

Hamilton's Dirty Secrets: An Intersectional Analysis of Hamilton's Wastewater Policies

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Table of Contents

INTRODUCTION 3

LITERATURE REVIEW 3

ENVIRONMENTAL JUSTICE 3

INTERSECTIONALITY 4

WATER JUSTICE 5

EVALUATION CRITERIA 6

THE UNITED NATIONS 6

CANADIAN ENVIRONMENTAL LAW ASSOCIATION & ENVIRONMENTAL DEFENCE 7

MEASURES OF PRACTICALITY, SMITH 8

POLICY ANALYSIS..... 8

POLICIES 8

ANALYSIS..... 9

CASE STUDIES 14

SEWERGATE: CHEDOKE CREEK, 2018..... 14

BURLINGTON STREET SPILL, NOVEMBER 2022 16

RECOMMENDATIONS 17

CONCLUSION..... 18

REFERENCES 19

INTRODUCTION

Public policies are one of society's most valuable tools for addressing social issues, promoting public welfare, and ensuring environmental protection. Strong policies, when effectively designed and implemented, have the potential to drastically improve people's lives and promote sustainable practices that preserve the environment for future generations. However, policies often only reflect the voices of those who created them. Poorly designed or implemented policies public can disproportionately impact certain communities and exacerbate existing inequalities.

Due to its industrial history and proximity to Lake Ontario, the City of Hamilton faces unique challenges concerning wastewater management. The City's history of multiple sewage leaks polluting the surrounding watershed and ecosystems indicate Hamilton's current wastewater management system is flawed. This paper will examine wastewater policies concerning the Hamilton area from an intersectional perspective. Policies will not only be evaluated based on their effectiveness, but also in terms of how thoroughly they consider cross-sectoral implications. Two case studies of recent sewage leaks in Hamilton will be explored and analyzed in terms of how the failure of wastewater policies contributed to these incidents. Finally, several recommendations concerning how Hamilton can improve upon existing wastewater policies will be offered. Wastewater management is a crucial aspect of environmental sustainability and public health. As Hamilton's population continues to grow and industrial activities expand, the need for effective wastewater policies becomes increasingly urgent.

LITERATURE REVIEW

This literature review will provide a brief incomprehensive overview of three important concepts that are relevant to this policy analysis: environmental justice, intersectionality, and water justice. Each summary will briefly define the concept, provide an example, and explain why the concept is an important lens for policy.

Environmental Justice

The term environmental justice (EJ) emerged in the 1980s in response to both the Civil Rights and the Earth Day movements when poor, mostly Black rural communities mobilized against a hazardous waste dump being built near their homes in North Carolina, USA. These movements prompted landmark studies and new research which began to expose the disproportionate ways lower income households and racialized communities are affected by polluting activities and other forms of environmental degradation (Bullard, 1993). Bullard's research established the seventeen principles of environmental justice, and defines EJ as a concept that "embraces the principles that all communities, all people are entitled to equal protection of our environmental laws, health laws, housing laws, transportation laws, and civil

rights laws” (p. 46). The Environmental Justice movement grew overtime, with the goal of illuminating the connection between environmental issues and social justice, while uplifting the voices of the people who are most impacted, yet most unheard.

Like the US, Canada also faces challenges of environmental justice. According to social scientist Dr. Ingrid Waldron (2018), “In Canada, your postal code determines your health” (p. 32). For example, in Nova Scotia, this manifests as the disproportionate locations of toxic sites and industries in communities of Colour, Indigenous communities, and the working poor. It is no coincidence that these are also the groups that lack social, economic, and political power, thus making them unable to fight back against exploitative government agendas. Environmental injustices can have severe, even fatal consequences. In the 1940s, a dump was built near a Black community in South Shelburne which has had harmful effects including contaminated drinking wells, and several community members lost due to cancer (Page et al., 2019). Environmental justice is the social movement that works to address the complex issues like those occurring in South Shelburne.

