- ADDENDUM -

- Planning & Building, Engineering and Environment Committee -

Council Chambers @ 12:30 p.m.

- October 15, 2012 -

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PBEE-41 Urban Forest Management Plan

Delegation:

- Judy Martin

Correspondence:

- Dave Sills, Guelph Civic League
- John Ambrose
- Stacey Alderwick
- Cynthia Folzer

PBEE-42 Guelph Innovation District: Release of Draft Secondary Plan

Delegation:

- Bryan Folkerson
- Khosrow Farahbakhsh

Correspondence:

- Alex Drolc *(presentation)*
- Jamie Miller
- Khosrow Farahbakhsh
- Ken Spira

From: Dave Sills
Sent: October 15, 2012 1:13 AM
To: Clerks
Cc: Leanne Piper; Bob Bell; Lise Burcher; Cam Guthrie; Mayors Office
Subject: GCL comments on UFMP

Hello,

The following are comments from the Guelph Civic League regarding the Urban Forest Management Plan to be discussed tomorrow at the PBEE committee meeting.

The Guelph Civic League holds to the following values (among others):

* ecological awareness and protection
* quality and beauty as civic priorities, and
* better city planning and design to manage growth

Our urban canopy is a large part of the 'green infrastructure' of this city, and the GCL is concerned that not enough is being done to maintain that green infrastructure, let alone develop it to its fullest potential.

There are many benefits associated with trees beyond just their aesthetic impacts:

* they reduce energy consumption by providing shade
* they improve air quality
* they increase water quality
* they enhance property values
* they reduce aggressive behaviour, and
* they provide habitat for wildlife.

Significant and timely increases in urban canopy cannot be achieved just by planting more trees - Guelph needs a comprehensive approach. We see the Urban Forest Management Plan as a critical tool that will allow the City to properly manage this green infrastructure, just as 'grey infrastructure' such as roads and pipes needs to be properly managed.

It is a visionary plan with reasonable timelines, and involved years of consultation with citizens and experts.

We urge you to recommend to Council that the Urban Forest Management Plan be adopted as proposed.

Sincerely,

Dave Sills, President
Guelph Civic League

From: John Ambrose
Sent: October 14, 2012 9:37 PM
To: Leanne Piper
Cc: Mayors Office; Bob Bell; Lise Burcher; Cam Guthrie
Subject: Urban Forest Management Plan

Leanne Piper, chair, and members of the Planning, Building, Engineering and Environment Committee--

I am pleased to see that the Urban Forest Management Plan is now coming before you for review.

I fully support this plan needed to guide the city in more efficiently and effectively managing and maintaining our urban forest. Having a senior staff urban forester is essential to ensuring that this plan is well managed and coordinated. There are some gaps in the current Trees By-law, such as applying only to private lots over 1/2 acre. I would hope that these gaps could be dealt within a timely manner once the plan is in effect.

Sincerely,

John D. Ambrose

From: Stacey Alderwick
Sent: October 14, 2012 5:58 PM
To: Leanne Piper; Mayors Office; Bob Bell; Lise Burcher; Cam Guthrie
Subject: urban forest management plan

Dear Mayor Farbridge and City Councillors,

Thank you for your work on the committee to develop an urban forest management plan which is essential to our city. As a community dweller and member of GUFF, I appreciate the long-range scope of the plan and the recommendations for budgetary resources and dedicated staff positions over this period. The preservation of green spaces and, in particular, urban forests, can make Guelph one of the most attractive communities in which to live.

I am concerned about the provisions with regard to the private tree by-law, as it pertains to such a small percent of trees in the city and may not offer the degree of protection intended. I also feel it is misguided to put on hold vital data collection about how many mature trees are cut down in the city each year, how much canopy is lost, how many new trees are planted and how many of them die. To wait until 2018 or later may mean the difference between saving and losing thousands of mature trees a year due to ongoing development -- a move which is short-sighted and which works against the intention of being good stewards of this land. I find it heart-breaking to see the devastation of mature trees and forests occurring in the name of development, and a strong plan, well-implemented, can make all the difference.

I trust that this urban forest management plan will move ahead, strengthened with the best interests of our urban environment at heart.

Best regards,

Stacey Alderwick

From: Cynthia Folzer
Sent: October 14, 2012 2:45 PM
To: leannepiper@guelph.ca; Mayors Office; bobbell@guelph.ca; Lise Burcher; Cam Guthrie
Subject: Urban Forest plan

Dear members of the Planning, Building, Engineering, and Environment Committee

I spent a considerable amount of time on a submission to the consultant who reviewed the city's tree by-law. My submission included examples of by-laws for trees on private properties which required land owners of properties of any size, not just those of 1/2 acre or more, to obtain permission to remove trees. I am disappointed that my submission as well as those of the majority have been ignored. Waiting until 2017 is unacceptable.
Also I cannot understand why we have to wait until 2018 to consider collecting data on the number of trees cut down in the City each year, the number of trees planted and the number of these that survive. If we had an adequate by-law that applied to private property, we would automatically have most of these numbers.
There are some things in the proposal which are positive, such as creating a Senior Urban Forester position and improving the maintenance of City trees and others.
It would have been appreciated if those who made submissions could have been informed about this meeting.

Sincerely,
Cynthia Folzer

Alex Drolc Delegation Presentation

Re: Guelph Innovation District Release of Draft Secondary Plan (Rpt#12-89)

Oct 15, 2012

2 Parts

- Staff Report Comments
- Family

Respect

- Staff met with the current primary 'special residential ' land owners October 4th to finally try and understand our development submission designed mostly in part by the UofG Engineering (Jamie Miller and Khosrow F.) which explained our development land intentions
- At which time the discussion focused heavily on "servicing"
- Residents and Khosrow F. (University of Guelph Engineering) explained we have many proven & advanced alternate servicing options we would like to discuss.

Respect

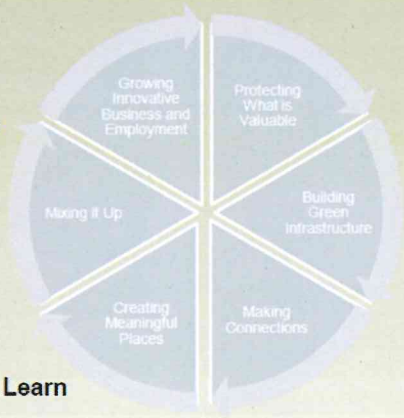
- In the staff report you will see strong language indicating that alternate servicing is prohibited, in keeping with current official plan policies. All our prior discussion around a 'Special Residential' land designation with staff and council was crafted to allow for alternative servicing to be 'explored' and never once was it prohibited. We were promised 'rounding out' of Glenholm Drive areas. But how can we round out if we can't connect to city services? It is a false promise.
- Exploring alternative servicing is not only critical to this 'Special residential' land designation it is also a key component to our Innovative residential design. In order for Guelph to be innovative, we need staff to be willing to explore. We need council to support this exploration so that we can foster innovation together by collaborating with UofG &staff to change for the better.
- Having one meeting one week before report submission to 'work with' the existing residents (as mandated by council) is not enough time to have any kind of collaboration with any value.

Vision and Principles

Vision

- Compact Mixed Use Community
- Innovative, Sustainable Employment Uses
- Connecting Residential and Compatible Employment Uses
- Fine Grain Mix of Uses
- Pedestrian Focused and Transit Supportive
- Carbon Neutrality
- Showcase New Approaches and Reflect History
- Meaningful Places to Live, Shop, Play and Learn

Principles



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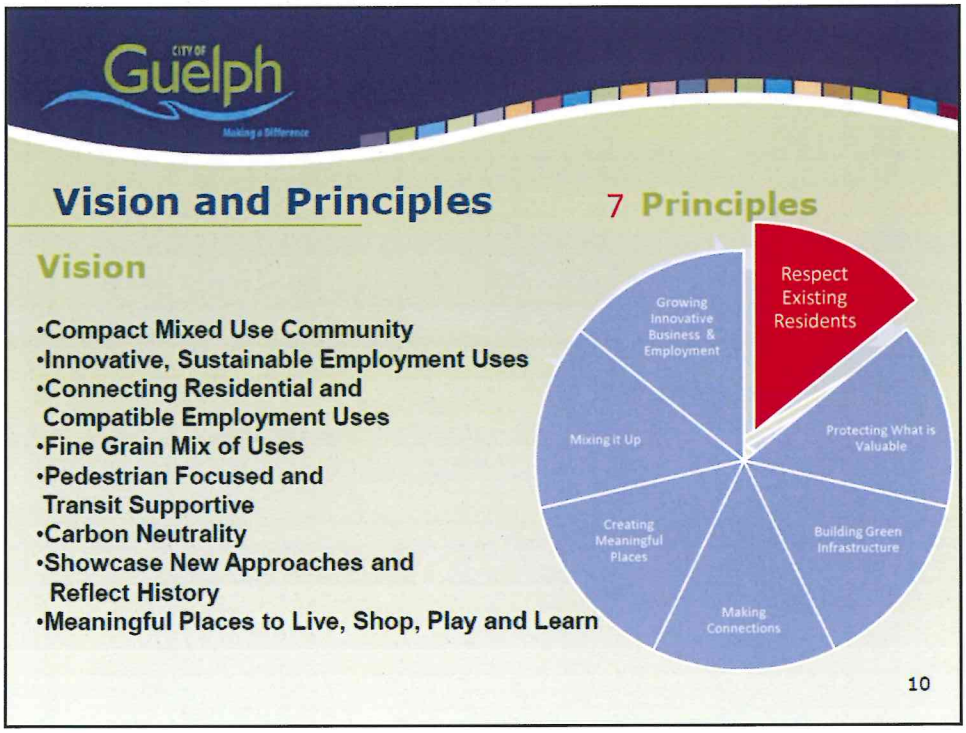
Meeting to Council (January 23rd 2012)

- I delegated to council and asked to amend GID Vision and Principles to include:

  "Respect the livelihood of existing residents inside the GID."

Council agreed to amend



How can Council accept this proposal in good faith knowing that staff was not guided by all 7 principles. Staff did not work with the existing residents until 1 week before the report was issued to council. This is an excellent example of why this principle was to be added.

The key principle that I asked to be incorporated earlier this year has been clearly omitted. It needs to not only be 'added' but the entire proposal should be reviewed with a 7 principle perspective. Principles of a vision are fundamental to its design.

**In the entire 149 page staff submission that you have before you today the words "respect" and/or "livelihood" do not appear once.*

History / Family / Livelihood

History / Timeline

- 1968: Father John, mother Helen, and older brother John Jr. came to Canada.
- 1972: the family purchased 24 acres on Stone Road.
  - Intentions were to build a family home and sever a portion of the excess lands for income (ideally a farmer)
- 1972 my father asked City staff if he could sever some of the lands. He was informed by staff he must possess the property for 1 year before he could apply for severance.
- 1973/1974- asked City staff to sever a portion of his lands again. He was recommended to come back in 5 years (for Stone Road to mature? (move from gravel to paved as it would increase value))
- 1976- Alex arrived.
- 1976 through to 80's did not have an immediate need for severance (was comfortable waiting for kids to grow)
- **1992/1993 approached by Mario V. (Chief City Planner at the time) to get annexed from Puslinch into City of Guelph <u>with the promise of city services</u>. All parties agreed, it was uncontested.**
- 90's-2000's; I was finishing up schooling, waited for services to arrive, and we approached City staff again to request severance. Denied severance because lands were categorized as 'Special Study'
- 2007/2008: Retained Mario Vendetti with neighbouring property owners to reclaim a residential designation to develop our lands as promised during the annexation. Discussions with neighbouring property owners to develop our properties (planned subdivision proposal). City staff said, "not enough density, Guelph doesn't allow for more estate lots"
- 2011: Revised a plan with more intensification, also rejected.
- 2012: Worked directly with the University of Guelph Engineering to research and design a low impact, highly innovative showcase community.

HAND DELIVERED August 27, 2008

Katie Nasswetter
Senior Development Planner
City Hall
1 Carden Street
Guelph, Ontario
N1H 3A1

Re: Development Priorities Plan (DPP)
Re: Properties : 58 Glenholm Drive Ken Spira
745 Stone Road East John Drolc

Further to our meeting of Monday August 18, 2008 where I discussed 4 properties with yourself, this submission will deal with the above noted properties.

As discussed with you the 1993 Annexation of the above noted properties was specifically done in order to plan this area and these 2 properties for Residential Land Uses.

The intent was to recognize the existing and established Residential Neighborhood of the GlenholmDrive area and abutting lands for future Residential Development.

In 1994 and 1995, the City had numerous meetings with the land owners as part of the Annexation proceedings, and the landowners were told that this area would always be designated for Residential Land Uses.

This Submission is a Joint Submission on behalf of the 2 landowners.

When I met with you, I submitted a concept draft plan which outlines the residential lot layout with proposed lots, blocks for townhouses, and a road layout.

The Plan Title is Glenholm Drive Expansion Phase 3, and is dated August 14, 2008.

This is a concept draft plan at this time.

A Development Draft Plan will be prepared when the York District Plan is approved with a Residential Designation.

We intend to proceed with development plans early in 2009.

Please keep me informed on the DPP plan and process, and add me to your mailing list.

Please also inform me of any Committee Meetings that deal with the DPP.

cc Ken Spira
John Drolc
Joan Jylanne

Mario Venditti MBA MA

Mario Venditti

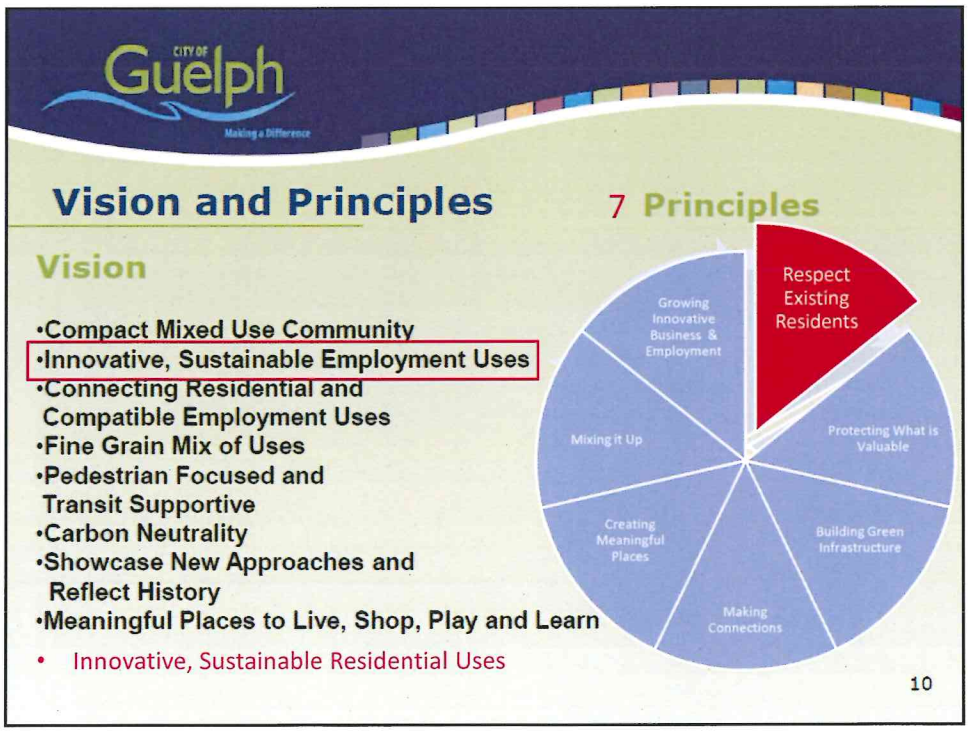
Chief Planner at time of annexation

The Family Plan

- My parents have always envisioned building two homes for their two kids on their 24 acre property once they have a family.
- My parents are now approaching their 80's
- My immediate family now consists of my wife and 2.5 kids (wife is 3 months pregnant)
- My children are the only grand kids for my parents.
- We currently live on opposite ends of Guelph.
- My wife had a difficult pregnancy less than 2 years ago and my parents were driving across town during all hours of the day to help, they are a very great people and I am blessed to have them. They will sacrifice everything for family.
- My family needs to be together, we need my parents support now more than ever, and they also need me and my family.
- The biggest hurdle to building a house beside my parents and having a mutually supportive family livelihood is to overcome a roadblock with sewer services.
- According to city staff, because of the inability to connect to a city sewer line I cannot build a house next to my parents.
- This should not be a limiting factor for a family to function. That is why I have been collaborating with UofG engineering for the last 8 months to come up with innovative (reliable & proven) solutions

Solution(s)/Recommendations

1. Firstly, do not accept this proposal without staff revisiting the 7 vision principle approach.
2. Please respect the annexation agreements that were promised to us when Mario V. was the chief planner.
3. Together with UofG a catalogue of many innovative/ proven solutions to this servicing hurdle (and many other innovative design concepts) and I ask that council please create an allowance for alternative servicing on only these 'Special Residential Lands' especially since there is collaboration with UofG for monitoring (as alternative servicing is the future for many new developments across the world and is low risk).
4. The solution we are proposing (in conjunction with the UofG) is something that will go above and beyond the current innovative solutions which are currently provided by staff, it really is a very exciting opportunity for collaboration between, land owners, UofG, City staff and community. It will add an innovative residential component to the GID



Submission from Jamie Miller
Re: Guelph Innovation District Release of Draft Secondary Plan

Guelph Development Priorities Plan 2013
A Glenholm Community Proposal
Part II: Wastewater Services

Submitted by Jamie Miller & Dr. Khosrow Farahbakhsh, School of Engineering, University of Guelph and members of the Glenholm and Stone East Community **October 15, 2012**

Abstract

This document is the second part of a two-part proposal. In this document we present the Glenholm and Stone East community's intention for implementing alternative wastewater service infrastructure. In partnership with the University of Guelph, the three landowners wish to work with the City of Guelph to safely test wastewater infrastructure for the purpose of reducing demand on existing City services and providing an opportunity for the City, University and community to test and experiment with technologies for future Guelph developments.

