



# **BISCAYNE BAY MARINE HEALTH SUMMIT COALITION BUILDING MEETING**

**JULY 9, 2019**

**PRESENTED BY  
EMILIO LOPEZ, CEO**



# ABOUT US



Based in Miami, FL, SOP Technologies provides technologies to prevent ocean pollution, prevent floods, and provide cost savings to communities and businesses around the world. We also use our expertise to offer custom engineering and consulting services to clients that have additional technical needs.

SOP Technologies is a winner of the 2017 American Entrepreneurship Award; and a recipient of the Keys to Miami-Dade County and City of Miami. We also collaborate with research institutions such as Florida International University.

[Click here to read and listen to our radio interview with NPR.](#)

[Click here to watch our TV interview with Telemundo.](#)

*We are:*



Winners of the 2017 American Entrepreneurship Award



Recipients of the Keys to Miami-Dade County and City of Miami

**VIDEO**

[\*Link\*](#)



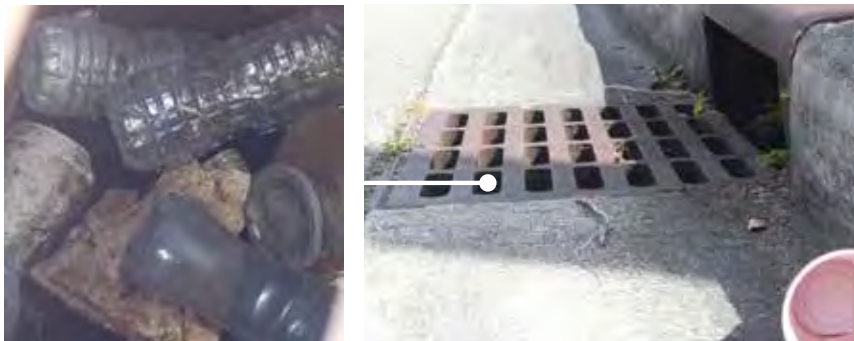


# ISSUES: STORMWATER POLLUTION



“Nonpoint source (NPS) pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters and ground waters.”

- U.S. Environmental Protection Agency EPA



## POLLUTED WATERS AND ECOSYSTEMS

## HUMAN HEALTH RISKS



## FLOODS DUE TO CLOGGED PIPES



## DAMAGE TO HOMES AND BUSINESSES

## EXPENSIVE MAINTENANCE

# SOLUTIONS: STORMWATER FILTERS



Our patented storm drain filters are installed at drainage openings on the side of the road and under storm grates.



City of Key West

**LOWER MAINTENANCE COSTS**

**LESS FLOODS DUE TO CLOGGED PIPES**

**DECREASE WATER POLLUTION**

**IMPROVE QUALITY OF LIFE**

**RETROFIT TO OLD & NEW INFRASTRUCTURE**



City of Key Biscayne

# FILTERS FOR MULTIPLE SCENARIOS

## Curb Inlet Filters

Protect curb openings and maintain the filters clean with existing street sweeping efforts.



## Under-grate Basket Filters

Use under storm grates to capture debris. Easily lift out and remove contents when baskets are full.



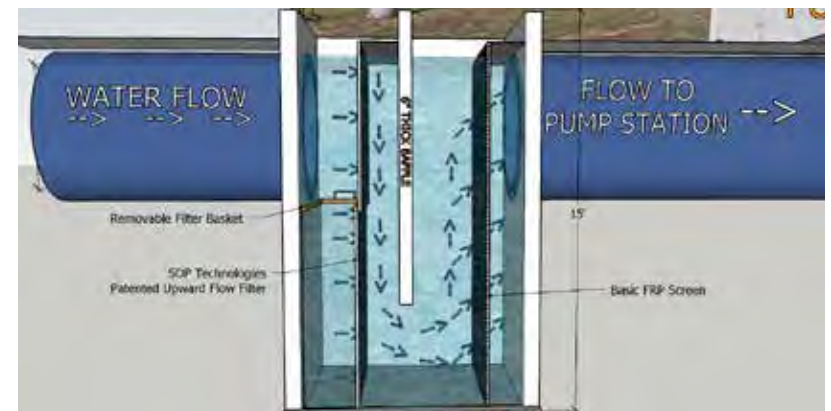
## Catch Basin Filters

Place adjacent to pipes, inside stormwater catch basins. Remove pollutants using vacuum trucks.



## Large-Scale Systems

Custom design and fabrication to prevent stormwater pollution from reaching pumps or other areas.





# SERVICES & FABRICATION



## Consultation



## Site Visits



## Fabrication



## Installations



Capture large debris, small items, chemicals and/or oils



### Aluminum

Aluminum can be configured in various shapes and has a high strength-to-weight ratio.



### We offer many materials to choose from

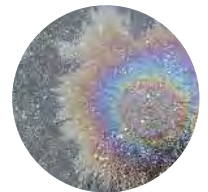
### Stainless Steel

Stainless steel is stronger and can provide added corrosion resistance in marine settings.



### HDPE Plastic

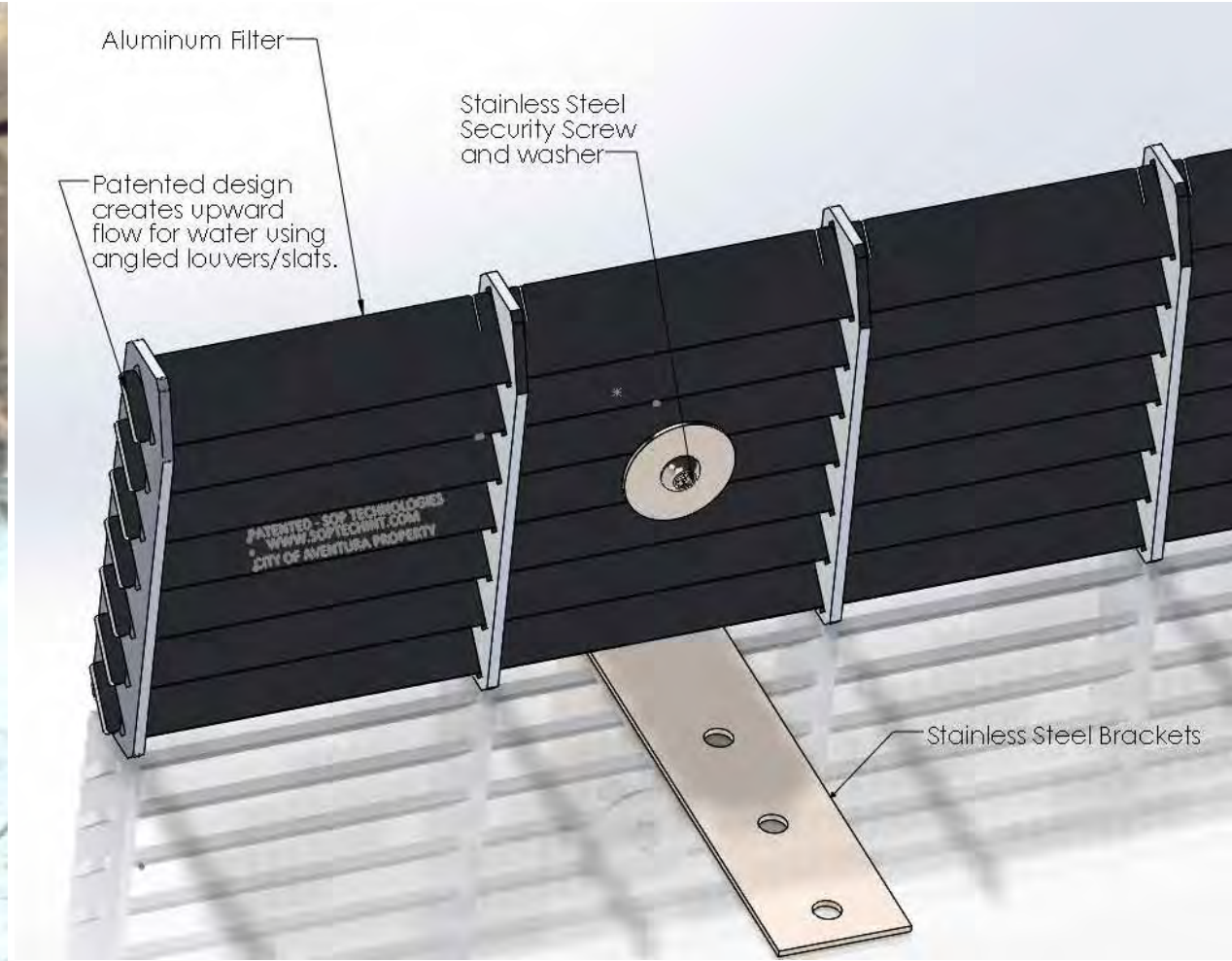
High-density polyethylene (HDPE) and other plastics are lower cost alternatives.