To achieve Environmental Justice, we must ensure equal enforcement of laws and regulations, as well as identify and eliminate discriminatory practices and policies. Regardless of whether the discriminatory effects of policies are intended or unintended, “if there are impacts that are regressive/negative, that fall heaviest on a certain population, and if we can eliminate those effects,” we have a moral obligation to do so (Thomas, 2022, p. 46). Currently, many policies do not adequately address the disproportionate ways marginalized communities are impacted by environmental issues. When policies fail to ensure equal protection for all citizens, they reinforce oppressive systems and perpetuate injustice. Therefore, strong public policies represent one of the most effective tools that governments can use to help achieve the goal of environmental justice for all.

Intersectionality

The term intersectionality was first introduced in 1989 by critical race theorist Kimberlé Williams Crenshaw and was inspired by her life experiences as a Black woman in America. It is important to recognize that the concept of intersectionality was born out of Black feminist theorists, activists, and scholars who faced discrimination in several facets of their lives. Essentially, the concept of intersectionality describes the ways in which systems of inequality based on gender, race, ethnicity, sexual orientation, gender identity, disability, class, and other forms of discrimination “intersect” to create unique dynamics and effects (Thomas, 2022). Our society’s social systems are incredibly complex, and intersectionality acknowledges how multiple forms of oppression may be present in a person’s life—especially in the experiences of marginalized individuals or groups. In an interview with Vox, Crenshaw calls intersectionality “a prism to bring to light dynamics within discrimination law that weren’t being appreciated by courts”, or a way of understanding certain kinds of problems (Coaston, 2019). Multiple forms of inequality or disadvantage can compound themselves and create obstacles that are often not understood within conventional ways of thinking about anti-racism, feminism, or other social

justice advocacy structures. Over the past few decades, intersectional theories and frameworks have been put forth to bring about better outcomes and livelihoods for underrepresented and marginalized communities.

In her first paper describing intersectionality, Crenshaw (1989) used the example of the 1976 court case *DeGraffenreid v. General Motors*, where in a work force comprised of Black men and women as well as white women, only Black women were laid off in a round of firings. The judge ruled the “Black women specifically could not be treated as a legally protected class” even though race and sex are protected classes themselves (p. 141). Crenshaw identified how this case revealed a loophole in the legal system that led to the court absolving General Motors and left Black women vulnerable. This case is a prime example of how the intersection of two identities (race and gender) disadvantaged Black women specifically.

Our society tends to examine forms of oppression in isolation. This short-sightedness is reflected through the countless loopholes in public policies that protect certain identities but do not recognize intersecting identities, leaving certain individuals vulnerable targets to compounded forms of oppression. To understand and fight against forms of discrimination, it is important to understand every potential factor that can contribute to the marginalization of individuals in a particular cultural context. If the labour policies from the 1976 *DeGraffenreid v. General Motors* case had recognized the *intersection* of gender and racial identities instead of addressing them separately, the Black female workers would have been better protected. Policies that fail to recognize how intersecting identities disadvantage certain people have no hope in fulfilling their goals to protect people equally.

Water Justice

The global water justice movement is a coalition of grassroots groups, activists, governing institutions, and NGOs, all working to protect bodies of water, ensure equitable access and distribution of water, and challenge to dominant discourses and knowledge systems that shape water control (Zwarteveen & Boelens, 2014). One of the leading interdisciplinary scholars in water governance, Farhana Sultana (2018) explains how water justice is based on principles of “fairness, equity, participation and justice” and must be “relational, situated, and context-sensitive rather than universalistic” (p. 487). In other words, the global water crisis cannot be resolved through a simplistic or one-dimensional approach; potential solutions to water justice must not only focus on technical solutions, but also consider political, social, and ecological issues as well. Water justice includes but transcends questions of distribution to include those of cultural recognition and political participation, and is intimately linked to the integrity of ecosystems (Perreault & Bridge, 2018). Furthermore, water justice involves advocating for the rights of bodies of water themselves and them against pollution, contamination, and other harmful human activities.

One of the most significant examples of water injustice in Canada is water insecurity on Indigenous reserves. Many Canadians assume water advisories only apply to northern remote reserves, but just a few kilometers from Hamilton more than 2000 households on Six Nations of

the Grand River live without access to clean potable water (Acquisto & Bond, 2022). Unlike 27 other Indigenous communities across Canada, the Six Nations reserve is not under a federal long-term drinking water advisory, meaning there is little acknowledgement or attention to this injustice and its impact on people’s livelihood and cultural practices. Access to clean water is often tied to socio-economic status in many countries, including Canada, where wealthier (predominantly white) communities enjoy access to reliable high-quality water sources, while marginalized communities are forced to rely on unsafe, contaminated water sources.

