AbTech

The Leader of Stormwater Purification

Costs vs. Value: The Importance of BMP Lifecycle Costs

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Meet the Presenters:

Anthony Reed

&

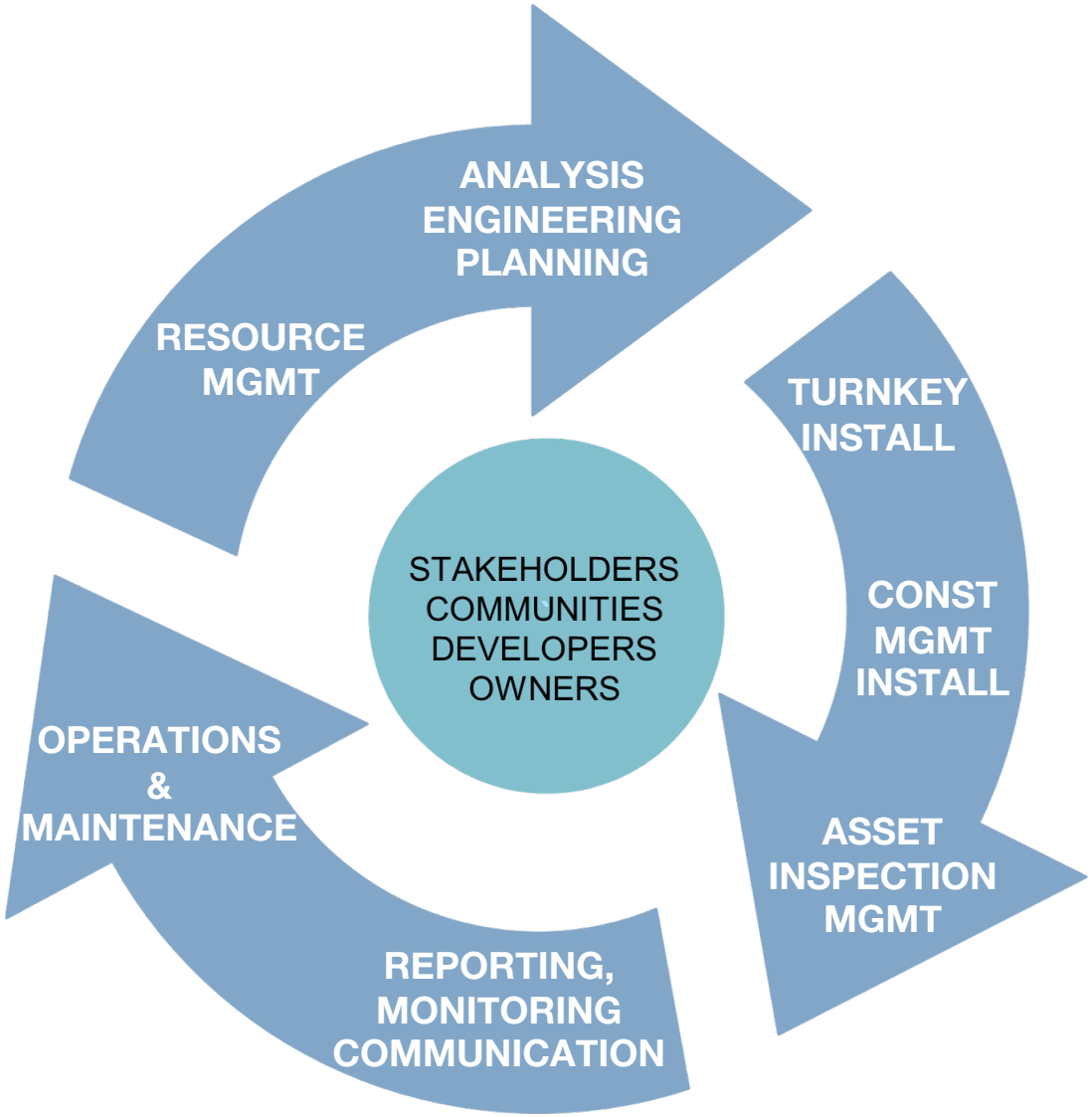
David Scott

Agenda

1. Brief Overview of AbTech Industries
2. AbTech's Smart Sponge Filtration Media Platform and stormwater product portfolio
3. Costs Considerations for stormwater products that are often overlooked
4. Lifecycle Cost Analysis – Comparison between a commercial and industrial site use
5. How to get the most out of your stormwater asset