### Geotextile Fabrics

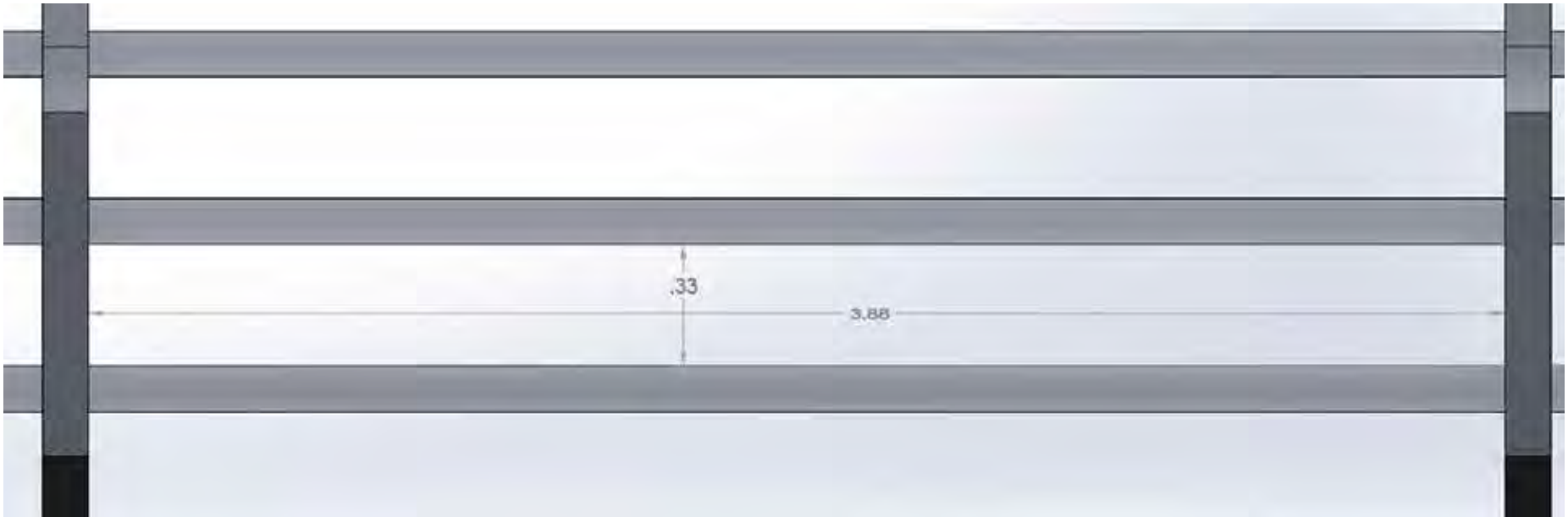
Geotextile fabrics are malleable and can be used to filter smaller debris.

# STORMWATER CURB FILTERS: DETAILS





# STORMWATER FILTERS: DETAILS



Dimensions of each opening: 0.33" tall x 3.88" wide (1.28 sq inches)

Open area: 69% of filter area

*Can be modified based on needs*

# STORMWATER FILTERS: DETAILS

## *Why the patented upward flow?*

- 1. Improved water flow:** Floating items such as leaves, plastics, and Styrofoam stay on surface of the water, and water flows under and through the filter.
- 2. Less clogging:** Debris naturally slides down and out of the filter

## **Testing with Miami Dade College Engineering Professors in 2012** Testing box created to test filter capabilities





# COMPARING FILTER DESIGNS

## *Testing the SOP Technologies Upward Flow vs. Horizontal Flow through filters*

### **SOP Technologies** Upward Water Flow

- 0.33" x 3.88" openings
- 1.28 sq in area per opening
- 69% open area (more open area)



### **Other Filter/Screen Designs** Horizontal Water Flow

- 0.75" diameter holes
- 0.44 sq in area per opening
- 51% open area (less open area)



# COMPARING FILTER DESIGNS

## Testing Steps

- Filled a cup with small Styrofoam and paper pieces
- Used the Miami-Dade College testing box and ran water through both filter designs
- Added the Styrofoam and paper to the water to see how many pieces got past the filters



SOP Technologies Filter  
Upward Water Flow



Other Filter Design  
Horizontal Water Flow





# COMPARING FILTER DESIGNS

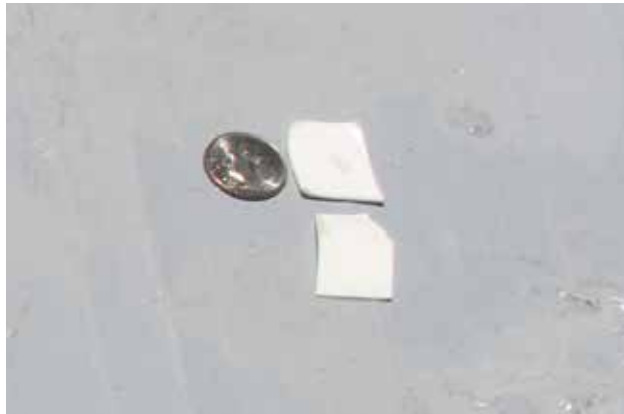
## Results

- SOP Technologies filter blocked all but 2 of the small pieces of Styrofoam and paper
- The other filter, although with smaller openings, allowed

### SOP Technologies Filter

Upward Water Flow

**Only 2 pieces of debris passed the filter.**



### Other Filter Design

Horizontal Water Flow

**16 pieces of debris passed the filter/screen.  
8 times more than the SOP Tech filter.**



### SOP Technologies' upward flow filter is

- **More effective at preventing trash from entering the storm drains**
- **Allows more (clean) water to flow into the drainage system (69% open area vs 51% open area)**

# AVOID MOVING PARTS AND VERY LARGE GAPS

- Mechanisms that automatically open tend to become stuck in the “open”
- Filters/screens with large gaps allow cans and other large objects to enter the drainage system.
- Both of these systems can clog easier and require additional expenses for secondary screening and vector cleanings







# CASE STUDIES

# CASE STUDY: CITY OF KEY WEST, FL



## THE CHALLENGE

- Litter blocking the drainage system
- High cleaning costs
- Flood risks due to clogged pipes

## USE OF TECHNOLOGY

- 3 month pilot project for curb filters
- Collaboration with Public Works and Maintenance Personnel
- Feedback on product design

## OUTCOMES

- Successful pilot project
- Implementation of curb filters throughout the commercial district
- More filter implementations at sites with lots of litter.



