

Structurally Reinforced Thermoplastic Water & Wastewater Solutions

Operator Training Committee of Ohio



Agenda

- **Apptech Introduction**
- **PE & PP Composites + HDPE + SRPE = SRTP**
- **SRTP Structures Vs. Conventional Materials**
- **Systems Overview**
- **CENTRY PUMP STATIONS**
- **INCEPTOR WWT Overview**



APPTECH
S O L U T I O N S

S RTP Manufacturing and Engineering Support

Innovation

Fabrication Capabilities

- 30,000 SF Facility
- Salem, VA
- Leader in SRTP Fabrication
- Custom STRP Fabrication
- Electricians, Plumbers and Welders



Engineering Support at Your Disposal

- 3D Cadd Solution Development
- Standard Design Drawings
- Custom Design Drawings
- Sizing and Design Tools
- Specification and Scoping Support
- Permitting
- O&M Documentation and Training
- In Field Start Up

HDPE

High Density Polyethylene

+ PE/PP

Composite Polyethylene and Polypropylene

+ SRPE

Structurally Reinforced Polyethylene

+ Fusion Welding

Fabrication Advantage

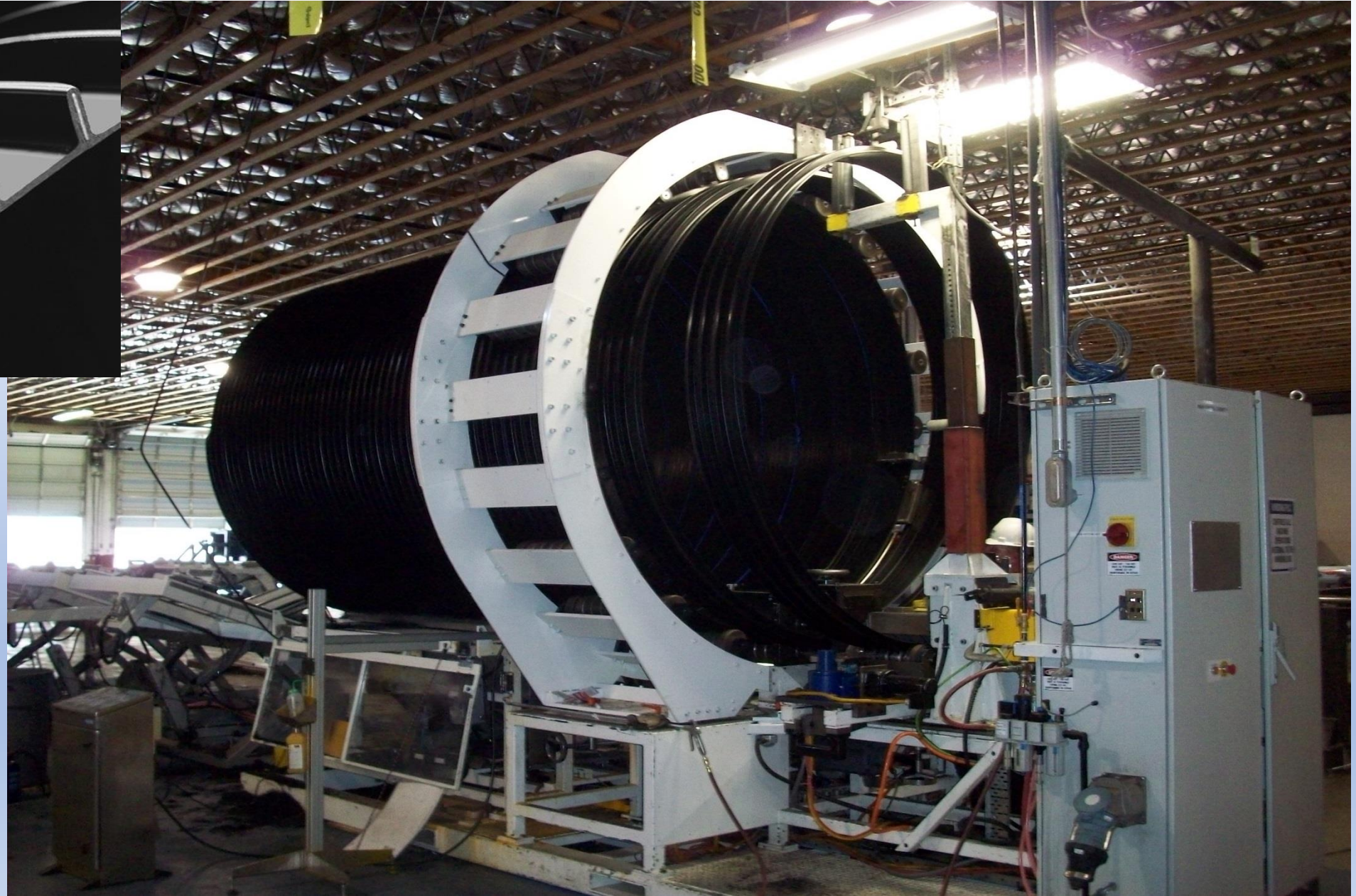
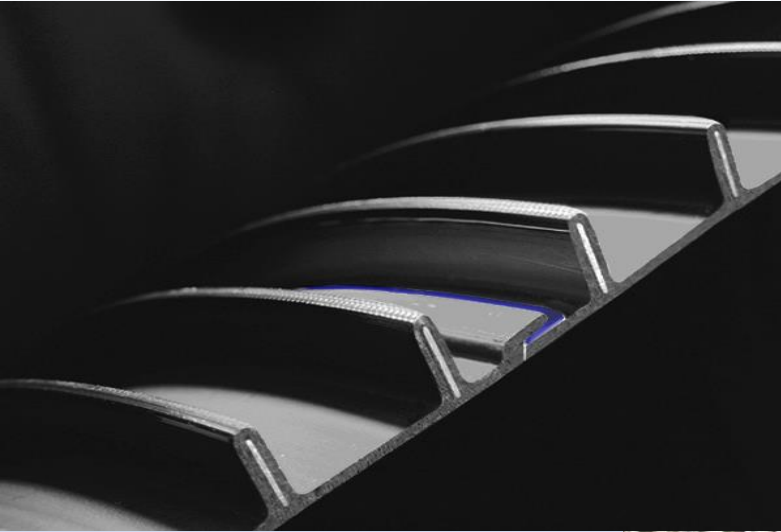
= SRTP

Structurally Reinforced Thermoplastic

Significant advances in these materials made over the past decade.

Fusion Welding

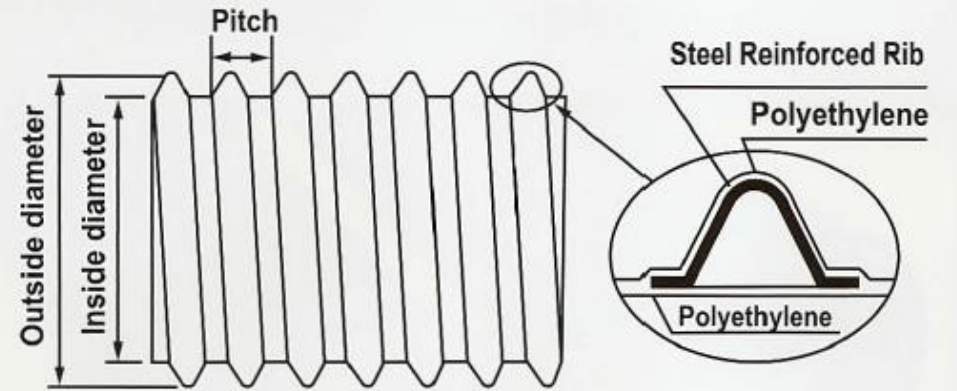






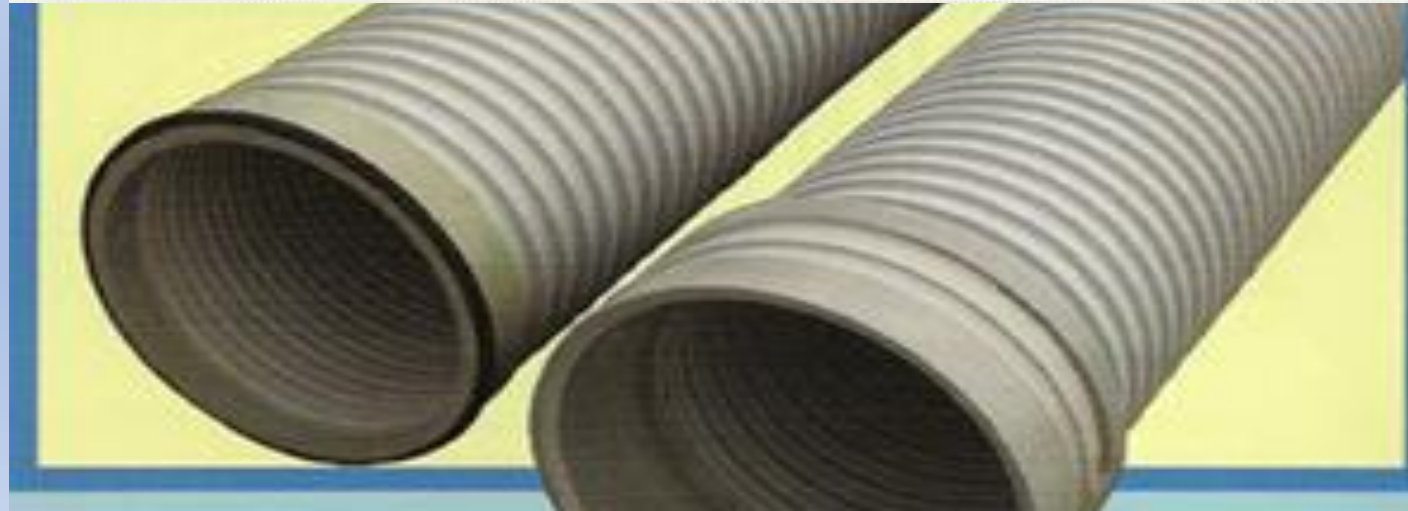
Structural Diagram

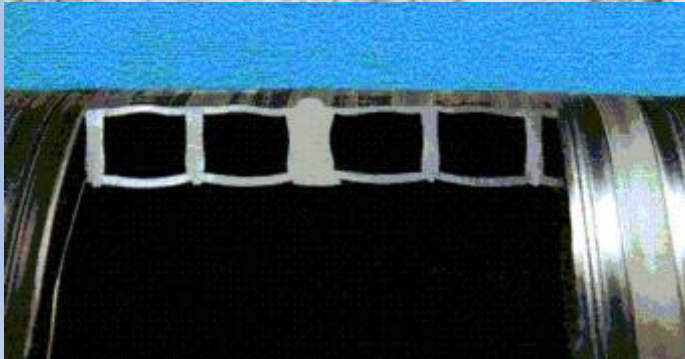
Steel Reinforced
Corrugated HDPE Pipe



Representative diagram

Kanaflex[®]
Presents
KanaPipe

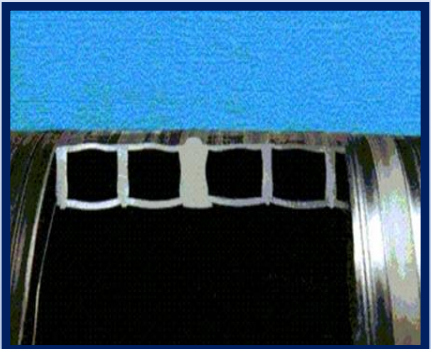




Weholite



Recap



LARGE SYSTEMS

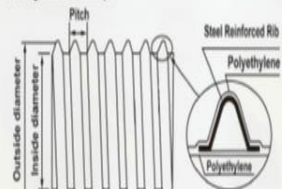


ENHANCED DURABILITY

INFINITELY CUSTOMIZABLE

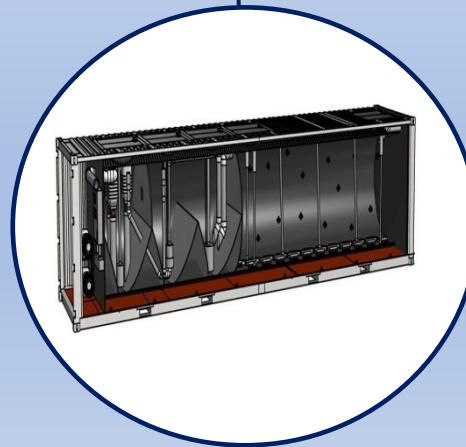
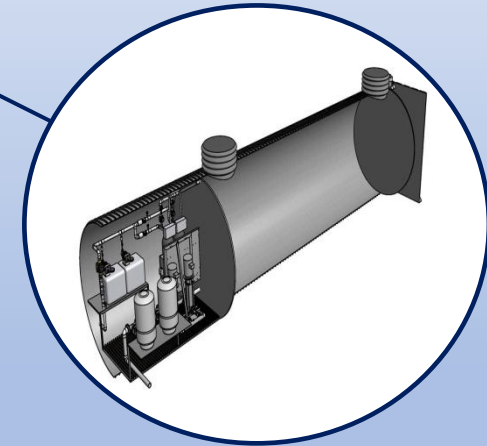
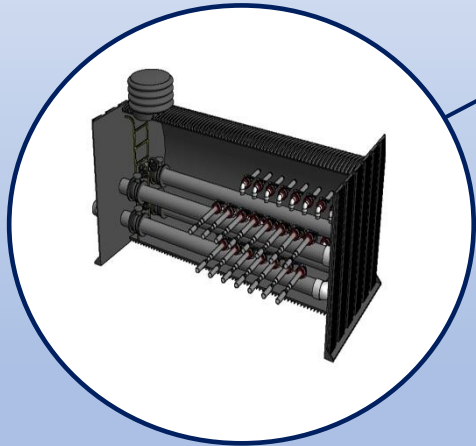
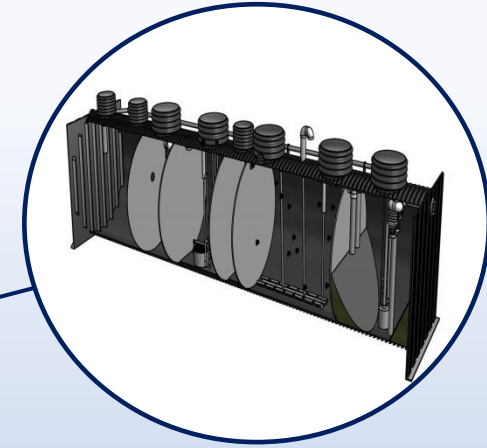
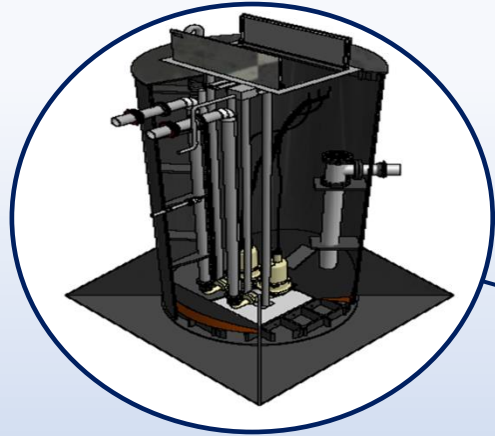
Structural Diagram

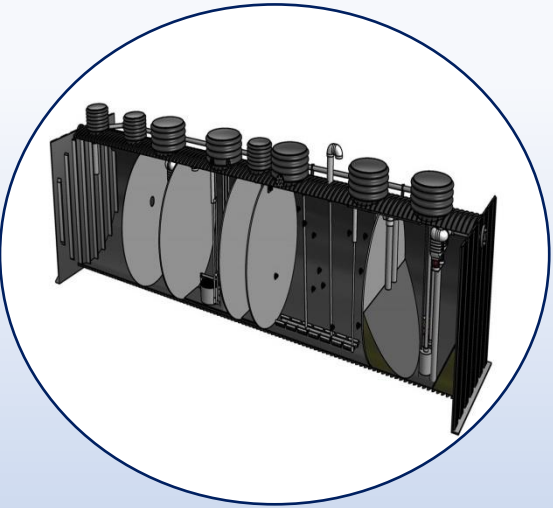
Steel Reinforced
Corrugated HDPE Pipe



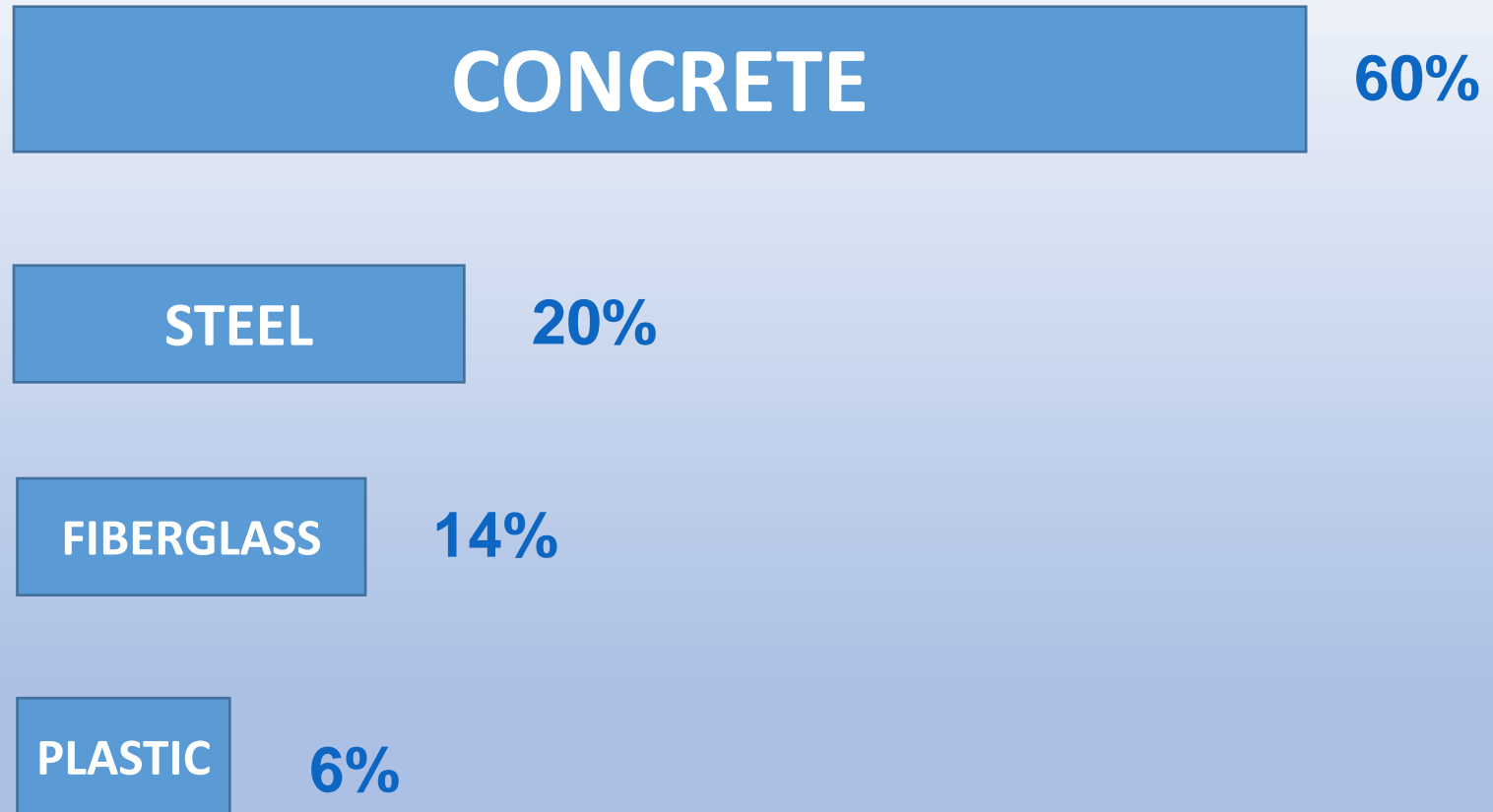
Representative diagram

S RTP Engineered Systems





CONVENTIONAL MATERIAL SELECTION



Conventional Materials

Concrete

Design Life < 40 Years

Limited Scalability

Vs.

