

ROTARY PRESS



Why Dewater?

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Rates & fees

The following rates and fees are for **2009**.

Disposal Rate	10.2 cents per gallon. We weigh each load and charge \$0.012230 per pound discharged. This covers domestic septic tank waste and portable toilet waste, up to 2% solids.
Fees	Annual fee: \$200/year/truck Initial setup fee: \$50/truck

Related information

- [Septage acceptance guidelines](#)
- [King County Wastewater Treatment Division finances and budget](#)

Why Dewater?

- 1) WWTP tipping fees are more than cake disposal
- 2) It costs less to truck solids than to truck water

Disposal Costs				
		Cake dryness ->	Wet raw 2%	Rotary Press 30%
	Dry tons produced :	375	20833	wet tons 1250
WWTP disposal fees per gallon:	\$	0.10	\$ 490,000	
Tipping fees per wet ton:	\$	75.00		
Total disposal fees ->				\$ 93,750
Transport costs at \$1.75/mi ->			4,365	2,619
Total disposal costs ->			\$ 494,365	\$ 96,369
Total savings using Rotary Press ->			\$ 397,996	

Based on 20,000 GPD avg. daily disposal

What are the costs?

Apart from the purchase cost, labor and consumables are the biggest component of the daily operation

		Septage & Grease	
To attain 20,000 gal/day		Two (2) channel machine	
Cost per 1,000 Gal.	Operator cost (assuming operator at \$12.00 per hour plus benefits, attending operation 2 hrs/day)	1.78	1.78
	Chemical (polymer) cost	3.93	5.22
	Power cost	0.08	0.11
	Maintenance cost for press	0.71	0.85
	Maintenance cost (other)	0.35	0.42

What are consumables?

Chemicals for conditioning, wash water, and the hidden cost of re-treating solids.

polymer cost	\$2.00	per lb at 100 active
typical dose:	16	lbs per dry ton
	375	dry tons annually
	\$12,000.00	annual polymer costs
for every 1 lb extra polymer	\$750.00	extra annual cost
example at 25 lbs per dry ton:	\$19,500.00	annual polymer costs
	\$7,500.00	annual savings

What are consumables?

Chemicals for conditioning, wash water, and the hidden cost of re-treating solids.

An average homeowner in the Manhasset-Lakeville Water District paid a water tax of \$200 and a \$1.35 per 1,000 gallons of metered water. Some consumers are buying bottled water that often sells for more than \$1 per half-liter. By comparison, a half-liter of Manhasset-Lakeville Water costs less than a penny.

What are consumables?

Chemicals for conditioning, wash water, and the hidden cost of re-treating solids.

Wash water use:	25 GPM
49 40-hour weeks =	1,960 hours
or	117,600 minutes
	2,940,000 gallons of wash water
	\$1.35 per 1,000 gal
	\$3,969.00 annual wash water costs
	61,250 gallons used by the Rotary Press
	\$82.69 annual Rotary Press wash water cost
	\$3,886.31 annual savings

What are the costs?

Every 1% drier cake represents more money.

Cake Disposal Costs		Wet tons for each technology		
	Cake dryness ->	Boxes	BFP	Rotary Press
Dry tons produced :	375	2083	1500	1250
Tipping fees per wet ton: \$	75.00			
Total tipping fees ->		\$ 156,250	\$ 112,500	\$ 93,750
Transport costs at \$1.75/mi ->		4,365	3,142	2,619
Total landfill costs ->		\$ 160,615	\$ 115,642	\$ 96,369
Total savings using Rotary Press ->		\$ 64,246	\$ 19,274	

What are the costs?

The dewatering process is to remove solids, so capture efficiency is very important

Typical 95% capture rate as a baseline		
For every 1,000 gallons of sludge		
if 1% less efficient capture	\$0.32	\$0.34
if 2% less efficient capture	\$0.64	\$0.68
if 3% less efficient capture	\$0.96	\$1.02
if 4% less efficient capture	\$1.27	\$1.36
if 5% less efficient capture	\$1.59	\$1.69
if 7.5% less efficient capture	\$2.39	\$2.54
if 10% less efficient capture	\$3.19	\$3.39
if 15% less efficient capture	\$4.78	\$5.08

What are the costs?

Cost to treat solids, per lb	\$0.29	\$0.18
Typical 95% capture rate as a baseline		
For every 1,000 gallons of sludge		
if 1% less efficient capture	\$0.32	\$0.34
if 2% less efficient capture	\$0.64	\$0.68
if 3% less efficient capture	\$0.96	\$1.02
if 4% less efficient capture	\$1.27	\$1.36
if 5% less efficient capture	\$1.59	\$1.69
if 7.5% less efficient capture	\$2.39	\$2.54
if 10% less efficient capture	\$3.19	\$3.39
if 15% less efficient capture	\$4.78	\$5.08
based on 90% vs 95% capture:	\$7,807.70	extra running cost
based on 85% vs 95% capture:	\$15,615.41	extra running cost

