

Residual Management

SRU is a real time, fully automated, configurable, chemical free, extremely low energy, SiC Membrane Process to Recover Solids from water. The process allows full Solids Recovery and to achieve 100% Water Efficiency. Recovered Solids include coagulated organics (DOC), biomass, silt, algae, sludge, precipitated metals in any combination. Zero Liquid Discharge (ZLD) and 100% water efficiency is achieved. **SRU** solves the technical and purification challenge by removing Solids from the water into a solid phase. **SRU** can operate continuously or on demand and has a 25-year design life and can be a stand-alone process or integrated with other processes.



Chemical Free, Consumable Free, Labor Free

There is no polymer or chemicals of any kind, no consumables or no labor involved in the **SRU** process which eliminates all costs associated with traditional concentrate wastewater management and disposal methods.

Holistic Residuals Management

The solids produced by the **SRU** are at best, a viable product with commercial value or at worst a small solid waste handling disposal requirement which can be landfilled as per regulations. **SRU** is a Carbon Capture process with a very small footprint and very low electrical energy requirement.

Capability

The **SRU** solids / residuals are recovered at nominally 20% solids to pass a TCLP test for landfill disposal applied in high (multi MGD) and low flow applications.



Applications

Drinking Water Filtration Plants
Concentrating DAF Waste & Clarifier Bottoms
Product Recovery, Mining of Water for Metals & Nutrients
Filter Reject / Backwash Waste Dewatering

Municipal Sludge Concentration
Algae & Pathogen Removal
Replaces Filter Presses & Centrifuges

Process

SRU recovers solid contaminants or second phase constituents which are filtered or phase separated to customer requirements. The heart of **SRU** consists of proprietary ceramic membrane process technology using dynamic shock and process.

Eliminates

Conventional Solutions require chemicals (polymer), labor, consumables and high maintenance which are eliminated with the **SRU** process. The elimination of these obsolete process inputs further contributes to the unmatched reduction in the operating and capital cost structures of the **SRU** process vs alternatives.

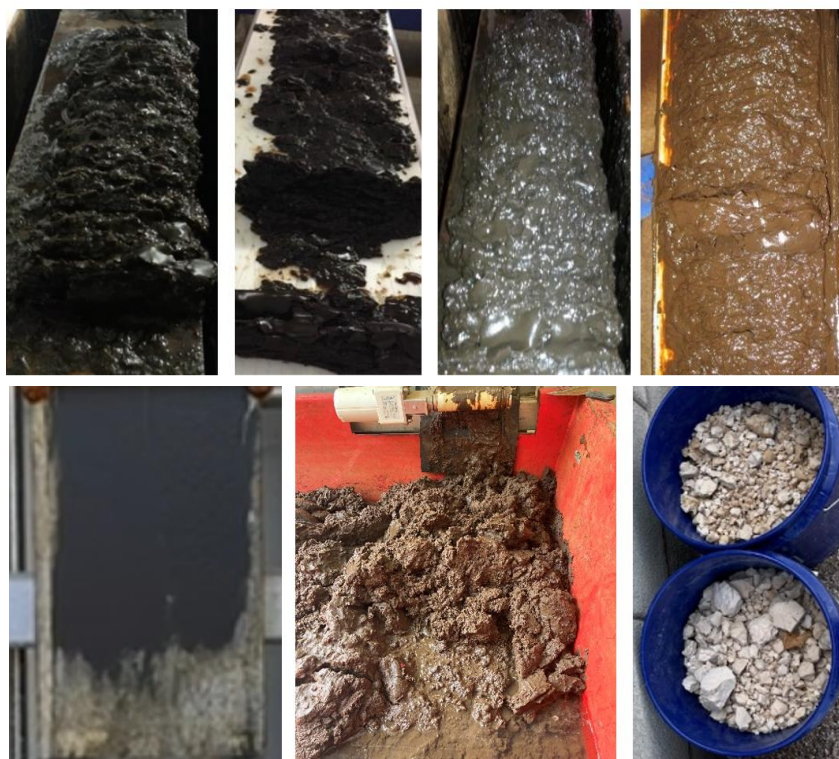
Operating Cost and Performance

ZLD costs \$0.64 / day at a 1MGD **Cuf** drinking water plant in operation since 2015.

Certification / Compliance

LT2ESWTR > 4 Log LRV; NSF/ANSI/CAN 61-372; NEC – UL508A

Solids, Different Water, Composition & Set Points



Closed Loop Residuals Reuse/Disposal Options

SRU Residuals can be sold/disposed of by any of the following methods:

- Approved Landfill
- Off-Site Incineration/Regeneration
- Cement Kilns
- Deep Well Injection
- Sale of Residual Solids
- Phytoremediation (Land Applied)
- Off-Site Pyrolysis
- **POD** (PFAS On-Site Destruction)

Characterization of the residuals from a surface water plant confirmed that the residual solids can meet Codes of Practice for Soil Amendments Standards and could be used for land application. Recovery of the solids for land application makes the residuals a value-added product.