# CASE STUDY: CITY OF BOROONDARA, AUSTRALIA



## TESTIMONIAL

"We have been trialling the SOP side entry pit filter at the Council Infrastructure Operations depot since August 2018. In that time we have been encouraged by its performance in preventing litter and debris from entering the stormwater system.

We found the unit easy to install and now intend to fit a number of units at a busy commercial centre and marketplace."

- City of Boroondara, Drainage & Cleansing Team.

# CASE STUDY: CITY OF AVENTURA, FL

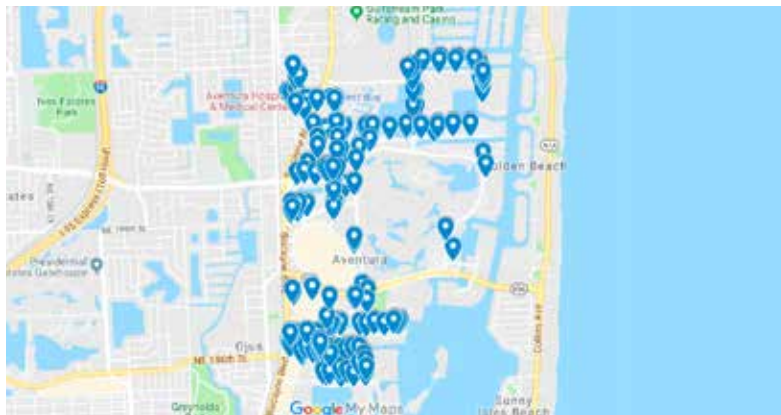


## THE CHALLENGE

- Flooding issues due to clogged drains
- High cleaning costs
- Concern of future sea level rise

## USE OF TECHNOLOGY

- Pilot project with 35 filters
- Successful pilot project
- City-wide implementation in progress (177 inlets of various sizes)



## OUTCOMES

- Cost savings due to decreased need for vector cleanings
- Street sweeping keeps the filters clean and debris out of the pipes
- Less water pollution and flood risks



# CASE STUDY: CITY OF AVENTURA, FL



## STORMWATER PROJECT OF THE YEAR

**“IMPLEMENTING INNOVATIVE AND COST-EFFECTIVE BEST PRACTICES FOR STORMWATER MANAGEMENT”**



# CITY OF AVENTURA: IMPLEMENTATION PROCESS



## MEASUREMENTS

## MANUFACTURING

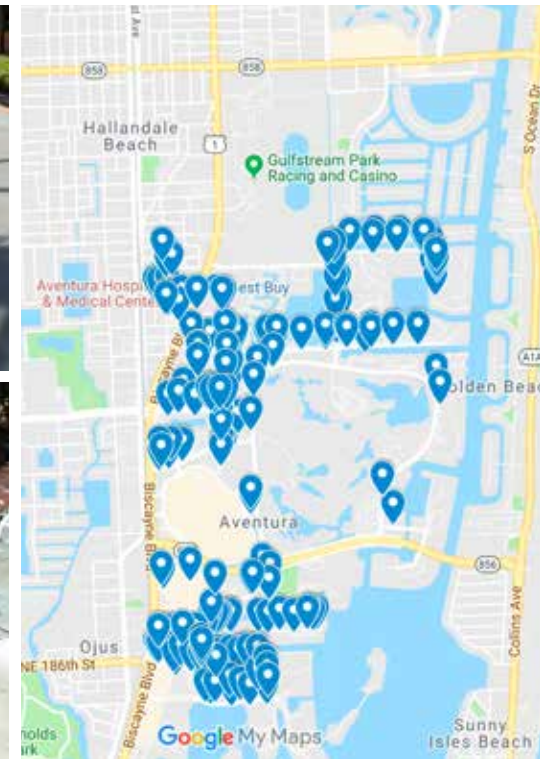
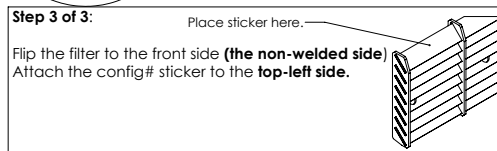
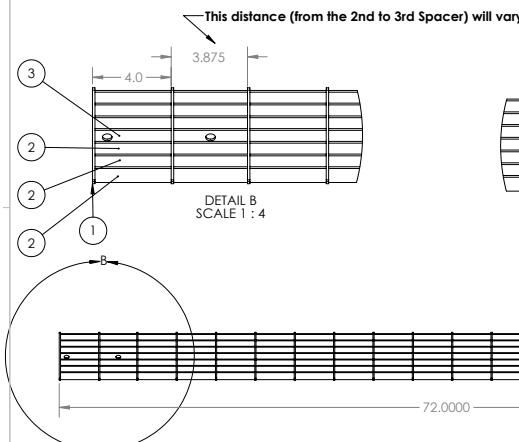
## INSTALLATIONS

## REPORT WITH MAPS



**Step 1 of 3:** Assemble the filter by sliding the slats into the Spacer pc

ITEM NO.	PART NUMBER	DESCRIPTION
1	SM7	Spacer part with 7 holes.
2	PS-72	Plain Slat (no holes). 72 in. length
3	HS-72	Holed Slat (4 holes). 72 in. length





# SELECT CLIENTS & TESTIMONIALS



City of Aventura



Village of Virginia Gardens



City of Key West

**“It has not been necessary to clean the drains since the devices have been installed.”**

*Public Works Director, Customer*

**“The filter does what it is designed to do, all debris is collected at the inlet, keeping it out of the basin.”**

*Public Works Director, Customer*

**“I was amazed at the results because of the way the water flows and the leaves and the debris do not block the filter.”**

*Engineer and Faculty Member, Miami-Dade College*

**“All of the debris stays out instead of going into the storm basin. Much easier to clean and remove from the surface instead of vac trucking it out.”**

*Public Works Director, Customer*

**“It is in the best interest of the city to purchase these filters from SOP Technologies. Staff have tested filters from two companies. The SOP product is much stronger and better built. They are comparable in price. No other comparable products exist to staffs knowledge after lengthy research. The filters have been effective at keeping debris out as intended and have had no mechanical or corrosion issues to date.”**

*Utilities Director, Customer*



**THANK YOU!**

**EMILIO LOPEZ**

**305-792-8778**

**emilio@soptechint.com**

**www.soptechint.com**





# Municipal Products





# Workboats

## Omni Catamaran: Multi-Purpose Workboat



Omni Catamaran with Debris Collection Basket



Omni Catamaran with Pump-out Pod

Maintenance vessel for inland waterways.