Introduction

Water represents the most fundamental of our basic human needs. Thus, the infrastructure and technologies that support our water management are critically important in our urban designs. The community of Glenholm and Stone East have indicated their intention (See - A Glenholm Proposal Part I: Layout) for "special residential" status to support their goal of developing an innovative and sustainable development to be incorporated into the existing Guelph Innovation District (GID) (Figure 1a).

In partnership with the University of Guelph, the landowners propose that their property (Figure 1b) be used to apply, test, and evaluate service technologies that diverge from traditional water and wastewater options for the City, i.e. centralized, city treatment plants or septic beds and wells.

The intended use of this proposed development is to create a safe space for the City, University, and landowners to test and promote research on alternative technologies in situ, and to use these applications to help inform and possibly innovate future Guelph development projects.

In this document present a "catalogue" (Appendix A) of alternative wastewater technologies that have been implemented and tested elsewhere and that could serve as examples or inspiration for the Glenholm project. We use this catalogue and present scenarios of various pairings between technologies and the current Glenholm residential design. We also provide the landowners' stories and connection to this property and their intent for pursuing this project (Appendix B).

Figure 1a: Boundaries of the Guelph Innovation District with the Glenholm property highlighted

Figure 1b: Expanded view of the highlighted area of the Glenholm property

Background

Guelph's population is expected to grow by 125,000 people in the next 30 years (City of Guelph 2009). Thus, the current infrastructure will be subjected to higher loading, will require more pipes, more chemicals, more energy, and an increased pressure to assure a fail-safe design.

Because of the relationship between water management and human health, it is understandable why there has been comparatively little innovation in water management in the First World context (Herstein 2009). There is a psychological security in sustaining well-tested ideas – i.e. ideas that we have become comfortable with (Peterson & Flanders 2002). But every system must go through adaptations and evolutions to ensure that they remain appropriate for the particular context – whether voluntary or involuntary.

In Glenholm, there is an ideal opportunity to safely design, implement and test alternative water management strategies - in partnership with leading experts - and to provide a platform for transitioning from an old system of ideas. Firstly, the vast majority of current operating costs for centralized treatment plants are related to pumping and moving water and wastewater. Thus, Glenholm is geographically at a perfect transition point. Further, the adjacent residents to Glenholm all depend on well and septic services and there are a plethora of technological examples that could services homes in Glenholm but could significantly outperform the existing technologies. Plus, a unique and innovative low density pilot development would help reduce the loading on City services, and most importantly, help influence or inform potential future developments in the area (including the GID).

In the current context of Guelph - the expected population growth, the community's passion for valuing water (IPSOS Reid 2008), and the costs associated with powering and upgrading service infrastructure – Glenholm seems to represent an incredible opportunity to explore alternative ideas. Thus, we propose that the City of Guelph partner with research experts at the University of Guelph and various influential community stakeholders (e.g. contractors, landowners and practitioners) to safely implement and test innovative, communal and decentralized systems that might help inform future Guelph development projects.

None of the proposed ideas in this document are untested. All of them have been implemented outside of the lab. Thus, we present the "catalogue" in Appendix A as a collection of ideas that might inspire us to imagine how the property could be serviced.

Design

The proposed property layout for a special residential mixed-use zone has already been outlined in *A Glenholm Proposal, Part I: Layout*. Figure 2 is the most updated version of this proposed property based on the work outlined in the aforementioned document.

However, in order to ensure that the wastewater technologies for this community most appropriately fit in with the context – e.g. culture, ecology, standards and regulations – we propose that the various stakeholders create a working partnership and build off of the ideas presented in Appendix A. The various technologies presented in Appendix A, are categorized as: individual; individual/communal; and communal. This indicates whether they would be best

suited as units specific to one household (individual) or if they could be shared amongst the smaller Glenholm communities, or in small clusters (communal).

To initiate this discussion we present the various Tiers from Figure 2 with the general description of their intended uses, and potential scenarios for servicing these areas:

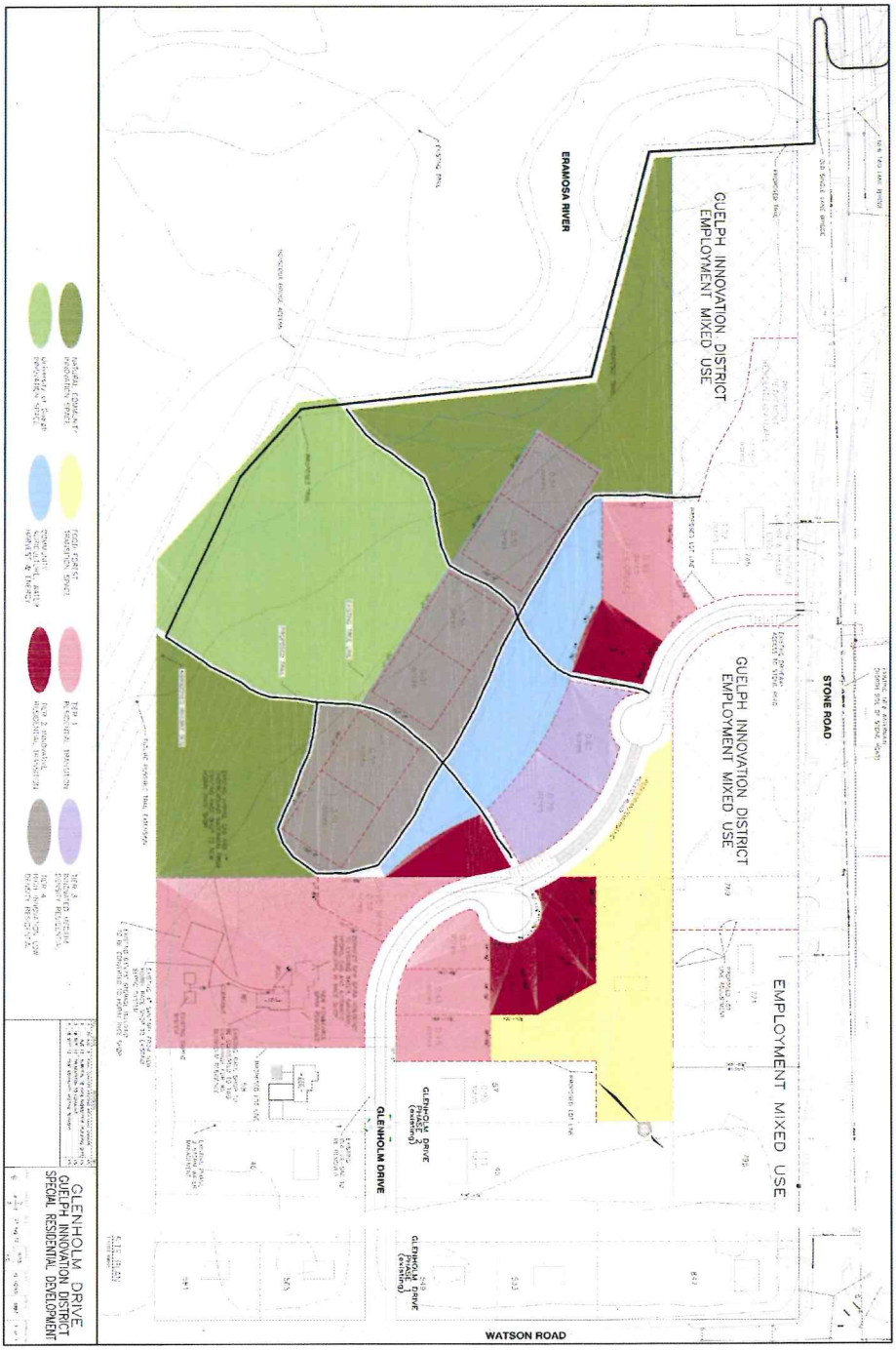
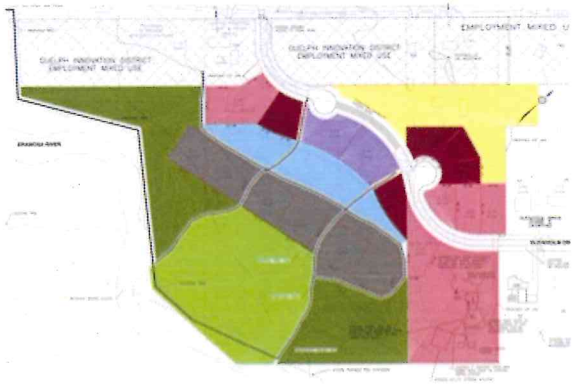


Figure 2: Draft plan property as proposed by University-community partnership

TIER 1
RESIDENTIAL TRANSITION

design idea: tier 1



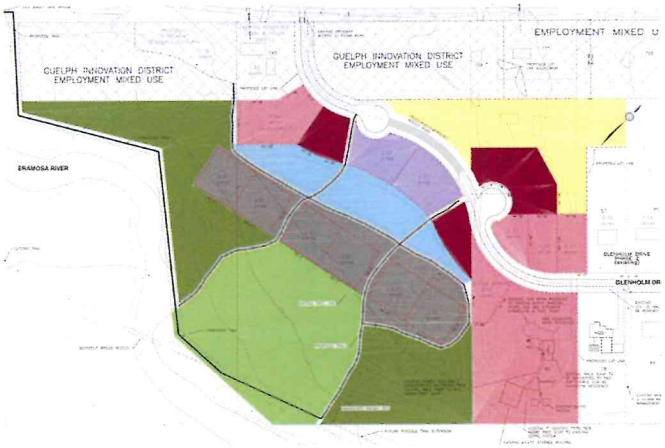
Proposed Tier 1 developments will look like a classical Guelph home in that it may have a rectangular shape, peaked roves, and driveways. The difference however, is that they have new "guts", I.e. they embody new ways of collecting energy (e.g. solar panels), or water (e.g. rain harvesting systems, dual plumbing). These properties provide the opportunity to play with ways of adapting classical housing. These properties are geared to those residents who do not like change, or experimenting with their lifestyles but would like to save money on utilities and are willing to implement well-tested technologies. The lots in this section are designed larger than the others to help transition from the existing lots in the area and to provide these people lots of private space.

Passive solar
Dual plumbing
Permaculture
Rain harvesting

WASTEWATER TECHNOLOGY: Individual

To help reduce uncertainty associated with applying alternative technologies, we suggest applying "individual" wastewater technologies with Tier 1 housing designs. These could include examples of "individual/communal" but only if they are designed for individual residential homes, i.e. receiving loading from only one house. Because Tier 1 has also been identified as the first phase of development, this would allow us to experiment with less "risky" technologies in order to create more comfort in the subsequent phases.

TIER 2 INNOVATIVE RESIDENTIAL TRANSITION design idea: tier 2



Tier 2 residents are driven by a more sustainable lifestyle, in that they see nature as a primary stakeholder in their decisions and designs. Thus, these properties allow greater participation in a new ways of doing development and using new technologies for water, energy and waste. They are geared towards those who are willing to try new ideas and want to improve the efficiency, resiliency and sustainability of our habitats.

WASTEWATER TECHNOLOGY: Individual/Communal

Tier 2 areas would be better suited to explore more "individual/communal" technologies that would perhaps connect two or three homes.

design idea: tier 3

TIER 3
INNOVATED MEDIUM
DENSITY RESIDENTIAL

Tier 3 is a space to experiment with higher density sustainable development. These properties are designed for those residents who benefit from the skills of others and appreciate more social spaces (e.g. farmer's markets, sharing tools and resources), and working with neighbours to solve problems.

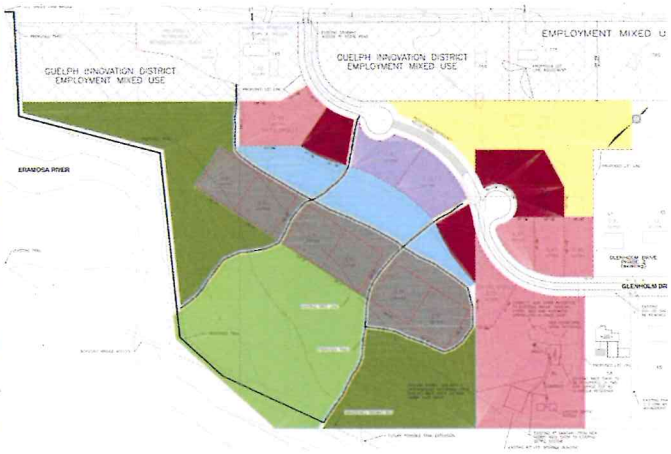
Shared resources
Markets
Small business
Community education studios

WASTEWATER TECHNOLOGY: Communal

Tier 3 zones provide an ideal opportunity to implement "communal" designs, where the medium density housing could have all of their effluent treated at a communal treatment plant. Because of the available space south of this area (See "Community Zone" below), there is opportunity to use the effluent for a variety of purposes – e.g. firefighting, reservoir, groundwater recharge, irrigation, etc.

COMMUNITY
AGRICULTURE, WATER
HARVEST & ENERGY

design idea: community zone



This area is designated for innovation around basic needs and services. Knowing that some of the greatest threats to urban infrastructure are energy, water and food, this area provides opportunities for the community, University, and City, to employ technologies that support these services, e.g. urban agriculture, community rain harvesting, passive solar designs. As with all locations of zones, the location of this area was based on the preliminary research conducted by Miller et al.

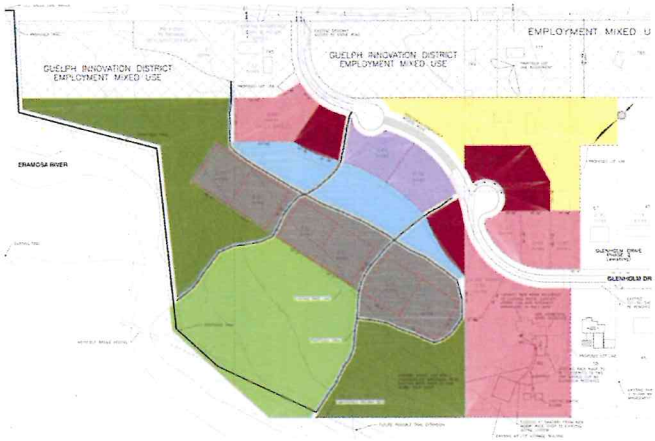
Community:
Rain harvest
Garden
Education studios
Activity centre

WASTEWATER TECHNOLOGY

This area offers the space for implementing various wastewater technologies. For example, it could support constructed wetlands, wastewater gardens, or the infrastructure to house the technologies, e.g. greenhouses, SBR systems

TIER 4
HIGH INNOVATION LOW DENSITY RESIDENTIAL

design idea: tier 4



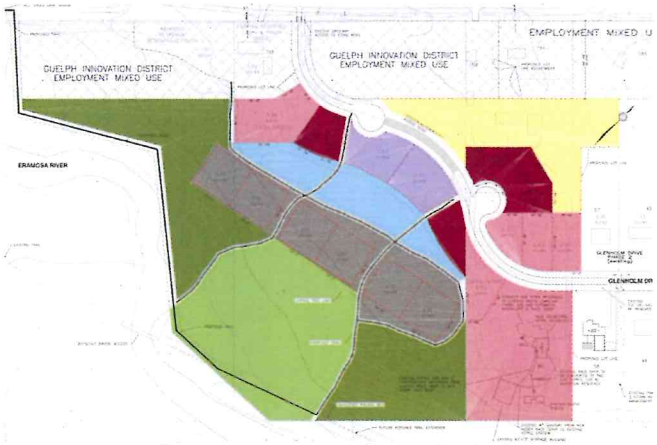
The Tier 4 development is dedicated to a deeper engagement with low-impact development and design. These properties allow for creative experimentation and provide opportunities to discover ways of more symbiotically integrating into natural forests and areas. These properties are designed for those who are comfortable with innovation and experimentation and who are willing to collaborate in employing new ideas.

WASTEWATER TECHNOLOGY: Individual/Communal

Tier 4 areas are dedicated to highly sensitive design ideas and to protecting the natural heritage of the area. Thus, these designs are available for deep partnership and innovation. This is the last proposed phase of development and can therefore be designed at a later date. However, we would suggest implementing both individual and/or communal wastewater treatment technologies.

University of Guelph
INNOVATION SPACE

design idea: innovation studio



In order to support Tier 4 developments, the designated University of Guelph Innovation Space is designed to promote partnership between the community and University in order to engage in research and design experimentation. This means, that this space will house programs and platforms that foster research of the area, e.g. local ecology and on sustainable design ideas that fit in. Here, the University could help inform and shape the technologies and designs of the Glenholm community. In this draft design, we propose that this space be represented by an "Innovation House" as the infrastructure to support these programs.