SRTP

Design Life >75 Years

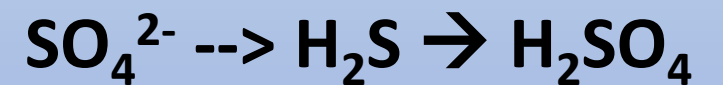
Infinitely Scalable





Biogenic Sulfide Corrosion

Bacterially mediated process of forming Hydrogen sulfide gas and the subsequent conversion to Sulfuric Acid that attacks concrete and steel within wastewater environments.



Thiobacillus concretivorus
Latin for “eats concrete”

REF: EPA Sept 1991 832S91100

Conventional Materials



Steel

< 20 Years

High Maintenance

Steel

Design Life < 20 Years

High Maintenance

Vs.

S RTP

Design Life >75 Years

Zero Maintenance

Conventional Materials



Fiberglass

Design Life < 40 Years

Limited Scalability

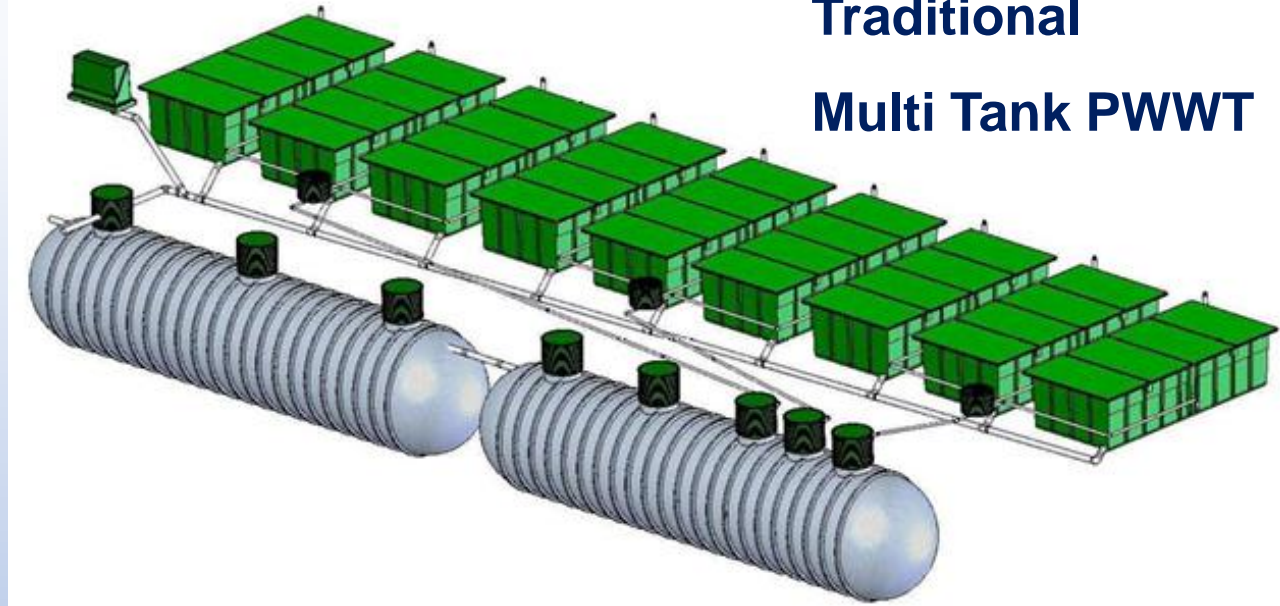
Vs.

SRTP

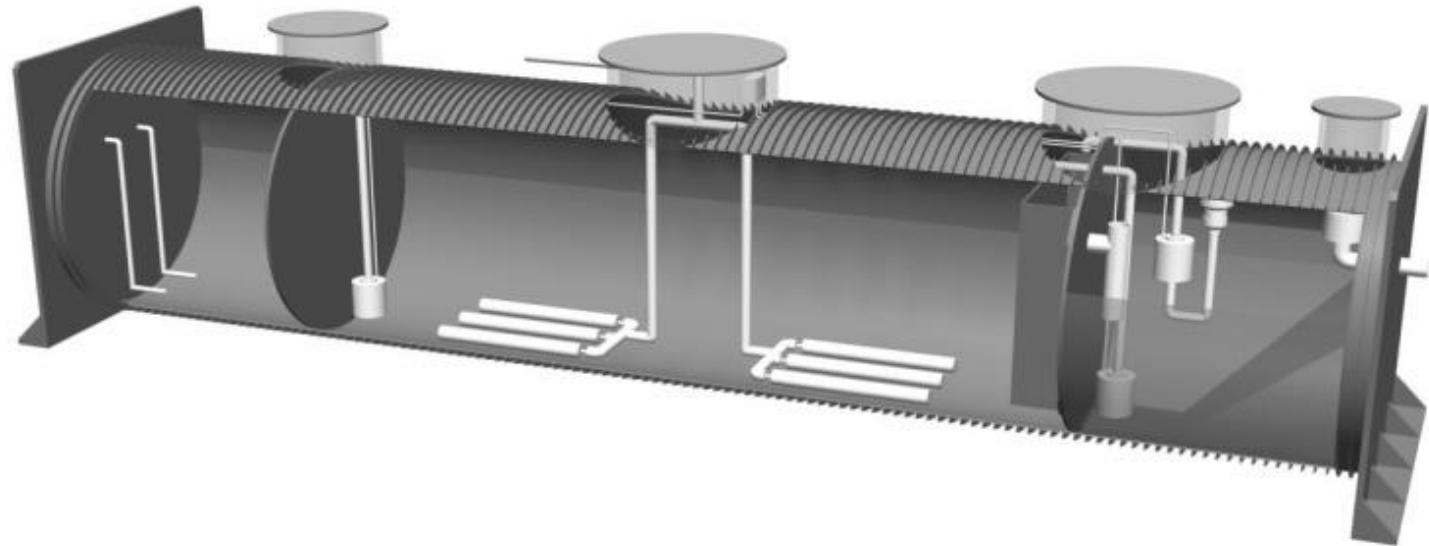
Design Life >75 Years

Infinitely Scalable

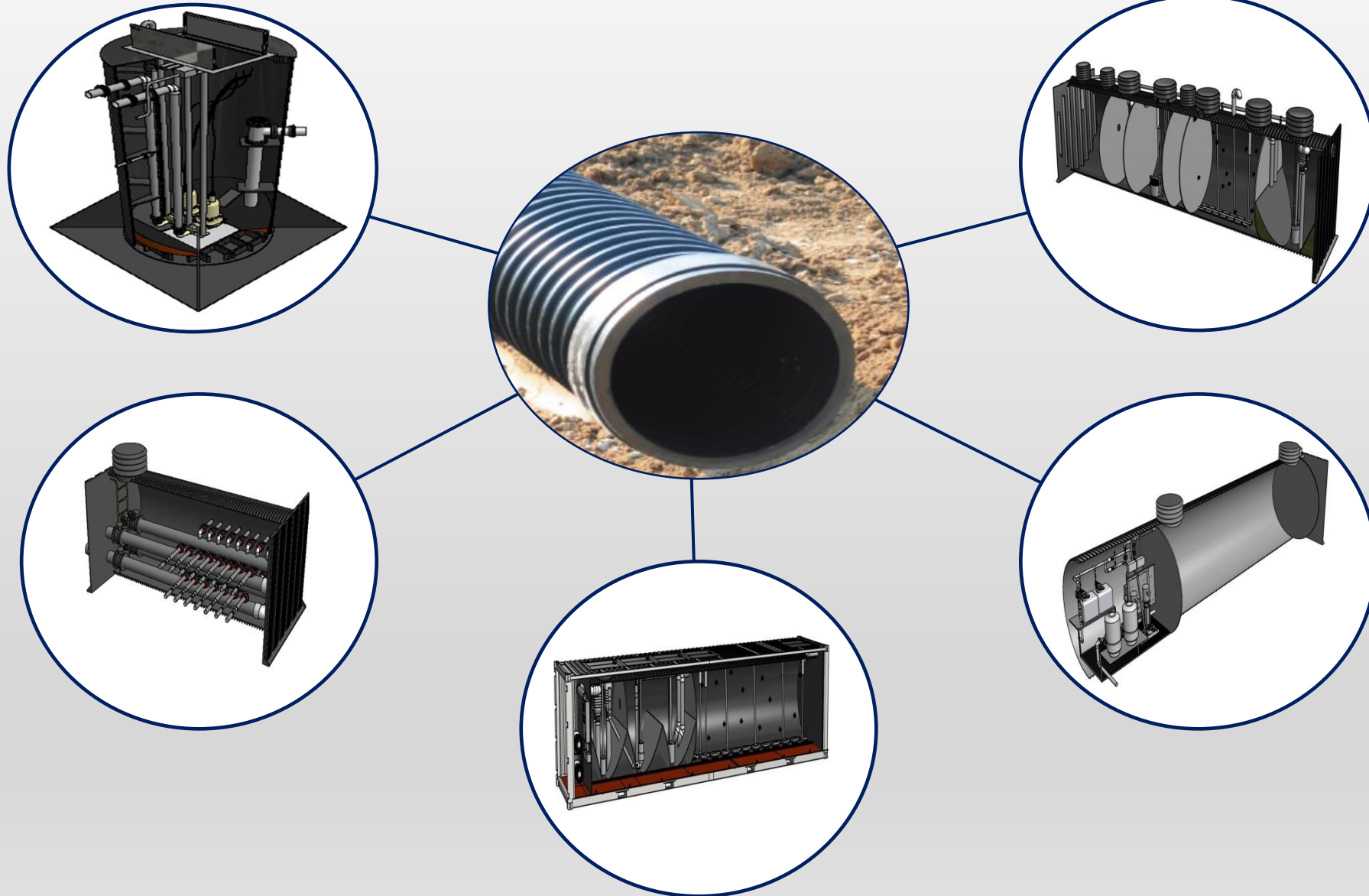
**Traditional
Multi Tank PWWT**



INCEPTOR



S RTP Engineered Systems



Inceptor

CENTRY

Manholes

AquaVolve

Fortress

Versacon

Custom Waste Water Treatment

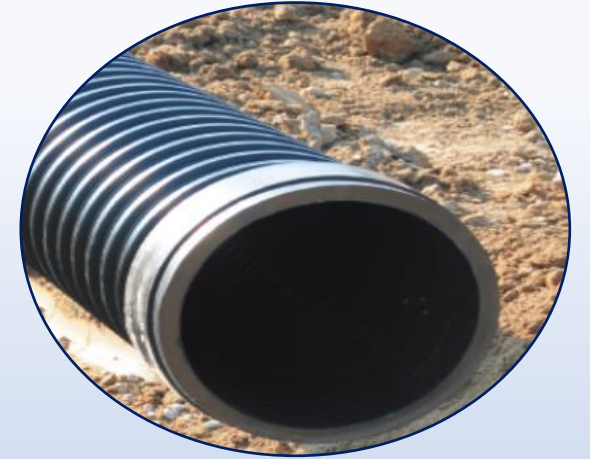
Pump Stations

Custom Manholes and Conveyance

Potable Water Treatment and Storage

Fire Suppression

Mobile systems, EWRS and Others



S RTP

Based Innovations

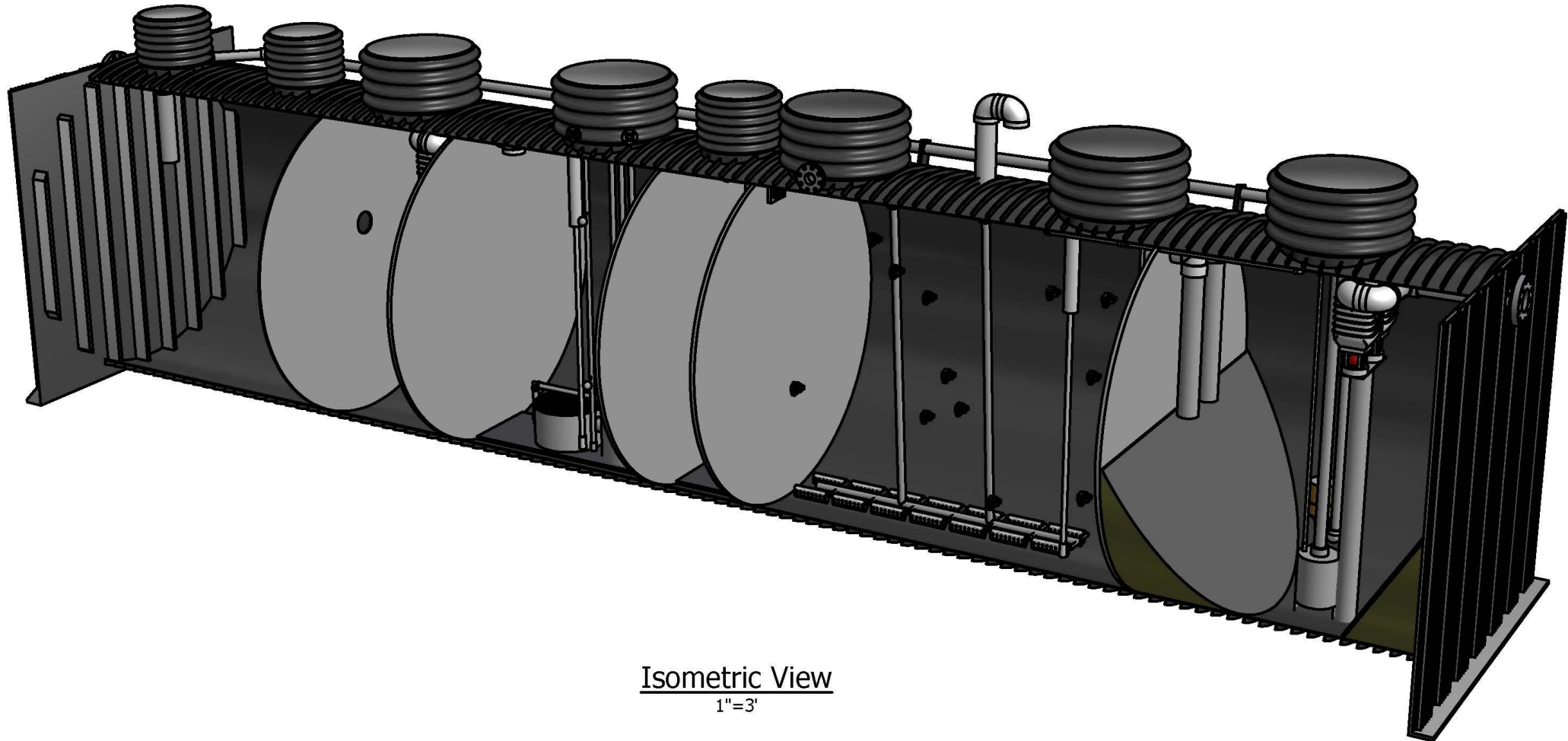
> 75 Years

Fabrication Advantages

Size and Strength

Lightweight

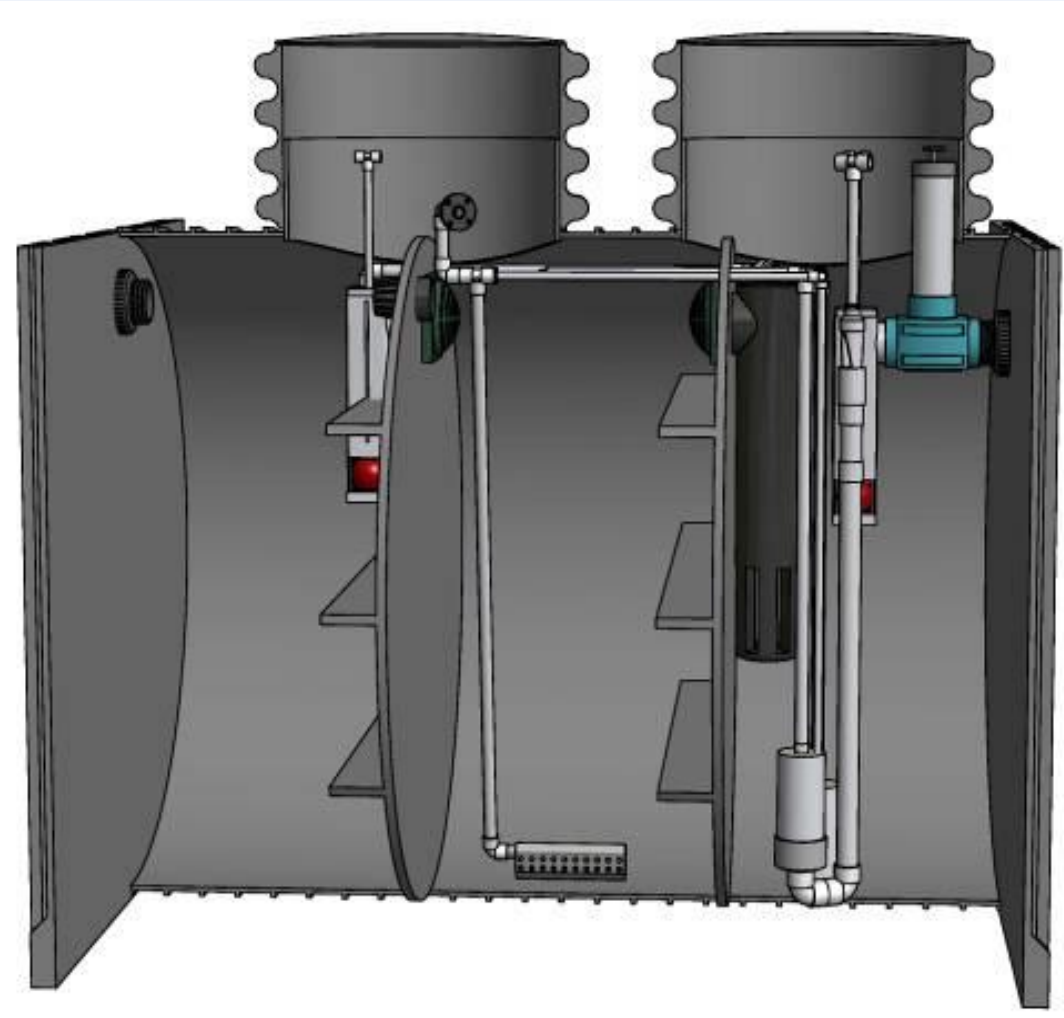
The Inceptor a 21st Century Solution for Wastewater