About AbTech

- Headquarters in AZ
- Representatives nationally and internationally
- Innovative solutions to address water pollution
- 30,000+ installations in 45 states and 15 countries
- Provide Stormwater, SPCC and Industrial solutions



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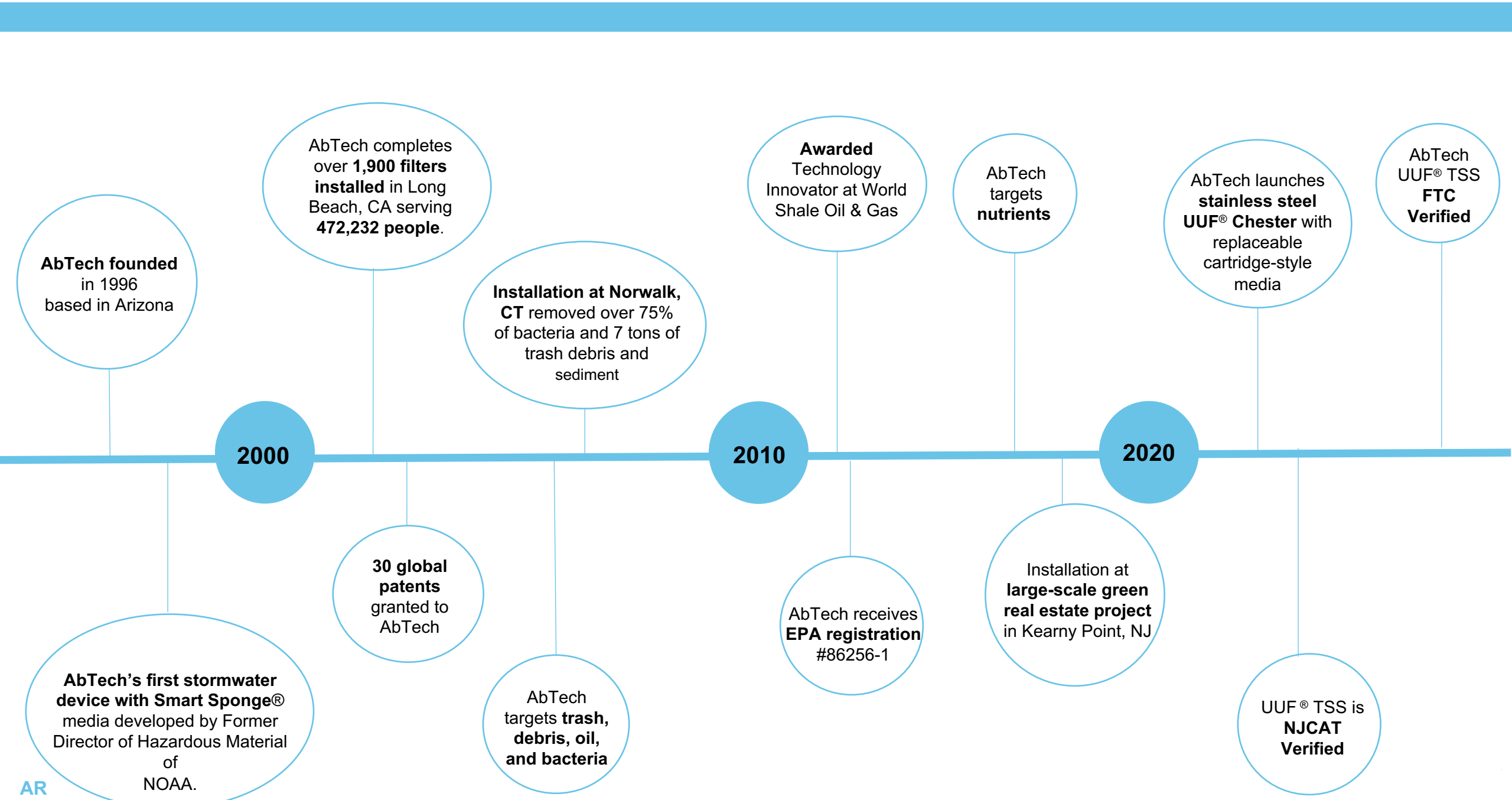
AbTech founded in 1996 based in Arizona
AbTech completes over **1,900 filters installed** in Long Beach, CA serving **472,232 people**.
Installation at Norwalk, CT removed over 75% of bacteria and 7 tons of trash debris and sediment
Awarded Technology Innovator at World Shale Oil & Gas
AbTech targets **nutrients**
AbTech launches **stainless steel UUF® Chester** with replaceable cartridge-style media
AbTech UUF® TSS **FTC Verified**
2000
2010
2020
AbTech's first stormwater device with Smart Sponge® media developed by Former Director of Hazardous Material of NOAA.
30 global patents granted to AbTech
AbTech targets **trash, debris, oil, and bacteria**
AbTech receives **EPA registration** #86256-1
Installation at **large-scale green real estate project** in Kearny Point, NJ
UUF® TSS is **NJCAT Verified**

