

Composting at 4,000 Feet

Presented by:

Pat Miller, EOCP III Operator and Compost Operator I
Sun Peaks Mountain Resort Municipality



Dr. Joanne Quarmby, R.P.Bio.
Urban Systems Ltd.

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Presenters Background

Pat Miller

Manager, Public Works

(soon to be retired)

**Sun Peaks Mountain Resort
Municipality**

EOCP Level III Operator

Compost Operator Level I

Gas Utility Technician

Dr. Joanne Quarmby, R.P.Bio.

Wastewater & Water Specialist

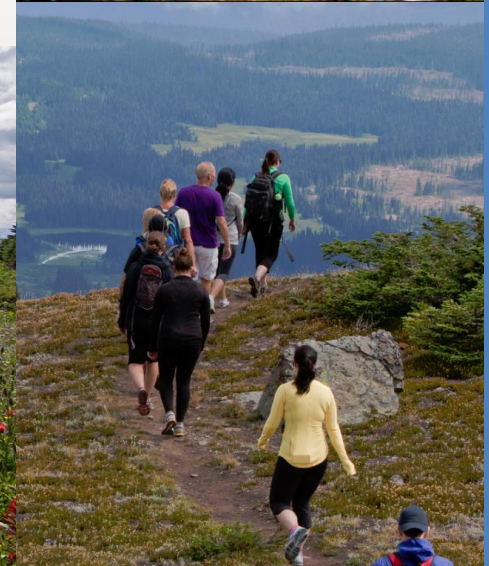
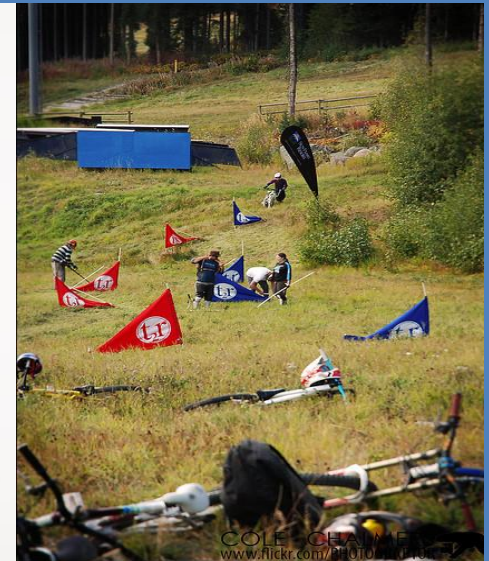
(a long way from retirement)

Urban Systems Ltd.

Consulting Engineer Firm

Case Study – Sun Peaks Approach to Managing Organic Wastes

- Solid waste management through regional district
- Main issue – biosolids management
- Next issue – food waste



Biosolids

- Consist mainly of water
- Biologically active
- They contain the good, the bad and the ugly: nutrients, metals, plastics, pharmaceuticals
- They are not faeces but can contain gut micro-organisms

A Word About Pharmaceuticals

- Just one of the endocrine disrupting family
- Present in wastewater – through disposal and excretion
- Have different characteristics – some like liquid and some like solid
- **Found in very low concentrations**
- Testing challenges
- Biodegradation during wastewater treatment, sludge treatment and in soils

Biosolids

- Strict management and control in place
– not always the case for organic products
- Federal Biosolids Strategy
- BC Organic Matter Recycling Regulation (OMRR)



Organic Matter Recycling Regulation

Treatment	Purpose
Reduce pathogens	Reduce risks to human health
Reduce biological activity	Reduce nuisance conditions – odour, attraction of pests



Biosolids – Perception is not reality!