In order for water policies to address water injustices in a meaningful way, they must look beyond the water systems themselves and consider the political, social, and ecological issues at play as well. Water injustices like contaminated source water cannot be addressed without considering the systemic forces of oppression that may have caused the injustices in the first place. Additionally, it is important that policies protect the rights of the bodies of water themselves as well. For example, in 2019, the city of Toledo, Ohio, in the United States passed the *Lake Erie Bill of Rights*, which granted the lake legal rights and protections, including the right to “exist, flourish, and be free from pollution” (Uni. of Toledo, 2019). Therefore, addressing water injustice requires policies that prioritize equitable access to water resources, protect water sources and ecosystems, and recognize the rights of marginalized communities—especially those who rely on water for their livelihoods and cultural practices.

EVALUATION CRITERIA

The selected wastewater policies concerning Hamilton will be analyzed using a multi-criteria evaluation method (Munda, 2006). Because a single pre-existing criterion that encompassed everything that needed to be analyzed could not be found, a policy evaluation criteria was created by pulling from the following sources.

The United Nations

In 2010, the United Nations established the Integrated Water Resources Management approach, which has been accepted internationally as the “way forward for efficient, equitable and sustainable development and management of the world’s limited water resources”. While water availability and system infrastructure may vary greatly from region to region, the United Nations IWRM framework provides a comprehensive outline for the necessary components for strong water policy. IWRM is a process which promotes the co-ordinated development and management of water and land related resources in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems (UNEP) (see *Figure 1*).