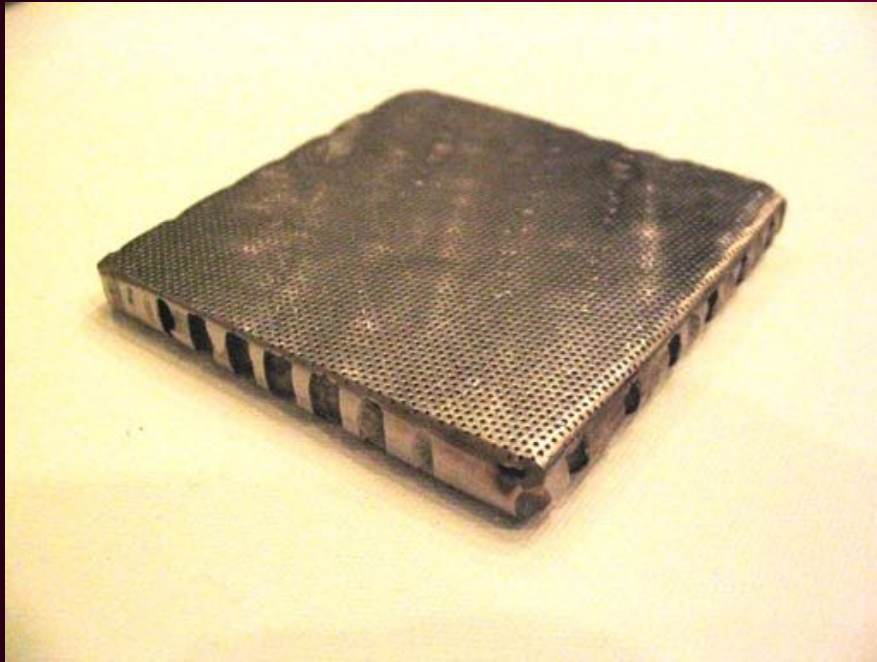
Overview of Rotary Press

Outstanding Features:

- Completely enclosed minimal odors
- Few moving parts = few wear parts
- Low energy requirement
- Fully automatic, with smooth operation with changing sludge quality, feed rate
- Low speed < 3 rpm
- Low polymer consumption
- High Capture Rate – typically 95% or greater
- Only dewatering press designed to operate without wash water
- Only dewatering press that can expand