Stormwater Treatment

A basic level solution that addresses trash, sediment, debris, and attached contaminants.

- ✓Sediment
- ✓Trash and Debris

VS

Stormwater Purification

Eliminates or reduces pollutant concentrations beyond what is attached to sediment in soluble forms for fishable and swimmable water

- ✓ Hydrocarbons
- ✓ Heavy Metals
- ✓ Bacteria
- ✓ Phosphorus
- ✓ Emerging Contaminants

Smart Sponge® Media

- Capable of removing 1 to 3 times its own weight
- Oleophilic and Hydrophobic
- Absorbs oil on contact
- Non-leaching or leaking
- Remains buoyant even after being saturated with hydrocarbons
- Variants of Smart Sponge target a diverse range of contaminants
- Adaptable for many products and applications

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Smart Sponge® Media

Smart Sponge	Smart Sponge Plus	Smart Sponge HM	Smart Sponge AC	Smart Sponge Char
Hydrocarbons	Bacteria	Dissolved Heavy Metals and Phosphates	Dissolved Hydrocarbons and Organics	Nutrients Metals and Emerging Contaminants

All Smart Sponge media variants are hydrophilic, oleophilic, and are non-leaching. Utilized in AbTech's product offerings, all media variants will remove TSS, TPH's, motor oils and grease. Purification capabilities of specific contaminants depends on the media variant, product and design features. Contact AbTech Industries to determine the best solution.

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Proven Technology

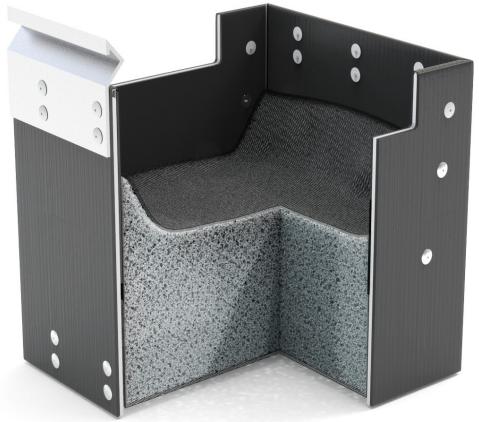
AbTech technology tested with independent third-party stakeholders and labs

- To comply with stormwater permit requirements (NPDES)
  - UUF TSS NJCAT verified
  - All UUF's California Full Trash Capture verified (trash and debris > 5mm)
  - Smart Sponge Plus is registered with EPA (Registration # 86256-1)
  - Data and case studies on O&G absorption capabilities
  - Various municipal and industrial monitoring efforts for pollutants of concern