The IWRM planning cycle

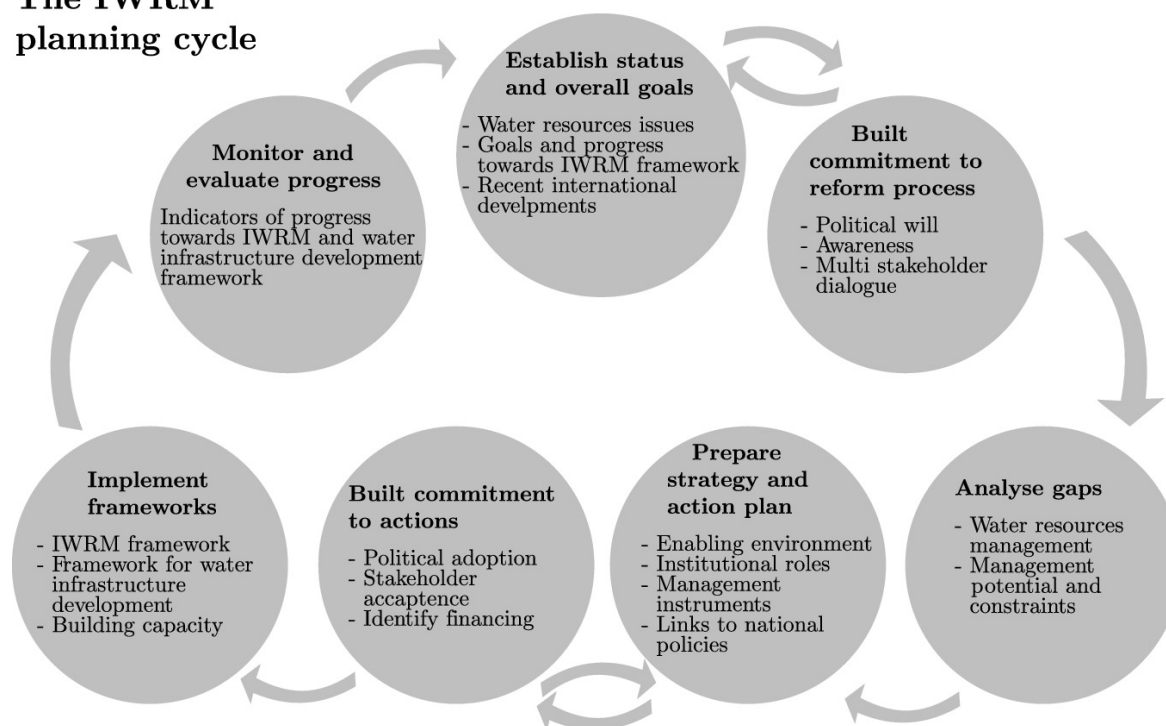


Figure 1: United Nations IWRM Planning Cycle

Canadian Environmental Law Association & Environmental Defence

The Canadian Environmental Law Association (CELA) and Environmental Defence Canada (EDC) have several established criteria in place for evaluating specifically environmental policies within a Canadian context. The following criteria points adapted from CELA and EDC will be used for the policy analysis.

How well does the policy support:

- Meaningful reconciliation with Indigenous communities.
- Effective public participation, including transparency of decision-making and ensuring diversity of voices heard.
- Responsiveness to local circumstances within a clear provincial planning framework.
- Consistency with values articulated by the province based on public input (eg, protection of Water, wetlands, forests, natural heritage, biodiversity, hazard, and flood protection).
- Supporting increased density around services and transit.
- Promoting healthy rural economies.
- Access to green space and walkable communities.
- Climate resilience (eg, mitigation, adaption including adoption of green infrastructure, and avoiding heat islands).
- Existence of interested and engaged community members and local public body (or bodies) that are ready to tackle the issues in a collaborative manner.

Measures of Practicality, Smith

The final component of the multi-criteria evaluation that will be used in this paper concerns evaluating the technical features of effective policies. This portion of the evaluation criteria will reference Catherine Smith's (2019) book *Writing Public Policy: A Practical Guide to Communicating in the Policy-making Process*, which represents a practical guide to writing and communicating in public policy process. Smith offers several general checklists and guidelines that have been adapted and condensed into the following criteria points.

Features of effectiveness; a public policy is most likely to be useful if:

- It addresses a specific audience about a specific problem.
- It has purpose related to specific policy action.
- It represents authority accurately and ethically: public policy not only presents information; it also represents a type of participation and power. Honestly helps credibility.
- It uses appropriate form and expression: settings of policy work have their own conventions for communicating. Use the document type, style, and tone of presentation that are expected for the purpose, that accommodate working conditions in the setting of its reception, and that respect all persons who are the actors in the process.
- It is designed for use.

Measures of Excellence:

- ◇ Clarity
- ◇ Correctness
- ◇ Conciseness
- ◇ Credibility

POLICY ANALYSIS

Policies

This paper will primarily be examining two policies relating to wastewater management in Hamilton:

1. **City of Hamilton By-law No. 14-090:** This document represents the City's main By-law responsible for "regulating the discharge of any matter into the sewer works", including the sanitary, combined and storm sewer systems of the City of Hamilton (most recently updated as of April 27, 2022).
2. **City of Hamilton Water and Wastewater Master Plan Class Environmental Assessment Report:** This Master Plan is not a legally binding document but rather a "strategic and comprehensive infrastructure planning study" intended to provide a basis for decisions making to shape the City's future growth (City of Hamilton, 2022). It is important to note that the City of Hamilton's Water and Wastewater Master Plan was

prepared by a third-party: Ontario-based engineering firm KMK Consultants Limited who specialize in water, wastewater, and municipal engineering.

Analysis

Meaningful reconciliation with Indigenous communities.

- In the entirety of Master Plan there is only one 63-word section concerning implications for Indigenous communities titled “Aboriginal Dialogue” (Section 2.3). The City of Hamilton had only three contacts listed in this section: Six Nations, Hamilton Executive Directors Aboriginal Coalition (HEDAC), and Ontario Secretariat for Aboriginal Affairs, and the latter two organizations no longer exist under the names recognized in the policy¹ (KMK, 2006, p. 14). Additionally, the language used in Section 2.3 of the Master Plan is concerning. For instance, the Plan states that the three organizations were “part of the mandatory contact list and received all project notices and communications” but in no way mentions effort to involve Indigenous groups in decision-making (KMK, 2006, p. 14). Overall, the role of the Indigenous groups and their position on the mailing lists was merely a way for the City to communicate what action will take place, rather than actually foster meaningful dialogue and support reconciliation.
- This criteria point is important because Indigenous communities have historically been disproportionately impacted by water insecurity and pollution issues, while representing some of the fiercest advocates for water justice. In order to address these systemic issues of contamination and water justice, policies must reflect awareness of these disproportionate effects and incorporate meaningful consultation with Indigenous communities in the policy-making process. Indigenous water governance cannot occur unless Indigenous voices are reflected in public policy. In 2023, *all* Canadian policies should actively be working towards meaningful reconciliation with Indigenous communities, and wastewater policies are no exception.

