

Engineering Data Sheet

6001

Product: ContamAway II Plus™ Aqueous Waste Treatment and Water Recycling System

Product Description

ContamAway II Plus™ units are small flow, multi-purpose, medium duty, factory packaged aqueous waste treatment plants which are designed to:

- ◆ Remove free oils/fuels (i.e., insoluble hydrocarbons),
- ◆ Remove gross settleable solids,
- ◆ Remove fine suspended solids (to 1 micron),
- ◆ Remove chemically and mechanically emulsified oils,
- ◆ Remove volatile and semi-volatile organic compounds, PCBs, pesticides, BOD/COD/TOC, dissolved organics, and heavy metals to near non-detect levels, and
- ◆ Recycle the treated water.

Product Application

In addition to decon water, the unit will successfully treat stormwater runoff, hydroblast waters, detergent based tank and equipment washwaters, ground dewatering liquids, underground storage tank residuals, and contaminated site groundwater. ContamAway II Plus™ units are ideal for contractors, car and truck dealerships, equipment rental yards, machine shops, maintenance facilities, airport terminals, taxi and bus garages, rail yards, and manufacturing companies.

Product Usage

Routine plant operation is entirely automatic and fail-safe. Improper operation is virtually impossible. Routine maintenance consists of two activities:

1. The replacement of either of two different filter cartridges whenever a strobe warning light starts flashing.
2. The replacement of the tri-media adsorber when the adsorptive capacity has been reached as determined by periodic sampling and testing.

Suspended solids are removed using two stages of treatment to maximize the run time between operator servicing. For most applications, the filter cartridges and adsorber units should last for several months before requiring change out. Purification Industries stocks the replacement items in inventory for overnight shipment, if necessary.

The ContamAway II Plus™ product line requires absolutely no chemicals for either heavy metals removal or for disinfection. Effective pH range is 4-10.

Heavy metals are removed through media adsorption technology rather than chemical precipitation. Differences in raw water quality do not matter when adsorption technology is selected for heavy metals removal.

Our research has established that suspended solids in the flow stream rather than biological growths cause the "so-called" plugging of granular activated carbon contactors. Backwashing activated carbon always reduces its treatment capacity because of the associated disruption of the adsorption profile. Media plugging can easily be pre-vented by removing particulate matter down to 1 micron in size upstream from the adsorption device. The entire ContamAway II™ product line utilizes this design approach.

Principal Features

- ◆ User Friendly. Maintenance requirements are specifically identified. No guesswork necessary.
- ◆ Extended run times between maintenance procedures. Each system component is intentionally oversized to maximize service cycle.
- ◆ No chemicals required. Raw wastewater may vary considerably without any change in effluent quality.

System Description - Summary

The ContamAway II Plus™ product line accomplishes treatment through filtration and adsorption technologies. The first treatment vessel is called a **5 micron cartridge filter T-01 and T-02**. This unit removes suspended solids. Two units are provided to permit continuous operation while one unit is being serviced. As an alternative, both units may be operated simultaneously with the understanding that plant shut down is required for servicing. The 5 micron cartridge filter effluent is further treated by a **1 micron cartridge filter T-03** which removes suspended solids to 1 micron in size as well as free and mechanically emulsified oils. The 1 micron filter effluent is further treated by tri-media adsorption consisting of OrganoSorb™ over granular activated carbon over MetalSorb™. The above design maximizes the useful life of the tri-media adsorber, the most expensive component of the treatment system. The 5 micron cartridge filter, the 1 micron cartridge filter and the tri-media adsorber must be replaced when their useful capacities have been reached.

System Description - Complete

The ContamAway II Plus™ product line is always fed from a sump. The use of a slotted screen intake 12" or so above the sump floor:

1. Permits an accumulation of coarse sludge within the sump
2. Prevents the introduction of coarse solids into the ContamAway II Plus™ treatment plant

The sump will also accumulate free oils until the oil thickness becomes so great that oil enters the pump suction inlet

before the pump cut-off level is reached. The use of either an endless belt type oil skimmer or servicing the floating oil removal in a timely manner will prevent this from occurring.

If the sump level gets too high, an audible alarm horn will sound simultaneous with a flashing light. A push-button silences the horn but the light continues to flash until the high liquid level condition falls below the alarm level. Alarm reset occurs automatically.

The pump used for liquid transfer is a shallow well jet pump with a 25 ft suction lift capability. If the pump detects excessive discharge pressure the pump will shut down automatically.

When the 5-micron filter becomes plugged, a high differential pressure switch initiates an alarm reflecting the necessity to clean the filter. This filter is greatly oversized in order to maximize the run time between servicing. Mechanically and chemically emulsified oils as well as dissolved organics and inorganics pass through this filter. By noting the totalized flow, the next servicing can be estimated.

