Implementing composting toilets in BC and worldwide

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Content

- We can do better than the Porcelain Dream™ (i.e. waterborne sewerage and centralized treatment)
- Regulatory framework in BC for composting toilet
- Early adopters! Installing a composting toilet at UVic!
- Opportunities for future research & implementation

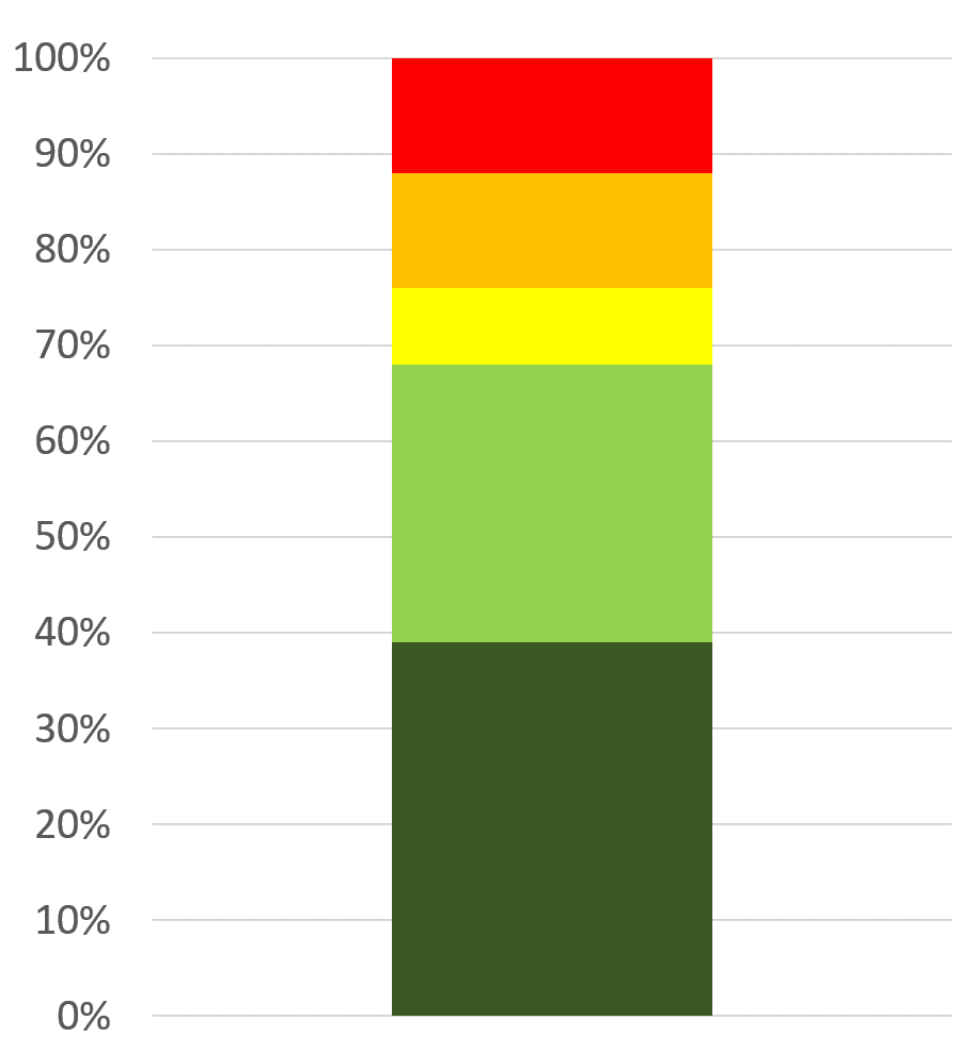
University of Victoria

Opportunities for implementation

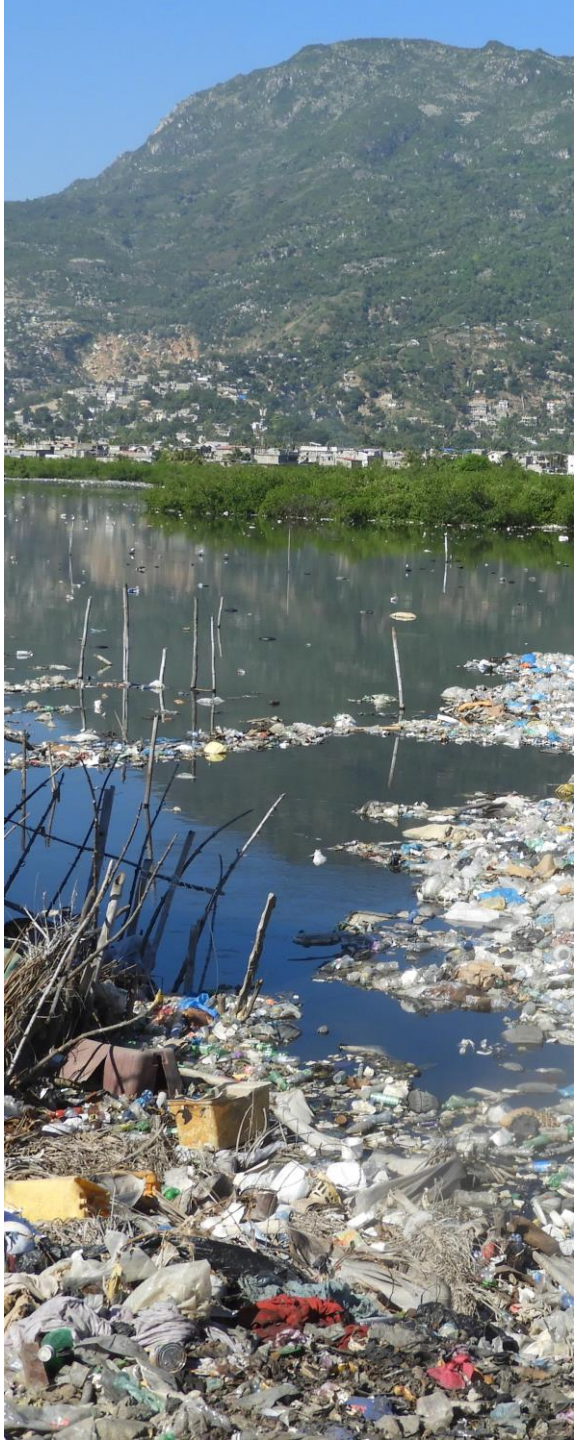
- New civil engineering building on the UVic campus!
- Retrofitting long-drop toilets
- Replacing long-term usage of port-a-potties
- To meet household on-site sanitation needs
- At festivals!?