Catch Basin Filtration

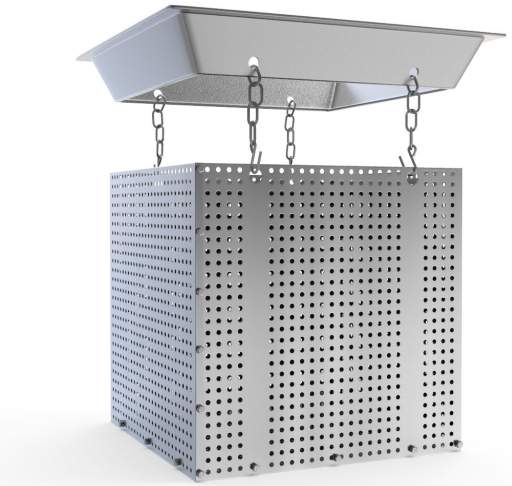
Recycled Plastic

Ultra Urban Filters DI

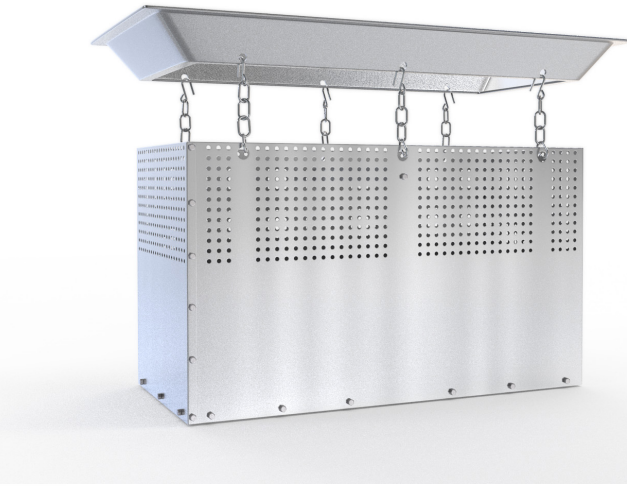


Ultra Urban Filters CO

Stainless Steel



Ultra Urban Filters TSS



Ultra Urban Filters Chester

20 YEAR WARRANTY

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Ultra-Urban ® Filter Drop In

- Helps meet NPDES permit and MS4 objectives
- “Source” control BMP
- Can be manufactured to fit almost any size catch basin
- Ability to target a variety of contaminants with Smart Sponge media
- Upgradeable to UUF Chester
- Easy to install and maintain
- Certified for Full Trash Capture in California

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Ultra-Urban ® Filter - Chester

- All stainless steel with a 20-year warranty
- Cartridge style media Smart Pak® media replacement
- Ability to retrofit almost any size or style catch basin
- Up to 80% cost reduction vs competitive products using a 20-year NPV analysis
- Can target a variety of contaminants with Smart Sponge variants
- Simple installation and maintenance
- Certified for Full Trash Capture in California
- Independent Full-Scale Hydrocarbon Removal Assessment

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Costs to consider when choosing a stormwater system

- Initial costs
- Service costs
- Preventative maintenance costs
- Operating costs
- Disposal costs

Poll: When looking at a long-term BMP installation what is the most important thing you look for?

- Lowest retail cost
- Low maintenance cost
- Low Lifecycle cost

CB Inlet Cost Considerations

- Size of the inlet: Curb Opening and/or surface grate
- Materials – Stainless Vs. Plastic
- Project location and shipping charges
- Filter Media (Smart Sponge) volume Vs. no media
- Installation and annual service costs:
  - Number of filters
  - Retrofit Vs. New construction
  - Pollutant Loading:
    - Media Longevity – Replacement Vs Cleaning Frequency
  - Disposal – Nonhazardous Vs. Hazardous

Catch basin / Drain Insert Filter Cost Analysis

- Drain Inlet Filter Comparison:
  - UUF Chester & Plastic
  - Fabric or Geotextile Insert

  - Two site conditions:
    1. Normal Load
    2. Heavy Load

Note:
Costs are site specific

Catch basin or Drain Insert Comparison						
Item	**Fabric Filter Insert**		**UUF Plastic (SS Collar)**		**UUF Chester**	
	Normal	**Heavy**	**Normal**	**Heavy**	**Normal**	**Heavy**
Quantity / Number of Filters	Qty = 7					
Replacement Costs						
Frequency/year	4X per yr.	12X per yr.	1X per 3 yrs	1X per yr.	1X per 3 yrs	1X per yr.
Labor	15 mins per CB * two people @ $60/hr = $210					
Disposal Costs	Leaches Oils - Hazardous		Non Hazardous - Smart Sponge passes TCLP Test			
Service Costs						
Cleaning Frequency/year	**No Cleaning Needed. Filter Fabric is replaced**		3	11	3	11
Wash Truck			$560	$560	$560	$560
Disposal of Water						
Labor						

Cost Analysis – "Normal" Commercial Application

Catch basin or Drain Insert Comparison						
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Disposal of Water						
Labor						