After 5 micron cartridge filtration, the wastewater is filtered through an oversized 1 micron coalescing cartridge filter. In addition to removing suspended solids to 1 micron, the filter removes free and mechanically emulsified oils. The mega cartridge filter consists of a spirally wound polypropylene fabric tight-to-loose such that depth filtration is accomplished. Three different porosities of fabric are used with the tightest on the innermost wraps and the loosest on the outermost wraps. Polypropylene is oleophilic (oil-loving) and it is this property which achieves the removal of free and mechanically emulsified oils. As the cartridges reach their adsorptive capacity a progressively higher pressure drop develops such that the cartridge eventually becomes plugged with both suspended solids and oils. As this occurs an alarm is initiated which reflects the need for servicing. By noting the totalized flow, the next servicing can be estimated. The space above the mega cartridge is for separated free oil storage which can be discharged through its dedicated oil drain valve. The mega cartridge filters adsorb up to 15 times their weight in dispersed petroleum hydrocarbons. Chemically emulsified oils, dissolved organics, and dissolved inorganics pass through the 1 micron filter.

The tri-media adsorber consists of 1/3 OrganoSorb™, 1/3 acid washed lignite based aqueous phase granular activated carbon and 1/3 MetalSorb™. The adsorber has 10 minutes EBCT (empty bed contact time). A second tri-media adsorber can be provided in series flow in order to permit

change-out of the first adsorber without taking the ContamAway unit off-line. A replacement adsorber then becomes the lag unit. Lignite based carbon is used because it adsorbs a wider range of molecular organics than bituminous based carbons. Acid washed GAC adsorbs far more organics and heavy metals than non-acid washed.

The adsorber also removes chemically emulsified oils, TOC, BOD, TOX, VOC, and SVOC compounds. Because particles to 1 micron are removed upstream from the adsorbers, no backwashing of the carbon is ever necessary. If COCs (contaminants of concern) include anions such as cyanides, hexavalent chromium, selenium, and arsenic, their removal may be accomplished using a polishing Ansorb™ adsorber.

Of significance to routine operation, no chemicals are required to achieve the effective removal of a broad spectrum of contaminants. Since raw characteristics can and do change, the absence of chemical addition translates into simple, reliable, and easy operation.

Vapor Emission Control

The ContamAway II Plus™ system is entirely enclosed which eliminates all vapor emissions to the atmosphere. Even the skid drain piping is extended well below the minimum sump liquid level to further prevent any possibility of uncontrolled vapor emissions to the environment. No air monitoring is therefore necessary. The alarm conditions call out the required maintenance procedure whereas the flow meter enables the operator to accurately predict the next maintenance requirement. Convenient sampling of the raw and treated water flows is provided.

All equipment is skid mounted. The ContamAway II Plus™ is factory piped, wired, and tested prior to shipment. Site installation consists of terminal connections and power feed only.

The ContamAway II Plus™ product has been equipped with several instruments for ease of operation. These instruments include visual and audible alarms that identify various maintenance or operational requirements as they occur as follows:

The ContamAway II Plus™ product has been equipped with several instruments for ease of operation. These instruments include visual and audible alarms that identify various maintenance or operational requirements as they occur as follows:

Condition	Initiates	Requirement
Sump Switch LS-02 High Liquid Level *	Visual flashing lamp alarm, audible horn alarm, and red status light. System operation continues. Actuating red alarm acknowledge push-button will silence the audible horn alarm but the other two lights will remain on. After the high liquid level falls below the alarm level the visual flashing lamp and red status light both turn off and the visual and audible alarms automatically reset.	Temporarily reduce wastewater discharge rate
Feed Pump P-01 High Pressure*	Visual flashing lamp alarm, audible horn alarm, and red status light. System operation is automatically stopped. Actuating red alarm acknowledge push-button will silence the audible horn alarm but the other two lights will remain on. After the high pressure condition has been corrected the visual flashing lamp and red status light both turn off when the blue master reset alarm push-button is actuated.	Plugged piping
5-Micron Cartridge Filters T-01 and T-02 High Differential Pressure	Visual flashing lamp alarm, audible horn alarm, and red status light. System operation is automatically stopped. Actuating red alarm acknowledge push-button will silence the audible horn alarm but the other two lights will remain on. After the high differential pressure condition has been corrected the visual flashing lamp and red status light both turn off when the blue master reset alarm push-button is actuated.	Replace 5 micron filter cartridges
1-Micron Cartridge Filter T-03 High Differential Pressure	Visual flashing lamp alarm, audible horn alarm, and red status light. System operation is automatically stopped. Actuating red alarm acknowledge push-button will silence the audible horn alarm but the other two lights will remain on. After the high pressure condition has been corrected the visual flashing lamp and red status light both turn off when the blue master reset alarm push-button is actuated.	Replace 1 micron filter
Tri-Media Adsorber T-04 High Adsorber Pressure*	Visual flashing lamp alarm, audible horn alarm, and red status light. System operation is automatically stopped. Actuating red alarm acknowledge push-button will silence the audible horn alarm but the other two lights will remain on. After the high differential pressure condition has been corrected the visual flashing lamp and red status light both turn off when the blue master reset alarm push-button is actuated.	Plugged adsorber or downstream piping

*Indicates improper condition

Quality Control

The ContamAway II Plus™ is completely skid mounted, factory assembled, prepiped, prewired, and fully tested prior

to shipment. It is available on a purchase or lease/rental basis as follows:

PURCHASE OPTION			
MODEL	CA2P- 05	CA2P-15	CA2P- 25
Unit Price - Effective 1/1/2006	\$43,125.00	\$66,210.00	\$88,125.00
Replacement 5-micron filter cartridge set (number in set)	312.00 (8)	312.00 (8)	312.00 (8)
Replacement 1-micron cartridge filter set (number in set)	580.00 (1)	1,740.00 (3)	2,320.00 (4)
Replacement tri-media adsorber set (number in set)	3,660.00 (1)	4,800.00 (1)	8,000.00 (1)
Equipment Layout Drawing Number	S-1721	S-1722	S-1723
Process Flow Schematic Drawing Number	S-1720	S-1720	S-1720

Selling Terms:

- ◆ 35% of contract amount with purchase order;
- ◆ 55% of contract amount upon completion of manufacturing and prior to shipment;
- ◆ 10% of contract amount net 30 days from shipment date.
- ◆ Availability: Four (4) weeks after receipt of order (ARO) or after receipt of approved submittals (ARAS), whichever applies.

LEASE/RENTAL OPTION	
MODEL	MONTHLY CHARGE
CA2P-05	\$3,185.00
CA2P-15	\$4,335.00
CA2P-25	\$6,160.00

Lease/Rental Terms:

- ◆ Availability: Four (4) weeks after receipt of order (ARO) or after receipt of approved submittals (ARAS), whichever applies.
- ◆ Three (3) month minimum charge payable with transmittal of fully executed lease/rental agreement.
- ◆ 50% of initial twelve (12) months lease/rental is applicable to purchase price any time during the lease period.
- ◆ Final equipment decontamination, if required, is the responsibility of user.