ACUTE demand for sanitation & waste treatment services

More than 60% of human excreta enters the environment without treatment



Planetary crisis

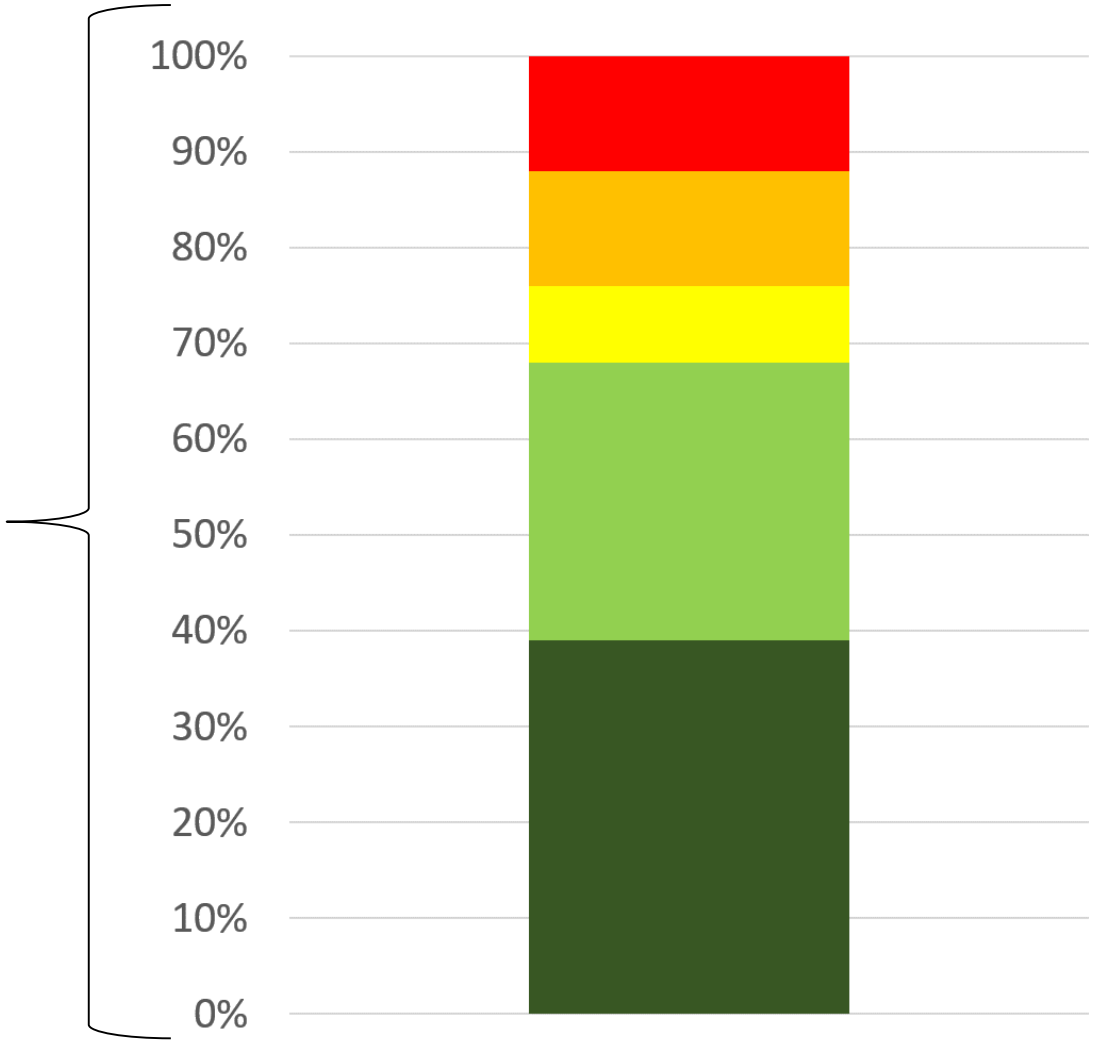


SOIL's Solution in Haiti

Planetary crisis

CHRONIC demand for sanitation & waste treatment services

Short- and long-term implications for ecosystem services

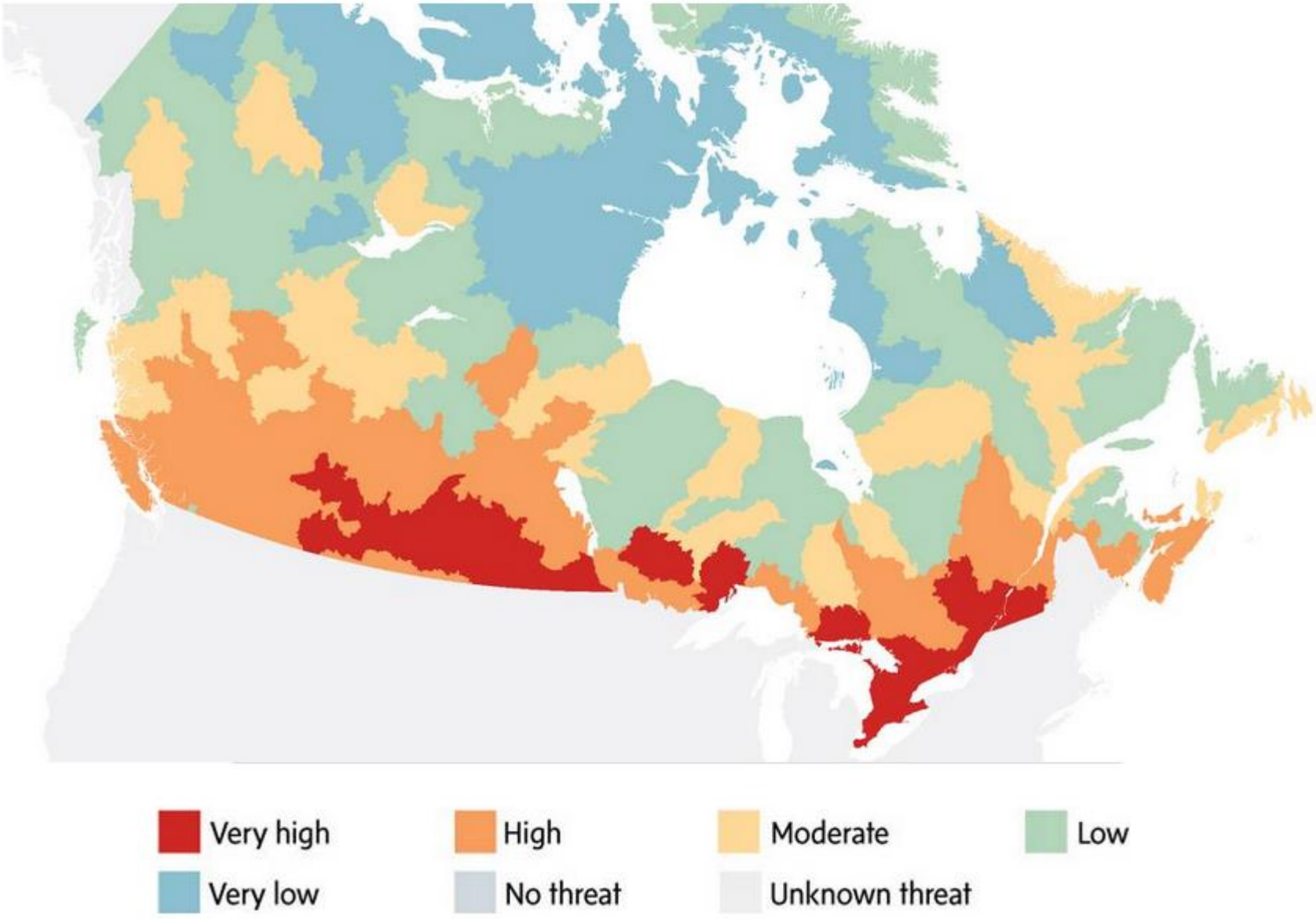


Planetary crisis