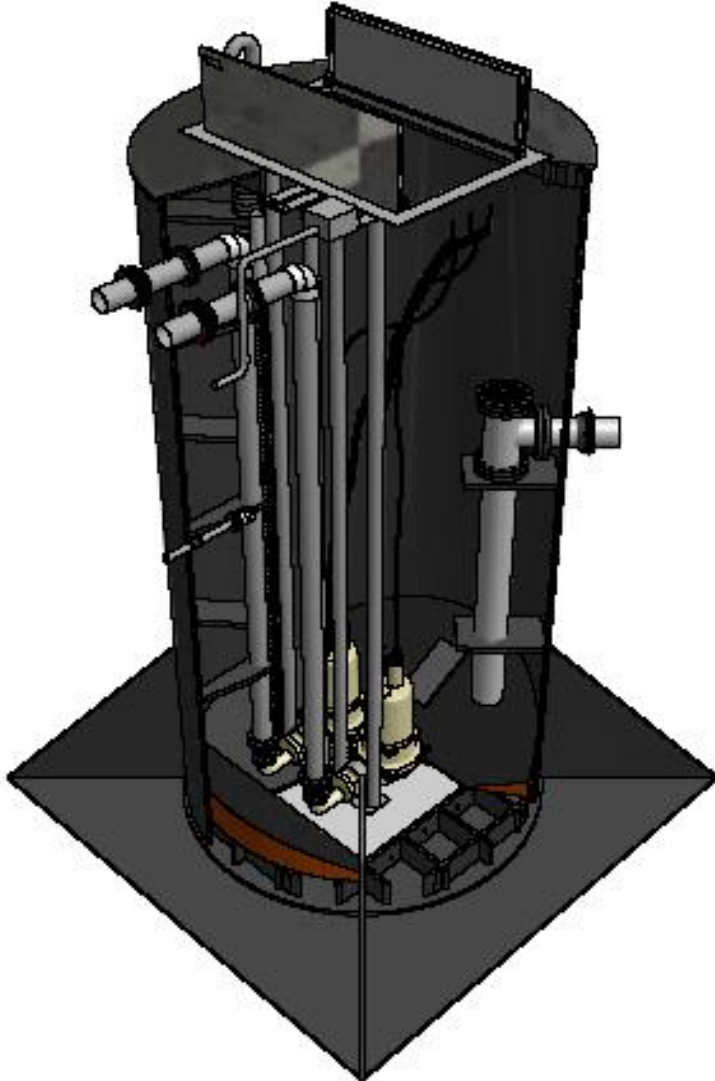
Isometric View
1"=3'

The Inceptor

Pre-Designed Residential and Small Scale Commercial



CENTRY Packaged Pump Stations



Manhole Structures

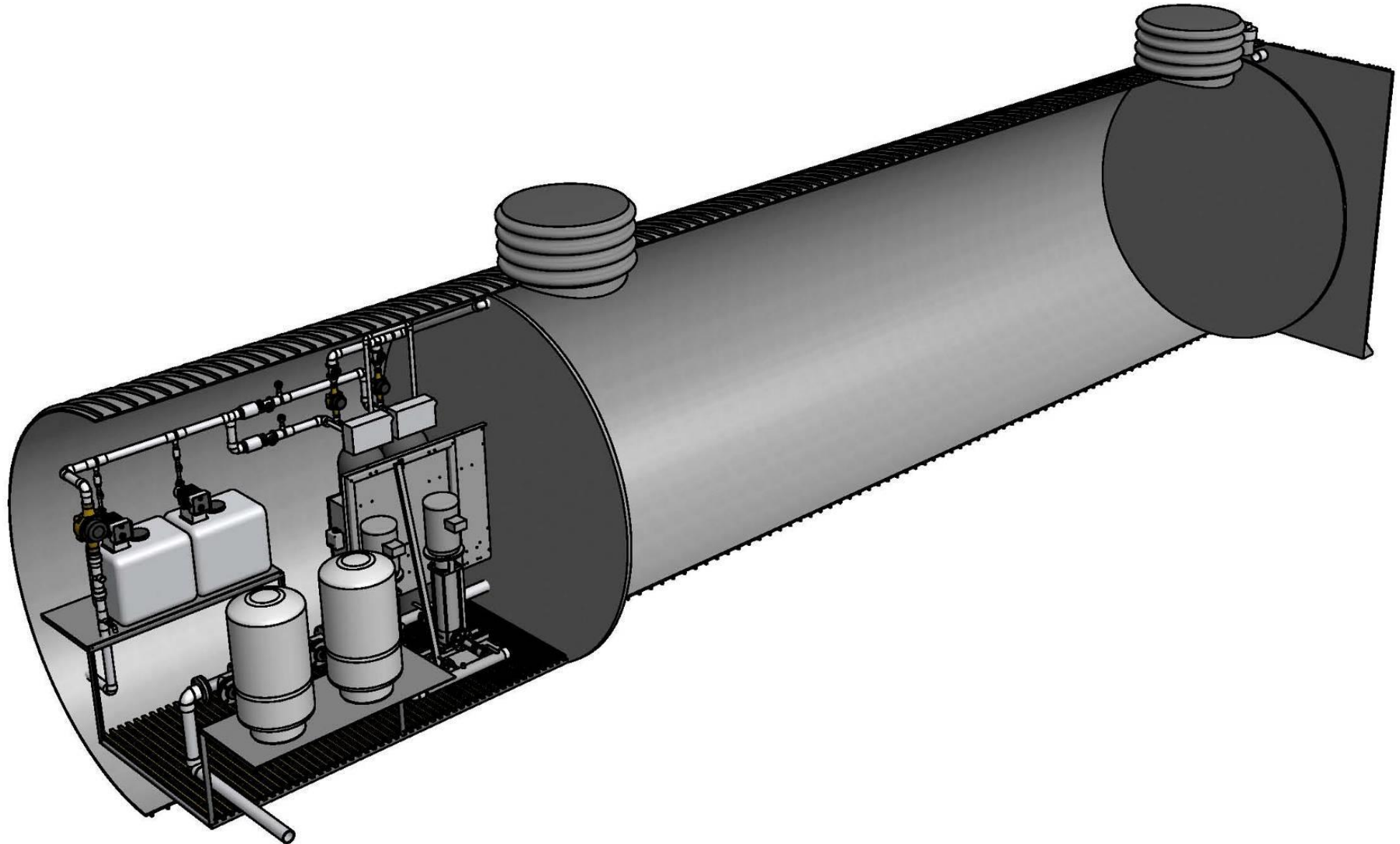


Manhole Structures



AquaVolve

Potable Water Treatment and Storage

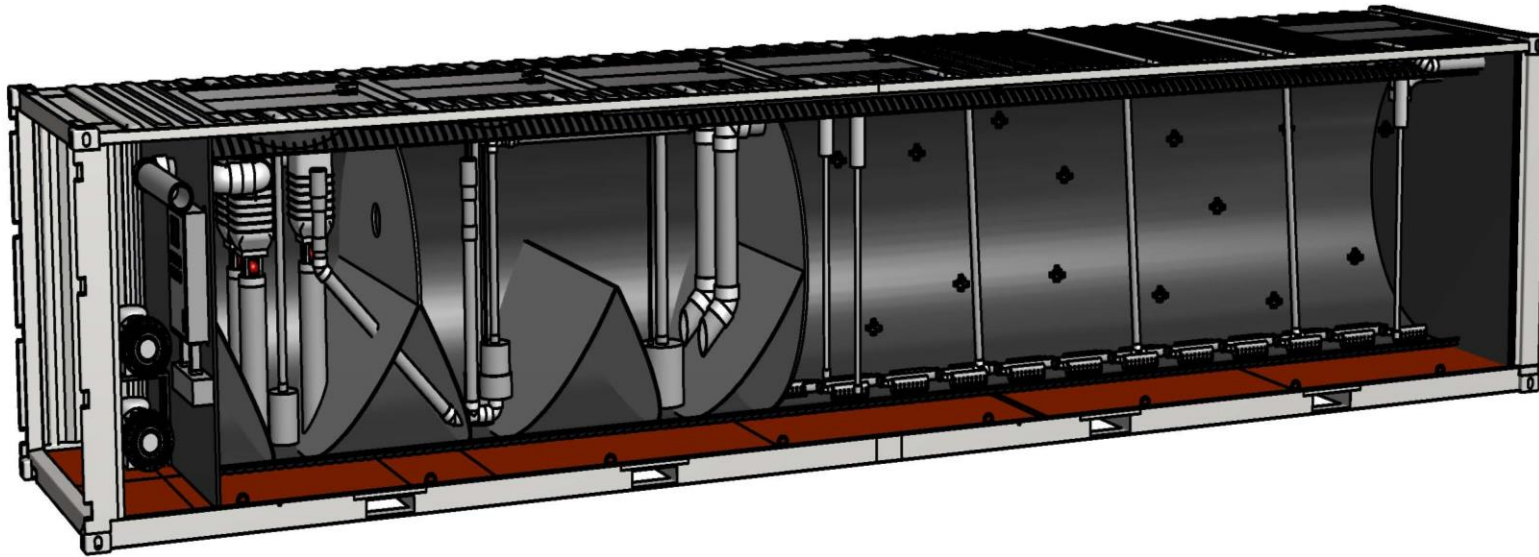


Custom Applications

UV, Aeration, Bolt-On, Industrial



VERSACON - Mobile Applications



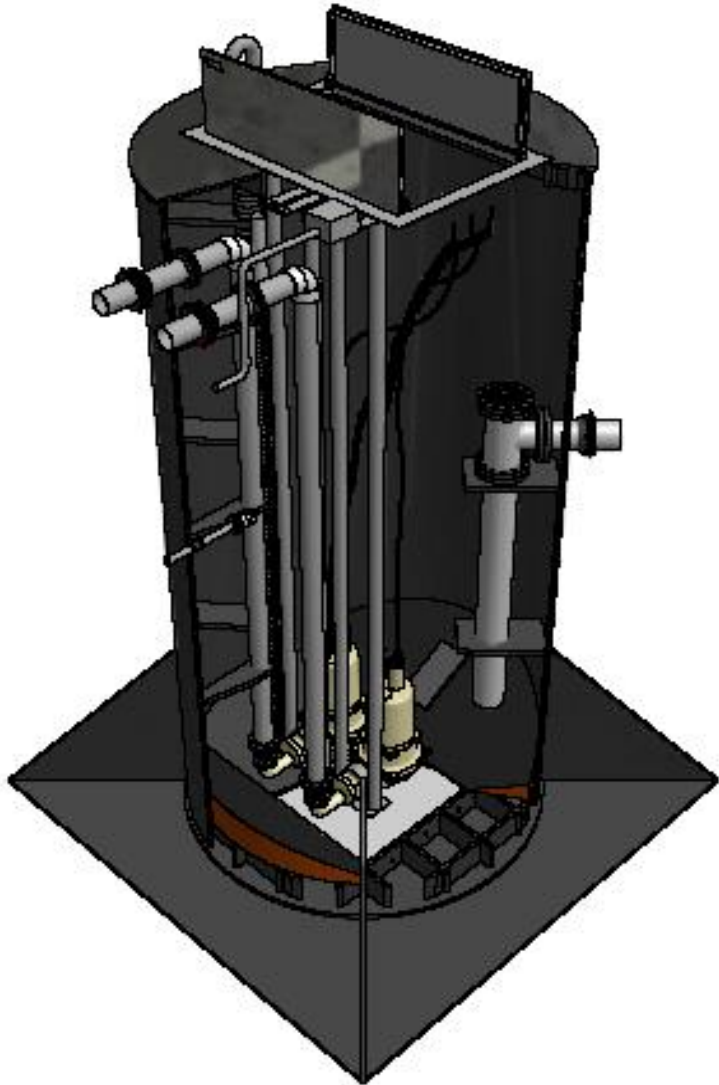
VERSACON - Mobile Applications



CENTRY

- Reduced Overall Installation Costs
- 4' to 11' Diameters
- 25-35 Bury Depth
- 100% Prefabricated – Packaged System
- 75 Year Design Life