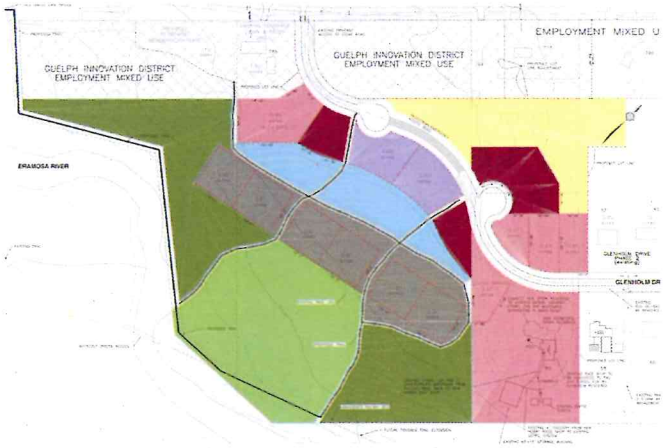
This is the space where we – as a larger community – can safely explore new ideas with limited risks. It is a space that would promote education through application and an idea that is expanded to other developments around the City.

WASTEWATER TECHNOLOGY: **Individual**

The Innovation Studio would be a single unit, non-residential, building. It is not intended to house lab experiments or toxic materials and would therefore have a pretty basic waste stream from perhaps a single toilet.

NATURAL COMMUNITY INNOVATION SPACE

design idea: explore



In order to protect the existing ecosystems in this area, the proposed design leaves this as designated community innovation space. This implies that it will restrict development for purposes other than community-based projects, e.g. apiary, spiritual centres, nature-based education, hiking, very small-scale habitats used for eco-tourism, etc. These areas may also be used for generating income that would in turn support the Glenholm community programs (e.g. eco homes used as short-term rental units).

Self-emerging:

Apiary

Spiritual centres

Green tourism

Hiking trails

WASTEWATER TECHNOLOGY: **Individual**

The natural community space has been designated as a no-build zone for anything other than community projects. For example, if the community would like to collaborate on building a *very* sustainable, small, house for use in, for example, eco-tourism, then the proposed wastewater technology would be designed for that specific unit. However, we intend on keeping this area free from construction.

Support

As a mechanism for better understanding the context and for selecting appropriate and viable designs, the current landowners and the School of Engineering, University of Guelph have been in collaboration with several supportive parties. A few of these parties include:

- Neighbours of the existing community
- University of Guelph)
- Barber Scout Camp
- Canadian Mortgage and Housing
- Enermodal Engineering and LEED Designers
- Guelph Hiking Trail Club
- Innovation Guelph
- Various community members that include:
    - Plumbers
    - Contractors
    - Designers
    - Biologists

References

Herstein, L. (2010). Bridging the Gap: The Potential Role of the Engineer in Addressing Ontario's Water Infrastructure Deficit. Retrieved from: http://members.peo.on.ca/index.cfm/document/1/ci_id/56719/la_id/1

IPSOS Reid. (2008). *City of Guelph 2008: Future Growth Survey.* Retrieved from: http://guelph.ca/uploads/PBS_Dept/planning/documents/Guelph%20Growth%20Management/2008%20IPSOS%20Reid%20Future%20Growth%20Survey%20Results%20Report.pdf

Peterson, J.B., Flanders, J.L. (2002). Complexity management theory: motivation for ideological rigidity and social conflict. *Cortex,* 38, 429-458

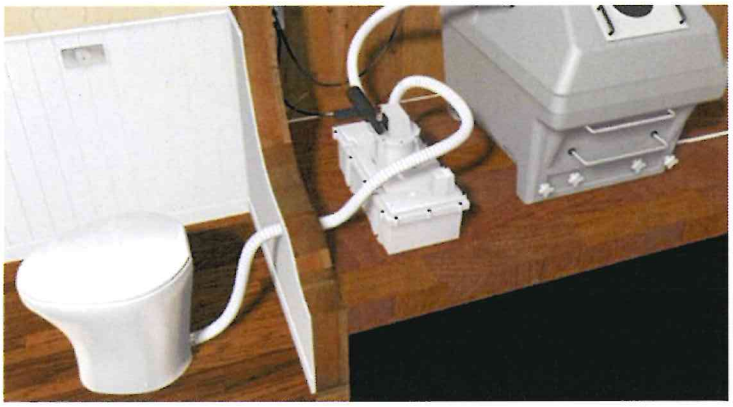
Appendix A: Wastewater Service Ideation Examples

Option 1: Individual Technologies

Composting Toilet

E.g. Envirolet - Oshawa, Ontario

A Composting Toilet is both waterless and odorless, connecting to a miniature composting facility in your home. This system can also collect urine in a separate facility – allowing for human fecal matter to be used as humus and the collected urine as a fertilizer.



Incinerating Toilets

E.g. Incinolet – Owen Sound, Ontario

These incinerating toilets take all organic by-products and convert it to ash without the use of water or any other system. They are relatively odorless and can save a lot of room in your bathroom.

Dual Plumbing/Separation

E.g. Small bore sewers – Hinton, Alberta

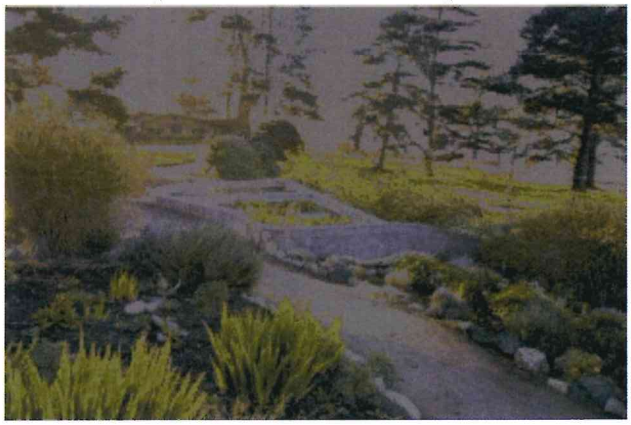
The SBS system separates the solid and liquid components of the sewage near site, which allows the predominantly solid-free waste to move more easily through the pipes to the final treatment plant. The solids naturally digests and because they do not enter the pipes, allow for a decreased diameter pipe with an improved lifespan of nearly three times that of a conventional piping system.

Option 2: Hybrid (Individual/Communal) Technologies

Living Machine: Individual/Communal

E.g. YMCA - Kitchener-Waterloo, Ontario

The Living Machine is a waste management system where living organisms, such as plants, clean human waste. Through basins, oxygen transfer, vegetation and natural microorganisms, this is truly a unique wastewater collecting system.



E.g. Wastewater Garden (RECyclET) - Portland, Ontario

Wastewater gardens are zero-discharge adaptations of septic systems. Widely used in warm climates, researchers at Queen's have been testing on Portland, Ontario's application for over five years.

E.g. Evapotranspiration Bed - Frontenac Provincial Park, ON

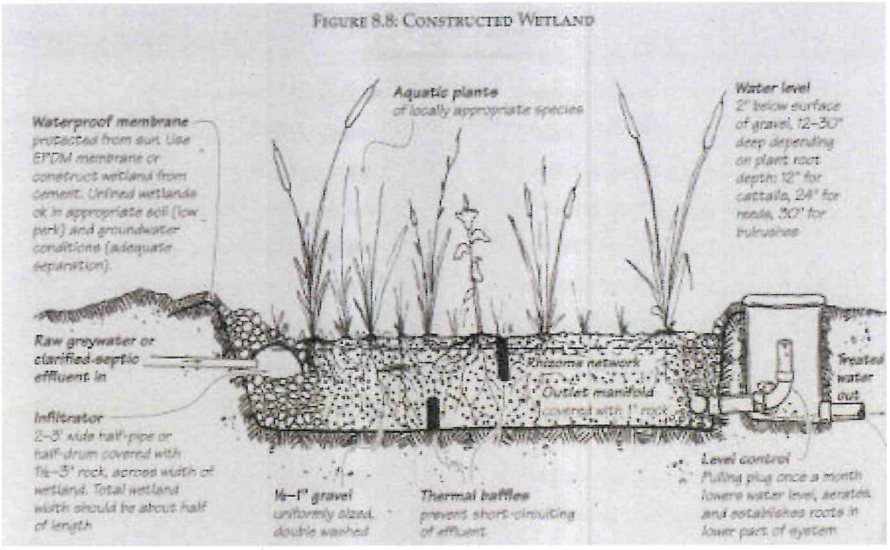
There have been over 1,800 installed evapotranspiration beds in Ontario since 1989. Following similar operation principles as a living system, the Kingston application is 225 m^2 and receives an estimated load of 800L/d.

E.g. Aquatic system - Annapolis County, Nova Scotia
- Ontario Science Centre, Ontario

An aquatic system allows for wastewater treatment through several solar tanks connected to one another – each its own miniature ecosystem. Wastewater moves through each tank and is slowly removed of its organic compounds each time. It requires no chemicals, no mechanical machinery and produces little sludge.

E.g. Constructed Wetlands - Cobolt, Ontario

Constructed wetlands are artificial swamps, wetlands or marshes that bank on the natural abilities of particular organisms to utilize human waste. As a welcomed consequence they are also lively ecosystems and can create homes for a variety of local organisms.



Biofilters – Individual/communal

Biofilters are onsite treatment technologies that treat residential wastewater by filtering water through a media that supports organic decomposition of waste.

E.g. Ontario Rural Wastewater Centre – Guelph, Ontario

A research centre dedicated to promoting, testing, and constructing sustainable wasewater treatment and dispersal technologies.

E.g. Waterloo Biofilters – Toronto Healthy House, Toronto Ontario

The Toronto Healthy House utilizes a Waterloo Biofilter and is the first residential wastewater reuse system in Canada. The Waterloo technology produces a clear, odourless, and sterile effluent that can be reused onsite for purpose such as toilet flushing, vehicle washing, and irrigation. The applications range from underground, communal, individual or above ground.

E.g. Ecoflo – Barrie, Ontario

An autonomous biofilter that uses specially treated peat moss as a medium. Relatively small, its design can treat up to 1,000 litres of wastewater daily.

E.g. Biolytix – Pezula Private Estate, Knysna (25 currently installed)

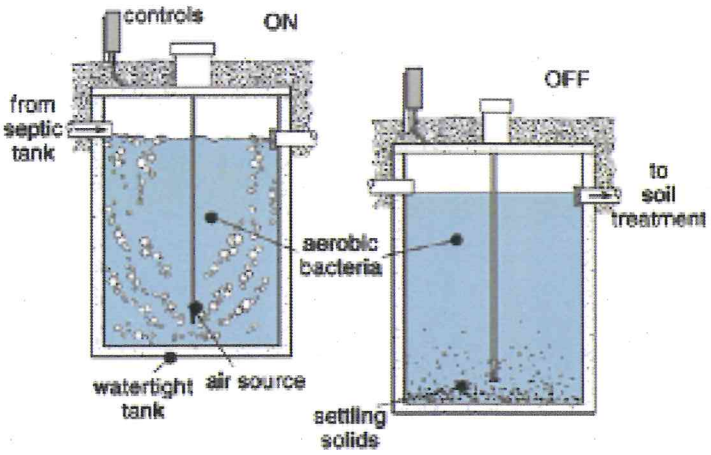
By emulating the way natural systems filter water, the Biolytix system is composed of various layers that emulate the layers of a healthy forest floor – banking on the decomposition abilities of worms, micro-organisms, humus, etc.

Aerobic Treatment Units – Individual/Communal

These units pre-treat wastewater by introducing air to break down organic matter, reduce pathogen, and transform nutrients. Compared to traditional septic tanks, these units are more efficient and reduce the concentration of pathogens of wastewater. The required space for housing an ATU to service a three-bedroom home is roughly 25 ft^2.

E.g. Enclosed Sequencing Batch Reactor – Keltic Lodge, Cape Breton, Nova Scotia designed by Dr. Farahbakhsh.

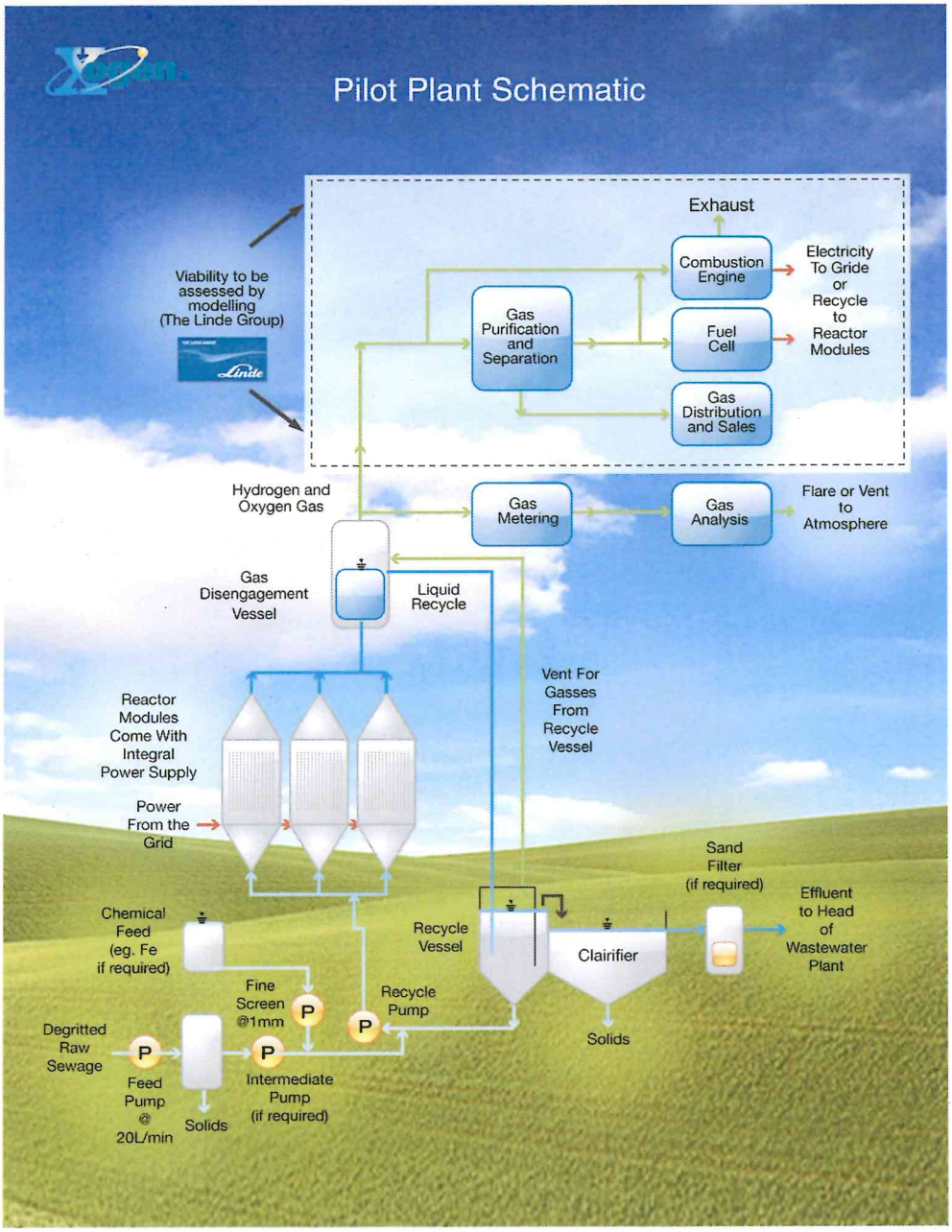
The SBR uses the same tank for treatment and solid separation and the effluence can be reused after disinfection. All operation and maintenance can be automated and processed biosolids may be composted and used for fertilizer.



Option 3: Communal Technologies

E.g. Xogen Technologies – Orangeville, Ontario

Through electrolysis, Xogen can eliminate biosolids from the sewage treatment process and leave a much smaller footprint than conventional treatment methods. And the electrical process on average requires about 1 kWh to purify each cubic metre. Not only does this technology treat wastewater to regulatory requirement, it can also remove pharmaceuticals and personal care products, all without smell.



Appendix B: Landowners' stories

The Spira Family Story of Glenholm Drive

History of Ken & Carol Spira:

- Bought 10 acres of land at the end of Glenholm Drive in 1987.
- Built a new family home, constructed by Sloot Construction who lived around the corner on Watson Road. Moved in with 6-year-old son David and 2-year-old daughter Karyn in 1988. Became close friends with John Sloot and he remains a good friend as of this day.
- Built ice rinks in the winters and both children got very involved in hockey and played at many levels in Guelph.
- Developed a plan of subdivision with the township of Puslinch for five two acre lots, extended Glenholm Drive and sold two, two acre lots on the north side of the street in 1991.
- Constructed a bigger six bedroom, two story home built by Sloot Construction to the west of the first home on one of the two acre lots in 1992. This remains the home of Ken and Carol today known as 58 Glenholm Drive.
- Sold 46 Glenholm Drive in 1993 with two acres of land to Joe and Laura Marini. Joe and Laura started their family in the house and are currently still living there with three children who call us uncle Ken and Aunty Carol as we became very good friends and felt like part of their family. Joe and Laura provided us with fresh eggs from their chickens that were used to feed the many Guelph Storm players that we billeted over the years including Craig Anderson who currently plays for the NHL. Ten hockey players became a big part of our family and we became a big part of theirs as we attended their weddings as well as them attending the recent wedding of David and Kim in 2012.
- Sold the final two-acre building lot on Stone Road in 2000.
- Lost our eighteen-year-old daughter Karyn who passed away from a traffic accident at the corner of Watson expressway and York Road in 2004.
- Bought additional land with a property line adjustment in 2007 and built a hobby shop known as 80 Glenholm Drive, to create the Spira Racing program in memory of Karyn. Spira Racing is a program geared towards providing kids that would not normally have the opportunity to race or work on race cars the chance to do so. We provide a structured team complete with shop, tools, equipment, cars and haulers to those that have the desire to become a driver or crew member. Potential candidates are introduced to real time experience on how to drive, build, repair and set-up the cars in a structured team environment so they may eventually enjoy success in building their own team or work with other teams at a higher level.