Item	**Fabric Filter Insert**		**UUF Plastic (SS Collar)**		**UUF Chester**	
	Normal	**Heavy**	**Normal**	**Heavy**	**Normal**	**Heavy**
Total Unit Cost (Qty=7)	$525	$525	$7,175	$7,175	$8,680	$8,680
Annual Replacement Costs	$3,360	$10,080	$1,259	$3,815	$358	$1,085
Annual Service Costs	$4,060	$12,180	$2,939	$9,975	$2,038	$7,245

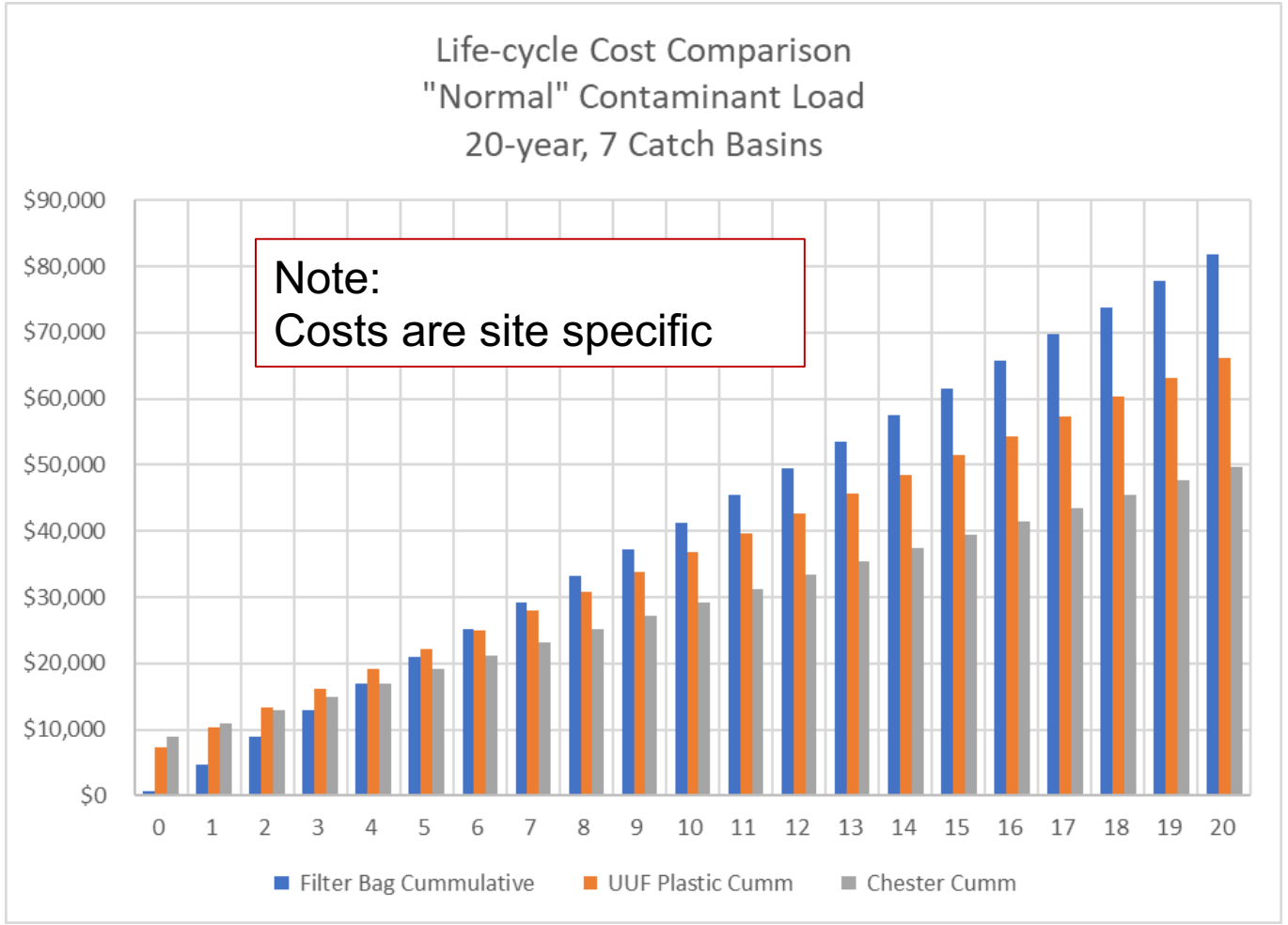
Life-cycle costs – “Normal” Commercial Application

