WORK PLAN ADDENDUM 2

WATER TREATMENT SYSTEM DESIGN AND OPERATIONS, MAINTENANCE, AND MONITORING PLAN

Callahan Mine Superfund – OU1
Brooksville, Maine

***Prepared for*:**

Maine Department of Environmental Protection
17 State House Station
Augusta, ME 04333-0017

Prepared by:

CHARTER ENVIRONMENTAL, INC.
560 Harrison Avenue
Boston, MA 02118

April 2013

CONTENTS

1.0 Dewatering Plan

This Plan serves as an addendum to the previously approved Work plan for this contract. All health and Safety and QA/QC procedures established in the previously approved work plan will apply to this addendum. This Dewatering Plan serves both as the Design Plan and the Operations, Maintenance, and Monitoring Plan for the treatment of water that may come in contact with PCB impacted soils within the Callahan Mine property.

The primary method of management of water developed from excavations within the PCB impacted areas will be treatment of water through settlement and filtration prior to on-site recharge.

2.0 PCB Impacted water Handling and or Treatment

All dewatering fluid (combined groundwater seepage and surface-water runoff) handling will be performed in accordance with the approved Work Plan, applicable Federal, State, and local regulations, laws, codes, and ordinances using portable dewatering system plants.

3.0 PCB Water Collection

The fluid collection system will consist of a 2-inch sump pump that will be placed in the excavation. Gravel will be placed around the pump to minimize the amount of sediment that is pumped into the system. Water will be pumped to the treatment system directly. The pumps will be plumbed with flexible hoses to the chosen receiving system. It is anticipated that the system will only be operated during working hours of the site. If additional time to run system is required or if the 2-inch pump is not adequate to dewater an area the system will be evaluated and system changes will be proposed to the MEDEP for approval.

4.0 Pre-Treatment / Discharge of Dewatering Fluid Characterization

The initial dewatering fluids will be visually inspected to assess the potential presence of suspended sediment, coloration, odor, sheens, and/or free product. The dewatering fluids will then be pumped through the treatment system.

5.0 Free-Product Handling

If free product is identified in any of the pipe tap locations or otherwise observed on-site, the MEDEP will be notified. Pumps within the sedimentation tank would be relocated to minimize potential for free product to be pumped from the tanks, if formed. Booms and/or pads would be placed within the sedimentation tanks as a precautionary measure to collect any floating product that forms.

Booms and pads will be placed in 55-gallon drums for off-site disposal as PCB impacted solids.

6.0 Water Treatment System

A portable water treatment system will be mobilized to the project site to meet the on-site recharge standard of 1ppm. A detailed schematic of an available system is contained in Attachment A. Component details are contained in Attachment B.

Dewatering fluids pumped from the pipe to the dewatering system would be treated using the following basic protocol.

a. Dewatering fluids will be delivered to a primary 10,000-gallon capacity frac tank that will serve as the principal sediment-settling chamber and oil/water separator. The frac tank may be equipped with low-level float valves if needed to activate and deactivate an internal submersible pump. The pump will be set in the water column of the frac tank to retrieve water from a level approximately two feet below the low-level float, and the float switches will be set to assure a maximum settling residence time for water in the tank. Replacement pumps will be made available to allow for rapid repair should a pump fail. The pump will be powered by a generator.

b. Filtration will be accomplished by pumping from the frac tank into bag filters placed in series. This will be used for final particulate removal from the waste stream and to provide trace oil separation from the water. The bag filter that would be used will be a U.F. Strainrite Model UF 1-180 or equivalent, capable of removing particulate matter greater than 25 microns, the second bag filter unit will be capable of removing particulate matter to 1 micron. The 1 micron filters will be changed regularly to eliminate any slow down to the system.

7.0 Post-Treatment Testing of Dewatering Fluid Discharges

Testing of the treatment system effluent to confirm it has successfully treated the water for PCBs. The effluent will be plumbed back to the frac tank until the analytical results confirm that the water has been successfully treated. The effluent will then be recharged back on-site.

Periodic sampling will be the responsibility of CES, Inc.

CES, Inc. will supply all labor, equipment and materials necessary to obtain accurate representative samples of the water.

Upon start-up of the system a sample will be taken before the treatment system and after the treatment system to demonstrate treatment effectiveness.

The effluent will be re-circulated to the system's influent point until the first set of analysis indicates that the system has met the discharge limits. Only when analytical demonstrates that the system has met this standard will the effluent be discharge to the discharge point.

8.0 Discharge Location

Treated water will be discharged to a recharge area near the treatment system. See Figure 1 for the approximate location of the Treatment System.

9.0 System Security

Elements of the Dewatering Treatment System will be protected from weather and construction hazards as appropriate. Insulation, heat tape, and temporary shelters will be used to protect individual components from freezing or other weather-related hazards, as necessary. Discharge lines and plumbing between System elements will be placed below ground where necessary so as not to impede construction activities.

The Water Treatment System will be located within project boundaries.

10.0 Routine Operations and Maintenance

During operation of the dewatering treatment system, daily inspections will be conducted to confirm appropriate system performance and to identify potential maintenance requirements. The Daily Inspection Form included in Attachment C will guide daily inspections.