Effective public participation, including transparency of decision-making and ensuring diversity of voices heard.

- A Public Consultation Plan was created during the initial stages of developing the Master Plan (2006), which recognizes the importance of consultation with the affected parties to the Class EA planning process (p. 9). Throughout the development of the Master Plan, six public consultation sessions were held despite Municipal law only requiring the City of Hamilton to consult the public once (p. 13). However, in accordance with the Government of Ontario’s Class Environmental Assessment (EA) for Municipal Infrastructure Projects, the public review period is limited to 5 years, after which certain documentation is removed from public record and formal comments can no longer be filed. This means the public has not been able to formally comment on wastewater

¹ HEDAC is now known as the Coalition of Hamilton Indigenous Leadership (CHIL), and the Ontario Secretariat for Aboriginal Affairs is now known as the Ministry of Indigenous Relation and Reconciliation.

planning for more than a decade. Additionally, the stakeholders involved with developing the Master Plan included (p. 12):

- City Departments (Planning and Economic Development, Public Health, Community Services, Public Works, City Manager’s Office),
- Conservation Authorities
- Ministry of the Environment
- Environment Canada including the Hamilton Harbour Remedial Action Plan Office
- Bay Area Restoration Council

However, as alluded to in the previous section, an overwhelming voice missing from this list of stakeholder consultants is Indigenous communities. While Conservation Authorities and Municipal departments are recognized stakeholders involved in developing long-term plans for the City and have the ability to comment, advise, and approve actions during the policy development process, Indigenous communities have no stake in these decisions according to the Master Plan.

- This criteria point is important because policies must reflect the voices of those who will be most impacted. The process of reviewing policy at different stages of its development by these public committees may seem like ways to delay action, but they are essential to ensure sustained community support and therefore key to the longevity of remediation efforts. It is the local public who is most impacted by development initiatives, remediation efforts, environmental policies, therefore, public policies must advocate for action and policies that reflect local opinions.

Responsiveness to local circumstances within a clear provincial planning framework.

- The Hamilton Sewer By-Law (2022) explicitly prohibits offences to federal and provincial legislation, including the *Ontario Water Resource Act*, the *Environment Protection Act*, and the *Fisheries Act* (p. 12). However, the Ontario Planning Act, which is arguably the most important omnibus piece of policy concerning land use planning and development in the province, is not mentioned in this By-law.
- This criteria point is important because different areas within the province of may have different priorities, resources, and challenges that must be considered during the policy process. Because of its older infrastructure, Hamilton faces unique challenges in managing wastewater that distinguishes it from other cities in Ontario. For example, Hamilton and Toronto both have combined sewer systems, however because it is a newer city, Peel Region operates with exclusively separated sewers. This means Peel Region is not affected by the challenges and spills that often accompany combined sewer networks. Therefore, it is crucial that municipal By-laws are tailored to the specific needs of the region. Responsiveness to local circumstances is essential for improving policies and preventing future policy failures.

Consistency with values articulated by the province based on public input.