20-year costs

- Fabric Filter Insert
  - $81,935
- UUF Plastic
  - $66,164
- UUF Chester (Stainless)
  - $49,651

20-Year % Savings

- UUF Plastic
  - 19%
- UUF Chester (Stainless)
  - 39%



UUF “Heavy” Industrial Application

- Challenged with operations that demand large impervious areas with surface inlets conveying runoff directly into rivers and oceans.
- Identified critical source areas from site operations that were best suited for treatment by retrofitting existing catch basins with surface inlet filters.
- They installed both geotextile fabric filters and UUFs.
- Currently assessing upgrading all inlet filter sleeves to UUF Chester models

Cost Analysis – "Heavy" Industrial Site Application

Catch basin or Drain Insert Comparison						
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Quantity / Number of Filters			Qty = 7			
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Frequency/year	4X per yr.	12X per yr.	1X per 3 yrs	1X per yr.	1X per 3 yrs	1X per yr.
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Disposal of Water						
Labor						

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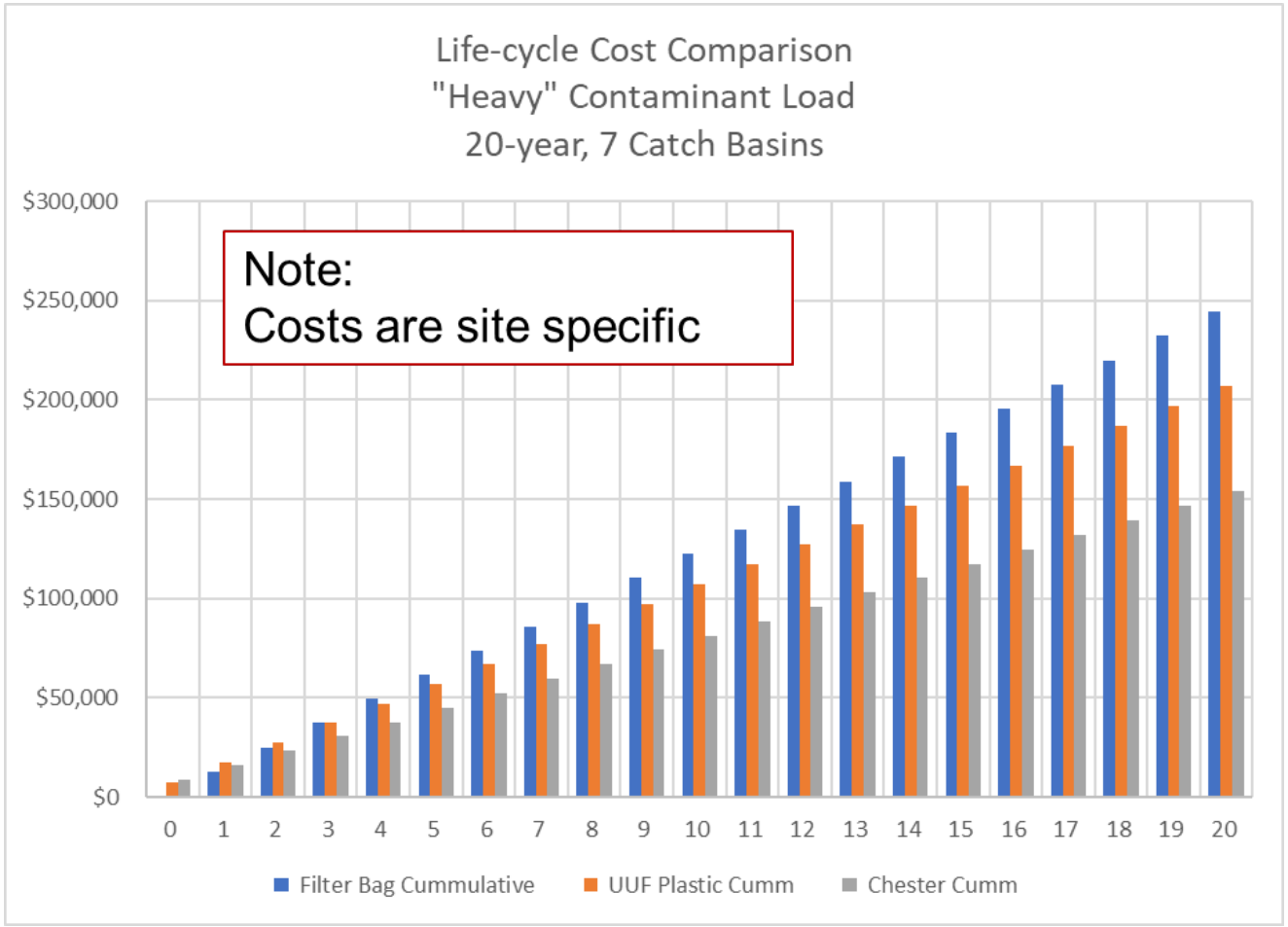
UUF Life-cycle costs –“Heavy” Industrial Runoff Application