Depiction of the flow of nitrogen through the agricultural and sanitation cycles (in million ton nitrogen per year)

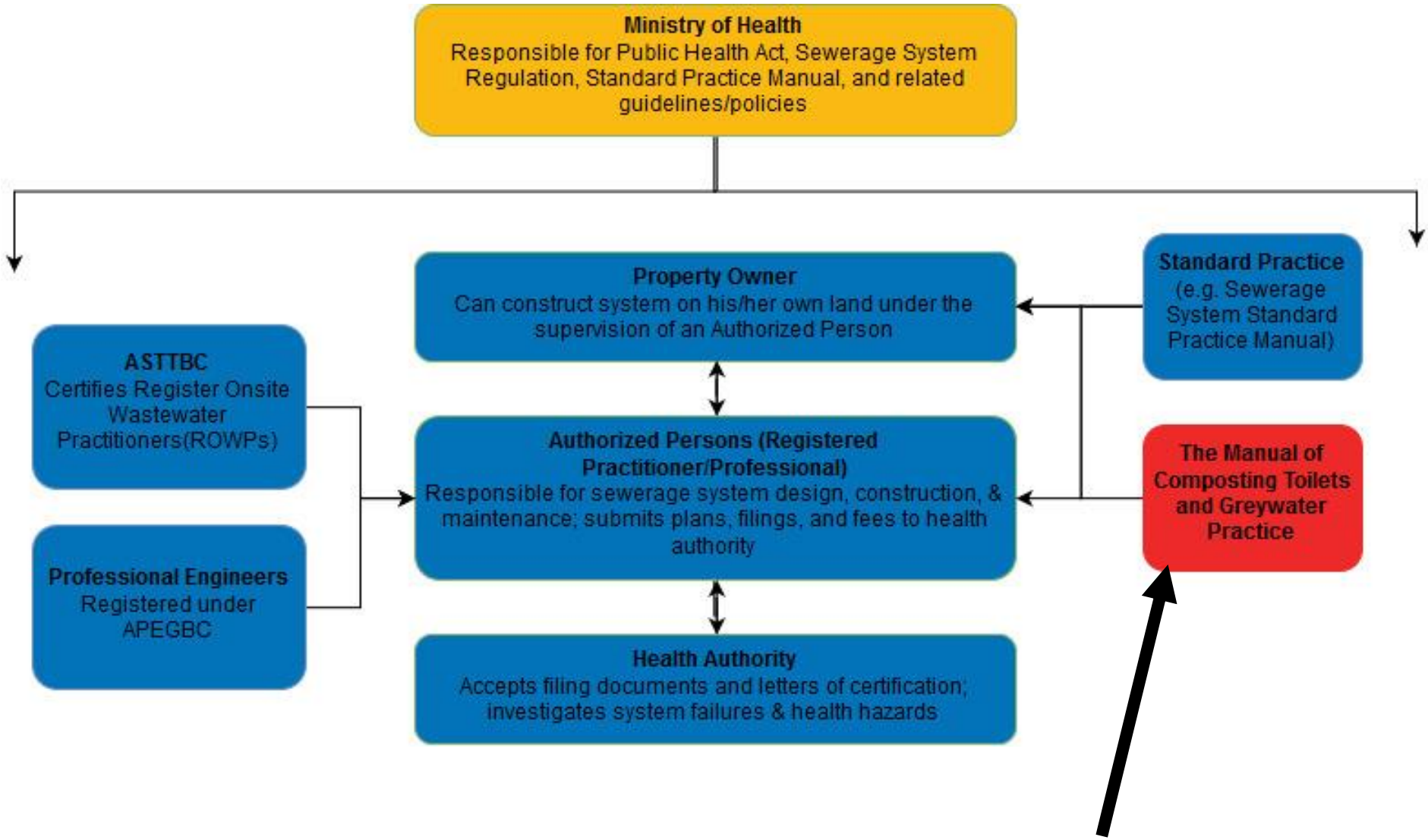
This is a **linear** approach to managing freshwater and nutrient resources

Risks to **Canada**'s freshwater ecosystems



Planetary crisis

The goal: **sustainable development =** meeting the needs of the present without compromising the ability of future generations