CENTRY Packaged Pump Stations



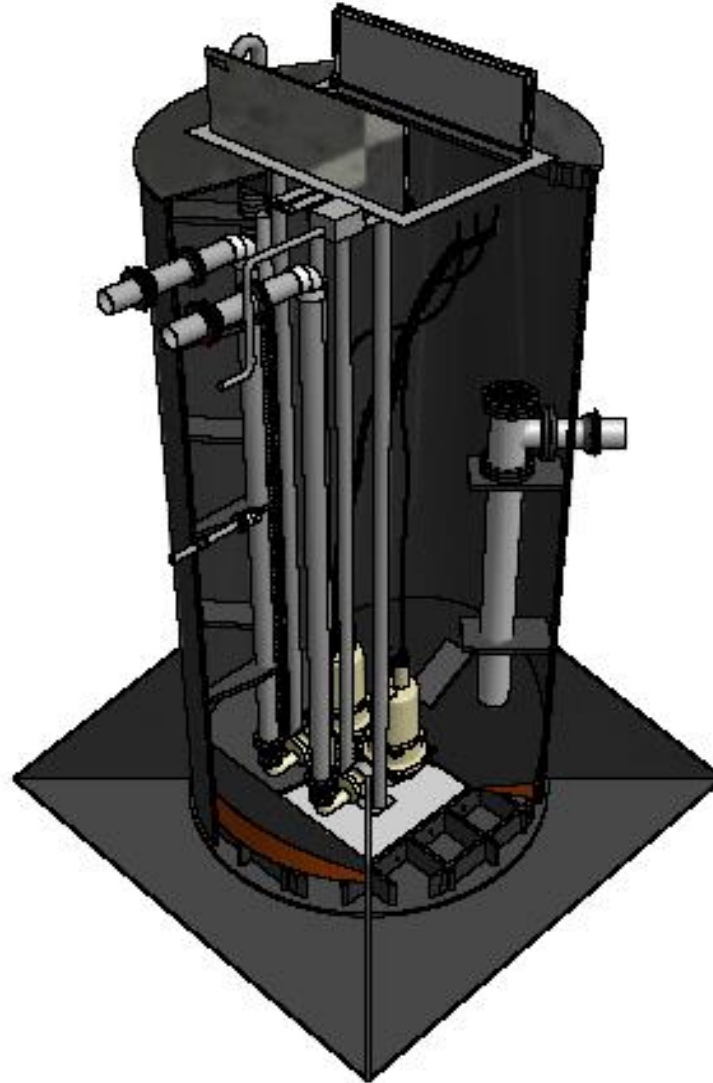
Up To 11' Diameter and 30' Bury Depth



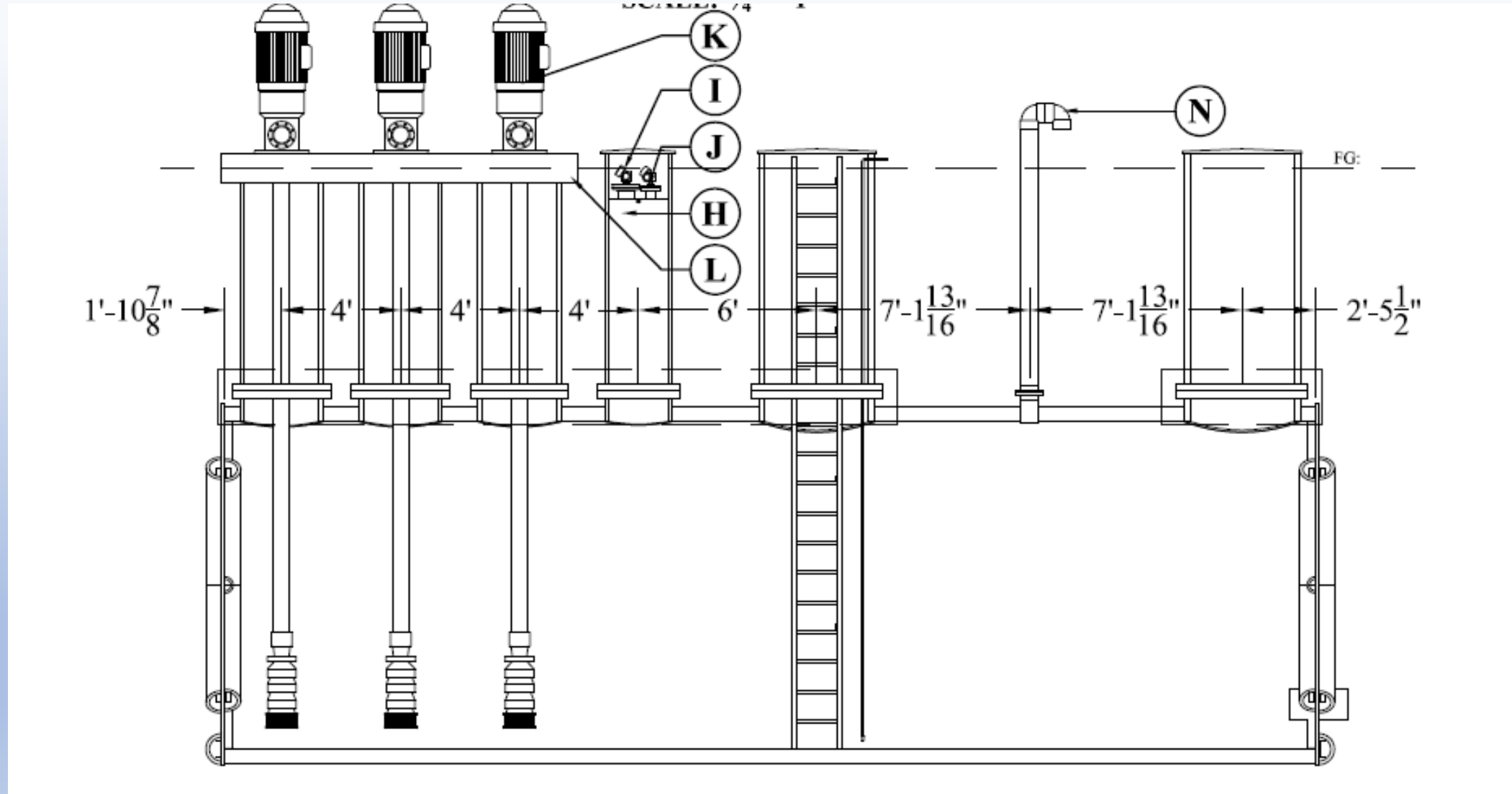
CENTRY Packaged Pump Stations



CENTRY Packaged Pump Stations



Up To 11' Diameter and 30' Bury Depth

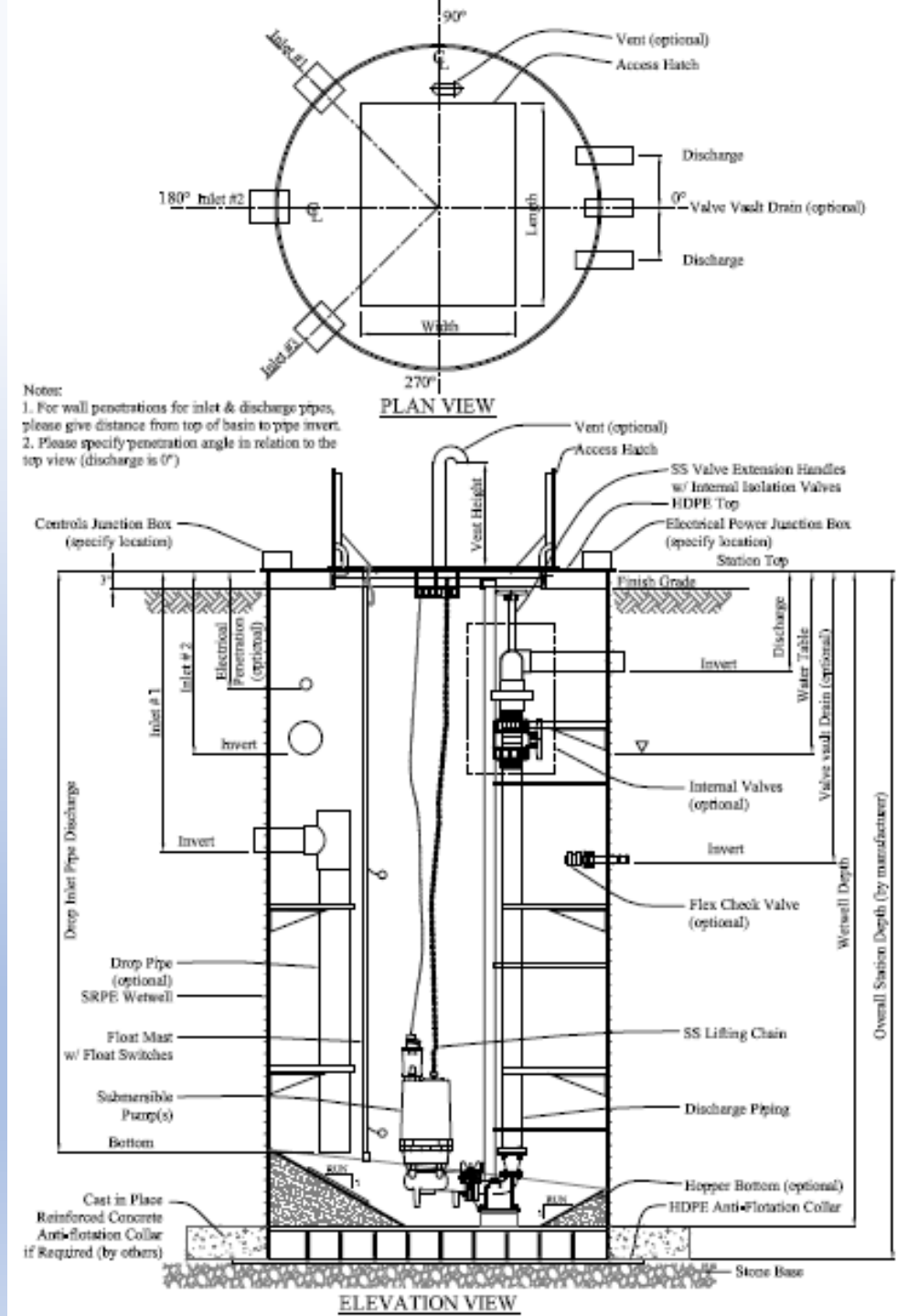


Minimum Information

- FLOW RATE – GPM OR TDF
- TOTAL DYNAMIC HEAD - TDH

OTHER INFORMATION

- TOS, INVERTS
- TOP OF STRUCTURE
- VEHICULAR OR PEDESTRIAN RATED
- PUMP MFG PREFERENCE
- FORCE MAIN DIAMETER TYPE
- GRINDER OR SOLIDS PASSING
- MIN HYDRAULIC CAPACITY
- AVAILABLE SITE ELECTRICAL (Voltage/Phase)



PumpMaxx Pump Station DESIGNER

Project Name:	Project Name Here	Proposal/Project #:	Project Number Here
City/County:	Project Location Here		yellow fill requires design input value
State:	Project State Here		light green fill indicates process calculation
Date:	Date Here		green fill indicates final calculation
Type of Project:			orange fill requires engineer evaluation
<i>Red Text represents notes and instructions</i>			

Input Average Daily Flow:	50,000	GPD	
Input Design Peak Day Factor	4.0		(Generally use 2.5)
Input Design Peak Hour Factor	4.0		<i>Input Design Information into the following cells based on data supplied. Refer to data sheets and attach to printout</i>
Input Length of Forcemain	1,000.00	ft	
Input Diameter of Forcemain	3.79	inch	C (coeff.) 150
Input Forcemain Material	SCH-80 4"		
Input Maximum FM Static Head	10.00	feet	
Input Artificial Static Head	0.00	feet	
Input Equivalent Pipe Lengths (Fittings)	100	feet	(Use 10% of FM length if unknown)
Input Pump Station Piping Length	6.28	feet	

Pump Solution:			
Pump Station Discharge Rate:	138.89	GPM or	0.31 CFS
Pump Station Discharge Rate Used:	150	GPM or	0.33 CFS
Flushing Velocity:	4.28	FPS	OK
Calculation of Total Dynamic Head:	31.9	Feet TDH	

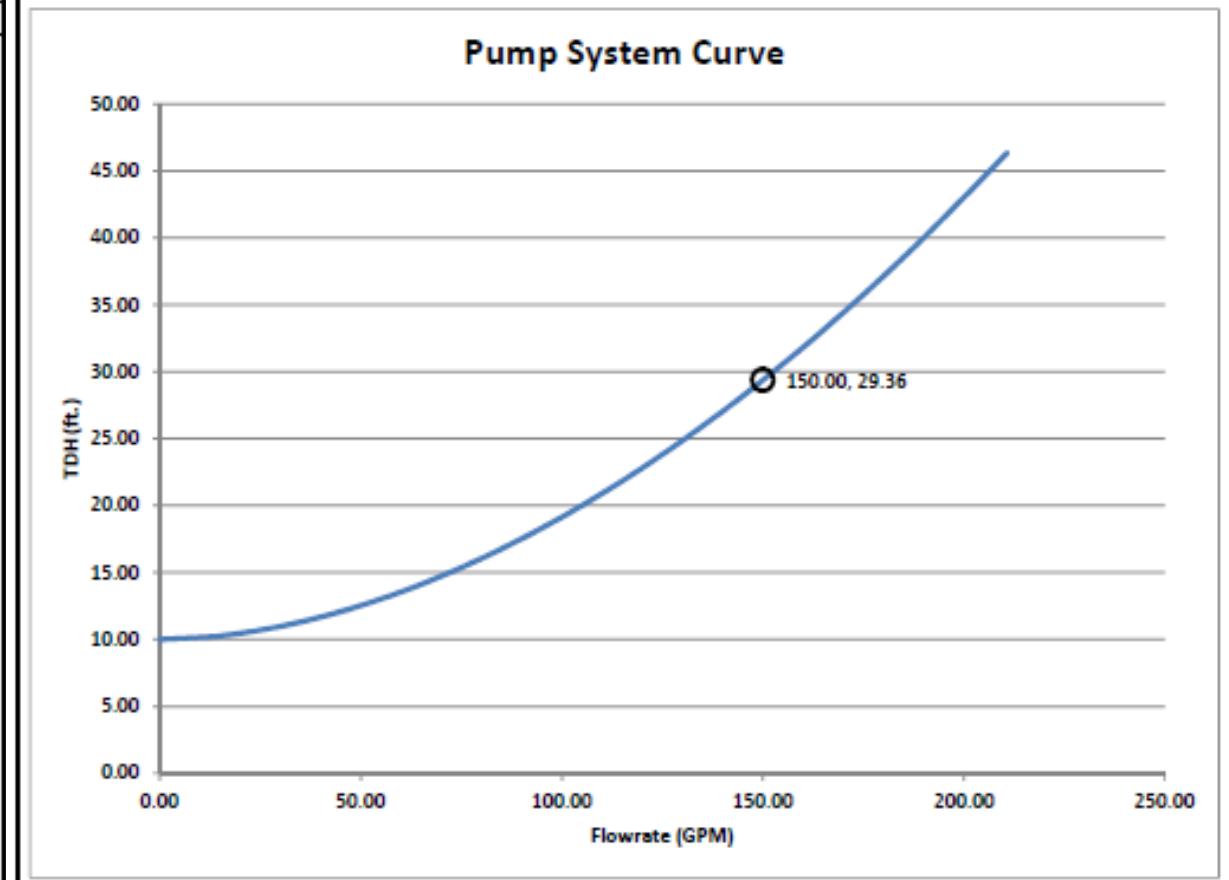
Wetwell Sizing:			
Input Sewer Invert Inlet Depth:	3.00	feet	Depth below finish grade
Input Desired Pump Run Time:	5.00	minutes	(can vary from 5 to 15)
Input Desired Wetwell Diameter:	6.00	feet	
Calculated Working Volume:	92.84	Ft ³	
Calculated Working Volume Depth:	3.28	feet	(Pump on/off)
Input Resident Volume Depth:	2	feet	Confirm Pump dimensions with manufacturer
Input Emergency Storage Time:	0	hour	
Input Total Storage Requirement:	0	Gallons	Volume to be stored from Sewer Inv In to Pump Off

ADF Flow into Pump Station:	34.72	GPM	
Low Flow Rate into Pump Station:	5.79	GPM	
Time of Pump-Off Cycle:	20.00	Minutes	
Time of Pump-On Cycle:	5.22	Minutes	
Time of Pump-Off Cycle (Low Flow)	120.00	Minutes	OK
Emergency Storage Volume:	0.00	Gallons or	0.00 Ft ³
Emergency Storage Volume Depth:	0.00	Feet	Depth from Sewer Inv In to High Water Alarm Float

Wetwell Configuration & Operational Specifications:			
Finish Grade Elevation:	100.00	Feet	Assume 100 if unknown
Forcemain Inv. Out Elevation:	97.00	Feet	
HDPE Top Plate Thickness	1.00	Inches	
Finish Grade to Top of SRPE:	5.00	Inches	
Sump to Bottom of SRPE:	10.00	Inches	
HDPE Bottom Plate Thickness	1.00	Inches	
Independent High Water Alarm:	yes	Yes/No	
Lead On/Lag On Distance:	6.00	Inches	
Lag On/HWA Distance:	5.00	Inches	
Total Length of SRPE:	10.53	Feet	
Total Height of PS:	10.70	Feet	
"A+C+D" per detail			
"D" per detail			
<i>Note: If No then HWA will be combined with Lag Pump On</i>			
<i>Note: Distance from Lead On to Lag On</i>			
<i>Note: Distance from Lag On to HWA</i>			

PumpMaxx Submersible Pump System Curve Information

Effluent Pump Station Peaking Factor:	4.0	PF
Pump Discharge Rate:	150.00	gpm
Static Head:	10.00	ft
Forcemain Length (including equivalent fittings):	1,206.28	ft
Effluent Forcemain Diameter:	SCH-80 4"	
Effluent Forcemain Diameter:	3.79	inches



Pump Operating Condition =	150.00	gpm @	29.36	Feet TDH
Select Simplex or Duplex Pump Configuration:	Duplex			
Select Submersible Electric Pump:				
Pump Operating Conditions:	150.00	gpm @	29.36	Feet TDH
Pump Quantity:	2			
Pump Type:	Non-Clog (Grinder, Sewage Non Clog or Effluent)			
Available Power:	230/3/60 (Volts/Phase/Hz)			
Pump Manufacturer:	ABS			
Pump Model:	XFP100C	RPM:	3450.00	HP: 4.70
Notes:	XFP100C CB1.4 PE35/4			

PUMPMAXX

TANK UPLIFT CALCULATION

Project: _____
 Project Number: _____
 Date: _____
 By: _____

Project Name Here _____
 Project Number Here _____
 Date Here _____
 JMS

Top Slab = **100.50**
 BOSF = **89.80**
 H = **10.70**

GIVEN

Tank Diameter	6.00 Feet	
Tank Depth below Grade	10.20 Feet	(SRPE 30.9-4' Dia, 43.5-5' Dia, 69.9-6' Dia, 90.9-7' Dia, 103.8-8' Dia, 129.8-10' Dia)
Weight of Tank Wall per foot	69.9 PLF	(M294 20.9-3' Dia, 26.9-3.5' Dia, 34.0-4' Dia, 56.0-5' Dia)
Thickness of Outer Shell, if applicable	2 inch	(Polyurethane Foam Insulation)
Thickness of Tank Base Top Plate	1 inch	(HDPE Wt. 59.3 PCF)
Thickness of Tank Base Steel Plate	0 inch	
Thickness of Tank Base Bottom Plate	2.00 inch	
Concrete Base Size, if provided	17.36 SF	(Interior Base)
Concrete Base Thickness	0.67 Feet	
Weight of Access Hatch	130 Pounds	(2436 - 48#, 4848 - 110#, 6036 - 87#, 6048 - 130#, 7236 - 116#, 7248 - 151#)
Total Thickness of Tank Top Plate	1 inch	(HDPE Wt. 59.3 PCF)
Thickness of Tank Top Steel Plate	0 inch	
Total Weight of Tank	3843.88 Pounds	
Tank Depth Below Water Table	10.20 Feet	(Height of Water Above Tank Bottom)
HDPE Anti-Flotation Collar Width	7.75 Feet	(Min. is 6" greater than Tank Diameter plus Outer Shell)
HDPE Anti-Flotation Collar Length	7.75 Feet	(Min. is 6" greater than Tank Diameter plus Outer Shell)

STEP 1 BOUYANCY FORCE

Volume of Tank Below Water Table	288 CF	
Factor of Safety	1.25	(Use minimum 1.25 if not specified)
Specific Gravity of Water	62.4 PCF	(62.4 for Fresh, 64.1 for Salt)