- As mentioned earlier, the Hamilton Sewer By-Law (2022) recognizes some provincial legislation, including the *Ontario Water Resource Act*, the *Environment Protection Act*, and the *Fisheries Act* (p. 12). However, the By-law fails to acknowledge other important legislation, such as the *Conservation Authorities Act*, *Endangered Species Act*, and the *Planning Act*, all of which play a vital role in protecting the environment. Additionally, the province of Ontario has articulated several values related to the natural environment including sustainability, stewardship, conservation, collaboration, innovation, and education (Gov. of Ontario, 2020). While the Master Plan aligns with nearly all the aforementioned provincial values, it neglects to emphasize the significance of fostering environmental education and awareness initiatives.
- This criteria point is important because effective municipal by-laws must adhere to provincial legislation and values while also addressing specific regional issues. Provincial legislation provides a framework for municipalities to operate within, ensuring that local By-laws are in line with broader policy objectives and priorities. Additionally, By-laws that do not adhere to provincial legislation can be challenged and overturned with municipalities sometimes facing financial consequences. Overall, compliance with provincial values is key to consistent and effective municipal policies.

Supporting increased density around services and transit.

- Since 2003, the City of Hamilton has adopted the Growth Related Integrated Development Strategy (GRIDS) which represents a “made-in-Hamilton balanced growth strategy” (KMK, 2006, p. 1). The great benefit of the GRIDS method is it integrates transportation and water/wastewater and stormwater planning into one project. In fact, one of the GRIDS objectives in the Master Plan “focuses growth around transit infrastructure” (p. 21). However, recent development plans to Hamilton’s transit systems have highlighted certain outdated aspects of the 2006 Master Plan. For example, Hamilton is currently in the process of implementing the Light Rail Transit (LRT) Program, which will involve excavation as part of the construction process. This disturbance may potentially impact the City’s wastewater infrastructure. While the Master Plan does emphasize the need to “minimize the impact on the Escarpment environment”, it falls short of providing specific planning points to guide a large-scale project like the LRT (p. 19).
- This criteria point is important because the connections between wastewater systems and transit services is complex and indirect. Development and changes to transportation systems can cause disturbance to wastewater infrastructure and additional transportation systems can bring increased human and vehicle traffic that means additional volumes of wastewater. For instance, transportation infrastructure can generate runoff that carries pollutants (oil, heavy metals, sediment) into storm drains and wastewater systems presenting challenges to water treatment facilities. Policies must consider and prepare for how growth in the transportation sector will impact wastewater systems.

Promoting healthy rural economies.

- While the study area for the Master Plan (2006) consists of the City of Hamilton’s existing lake-based water and wastewater servicing area, the Plan is primarily “focused on the urban areas of the City of Hamilton” (p. ES-1, 2). Therefore, the GRIDS strategy gives less regard to the water/wastewater needs in the rural areas of the City. For instance, the City is responsible for the supply and treatment of water in four rural communities (Carlisle, Freelton, Greensville, and Lynden) however they do not fall within the current study area represented by the Master Plan (p. 41). As a result, policies addressing wastewater management issues in rural areas are ill-equipped to effectively represent and serve the needs of residents in these areas.
- This criteria point is important because agriculture and food production are the cornerstones of rural economies and maintaining wastewater operations is essential to their success. Changes in urban, rural and industrial activities in Hamilton have resulted in destruction of sustainable natural ecosystems. Wastewater from rural areas has historically resulted in increased erosion, increasing demands on wastewater and treatment plants, and increased number and volume of toxic substances entering the watershed (KMK, 2006, p. 35). Therefore, wastewater policies should not only focus on the densely populated urban areas of the region, but also support and promote the economic and environmental development of rural areas.

Access to green space and walkable communities.

- As mentioned earlier, the Master Plan follows the GRIDS process, and one of its objectives for preferred growth “avoids and protects the local natural features and green space” (p. 21). However, later in the document a wastewater infrastructure upgrade recommendation is offered that suggests the City “upgrade pumping capacity at the existing HD016 pumping station and construct new reservoir and pumping station in Kelly Street area” (p. 57). The Plan recognized this course of action would require “removal/disturbance of vegetation” but assured “disturbed areas will be restored to its original or to an improved condition” (p. 57). In 2022, the City decided to proceed with this course of action, but according to the Environmental Assessment (EA) Addendum Report (July 6, 2022), action has already resulted in permanent closure of “the portion of Borer’s Falls Off-Leash Park dedicated specifically to small and senior dogs” (p. 2). This example illustrates the disconnect between policy objectives/intentions, and their practical implementation. Whether or not the disturbed areas will “be restored to its original or to an improved condition” remains to be seen.
- This criteria point is important because greenspace and walkable communities has a significant impact on the overall health of a city and its inhabitants. While displacement of some vegetation and a portion of a dog park may seem like a small price to pay for improvements to sewer infrastructure, it is important that the City does not neglect the importance of green space and social spaces. Not only is green space important for improving urban air quality and reducing heat island effects, but studies have shown green space has positive impacts on both physical and mental health and overall well-

being of city dwellers (Kingsley, 2019). It is essential that policies that recognize the value of green space and consider how both infrastructure improvements and protecting green space initiatives can coexist.