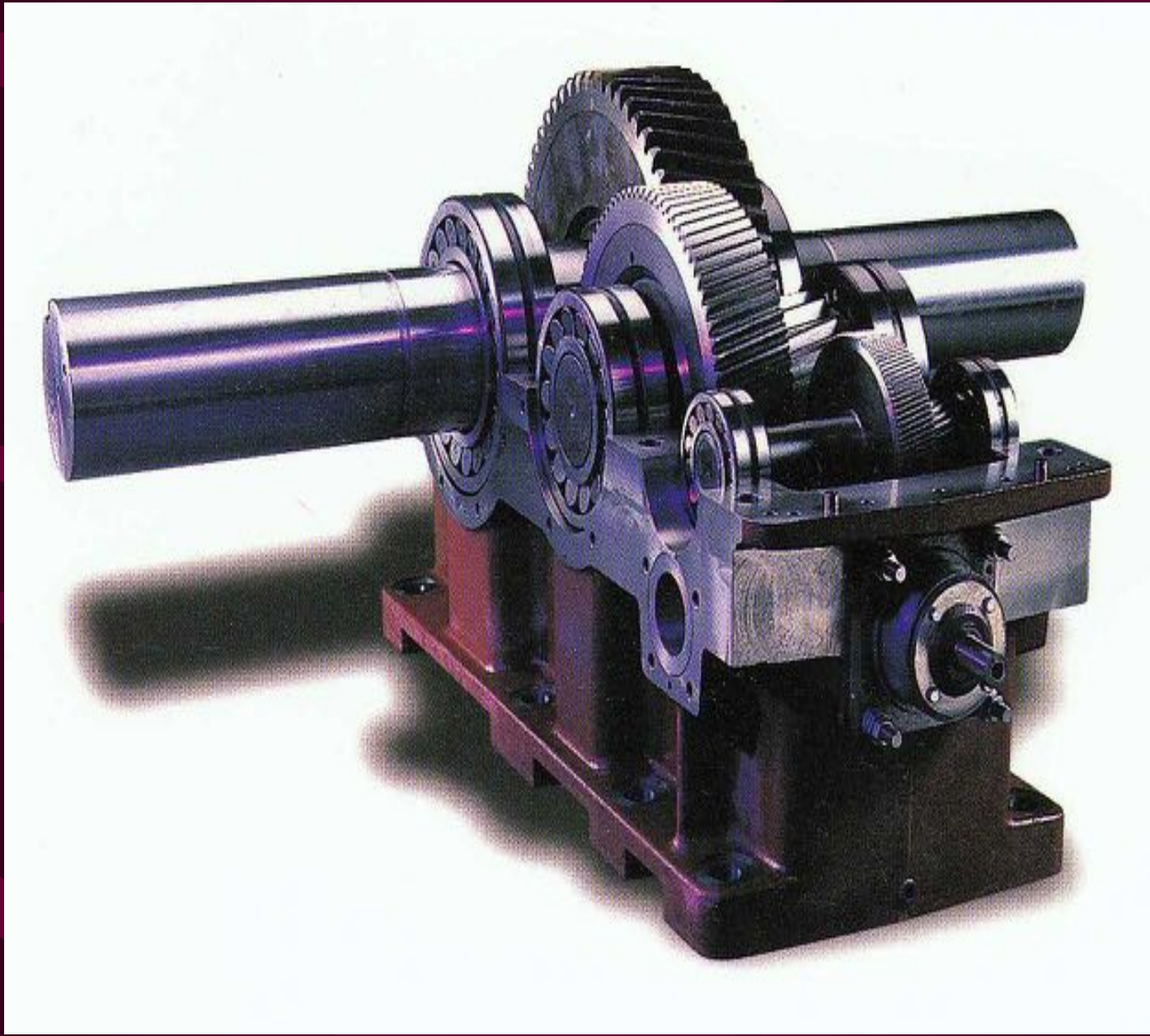
Filtering Elements

Non-clogging design; does not require washwater (5 mins per day).



