



CLEAN WATER AS A SERVICE

THE VIABLE SOLUTION TO COMBAT PFAS



A PROVEN TRACK RECORD

40 years
in Environmental
Services Industry

>\$30 billion
of environmental
projects executed
including site
remediation

**+3 billion
gallons**
of heavily
contaminated water
treated

**Financially
stable**
company

Treating PFAS
since 2001

ALTRA has been treating PFAS from contaminated soils and wastewater since 2001. We have created the ALTRA PFAS Treatment Solution that has been proven to cost-effectively remove PFAS from wastewater (AFFF-contaminated groundwater, industrial wastewater, landfill leachate and even RO Reject from RO treatment of wastewater).

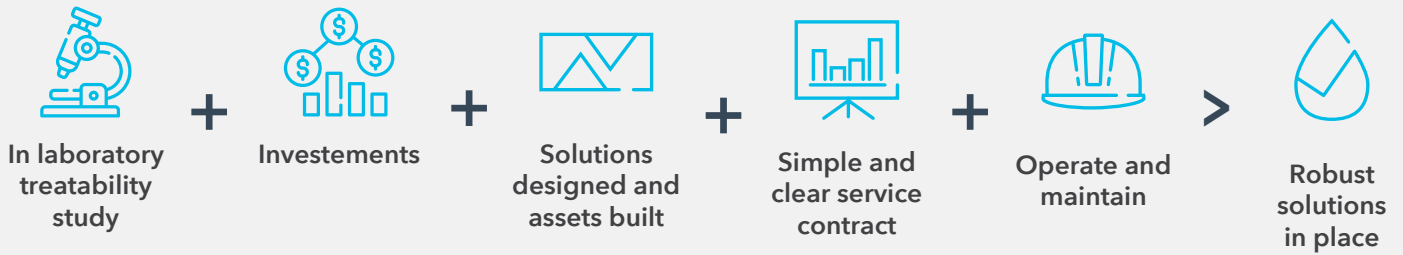
Our approach is to provide clients with an on-site, containerized pretreatment system. Our solution uses a multi-step approach combining our proprietary Foam Fractionation, or FF, with polishing filtration (if required) to meet the client targets. As part of the treatment process, we concentrate the PFAS to enable destruction / management of this waste stream by the client.

ALTRA also understands the most prominent on-site PFAS destruction technologies being developed and where they can best be used. ALTRA trialed an encapsulation technology that mixes PFAS concentrate solution with cement and proprietary additives into a non-leachable concrete cast structure that can be disposed into a secure (i.e., lined) landfill.

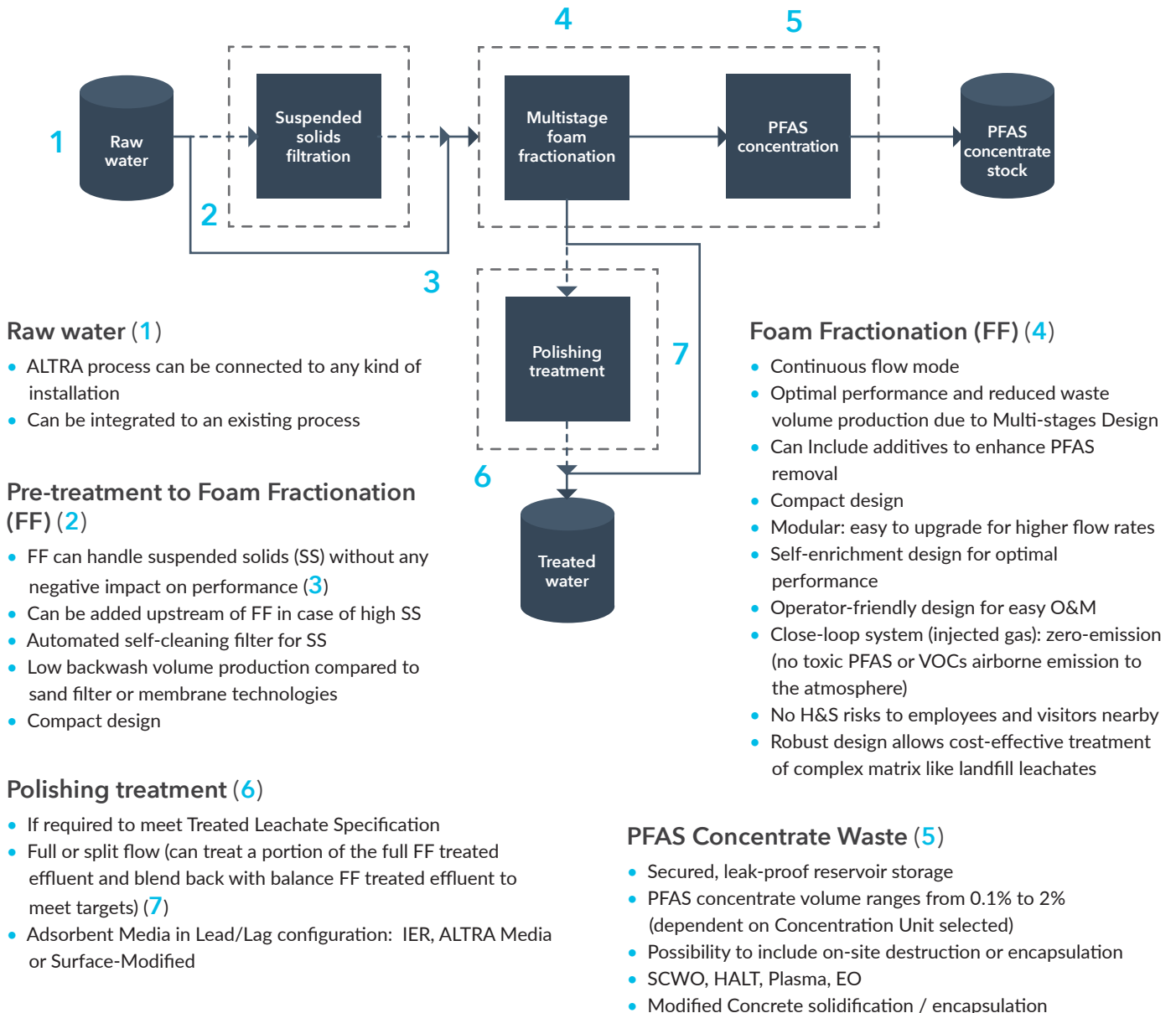
The ALTRA PFAS Treatment Solution is one of the most viable and market-ready solution that enables companies dealing with wastewater (groundwater, industrial wastewater, and landfill leachate) contaminated with PFAS to be able to treat their wastewater onsite and continue to send the wastewater for disposal to POTWs or even discharge it directly to the environment.