Modular pod system allows for multiple tasks.

- Debris Collection Basket
- Wash-down
- Pump-out
- A-frame Lifting System
- Cargo Hauling
- Aquatic Weed Harvesting



Omni Catamaran with A-frame and Spud Pole



# Workboats

## Inlander: High Durability Workboat & Barge

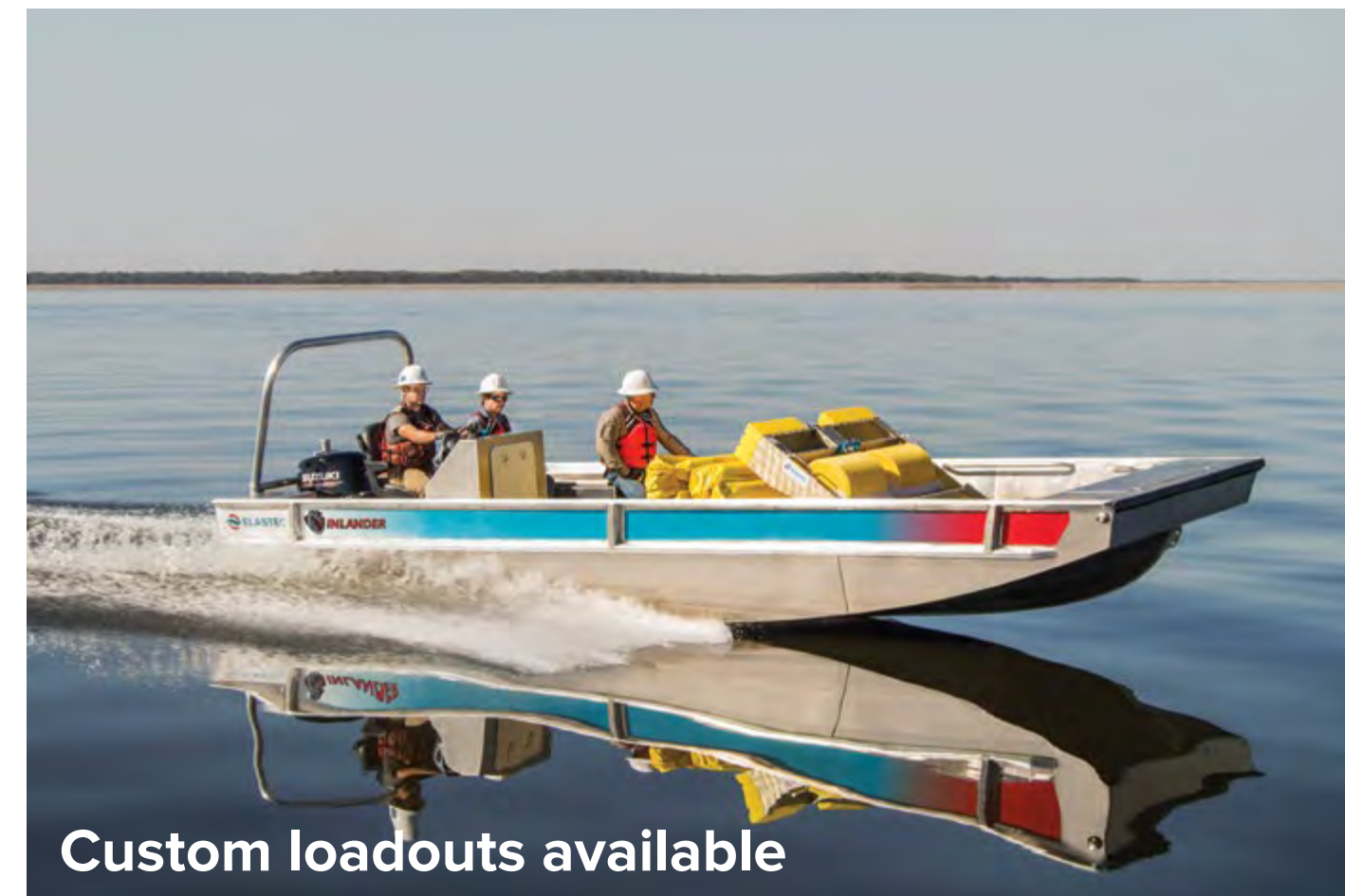


Inlander provides rapid response and large payload



Stability, durability & safety for responders

The **ELASTEC Inlander Boat and Barge** is a shallow draft boat system - a safe and functional alternative to the use of fishing boats for response operations. The 22 ft / 6.7 m long boat has a modified V-hull with a 6-degree deadrise for maximum speed-to-weight performance in choppy or swift waters.



Custom loadouts available



# Workboats

## Landing Craft: Heavy Duty Workboats



E28 with High Capacity Water Pump



Bow door allows easy and safe access

**Elastec Aluminum Landing Crafts** are designed to operate in shallow or open water conditions. Recognizing that response and waterway maintenance may require beaching, they are fitted with a bow ramp. These impressive aluminum work boats can typically achieve 30 to 40 knots, depending on choice of propulsion options.



E26 crateable for shipping and storage



# Workboats

## Platform Boat: Mobile Working Platform





# Vacuum Systems

## PACS: Trailer Mounted Vacuum



PACS 2000 shown with options



PACS 770 shown with options



PACS 770 shown with options

**ELASTEC PACS** trailer mounted vacuum systems are designed for removing liquids, solids and sludge from land or water. Less expensive than vacuum trucks, PACS units are approved for highway towing. Models with integral hydraulics can run oil skimmers and pumps, as well as lift the tank vertically to dump contents.



# Vacuum Systems

## MiniVac and Accessories



MiniVac portable vacuum



All Terrain Vacuum Tank

The **ELASTEC MiniVac II** is a powerful, portable vacuum unit that can recover a wide range of liquids, oils and sludge with entrained solids up to 2 inch / 50 mm diameter. The diesel-driven high capacity pump quickly generates a vacuum inside standard drums using an ELASTEC DrumIt head. Also available is an optional hopper unit or 110 gallon / 400 litre tank.