20-year costs

- Fabric Filter Insert
  - $244,335
- UUF Plastic
  - $206,885
- UUF Chester (Stainless)
  - $153,790

20-Year % Savings

- UUF Plastic
  - 15%
- UUF Chester (Stainless)
  - 37%



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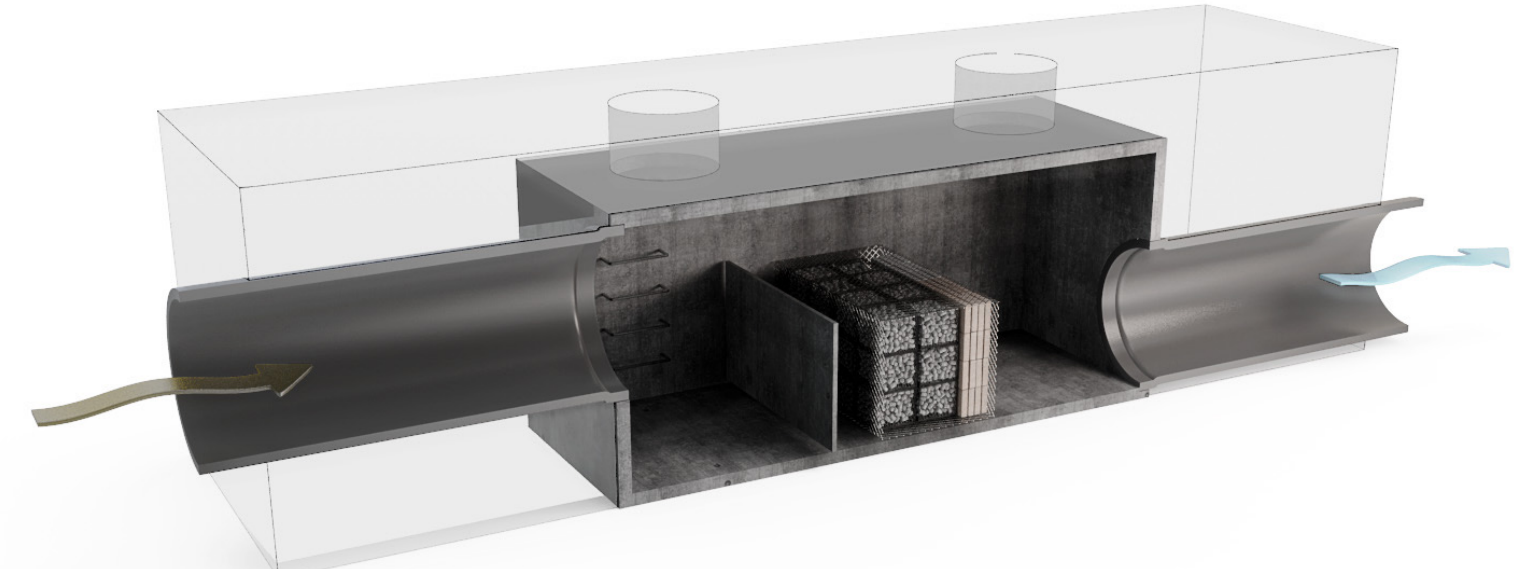
Now that you've learned the true cost of ownership…