The Manual of Composting Toilets and Greywater Practice

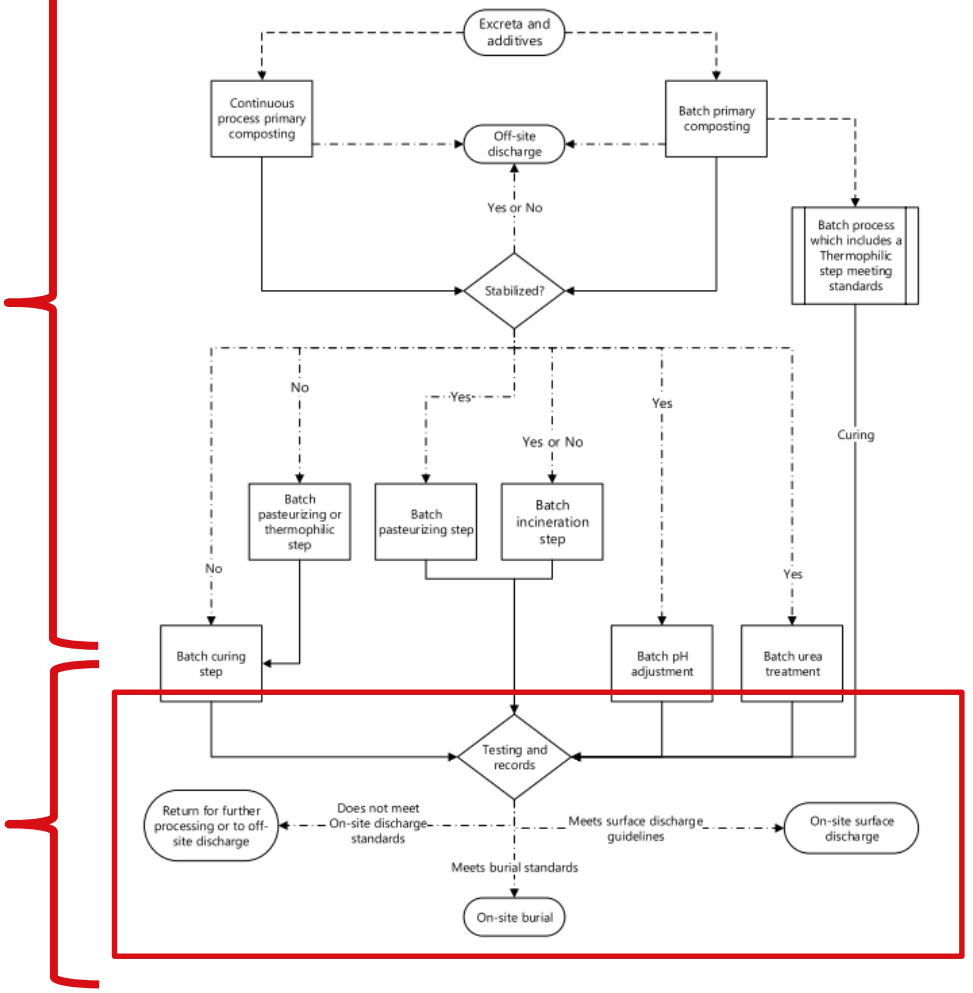
How does treatment happen and what do we do with the final "product?"

Treatment mechanism depends on composting toilet design:

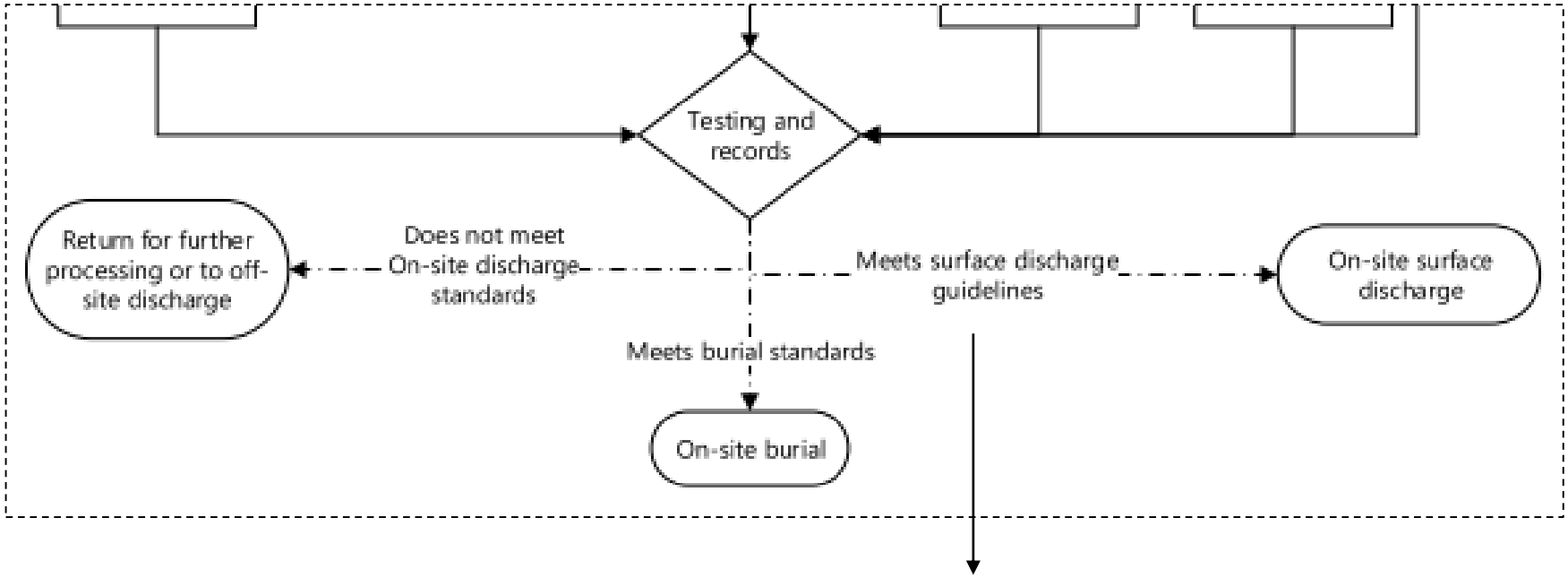
- High temperature
- High pH
- Dehydration
- Solar radiation

Three options for disposal: on-site surface discharge, on-site burial, and off-site discharge