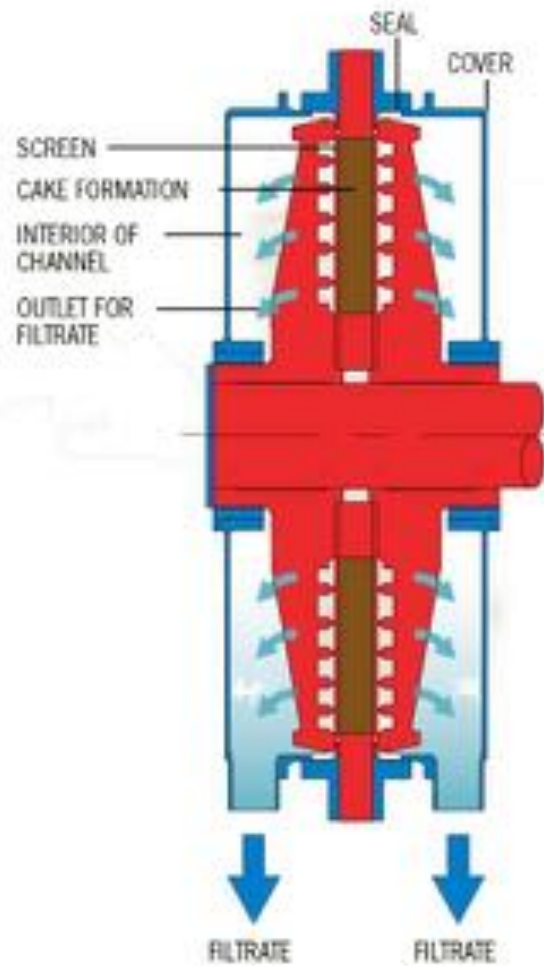
Inspection



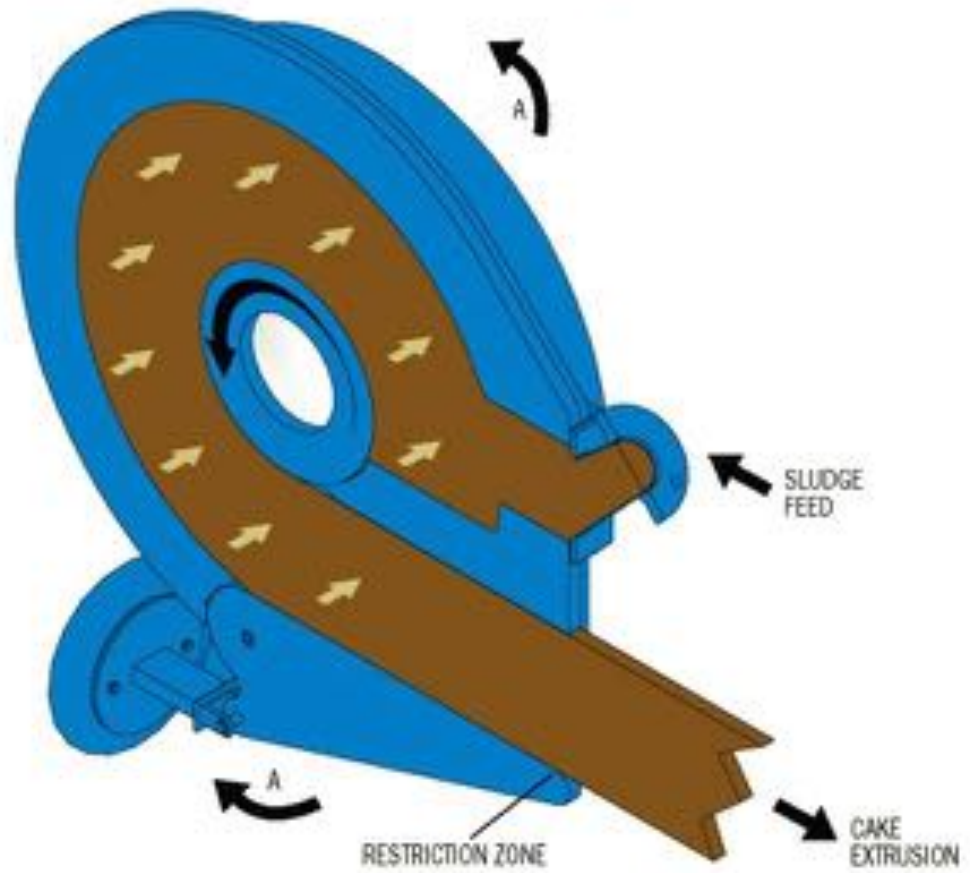




Principle of operation



- SLUDGE
- STATIC MECHANICAL COMPONENT
- ROTATING MECHANICAL COMPONENT
- DEWATERING SLUDGE (CAKE)
- FILTRATE FLOW





Expandable Presses

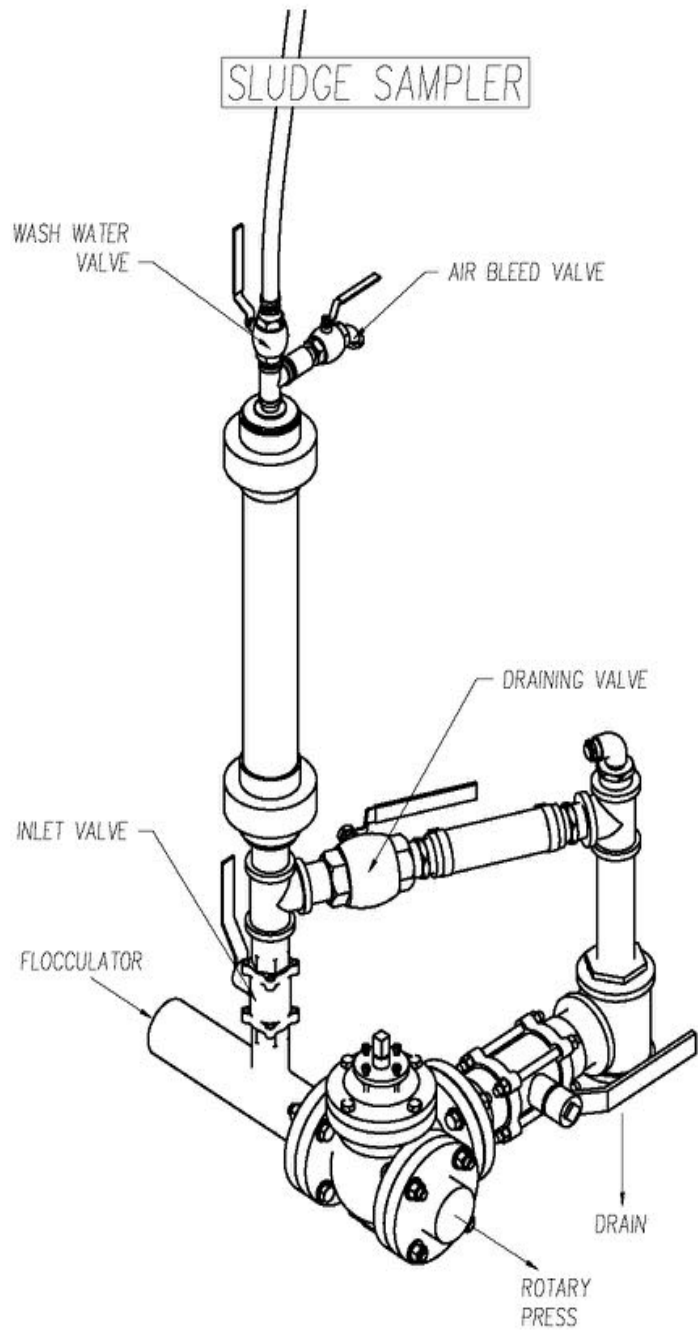


1 to 2-channel
expandable

4 to 6-channel expandable









Typical Results (Deschambeault, QC)

Data shown per one channel

Total solids Feed % TS (Average)	Percent of total %	Sludge Flow GPM	Cake production lbs/hr	Cake dryness %	Capture Rate % SS	Number of samples
0.1 # TS < 1.0% (0.46)	35	59	123	40.5	90.6	36
1.0 # TS < 2.0% (1.05)	51	55	262	40.2	91.0	56
TS ≥ 2.0% (3.98)	14	59	1067	38.9	91.1	15

Typical Results (Deschambeault, QC)