Pipeline taps will be inspected to confirm free of leaks.

Sedimentation tank(s) will be inspected to measure water levels and sediment levels, identify the presence of sheens or free product on the water, verify float and shutoff switch and associated transfer pump operation. Sediment measurements will be recorded on the daily inspection log. The daily inspection log can be found in ***Attachment C***. If sheens or free product are identified, absorbent booms or pads will be placed in the sedimentation tanks and pump levels will be adjusted as appropriate to prevent transfer of separate phase oil. If switches or pumps are not operating properly, replacement from on-site stock will be performed. When accumulated sediment must be removed from the tanks (likely only at the termination of system use or when sediment reaches approximately 4 feet high with in the tank), the system will be stopped, pumps will be removed and then the sediment may be pumped or manually removed, dewatered by drying, tested for disposal characterization in accordance with criteria set forth in the soil management plan, and disposed at an appropriate receiving facility along with comparably characterized soil from the Site. If a Vacuum truck is used to remove sediment from frac tanks a certification that the interior of the vac truck's holding tank has been cleaned from all prior content will be supplied to the Project. Any entry into the sedimentation tanks will be performed according to established confined space entry protocols. Sediment removed from frac tanks will be placed in the soil staging and stockpiling area of the site to dry.

Bag filters will be inspected to determine if replacement with a new filter is required. Replacement filters will be maintained on-site.

A visual inspection of the remainder of the dewatering treatment system will be performed to identify any system leakage or evidence of unusual wear. Leaks will be corrected immediately, and spilled fluids will be cleaned up with absorbents or other appropriate controls.

All waste (bag filters, sediment in frac tank ect.) generated from the system will be disposed of with the >50ppm PCB waste unless otherwise sampled for disposal characterization.

Water being discharged to the recharge area will be inspected visually to verify that no sheen or associated free product is apparent. If a sheen or free product is identified, the system will be placed in the recirculating mode until the source of the treatment failure is identified.

Whenever maintenance is performed, activities will be completely documented in the daily inspection log. The logbook will be maintained on-site.

11.0 Storage / Frac Tank Cleaning

Confined Space Entry Procedure will be followed when performing tank cleanings.

A confined space provides the potential for unusually high concentrations of contaminants, explosive atmospheres, limited visibility, and restricted movement. This section will establish requirements for safe entry into, continued work in, and safe exit from confined spaces. Additional information regarding confined space entry can be found in 29 CFR 1926.21, 29 CFR 1910 and NIOSH 80-106.

Definitions

Confined Space: A space or work area not designed or intended for normal human occupancy, having limited means of egress and poor natural ventilation; and/or any structure, including buildings or rooms, which have limited means of egress.

Confined Space Entry Permit (CSEP): A document to be initiated by the supervisor of personnel who are to enter into or work in a confined space. The Confined Space Entry Permit (CSEP) will be completed by the personnel involved in the entry and approved by the HSO before personnel will be permitted to enter the confined space. The CSEP shall be valid only for the performance of the work identified and for the location and time specified. The beginning of a new shift with change of personnel will require the issuance of a new CSEP.

Confined Space Attendant: An individual assigned to monitor the activities of personnel working within a confined space. The confined space attendant monitors and provides external assistance to those inside the confined space. The confined space attendant summons rescue personnel in the event of emergency and assists the rescue team.

General Provisions

- When possible, confined spaces should be identified with a posted sign which reads: Caution - Confined Space.
- Only personnel trained and knowledgeable of the requirements of these Confined Space Entry Procedures will be authorized to enter a

confined space or be a confined space observer.

- A Confined Space Entry Permit (CSEP) must be issued prior to the performance of any work within a confined space. The CSEP will become a part of the permanent and official record of the site.
- Natural and or mechanical ventilation shall be provided for the confined space prior to initial entry and for the duration of the CSEP. Positive/forced mechanical ventilation may be required. However, care should be taken to not spread contamination outside of the enclosed area.
- If flammable liquids may be contained within the confined space, explosion proof equipment will be used. All equipment shall be positively grounded.
- The contents of any confined space shall, where necessary, be removed prior to entry. All sources of ignition must be removed prior to entry.
- Hand tools used in confined spaces shall be in good repair explosion proof and spark proof, and selected according to intended use. Where possible, pneumatic power tools are to be used.
- Hand-held lights and other illumination utilized in confined spaces shall be equipped with guards to prevent contact with the bulb and must be explosion roof.
- Compressed gas cylinders, except cylinders used for self-contained breathing apparatus, shall not be taken into confined spaces. Gas hoses shall be removed from the space and the supply turned off at the cylinder valve when personnel exit from the confined space.
- If a confined space requires respiratory equipment or where rescue may be difficult, safety belts, body harnesses, and lifelines will be used. The outside observer shall be provided with the same equipment as those working within the confined space.
- A ladder is required in all confined spaces deeper than the employee's shoulders. The ladder shall be secured and not removed until all employees have exited the space.
- Only self-contained breathing apparatus or NIOSH approved airline respirators equipped with a 5-minute emergency air supply (egress bottle) shall be used in untested confined spaces or in any confined space with conditions determined immediately dangerous to life and health.
- Where air-moving equipment is used to provide ventilation, chemicals shall be removed from the vicinity to prevent introduction into the confined space.
- Vehicles shall not be left running near confined space work or near air-moving equipment being used for confined space ventilation.
- Smoking in confined spaces will be prohibited at all times.
- Any deviation from these Confined Space Entry Procedures requires

the prior permission of the On-Scene Coordinator.