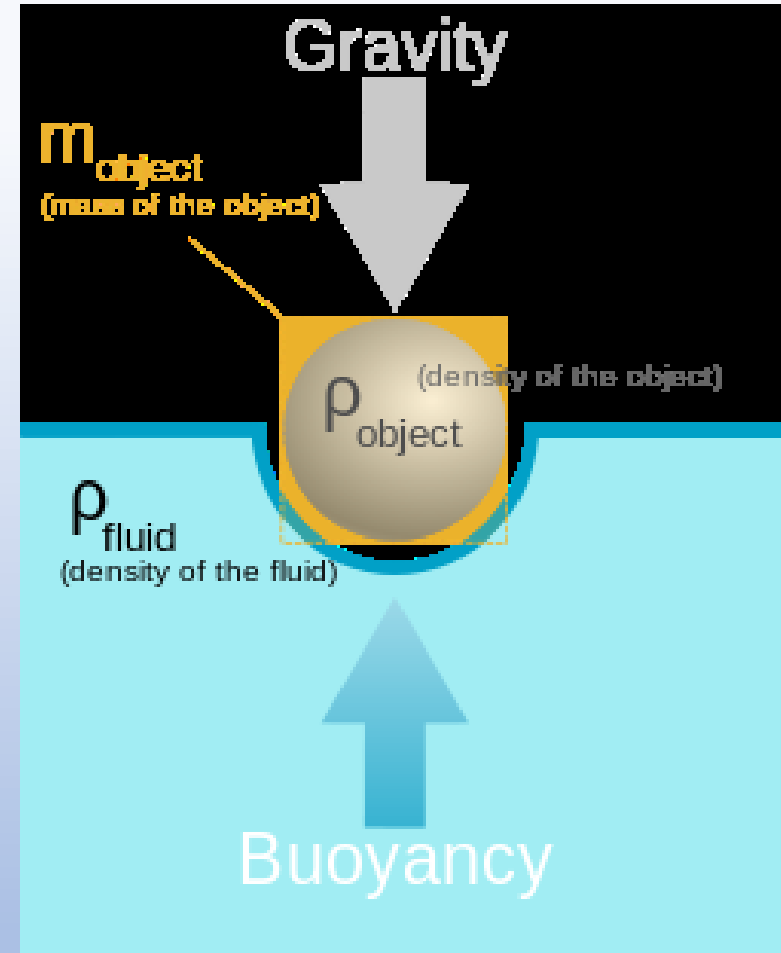
Bouyancy Force 22484 Pounds

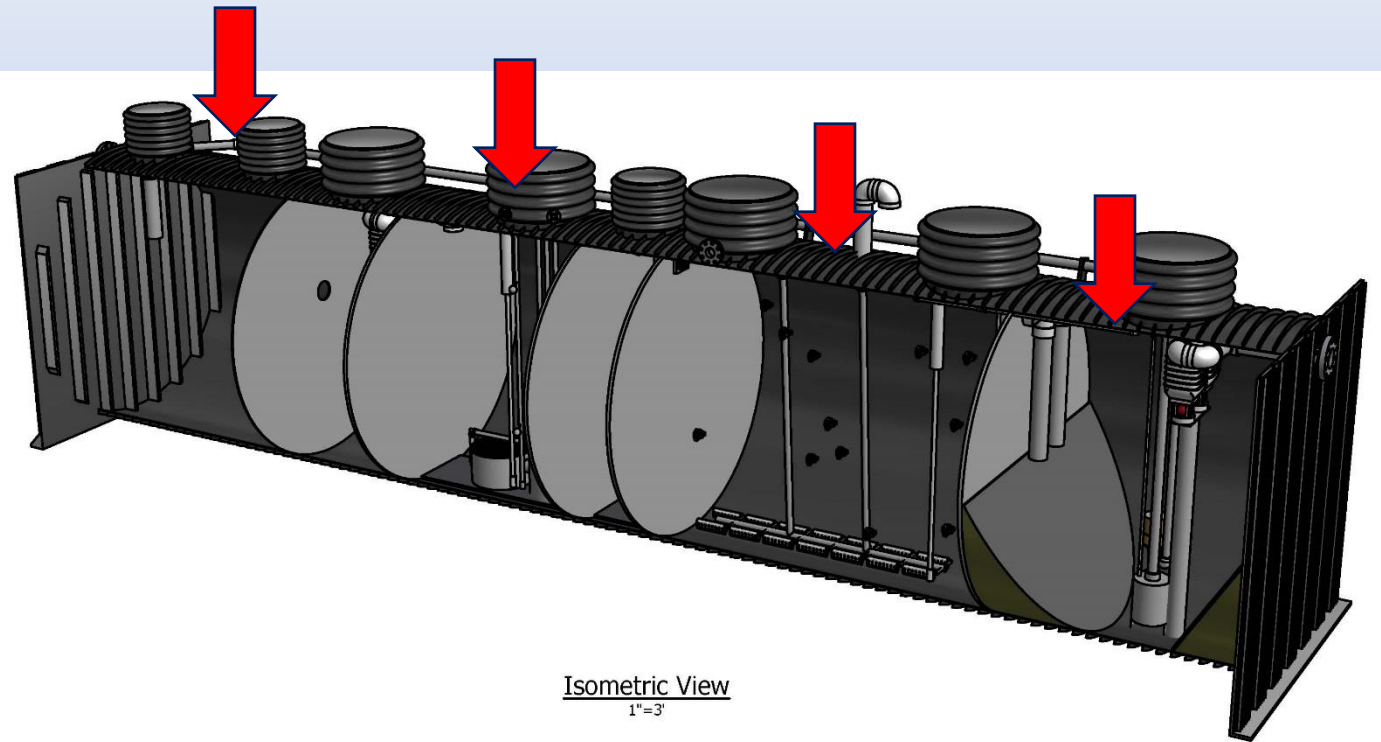
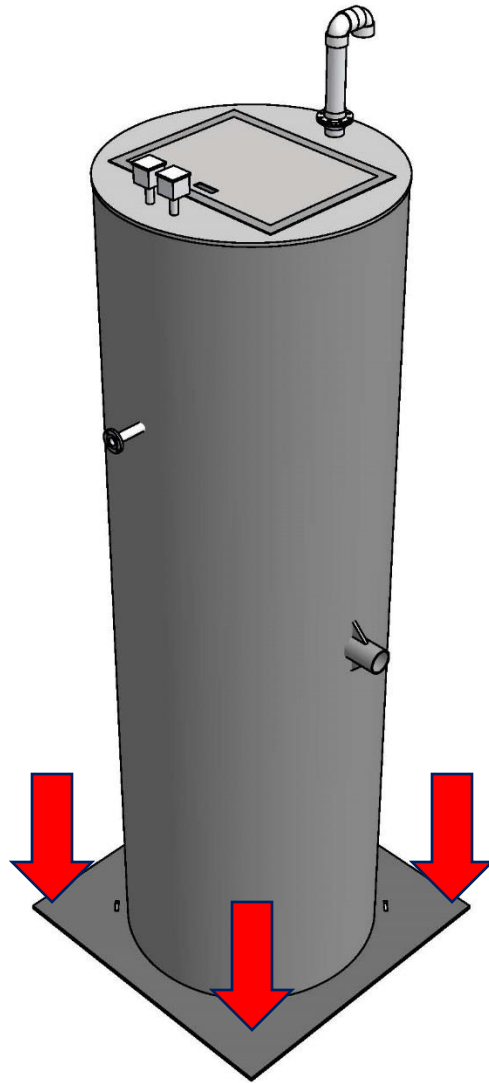
STEP 2 WEIGHT OF CONCRETE AND EARTH OVER TANK

HDPE Anti-Flotation Collar Area	30.21 SF	
Depth of Concrete over collar	0 Feet	
Concrete Collar Length/Width	0 Feet	
Concrete Anti-Flotation Collar Area	0.00 SF	
Volume of Concrete	0 CF	
Volume of Soil below Water Table	308 CF	
Volume of Soil Above Water Table	0 CF	
Unit Weight of Submerged Concrete	87.60 PCF	Use: 150-62.4 = 87.6 PCF
Unit Weight of Submerged Soil	87.60 PCF	Use: 130-62.4 = 67.6 PCF if Unknown
Unit Weight of Soil Above Water	130.00 PCF	
Weight of Concrete over Collar	0 Pounds	
Weight of Earth over collar	20832 Pounds	

STEP 3 NET BOUYANCY FORCE

Net Bouyancy Force -2192 Pounds
 Is concrete slab depth adequate? **Yes** If Yes then complete, If No increase depth of concrete or collar size



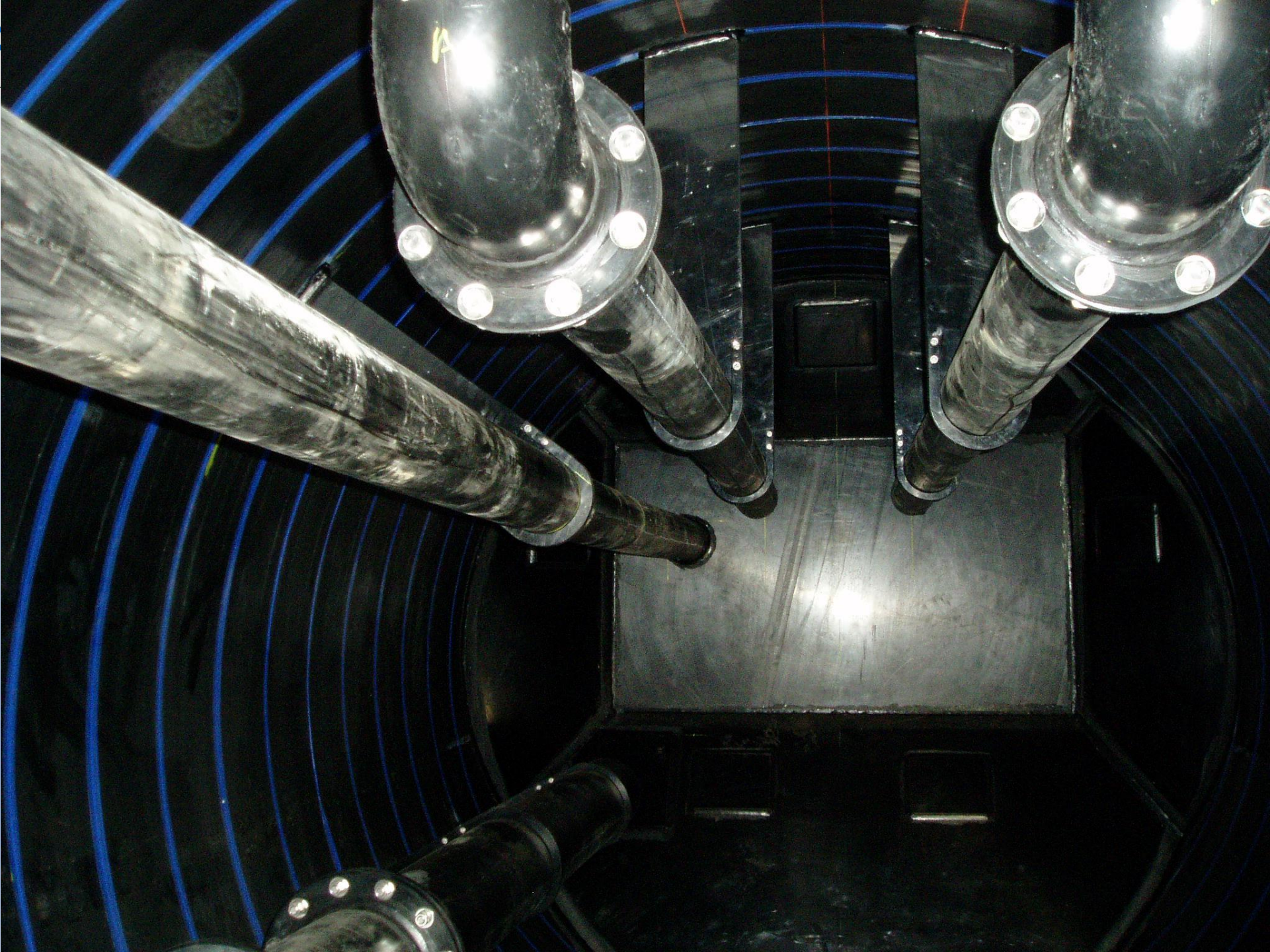


Isometric View
1"=3'













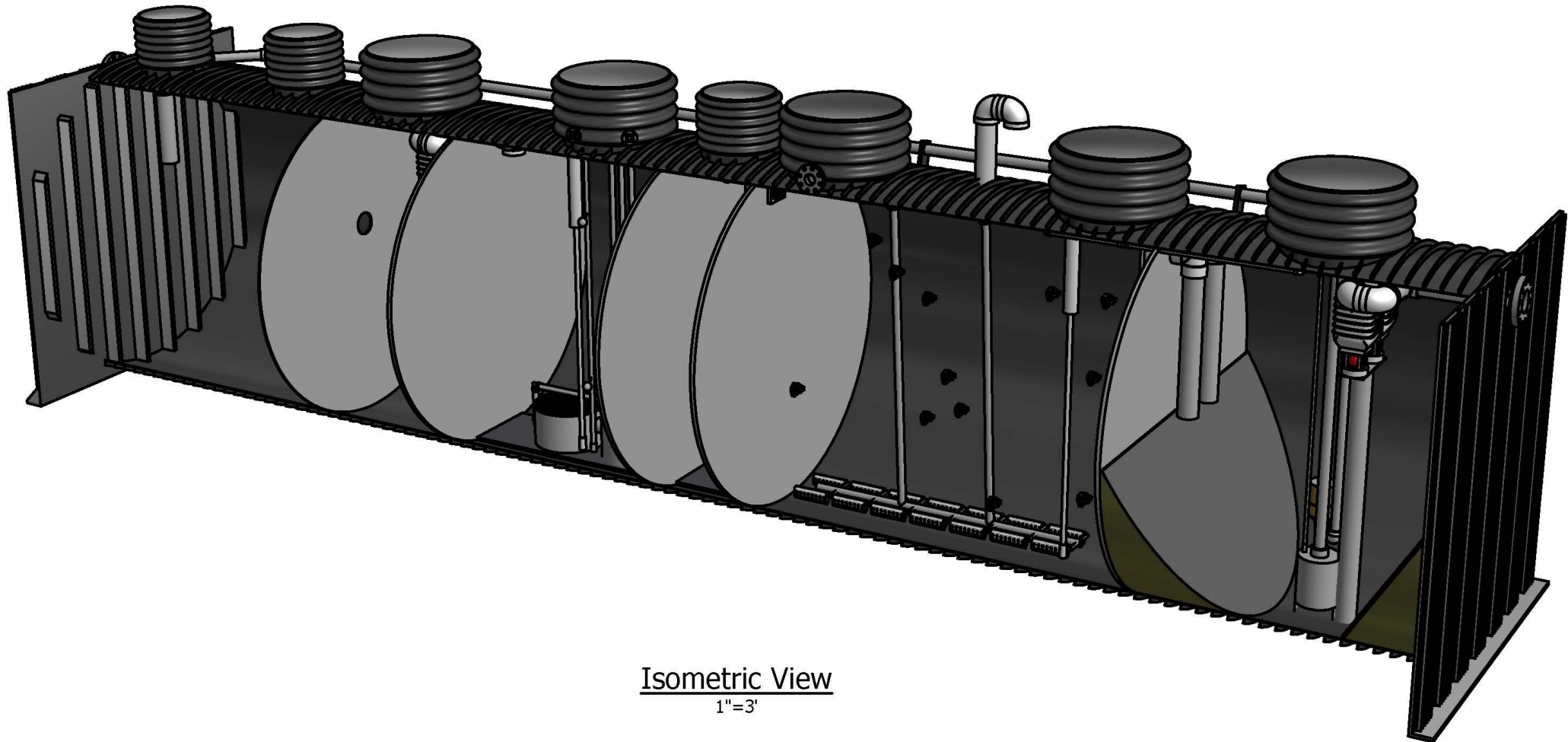




Inceptor Overview

- Simple
- Operator Tested and Refined Design
- Account for Real World Variability
- Design around Total Cost of Ownership
- Reduce Headaches
- Infinitely Customizable

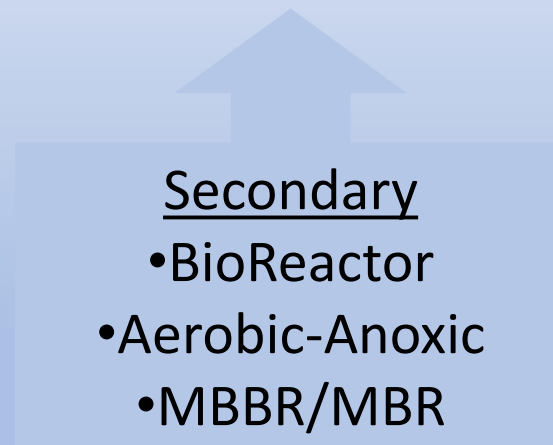
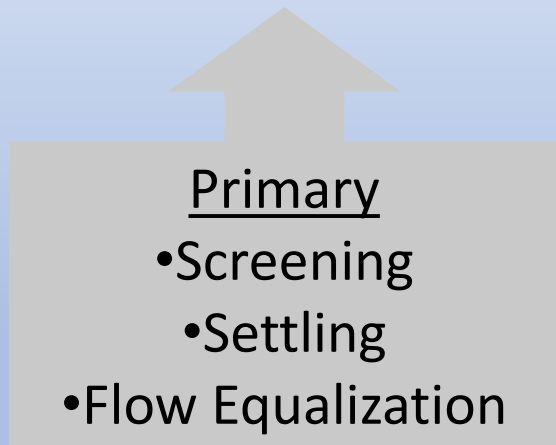
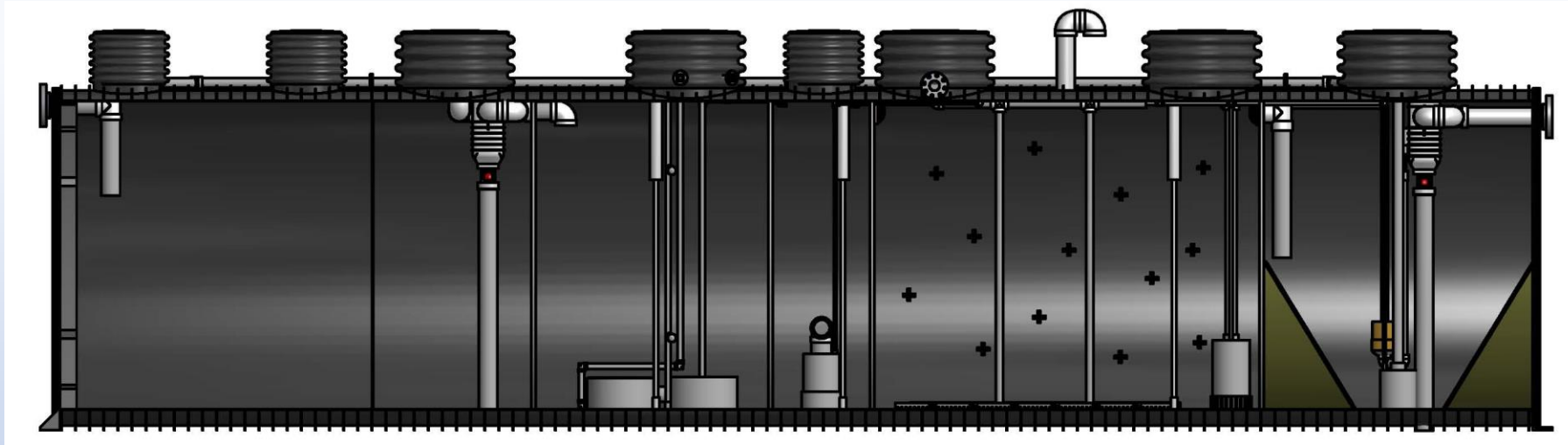
The Inceptor a 21st Century Solution for Wastewater



Isometric View
1"=3'