DrumIt Vacuum Head



# Pumps

Multiple Styles for Multiple Jobs



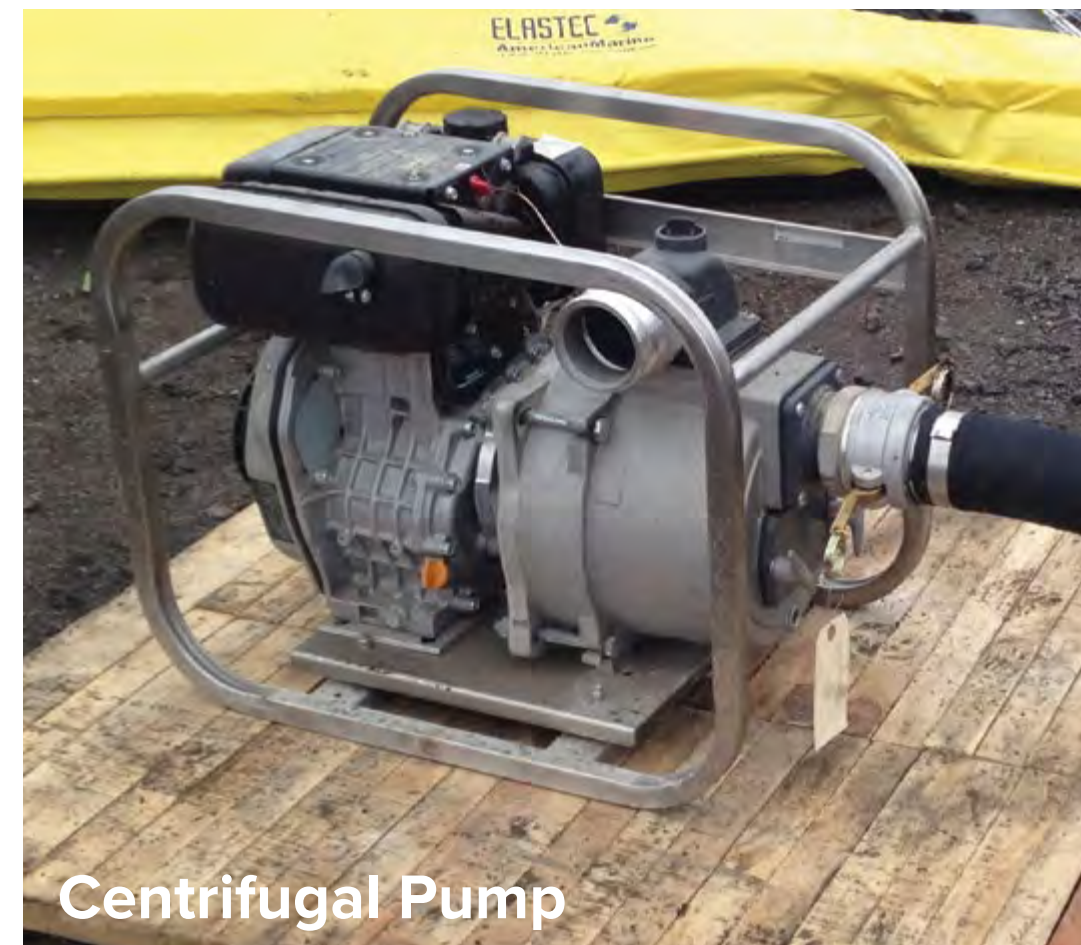
High Capacity Water Pump



Submersible Pumps



Diesel Diaphragm Pump



Centrifugal Pump



Pneumatic Diaphragm Pump



# Skimmer Systems

## 12v Mini Skimmer



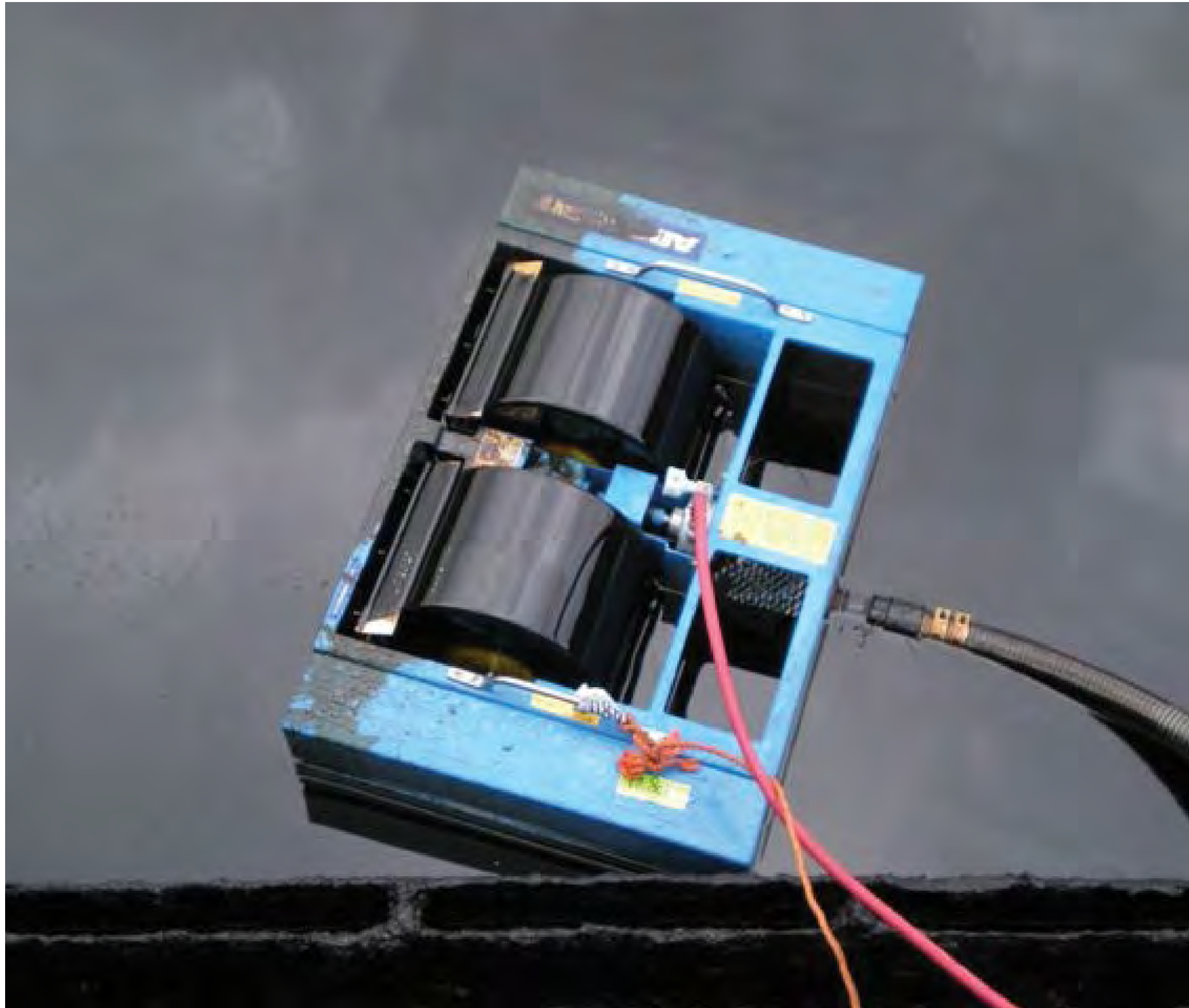
The **ELASTEC 12V Mini Drum Skimmer** is a small and lightweight oil skimmer for industrial applications or small inland spills. Powered by a 12V DC motor, it can run for long periods from a standard car battery or continuous 110 / 220v power supply.





# Skimmer Systems

## MiniMax Industrial Skimmer



The **ELASTEC MiniMax Drum Skimmer** is manufactured in HDPE, making it resistant to many chemicals found in industrial pits, sumps, separators and tanks. Special versions are available for high temperature and highly acidic environments.