BOD₅ and COD Results

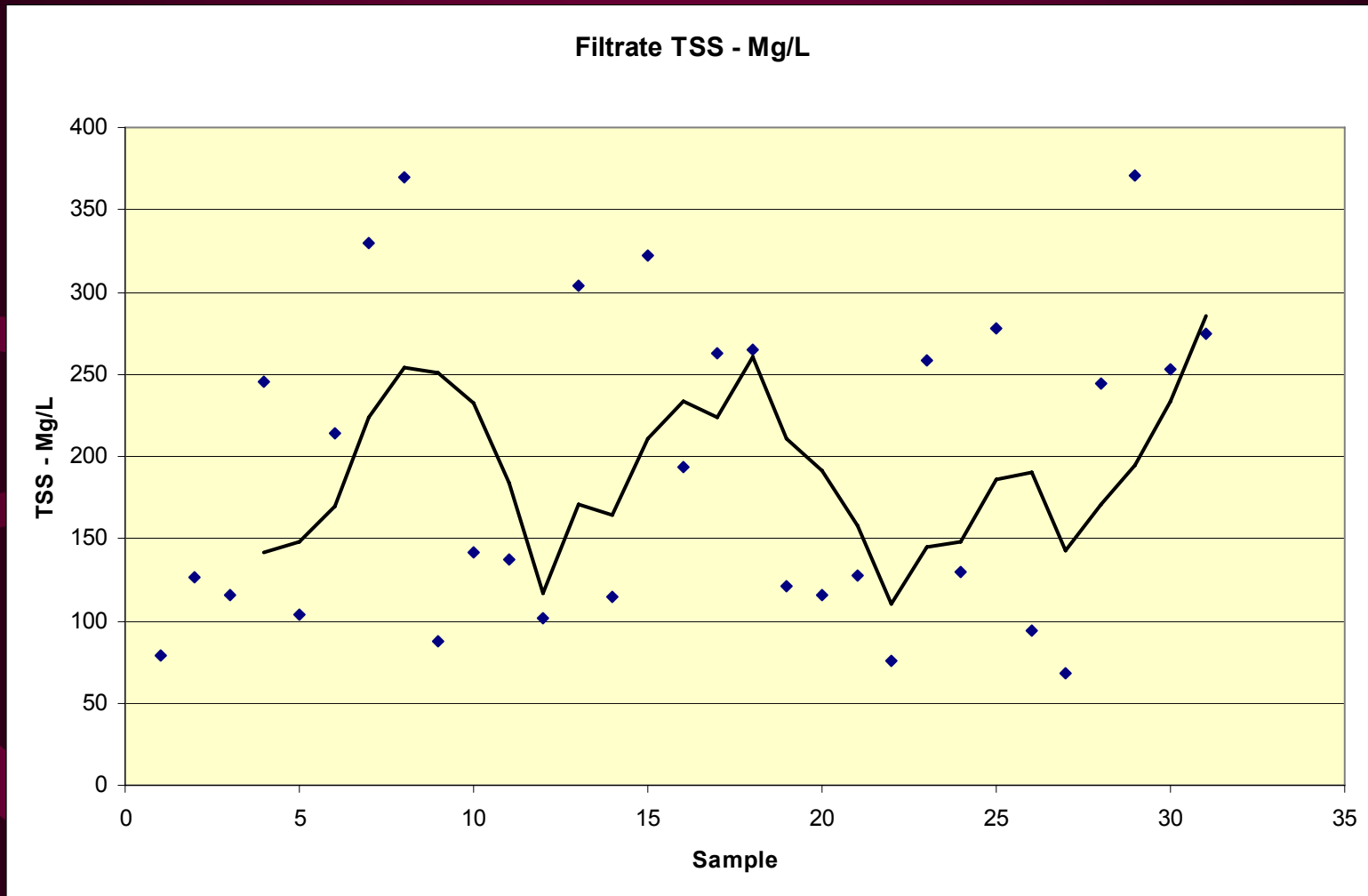
Sample	Total Solids %	BOD ₅ Raw sludge mg/liter	COD Raw sludge mg/liter	BOD ₅ Filtrate mg/liter	COD Filtrate mg/liter	Cake Solids %	Capture Rate %
1	2.16%	7903	23,467	989	1408	50%	98.3%
2	1.26%	6523	17,280	918	2176	54.5%	96.7%
3	0.8%	5197	10,880	858	1484	45.3%	92.4%
4	1.58%	8827	17,621	867	1856	50%	96.8%
5	0.79%	4566	10,432	391	1216	24%	97.6%
Mean results	1.31%	6503	15,936	804	1628	44.76%	96.4%

Typical Results (Deschambeault, QC)