- Perception – nasty, dirty, smelly & disease causing
- Confusion with sludge
- Bad perception through fear, misunderstanding and mishandling
- There are health risks
- Valuable – nutrient source



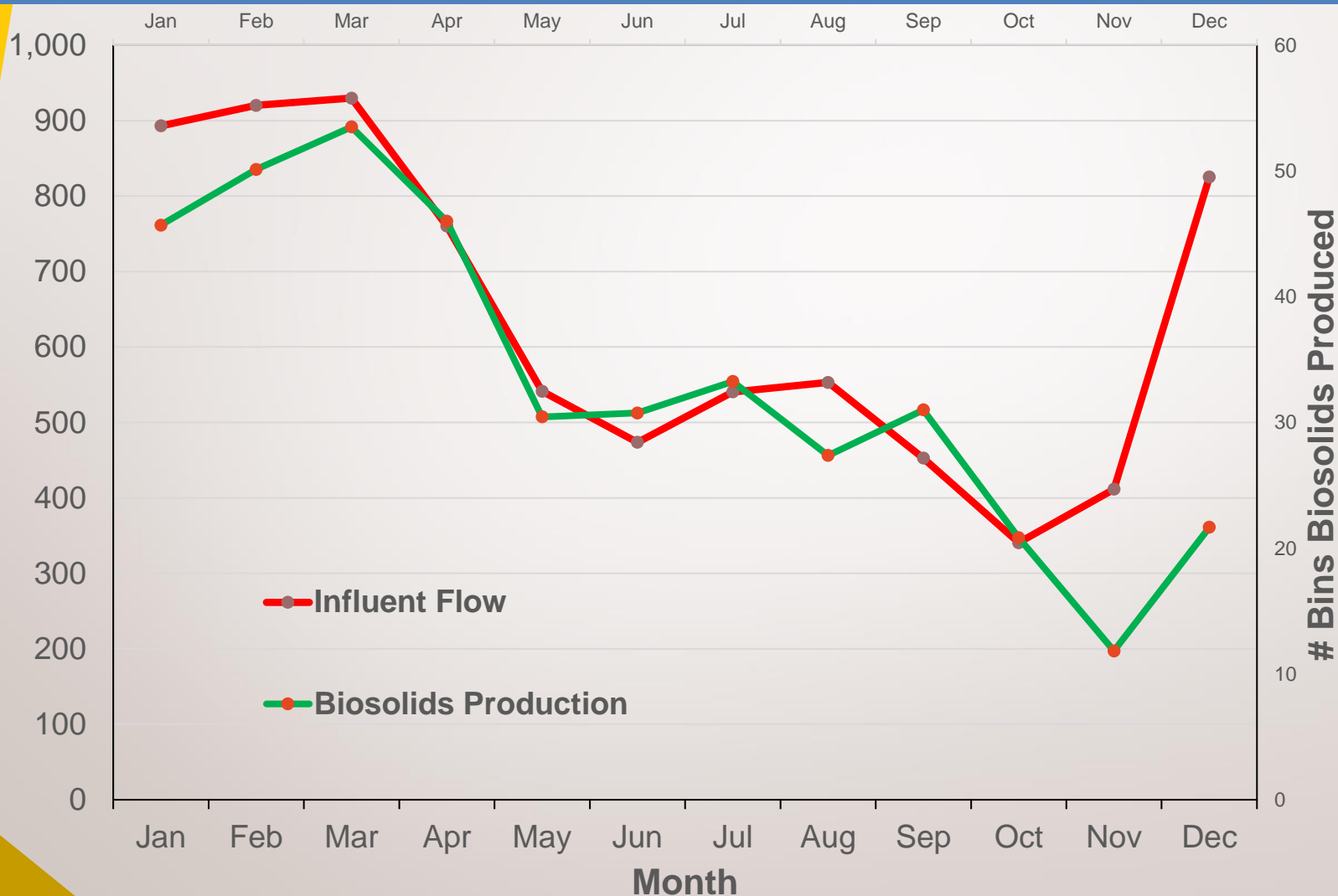
Life in the Real World



Challenges and Issues

- Main organic production is during winter months
- Resort elevation starts at 4,000 feet
- High snow fall conditions
- Cold winter temperatures
- Space constraints increase even more with snow!
- Relatively small size of the operation

Influent Flows and Biosolids Production



Finding Creative Solutions

- Land Application Re-Use
- On-Site Processing
- Off-Site Processing
- Landfill Disposal
- Landfill Re-Use
- Gasification & Incineration
- Many Other Options

Compost Pilot Trials



**Access to Site During
Summer**



**Static Pile Several Years
Later**



**Trial Static Compost
Pile Exposed**

Compost Pilot Trials



Snow in the Winter



Site During Spring Melt

Making Trial a Reality

List of Things to do . . .