Flow of excreta through composting toilet system

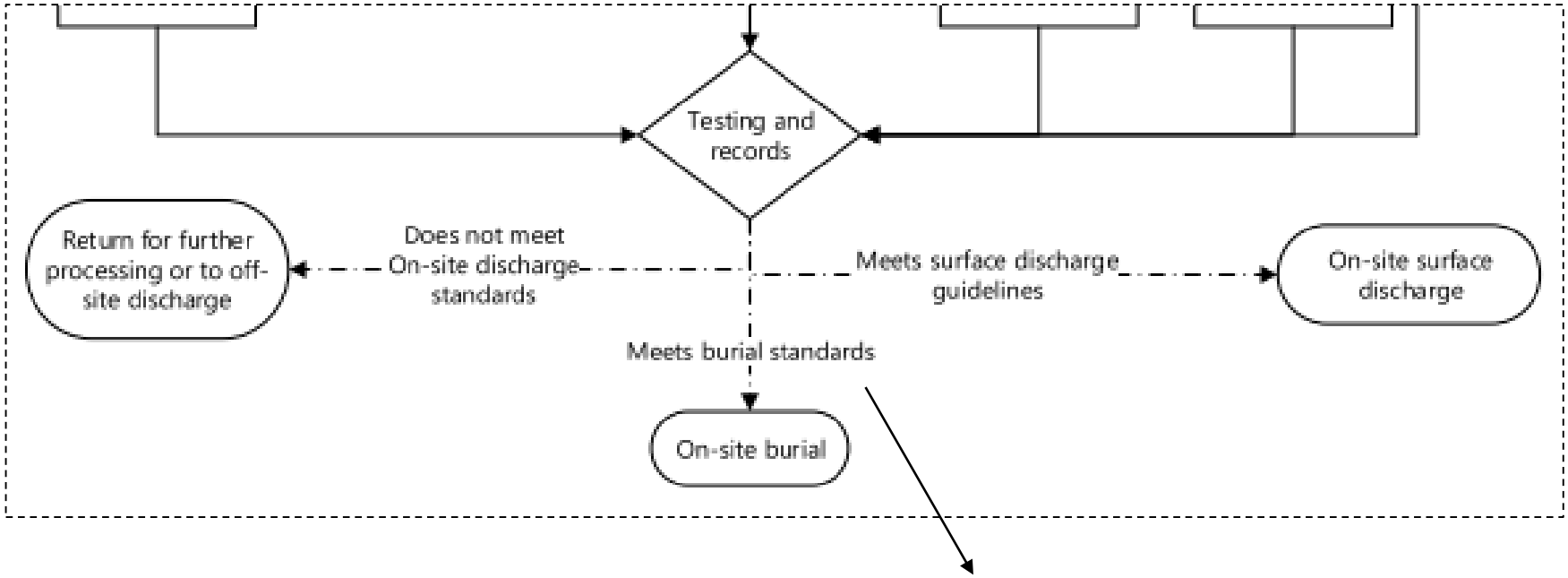


On-site surface discharge



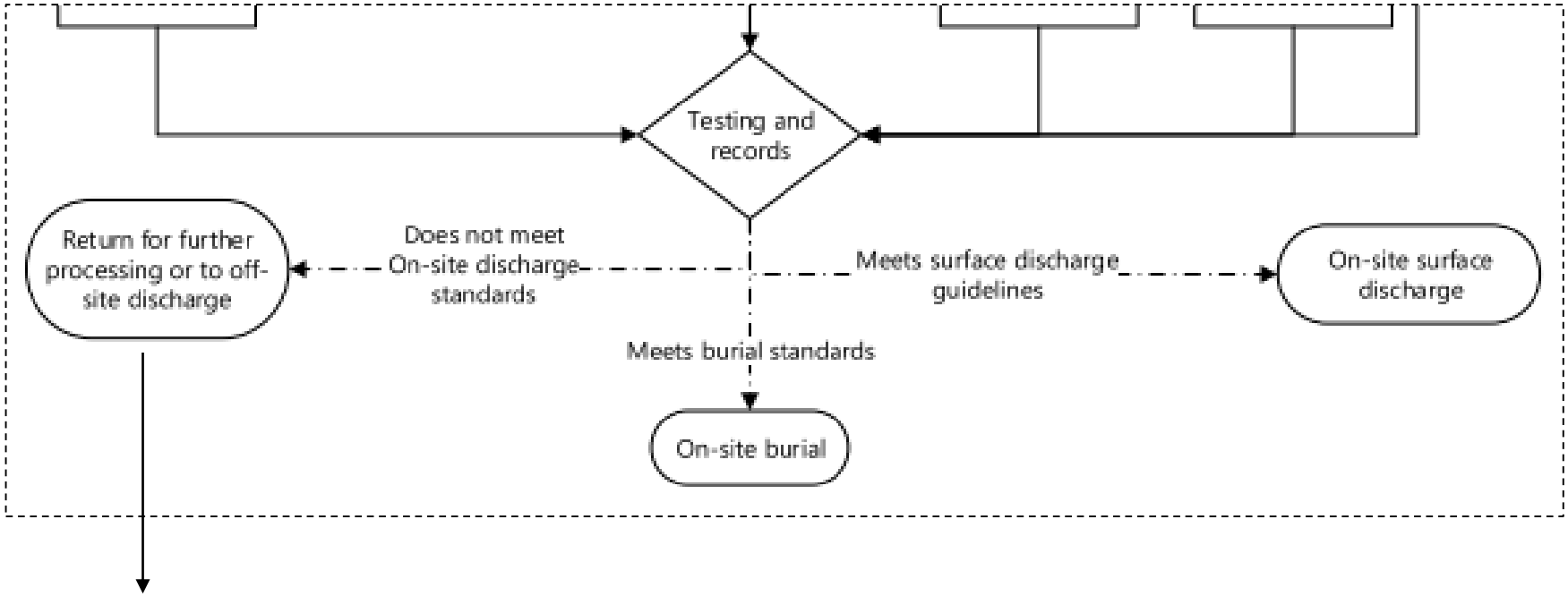
- Excreta from residential use only
- Homogenous
- Stability & maturity
- Metal levels
- Moisture content
- E. coli
- C:N ratio

On-site burial



- Homogenous
- Stability & maturity
- Moisture content

Off-site discharge



Sanitary landfill or approved composting facility (e.g. Hartland Landfill)