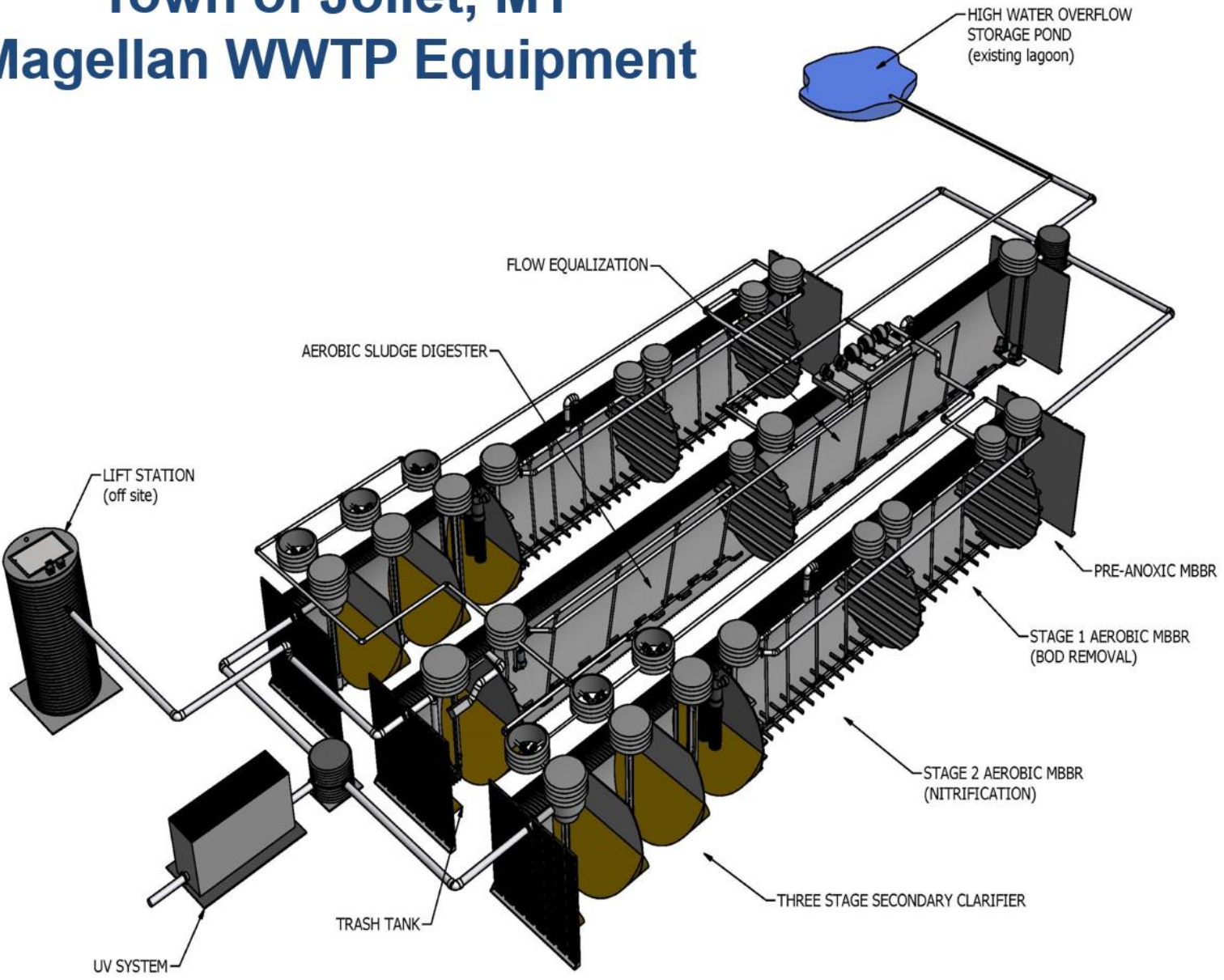
Residential Constituent Table

Constituent	Concentration, mg/l		
	Strong	Medium	Weak
Biological Oxygen Demand (BOD ₅)	300	200	100
Total solids	1200	700	350
Dissolved solids (TDS)	850	500	250
Total Suspended solids (TSS)	350	200	100
Nitrogen (as N)	85	40	20
Phosphorus (as P)	20	10	6
Chloride	100	50	30
Alkalinity (as CaCO ₃)	200	100	50
Grease	150	100	50

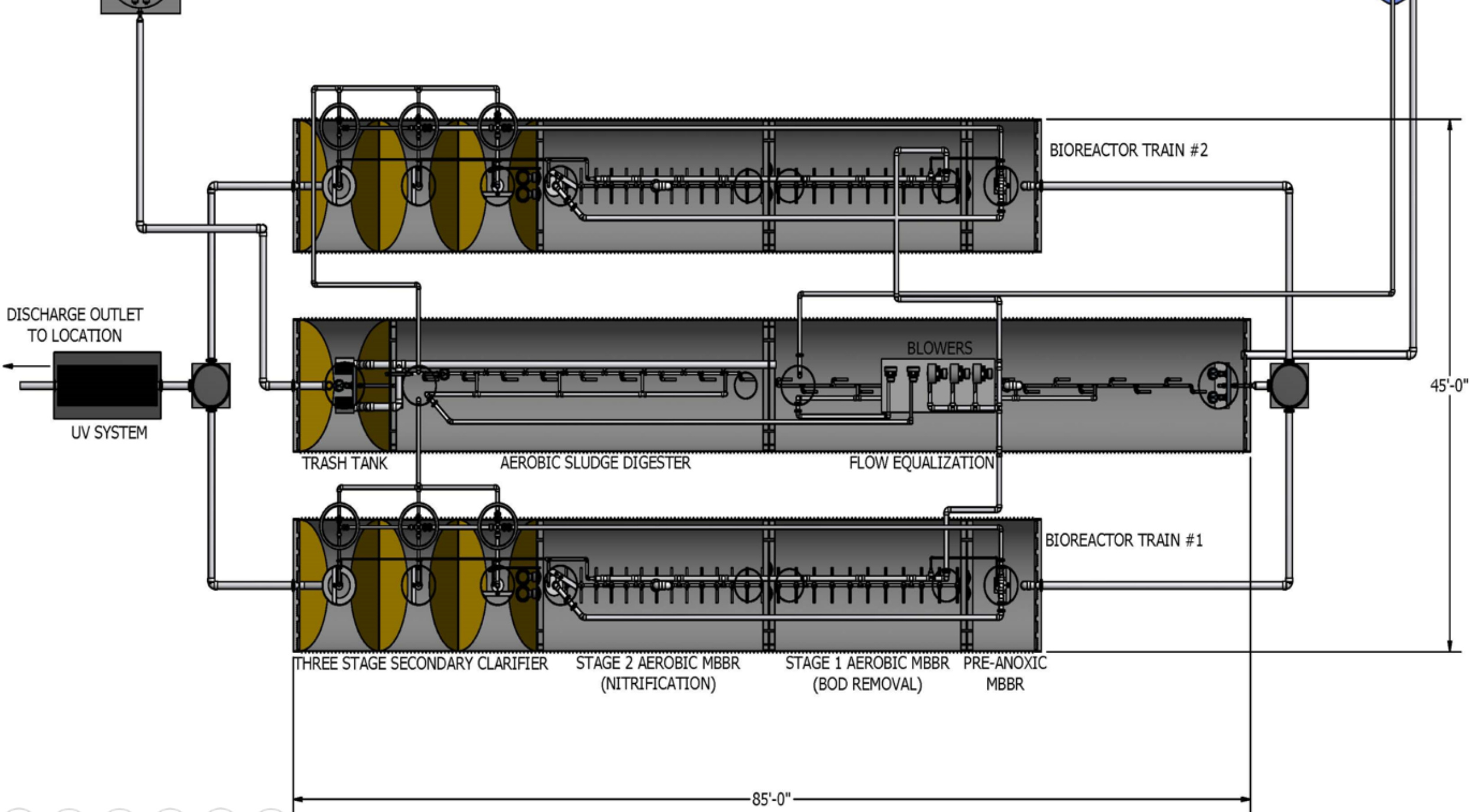


Proven Wastewater Treatment System

Town of Joliet, MT Magellan WWTP Equipment



- 90,000 GPD
Influent: 550 BOD/TSS, 50 TN
Effluent: 5 BOD/ 5 TSS,
<5 mg/L TN
- Integrated into Existing Lagoon
- 3 Stage MBBR
- Nitrification/Denitrification
 $\text{NH}_3 \rightarrow \text{NO}_3 \rightarrow \text{N}_2 \text{ gas}$
- Baffle Clarifier
- UV Disinfection



**Manufacturing
Equipment
and
Installation**



MOVING BED BIOFILM REACTOR (MBBR)

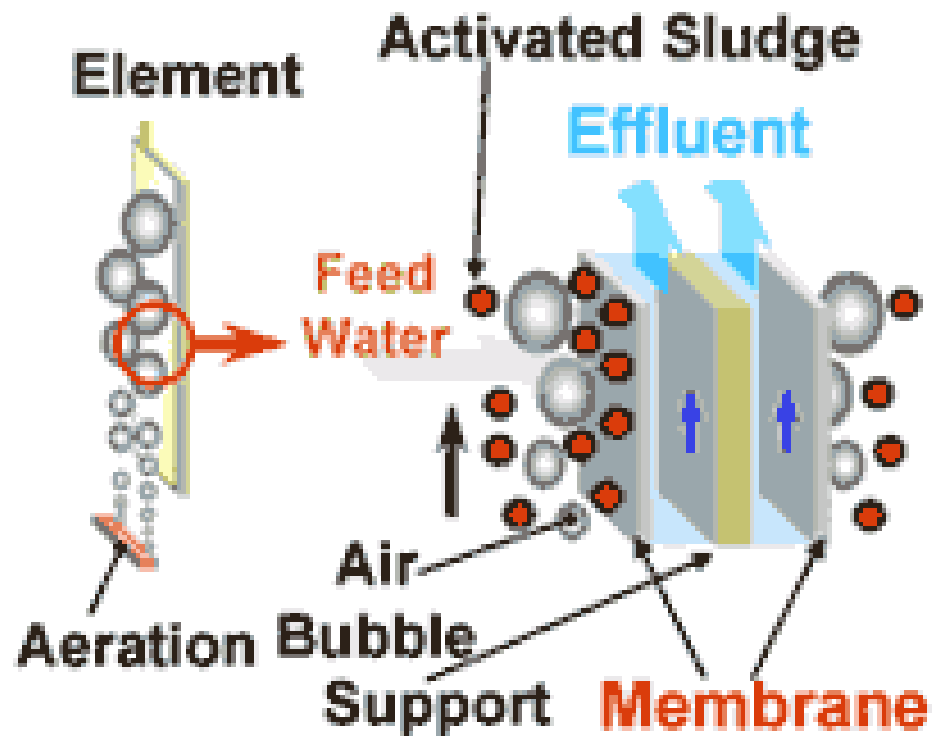
- Inceptor primarily uses a biological treatment system—it is not a chemical process.
- Utilizes naturally occurring microbial activity to digest waste products to produce a clean effluent
- Aerobic Processes very similar to an Aquarium
---microbes need oxygen and food
- Microbial systems are fixed film and suspended growth biomass systems



MBBR

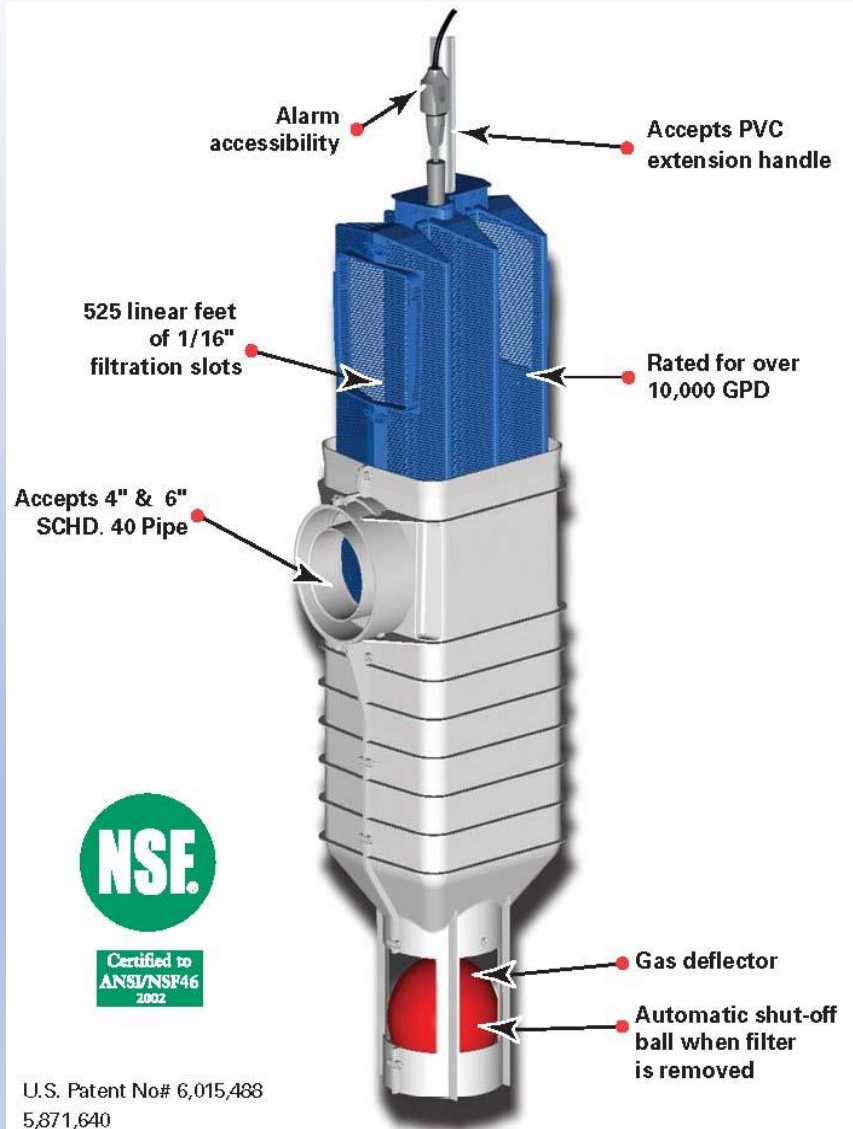
- Very Simple Operation
- No Biomass Management requirements
- Single Pass Design-----Secondary Clarifier automatically wastes to Sludge Holding/Sludge Digester
- Plastic Media is self cleaning due to aeration & mixing action

Membrane Bioreactor (MBR)



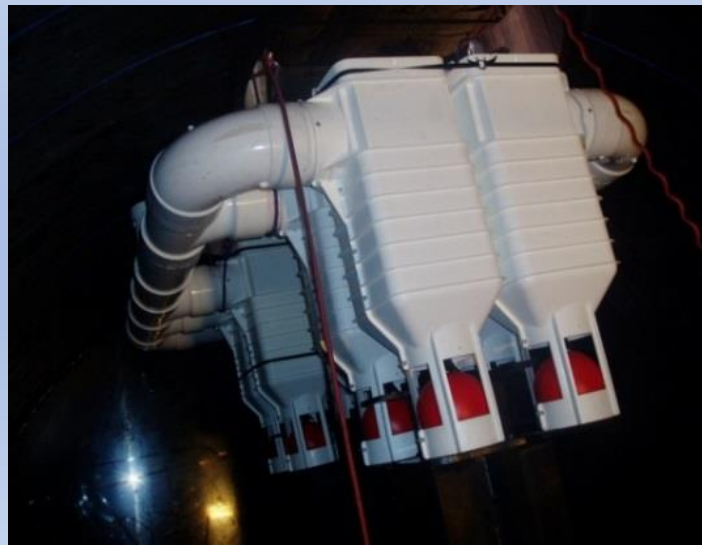
The nominal pore size is 0.08 microns

Polylok PL-525 Effluent Filter



Inceptor Primary Treatment

- **Primary Clarification/Trash Tank----**
Primary treatment & Solids Settling
- **Passive Influent Screening----**Captures grit, indigestible trash, large solids
- **Aerated Bar Screen----**Active screening for larger Inceptor Systems



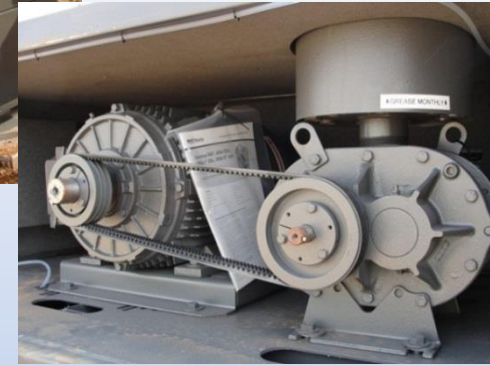
Flow Equalization & Influent Pumping

- **Flow Equalization**----Stores peak flows & hydraulic surges
- **Influent Pumping**----provides constant rate pumping for maximum treatment efficiency
- **EQ Aeration**----Initiates biological treatment and increases influent DO





Linear Air Pump
(Small systems)



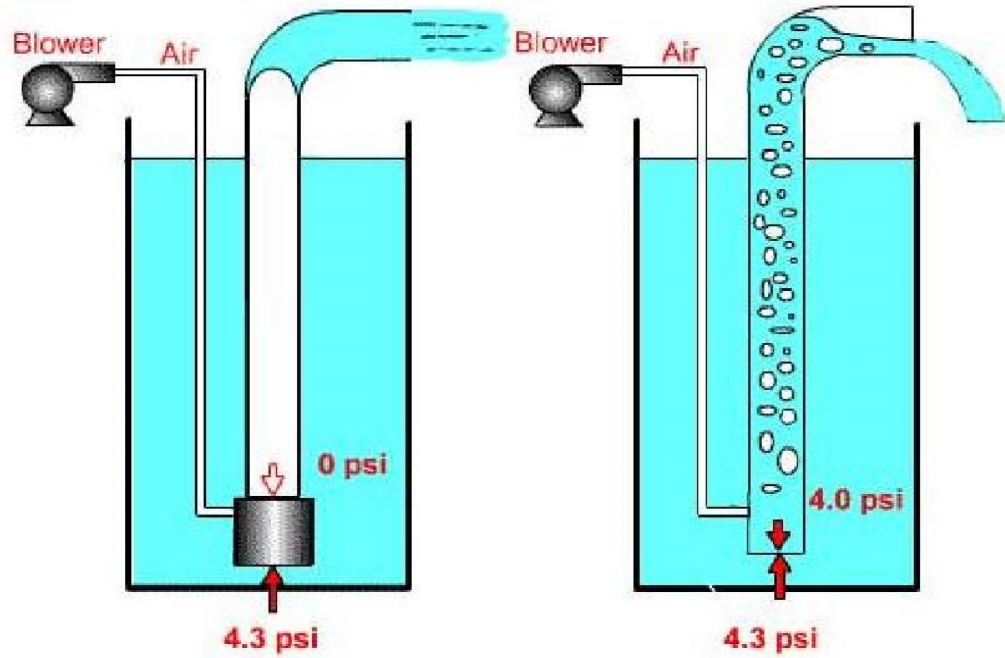
Roots Style PD Blowers
(very large systems)



Regenerative Blower
(multi-train installation)

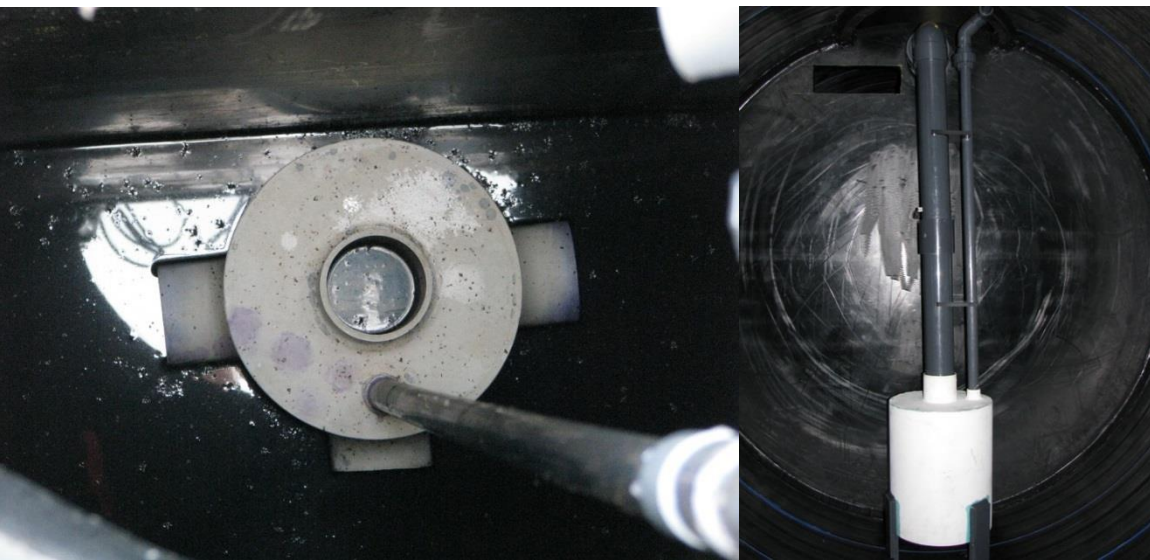
Blower Assemblies

(Aeration & Oxygen delivery)