THE ONLY VIABLE COMMERCIAL OFFERING IS 'CLEAN-WATER-AS-A-SERVICE'

ALTRA provides PFAS 'clean water-as-a-service' commercial model whereby we design, build, own and operate the treatment system with an agreed level of PFAS removal.



OUR TECHNOLOGY



TREATMENT EFFICIENCY

Foam Fractionation

Typical PFAS removal of **99%** long chain* and **>50%** short chain*

**according to ITRC definition (see table below)*

Media filtration of FF Effluent (if required)

Typically PFAS removal of **85%** to **99%** of Total PFAS

Total PFAS Removal Performance of **75%** (mass basis) using FF ONLY is GUARANTEED if Leachate Composition complies to following definition:

- Sum of concentration of PFPeS, PFPeA, PFHxA, PFBS and PFBA is below 45% of the total PFAS concentration, following US EPA533 and
- Sum of concentration of PFBS and PFBA is below 25% of the total PFAS concentration, following US EPA533

Performance reaches < 10 ng/L for individual PFAS compounds and even non-detect levels, following US EPA533

Number of Carbons	4	5	6	7	8	9	10	11	12
PFCAs	Short-chain PFCAs				Long-chain PFCAs				
	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnA	PFDoA
PFSAs	PFBS	PFPeS	PFHxS	PFHpS	PFOS	PFNS	PFDS	PFUnS	PFDoS
	Short-chain PFSAs		Long-chain PFSAs						

ALTRA PFAS CENTER OF EXCELLENCE

To support our water and wastewater treatment services, ALTRA has established a fully equipped and staffed analytical and treatability studies laboratory in Montreal, Quebec.

- 10 000 PFAS tests completed in the last 18 months in our laboratory in Montreal, the highest number of tests performed by a single treatment company in North America
- Small-scale versions of systems used to test client's water and determine feasibility of treatment
- In-house PFAS analysis with US EPA Methods EPA 533 (modified) and EPA 8327 (modified) on Agilent LC-MS/MS, and EPA 1633



KEY DIFFERENTIATORS

01

LOWEST INVESTMENT COST

Our mobile equipment can be used at a relatively low pay-per-use rate, rather than spending millions of CAPEX+OPEX \$ to build a treatment facility

02

HIGHLY CUSTOMIZED APPROACH

We calibrate solutions for the nature and size of any needs (underground water, contaminated soils, wells for potable water, etc.)

03

SAFEST APPROACH

Close-loop system with zero-emission of PFAS or other toxic gases to the atmosphere. The safest approach available for employees and visitors nearby.

04

THE MOST ROBUST

The most versatile and robust remediation technology that has proven its ability to work in waters with high percentages of co-contaminants

05

OPERATOR-FRIENDLY DESIGN

A continuous 24/7 water treatment, ALTRA container unit is designed for portability and plug and play application

06

THE ONLY GUARANTEED SOLUTION

ALTRA provides PFAS treatment services on a 'clean-water-as-a-service' commercial model whereby we design, build, operate, maintain and finance the treatment system with an agreed level of PFAS removal.



CONTACT

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ALTRA
PFAS TREATMENT SOLUTIONS