Procedure for Confined Space Entry

The HSO and Entry Team shall:

- Evaluate the job to be done and identify the potential hazards before a job in a confined space is scheduled.
- Ensure that all process piping, mechanical and electrical equipment, etc., have been disconnected, purged, blanked-off or locked and tagged as necessary.
- If possible, ensure removal of any standing fluids that may produce toxic or air displacing gases, vapors, or dust.
- Initiate a Confined Space Entry Permit (CSEP) in concurrence with the project manager or designated alternative.
- Ensure that any hot work (welding, burning, open flames, or spark producing operation) that is to be performed in the confined space has been approved by the project manager and is indicated on the CSEP.
- Ensure that the space is ventilated before starting work in the confined space and for the duration of the time that the work is to be performed in the space.
- Ensure that the personnel who enter the confined space and the confined space observer helper are familiar with the contents and requirements of this instruction.
- Ensure remote atmospheric testing of the confined space prior to employee entry and before validation/revalidation of a CSEP to ensure the following:

    1. Oxygen content between 19.5% - 23.0%.
    2. No concentration of combustible gas in the space. Sampling will be done throughout the confined space and specifically at the lowest point in the space.
    3. The absence of other atmospheric contaminants space has contained toxic, corrosive, or irritant material.
    4. If remote testing is not possible, Level B PPE is required.

- Designate whether hot or cold work will be allowed. If all tests in 1 through 3 are satisfactory, complete the CSEP listing any safety precautions, protective equipment, or other requirements.
- Ensure that a copy of the CSEP is posted at the work site a copy is filed with the project supervisor, and a copy is furnished to the project manager.
- Erect personnel retrieval equipment adjacent to entry point. Equipment includes tripod, winch and tether, as well as body harness

for occupants to wear during work in the confined space.

The CSEP shall be considered void if work in the confined space does not start within one hour after the tests are performed or if significant changes within the confined space atmosphere or job scope occur.

The CSEP posted at the work site shall be removed at the completion of the job or the end of the shift, whichever is first.