Future Expectations Ken & Carol:

- Sever the home at 58 Glenholm Drive with a two acre parcel of land and sell it to a third party.
- Build a new smaller, three bedroom bungalow on 3.6 acres of land to the west utilizing the existing well and septic system. The home would be added to the existing hobby shop that would be converted to a garage for our use as part of the new home. Work with the University of Guelph to incorporate innovative technology for such things as solar power, heating, rain water harvesting, green technology in a self sustaining, low carbon footprint home that would be used to demonstrate some of the technology available to potential home owners in the balance of the Glenholm Development.
- Convert the existing storage building at the south west corner of the 3.6 acre lot to a hobby shop that would be used to continue the Spira Racing development program for children.
- Give David and Kim a 0.5 acre lot to the west as a wedding gift.
- Help David and Kim build a new home, learning from the technology put into our home so they can start their family as neighbors to us.

History of David & Kimberly Spira:

- Kimberly moved into the area in 1985 when she was 3 years old. She grew up in her mother's childhood home, which her grandfather had built in the early 1950's.
- Kimberly's extended family also live in the surrounding area and have been living in the same family homes since the early 50's.
- David and his family moved into the neighborhood in 1988 when his family built a four bedroom home at what is now 46 Glenholm Drive.
- In 1993 the Spira family sold their home and built a new home at 58 Glenholm Drive next door.
- David and Kimberly developed a friendship in elementary school and started dating in high school while riding the school bus together; Kimberly went to J.F. Ross and David went to Centennial C.V.I.
- David and Kimberly moved into the basement apartment at 58 Glenholm Drive in October 2008. This opportunity allowed both individuals to stay close to their families to be able to assist them in times of need.
- Kimberly and David were married in August of 2012 at Cutten Fields in Guelph. Keeping the ceremony and reception close to where they have lived for over 25 years.

Future Expectations David & Kimberly:

- To build a home of their own and work with the University of Guelph to incorporate new innovative technologies such as solar power, heating, rain water harvesting, green technology and learn from what their parents experienced with the construction of their new home.

- To raise their family in a safe, family oriented community where their children would be able to explore nature and learn from their surroundings all while staying close to their family roots.

- To live in the same community that they currently reside, staying closely situated to Kimberly's mother, sister and niece (who are still living in the family home nearby) along with staying close to the extended family.

- To live in the same community as Ken and Carol Spira

Guelph City Council
City of Guelph, City Hall
59 Carden Street,
Guelph, ON N1H 3A1

October 15, 2012

Re: Guelph Innovation District Secondary Plan

Dear Council:

Innovation is essential to adaptation and survival. As a professor of Environmental Engineering at the University of Guelph, I am keenly interested in developing innovative technologies and design processes that move us beyond the status quo and enable us to find new ways to adapt to changing environmental, economic and social conditions. My research projects take me around the country and the world where I participate in efforts to develop alternate approaches to providing and managing services such as water, wastewater and stormwater management systems. These efforts have one main thing in common – the recognition that to innovate we must go beyond our comfort zone. The quote attributed to Einstein puts it simply: *"If you always do what you always did, you will always get what you always got."*

Over the past five months, my PhD student (Jamie Miller) and I have been working with a group of landowners at the Glenholm Drive to develop not only alternative concepts of service provision but also new design methodologies. The process has been innovative and insightful and the concepts developed have incorporated social, historical, economic and ecological context of the place. I have been impressed with the desire of the landowners to "move beyond their comfort zone" and consider and contribute to new ideas for distributed water, wastewater and energy management. Concepts that are in full alignment with the Guelph's Community Energy Plan, Guelph's Water Conservation Plan and Guelph's Wastewater Master Plan. These landowners are willing to invest their own money and resources to help develop innovative models of land development that can provide significant insight for the City and the community. I believe this is an opportunity that should be fully explored and facilitated.

The concepts that are proposed for the Glenholm Drive wastewater and water services are not new. The means by which these concepts are integrated with the overall development plan is however, innovative and promising. The intention is not to set up an experimental station and test unproven technologies and approaches. The intent is to implement proven technologies in a way that is new and innovative for the city of Guelph. The risk of further developing and implementing these alternate concepts is minimal. This is not a proposal for a massive development with hundreds of dwellings. What is proposed is a small and gradual design and construction of just a few homes in a fully transparent manner that aims to engage the city of Guelph's engineers and planner at every step of the design process. Here is an opportunity for the city to evaluate alternate options, understand their

advantages and limitations and learn about and develop appropriate monitoring and management strategies. With the relatively small number of homes to be developed over the next few years, the design and development process promises to be well managed and controlled. All necessary measures for sound and scientific design can be put in place to ensure the protection of precious natural resources including our aquifer.

The city of Guelph has been committed to innovation and what better place to showcase this commitment than in the "Guelph Innovation District". I am hopeful that the Council consider favourably the wishes of the landowners at the Glenholm Drive to build an innovative and ecologically-sound community and grant them the opportunity to fully pursue this worthy endeavour.

Respectfully yours,

Dr. Khosrow Farahbakhsh, P.Eng.

Guelph City Council
City of Guelph, City Hall
59 Carden Street,
Guelph, ON N1H 3A1

October 13, 2012

Attention: City Clerk

Re: Guelph Innovation District Secondary Plan

Dear Council,

I am unable to attend the October 15th PBEE meeting and am writing to notify you of my objection to the wording and restrictions applying to the "Special Residential" designation to the lands south of Stone Road, west of Watson and east of the river.

We were annexed from the Township of Puslinch in 1992 with the promise from City staff that we would receive full municipal services and a residential designation. Despite installing the water main on Stone Road and building the Guelph Waste Innovation Centre with a sewage pumping station, the sanitary service was not extended the short distance to Stone Road where we could access it. In 2007, John Drolc and myself proposed a 16 estate lot plan of subdivision that would develop the vacant land to the south of Stone Road on full municipal services. We retained Gamsby and Mannerow Engineers to analyze the pumping sation at the waste transfer building as they did the original design and we were informed the system would handle our development. This proposal was rejected by City staff with the reason that it did not have enough density and that the estate lots were unacceptable. Within a year, we prepared another plan that consisted of 58 lots complete with a mix of townhouses to achieve the density requested, again on full municipal services. To our surprise, this plan was rejected as it had too many lots and were told that it was not compatible with the organics facility to the north.

Working with staff in the development of the Guelph Innovation District Secondary Plan, we proposed a compromise to work with the University of Guelph to develop the land as a "Special Residential" : "A unique and innovative low density pilot project consisting of green homes within an innovative low carbon footprint housing development. New homes in this area are to be consistent with Guelph's Community Energy Initiative, minimize energy and water use while incorporating resource efficient materials with a Leed designation. The master plan is to focus on the investigation, implementation and applications of clean energy (e.g., solar power), energy conservation (e.g., energy star products, Leed), heat pumps, onsite waste and storm water treatment with the overall goal of making the development self contained and self sustaining with minimal impact on the environment. This pilot project will be performed in conjunction with the University of Guelph as a valuable study vehicle, giving students the opportunity to provide input into the site design, the design of the eco-homes, accessibility to energy usage data and to work with the people who live in this unique community. In direct support of the Vision of Principals of the Guelph Innovation District, this initiative shall become a showcase community inside of the GID, ultimately balancing a small carbon footprint with a green education study while at the same time providing a unique and meaningful place to live." We had the understanding at the conclusion of our discussions in January of this year that the "Special Residential" designation would be just that "Special" and we proceeded with the University of Guelph to develop the guiding principals of the development based on what was presented to committee and Council in January. Many hours and resources have been put into this project including a public meeting at the Italian Canadian Club on September 18th with adjacent land owners our ward Councilor's including invitations given to the Waste Resource Innovation Centre and Cargill.

We were contacted by City staff to attend a meeting with them on October 4th at City Hall as they wanted to discuss the Special Residential designation with the three land owners and the University of Guelph. We attended this meeting only to be shocked with the news that the GID Secondary Plan would now require both low density and full municipal services.

At this point, I must strongly object to accepting the plan and intend to appeal it at all levels. A low density residential development on full municipal services is not economical or feasible as a "Special Residential" development. If Municipal services are a requirement, the land designation of "Special Residential" should be removed and the land should be zoned R.1B "residential" in order to meet the places to grow legislation that is the City's focus for other residential areas throughout the city. Alternatively, the description of the low density, self sustaining pilot project as described, should replace the requirements for full municipal services and this is in-fact our preferred designation.

I feel that we are being grossly mistreated by staff with the low density/fully serviced restrictions as it does not fulfil what was promised in 1992 or throughout the development of the secondary plan with us since December of 2011. I urge you to accept the overall Draft Guelph Innovation District Secondary Plan only with an amendment to change the "Special Residential" designation to either an R.1B residential designation or as "A unique and innovative low density pilot project consisting of green homes within an innovative low carbon footprint housing development. New homes in this area are to be consistent with Guelph's Community Energy Initiative, minimize energy and water use while incorporating resource efficient materials with a Leed designation. The master plan is to focus on the investigation, implementation and applications of clean energy, energy conservation, onsite waste and storm water treatment with the overall goal of making the development self contained and self sustaining with minimal impact on the environment in direct support of the Vision of Principals of the Guelph Innovation District."

Hoping the above meets with your approval, we remain,

Yours Truly,

Ken Spira

act

ACT Project

INNOVATIVE WASTEWATER TREATMENT AND RESIDENTIAL DEVELOPMENT IN BRITISH COLUMBIA: INTERPRETING MUNICIPAL GOVERNMENT ATTITUDES TO THE MUNICIPAL SEWAGE REGULATION 1999

October 2004

PREPARED BY

GREGORY FINNEGAN, Ph.D.
CENTRE FOR SUSTAINABLE COMMUNITIES CANADA

VANCOUVER, BRITISH COLUMBIA

Program Partners:

Federation of Canadian Municipalities / Fédération canadienne des municipalités

CHRA ACHRC

Association canadienne des constructeurs d'habitations / Canadian Home Builders' Association

CMHC SCHL Canada

TABLE OF CONTENTS

PREFACE

The project documented in this report received a grant under the Affordability and Choice Today (ACT) program. ACT is a housing regulatory reform initiative sponsored by Canada Mortgage and Housing Corporation and jointly managed with the Federation of Canadian Municipalities (program administrator), the Canadian Home Builders' Association and the Canadian Housing and Renewal Association.

ACT, launched in 1990, encourages housing affordability and choice through regulatory reform. The United Nations Centre for Human Settlements recognized ACT in 1998 as one of the top global best practices for improving the living environment.

Over the years, ACT has created an impressive body of knowledge others can use to facilitate regulatory change in their communities. Projects range from innovative housing forms, secondary suites and streamlined approval procedures to NIMBY, alternative development and renovation standards, and more. ACT projects contribute in many ways to sustainable development. They have also served to enhance working relationships between local governments, the building industry and non-profit organizations.

In summary, ACT promotes regulatory reform through

- its database of solutions, which others may borrow and adapt freely to meet their needs (see Web site address below).
- grants to local governments, builders, developers, architects, non-profit organizations and others across Canada to help facilitate the development of innovative solutions;
- other means of promoting regulatory solutions, such as forums that are held from time to time to highlight ACT solutions and address specific regulatory barriers.

For more information, visit the ACT Web site at www.actprogram.com, or contact:

ACT Administration
c/o The Federation of Canadian Municipalities
24 Clarence Street
Ottawa, Ontario
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Fax: (613) 244-1515
E-mail: info@actprogram.com

DISCLAIMER

This project was partially funded by the ACT Program. The contents, views and editorial quality of this report are the responsibility of the author(s), and the ACT Program and its partners accept no responsibility for them or any consequences arising from the reader's use of the information, materials or techniques described herein.

ACKNOWLEDGEMENTS

The new interrelated fields of innovative wastewater treatment, water reuse, and the alternative delivery of infrastructure services (innovative on-site, decentralized and distributed, with public and private ownership) are new and challenging subjects that are being introduced by sustainable planning advocates. Canada has the capacity to be in the forefront of this development taking the lead in the designing and implementation of alternative and innovative water and wastewater technologies that are more efficient, saving and even reusing limited energy and water resources.

This project has greatly benefited from ongoing work in the field of water reuse technologies and regulatory regimes being undertaken at NovaTec Consultants Inc. on behalf of clients ranging from the Federal Government of Canada, the Greater Vancouver Regional District the Capital Regional District to innovative land developers who are willing to explore new means by which to effectively solve the age old problem of sanitary management under new "green" approaches.

Financial support for this project has been provided by the *ACT Program*, Federation of Canadian Municipalities and by a VanCity Credit Union *Community Partnership Program -Community Project Grant* with assistance provided by the Ministry of Community, Aboriginal and Women's Services.

1. INTRODUCTION

This ACT research report explores the regulatory gap between The Province of British Columbia's new Municipal Sewer Regulation, 1999 (that allows developers to provide advanced on-site wastewater treatment systems for the purpose of servicing new land development sites, with, in this case, water reuse applications) and municipal attitudes, policies or legislation that may prohibit subdivision of property if the development is seen to be dependent upon a package treatment plant or a privately owned or managed wastewater utility for servicing.

As early as 1997, a Canada Mortgage and Housing Corporation report noted that although no absolute regulatory barriers to innovate water reuse technologies and applications could be identified the major obstacles appeared to be created largely by the attitudes and perceptions of decision-makers.[1] This National level study supported the use of on-site wastewater treatment as a means of conserving water and reducing the need to expand infrastructure.[2] The report also noted that BC was developing a new Municipal Sewage Regulation that would be the most comprehensive regulation of its kind in Canada, stating that it *may serve as a guide to the future implementation of site water reuse.*[3]

This report reviews the ongoing barriers to the implementation of on-site wastewater treatment as supported by the MSR 1999 legislation based on the responses to the survey taken of municipal and provincial decision makers and makes recommendations that may help overcome these apparent barriers. It is expected that perceptions and attitudes regarding risk management at the municipal level continues to be the major barriers to the implementation of new residential land development projects that could be approved for *Registration To Discharge* under the MSR 1999. The present system has a major regulatory gap that is costing developers time and money as they proceed from the provincial regulation to the municipal level of subdivision and servicing approvals.

Resolving the problems expressed by Municipal decision-makers could speed-up the process of servicing new sites for housing developments, while reducing public servicing costs associated with extending existing sewer systems. With the option to provide advanced wastewater treatment with water reuse, these developments could also help extend the life of existing treatment plants with reclaimed water being used for a range of uses including toilet flushing to irrigation which account for a high percentage of all potable water usage.

[1] CMHC (1997), *Regulatory Barriers to On-Site Water Reuse*, Prepared by Canadian Water and Wastewater Association, pg. iii
[2] CMHC (1997), Ibid, pg. 1.
[3] CMHC (1997), pg. 11.

1.1 Innovative Wastewater Treatment and Sustainable Housing Developments

In July of 1999 the British Columbia government brought into existence a new Municipal Sewage Regulation that had as one of its goals to:

> Encourage the use of innovative technologies to provide an alternative for the "big pipe", improved source control, water conservation, water reuse and reduced discharge of treated effluent to the receiving environment.[4]

Examples of projects that could be built under this legislation include infrastructure services that provide **decentralized** and/or **distributed** wastewater services to new subdivisions taking them off the grid (*big pipe solution*). Secondly, MSR 1999 projects can be designed to provide **water reuse**[5], allowing communities to reduce their consumption of potable water by using reclaimed effluent for a broad range of applications as allowed under the Regulation. These applications range from toilet flushing to irrigation, based on the level treatment and quality of the effluent being produced.

To date, the goal of this forward thinking regulation has remained almost unattainable, with few applications at the residential development level having been approved for sizable new community developments even 50 homes or larger. This is primarily due to:

1. Limited exposure and acceptance at the municipal government level;
2. Limited exposure and understanding of the legislation in the land development industry;
3. Challenges in interpreting the regulation among potential qualified professional practitioners
4. Financial costs associated with meeting MSR requirements, which limits application to regions of BC with higher value property;
5. Financial costs for assuring the establishment of a privately-owned wastewater utility as well as approved private sector assurance programs;

Regardless of this long list of barriers, the **Registrations to Discharge** [6] issued to date indicate that the MSR 1999 is a tool that, with refinements, can be used to help create sustainable communities under specific land development conditions and in jurisdictions where water management is recognized as pressing concern. In other words, an effort needs to be made to target municipalities that are water deficit and under pressure for land development if we are going to be able to push the sustainable community initiative as it relates to water conservation through the MSR 1999.