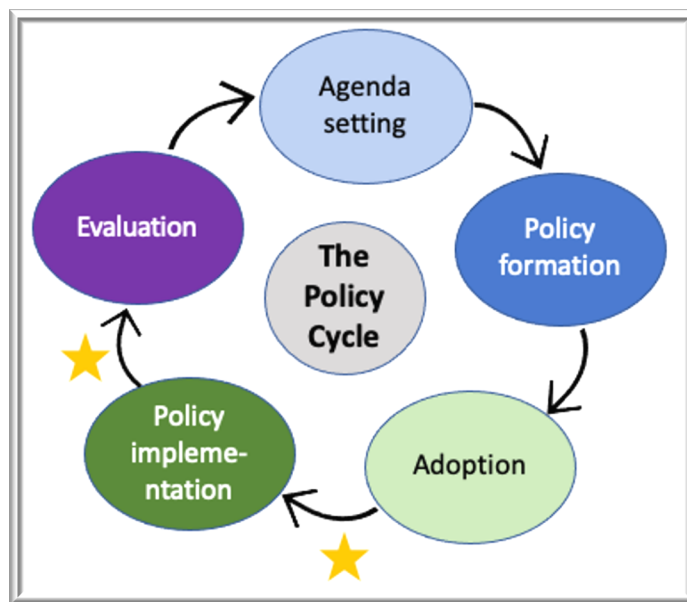
United Nations:

To support the practical application of the United Nations IWRM principles, it is important to incorporate the “Analyze Gaps” stage of the planning cycle (UNEP). This section advocates for any policy gaps to be “analyzed in the light of management functions required by the urgent issues” (Meran et al., 2021). In response to this criteria point, Hamilton does not have an established analytical framework for policies in response to “urgent issues”. For instance, Section 10 of the By-Law (2022) concerning wastewater spills is clear and specific in demanding all spills be “reported immediately” and the parties responsible promptly develop a “detailed spill contingency plan” (p. 25). However, the rules are less clear about the procedure when it is not a private company or business responsible for a spill but the City of Hamilton itself.

Another important aspect of the IWRM planning cycle where Hamilton falls short involves “progress monitoring and evaluation of the process inputs” (UN). While Section 6 of the Sewer By-law (2022) addresses the “Monitoring and Analyzing Discharges For Quality and Quantity”, further examination of this section found the language used in the policy concerning the sampling, analysis, and monitoring of the wastewater infrastructure is vague and ambiguous. For instance, the City specifically states all sewer access points must have “install a device to monitor the quality and quantity... of sewage or stormwater discharges”, but does not include specifics as to how often monitors must be inspected, updated, etc. (p. 16). Additionally, there is no program in place to inspect or enforce such monitoring regulations—overall, the City has left reporting problems up to the discretion of the owners, who are often unreliable.

Figure 2: The Policy Cycle

The policy process follows a cyclical pattern; typically beginning with agenda setting, followed by policy formation, adoption, implementation, evaluation, then repeating the cycle from the agenda-setting phase. In terms of wastewater management in Hamilton, the most vulnerable points of this cycle are the transitions from policy adoption to implementation, and policy implementation to evaluation. In essence, this implies that the City’s policies, once adopted, are not being implemented the most effective manner possible, and even when they are



implemented, they are not being systematically and regularly evaluated to gauge their effectiveness.

CASE STUDIES

To further demonstrate the shortcomings of Hamilton's wastewater policies, two case studies where wastewater policies failed will now be examined.