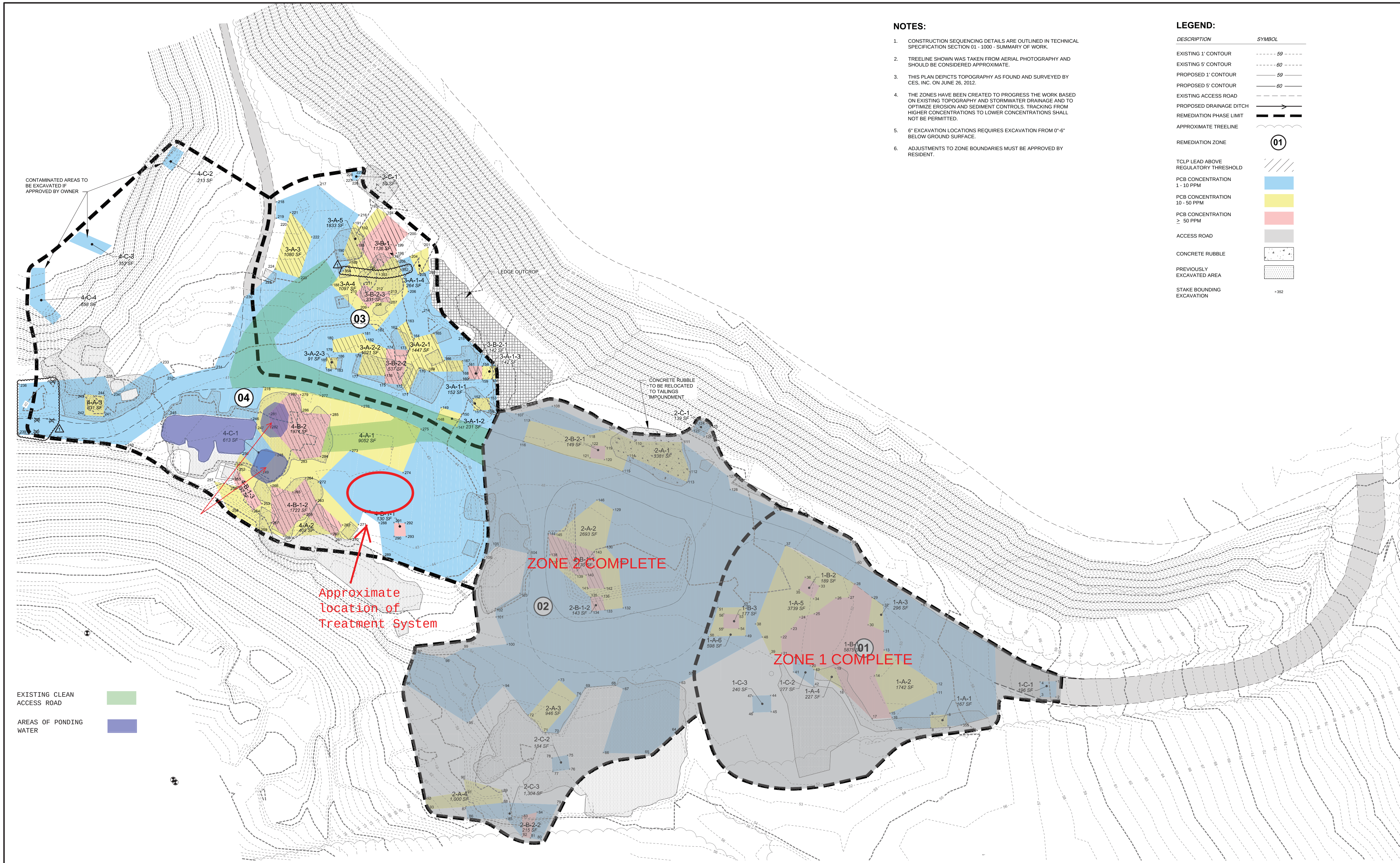
Confined Space Attendant

- While personnel are inside the confined space, a confined space attendant will monitor the activities and provide external assistance to those in the space. The attendant will have no other duties, which may take his attention away from the work or require him to leave the vicinity of the confined space at any time while personnel are in the space.
- The confined space attendant shall maintain at least voice contact with all personnel in the confined space. Visual contact is preferred, if possible.

- The attendant shall be instructed by his supervisor in the method for contacting rescue personnel in the event of an emergency.
- If irregularities within the space are detected by the attendant, personnel within the space will be ordered to exit.
- In the event of an emergency, the observer must NEVER enter the confined space prior to contacting and receiving assistance from a helper. Prior to this time, he should attempt to remove personnel with the lifeline and to perform all other rescue functions from outside the space.
- A helper shall be designated to provide assistance to the confined space attendant in case the observer must enter the confined space to retrieve personnel.

FIGURE 1

APPROXIMATE LOCATION OF TREATMENT SYSTEM



NOTES:

1. CONSTRUCTION SEQUENCING DETAILS ARE OUTLINED IN TECHNICAL SPECIFICATION SECTION 01 - 1000 - SUMMARY OF WORK.
2. TREELINE SHOWN WAS TAKEN FROM AERIAL PHOTOGRAPHY AND SHOULD BE CONSIDERED APPROXIMATE.
3. THIS PLAN DEPICTS TOPOGRAPHY AS FOUND AND SURVEYED BY CES, INC. ON JUNE 26, 2012.
4. THE ZONES HAVE BEEN CREATED TO PROGRESS THE WORK BASED ON EXISTING TOPOGRAPHY AND STORMWATER DRAINAGE AND TO OPTIMIZE EROSION AND SEDIMENT CONTROLS. TRACKING FROM HIGHER CONCENTRATIONS TO LOWER CONCENTRATIONS SHALL NOT BE PERMITTED.
5. 6" EXCAVATION LOCATIONS REQUIRES EXCAVATION FROM 0"-6" BELOW GROUND SURFACE.
6. ADJUSTMENTS TO ZONE BOUNDARIES MUST BE APPROVED BY RESIDENT.

LEGEND:

DESCRIPTION	SYMBOL
EXISTING 1' CONTOUR	59
EXISTING 5' CONTOUR	60
PROPOSED 1' CONTOUR	59
PROPOSED 5' CONTOUR	60
EXISTING ACCESS ROAD	
PROPOSED DRAINAGE DITCH	
REMEDIATION PHASE LIMIT	
APPROXIMATE TREELINE	
REMEDIATION ZONE	01
TCLP LEAD ABOVE REGULATORY THRESHOLD	
PCB CONCENTRATION 1 - 10 PPM	
PCB CONCENTRATION 10 - 50 PPM	
PCB CONCENTRATION ≥ 50 PPM	
ACCESS ROAD	
CONCRETE RUBBLE	
PREVIOUSLY EXCAVATED AREA	
STAKE BOUNDING EXCAVATION	×352

REMEDIATION PLAN
6" EXCAVATION LOCATIONS

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

CES INC
ENGINEERING • SURVEYING • PLANNING • SCIENCES

Brewer
465 So Main Street
PO BOX 639
Brewer, ME
T.207-989-4824
F.207-989-4881

Presque Isle
549 Main Street
PO BOX 827
Presque Isle, ME
T.207-764-8412
F.207-764-8414

Topsham
2 Main Street
Suite 213
Topsham, ME
T. 207-837-6130
F.207-837-6199

Machias
61 Dublin Street
PO BOX 587
Machias, ME
T.207-255-3270
F.207-255-8367

Bar Harbor
1366 State Hwy 102
Bar Harbor, ME
T.207-288-0587
F.207-288-0588

WWW.CES-MAINE.COM

PROJECT TITLE: CALLAHAN MINE SUPERFUND PROJECT BROOKSVILLE, MAINE

SHEET TITLE: REMEDIATION PLAN 6" EXCAVATION LOCATIONS

REV.	DESCRIPTION	DATE	DRAWN BY	CHECKED BY
R4				
R3				
R2				
R1	POINTS & 1-10ppm AREA CHANGE PER MDEP	09.17.2012	BLC	AD/DSP