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[4] R. D. Wetter, M.A.Sc., P.Eng., Municipal Sewage Regulation (MSR) Workshop, Speaking Notes. January 22, 2003, Richmond, BC

[5] In this study wastewater that is treated to Regulatory Standards under the MSR 1999 for reuse as per the Regulation will be termed reuse water. Other terms include reclaimed water, effluent reuse, and in some cases gray water reuse.

[6] A Registration to Discharge is the ultimate outcome of the process for the applicant, allowing them to build a wastewater treatment plant that meets the requirements of the MSR 1999 as approved under the Registration to Discharge.

The profile for successful projects indicates that the developer, who has to take the lead on sustainable projects, has a strong commercial and community-based motivation to find alternative servicing programs for the site. The developer, while working to placate strong community and/or municipal concerns over on site environmental issues also needs to ensure that the project is economically viable. Given the previously *uncharted* cost factors of delivering onsite and as such off-grid wastewater services this is another barrier that needs to be overcome. This decentralized wastewater treatment precludes normal DCC related to project service charges. In essence, in forgoing municipal services (*assuming they are available*) the developer is entering into a new realm of service costing that includes, environmental assessments, maintenance and operations plans, potentially setting up of a private wastewater utility with bonding and assurance programs, the management of the delivery of wastewater services to a community of users, including billings, and the environmental management of effluent discharge and potentially reuse. While many of these issues can be passed onto the Community as the ultimate owner of their own services, this does represent a new *uncharted* element of business planning (*pro forma*) for land developers.

Finally, the legislation has the potential to seriously challenge the normal operations of municipal planning and engineering departments as they work to regulate and manage urban growth through long-term infrastructure servicing agreements and planning, an issue that will be addressed more closely in the case studies.

1.2 The British Columbia Municipal Sewage Regulation

The Municipal Sewage Regulation (MSR), which came into effect in British Columbia on July 15, 1999, provides authorization with standards and requirements for the discharge or reuse of treated sewage effluent. The BC legislation is unique in Canada, in that it defines water reuse within a comprehensive Regulation dealing with both unrestricted public access (high risk) and restricted public access (low risk).[7] Part of the process of complying with the regulation includes completing an environmental impact study and an operating plan prior to the submission of a registration form.

For residential developments where the discharger is not a government agency or municipality, the discharger must also comply with the applicable financial security requirements of the MSR[8]. As such, this legislation offers unique land development opportunities for developers who are willing to undertake the designing, building and operations, maintenance and management of a community's wastewater infrastructure as part of their development program. Under the Regulation, developers could provide centralized, decentralized or distributed wastewater treatment services to the communities they build or lease these facilities out to infrastructure management firms, without having to enter into site

[7] Vassos, Troy, D., P. Eng. *Water Reuse Standards and Verification Protocol* Report for CMHC, June, 2004, Six provinces in Canada permit some form of water reuse practices. British Columbia is the only one that defines water reuse within a comprehensive Regulation dealing with both unrestricted public access (high risk) and restricted public access (low risk). All three Prairie Provinces permit effluent irrigation of forage crops for disposal purposes, with over 5700 ha. being irrigated. Both Alberta and Saskatchewan have published Guidelines for municipal effluent irrigation practices. Ontario has no specific policy, regulations or guidelines, but issues Certificate of Approvals for disinfected secondary effluent irrigation on an individual basis. Finally, Prince Edward Island has issued Permits for water reuse irrigation for golf course application.

[8] See http://www.qp.gov.bc.ca/statreg/reg/W/WasteMgmt/129_99.htm#schedule1

servicing agreements with municipalities. Assuming the treatment technologies meet Regulatory standards they could also reuse the water for a variety of applications ranging from Restricted Public Access such as landscape waterfalls or impoundments to Unrestricted Public Access such as, toilet flushing, car washing, fire protection, golf course irrigation or stream augmentation.

1.3 The MSR 1999 in Review

The Regulation requires that qualified professionals (QPs) undertake the design, O&M plan, environmental impact assessment, and oversee the construction, commissioning and operation of the plant. Furthermore, the Regulation requires that the systems be supported by a stringent financial security plan with 100% replacement funding. As such, the MSR allows for private sector delivery of wastewater treatment services. Working within this legislation, private firms can deliver sewage treatment infrastructure to deliver new housing in the market place. In reality, few land development companies have attempted to navigate through this new legislation to supply services for new housing estates and those that have managed the regulatory challenge at the Provincial level have not necessarily been able to translate that success into development permits at the municipal level.

The BC Municipal Sewage Regulation, 1999 (MSR) sets new province-wide standards regulating the ownership, construction, management, security and effluent quality and application of wastewater treatment facilities including water reuse standards. It was established to:

1. **Time Delays** - Replace the requirement for site-specific permits under the Waste Management Act with an authorization under a performance-based regulation that reduces the time for receiving the authorization from about two years to 3 months;
2. **Protection** - Update discharge standards and security requirements to ensure that there is improved protection of the receiving environment; and
3. **Innovation** - Encourage the use of innovative technologies to provide an alternative for the "big pipe", improved source control, water conservation, water reuse and reduced discharge of treated effluent to the receiving environment.[9]

Based on case studies the MSR 1999 has successfully delivered on the reduction of Time Delays, with reports from QPs being regularly moved through the review process and Registrations to Discharge being authorized by the Ministry. However, QPs note that delays and problems have occurred with review of the process for approving water reuse provisions by Health:

> (7) No person may provide for the use of reclaimed water unless specifically authorized
>
> (a) in writing by the local health authority having jurisdiction, or
> (b) under a local service area bylaw under which the municipality or a private corporation under contract to the municipality assumes the responsibility for ensuring compliance with this regulation and that proper operation and maintenance will be carried out.[10]

[9] [9] R. D. Wetter, M.A.Sc., P.Eng., Municipal Sewage Regulation (MSR) Workshop, Speaking Notes. January 22, 2003, Richmond, BC

[10] MSR 1999, Part 2 — Exemption under Certain Conditions from Section 3 (2) and (3) of the *Waste Management Act* for Discharge Use of reclaimed water, 10,

As per environmental protection, the MSR 1999 has effectively placed Qualified Professionals in the drivers seat to deliver scientific and engineering reports that effectively respond to the issues raised by government project officers. However, on the financial protection side of the issue the regulation has proved to be complicated and even onerous. With the developer or community of users (i.e. a Strata Council) expected to put up 100% of the capital replacement costs of the treatment plant at the time of commissioning through a program that has been approved by the government and run by a financial institution there have been few successful programs financed to date. As such, innovation has not been an achievable goal either, given the high costs of starting up such a program.

Innovation is also difficult to achieve in an municipal services engineering environment that has to carefully select and approve technologies and treatment processes based long term community safety and also on a limited experience of systems outside of traditional municipal big-pipe solutions. Presently, BC municipal engineers and infrastructure planners have no local third party organization that they can turn to for advice on water or wastewater technologies to ensure that their communities can be both innovative, green, consumer smart and safe.[11]

The MSR 1999 has failed to deliver on two of its three goals over the first five years of its existence. This is partially due to problems with the legislation, some of which are being effectively worked out, and partially due to barriers to change at the municipal level and in the land development industry. However, these problems exemplify a much larger problem that green or innovative technologies face across the entire spectrum from bioproducts to renewable energies to water and wastewater treatment that is a lack of demonstration sites and an unusually high perception of risk that needs to be mitigated.

1.4 Problem Definition

Since the proclamation of the MSR in 1999 there have been very few discharges "registered" for private sector residential projects (Table 1), and as of the published 2002 data, only one confirmed with the potential for water reuse.[12] This suggests that regulatory and /or market condition barriers may be complicating the approval of projects under the new Regulation.

Water, Land and Air Protection (WLAP) is managed through seven regional offices, each of which handles local registrations to discharge under the MSR, 1999. Telephone interviews were held with district managers and most commonly with compliance officers in the regions. Compliance officers offered a wide range of opinions regarding the MSR and its application. The most common problems that they referred to include:

1 Inability to interpret Assurance Plan Requirements to developers.
2 Inability of smaller developments to finance servicing under the MSR Assurance Plan Requirements program requirements.

[11] They can turn to the National Sanitation Foundation for ETV US-EPA approved technology reports for water and wastewater technologies, assuming that the manufacturers have undertaken this voluntary verification process.

[12] The first registration in the Lower Mainland was for tertiary level wastewater treatment plant with an "unrestricted" water reuse application, for a residential project of 100 homes. WLAP has registered only three discharges that require security and capital replacement funds in their Lower Mainland Office from 1999 to 2002.

3 Costs incurred by Developers to follow through with the requirements of the MSR requirements (consulting fees) are too onerous on developers outside of higher land price regions.

4 Inability of regional engineering and environmental firms to work through the MSR; or basically a lack of QP in remoter parts of the Province.

5 Inability to meet compliance after the Discharge has been Registered has resulted in Registrations being withdrawn.

6 Lack of indexing and text-based assistance programs to help Regulatory (provincial and municipal) and development communities to work through the MSR.

TABLE 1
Registrations Under MSR 1999 as of June 2002

WLAP Regional Office	Number of Registered Discharges	Residential Development (Excluding municipalities)	Proposed Water Reuse Options
Nanaimo	18	4	0
Surrey	15	1	1
Kamloops	25	4	0
Nelson	6	2	0
Williams Lake	2	0	0
Smithers	1		
Prince George	11	2	0
Total Number	**79**	**10**	

NB: Please note that the Ministry has not updated information on this information since June 17, 2002, over two years ago.

The MSR was designed to reduce the time required for approval by government to 90 days, compared to the previous permitting system that averaged up to two years. While Ministry processes have been streamlined, new barriers appear to have arisen at the municipal level that are impeding the application of the MSR legislation to residential land development projects. These barriers include, but are probably not limited to:

1. The Section of the Regulation pertaining to financial security requirements (Assurance Plan) places an onerous burden on developers, is difficult to interpret and has a very limited acceptance in the market place with only two "Financial" firms having made the effort to have their Assurance Programs approved by the Province for use by developers.[13]

2. Experience with the Regulation at the municipal level are limited and impacts unknown, leaving overworked and understaffed engineering and planning departments, as well as municipal legal staff in a state of uncertainty regarding the implications of allowing the private delivery of wastewater services or water reuse. **Uncertainty equals risk, risk equals rejection.**

3. As applications are frequently for development properties outside, or beyond, the existing serviced region of the municipality there is a tendency for planning departments to see applications as leading to or creating urban sprawl – even where the property may be designated for urban development.

4. Interpretation of the MSR 1999, the carrying out of Environmental Impact Assessments, selecting and acquiring on-site (frequently advanced) wastewater treatment plants and finding viable and appropriate discharge options require environmental and engineering services that demand that the developer recoup their return on researching the problem and designing the *green* solution. This means that projects designed under the MSR 1999 have a cost sensitivity.

[13] The two firms referred are VanCity Credit Union through at the time their VanCity Insurance arm and Terasen Utility Service (formally bcgService).

In BC this means that projects are more likely to be viable in the Lower Mainland, in high growth areas of the Okanagan-Kelowna region and in the Victoria Capital Region, as well as in specific high-end ski-resort/golf resort locations that lack other options for treatment and disposal and which may require water reuse for irrigation.[14]

5. Finally, the level of Qualified Professional (QP) expertise and support required to manage an approval through the MSR 1999 legislation appears to indicate that remote and northern land developers (who are also generally receiving a lower return on land values) are unlikely to have access to local consultants who could feasibly explore this option for them.

The scope of the present research report focuses on the issue of municipal government response to the Provincial MSR 1999. Although WLAP held focus groups and workshops across the Province to introduce the legislation, it would appear that a number of the municipalities contacted in the run up to the questionnaire had a limited working knowledge of the Regulation (see Section 2.10). As such, we designed a questionnaire to send out to municipal engineers and planners that focused on how they would respond to a land development project that proposed on-site wastewater treatment delivered by a developer with water reuse. Their responses are supplemented by information gained from local WLAP officials in the regions that have authority over managing the MSR 1999[15] and through case studies that the author has gleamed from local developments that successfully went through the MSR Registration to Discharge process.

1.5 Introduction and Questionnaire

This research project is premised on the responses to an extensive questionnaire that was completed by 17 participating communities across British Columbia. An attempt was made to provide a cross section of views and responses from larger urban centers close to the urban core area (Vancouver-Victoria) through to smaller, northern and interior communities. While a representative sample of 17 communities was acquired, a number of pre-selected innovative rural communities that are progressively dealing with septic systems problems and smaller northern and interior communities were unable to respond due to very limited staffing levels.[16]

The questionnaire was designed with input from Mr. Eric Bonham, P. Eng., Director of Municipal Engineering, MCAWS (retired 2004) and from Dr. Troy Vassos, P. Eng., NovaTec Consultants Inc. Each municipality in the dataset was contacted personally and provided with an overview of the project and the rationale for participating. The majority of the 35 municipalities contacted were interested in the topic and generally wished to know more about the potential impact of the MSR 1999 on urban development and planning. However, the reality of small town government meant that a number of municipalities in the end had to decline (See Appendix A – Contact List). The 17 participating

[14] Or as proven by one environmental engineering firm - snow-making.
[15] Officers in each regional jurisdiction in BC were contacted by phone and by e-mail. These were not scribed interviews, although a few opening questions regarding number of applications and examples of projects were queried first. The WLAP officials were very forthcoming and added valuable regional context and case study opinions.
[16] For example, the Village of Anmore, B.C. (in the GVRD) was targeted for participation as a semi-rural communities close to Vancouver that has deliberately not connected to the GVRD's infrastructure having addressed the need for advanced septic systems at the household level, however they were unable to participate due to limited staff time.

municipalities are listed in Column One in Appendix C that provides an overview of all responses, with the questionnaire located in Appendix B.

The first part of the questionnaire asked participants to review a hypothetical application to subdivide a property that has been zoned for mixed residential/recreational development but which is beyond the present development "envelope" of the municipality. This was followed by a section that relates to their working experience and knowledge of the MSR 1999 or of water reuse projects in their municipality as well as municipal policy issues relating to on-site wastewater treatment, innovative technologies and water reuse. The questionnaire was prefaced by a series of land development assumptions based on a real case study and presented to municipal managers. The managers were then asked to judge how their municipality would respond to a similar site-servicing plan made by a land developer (See Appendix for example).

2. CASE STUDIES

Two case studies help define the issues facing residential land developers, and the municipalities that they are operating in, as they struggle to resolve their wastewater servicing problems by implementing on-site wastewater treatment options. Both projects are located in the Lower Mainland of British Columbia in communities that are increasingly dealing with population growth and increasing demands for new housing and services.

Caveat: As each of these private land developments are either still in municipal review or are under development we cannot presently disclose location or names.

2.1 A 100 Home Subdivision

2.1.1 Introduction to Site and Proposed Servicing Regime

The proposed residential development was originally designed as an onsite wastewater treatment project in 2000-2001 by a local land development firm. This 200-plus acre property has been the site of a number of land uses in the past with the most recent active use being a gravel pit. As such, on-site septic systems with disposal fields were not a viable option as the soils percolate too quickly.

The property has an existing zoning classification for 2-acre residential development. The developer at the time (the property has changed ownership since the research project began) proposed developing it as 90+ two-acre parcels with a tertiary wastewater treatment plant to serve the entire development. The site is surrounded by hobby farms ranging from 5 to 20+ acres with the majority being equestrian properties with easy access to riding trails and parks. Previous attempts to develop this property had failed due to a mixture of community activism and changing economics. At least one past proposal was for a golf course and some 150 homes in a series of higher density pods. 2However, the cost of wastewater servicing had always been a major contributing factor to land development decisions, with the golf course proponent having expected to cover the costs connecting to sewer (some 12kms away) through the commercial capacity of the golf course and clubhouse.

Water for the development has never been perceived as a problem with connection to the municipality being the accepted option. However, the developer felt that the distance to sewer connections and the cost of connecting were prohibitive. As such, an environmental engineering firm was hired to resolve the wastewater problem. They proposed that all sanitary wastewater would be collected in gravity sewers and conveyed to the water reclamation plant - a mechanical tertiary wastewater treatment plant (average day flow 113 m^3/d). The resulting effluent was to meet the standards for reclaimed water use with unrestricted access as described in the Municipal Sewage Regulation (See Table 2). Operators certified to the same level as the facility were to operate and maintain the plant. The plant was to be designed with the level of equipment redundancy and effluent emergency storage required by the Municipal Sewage Regulation.

Insert Fold-out Diagram

Reclaimed water from the tertiary treatment plant was to be discharged to an existing pond on site. From the pond, overflow was directed to a new stream channel that would eventually discharge to a local water deficit salmoniod-bearing creek. The new channel will be designed as a non-fish-bearing permanent stream (Environmental Augmentation). Riparian vegetation was to be planted along the new channel. The pond and stream together would have supplied additional flow and nutrients, including fish food organisms, to the Creek. It was determined that the increase in flow (attributed to treated effluent) to the Creek as conveyed by the new stream channel to the drainage ditch would not hydraulically impact existing channels further downstream.

