

A scenic view of a town waterfront with a large body of water in the foreground. In the background, there are several buildings, including a prominent stone building with a tower and a large multi-story brick building. The sky is blue with some light clouds. The foreground shows a stone pier with a chain and concrete posts.

**Town of Newmarket, NH
Wastewater Treatment Facility Upgrade
Solids Dewatering
January 24, 2017**

**Sean T. Greig
Water and Wastewater Superintendent**

Background

- The plant was constructed as a primary plant with digesters and sludge drying beds in 1969.
- The plant was upgraded to a 0.85 MGD trickling filter plant 1985.
- In 1990, the plant added a sludge dewatering building with a 2 meter belt filter press.
- In 2000, Installed new influent grinders and grit removal equipment.



Background

- The Town is currently performing an upgrade to the Wastewater Treatment Plant to meet a 8.0 mg/L total nitrogen limit.
- Total Project Cost 14.1 Million
- Installing 4-Stage Bardenpho Process
- New Secondary Clarifiers
- New Dewatering Equipment
- New Operations Building
- New Plant Water System
- New Parshall Flume
- Convert Digesters to Sludge Holding Tanks
- Remove Influent Grinders
- Install new influent screen



Town's responsibility to empty the digesters



Town planned on using its belt filter press to dewater solids and empty the digesters.



Town decided not to repair the belt filter press and have the contractor install the Huber rotary screen press

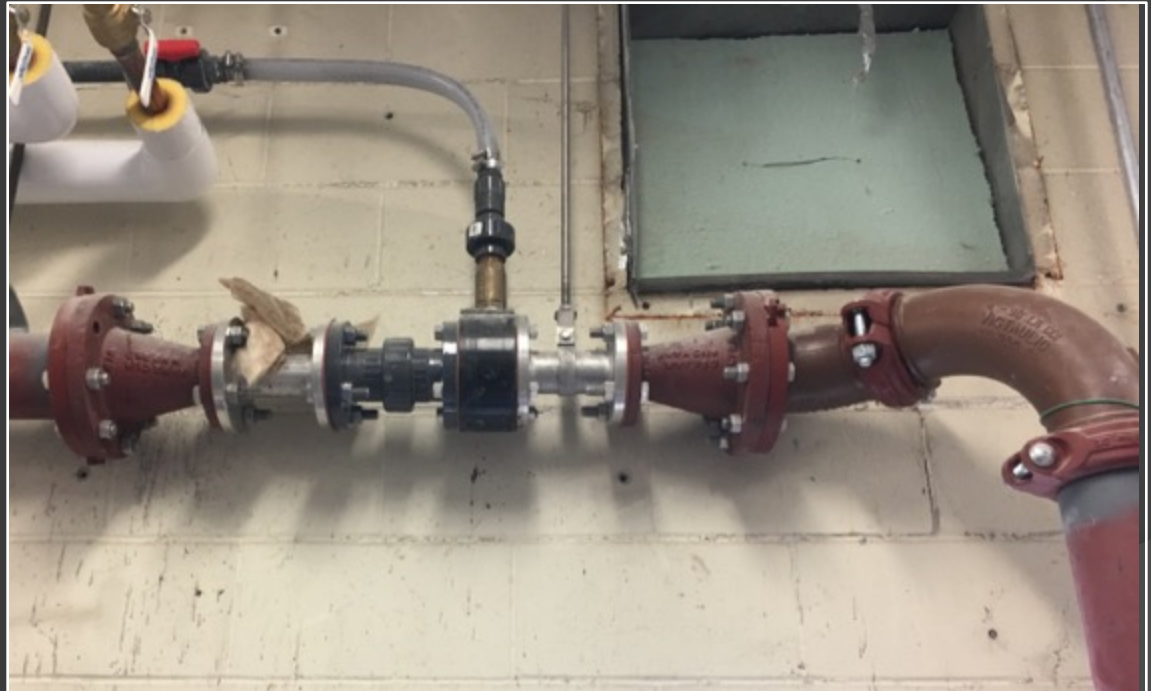


Problems

- We were able to get the secondary digester about half empty with the Huber press.
- Mixing prior to the press valve kept plugging.
- Solids from the digester were very thick
- The material that went through the influent grinders had reformed in the digesters.
- Decided to remove the mixing valve with a straight pipe
- Still had plugging issues



Mixing Valve/Straight Pipe



Cost to have a Contractor Empty the Digesters

NEWMARKET NH – DIGESTER DEWATERING COMPARISON

Assumed Solids %

CONTRACTOR	8% Solids	10% Solids	12% Solids
Dry Tons	54	67	80
We Care Organics	\$66,356.52	\$79,570.65	\$92,784.79
PH Senesac	\$97,333.96	\$116,905.46	\$136,476.95

NOTES

1. Assumes 45,000-gallons in Secondary Digester & 115,000-gallons in Primary Digester, 160,000-gallons total.
2. Mobilization/demobilization fees are high due to cold weather.
3. 12% assumed worst case condition based on "We Care Organics" inspection.
4. Does not include Town disposal costs associated with Dewatered Solids.



How do we empty the Digesters?



Assessment

- The dewatering equipment wasn't working due to plugging problems.
- The contractor cost estimates to empty the digesters are substantial.
- We are trying not to use project contingency (several bid alternates).
- We have a Muffin Monster grinder that was removed several years ago.
- Decision was made to install the Muffin Monster in the sludge dewatering feed line. Cost of materials \$700.00.



Grinder Installation



Did it work?

- We have begun processing sludge with the Muffin Monster in the sludge line.
- We have not had any plugs so far.
- If successful \$66,000 to \$92,000 in savings.

QUESTIONS?