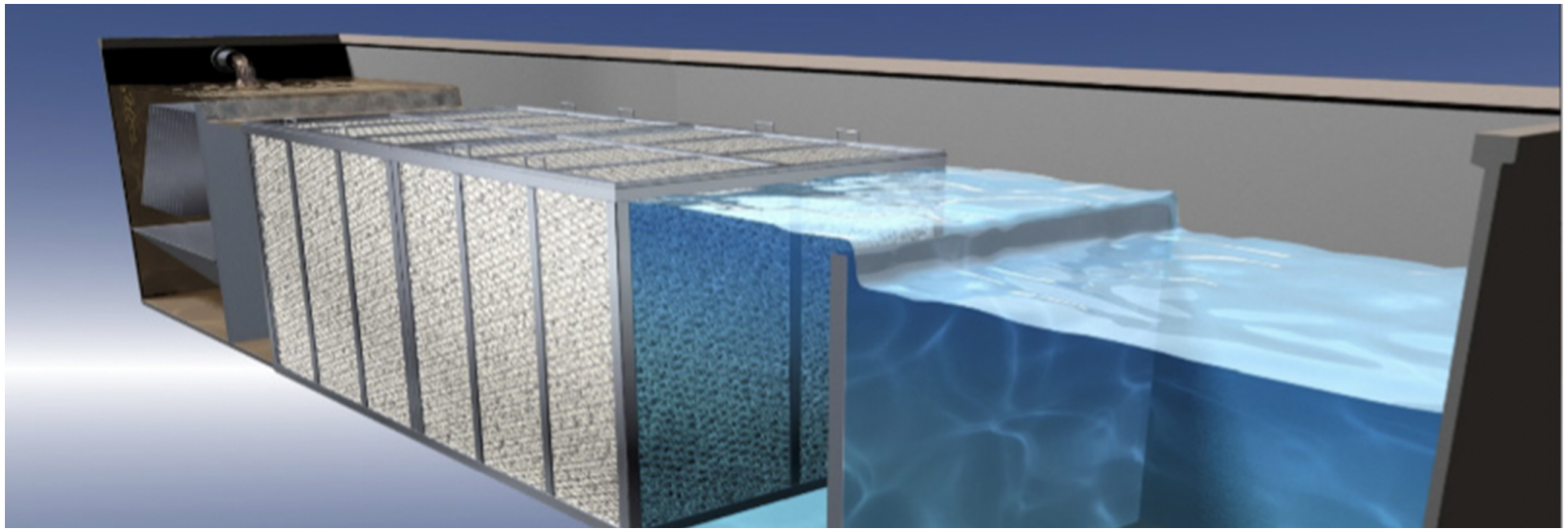
Poll: When looking at a long-term BMP installation what is the most important thing you look for?

- Lowest Retail Cost
- Low Maintenance Cost
- Low Lifecycle Cost

Smart Vault

- Centralized and simple maintenance
- Upstream inline treatment or end of pipe solution
- Simple media changeout
- Various materials of construction
- Can be customized to different applications
- Can target a variety of contaminants
- Internal bypass with optional external bypass
- Does not retain runoff and drains down between storm events





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Smart Vault Cost Considerations

- Existing Infrastructure – Pipe Sizes, depth of cover
- Water Quality and Capacity Flow Rates
- Contaminants of concern and annual treatment volumes and contaminant loads
  - Pretreatment needs
  - Contact time = media volume
- Installation and labor costs:
  - Excavation and lifting equipment
  - High Groundwater & Bedrock
  - Traffic safety provisions

Floating Filtration

Passive Skimmer

Bilge Skimmer

Line Skimmer

Skimmer Cost Considerations

- Application
  - Enhance an existing BMP: API Separator, Batch basin sump, Outlet pipe
  - Type of contaminant, expected longevity
  - Number of skimmers and how often they need replacing
- Installation
  - Confined space entry
  - Access
- Disposal

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How AbTech keeps life cycle costs low while meeting regulations

- Industry leading 20-Year Warranties on Chester and TSS
- Performance – Absorption technology, high flows, low annual bypass volumes
- Low replacement cost
- No pumping out of sump water for maintenance
- Low disposal costs
- Low Maintenance costs – long media longevity

How to get the most out of your stormwater asset

- Consider treatment at the source – prevent pollution from entering storm drain networks/systems.
- In order to maximize their asset value, inspection, maintenance, service life, and performance are imperative attributes to evaluate
- If you’re looking for a long-term solution, the most cost-effective solutions is a high performance, durable and low maintenance stormwater asset

Q+A

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Thank you

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