Multi-barrier approach to risk management

- Site & soil evaluation
- System maintenance plan developed

- Education for toilet users
- Training for toilet operators

- Ongoing temperature & moisture content monitoring

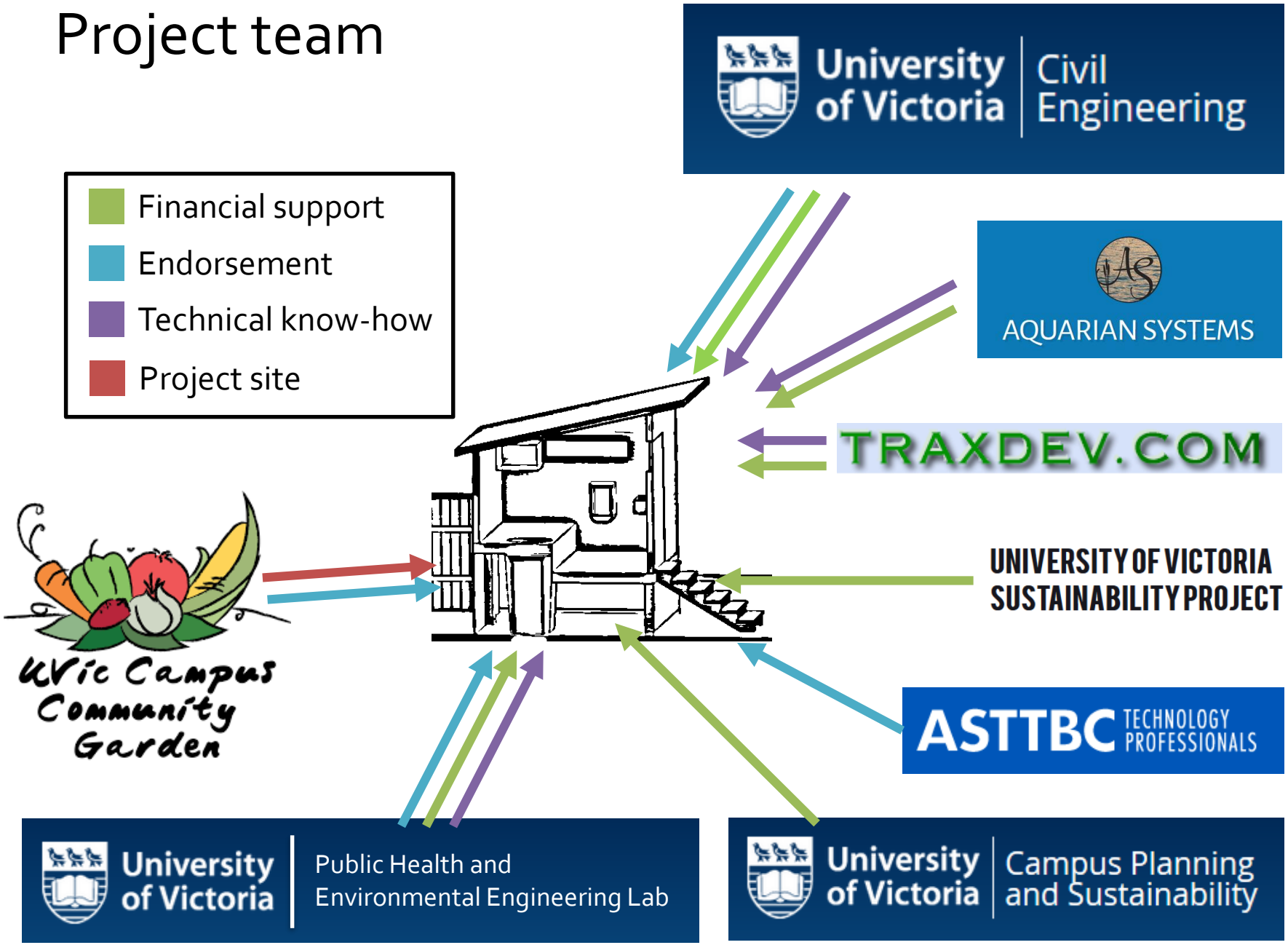
- Extensive evaluation of material

- Discharge supervised by AP
- Complies with standards for hygiene & safety
- Discharge option depends on evaluation of material