# Skimmer Systems

## F.O.G. Systems (Fats, Oils, Grease Collection)



F.O.G. Skimmer in WWTP Headworks



Complete F.O.G. System

The **ELASTEC F.O.G. System** is intended to be used in conjunction with local waste water treatment tactics. The automated systems helps to remove total suspended solids from the influent water and reduce the amount of F.O.G. that enters the treatment facility.

The F.O.G. System extends the life of filters, reduces downtime for cleanup maintenance, and saves money by reducing the amount of bacteria needed to fight TSS.



Drainage pipe clogged with F.O.G.



# Skimmer Systems

## Pelican Weir Skimmer



The **ELASTEC Pelican Weir Skimmer** is a self-adjusting weir skimmer. It can be used in a stationary mode or connected to river booms that will funnel oil to the skimmer entrance. The weir automatically adjusts to suction rate.



# Debris Containment

## Brute Boom Heavy Duty Containment Boom



The **ELASTEC Brute Boom** is a heavy duty boom capable of containing trash, logs and large floating debris, as well as providing marine demarcation. Brute Boom can be deployed in rivers, reservoirs, oceans and lakes. It also performs well in fast waters.

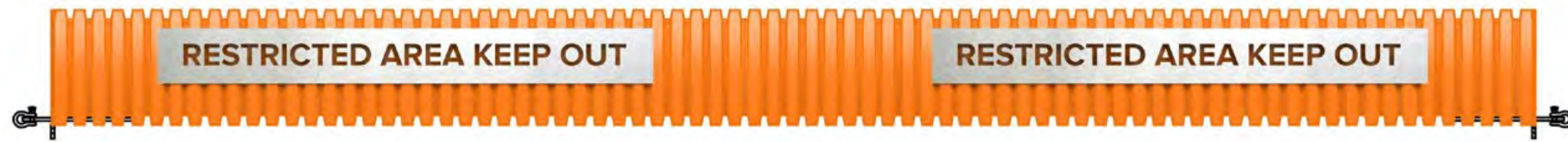
This boom can be fitted with an optional hot dip galvanized steel skirt underneath for added protection and containment. Brute Boom is available in 10 ft / 3 m and 20 ft / 6 m sections. Standard color is black.

Other colors are available with a minimum quantity order requirement.

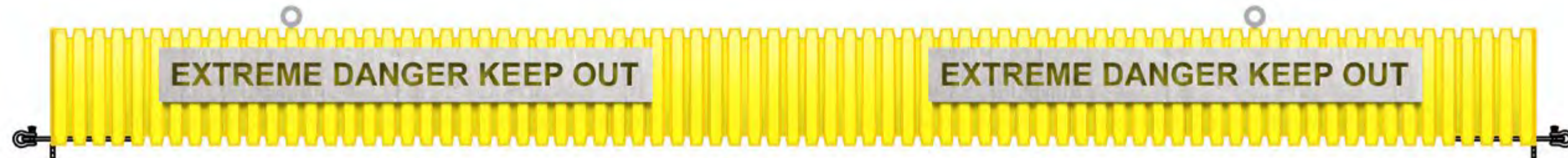


# Debris Containment

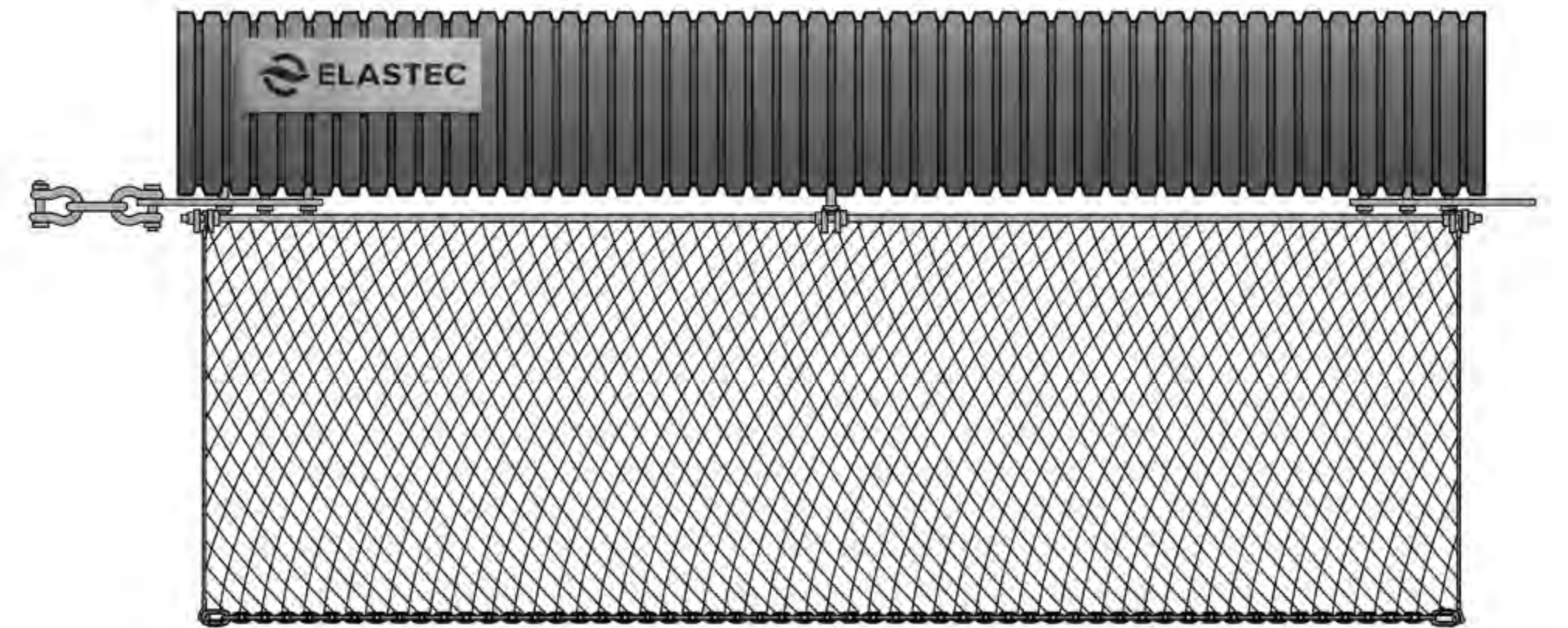
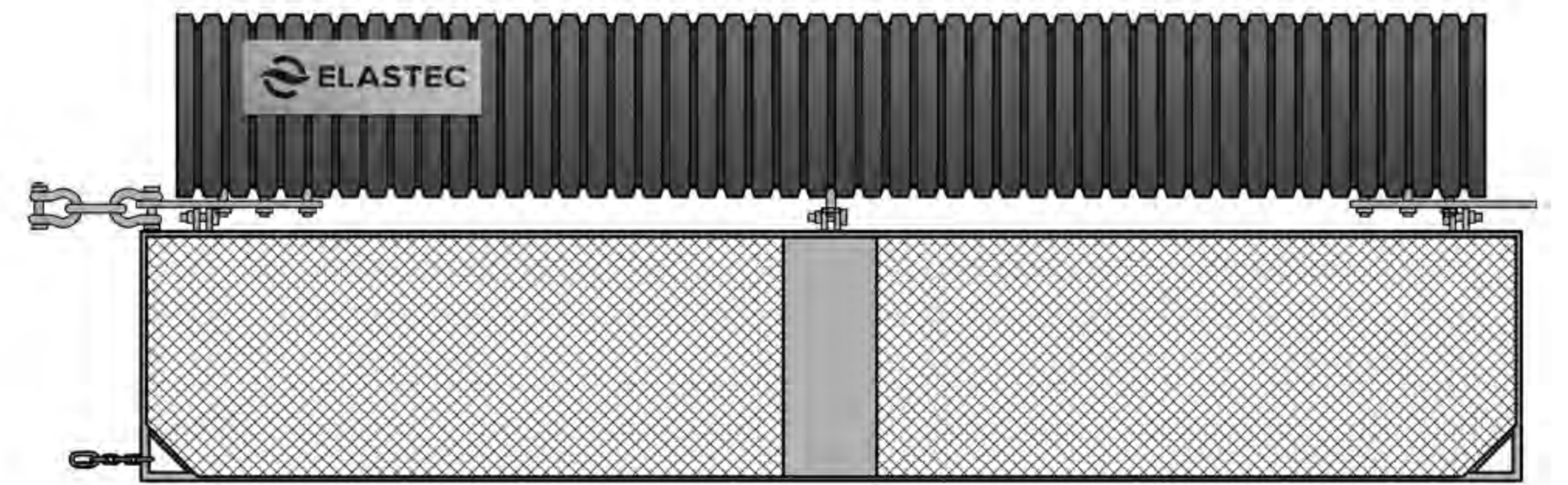
## Brute Boom: Custom Options Available