TABLE 2
British Columbia: Waste Management Act – Municipal Sewage Regulation[17]

Class	Reuse Application	Effluent Quality Requirements				
		Median FC (CFU/100ml)	BOD (mg/L)	TSS (mg/L)	pH (90%)	Turbidity (NTU)
Unrestricted public access	**Urban:**	≤2.2	<10	≤5	6-9	≤2
	Parks, playgrounds, cemeteries, golf courses, road right of ways, school grounds, residential lawns, green belts, vehicle and driveway washing, landscaping, toilet flushing, outside fire protection, street cleaning					
	Agricultural:					
	Aquaculture, food crops eaten raw, orchards and vineyards, pasture, frost protection, seed crops					
	Recreational:					
	Stream augmentation, impoundments for boating and fishing, snow making					
Restricted Public Access	**Urban/Recreational:** • Landscape Impoundments • Landscape Waterfalls • Snow Making (not for skiing and snowboarding)	≤200	≤45	≤45	6-9	-
	Monitoring Requirements	daily (1)	weekly	daily	weekly	continuous

Note: (1) Monitoring requirements for fecal coliform for restricted public access is weekly.

To mitigate environmental impact due to nutrient addition, the reclaimed water facility was designed to provide nitrogen and phosphorus removal in addition to the standards set for reclaimed water for unrestricted access in the Municipal Sewage Regulation (Table 2). It was recognized that there may still

[17] Troy D. Vassos, 2004, *Water Reuse Standards and Verification Protocol,* Canada Mortgage and Housing Corporation, See Table 9.

have been some potential for undesirable algal growth in low gradient, poorly vegetated areas of the Creek, which occur immediately downstream of the residential development. With further dilution downstream, it is unlikely that the phosphorus loading from the reclaimed water would affect the lower reaches of the Creek or the river system into which it flowed (See Figure 1).

To mitigate environmental impacts from the dissolved copper levels in the domestic water system, it was determined that either plastic piping should be used in the development housing, or further treatment should be provided as part of the reclaimed water treatment process to remove copper from the reclaimed water before discharging to the pond. Given concerns over higher temperature water being discharged from the pond into the Creek, consideration was given to mixing the water exiting the pond with colder water pumped from the lower aquifer. Part of an open 0.5 ha space to the east of the existing pond could be used in the future for additional treatment should it become necessary based on monitoring of Creek temperatures.

Overall, the consulting Registered Biologist reported that effluent from the treatment plant had a positive impact on the discharge Creek. A point agreed with by both the Federal Department of Fisheries and Oceans (DFO) and by the Provincial Water Land and Air Protection (WLAP) officers assigned to the file. Base flows in the Creek were predicted to be enhanced through the construction of the new stream, which will be connected to the existing pond, with increased base flows improving summer rearing habitat. In addition, the new channel will provide an additional source of fish food organisms (benthic invertebrate drift).

With respect to groundwater conditions, the site is underlain by an irregular distribution of sediments of primarily glacial origin, with three separate aquifer horizons: the upper, middle and lower aquifer units. This Equestrian Residential Development site is located within a groundwater recharge zone, with groundwater flow downward and generally towards the north, predominantly within the upper aquifer, under prevailing hydraulic gradients. All wells but three within 300 m of the site are drilled, and appear to be completed within the middle aquifer, with two of the dug wells abandoned and the third dug well hydraulically-isolated from the site Creek. No measurable impacts from pond water quality are expected on the groundwater quality of the surrounding domestic wells as a result of the apparent degree of hydraulic isolation of the middle and lower aquifers from site recharge. As well, no measurable impacts from the proposed site re-development are expected on wells south of the international border, as groundwater flow beneath the site is primarily towards the north, with site recharge mostly retained within the upper aquifer.

2.1.2 The Planning Challenge

Although the original developer received a Registration to Discharge under the MSR 1999 in February of 2002 based on the Ministry's review of the Environmental Impact Study, Operating Plan and Financial Security program and submission of the Registration Form, they apparently could not convince City Hall to approve the development permits.
Planning staff first raised objection to the proposed wastewater treatment solution at the initial meeting with the developer at which all three levels of government were present, including WLAP and DFO. At this time staff noted that Municipal policy stated that land development permits would not be issued for sites that required package treatment plants for the servicing of wastewater. This policy was directly related to the local government's past experiences in having to extend sewer lines out to small trailer

park developments. These sites had been allowed to develop (circa 1960s) under earlier legislation using off-the-shelf treatment plants that failed, leaving the residents with serious sewage problems. While the engineering consultants clearly showed that the proposed wastewater treatment program was an engineered system designed specifically for this site and situation with an approved Assurance Plan under Provincial legislation, planning staff strongly believed that the local government would be ultimately responsible and be *left holding the bag*.

In discussions with planners and engineers involved with this project, there was the general perception that while a viable green solution was being proposed by the developer, *a level of security* with the concept of a privately owned and operated wastewater treatment system just did not exist. Furthermore, they wanted to know where in a suburban setting such a project had been proven out in the Province. Indeed, perception of risk continues to be one of the major barriers holding back the demonstration and implementation of innovative urban infrastructure solutions.

Planning staff also expressed concerns over what can be called the *floodgate* issue. In other words, if this project was approved and development permits issued, then a precedent was set which would allow other developers to propose similar on-site serviced developments.

*Planning should follow servicing...If we said yes to this development where the services have followed the plans then "**how could we say no again.**"*
Director of Planning

These projects would in a similar vein be beyond projected growth areas of the municipality, leading to a potential *leapfrogging* of the designated urban development boundaries and in all likelihood, increased demand for other public services such as public transit, schools, libraries, water servicing, road improvements etc. In a region that is trying to advance Smart Growth, the MSR 1999 option appeared to them to create a major problem.

Taken as a single land development project, Equestrian Estates represented a green wastewater solution that did not unduly increase the demand for infrastructure services while delivering an opportunity to showcase innovative Canadian treatment technologies under a decentralized infrastructure program. As such, this project spoke to Regional government planning objectives to find green on-site solutions to infrastructure needs. But taken at the municipal context of local land development in a growing semi-rural municipality on the edge of a major city, this proposal had the potential to open the floodgates on new proposals scattered across the rural countryside.

Another option proposed by the developer was to build the treatment facility as designed and approved and turn it over to the municipality. However, this option also had long-term problems from the perspective of the municipal engineering staff, on two points:

1) Why take over a plant that you have not been involved in designing?
2) Why take on the operating and maintenance costs of a satellite plant that is far removed from all other wastewater treatment facilities in the region?

When last visited, the green wastewater solution for this site was still an option but not the preferred one, with the big-pipe connection to the municipal sewer system apparently providing a more secure risk-free option.

2.2 Residential Development and Golf Course

2.2.1 Introduction to Site and Proposed Servicing Regime

This proposed residential development and golf course covers an area of approximately 200 hectares located on an Island community that is increasingly being impacted by Lower Mainland population expansion. The developer is proposing to develop the property into over 150 residential lots, with a 20-bedroom inn, a pub/restaurant and limited commercial space and a small golf course.

About half of the site is underlain with fractured rock. Three creeks also traverse the property. The balance of the development (about 151 hectares) will be served by a gravity sanitary sewer system that will convey the wastewater to a treatment plant. The sewage from the eastern and southern parts of the serviced area will be conveyed to the treatment plant via pump stations. The balance will flow by gravity.

The development will be built over a period of several years, with the wastewater treatment plant being built in two phases. Phase 1, with a capacity of $186m^3/d$, will provide secondary treatment and will discharge the treated effluent through a marine outfall. Phase 2, with a total capacity of $391m^3/d$, will also provide secondary treatment and marine discharge. However, an advanced treatment component will be added as part of Phase 2 to allow the treatment of up to $239m^3/d$. for unrestricted public access.

An important and unique feature of this project is the reclaimed water component. Reclaimed water ($239m^3/d$) will be pumped to an adjacent $47,000m^3$ irrigation reservoir and used for golf course irrigation in the summer months. This reservoir will also receive a portion of the runoff from the catchment area between two of the local creeks that traverse the property. Stormwater discharge works will be designed for the reservoir overflow. The advanced mode of treatment will only be used when reclaimed water is needed for golf course irrigation.

The treatment plant is fully enclosed and will be provided with an odour control system. The treatment plant will be located within the golf course and the closest residential home will be at least 125 metres away.

The terminus of the marine outfall is at 30 metres below mean sea level and, according to the environmental assessment; the effluent will be trapped at a depth of 19 m (i.e., it will not surface). The impact assessment has not identified any major environmental issues relating to the proposed wastewater treatment and disposal system. Recommendations for surface water sampling from the local creeks monitoring are provided.

2.2.2 The Planning Challenge

The green planning challenge on this island community was at a totally different level of discussion from the beginning of the process for a number of reasons. Not the least of which is the fact that being

an Island community it does not have does not have connection to an urban sewer system. Secondly, water is recognized as a scare resource on the gulf islands, creating an environment where innovation, water conservation and even reuse are almost considered the norm.

In this case, problems with outbreak, due to the rocky conditions of the site, plagued conventional septic system and disposal field logic. Communal disposal fields were also looked at as an option but considered too costly and disruptive to the benchland areas that are being designed as a golf course. A number of options, including a decentralized system, were proposed but in the end a centralized treatment plant with water reuse for the drier summer months and an ocean outfall during winter were approved.

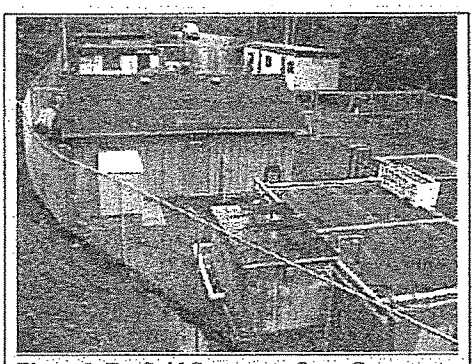

Figure 2, Ecofluid Systems at Snug Cove, Bowen Island
http://www.ecofluid.com/ecofl/160.html

A second consideration was the question of how to supply sufficient levels of water to the golf course in the summer months to provide irrigation for at least the greens and tee boxes. The solution was immediately available in the form of effluent from the housing, which needed to be treated and disposed of in any case. In this scenario, the housing estate's treated effluent is the golf course's precious water resource.

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A number of scenarios, including a distributed/decentralized model with water reuse, met with acceptance. However, the rocky nature of the site does not allow the placing of over 100 individual units in ground. The developer's fallback position, a centralized wastewater treatment plant provided by Ecofluid Systems Inc., was a viable alternative for the community as the known commodity being in service in the region. (See Figure 2 above). Where in the previous case study the municipal government needed proof that innovative systems could work in place of GVRD sewer, on Gulf Island they already had a local working example, greatly reducing the risk factor. Finally, the land developer already has a strong track record of providing potable water as a private water utility in the area being serviced, helping to increase the Island municipality's level of security.

2.3 Comparisons and Lessons Learned

Typically at least two levels of governmental approvals are required at the project approvals stage. Discussions and negotiations with the Province regarding the discharge to the environment were relatively streamlined through the MSR process, even though this was the first project with a registered discharge under the Regulation. From initiating the first feasibility study and meetings with the Ministry to registration the process took about eight months. As this was the first project under the MSR, the Ministry requested an in-depth review all supporting documents.

In contrast, Municipal Departments of Engineering and Planning raised persistent questions regarding the project, citing concerns over financial liability, operations and maintenance and ownership, impacts on municipal planning projections and concerns that if approved it will open up a new market for land development. Some planners expressed the opinion that the MSR 1999 could effectively reduce their

ability to plan extensions of wastewater servicing as a means of managing urban growth. The senior manager of the Municipal Engineering Branch in the Ministry of Community, Aboriginal and Women's Services, expressed this same opinion.[18] If developers can apply under the MSR to register discharges, and as such provide wastewater services for properties beyond existing or projected urban boundaries, then the implicit planning control of timing the delivery of municipal wastewater services to correspond with approved urban growth has been threatened. To quote one urban planner:

...These green technologies represent a major paradigm shift from how we have traditionally planned infrastructure for our municipalities.

In both case studies the local developers faced considerable community challenges, needing to build public support for their development proposal as well as for their wastewater treatment solutions for the sites. Community concerns were addressed at well-attended public meetings, and for the most part the wastewater treatment solutions being proposed were not the paramount, or even secondary, issue raised by the public.

In both case studies the developer put in place an Assurance Plan that met WLAP's standards of approval as required in the MSR 1999. However, the Gulf Island developer had a number of practical variables supporting his position, which included:

- the inability to connect to existing municipal sewer lines.
- the municipality's experience and working knowledge of the treatment technology being recommended.
- practical experience in managing a water utility.

Clearly, the municipal staff reviewing the 100 Lot project never developed the level of security with the Assurance Plan and the operations and maintenance elements of the proposed treatment plant required to allow them to fully support the project. A second problem that the 100-lot developer could not foresee was the municipality's long-term servicing program that required bringing the sewer line south towards the development to service a community that was on failing septic system disposal fields. Finally, planning staff acknowledged that they feared setting a precedent that would open the floodgates to similar proposals. In contrast on the Gulf Island, new developments will in all probability require advanced on-site systems in order to proceed.

[18] Personal communications Mr. Eric Bonham, P. Eng., Director of Municipal Engineering, MCAWS, Victoria. Although Mr. Bonham, now retired, was a strong advocate for innovative and decentralized infrastructure he recognized that Planners could interpret the MSR 1999 as a means of jumping urban planning boundaries that are commonly controlled and dictated by the planning of sewer and water extensions.

3. QUESTIONNAIRE RESULTS AND DISCUSSION

In this section of the report we look at the attitudes and responses of municipal engineers and planners to a sample application by a developer under the MSR 1999, asking them to respond to the application as if it was being brought forward for approval in their jurisdiction. The questionnaire is available for review in Appendix B.

3.1 Question 1

In question 1 we asked: From an Engineering perspective what are the three major complications or issues that would be raised by this project in your municipality? (See Table 3)

Although the responses requested a qualitative response the replies can be quantified, with the majority of respondents in order of magnitude recognizing the following issues as needing to be clearly addressed:

TABLE 3
Major Municipal Engineering Concerns over MSR 1999,

Primary Concerns	Frequency	Comments
Assurance Plan & Liability	14	Issue of private sector bankruptcy
Operations & Management	13	Continuity of ownership
Effects on Urban Planning	4	Issues include urban containment
Effluent Monitoring	3	Ability to respond to changing standards
Technology Record	3	Who defines accepted technology, track record issue
Inter-Jurisdictional Issues	3	Appears to be conflict within Provincial Ministries
Local Environmental Concerns	2	Soils and cold climate issues
Need for Local Legislation	2	Covenants on properties
Confusion Public/Private	2	
Facility to Municipal Standards	2	

The twin concerns of liability and operations and management clearly speak to the municipal engineering communities ongoing need to ensure that risk is mitigated prior to the construction and operation of a privately owned wastewater treatment facility. In the Canadian context this is a realistic and accepted level of concern, one which the present MSR 1999 legislation does not appear to be overcoming and responding adequately to based on these well thought out responses. Decision makers from both Whistler and Campbell River stated that they would need to have separate municipal covenants against each property to ensure that perpetual service would be guaranteed and that connection to municipal sewers would not be demanded at some point in the future.

Another important issue raised by the municipal engineers was the perception that the MSR legislation as discussed here was not necessarily supported by Health or by Municipal affairs in Victoria. This bringing into question the *seamless ness* of the legislation between these three provincial ministries - WLAP, Ministry of Community, Aboriginal and Women's Services (MCAWS) which is responsible for municipal engineering policy issues and Health.

Part of this lack of acceptance of the MSR legislation as it pertains to the private delivery of on-site wastewater facilities has to do with the traditional role of the municipal engineering community in Canada as the gatekeeper to these *public goods and services*. The issue of confusion over the delivery of wastewater treatment services by the private sector was also mentioned as a serious problem. However, this model of wastewater or even water utility service delivery is not the only accepted one in the western economies. In France, the private sector delivery of these *utilities* has been ongoing for over 100 year. Companies such as Vivendi and Suez have built multinational enterprises on the expertise they have evolved in delivering municipal services. More recently, privatization in Great Britain has allowed Thames Water to become an international market player with, like its French competitors, a growing market presence in the American market for water services and technologies. Increasingly, American municipalities are looking to private sector firms to deliver water treatment services, a trend that is also active in Ontario.

A senior municipal engineer with extensive experience of the Regulation raised a final, and most telling response:

> *Impact of the proposal on the environment especially public perception as opposed to technical conclusions.*

It appears that local public, and possibly political, perception outweighs the merit of technical reports that provide support for projects under the MSR 1999. So even if the engineering and environmental studies prove supportive, the perception of undue risk appears to be limiting the application of innovative wastewater solutions.

3.1 Question 2

The reactions to the proposed application presented in this scenario by the planning department covered some of the same ground as engineering but ranged into more policy related issues not addressed by the MSR 1999 nor discussions that addressed the legislation in workshops leading up to its proclamation. Specifically Planners brought forward issues addressing urban containment and taxation – the paying for municipal services. Given that extending water and sewer lines creates new market for these services under existing taxation the delivery of private sewer to such sites could reduce the expected and planned for municipal taxation base. This development would require other services, with municipalities rightly asking how are they to be paid for? One respondent suggested that tax rates must be restructured so these developments pay a premium for this lifestyle and not be subsidized.

Water and associated wastewater treatment are a primary source of revenue for municipalities. The advent of a mixed public/private system of delivery indicates that there is money to be made in the water utilities sector in Canada, a situation that will threaten already limited municipal financial revenue unless a new model of taxation is initiated.