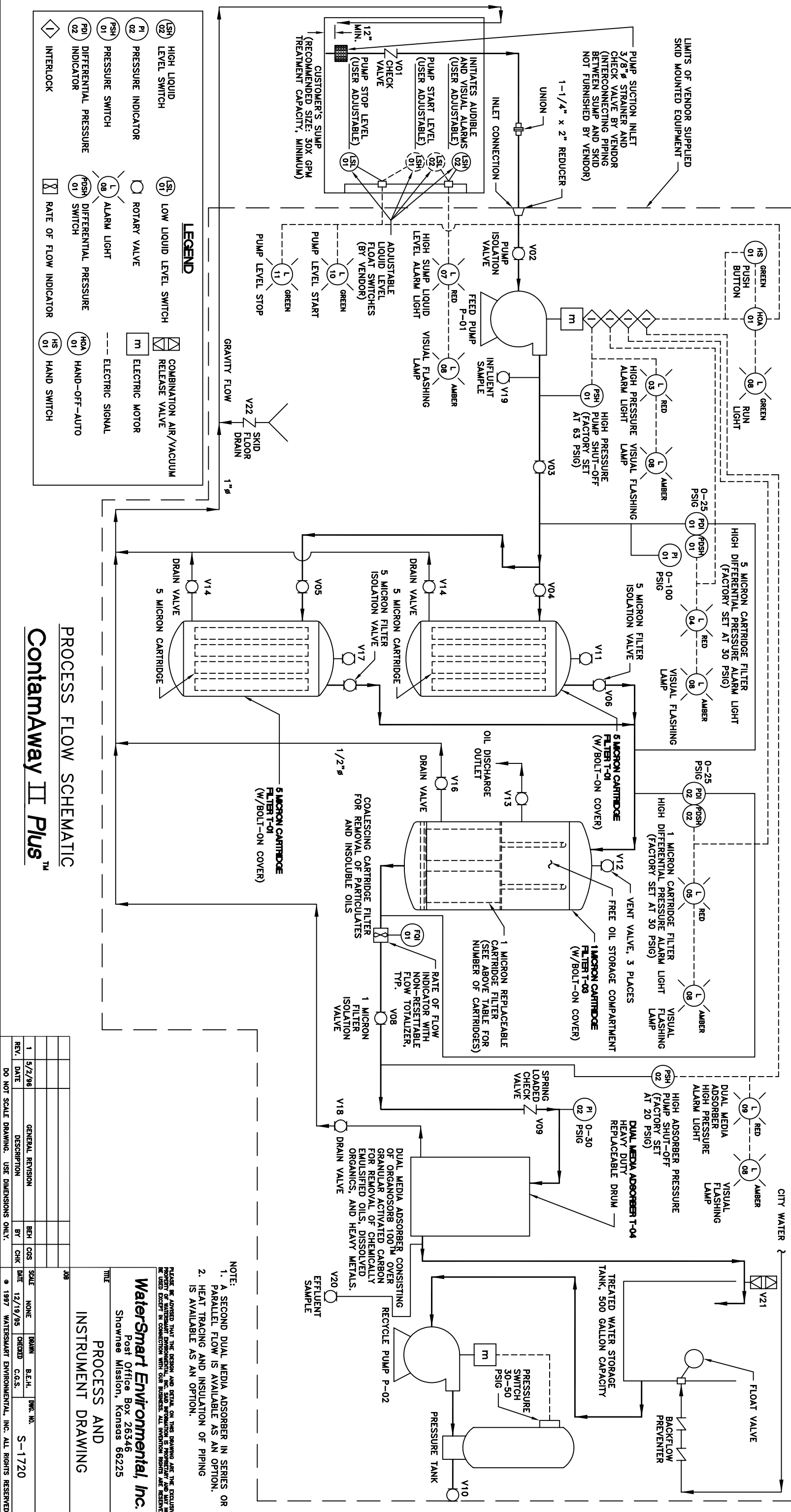
FOR BOTH ABOVE OPTIONS

- ◆ Price includes Operation & Maintenance manuals.
- ◆ Plant start-up and operator training services are available at the rate of \$600.00/day (one factory trained representative) plus portal to portal expenses.
- ◆ No taxes, permit fees, chemicals, spare parts, site labor, or technical services are included.
- ◆ All freight charges are at customer's account. Customer to be responsible for equipment loading and unloading at project location.

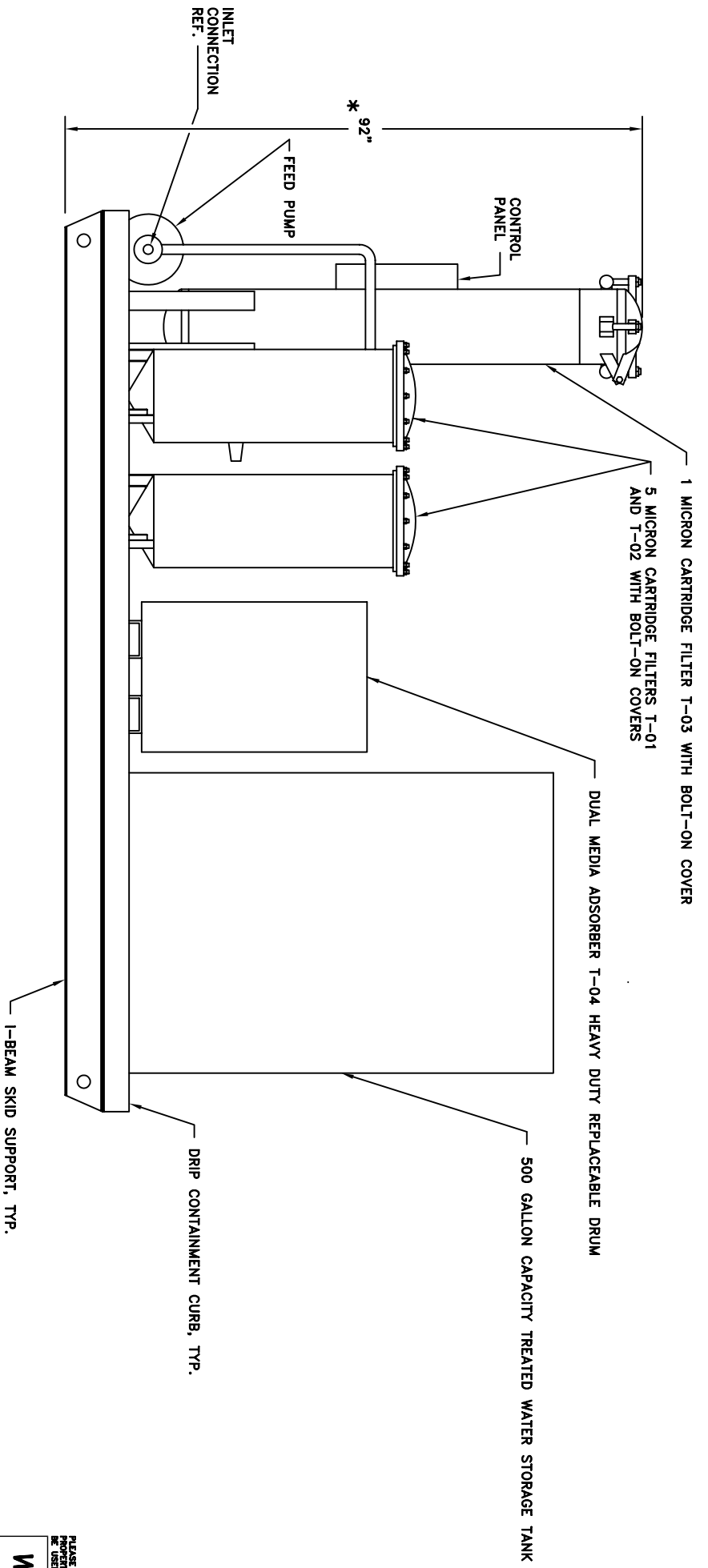
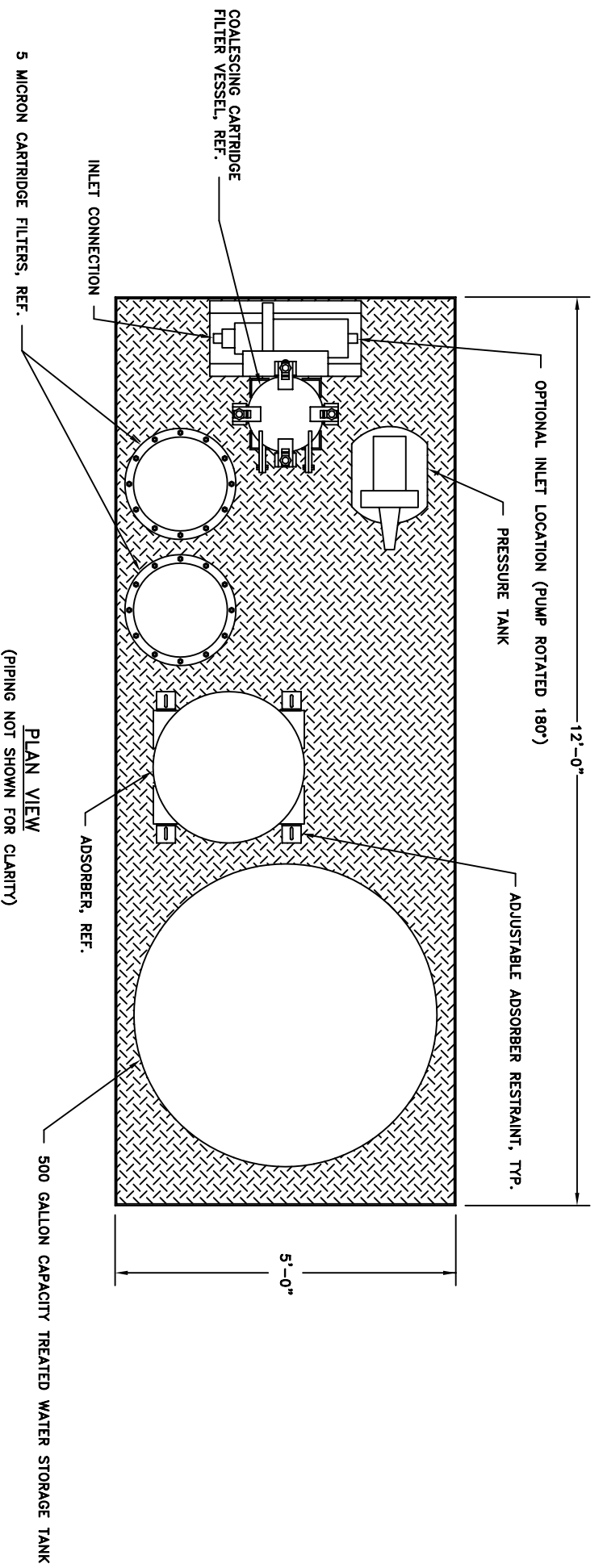


