube settler surface-settling area)

5) Filter

a) Design:

3.0 gpm/sq ft Filtering Rate  
10 sq.ft.Filter-Surface Area  
20 "AQUAKOL Anthracite1.0-1.1 mm E.S., 1.5 U.C. Max  
10 "Filter Sand 0.45-0.55 mm E.S., 1.5 U.C. Max  
18 "Graded-Gravel Support

b)        AQUAIR Air-Wash System (Backwash)  
       cfm at        psig (blower)

       gpm water flow (backwash flow)

       Gal Water Required/       minute backwash

c)   X   Surface washer, fixed  
25-30 gpm @ 40 psi

250 Gal Water Required/10 minute backwash

d) Backwash:  
15 gpm/sq.ft. design rate

150 gpm design rate/filter

1,500 gallons water required/10 minute backwash

1,750 Total Gallons water req'd/10 minute backwash  
(includes backwash & surface-wash water)

e) Underdrains Header/lateral Schedule 80/40 PVC with drilled orifices

6) Pumps:

a) Raw Water:

1 #Required (Furnished by Forest Service)  
3/4 HP,        V,        Phase, 30 gpm @        TDH

b) Effluent:

2 # Required (1 in box)  
1.0 HP, 240 V, 1 Phase, 30 gpm @ 130'TDH

c) Backwash:

       # Required  
       HP,        V,        Phase,        gpm @        TDH

d) Surface Wash

       # Required  
       HP,        V,        Phase,        gpm @        TDH

e)

       # Required  
       HP,        V,        Phase,        gpm @        TDH

7) Controls

The effluent-modulating valve matches effluent flow rate to influent rate. Backwash is initiated on headloss with automatic return to service. Rinse-to-waste cycle is included. Refer to section 22 for additional information on controls.

8) Module Construction

Shell:

a)        Steel,       " plate

Surface Coating:

Interior: White-Metal Blast (SSPC-SP5-63)

Exterior: Commercial Blast (SSPC-SP6-63)

One(1)-2 mil red-oxide primer

One(1)-1.5 mil alkyd-resin enamel(1st finish coat)

One(1)-Final coat by G.C., after construction

b)   X   Aluminum, Marine Grade

  1/4  " shell thickness;   5086-H32   Grade/alloy aluminum plate

  6061   Grade/alloy aluminum structural members

  X   Treated to provide satin appearance

Notes: (1) Module to be set on concrete base coated with bitumastic, Not By FILTER TECH SYSTEMS

(2) PVC pipe/fitting connections to tank

9) Chemical Feeders

	Tank (gal)	Pump (gpd)	Max Feed (ppm)	Mixer Included
a) Alum	<u>  30  </u>	<u>  19.4  </u>	<u>  27  </u>	<u>  X  </u>
b) Hypochlorite	<u>  30  </u>	<u>  4.3  </u>	<u>  6  </u>	<u>  X  </u>
c) Pot Permanganate	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>
d) Soda Ash	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>
e) Polymer	<u>  30  </u>	<u>  10  </u>	<u>  5+  </u>	<u>  X  </u>

10) Pipe Sizes (150#ANSI flgd or stub):



- a) 1.5 " Inlet
- b) 3 " Effluent (Stub)
- c) 6 " Backwash out (Stub)
- d) 1.25 " Rinse
- e) 3 " Backwash in
- f) - " Air Inlet
- g) 1.25 " Surface Wash in
- h) 3 " Sludge Waste (Stub)



11) 3-4 ' Overhead clearance required (Minimum)

12) Compressed air: - SCFM at - psi

13) Blower: - CFM at - to - psig

14) Lab Equipment

- a) One (1) - 1,000 ml graduate, clear plastic
- b) Two (2) - 500 ml beakers, clear plastic
- c) Test Kits: X Chlorine residual
- X Alkalinity
- X Color
- X pH
- X Thermometer
- Iron: Low-range: 0-1 mg/l
- Manganese
- d) Turbidimeter, portable nephelometric
- e) pH meter with standard solution, 120 vac



15) Gas Chlorination

- Pre: - #/day flow tube

- Post: - #/day flow tube

- Automatic Switchover

- Duplex scales

- Gas Mask, cannister type

- Gas mask, air-supplied type, 30 min. capacity

- Booster Pump:

Type: -, - gpm at - psi boost, - HP, - Volt,

- phase

- psi Pump-suction pressure

- psi System or main-line pressure

- Chlorine-leak detector & alarm

16) Flow-Control valves included: X effluent, X rinse, X backwash



17) Turbidimeters

a) X Effluent 1 # Required

X Continuous sampling with master meter/indicator

X Recorder, circular chart, 12 mo supply of charts  
(mtd in control panel)

b) - Raw Water

- Continuous sampling with master meter/indicator

- Recorder, strip chart, - mo supply of charts(mtd in  
control panel)

18) 3" Backwash strainer (Y-Type), flanged

19) Electrical Service Required:

120/240 V, 1 Phase, 60 cy, 4 wire, - amps

20) Building Size (Suggested Minimum Dimensions): See Engr Drawings

- ' width by - ' long, by - ' high  
(These dimensions provide space for a 4' x 4' chlorinator  
room, lab counter, chemical-feed tanks, and walkways)

21) Rapid Mixers

a) - AQUAFLOC Inline Flash Mixer, Model -

- " Flanges, in & out, 150# ANSI

- HP Motor, - V, - Phase, - Hz, - ODP/- TEFC

- RPM Output shaft/impeller, Mat'l: 304 S.S.

- # of chemical injection points

Surface Coating:

Interior: White-Metal Blast

Two(2)-5 mil coats coal-tar epoxy

Exterior: Commercial Blast

One(1)-2 mil inhibitive primer

Two(2)-1.5 mil alkyd-resin enamel finish coats

b) - AQUAFLOC Static Mixer

- " Flanges, in & out, 15# ANSI

- " Stub - # of chemical-injection points

Shell:

- Steel with surface coating(same as #21 above)

- Schedule 80 PVC

- Type Elements

Material of Construction:

- psi, Differential-Pressure, at rated flow(estimated)

c) AQUAFLOC Hydraulic Mixer

  X   Integral with flocculator compartment

11.1 Ft/sec. inlet pipe flow velocity

0.5 Minutes, compartment detention time (at rated flow)

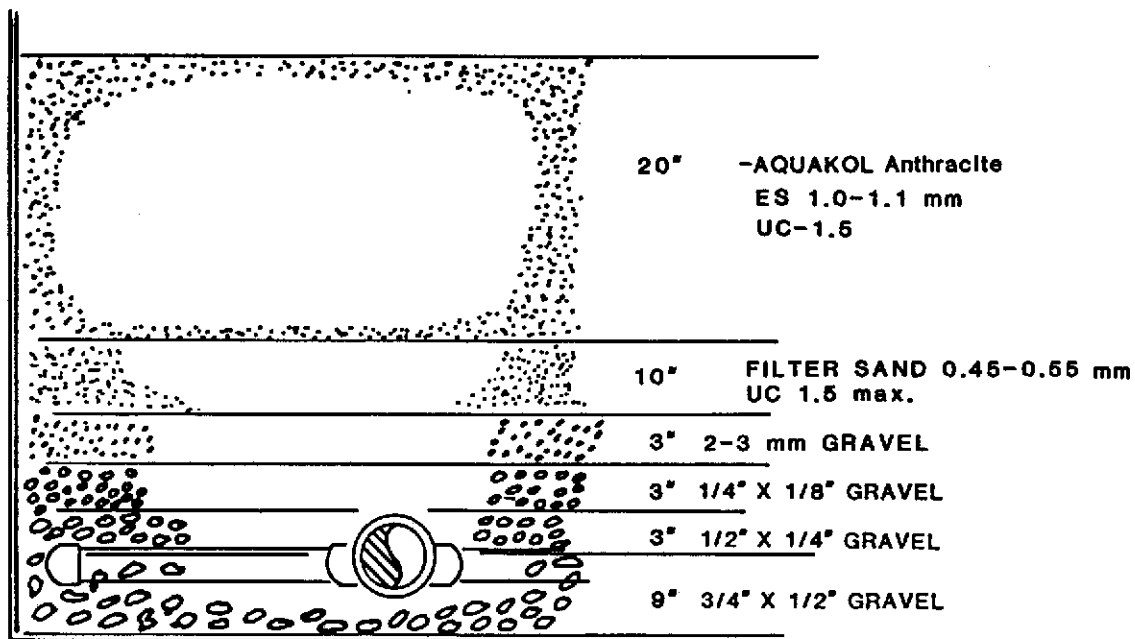
  2   Cu.Ft., volume hydraulic-mix compartment