The residual solids help immobilize excess phosphorus in the soil which is beneficial for: agricultural amendment and/or co-applied with manure/biosolids for nutrient management.

The detailed analysis and recommendation are available in the following report.

BIM (2018) Pilot Plant Study Ceramic Ultrafiltration.

<https://bowenisland.civicweb.net/document/152264>

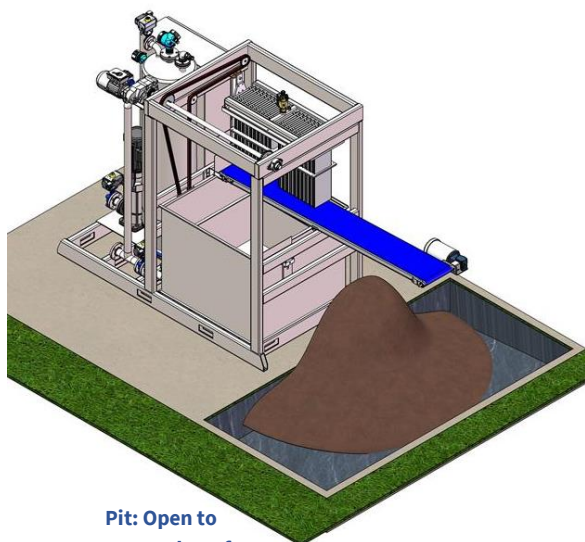
Residuals Characterization

Moisture, Average	88.9 %
Organic Content	35.5 %
Wet Bulk Density, (as-is)	1.03 – 1.15 kg/L
Dry Bulk Density	0.10 – 0.15 kg/L
Size Distribution	Consistent
Sample Classification	Sandy Loam
pH	5.5 – 6.3



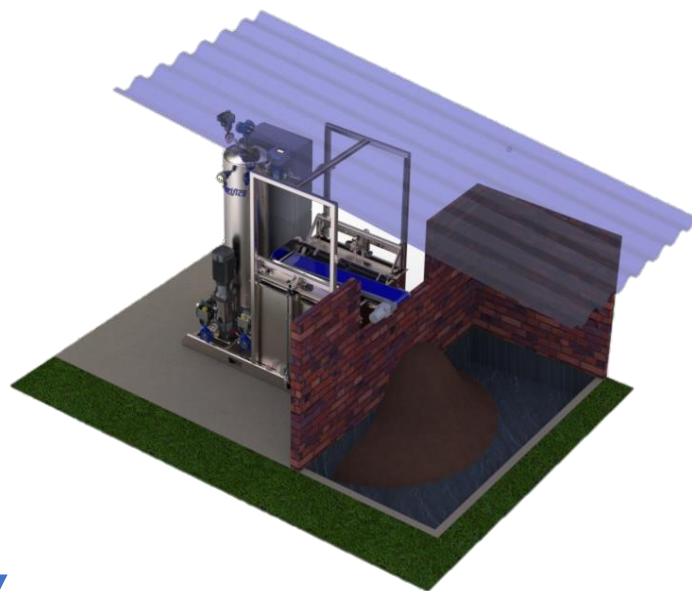
Solids Management Options

Option A – Pit Disposal

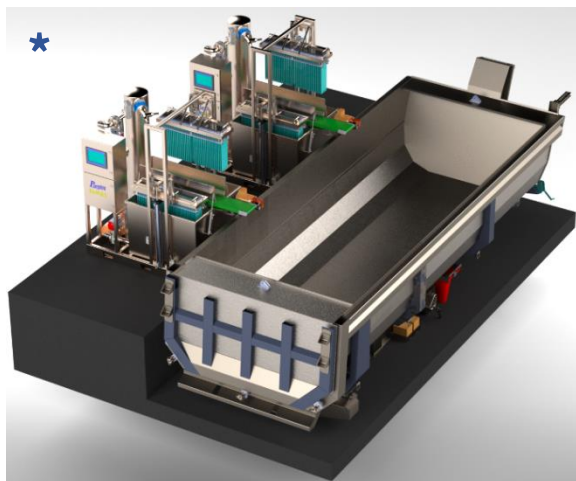


Pit: Open to atmosphere for sludge drying.

or



Option B – Direct Dumpster Disposal



***Plastic or Cardboard Lined Dumpster Advised**