ENGINEERING DATA AND SPECIFICATIONS TABLE

MODEL AND RECYCLE CAPACITIES	TREATMENT AND RECYCLE CAPACITIES	PIPE SIZES		PIPE MATERIALS		OPERATING HORSEPOWERS	REQUIRED FEED POWER	COALESCING CARTRIDGE FILTER VESSELS			DUAL MEDIA ADSORBERS			PRESSURE TANK CAPACITY, GALLONS	WEIGHTS, LBS.	
		INLET CONNECTION	PROCESS FLOW	OUTLET CONNECTION	INDOOR INSTALLATION			OUTDOOR INSTALLATION	QTY.	SIZE	FILTER CARTRIDGES PER VESSEL	QTY.	SIZE		TOTAL LBS. OF MEDIA	SHIPPING
CA2P-05	5 GPM	2" F NPT	1-1/2" F	1-1/2" F NPT	PVC	GALV. STEEL	110/220V/1 PHASE	1	12" F	1	187	1	24" F x 36" H	85	3,200	9,700
CA2P-15	15 GPM	2" F NPT	1-1/2" F	1-1/2" F NPT	PVC	GALV. STEEL	110/220V/1 PHASE	1	24" F	3	561	1	30" F x 66" H	85	4,000	10,600
CA2P-25	25 GPM	2" F NPT	2" F	2" F NPT	PVC	GALV. STEEL	110/220V/1 PHASE	1	30" F	4	935	1	36" F x 78" H	85	5,100	12,000



PROCESS FLOW SCHEMATIC
ContamAway II Plus™



ELEVATION VIEW

MODEL CA2P-05

* 144" MAXIMUM HEIGHT REQUIRED FOR CARTRIDGE FILTER CHANGE OUT.