Pulse Lift Pumping

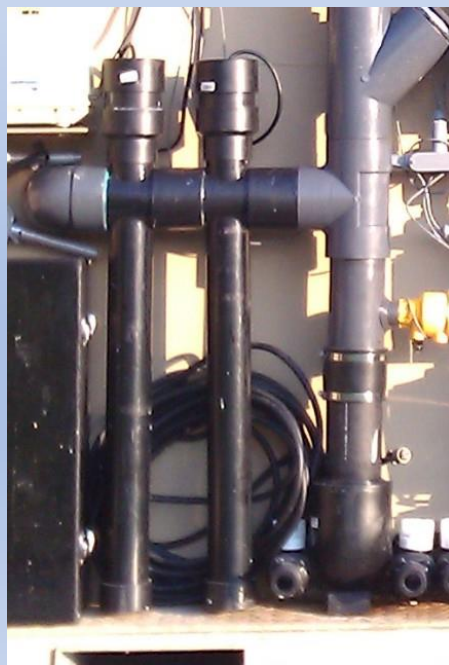
- Intermittent or Pulse Lift Pumping
- No Internal Moving Parts
- Non-Clogging Design
- Derives air from Main Aeration System
- Infinite Pump Rate Adjustment





UV Disinfection

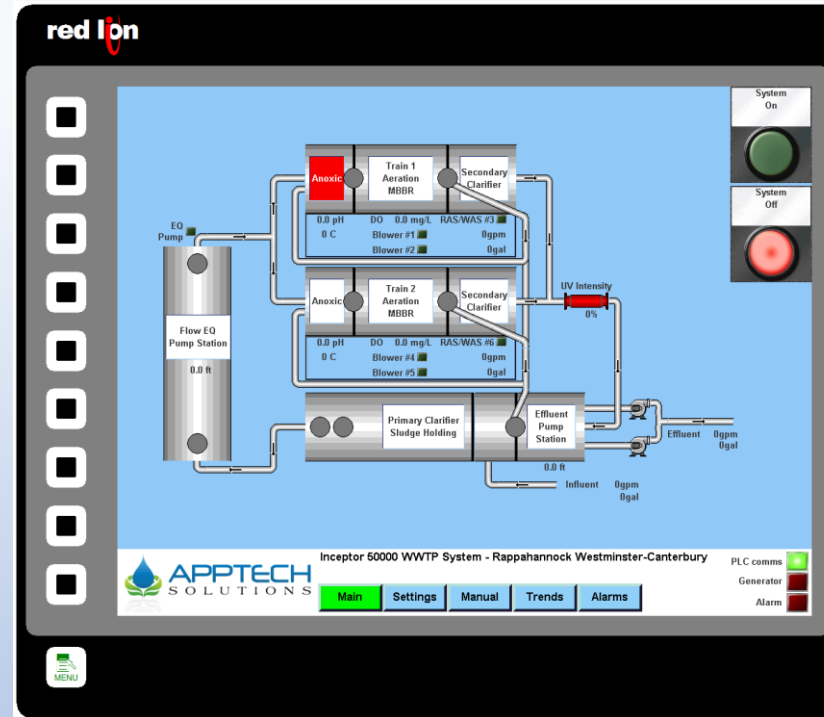
- **Simple** operation & energy efficient
- **Small Footprint**---supports high flows in compact unit
- **Safe**---no dangerous chemicals to manage, store, and replenish



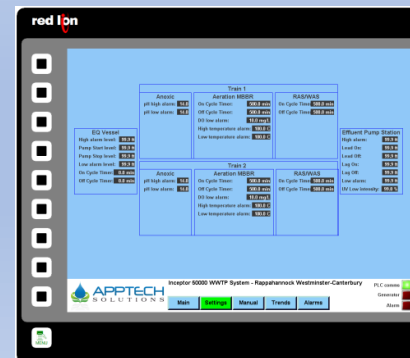


WWTP Control Panel

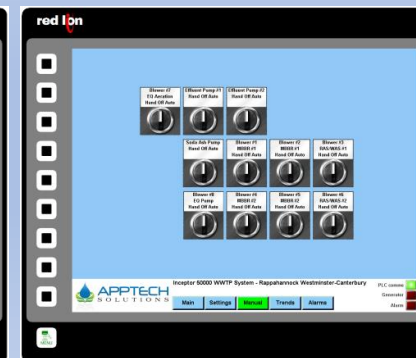
- Human Machine Interface (HMI) with touchscreen operation
- PLC provides automatic operation
- Control panel provides web based remote monitoring & notification
- PLC logs daily operations for historical trending and reporting



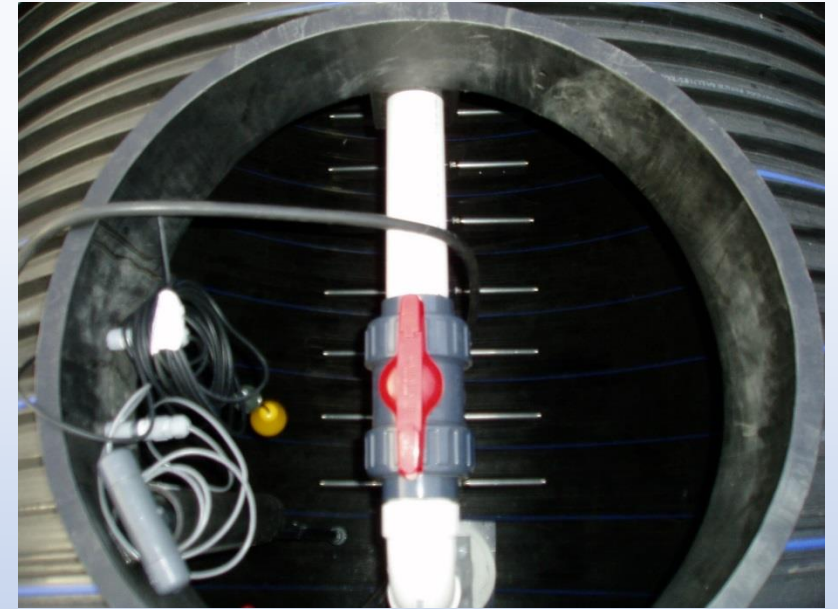
WWTP Set Points



Soft HOA switches



Top Mount Accessibility



Site Preparation



Site Preparation/Installation



Site Completion



Locust Grove



Project Profiles



The Coves Sewer System



Location:	Franklin County, Virginia
Contractor:	Chaffin Excavating
Date:	February 2013
Technical Description:	Centry H-Series
Configuration:	96" Dia x 40' L SRTP 10,000 Gallon Integrated Pump Station
Discharge System:	VDH (Mass Drainfield)
Effluent Storage integrated equipment room, pumping station & effluent distribution system	



Cutalong Primary Clarifier & Effluent Pump Station



Location:	Louisa County, Virginia
Contractor:	Sydnor Hydro
Date:	February 2015

Technical Description:	Hybrid Centry Primary Clarifier & Effl. Pump Station
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Configuration:	96" Dia x 30' L SRTP Multi-Compartment 5,000 Gallon Effluent Storage w/integrated pumping station
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Discharge System:	VDH (Mass Drainfield)
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Seneca Park Industrial Center Pump Station

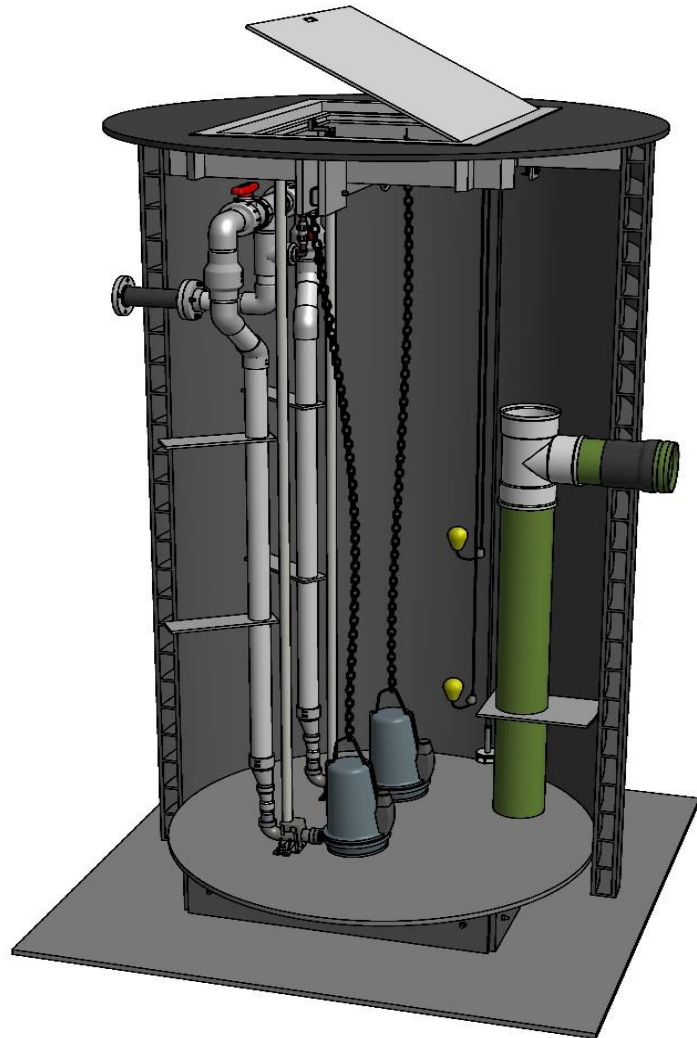


Location:	Alta Vista, Virginia
Owner:	CCUSA
General Contractor:	Concrete Solutions
Date:	September 2013
Technical Description:	Centry Pump Station
Configuration:	120" Dia x 20' Deep SRTP Duplex Submersible Non-Clog Pumps (100 HP Fairbanks Morse) Slide Rail removal system Halliday Aluminum Access Hatch with fall protection system



CAMPBELL COUNTY
Utilities and Service Authority

Bossevain Pump Station



Location: **Bossevain, Virginia**
Engineer: **Thompson and Litton**
Owner: **Tazewell County PSA**
Date: **February 2015**

Technical Description: **Centry Municipal
Pump Station**

Configuration: **72" Dia x 15' Deep SRTP
Pump Station
Duplex submersible pumps
7.5 HP with slide rails
Custom PLC control panel
to coordinate with common
forcemain**



Mexican Viejo Restaurant Scruggs, Virginia



Engineer: Parker Design Group, Inc.

Contractor: Falwell Resource Group, LLC.

Design Challenges

- 3,000 GPD Seasonal Restaurant wastewater
- Influent BOD & TSS: 1,500 mg/l & 750 mg/l
- Effluent BOD & TSS: 30 mg/l & 30 mg/l

Solution

- Inceptor WWTP, MBBR Field Discharge

Support

- Full engineering support
- Permitting
- On-site commissioning & O&M training

Outcome

Restaurant Online 3 Years

Industrial Pretreatment Somewhere, Virginia



Engineer: Apptech Solutions, LLC.

Contractor: Professional Builders, LLC

Design Challenges

- 30,000 GPD High Strength Industrial wastewater
- Influent BOD & TSS: 15,000 mg/l & 50 mg/l
- Effluent BOD & TSS: 300 mg/l & < 5 mg/l
- Site Constraints

Solution

- 3 Tank Inceptor WWTP, MBBR Pretreatment

Support

- Full engineering support
- Permit Support
- On-site commissioning & O&M training

Outcome

SIU Discharge Fees Eliminated

ROI 2-Years – System has paid for itself

Industrial Pretreatment Somewhere, Virginia



Engineer: Apptech Solutions, LLC.

Contractor: Professional Builders, LLC

Design Challenges

- 30,000 GPD High Strength Industrial wastewater
- Influent BOD & TSS: 15,000 mg/l & 50 mg/l
- Effluent BOD & TSS: 300 mg/l & < 5 mg/l
- Site Constraints

Solution

- 3 Tank Inceptor WWTP, MBBR Pretreatment

Support

- Full engineering support
- Permit Support
- On-site commissioning & O&M training

Outcome

SIU Discharge Fees Eliminated

ROI 2-Years – System has paid for itself

Industrial Pretreatment Somewhere, Virginia



Engineer: Apptech Solutions, LLC.

Contractor: Professional Builders, LLC

Design Challenges

- 30,000 GPD High Strength Industrial wastewater
- Influent BOD & TSS: 15,000 mg/l & 50 mg/l
- Effluent BOD & TSS: 300 mg/l & < 5 mg/l
- Site Constraints

Solution

- 3 Tank Inceptor WWTP, MBBR Pretreatment

Support

- Full engineering support
- Permit Support
- On-site commissioning & O&M training

Outcome

SIU Discharge Fees Eliminated

ROI 2-Years – System has paid for itself

Locust Grove Town Center Inceptor Wastewater Treatment Plant Locust Grove, Virginia



Design Challenges

- 10,000 GPD High Strength Mixed Use wastewater
- Influent: 575 mg/l & Ammonia = 120 mg/l
- Effluent: < 5 mg/l BOD/TSS
- High Quality Effluent Constraints

Solution

- Single Tank Inceptor WWTP, Three Stage Clarifier
- Ceramic Membrane

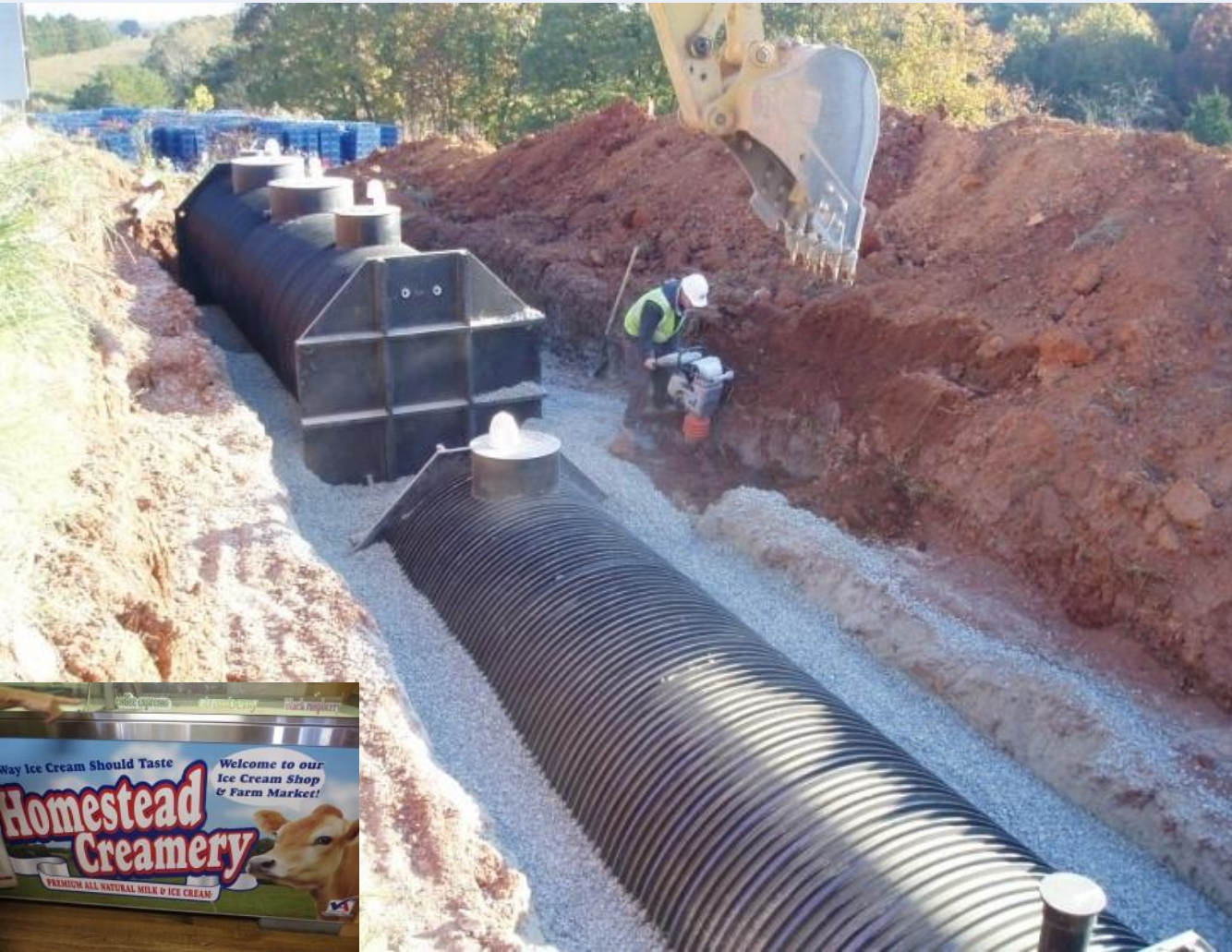
Support

- Full engineering support
- Permit Support
- On-site commissioning & O&M training

Outcome

Project on line and operational 2 years

Homestead Creamery Inceptor Wastewater Treatment Plant Burnt Chimney, Virginia



Engineer: Parker Design Group, Inc.