University of Victoria Campus Community Garden

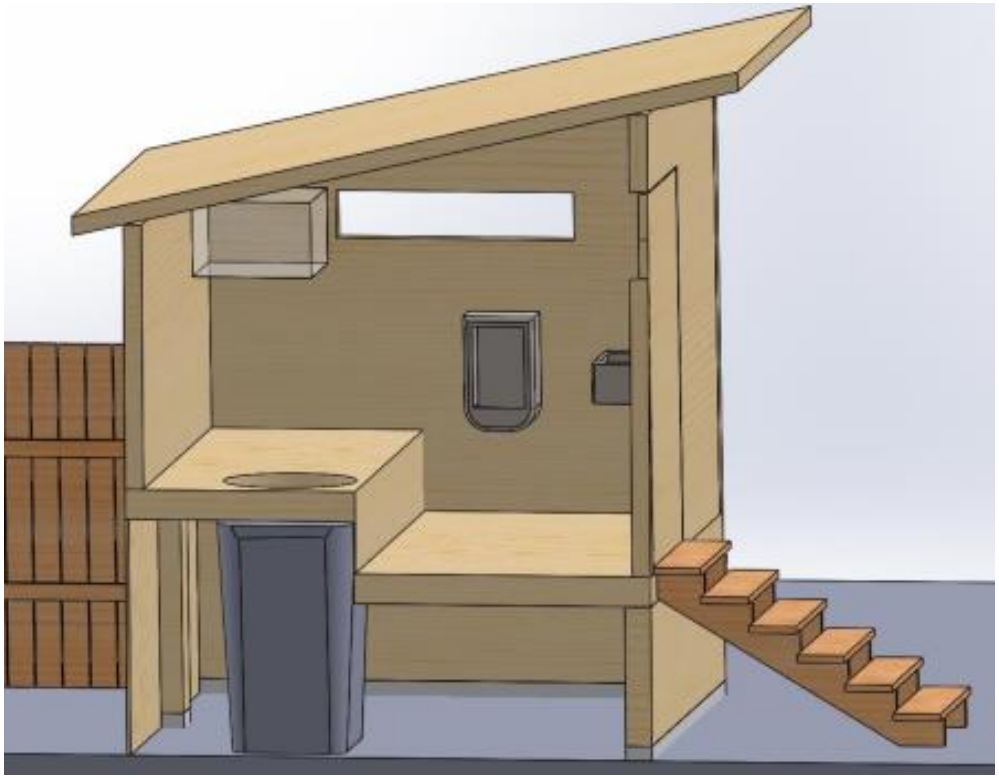
Local action

Project team

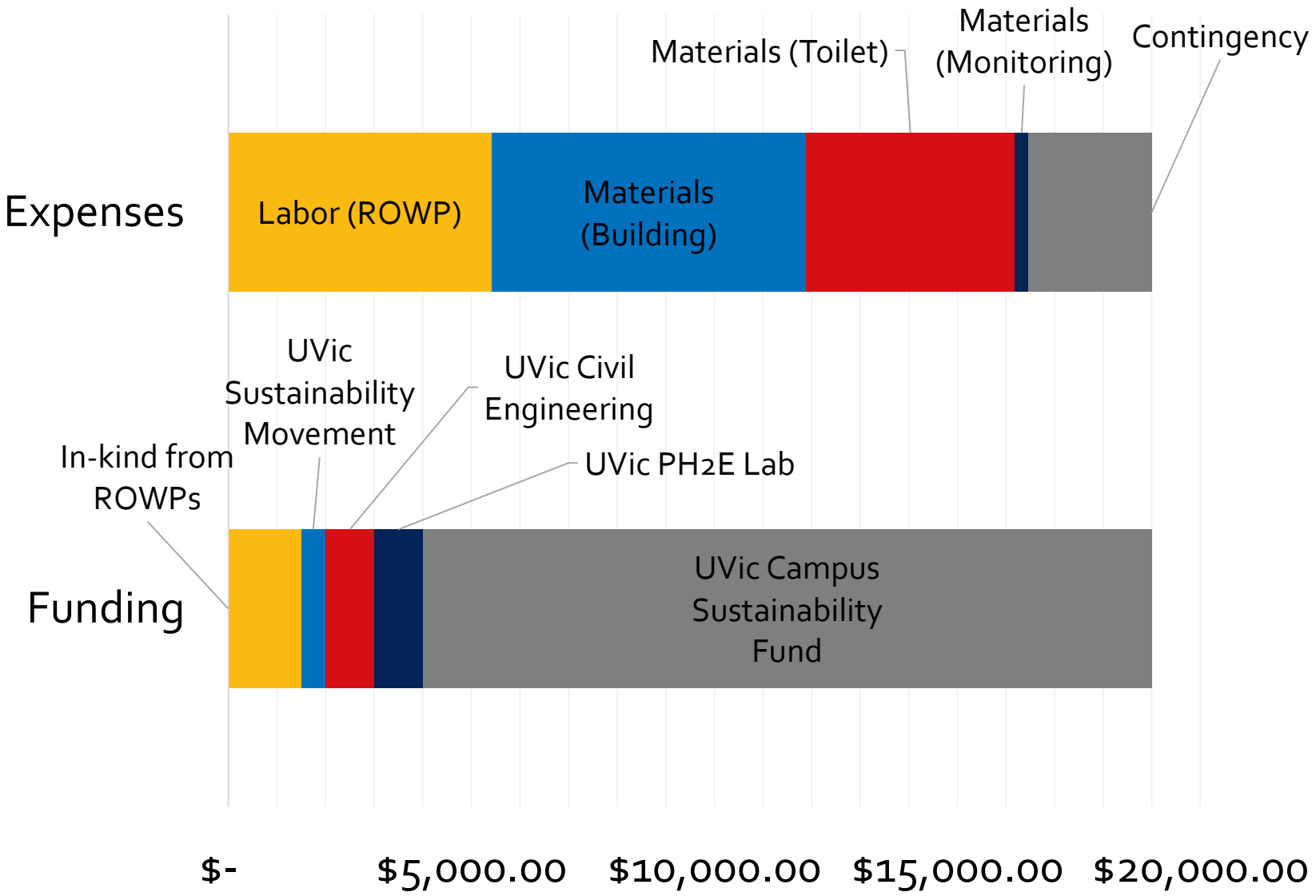


Local action

General design: urine-diversion with slow composting batch system



Budget Summary



Local action

Lessons learned

Technical

- Steps vs. ramp
- Multi-barrier risk management
- Certification schemes?
- Tech vs. maintenance

Regulatory

- Siting requirements
- Lack of familiarity with The Manual
- Gap between BC Building Code & the Manual

UVic-Specific

- De-stigmatization

What comes next

What comes next

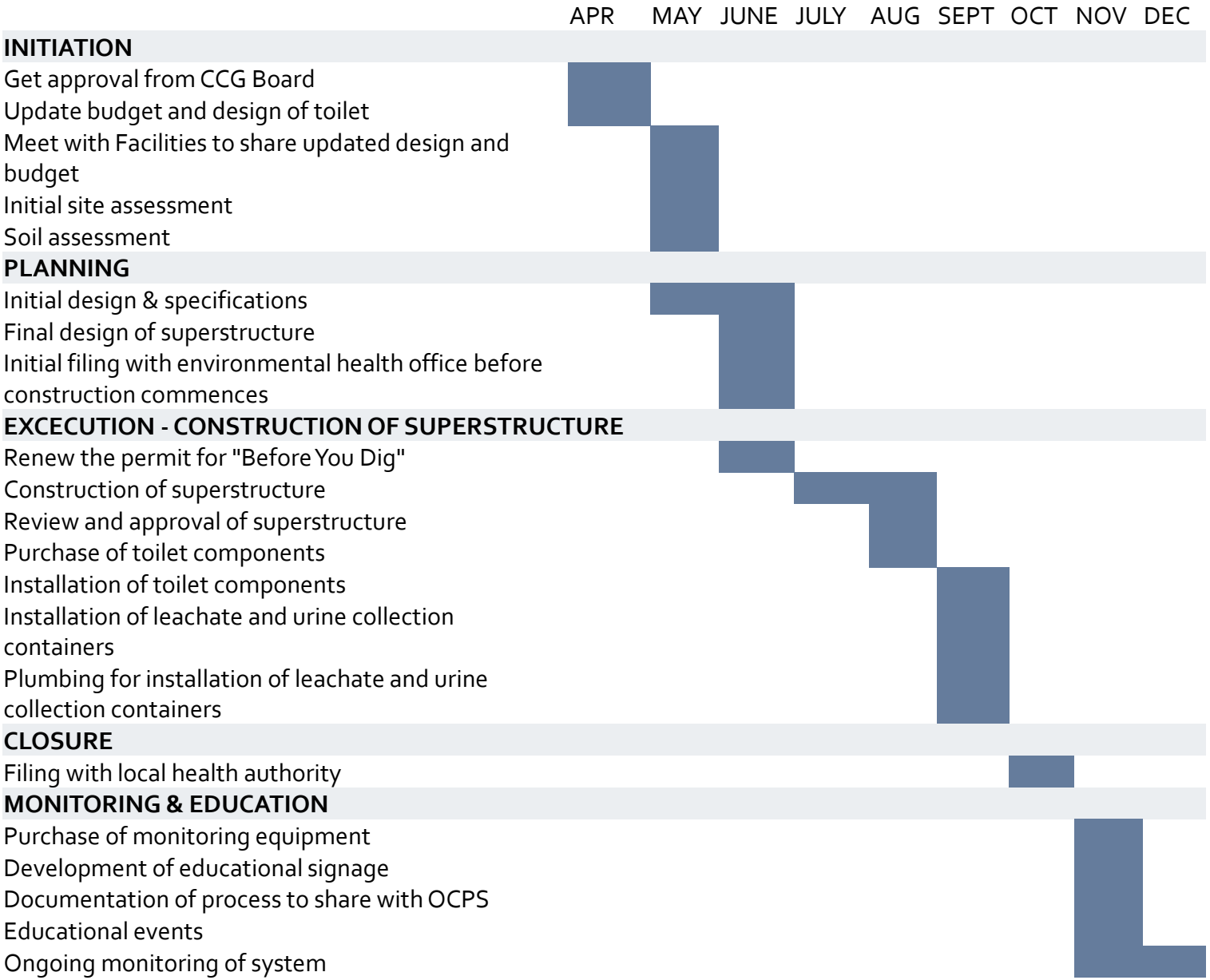
Opportunities for future learning and research

- Institutional learning around composting toilet installation and maintenance
- Research opportunities with PH2E Lab and other groups on-campus:
- Training site for APs in collaboration with ASTTBC

Special thanks to

- Stephanie Enevoldsen, Coordinator at the UVic Campus Community Garden
- Geoff Burton, Structures Technician in the UVic Civil Engineering Department
- Vincent Burkholder, Site Staff at the Campus Community Garden
- Brandy Gallagher, Founder and Executive Director of O.U.R. Ecovillage
- Ann and Gord Baird, Co-founders of Eco-Sense