ContamAway II Plus™

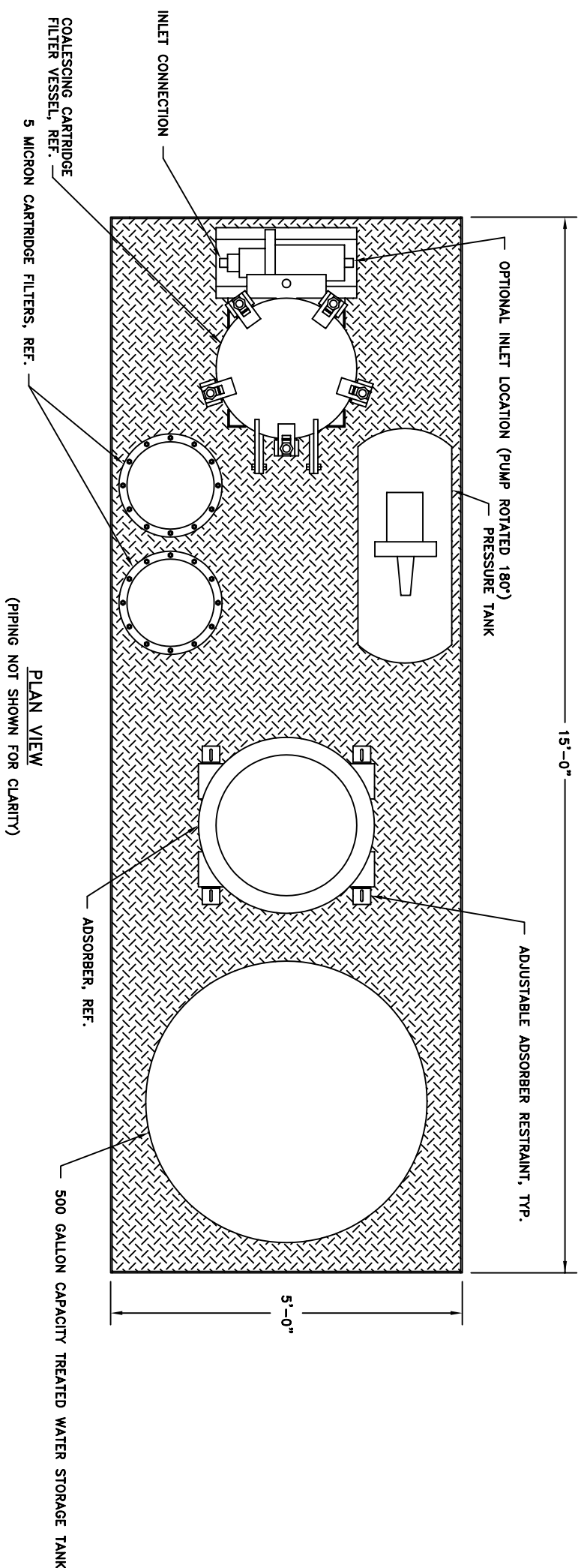
REV.	DATE	DESCRIPTION	BY	CHK	SCALE	DRAWN	CHECKED	DATE	DATE	DATE
1	5/2/96	GENERAL REVISION	BEH	CSS	1"=1'-0"		B.E.H.	12/19/95		
DO NOT SCALE DRAWING. USE DIMENSIONS ONLY.										

WaterSmart Environmental, Inc.
 Post Office Box 26346
 Shawnee Mission, Kansas 66225