ISSUE	DESCRIPTION	DATE	DRAWN BY	CHECKED BY
I2				
I1				

SCALE	1" = 40'
DATE	9/13/2012
DRAWN BY	BB/BC
CHECKED BY	ST
DESIGNED BY	AD
APPROVED BY	DSP
JOB NUMBER	5992-09
DRAWING NUMBER	C-101

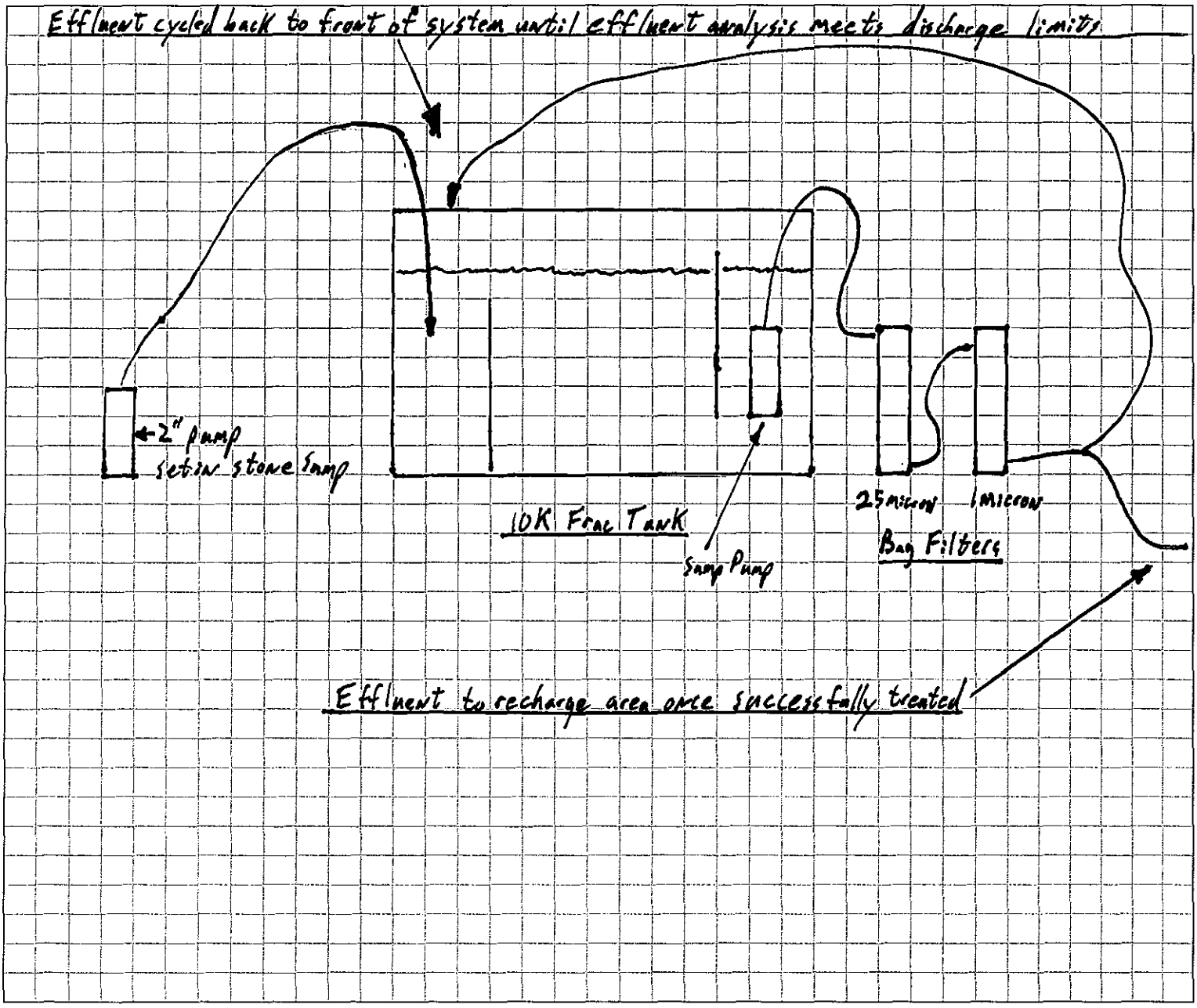
1 OF 8

ATTACHMENT A

TREATMENT SYSTEM CONFIGURATION

CHARTER
ENVIRONMENTAL

CLIENT / SUBJECT	**ME DEP / Callahan Mine**
TASK DESCRIPTION	Groundwater Treatment System