Custom colors available (with minimum order)



Custom signage available



Multiple skirt options available



# Debris Containment

## Brute Bin: Floating Debris Collection



Brute Bin 613



Brute Bin 64

The **ELASTEC Brute Bin 613** captures floatables from stormwater conveyances and outfalls before they reach our waterways. It features a 613 cubic feet collection basket.

The **ELASTEC Brute Bin 64** is a smaller trash and debris collection system that features a 64 cubic feet collection basket.

The **ELASTEC Brute Bridge** utilizes the high buoyancy of the Brute Boom to create a working platform and access walkway while also creating a containment barrier.



Brute Bridge Floating Walkway



# Debris Containment

## Beach Bouncer: Invasive Debris Control



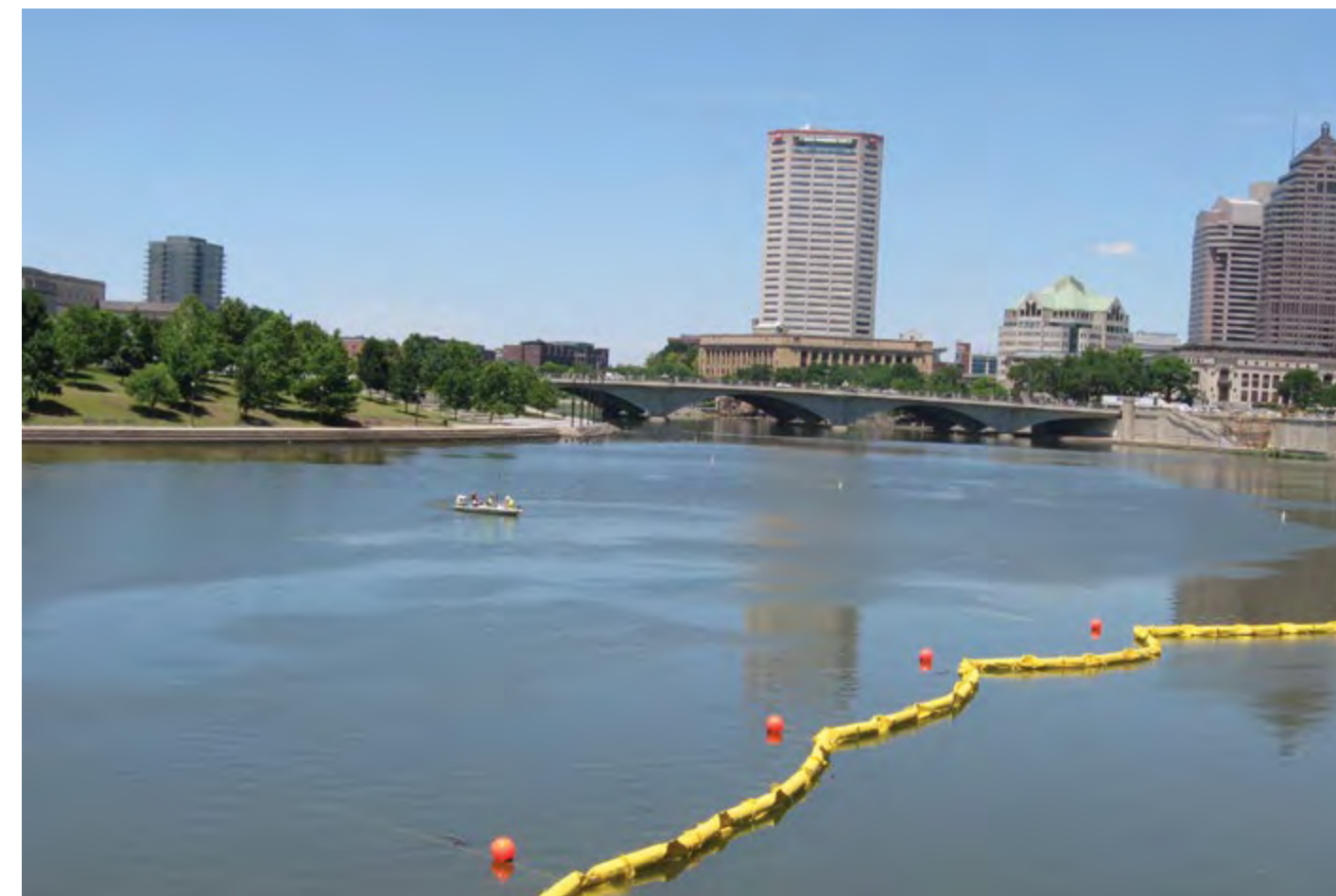
**ELASTEC Beach Bouncer** is a mesh-skirted deflection boom designed to keep Sargassum seaweed and other invasive macroalgae (seaweeds) from reaching commercial beaches. It features a stainless steel load carrying cable above and below the flotation and a heavy galvanized chain ballast at the bottom of the skirt.





# Curtains

## Turbidity Curtains



Turbidity curtains, silt curtains, silt screens, silt barriers, or turbidity barriers, as they are sometimes called, are floating barriers used in marine construction, dredging, and remediation projects to control the silt and sediment in a body of water. **ELASTEC Turbidity Curtains** can be set up to keep construction areas in compliance and protect the environment. American Marine, a division of Elastec, has been manufacturing quality turbidity curtains since 1967.