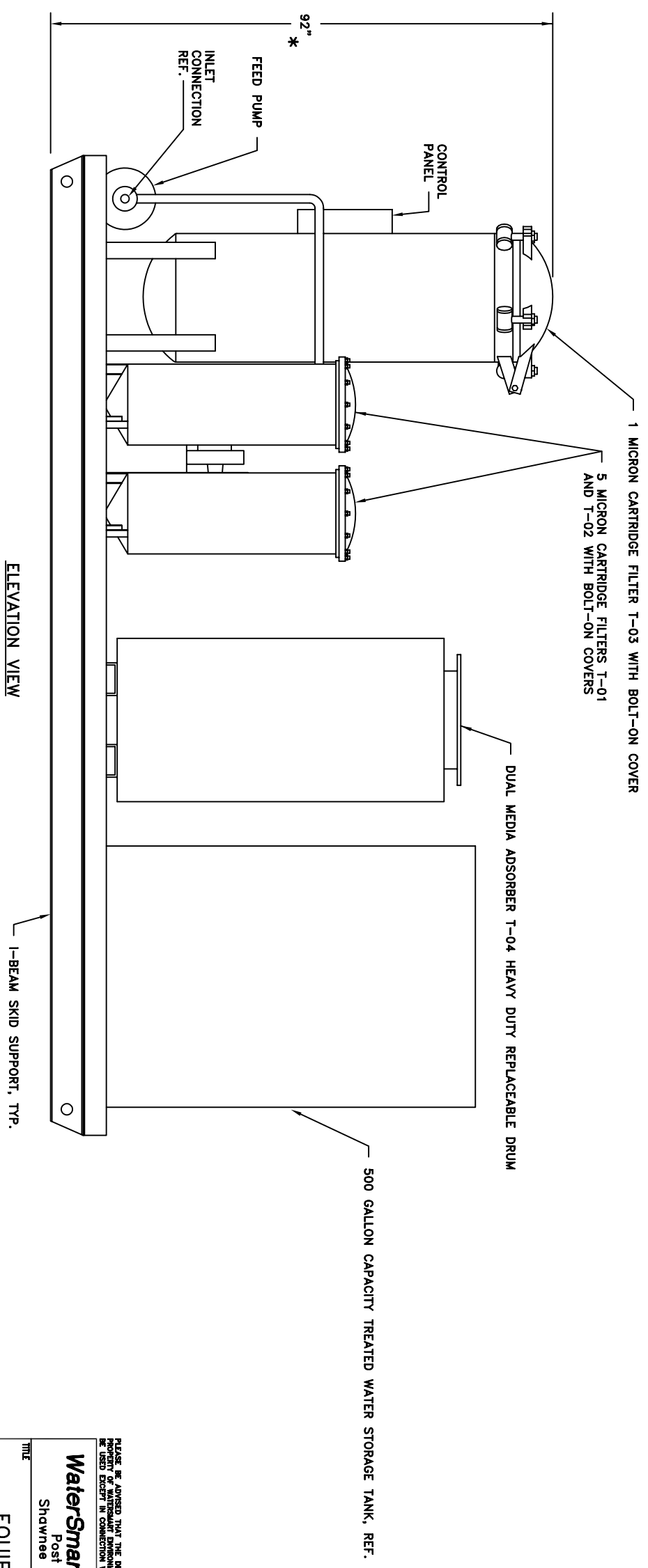
EQUIPMENT LAYOUT

PLEASE BE ADVISED THAT THE DESIGN AND DETAIL ON THIS DRAWING ARE THE EXCLUSIVE PROPERTY OF WATERSMART ENVIRONMENTAL, INC. SAID INFORMATION IS PROPRIETARY AND MAY NOT BE USED EXCEPT IN CONNECTION WITH OUR BUSINESS. ALL INVENTION RIGHTS ARE RESERVED.

© 1997 WATERSMART ENVIRONMENTAL, INC. ALL RIGHTS RESERVED.



PLAN VIEW
(PIPING NOT SHOWN FOR CLARITY)



ELEVATION VIEW

MODEL CA2P-15

ContamAway II Plus™

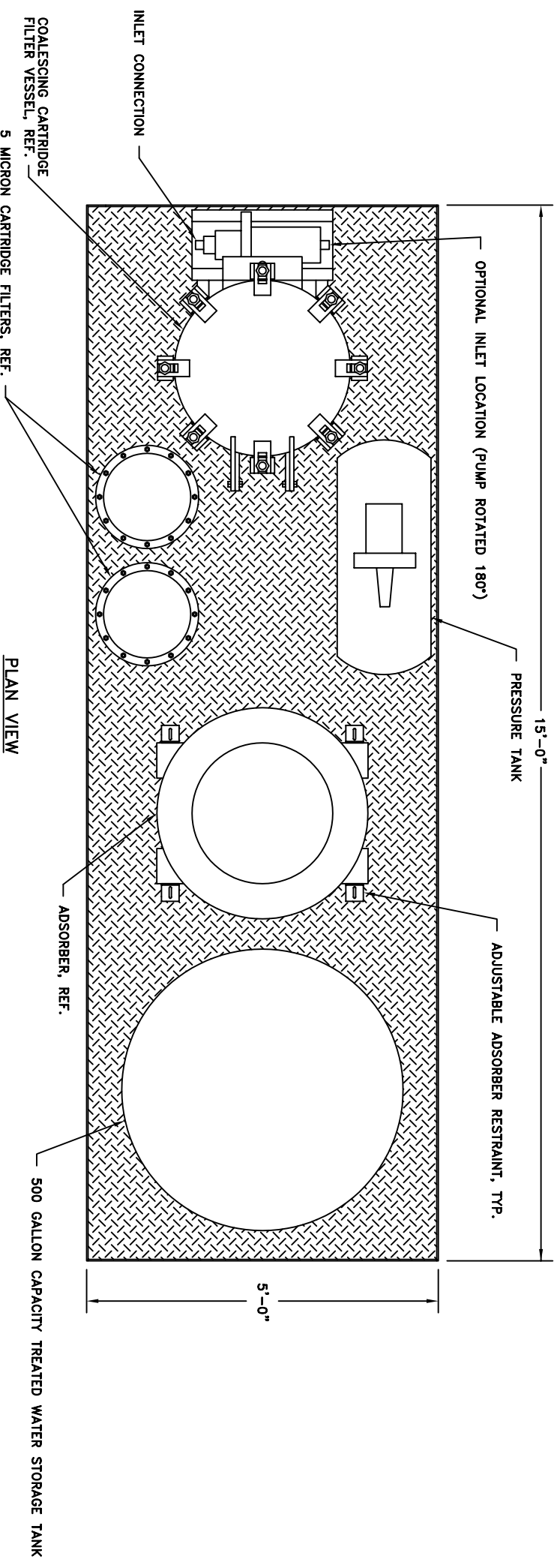
* 144" MAXIMUM HEIGHT REQUIRED FOR CARTRIDGE FILTER CHANGE OUT

REV.	DATE	DESCRIPTION	BY	CHK	SCALE	DRAWN	CHECKED	DATE	DATE	DATE
1	5/2/96	GENERAL REVISION	BEH	CSS	1"=1'-0"	B.E.H.	C.G.S.	12/19/95	12/19/95	12/19/95
DO NOT SCALE DRAWING. USE DIMENSIONS ONLY.										