ATTACHMENT B

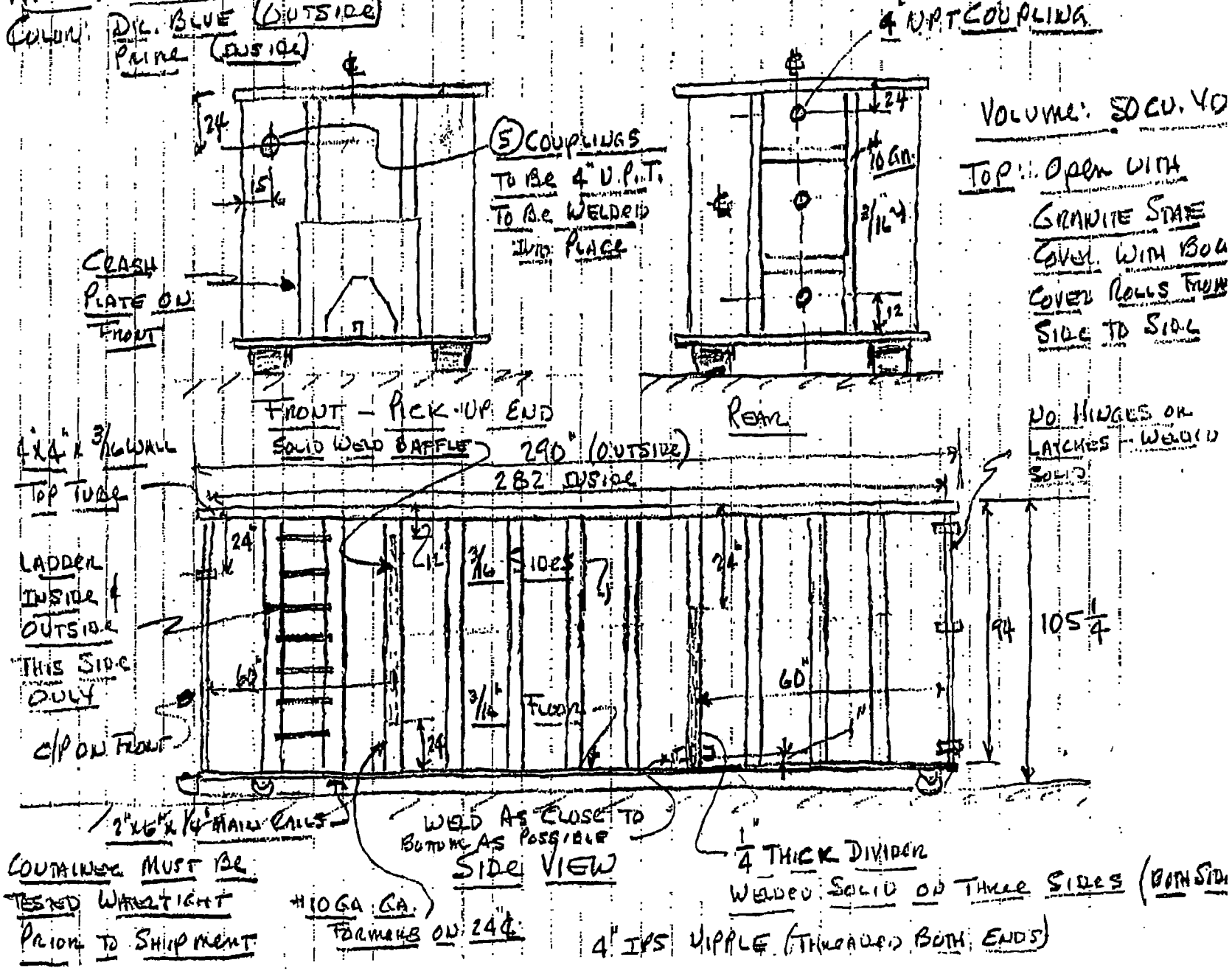
TREATMENT SYSTEM COMPONENT DETAILS

7/29/02

AMERI-TECH.

COLOR: DK. BLUE (OUTSIDE)

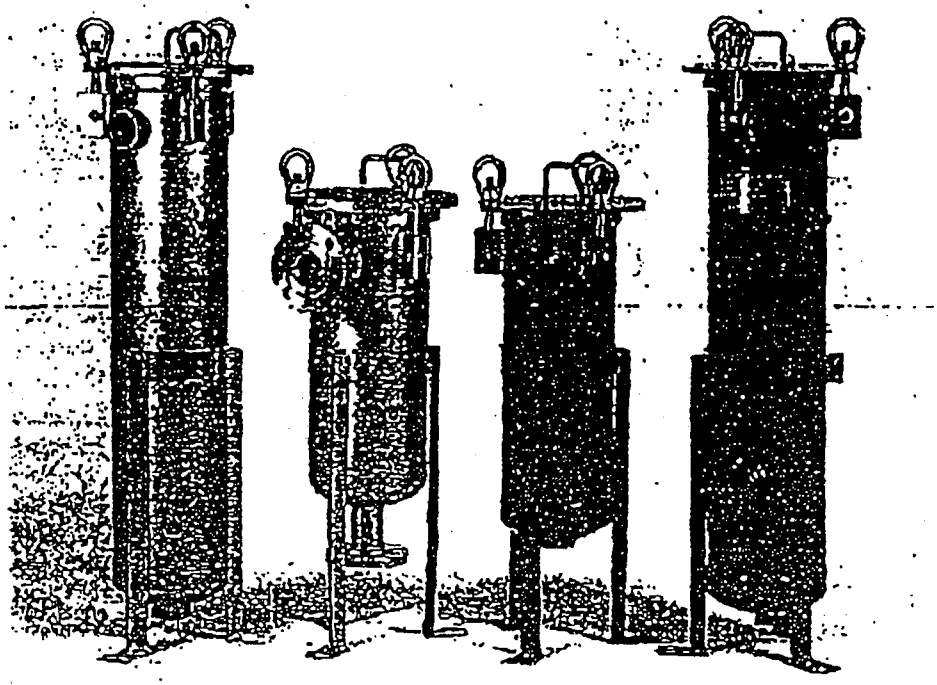
PAINT (OUTSIDE)