- Buildings and Composting Infrastructure
- New hydro service was required / Control System, containers and conveyors
- Mixing Equipment / Loading Equipment
- Wood Chips / Odour Control



The Process Building



The Process Building



The Process Building



Compost Containers



CONTAINERIZED COMPOST SYSTEM

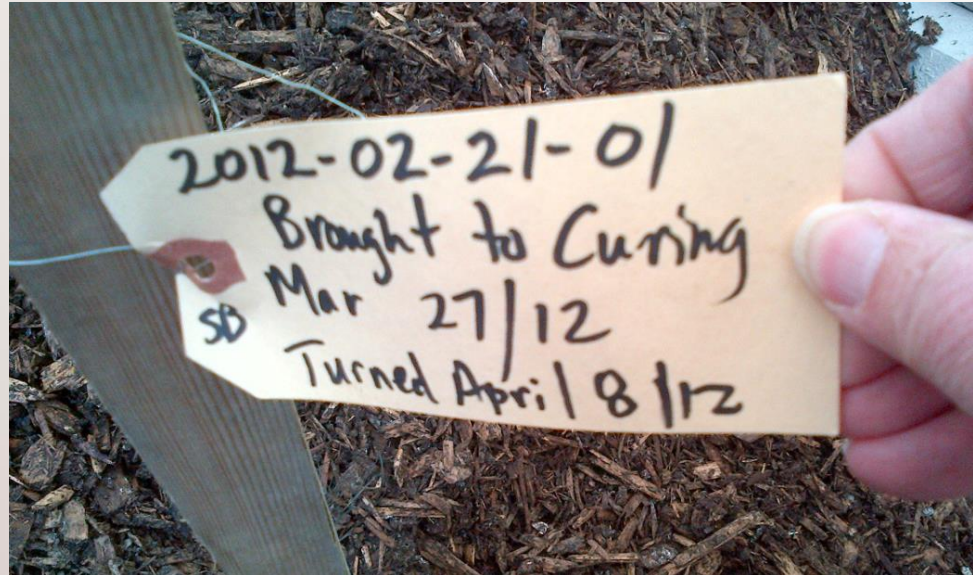
Odour Control



The Curing Building



Curing



Available for Community Pickup



The Trials and Tribulations

- Site constraints with increasing snowpack
- Storage and access to woodchips – the risk of woodchips and snow blend!
- Reaching and maintaining temperatures for pathogen and vector attraction reduction
- Getting the blend right to match the bio-solids being produced
- Relying on others to move the containers