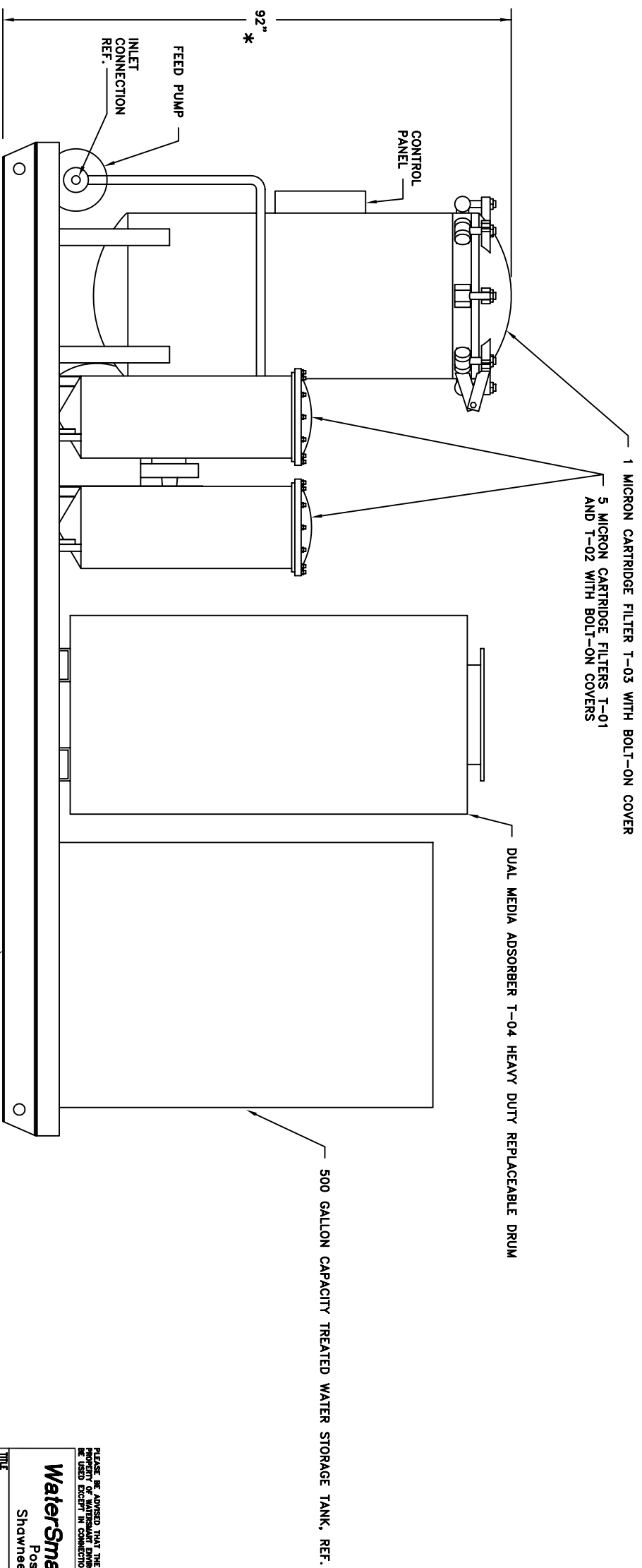
PLEASE BE ADVISED THAT THE DESIGN AND DETAIL ON THIS DRAWING ARE THE EXCLUSIVE PROPERTY OF WATERSMART ENVIRONMENTAL, INC. SAID INFORMATION IS PROPRIETARY AND MAY NOT BE USED EXCEPT IN CONNECTION WITH OUR BUSINESS. ALL INVENTION RIGHTS ARE RESERVED.

WaterSmart Environmental, Inc.
Post Office Box 26346
Shawnee Mission, Kansas 66225

TITLE
EQUIPMENT LAYOUT



PLAN VIEW
(PIPING NOT SHOWN FOR CLARITY)



ELEVATION VIEW

MODEL CA2P-25

ContamAway II Plus™

REV.	DATE	DESCRIPTION	BY	CHK	SCALE	DRAWN	CHECKED	DATE	DATE	DATE
1	5/2/96	GENERAL REVISION	BEH	CSS	1"=1'-0"	BEH	C.S.S.	12/19/95	12/19/95	12/19/95
DO NOT SCALE DRAWING. USE DIMENSIONS ONLY.										

PLEASE BE ADVISED THAT THE DESIGN AND DETAIL ON THIS DRAWING ARE THE EXCLUSIVE PROPERTY OF WATERSMART ENVIRONMENTAL, INC. SAID INFORMATION IS PROPRIETARY AND MAY NOT BE USED EXCEPT IN CONNECTION WITH OUR BUSINESS. ALL INVENTION RIGHTS ARE RESERVED.

WaterSmart Environmental, Inc.
 Post Office Box 26346
 Shawnee Mission, Kansas 66225

TITLE
EQUIPMENT LAYOUT

* 144" MAXIMUM HEIGHT REQUIRED FOR CARTRIDGE FILTER CHANGE OUT

1997 WATERSMART ENVIRONMENTAL, INC. ALL RIGHTS RESERVED.