VOLUME: 50 CU. YD

TOP: OPEN WITH GRANITE SIDE COVER. WITH BOW COVER ROLLS FROM SIDE TO SIDE

UF & CQX (90's & 180's)



All 90 and 180 style filter bag/strainer vessels are designed with a recessed basket, a volume displacer permanently welded to the top cover, and a 304 stainless steel wire mesh retainer basket. Wire mesh baskets increase available filtration surface area by 30% compared to a perforated retainer basket. We offer our 90 and 180 size vessels in two different styles, UF and CQX, and a variety of pressure ratings with 150 psi being standard.

Standard Features

- Available in Carbon Steel, 304 and 316 Stainless Steel
- Adjustable height tri-pod stand
- Built-in volume displacer in cover
- Inlet/outlet orientation: Side-in Bottom-out (standard) or Side-in Side-out
- Low pressure drop
- Positive cover seal
- Available O'ring materials: Buna N, EPR, Viton A, Teflon, & Teflon Encapsulated
- Easy cleanability
- 304 SS wire mesh basket
- ASME Code stamp available on all UF style vessels
- Swing bolt closures
- .25" NPT differential pressure gauge/vent tap
- Pipe sizes from .75" to 3" NPT, AFF or Quick Disconnect connections

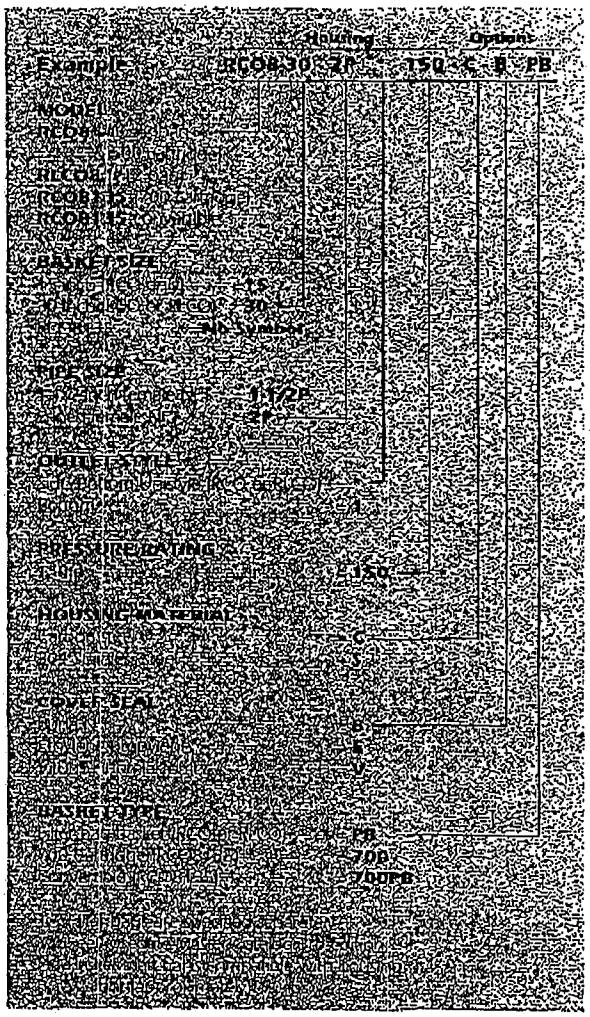
U.F. STRAINRITE
207-777-3100

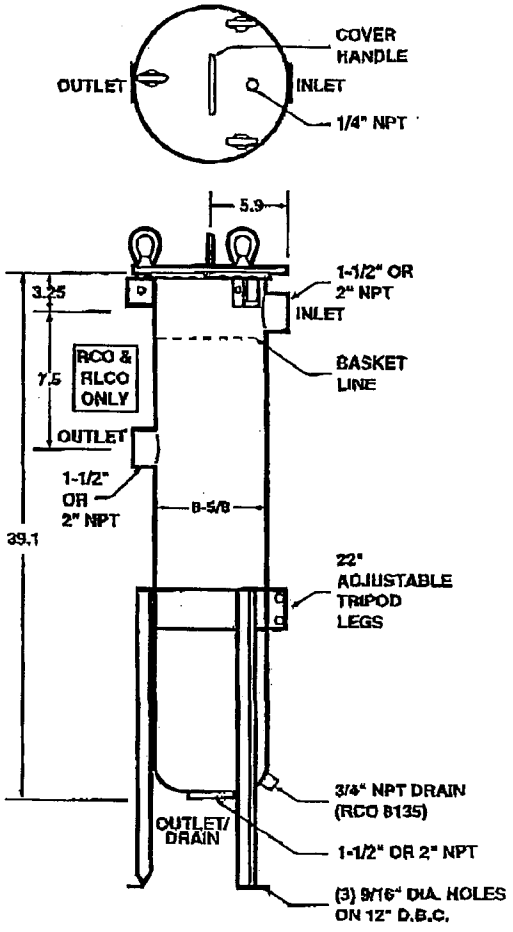
R O S E D A L E P R O D U C T S, I N C.