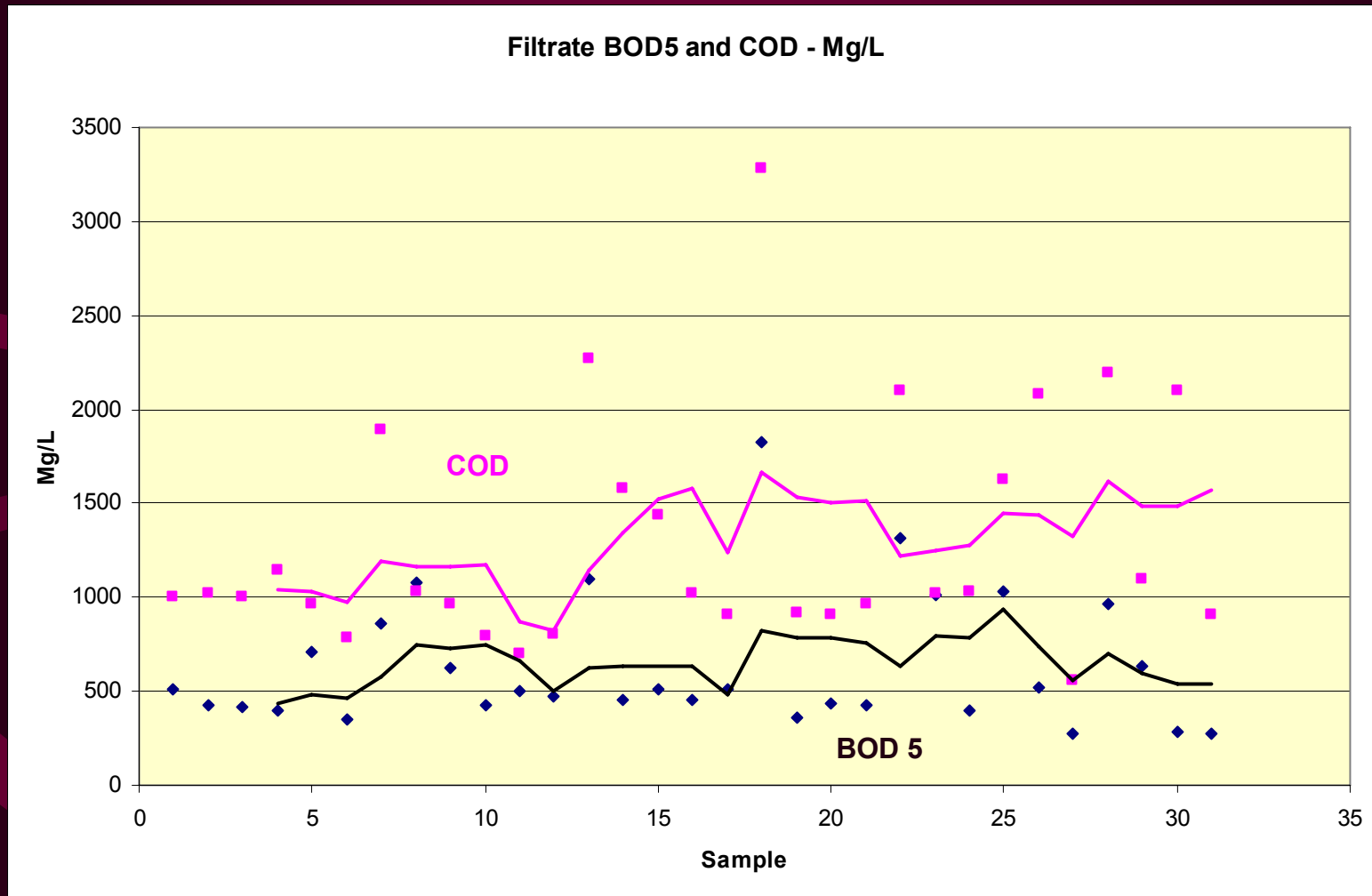
Mean results of chemical analysis

Element	Raw Sludge mg/kg (PPM)	Filtrate mg/kg (PPM)	Cake mg/kg (PPM)
K (Potassium)	85.5	58.9	349.2
Ni (Nickel)	0.3	Not detected	10.9
Cu (Copper)	5.2	0.12	152
Zn (Zinc)	12.3	0.3	326.4
P (Phosphorus)	71.5	36.8	1136.9
Pb (Lead)	2.58	Not detected	55.34
Cd (Cadmium)	0.12	Not detected	2.26
Total nitrogen	460	240	7480
Ammoniacal nitrogen	320	220	1280

Typical Results (St. Joseph de Beauce, QC – 2001-2005)



Typical Results (St. Joseph de Beauce, QC – 2001-2005)



What are the costs?

		Septago & Grosse	
To attain 20,000 gal/day		Two (2) channel machines	
Cost per 1,000 Gal.	Capital cost	17.32	17.32
	Financing cost	2.38	2.88
	Operator cost (assuming operator at \$12.00 per hour plus benefits, attending operation 2 hrs/day)	1.78	1.78
	Chemical (polymer) cost	3.93	5.22
	Power cost	0.08	0.11
	Maintenance cost for press	0.71	0.88
	Maintenance cost (other)	0.35	0.42
	Sub total	\$28.53	\$28.58

What are the costs?