However, the strongest worded and expressed replies to this question dealt with the potential loss of planning control. The creation of an *Ad Hoc development sequence* (Pitt Meadows), *this would be precedent setting, putting pressure* (on Council) *to open up areas not previously planned for*, and *thin*

edge of the wedge (Maple Ridge), *inconsistent with OCP* (Saanich), *in contravention of OCP* (Campbell River), *greenfield development not sustainable* (Gibsons).

In only one case did a municipality look at this in a positive light, with the City of Vernon that has a history of water reuse for irrigation dating back to 1997 asking,

> *Could provision be made to allow future development on adjacent properties connect to the system? How would this work?*

The answer to this would unfortunately appear to be no, unless the registration to discharge with WLAP was revisited and a new process undertaken. The other to this question is that developers would be unlikely to size the original treatment plant for the purposes of expansion given the onerous assurance plan requirements, were:

> security is calculated using the following formula and rounded up to the nearest $1,000:
> security = $1400Q,
> where "Q" is the maximum daily flow in m^3/d.[19]

3.1 Question 3

In our first case study the municipality argued that on-site wastewater treatment was in violation of an existing municipal policy, that stated "Development will not be permitted on the basis of a private package sewage treatment plant" (*Municipality Subdivision and Development Control Policy*). This response by the municipality was premised on the assumption that the treatment plant and disposal mechanism being designed specifically for the site was some form of "off-the-shelf treatment system" an assumption that was directly questioned by the engineering consultants.

Does your Municipality have a comparable bylaw or policy? Yes 9/17

This response was in keeping with the responses of the slight majority of municipalities polled with 9 of 17 stating that they had similar legislation in place. In most cases the policy required connection to existing sanitary sewerage systems and in the case of the District of Mission stated *that no subdivision of rural properties which are not suitable for conventional septic tank with disposal field systems will be permitted on a fee simple basis.*[20] On review of the policy and in light of the questionnaire Mission did note that the concept of rural strata area subdivision utilizing shared private disposal systems has some merit in that the security, operation, maintenance and replacement could be held under a Provincial authority (MSR 1999). Other municipalities stressed the role of the Ministry of Health Regulations or Health's on going testing of small wastewater treatment systems as responses to the question, noting a recognition of the division between municipal and provincial authority, but not between Health and WLAP's MSR 1999 legislation.

[19] http://www.qp.gov.bc.ca/statreg/reg/W/WasteMgmt/schedule1

[20] Earlier interpretation of the MSR 1999 regarding land ownership in fee simple vs. strata suggested that for the purposes of the Assurance Plan and operation of the plant that the site would have to be held under strata conditions, this is no longer the case.

Question 3 C/D/E asked the municipalities to express an opinion about the adequacy of their existing legislation to stop the proposed land development project and specifically if they felt that they should change their legislation to:

Question		Responses
3c	Increase Barriers to MSR 1999 type Projects,	8
3d	Streamline to Increase Opportunities	0
3e	Status Quo sufficient	8
Also:	Need more information	1

No municipality considered streamlining legislation or procedures to facilitate MSR type land development projects. Half of municipalities responding felt that existing legislation was adequate to block a subdivision approval that met MSR 1999 regulatory requirements at the municipal level. However, a surprising number suggested that they might consider reviewing their legislation to increase barriers. Only two municipalities modified their responses by adding information into the response section of 3d indicating that they may look at options to streamline subdivision applications approved for registrations to discharge under the MSR 1999 if there was a guarantee that the municipality would have, in the words of Pitt Meadows, *absolutely no obligation,* and in the words of Mission, there was no *implicit transfer of such risks (replacement, connection, maintenance) to local government.*

Once again the voice of local government is implicit:

- connection to the existing sewer systems is preferred if not demanded and
- risk to local government must be avoided.

When we review the conditions that developers need to meet under the MSR 1999 we see that these environmental risks, operations and maintenance risks and financial risks are all covered off with the Province. WALP has the authority to step in and take over management and control of a facility, in order to correct mechanical or building failures that may be occurring. Furthermore, the assurance plan requires that the full replacement cost of a facility be accessible from the day of commissioning. We must conclude then that the interpretation of MSR 1999 legislation is apparently not being clearly communicated to the Municipal level, or other factors such as control over municipal planning and ownership of buried assets are playing a role in local decision-making that had not been foreseen by the authors of the Regulation. Land planning, and specifically the timing and extension of services to new sites, is the prerogative of municipalities; it is a planning tool that controls and helps manage urban growth and the timely expansion of public services. In our case study, the developer brought forward not only a viable land development plan that fit within the community context but also infrastructure servicing for the site through a satellite wastewater treatment facility with approved disposal options. While this represented a green solution to one problem of wastewater treatment, it opened up a Pandora's Box of other complications for the municipality.

As one municipality replied:

A question for you: Do you believe that municipalities should have the authority to regulate development within their boundaries, particularly those areas that may be suitable for innovative sustainable water supply
and waste disposal practices and to define those areas that are not?...

and as another Municipal Director noted:

...planning should follow servicing.

3.1 Question 4

Based on the responses to questions 1 through 3 we were surprised to find that 7 of the 17 municipalities queried would, under qualified conditions, support a land development application that had a registration to discharge under the MSR 1999 and met similar conditions as those described in the case study. These seven positive responses represent a break in the discussion up to this point in time, with exception that their qualifications generally stress the need for the Province under WLAP to take responsibility for the risk involved (Assurance Plan) or that further studies be commissioned to meet the municipalities concerns. These seven communities (Vernon, Whistler, Prince Rupert, Mission, Langley, Maple Ridge and Richmond) also raised concerns over Fisheries approval re: discharges, or the nature of the specific project.

Another four communities also did not out reject the concept out-of-hand. In these cases (Prince George, Squamish, Pitt Meadows, and Gibsons) noted that a number of hurdles would have to be passed to acquire development permits, but that servicing under the MSR 1999 would not necessarily discount the project or that Council could grant a variance where the project was outside of the existing serviced development zone.

These leaves us with only 5 communities that rejected the proposed land development as presented (Chilliwack, Counrtney, Campbell River, Saanich, and Kelowna) with one not responding to the question. The majority of these communities stated that the proposal was not consistent with the OCP, with designated sewer area policies or not viable as being outside the urban containment area. Kelowna's response to this issue seems to be a considerable variance to that of Vernon, given that both share similar water management problems, these being the dry semi-desert region of the Interior and increasing urban populations. Kelowna has been a leader in water conservation programs, while Vernon has been actively reusing treated effluent for irrigation for decades. Reviewing Kelowna's responses we see that they are consistent with a concern over urban sprawl, a need to connect urban development to sewer services and a concern over liability, operations and management. The rapid growth of Kelowna, and the modern state of their treatment facilities, probably indicates that they have sized their facilities for the expected growth and would see little need for satellite type systems even if they took over operation and ownership. Vernon also appears to have had more direct experience with private sector delivery of wastewater facilities with the Predator Ridge golf course treatment plant having been built and paid for by the developer and then turned over to the city upon completion.[21]

[21] see: http://www.vernon.ca/services/utilities/reclamation/ for more information on Vernon and water reclamation

3.1 Question 5

Based on our case studies we knew that liability, operations and management were anticipated to be ongoing issues that municipalities felt were not being adequately addressed by the MSR. To address these issues we asked municipal engineers if they would entertain taking on ownership of the treatment facility once the developer had built and paid for the plant, thus reducing the risk.

Once again, replies stressed risk mitigation as well as fiscal responsibility. Two municipalities willing to take over the facility if offered to them are Vernon, which has already managed a similar takeover from the developer of Predator Ridge Golf Course, and the City of Prince Rupert. However, the vast majority of the municipalities, 12 of 17, responded in the negative (unless 100% of costs recoverable). The three engineering departments that recognized a potential opportunity for their municipality (Gibsons, Central Kootenay and Langley) added the condition that it would be a policy decision and that design and construction would have to done in association with them. Other municipalities noted the higher costs of operating satellite facilities and limited staff as qualifiers to their answers.

3.1 Question 6

As part of our research program we wanted to know how familiar the respondents were with the MSR 1999 and the frequency with which developers have made applications or even enquiries under the Regulation. Of our 17 respondents only four (Chilliwack, Langley, Kelowna, and Central Kootenay) had received applications under the MSR for wastewater treatment facilities. The Chilliwack proponent found that connecting to municipal sewer was more cost effective and dropped the application. The Kelowna, application actually preceded the MSR 1999, while in Langley the Registration to Discharge was issued in February of 2002. However, the original developer has not acted it upon. Of these, only two examples of water reuse were listed:

- Predator Ridge WWTP that discharges into MacKay Reservoir for reuse as irrigation and
- Langley, which provided reuse water for stream augmentation.

Given the infrequency with which the regulation has been used in municipalities it was not surprising that many staff had only passing knowledge or recent knowledge of the legislation. A number of senior engineers noted that they had reviewed draft copies going back to 1997, but an equal number noted they had only recently (now) become aware of it.

Finally, we asked if the municipal staff might now be deciding to develop a policy framework with which to deal with potential applications under the Regulation, assuming that they felt that existing municipal legislation was inadequate. Here we found that six (6) municipalities had decided to start reviewing their policy to ensure that they were ready to deal with an application, while another was unsure if they should proceed.

3.1 Question 7

The questionnaire also explored the attitude of municipal staff to recommend that developers look at alternatives to conventional septic systems under the MSR 1999.

In this case a number of different responses occurred, but the majority of engineers just assumed that conventional septic systems would be cheaper and better than an alternative engineered system. This is not necessarily the case, especially if one factors in environmental sustainability factors such as water reuse and the frequency with which septic systems and disposal fields fail due to poor maintenance. Others noted that multiple approvals for septic systems under Health would be easier to get through the application process than going through the MSR process!

Five municipalities recognized the value of reviewing alternative systems under the MSR that offered the best long-term solution to wastewater issues from a technical and an environmental standpoint (Vernon). Whistler, although stating No on principle if the developer was proposing septic systems, felt that if the developer could not connect due to specific reasons, they would allow them to pursue alternative approaches.

3.1 Question 8

The idea of developing higher density sustainable communities that are off-the-grid, with their own water, wastewater, water reuse treatment and conservation technologies as well as energy technologies, are being proposed for communities across North America. The South East False Creek community plan in Vancouver is one that is attracting considerable attention.[22] However, for sustainable communities of this nature to be developed, legislative changes to OCPs, legislation covering servicing and even parking
stall requirements will have to be reviewed to create a sustainable legislative framework for the community to build upon. Given the considerable barriers to implementation that the MSR 1999 has faced over its first five years of existence we expected a very weak response to Question 8. In this case 5 communities expressed a willingness to explore the design of an off-the-grid community, these being Richmond, Vernon, Central Kootenay, Whistler and Gibsons. Whistler noted that they are *very interested in considering sustainable applications, particularly off-the-grid approaches to municipal servicing as demonstration projects for sustainable communities.*

3.1 Question 9

In regards to bonusing for green buildings that conserved water and limited wastewater flows, six of our participating communities—Vernon, Squamish, Kelowna, Langley Township, Central Kootenay and Gibsons—provided outright support for the proposition. Whistler, Chilliwack and Prince George provided conditional support for such an idea at least in principle. Whistler noted that bonusing as described here would not be viable in their Resort Community, but might be viable in other communities. One smaller community felt that the administrative costs would not be worth the benefits, again bringing into play the role of scale when interpreting the impact of this new legislation on smaller municipalities.

3.1 Question 10

The final question stepped away from the MSR 1999 to ask municipal participants if they had engaged in a Demand side management (DSM) approach to reducing water consumption through the education

[22] See: http://www.city.vancouver.bc.ca/commsvcs/southeast/

of their resident about "Smart Water" use around their homes and work places. In 14 of 17 cases the municipalities were actively communicating Smart-Water ideas and suggestions to their water users or were in the process of developing or moving water smart programs through Council. In Prince George this includes a school program. In Richmond, Project Wet provides an educational model for DSM that has been well designed and accepted by the public. In Vernon, Kelowna and Maple Ridge, water metering allows household consumers to directly link water use to billing rates, generally seen as the most efficient way to reduce consumption. In Vernon this is coupled with a successful rebate program for water conserving toilets.

3.2 Conclusions

The present system of sewer planning, whereby municipal governments' request the extension of sewer pipelines to meet the needs of individual land development projects ranging from a house to hundreds of acres, has been described by one senior GVRD infrastructure planner as *death by a thousand cuts.*[23] Meeting the needs of the GVRD's growing urban population has required considerable expansion of the boundaries of the GVRD wastewater collection system (See GVRD LWMP).[24] The GVRD planner concluded that *the MSR should be a viable alternative to these extensions allowing for onsite treatment and disposal,* noting that the LWMP required that an assurance plan be in place that meets the requirements of the MSR 1999, prior to any innovative treatment system being installed in the GVRD.[25] In theory, innovative, engineered on-site systems that can provide water reuse or discharge treated residential effluent to water deficit streams may actually represent augmentation to the local environment, assuming that they meet the conditions of the MSR as pertains to the parameters for their discharges (BOD, TSS, etc). However, from the findings of this study it is the obligation of the proponents of these systems to ensure that:

> *no liability is carried by the local municipality for maintenance, operations, replacement or future connection.*

Given that the perception of immediate risk to the environment and to health and long-term risk to the municipalities' finances are at the center of many of the responses that we have documented in this study, the barriers to the MSR 1999 appear today to be as high as they were in 1995 when CMHC first addressed this issue.

The responses of the 17 participating municipalities have been reviewed and added to information on barriers from other sustainable planning initiatives in Table 4. Barriers fall into five categories, but clearly overlap and are interdependent. Financial barriers include both risk factors as well as limited budgets that reduce the amount of time and energy staff can put into research versus responding to immediate problems arising. One way to reduce the impact of financial risk is through progressive or green legislation. This requires champions on City Council who can support the efforts of municipal staff. Regardless of the logic or value of green infrastructure, permitting and construction codes already

[23] Toivo Allas: Policy and Planning, Innovative Systems, Greater Vancouver Regional District, March 31, 2003

[24] The Greater Vancouver Regional District, Liquid Waste Management Plan, can be viewed at: http://www.gvrd.bc.ca/sewerage/lwmp_feb2001/lwmp_plan_feb2001.pdf

[25] GVRD, LWMP, February 2001, Policy 29 – Assurance Plans, page 50.

exist. Changing codes, policies and getting overlapping legislative authorities and regulations to work seamlessly is both time consuming and problematic. Finally, educational barriers exist on numerous levels. Given the time constraints faced by most municipal staff, who may only be asked to review one wastewater treatment application in a year, the ability to have access to a Centre of Excellence on Sustainable Technologies would greatly improve their ability to make well-informed decisions. However, no facility of this nature presently exists in Canada.

TABLE 4
Common Barriers to Green Infrastructure[26]

Financial Barriers	Legislative & Political Barriers	Permitting & Code Barriers	Construction & Building Barriers	Educational Barriers
1. Fiscal impact unknown 2. Higher upfront costs – Entire plant may need to be constructed prior to residential development 3. Reuse water may be too costly given subsidized municipal water rates 4. Lack of Incentives 5. Lenders Risk & Security	1. Lack of Political Will to support Sustainability 2. Local vs. Regional impact Inter-jurisdictional Conflicts 3. Caution/Risk Avoidance on using "new" technology versus accepted "old" ways 4. Lack of Policies to Encourage Green Building Investment Municipal Bonusing	1. Code issues & Permitting Requirements. 2. Lack of Guidelines for Green Building 3. Variances to Building Code may be required 4. Rigidity of permitting	1. Liability issues 2. Safety concerns 3. Competition – bottom line issues in competitive land development 4. Availability and/or knowledge of products and services at competitive rates 5. Time issues to work through new approaches and Regulations	1. Lack of City Staff, Time & Funding for R&D 2. Different Knowledge Levels Architects, Engineers, Builders and Trades & the Public as end-users of green buildings 3. Community Fears especially related to Water & Environmental Issues 4. Inter-governmental. Agency Problems lack of *Seamlessness* between Departments and Regulations 5. Lack of third party, impartial Board or Centre of Expertise to go to for advice

[26] A variety of barriers to green building were originally identified by the Green Building Dialogue/Workshop and the meetings with the Green Building Work Group in San Jose. Solutions to these barriers were identified as part of the recommendations prepared by the Green Building Work Group. The author has supplemented these through research and case studies in British Columbia.

The questionnaire has allowed us to gain a greater understanding of municipal legislative barriers that may exist to the application of the MSR 1999 to residential development projects. Secondly, based on the often well thought-out and argued positions of municipal managers we are in a stronger position to make recommendations regarding revisions to the MSR 1999 while building a stronger understanding of the applicability and acceptance of green technologies in wastewater treatment at the municipal level.

3.3 Recommendations

Planning and infrastructure outcomes under the MSR 1999 represent in the words of one municipal planner a *paradigm shift, in the way we think about the delivery of municipal services*. Coupled with the delivery and development of new technologies, the MSR 1999 demands that a new dialogue be opened to discuss and question existing ways of planning and servicing our urban developments and the means by which to more effectively provide cost efficient infrastructure services. Crucial regulatory changes being proposed at senior levels of government, especially those discussed in this report on the BC Municipal Sewage Regulation, need to be clearly communicated and envisioned through workshops and briefing sessions that explore scenario building and critical deconstruction of potential outcomes.