Contractor: Hubbard Excavating

Design Challenges

- 15,000 GPD High Strength Food Process wastewater
- Influent BOD/TSS: 3500 mg/l, 500 mg/l
- Effluent BOD/TSS: 30/30 mg/l
- Failed Field, Peak Flows

Solution

Inceptor WWTP, Flow Equalization, FOG Pretreatment,
Field Polishing

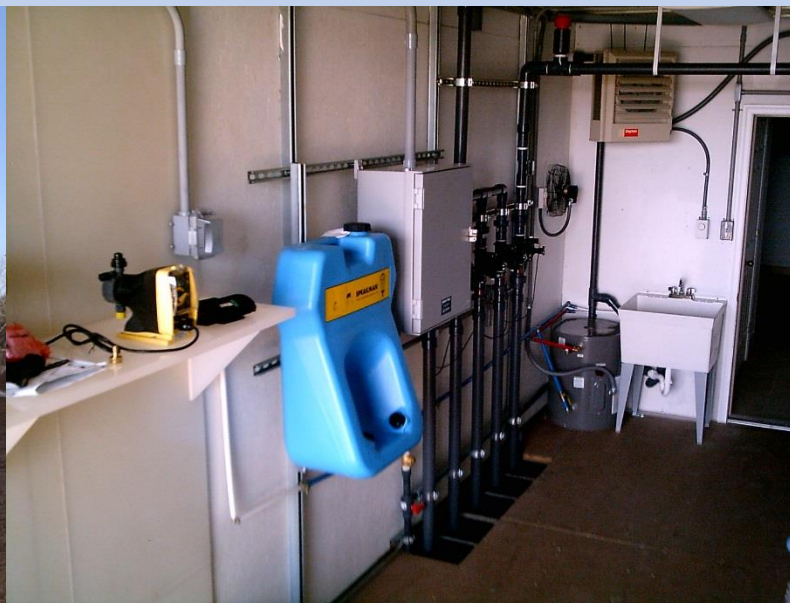
Support

Full engineering support
On-site commissioning & O&M training

Outcome

Project online 3 Years

Waterview Mobile WWTP Gloucester, Virginia



Owner:	Waterview Mobile Home Park Gloucester, Virginia
Operator:	Sydnor Hydro
Date:	December 2014
Technical Description:	20,000 GPD Domestic WWTP
Configuration:	120" Dia x 55' L SRTP Dual Vessel Configuration Primary Clarifier, Flow EQ 4- Stage MBBR Bioreactor, SC w/Disk Filter, Sludge Holding
Influent:	250 mg/l BOD 250 mg/l TSS 50 mg/l TKN
Effluent:	10 mg/l BOD 10 mg/l TSS 5 mg/l TN
Discharge System:	VDH AOSS Permit (Drip)

Tug Valley High School WWTP Facility



Owner:	Mingo County Public Schools Williamson, West Virginia
Operator:	Veolia Environmental Services
Date:	September 2014
Technical Description:	5,000 GPD Domestic WWTP
Configuration:	96" Dia x 31' L SRTP Primary Clarifier w/Filtration Flow EQ w/duplex pumps 2-Stage MBBR Bioreactor Secondary Clarifier UV Disinfection
Influent:	250 mg/l BOD 250 mg/l TSS 60 mg/l TKN
Effluent:	30 mg/l BOD 30 mg/l TSS 15 mg/l NH3
Discharge System:	WVHD Permit (Direct)

Cedar Point WWTP Facility



Location: Swansboro, North Carolina
Project Type: Mixed Use Commercial
Date: July 2014

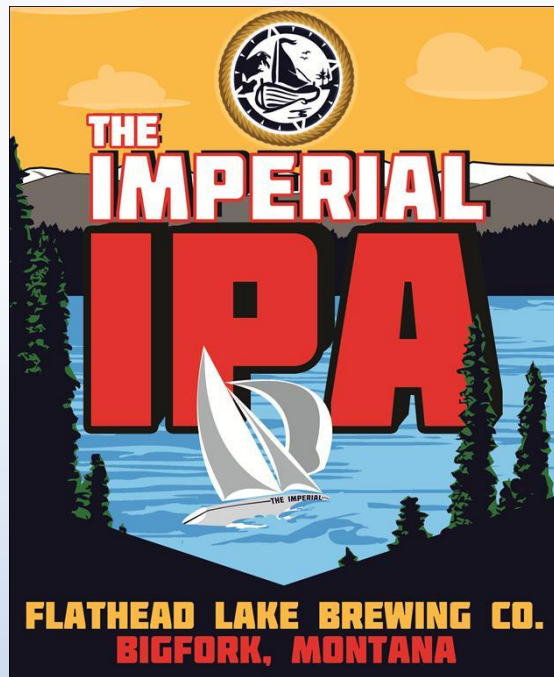
Technical Description: 15,000 GPD WWTP

Configuration: Dual Train 96" x 45' L SRTP
7,500 GPD Parallel Trains
Primary Clarifier, Flow EQ
4-Stage MBBR (IFAS)
Secondary Clarification w/
Effluent Filtration

Influent: 216 mg/l BOD
240 mg/l TSS
33 mg/l TKN
10 mg/l TP

Effluent: 10 mg/l BOD
10 mg/l TSS
4 mg/l TN
2 mg/l TP

Discharge System: NC DWQ Permit (RIB)



Flathead Lake Brewing Co WWTP Facility



Owner:	Flathead Lake Brewing Co
Location:	Big Fork, Montana
Date:	October 2013
Technical Description:	8,000 GPD Industrial WWTP
Configuration:	96" Dia x 42' L SRTP Trash Tank, Flow EQ, 2-Stage IFAS Bioreactor, Secondary Clarifier
Influent:	2000 mg/l BOD 1000 mg/l TSS 60 mg/l TKN 19 mg/l TP
Effluent:	200 mg/l BOD 200 mg/l TSS
Discharge System:	SIU Pretreatment (Sewer)



Project:	MarkWest Ops Center
Location:	Summerfield, Ohio
Date:	2013
Technical Description:	2,000 GPD INCEPTOR
Configuration:	72" Dia x 22' L SRTP Primary Clarifier MBBR IFAS Bioreactor, Secondary Clarifier w/Effluent Filtration Post Aeration
Influent:	280 mg/l BOD 250 mg/l TSS 50 mg/l NH₃
Effluent:	10 mg/l BOD 12 mg/l TSS 1 mg/l NH₃ 6 mg/l DO
Discharge System:	Ohio PDES Permit (Direct)



Town of Mora WWTP Facility

Committed to the future of rural communities.

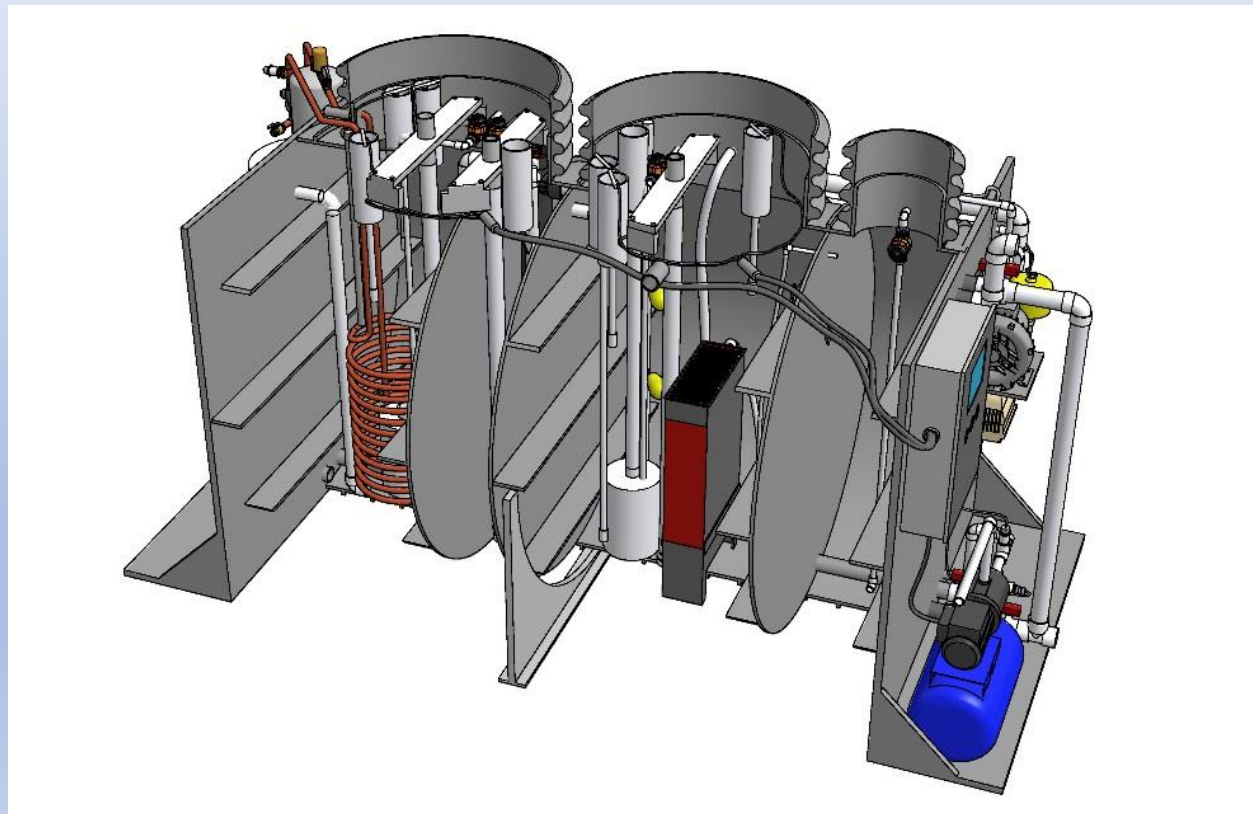


Location:	Mora, New Mexico
DB Contractor:	EIP Water
General Contractor:	RMCI
Date:	September 2014
Technical Description:	0.060 MPD INCEPTOR Municipal Sewage
Configuration:	120" Dia x 60' L SRTP Dual Train (30,000 GPD) Trash Tank, Flow EQ, 4-Stage MBBR Bioreactor, Secondary Clarifier w/Disk Filtration & UV
Influent:	250 mg/l BOD 250 mg/l TSS 50 mg/l TKN 10 mg/l TP
Effluent:	30 mg/l BOD 30 mg/l TSS 11 mg/l TN 0.5 mg/l TP
Discharge System:	EPA NPDES (Direct)

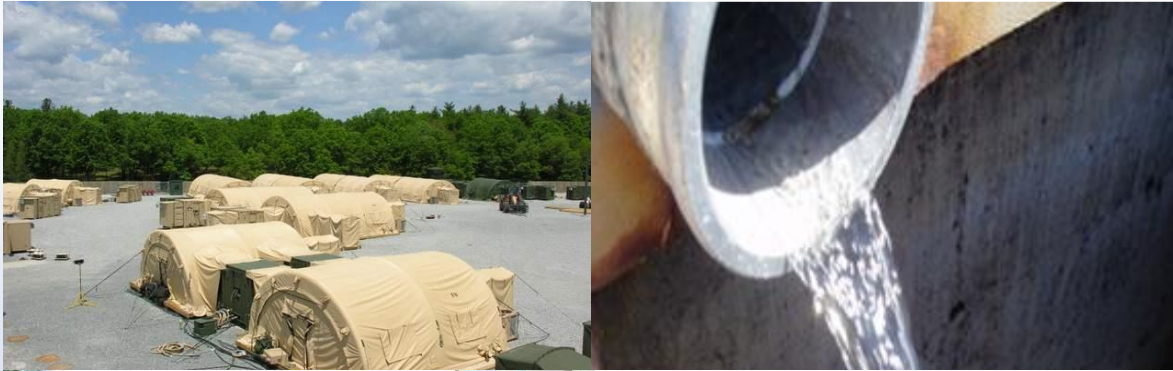
RTI International Biogas Generator Pilot Unit



turning knowledge into practice



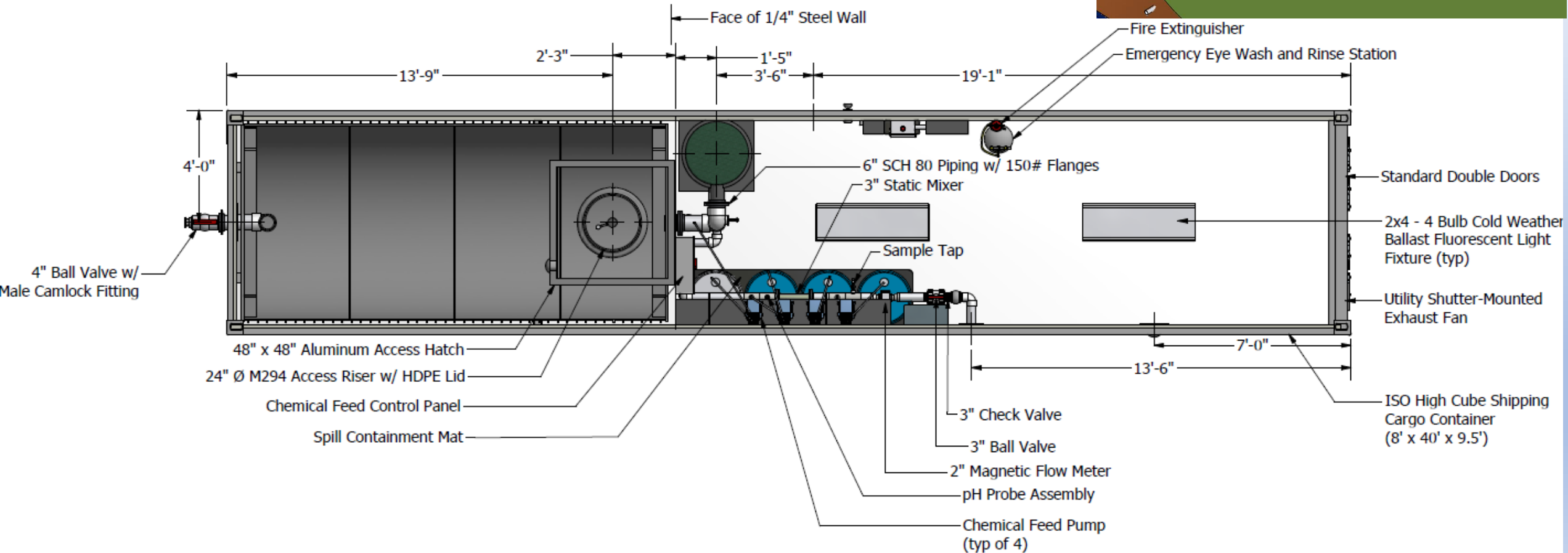
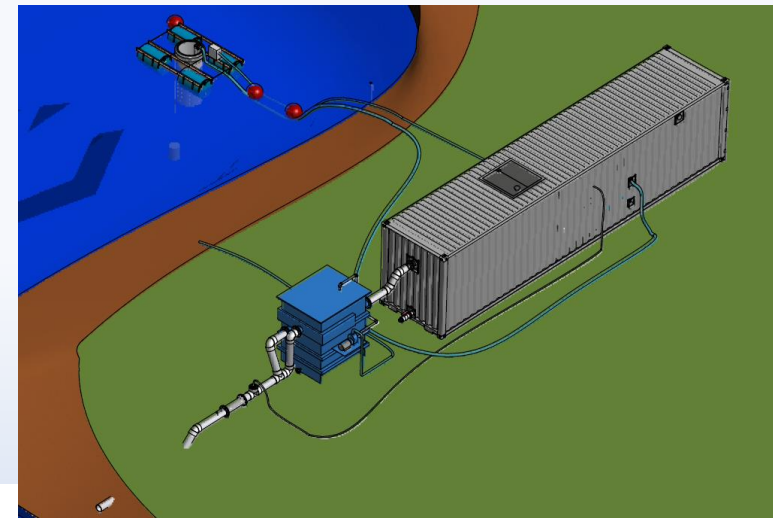
Location:	Raleigh, North Carolina
Date:	September 2014
Technical Description:	500 GPD Blackwater WWTP Hybrid Anaerobic/Aerobic
Configuration:	60" Dia x 8' L SRTP Anaerobic Digester w/gravity clarification & sludge return, Aerobic Nitrification w/MBR liquid- Solids separation, Electro- Chemical in-situ disinfection
Influent:	3000+ mg/l BOD 2000+ mg/l TSS 150 mg/l TKN 10 mg/l TP
Effluent:	<5 mg/l BOD <1 mg/l TSS
Discharge System:	Research & Development



Expeditionary Wastewater Recycling System (EWRS)

Location:	Fort Devens, MA Base Camp Integration Lab
Date:	Sept 2012 to Present
Technical Description:	1,500 GPD Blackwater WWTP
Configuration:	Mobile INCEPTOR Tricon (8' x 8' x 6.5') w/integrated equip. room Primary Clarification MBBR IFAS MBR Filtration w/UV Disinf. redundant Chlorination
Influent:	1250 mg/l BOD 750 mg/l TSS 110 mg/l TKN 10 mg/l TP
Effluent:	<5 mg/l BOD <5 mg/l TSS
Project Note:	Public Health Command approved

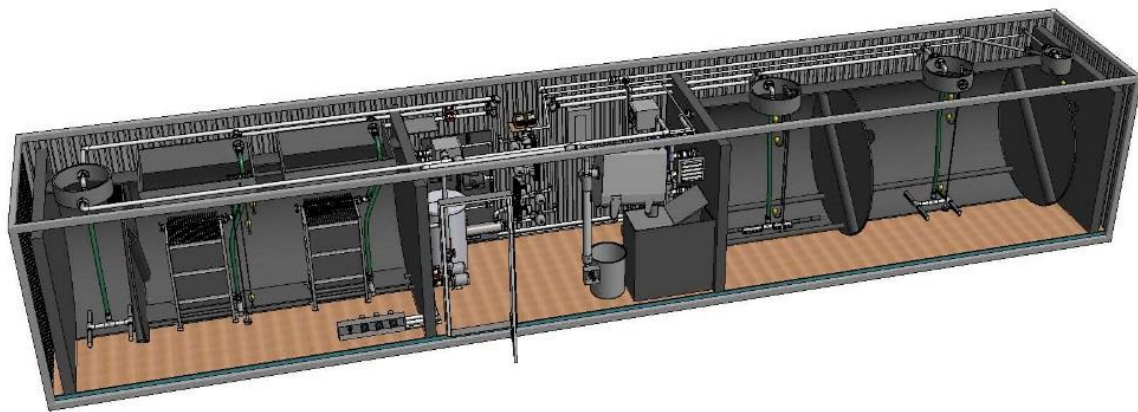
Four Mile Mine



Four Mile Mine



Point Thomson WWTP Mobile INCEPTOR



Location:	Point Thomson, Alaska
Date:	May 1, 2015
Technical Description:	7,000 GPD HS WWTP
Configuration:	Mobile INCEPTOR 53' Insulated SRTP Vessels w/integrated equip. room 1 mm Drum Screen, MBBR, duplex MBR microfilters, UV, Effluent Pumping, 20' Insulated Container for sludge dewater & bagging
Influent:	750 mg/l BOD 750 mg/l TSS 100 mg/l TKN 10 mg/l TP
Effluent:	<10 mg/l BOD <10 mg/l TSS
Discharge System:	Direct Discharge (to tundra)

Questions