Implementation timeline



Local action

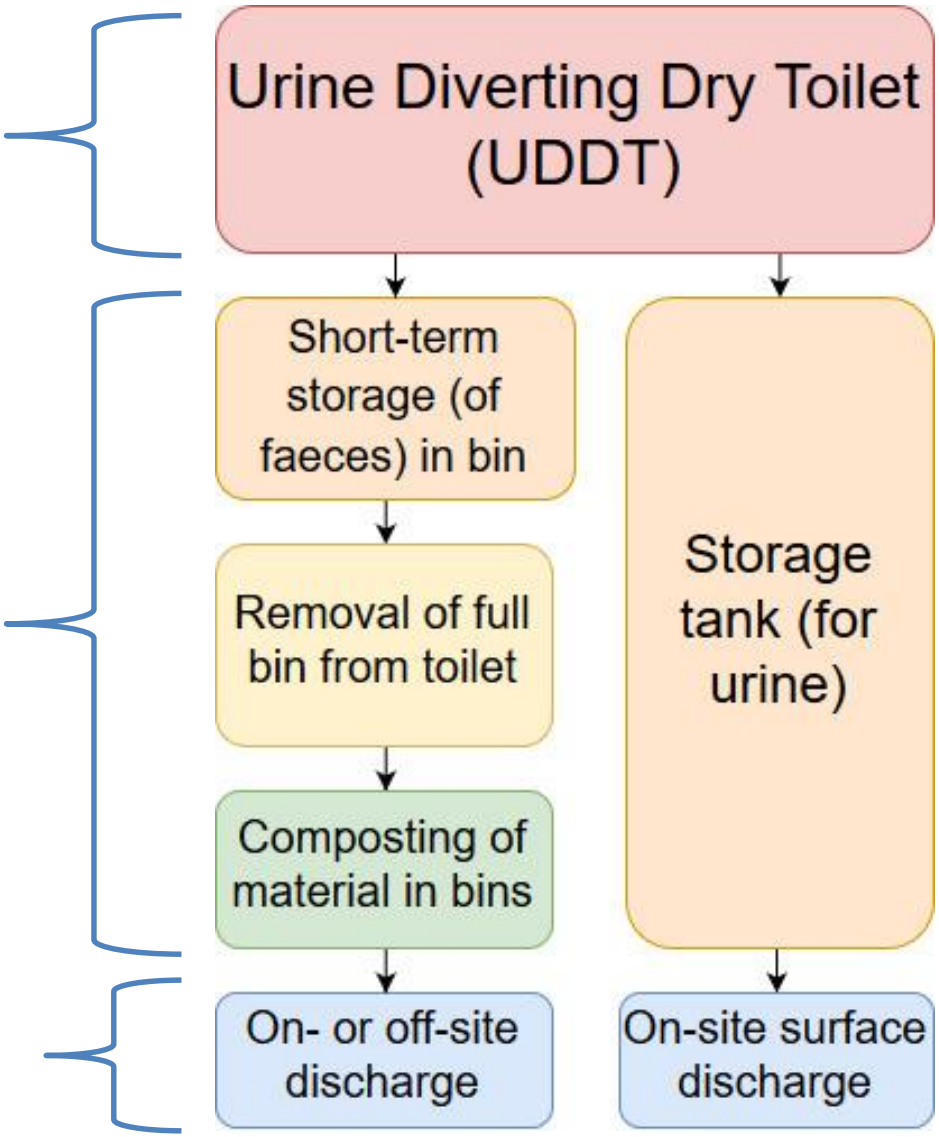
How can we optimize the current urban water management system to fulfill sustainability objectives?

Impact

Eco-Toilet Projects

Falmouth is providing a subsidy of up to $5,000 to homes and businesses willing to participate in the Eco-Toilet Incentive Program. This Program will evaluate the real contribution that eco-toilets can make, and the real cost of installation. To be part of the Program, homeowners or businesses must replace or remove all of their standard flush-type toilets with eco-toilets of the composting, urine diverting, or combination type. Data from this study will be used to assess how much nitrogen and phosphorus is removed by eco-toilets, and costs for this level of nutrient reduction.

Operation & maintenance

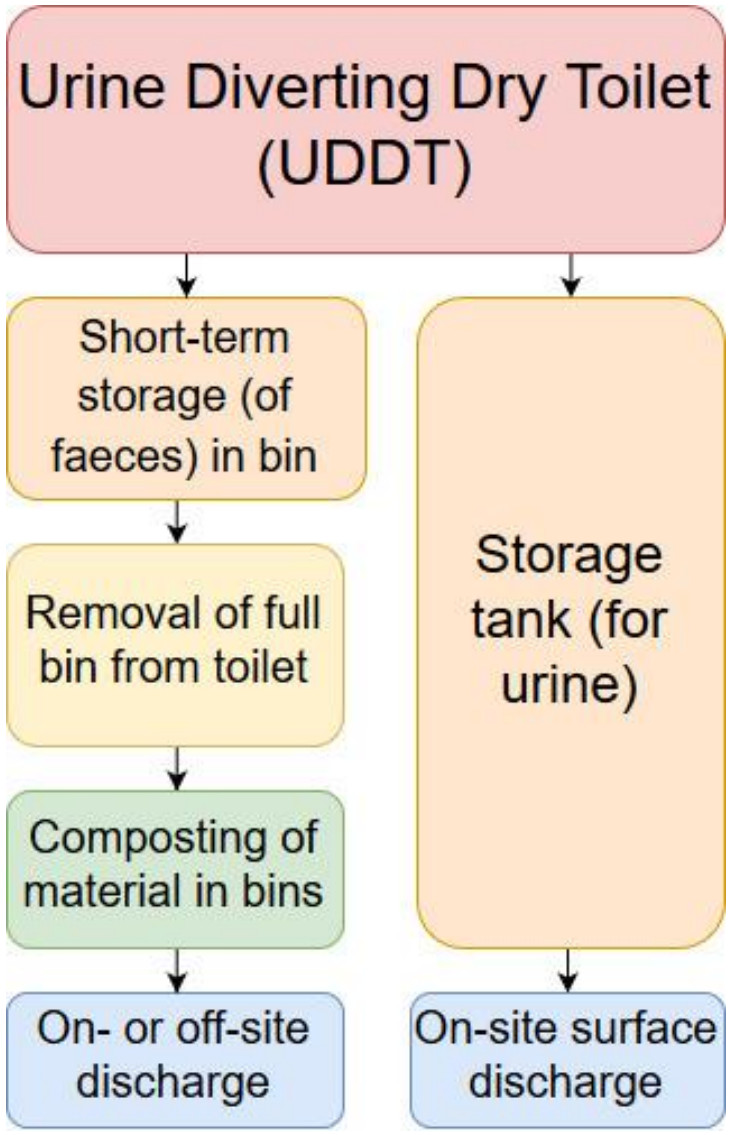


Operation & maintenance

Use of toilet by UVic community members

Ongoing monitoring of system by Campus Community Garden in collaboration with the Public Health & Environmental Engineering (PH2E) Lab

E.g. disposal at Hartland Landfill with controlled waste permit



Local action