Risk, the perception of risk and risk avoidance are common themes associated with innovative or alternative wastewater treatment at the municipal level of government. This issue of risk reduction needs to be addressed either through legislation which allows municipal engineers and planners to take on environmentally sustainable technology based projects or through improved third party verification of these technologies that would provide support to these decision makers. To some extent, municipal governments in BC are being asked to demonstrate new technologies and approaches to infrastructure servicing without the type of third party decision-making support that they require. Even though the MSR 1999 specifically includes the requirements for private companies to comply with the Assurance Plan this information is not commonly understood and is open to interpretation. On the private or corporate side of the equation, few land development firms are cognizant of the MSR 1999 options relating to the onsite servicing of properties or of the opportunities to reuse water for environmental and social benefits.

Again, it would appear that many of the target audiences for the MSR 1999 legislation as pertains to on-site servicing and for water reuse have not been reached, nor have the benefits for reduced infrastructure servicing and environmental benefits been adequately demonstrated. Educational programs directed at both municipal and corporate organizations may help make onsite wastewater and water reuse feasible for targeted markets where new infrastructure is required and where water resources are limited. The British Columbia MSR 1999 represents a strong foundation documents upon which to develop unique and innovative solutions for treating and potentially reusing wastewater in residential areas, however, it has not yet been adequately accepted nor applied to have made an impact upon the traditional *big-pipe* solution.

Non-Core Greenlands – overlay may contain natural heritage features, natural feature adjacent lands and natural hazard lands that should be afforded protection from development. The following natural features and their associated adjacent lands are found within the Non-Core Greenlands area: fish habitat, locally significant wetlands, significant woodlands, significant environmental corridors and ecological linkages, significant wildlife habitat.

Development may occur on lands associated with the Non-Core Greenlands overlay, consistent with the underlying land use designation, and where an environmental impact study has been completed.

4.2 Zoning

Consistent with the City of Guelph's *Zoning By-law*, additional land use designations for the York District site include (See **Figure 8** – Zoning):

Flood Plains (FP)
These designated areas are zoned to minimize conditions that may be hazardous to human life or may cause significant property damage due to flooding. This designation also recognizes existing development within the flood plain, and where flood problems are not aggravated, provide for infill and redevelopment in existing built-up areas of the City.

Aggregate Extraction (EX)
There are three aggregate parcels in the Study Area vicinity; one is in the Study Area near the SE corner of Stone Road and Victoria Road (see **Figure 8**). Another is located immediately south of the Study Area, and a third immediately east of the Study Area. The aggregate operation south of Stone Road has ceased operations and requires a new land use designation.

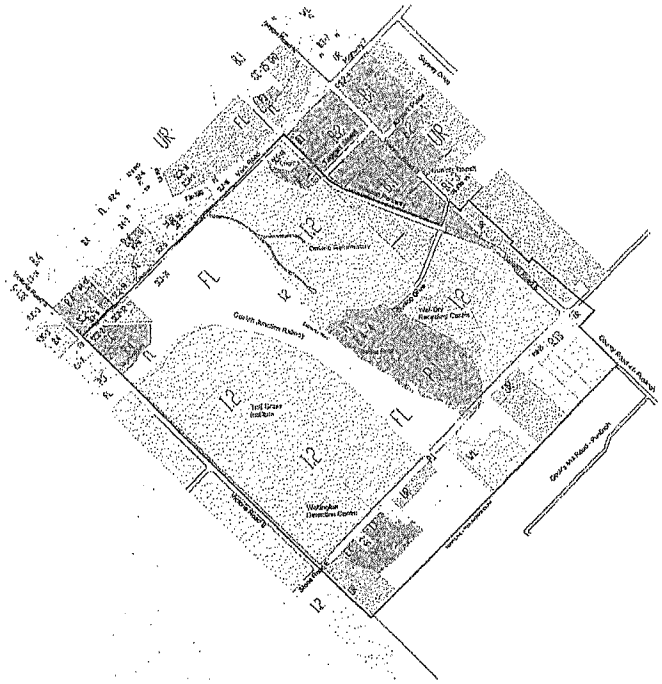
Urban Reserve (UR)
There are several Urban Reserve zoning areas in the vicinity of the Study Area. These are generally south of Stone Road and may and either vacant or used as a Conservation Area. The permitted uses in the Urban Reserve are the following under section 11.1 of the *Zoning By-Law*:

a) Agriculture, Livestock
b) Agriculture, Vegetation Based
c) Conservation Area
d) Flood Control Facility
e) Outdoor Sportsfield Facility
f) Recreation Trail
g) Wildlife Management Area
h) Accesory uses in accordance with Sec 4.23

- Another parcel zoned UR2 under section 11.3.2 of the By-Law also includes group home as a permitted use.
- The regulations for Urban Reserve can be found in the City's *By-Law* under section 11.2 and 11.3.2.1.

Residential (R)
There is one residential zone parcel in the York District as a:

- R. 1B – Residential Single Detached
- The zoning regulations are set out in Table 5.1.2 of the City of Guelph *Zoning By-Law*.



Legend

- Site Boundary
- Other Urban Use
- Environmental
- Commercial
- Other Urban Use
- Service Commercial
- Residential
- Institutional
- Industrial
- Utility
- Aggregate Extract
- Park

Figure 8

York District Land Use Study
Zoning

HAND DELIVERED August 27, 2008

Katie Nasswetter
Senior Development Planner
City Hall
1 Carden Street
Guelph, Ontario
N1H 3A1

Re: Development Priorities Plan (DPP)

Re: Properties : 58 Glenholm Drive Ken Spira

745 Stone Road East John Drolc

Further to our meeting of Monday August 18, 2008 where I discussed 4 properties with yourself, this submission will deal with the above noted properties.

As discussed with you the 1993 Annexation of the above noted properties was specifically done in order to plan this area and these 2 properties for Residential Land Uses.

The intent was to recognize the existing and establised Residential Neighborhood of the GlenholmDrive area and abutting lands for future Residential Development.

In 1994 and 1995, the City had numerous meetings with the land owners as part of the Annexation proceedings, and the landowners were told that this area would always be designated for Residential Land Uses.

This Submission is a Joint Submission on behalf of the 2 landowners.

When I met with you, I submitted a concept draft plan which outlines the residential lot layout with proposed lots, blocks for townhouses, and a road layout.

The Plan Title is Glenholm Drive Expansion Phase 3, and is dated August 14, 2008.

This is a concept draft plan at this time.

A Development Draft Plan will be prepared when the York District Plan is approved with a Residential Designation.

We intend to proceed with development plans early in 2009.

Please keep me informed on the DPP plan and process, and add me to your mailing list.

Please also inform me of any Committee Meetings that deal with the DPP.

cc Ken Spira
John Drolc
Joan Jylanne

Mario Venditti HBA MA

Mario Venditti

September 10, 2008

Joan Jylanne MCIP,RPP
Senior Policy Planner
City Hall, City of Guelph
59 Carden Street
Guelph, Ontario
N1H 3A1

Re: York District Land Use and Servicing Study
Phase 2 Report and
Phase 3 Update Report

Re: All LANDS located in the South East Quadrant South of Stone Road from the Eramosa River to Watson Road as shown in Figure # 12 of the Phase 2 Report, and as numbered Parcels 9 - 12.

As discussed with you by our Planner Mario Venditti at the Meeting on Friday August 8, 2008, the above noted Lands were Annexed into the City of Guelph from the Township of Puslinch in 1993.

These lands were annexed with the Consent of the Land Owners.

These Lands were annexed to both recognize the Existing Residential area, and the Existing and Established Neighbourhood Structure.

It was also the intent to allow further Residential Development in these areas.

In the years 1994 to 1995, the City Planning Staff, and the Consultants had numerous meetings with all the Land Owners in this area, and at all times conveyed to the Land Owners that this Area would be designated RESIDENTIAL.

That is the reason that there were NO OBJECTIONS to the 1993 ANNEXATION.

As discussed with you by our Planner Mario Venditti at the Meeting on February 26, 2007 that the Phase 2 Consultants Report dated November 24, 2005, recommended that the Area south of Stone Road from the Eramosa River to Watson Road be RESIDENTIAL in terms of Land Use.

This is also shown in Figure 12 of the Phase 2 Report Existing Parcels, and Residential Land Uses under the Section Labelled Residential, and as shown as Parcels 9 to 12.

Figure 1. The Land Use Scenario of the Phase 2 Report also shows this area as RESIDENTIAL.

This SUBMISSION and PETITION as signed by the Land Owners and attached hereto, is that the only DESIGNATION for this Area is RESIDENTIAL.

Any other form of designation is Not ACCEPTABLE and will be OBJECTED to and OPPOSED by the Land Owners in this PETITION.

We the Land Owners are prepared to meet with you, and Committee, or City Council on this matter at anytime.

In closing, we the Land Owners will only accept the RESIDENTIAL DESIGNATION as any other designation would Specifically Affect our RESIDENTIAL PROPERTIES and RESIDENTIAL ASSETS.

In closing, WE THE LAND OWNERS will only accept the RESIDENTIAL DESIGNATION.

Any other designation would make our LANDS NON CONFORMING.

If a Tornado came through this area and damaged our Residential Structures, we would not be able to build our Residential Structures as we can only build what the designation would permit.

This would render our properties as WORTHLESS.

Again, we will only accept a RESIDENTIAL DESIGNATION as PROMISED to us since 1993, and as recommended in the Phase 2 Report and as shown in Figure 1, York District Land Use as RESIDENTIAL.

cc Mayor and Members of
Guelph City Council

Chief Administrative Officer

City Clerk

19 Signatures received

Oct. 27/08 M.V.

RECEIVED

JAN 13 2009

SPIRA
FIRE PROTECTION

City of Guelph
Making a Difference

October 23, 2008

RE: **Development Priorities Plan 2009**
Request for Comments on Draft Schedules and Mapping

Enclosed are the draft schedules and mapping for the 2009 Development Priorities Plan. This information is based on City priorities together with timing expectations provided by land owners and planning consultants for the development of lands within the City of Guelph for 2009, 2010 and beyond 2010. These schedules include plans of subdivision that have been formally submitted to the City for review and display the anticipated timing associated with development approvals and subdivision registration.

Please review the attached schedules and mapping and provide any comments to me by November 14, 2008.

Please note changes to the schedules of the 2009 Development Priorities Plan including:

- Identification of lands within the built boundary and greenfield areas
- Addition of potential residential units created by Zoning By-law Amendments and Plans of Condiminium approved in 2008
- Inclusion of proposed densities (people and jobs per hectare) of potential Draft Plans of Subdivision

The report is expected to be finalized and presented to the Community Development and Environmental Services (CDES) Committee and considered for approval by City Council in January 2009. You will be notified of the date when the CDES Committee will consider the 2009 Development Priorities Plan.

If you have any questions or require further information, please contact me at 519-837-5616, ext. 2283 or by email at katie.nasswetter@guelph.ca.

Sincerely,

Katie Nasswetter

Katie Nasswetter
Senior Development Planner
Community Design and Development Services

C. DPP Team
Guelph Wellington Development Association
Mayor Karen Farbridge
Hans Loewig, CAO

Attachments included.

City Hall
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T 519-822-1260
TTY 519-826-9771

guelph.ca

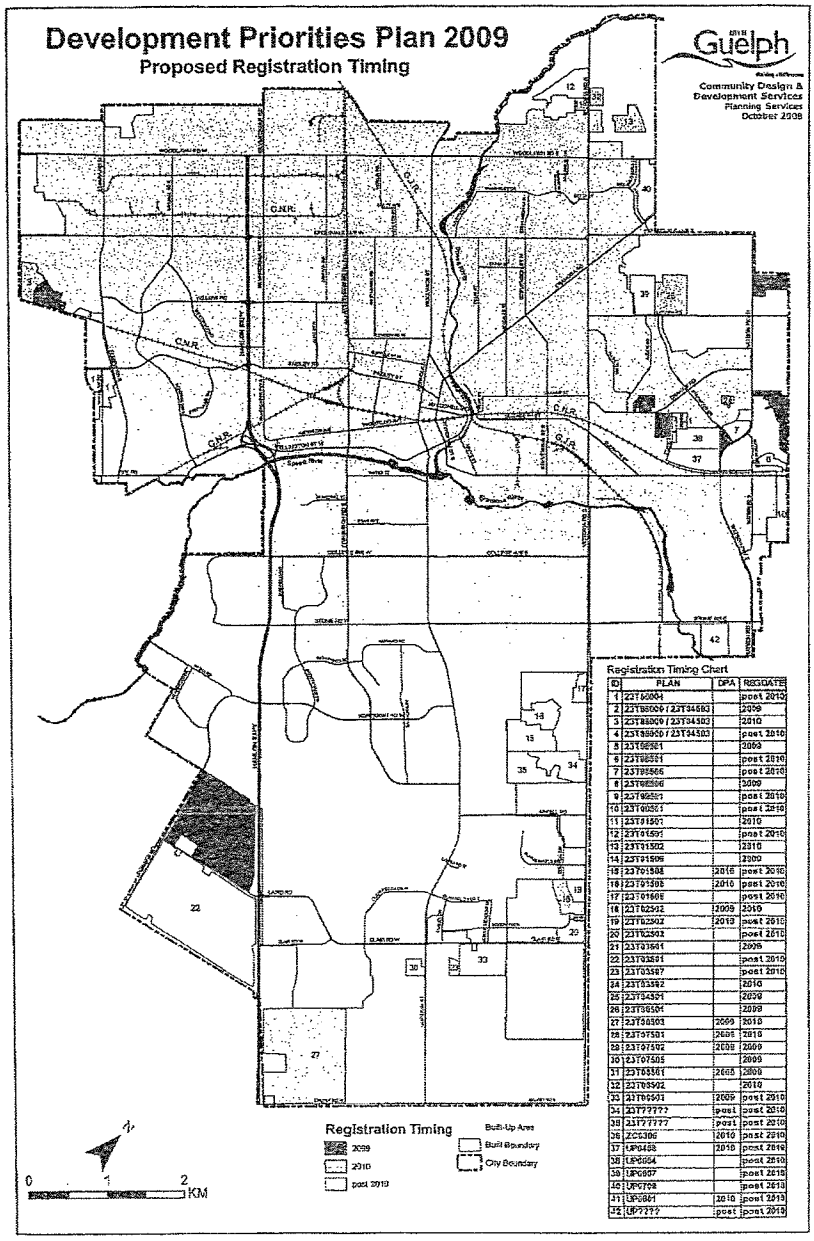
DRAFT SCHEDULE 4 Continued

Development Priorities Plan: Draft Approved and Preliminary Plans

Sector

South

File # (Description)	Status	Residential				Comm (ha.)	Ind (ha.)	Inst (ha.)	Park (ha.)	Draft Plan Approval Date	Expected Development
		D	SD	TH	APT						
23T-06503 Dallan	Preliminary	148		58	97				0.868	part 2009	Phase 1 - Post 2010
Servicing Comments:	May require servicing through Pergola/adjacent lands. Developing part of lands may require water pressure booster system. Detailed servicing report required.										
Timing Comments:	Requires Draft Plan Approval.										
23T-?? Victoria Park West	Preliminary	99		18	59	286				TBD	Part 2010	Phase 1 - Post 2010
Servicing Comments:	Detailed servicing report required.										
Timing Comments:	Requires Draft Plan approval. Victoria Road forecasted for 2010 in 2007 Capital Budget (RD0078).										
ZC0308 1897 Gordon St Krizsan-Bird	Preliminary	33			38	67				0.26	Post 2010	Post 2010
Servicing Comments:	Gordon St services and roadworks required. Development of a portion of the lands will require the construction of either a new water pressure zone or a water booster station.										
Timing Comments:	Requires approval of Zoning Amendment and Draft Plan of condominium. Gordon St reconstruction forecasted for 2009 in 2006 Capital Budget (RD0114). South end In-Ground Storage forecasted for 2008 in 2009 Capital Budget (WW0045).										
UP0802 Glenholme Dr Ext	Preliminary	34			24	0				TBD	Post 2010	Post 2010
Servicing Comments:											
Timing Comments:											



ID	PLAN	DPA	REGDATE
1	23T86004		post 2010
2	23T86009 / 23T94503		2009
3	23T86009 / 23T94503		2010
4	23T86009 / 23T94503		post 2010
5	23T96501		2009
6	23T96501		post 2010
7	23T96506		post 2010
8	23T96506		2009
9	23T96501		post 2010
10	23T96501		post 2010
11	23T91501		2010
12	23T91501		post 2010
13	23T91502		2010
14	23T91506		2009
15	23T91504	2010	post 2010
16	23T91505	2010	post 2010
17	23T91504		post 2010
18	23T92502	2009	2010
19	23T92502	2010	post 2010
20	23T92502		post 2010
21	23T93504		2009
22	23T93501		post 2010
23	23T93507		post 2010
24	23T93502		2010
25	23T94501		2009
26	23T96504		2009
27	23T96503	2009	2010
28	23T97501	2005	2010
29	23T97502	2009	2009
30	23T97505		2009
31	23T98501	2005	2009
32	23T98502		2010
33	23T99501	2009	post 2010
34	23T77777	post	post 2010
35	23T77777	post	post 2010
36	ZCC306	2010	post 2010
37	UPD668	2010	post 2010
38	UPD664		post 2010
39	UPD667		post 2010
40	UPD708		post 2010
41	UPD661	2010	post 2010
42	UP7777	post	post 2010