How To Order
Model RCO Housing

H. A. WILSON COMPANY
Manufacturers' Representatives
P.O. Box 252 Lexington, MA 02420
(781) 861-8000 Fax (781) 863-8629

Build an ordering code as shown in the example.





Rosedale Products, Inc.
P.O. Box 1085, Ann Arbor, MI 48106
Phone: (800) 821-5373 or (734) 665-8201 Fax: (734) 665-2214
E-Mail: filters@rosedaleproducts.com Website: www.rosedaleproducts.com

Catalog RCO-100 5M802 Litho in USA

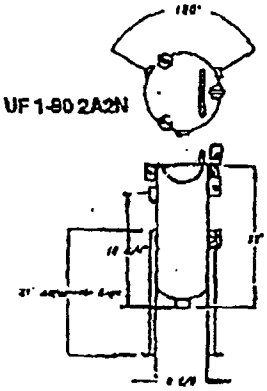
Optional Features

- Epoxy coating, electro-polish and fuse coating
- Higher pressure ratings available up to 3,000 psi
- Steam jacketed
- Differential pressure gauge taps — .25" or .5" NPT
- Bag hold down devices
- Custom designs
- Sanitary constructions
- Mesh-lined basket for straining applications — 50 micron and higher
- Other materials of construction are titanium and Hastelloy

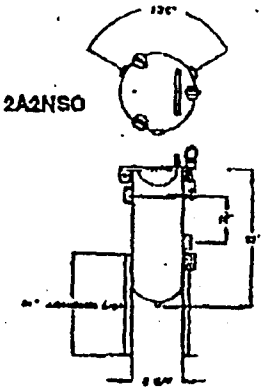
The U.F. Strainrite Advantage

- Recessed basket with welded volume displacer — allows for cleaner operation because liquid is several inches below lid
- Retainer basket with handle — allows for easy and quick access to filter bag and basket
- Wire mesh retainer basket — allows for longer filter time resulting in fewer change-outs as compared to perforated baskets *(refer to page 14)*
- Double O-ring seal — assures high quality filtration and minimizes bypass potential

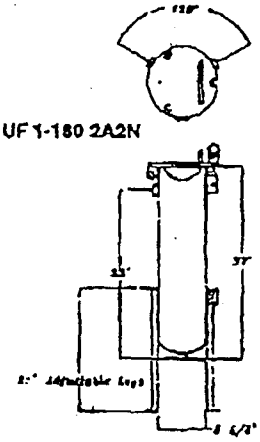
UF 1-90 2A2N



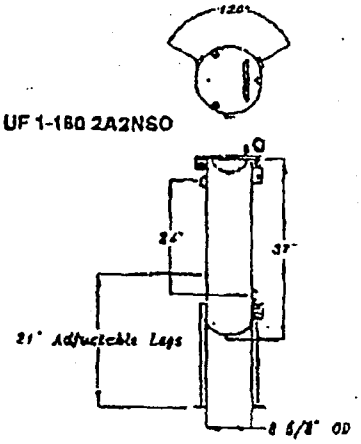
UF 1-90 2A2NSO



UF 1-180 2A2N



UF 1-180 2A2NSO



Recommended Flow Rates and Surface Area

For the following recommended flow rates, vessels need a minimum inlet/outlet size of 2" NPT. The recommended flow for basket and filter combination is for nominally rated filter bags not for our high efficiency filter bag line.

Product	Basket Strainer	Mesh lined Basket Strainer	Retainer Basket with Filter Bag	Surface Area Sq. Ft.
UF 1-90	150 gpm	110 gpm	75 gpm	2.25
UF 1-180	300 gpm	220 gpm	150 gpm	4.50

ATTACHMENT C

DAILY SYSTEM INSPECTION FORM

DAILY INSPECTION FORM

Date: _____ Time: _____ a.m./p.m.

Pipeline Tap	Condition:	
	Sheen? Y/N	Free Product? Y/N
Influent Sample	Collected?	
Frac Tank No. 1	Water Level	Sediment Level
	Pump Online? Y/N	Float Switch Op? Y/N
	Shutoff Switch Op? Y/N	Sheen? Y/N
	Sediment thickness	
	Free Product? Y/N	
Pump to Bag Filter No. 1	Pump Online? Y/N	Flow Rate _____ gpm
Pump to Bag Filter No. 2	Pump Online? Y/N	Flow Rate _____ gpm
Pressure Gauges	No. 1 _____ lbs	No. 2 _____ lbs
Bag Filters	No. 1 Replaced? Y/N	No. 2 Replaced? Y/N
Effluent Samples	Intermediate Y/N	Effluent Y/N
Any system leakage?		
Any electric power problems?		
Inspect recharge area for sheens		
Total Discharge	Time:	_____ gallons
Health or Safety Concerns?		
Maintenance Performed		
Maintenance Needed		
Inspectors Signature		