The Times It Didn't Work

CompTainer #2

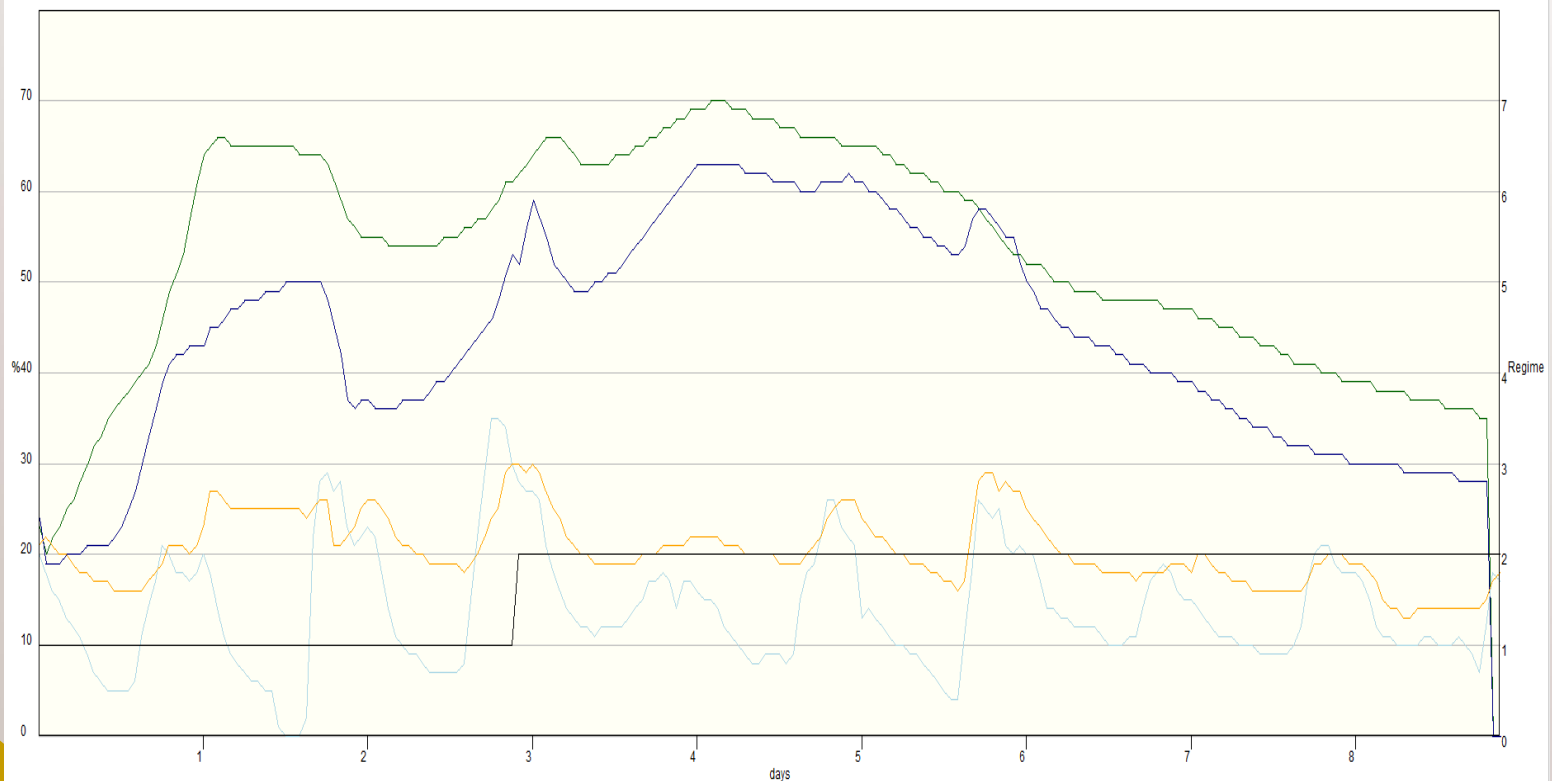
Batch Started: 6/03/14

Batch Finished: 6/12/14

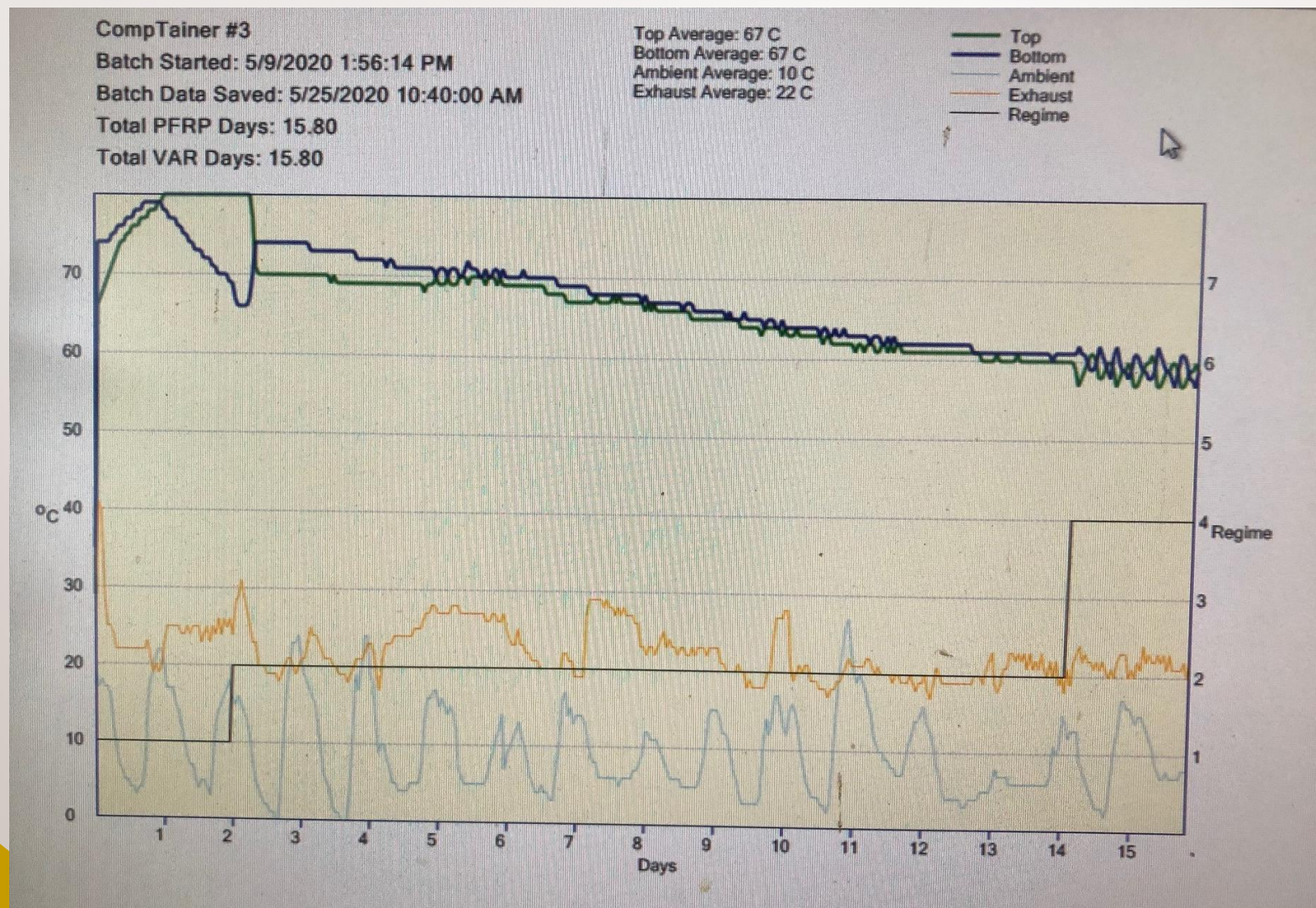
Total PFRP Days: 1.79

Total VAR Days: 5.42

Top	- Average: 53 C
Bottom	- Average: 43 C
Ambient	- Average: 14 C
Exhaust	- Average: 20 C
Regime	



The Times It Worked



The Triumphs



- Achieving a Class A Compost regardless of time of year
- Purchase of a roll-on-roll-off truck
- The building to cover the woodchips
- Model Site for how to compost bio-solids with no impact to the community or visitors

The History

2012 – Initial Project – \$650K

- Process Building c/w
3 loading bays / 4 process control points
4 curing bays
- Curing Building
Storage Area good for about a year

2017 – 1 more Container added – \$75K

2019 – Built a storage building – \$25K

- To keep wood chips dry

2020 – Expansion to a satellite system – \$300K

- 2 to 4 Containers
- Control System & Blower (for air management)

The Stats

Operational costs for 2018

\$100,000

- Breakdown:
- Labour \$47,500
- Hydro \$ 8,200
- Woodchips, etc. delivery \$30,700
- Screening \$ 8,800
- Repairs \$ 3,400
- Temperature probe replacement \$ 3,250

Cost recovery = \$0

The Process

- 15 to 16 days in a container for high temperature phase
- Curing time around 15 days
- Each container can process approximately 5 m³ of dewatered biosolids
- Annual biosolids production approximately 400 m³ dewatered
- Annual woodchip use:
 - Estimated to be 1,200 m³, with annual purchase and delivery cost approx. \$15,000 to \$30,000
- Mix woodchips to biosolids approx. 3:1
- Annual compost production.....

The Results



The Biggest Challenge Miss-information!!!



Come See For Yourself



Tours are available!

Questions?

Pat Miller, Manager, Public Works

Class III WWT / WWC Operator / Compost Operator

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Biosolids compost