Apart from the purchase cost, labor and consumables are the biggest component of the daily operation

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\$6.83 to \$8.12 / 1,000 gal



Rotary Press Installations Septage Sludge

City of Deschambault Septage Treatment Facility Deschambault, Quebec, Canada

- Process : Septage sludge
- Plant capacity : Flow 96 m³/d or 25 363 GD (8 hrs)
- Rotary Press : 1 unit model 1-1200/1250A
Commissioned 1993
- Performances :
 - Feed concentration 1-7 % (TS)
 - Throughput 3.8 t/d (8hrs)
 - Capture rate 95% (SS)
 - Cake dryness 35% (TS)
- Special feature : Complete dewatering system was supplied skid-mounted to "plug and start"



MUNICIPALITÉ DE ST-JOSEPH DE BEAUCE (QC)

- Process : Septage sludge
- Rotary Press : 1 unit
Model 1-1200/1500A
Commissioned : 2002
- Performances :
 - Feed sludge 3,3 % (TS)
 - Throughput 3,3 dry t/d (8hrs)
 - Capture rate 96 % (SS)
 - Cake dryness 30 % (TS)



CLEAN EARTH LTD

Saint John (NB)

- Process : Septage sludge
- Rotary Press : 1 unit
Model 1-1200/1500A
Commissioned : 2001
- Performances :
 - Feed sludge 4,8 % (TS)
 - Throughput 3,2 dry t/d (8hrs)
 - Capture rate 96 % (SS)
 - Cake dryness 25 % (TS)



Clean Earth

Fredericton (NB) Canada

- Process : Septage Sludge
- Rotary Press : 1 unit
Model 1 (2)-900/2000 CV
Supplied with conveyor system
Commissioned : 2005
- Performances :
 - Sludge Total Solid: 1 to 3 % (TS)
 - Throughput: 1,8 dry t/d/press (8hrs)
 - Cake dryness: 35 % (TS)
 - Capture rate: 98,5 % (TSS)



Bio-Waste Processing

Milford (IN) USA

- Process : 75% Septage Sludge, 25% grease trap waste and other trucked-in sludges
- Rotary Press : 1 unit
Model 2 (3)-900/3000 CV – expandable unit
Supplied with complete skid, polymer system, compressor and conveyor system
Commissioned : 2007
- Performances :
 - Feed concentration: 1 to 3 % (TS)
 - Throughput: 20,000 GPD (8hrs); 30,000 GPD – future expansion
 - Cake dryness: 35 % (TS)
 - Capture rate: 95 % (TSS)



Complete Skid – mounted and wired prior to shipment



Bio-Waste Processing Milford (IN) USA



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Bio-Waste Processing Milford (IN) USA



Hapchuk Hauling Services (Liquid Assets Disposal inc., Wheeling WV)

- Process : Septage & Grease Trap Waste
- Rotary Press : 1 Unit
Model 4(6)-900/6000CV
Commissioned: 2008
- Performances :
 - Feed concentration: 1-6 % (TS)
 - Throughput: 9,5 dry tons/day
 - Cake dryness: 34-47 % (TS)
 - Capture rate: 96-98 % (TSS)



Hapchuk Hauling Services (Liquid Assets Disposal inc., Wheeling WV)



ATP Dewatering Palmetto (FL)

- Process : Various (mobile dewatering)
- Rotary Press : 1 unit
Model 2-900/2000CV
Commissioned : 2006
- Special Feature: Mobile unit, ISO-container mounted



ATP Dewatering Palmetto (FL)



ATP Dewatering Palmetto (FL)



ATP Dewatering Palmetto (FL)



MRC Vallée de la Gatineau Septage Treatment Facility Kazabazua, Quebec, Canada

- Process: Septage sludge
- **Plant capacity:**
Flow 82 m³/d (8 hrs)
- **Rotary Press: 1 unit**
Model 1(2)-1200/3000A
Commissioned in 2005
- **Performances :**
 - Feed concentration 2,7 % (TS)
 - Throughput: 2,2 t/d (8 hrs)
 - Capture rate: 98,8 % (SS)
 - Cake dryness: 43,7 % (TS)
- **Special feature:**
 - Dewatering system
 - Biosolid composting



Services Sanitaires G. Campbell inc.