# Curtains

## Siltmax



**ELASTEC SiltMax** turbidity curtains are floating barriers designed to control sediment and runoff at construction sites. SiltMax silt curtains are designed for easy deployment and meet the requirements of the U.S. Clean Water Act (National Pollutant Discharge Elimination System (NPDES) Phase II).

- Dredging Operations
- Marine Construction
- Remediation Projects
- Intake / Outflow Protection
- Fish Screens
- Pollution Control Curtains



# Curtains

## Baffles

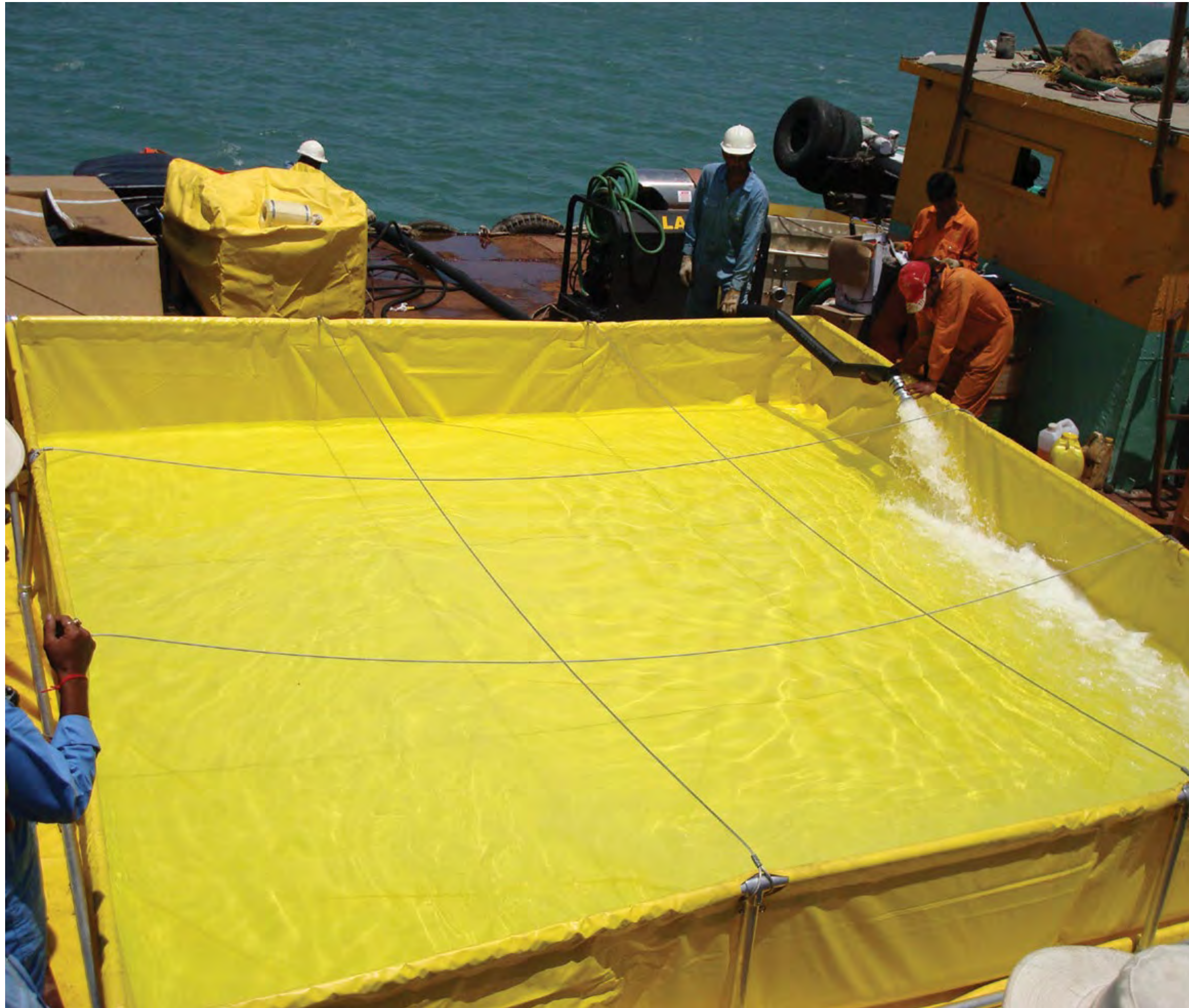


**ELASTEC Baffle Systems** slow the flow of wastewater in treatment lagoons to allow more time for sediment fall-out. Baffles are manufactured in lengths up to 2,500 ft / 762 m to reduce on-site assembly time. The float and underwater tension cable are completely enclosed for strength and wind resistance. All seams are thermal dielectric welded, eliminating the vulnerabilities of stitching. Reinforced flow-through windows are incorporated to accommodate varying flow rates.



# Portable Tanks

## Open Top and Closed Storage



**ELASTEC QuickTank** is an open liquid storage tank with a rigid aluminum frame that is designed for quick and easy assembly. A choice of fabrics and capacities ranging from 500 gal / 1.89 cu. m to 8,000 gal / 30 cu. m are available.

**ELASTEC Pillow Tanks** are collapsible containers that provide temporary, as well as long term, liquid storage. Pillow tanks are a cost-effective option for a variety of liquids including wastewater, fuels, consumables, potable (drinking) water, fruit juices, and oils.



# Incinerators

## General Waste Incinerator



Elastec's Municipal Waste Incinerators are environmentally safe, compact, and easy to operate. These systems are ideal for burning medical waste, collected drugs from take-back programs, illegal drugs and paraphernalia, food waste, and trash. The units are suited for use in hospitals, clinics, pharmacies, laboratories, blood banks, police departments, military bases, veterinary clinics and airports.



# Incinerators

## SmartAsh



**ELASTEC SmartAsh Cyclonic Barrel Burner®** is a portable, small-batch incinerator that meets U.S. EPA requirements for burning non-hazardous refuse. Load a 55 gallon / 208 litre open head steel drum, light the load, and clamp on the lid. A whirlwind of fire and intense heat is created inside the drum, burning refuse without smoke or smell. Once combustion is complete, only 3% ash remains.



SmartHeat accessory



# Incinerators

## Drug Terminator



**ELASTEC Drug Terminator** is used by law enforcement, military and medical facilities for the disposal of evidence drugs and take-back medicine programs. Drug Terminator is wood or charcoal-fired. Two high velocity electric blowers create a cyclone of intense heat, eliminating drugs almost immediately. The volume of material is reduced to an average of 3% ash. Non-combustible drug paraphernalia is sterilized by heat and can be disposed in municipal waste.



Drug Drop Box accessory

The **Drug Take Back Box** is an accessory to accompany the Drug Terminator. It features a key locked deposit box, pad locked retrieval door and floor bolt anchor holes.



# Trailers and Containers

## Custom Response Packages



Elastec offers trailers and containers in a variety of sizes and styles for transporting and storing spill response equipment. They can be custom-outfitted and sourced to your specifications.

Trailers can be modified with a side door for full access to equipment or fully enclosed with a ramp/door. Open bed trailers are also available.





# Thank You!



[www.elastec.com](http://www.elastec.com)

+1 (618) 382-2525