"G" = 2900

22) Additional Control System Description

- a) The control panel will contain manual override capability for all automatic functions.
- b) A separate recorder is furnished for recording effluent turbidity of each filter.
- c) A backwash counter is provided to allow the operator to keep track of backwash frequency when the system is unattended.
- d) A separate differential-pressure indicating switch is provided for each filter. The backwashing sequence will be initiated automatically on head loss exceeding the pre-set amount.
- e) Rinse-to-waste after each "call for water" is provided automatically. An adjustable timer allows operator selection of the rinse time. (This is in addition to rinse-to-waste after each backwashing cycle.)
- f) Turbidity monitor will provide for alarm at 1 TU and automatic shutdown of the filter at 10 TU in the event that breakthrough begins to occur. (Other turbidity levels may be selected by the operator.)





### FILTER MEDIA SCHEDULE

(FINISHED DEPTH)

APR 29 1993

# AQUAFLOC

## FILTERS

FILTER TECH SYSTEMS

DENVER

ROSS SPRINGS

### FILTER MEDIA SCHEDULE

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SCALE: NTS

DRAWN BY DHH

DRAWING NUMBER

DATE: 4/5/82

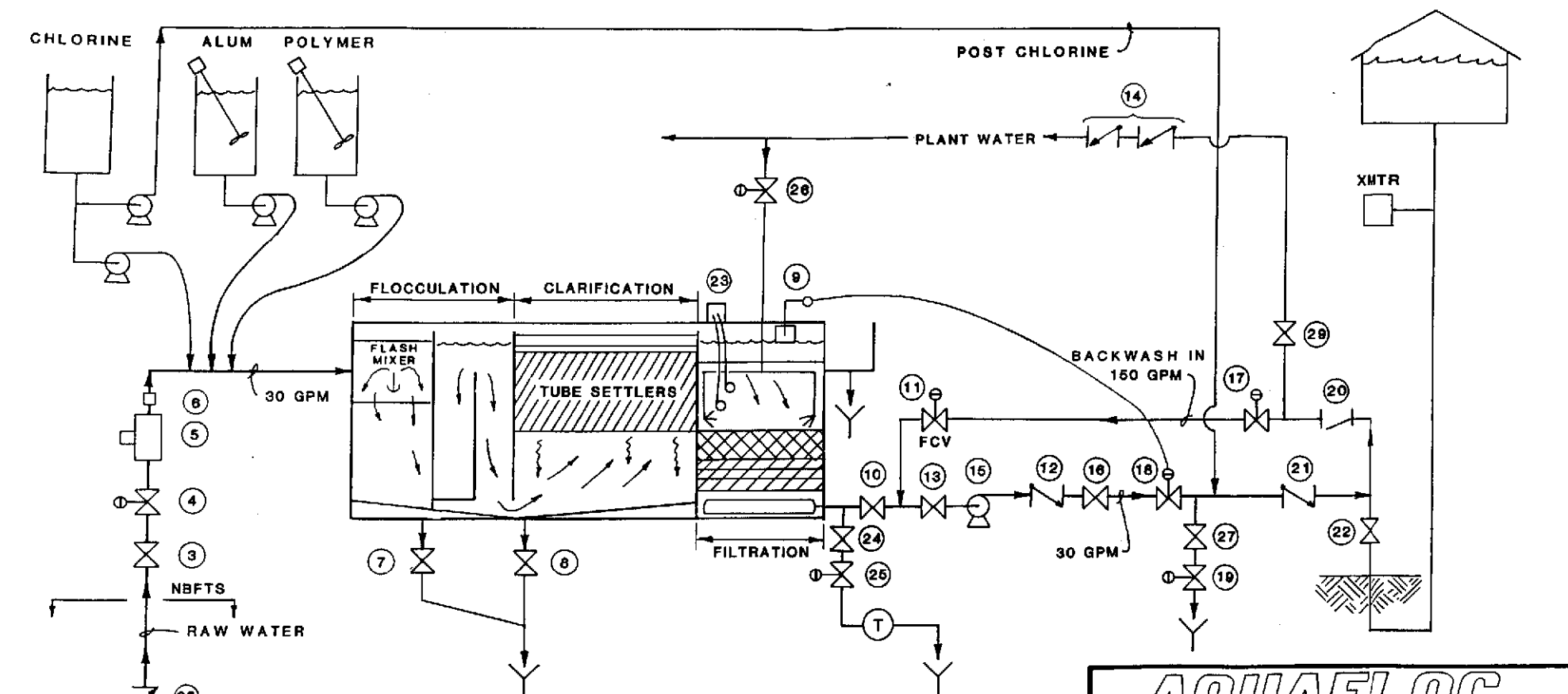
SHEET 2B

634-S-1225 - A

7/9/92

FTS 1999





NBFTS: Not By Filter Tech Systems

(T) : Turbidimeter

(Y) : Drain to waste

APR 29 1993

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REV	DATE	NAME	DESCRIPTION

**AQUAFLOC**  
**FILTERS**

FILTER TECH SYSTEMS

DENVER

ASHLEY NATIONAL FOREST

ROSS SPRINGS WTP

FLOW SCHEMATIC

SCALE: NONE

DRAWN BY CC

DRAWING NUMBER

DATE: 10/4/86

SHEET 18

1071-S-1225-B

7/9/82

FTS 1999

## ITEM LISTING

	Engr #	Item	Qty	Size	Description	Use