Cowansville (Quebec) Canada

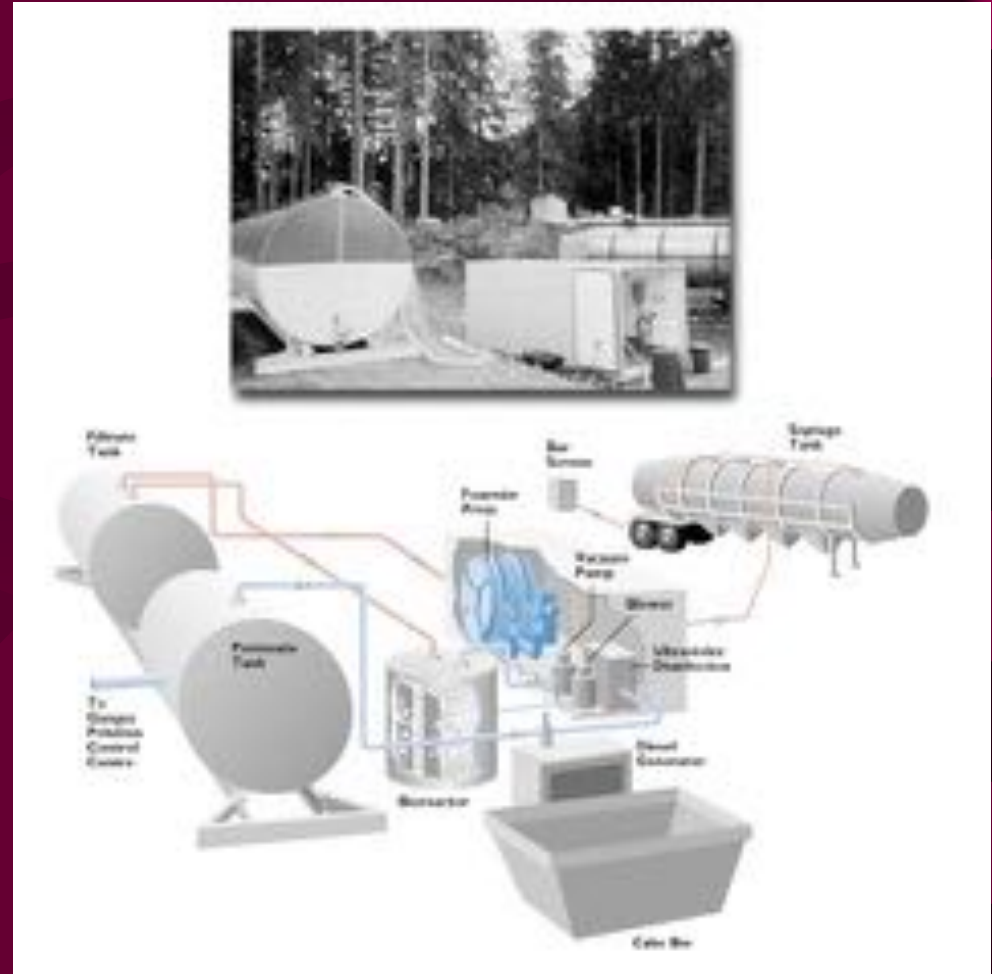
- Process:
Septage sludge
- Rotary Press: 1 unit
Model 2-1200/3000A
supplied with conveyor system
Commissioned: 2006
- Performances :
 - Sludge total solid: 2% (TS)
 - Throughput: 3.3 dry t/d/press (8hrs)
 - Capture rate: 92% (TSS)
 - Cake dryness: 43% (TS)



Bourgoyne's Bay WWTP

CRD – Saltspring Island, BC, Canada

- Process : Septage and WAS
- Plant capacity : 4 000 people
flow 5,500 m³/yr or 0,48 MGD
- Rotary Press : 1 unit model
1(2)-1200/2000A
commissioned 1997
- Performances :
 - Feed concentration 2% (TS)
 - Throughput 35 GPM
 - Capture rate : 96% (SS)
 - Cake dryness 28% (TS)
- Special feature : Rotary press
feeding a composting facility
with filtrate polishing by MBR



Campor inc. - Site 1

Riviere-du-Loup, Quebec, Canada

- Process: Septage sludge
- Rotary Press : (1) Unit
Model 3-900/3000CV
Commissioned: October 2008
- Performances :
 - Feed concentration : 1,5 % (TS)
 - Throughput: 3,2 t sèches / j (8 hrs)
 - Cake dryness : 32 % (TS)
 - Capture rate : 97 % (TSS)



[Return to Septage sludge installation](#)

Services Sanitaires Gerard Fortin (Quebec)

- Process: Septage sludge
- Rotary Press : 1 Unit
Model 2-900/2000CV
Commissioned: October 2008
- Performances :
 - Feed concentration: 5,0 % (TS)
 - Production: 4,0 dry tons/day (8 hrs)
 - Cake dryness: 25 % (TS)
 - Capture rate: 95 % (TSS)



[Return to Septage sludge installation](#)

Depot Rive-Nord (EBI), Quebec

- Process: Septic sludge
- Rotary Press : (2) Units
Model 3-900/3000CV
Commissioned: June 2009
- Performances :
 - Feed concentration : 1,8 % (TS)
 - Throughput: 7,2 dry tons/day (8 hrs)
 - Cake dryness : 32 % (TS)
 - Capture rate : 97 % (TSS)



[Return to Septage sludge installation](#)

Campor inc. - Site 2

Riviere-du-Loup, Quebec, Canada

- Process: Septage sludge
- Rotary Press : (1) Unit
Model 3-900/3000CV
Commissioned: June 2009
- Performances : (To follow after June 2009)
 - Feed concentration : 2 % (TS)
 - Throughput: 3 dry tons/day (8 hrs)
 - Cake dryness : 32 % (TS)
 - Capture rate : 97 % (TSS)



Super Soil Systems Clinton, NC

- Process: Pig manure
- Plant capacity: 20,000 GPD
- Rotary Press: 1 unit
Model 2-900/2000CV
Commissioned: 2006
- Performances :
 - Feed concentration: 2 % (TS)
 - Throughput: 50 GPM
 - Cake dryness: 28 % (TS)
 - Capture rate: 95 % (SS)
- Special feature: Trailer mounted unit



Questions?

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