NBFTS		1	1	--	Valve	Plant-Inlet Isolation
NBFTS		2	1	--	Raw-Water Pump	
	3	3	1	1.25"	Ball Valve	Inlet Rate Control
		4	1	1.5"	Diaphragm Valve w/ solenoid Valve	Inlet Block Valve
	5	5	1	1"	Meter/totalizer	Raw Water
	5	6	1	--	Meter	Flow-rate Indicator
	8	7	1	2"	BFV w/ lever	Compartment drain
	8/9	8	1	3"	BFV w/ lever	Clarifier drain
	12	9	1	--	Float pilot	Filter-level control
	14	10	1	3"	BFV w/ wafer	Module outlet isolation
	17	11	1	3"	Flow Control Valve	Backwash control
		12	1	1.5"	Checkvalve	Effluent-Pump
	16	13	2	2"	Ball Valve w/ lever	Effluent-pump isolation (inlet)
	13	14	1	1"	Double-check valve	Backflow Preventer (less gates)
	27	15	1	--	Pumps(2"suct/1.5"disch)	Effluent/High Service
	16	16	1	1.5"	Ball Valve	Effluent-pump isolation
	15	17	1	3"	Diaphragm vlv w/ sol opr	Backwash Inlet
	21	18	1	1.25"	Modulating valve	Effluent/Filter-level Control
	22	19	1	1.25"	Diaphragm vlv w/ sol opr	Rinse Valve
	20	20	1	3"	Y-Strainer	Backwash/underdrain protection
	24	21	1	2"	Checkvalve	Effluent
	26	22	1	3"	BFV w/ lever	Plant Isolation
NBFTS	11	23	2	--	Float Switches	Filter Low-level
		24	1	1/4"	Ball Valve	Turbidimeter Isolation/Flow Set
		25	1	3/8"	Solenoid Valve	Turbidimeter shutoff
	19	26	1	1"	Diaphragm vlv w/ sol opr	Surface-Washer Inlet
NBFTS		27	1	1.25"	Ball valve	Rinse-valve isolation
		28	1	--	Checkvalve	Raw-water pump discharge
	18	29	1	1"	Ball vlv w/ lever	Surface Wash Isolation

NBFTS: Not By Filter Tech Sytems

143:17 FT 1999 Sheet 1A 9/19/92

APR 29 1993

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REV	DATE	NAME	DESCRIPTION

<b>AQUAFLOC</b>		
<b>FILTERS</b>		
FILTER TECH SYSTEMS		DENVER
ASHLEY NATIONAL FOREST		
ROSS SPRINGS WTP		
ITEM LISTING		
SCALE: NONE	DRAWN BY: CC	DRAWING NUMBER
DATE: 7/9/92	SHEET 1a	-S-1225-B

FTS 1999