Sewergate: Chedoke Creek, 2018

In July 2018, the City of Hamilton discovered 24 billion litres of untreated wastewater² had leaked into Chedoke Creek and Cootes Paradise in west Hamilton. The truly shocking part of this discovery, other than the massive volume of the spill, was when City staff disclosed that the leak had been ongoing for 4.5 years without being discovered (Taekema, 2019). It was only when local residents began to file complaints about the odor and buildup that provincial and local governments finally began to prompt investigations. The incident left Hamilton residents all with the same question: how could this happen and go unnoticed for so long?



Figure 3: Sewage buildup in Chedoke Creek, August 2018 (CBC)

² Untreated wastewater is any wastewater that has not undergone any treatment processes to remove contaminants or pollutants before it is discharged into the environment. It typically includes a mixture of domestic sewage and industrial wastewater and may contain a wide range of harmful substances such as bacteria, viruses, organic compounds, heavy metals, and nutrients such as nitrogen and phosphorus (Gov. of Canada, 2020).

Investigations revealed the leak was caused by two separate malfunctions at the Main/King Combined Sewer Overflow (CSO) tank³:

1. A station bypass gate in the CSO tank that should have been in a closed position was manually opened 5% on January 28, 2014. Computer error reported normal operation which is why the gate malfunction remained undetected until July 2018. Despite extensive investigations, the City “has not been able to determine why the first bypass gate had been opened in January 2014” (City of Hamilton, 2023).
2. A second gate that should have remained in the open position experienced a mechanical failure in January 2018. The sensor on this piece of equipment did not pick up the failure and reported normal operation (City of Hamilton, 2023).

The combined gate and sensor failures resulted in untreated wastewater leaking into the channels that discharge into Chedoke Creek which flows into Cootes Paradise.

It is important to note that Cootes Paradise is an Environmental Significant Area (ESA) and is protected under the Ontario Environmental Protection Act (1986). With more than 320 hectares of marshland, 16 creeks, 25 km of shoreline, Cootes Paradise promotes biodiversity by acting as a sanctuary for hundreds of species of plants and animals, several of which are endangered (BARC). As a wetland, Cootes Paradise also acts as a natural water filter, and has the capacity to store water, making it invaluable for natural flood protection. Additionally, Cootes Paradise has cultural and recreational value as well as ecological value. The 24 billion litre sewage spill essentially removed the oxygen supply to Cootes Paradise virtually wiping out vegetation and bottom dwellers and forcing fish to relocate (Coward, 2019). It is important for policies to recognize the importance of wetlands like Cootes Paradise; policies must consider the broader landscape, especially the pockets of wetlands, forests and green infrastructure that regulate the functioning of ecologic and hydrologic systems.

The events leading up to and following “Sewergate” can be largely attributed to two main policy failures:

1. Wastewater infrastructure monitoring.

Most of the water/wastewater infrastructure in Hamilton, including the CSO tanks, are monitored remotely by computers, sensors, and gauges, that are part of a complex system called SCADA⁴. More than 130 water and wastewater facilities with thousands of moving parts are monitored remotely by staff working in the control room at the Woodward treatment plant. With limited field staff, the city relies heavily on technology to ensure operations at CSO tanks and other water/wastewater infrastructure are running as they should be. However, there is nothing in

³ Hamilton has nine Combined Sewer Overflow (CSO) tanks throughout the City, which store untreated wastewater until the treatment plants can process it. Activity in these CSO tanks fluctuates depending on weather and water usage (City of Hamilton, 2022).

⁴ SCADA stands for Supervisory Control and Data Acquisition. In the context of wastewater management in Hamilton, SCADA systems are used to monitor and control the various processes involved in treated wastewater. The data collected from the SCADA system is then used by operators to monitor the performance of the treatment processes and make adjustments as necessary to ensure efficient and effective treatment of wastewater before it is discharged back into the environment (Eramosa, 2023).

the policies to supplement these technological monitoring systems or prepare for when these systems may fail.

2. Transparency and consultation with the public.

In 2019, it was revealed that the City of Hamilton (including several city councilors) knew about the size and duration of the spill but decided not make this information public knowledge until the details were leaked and published by *The Hamilton Spectator* almost one full year after the initial discovery, hence the scandal “Sewergate” (Moro, 2019). According to the confidential report obtained by *The Spectator*, the City also failed to inform the stewardship agency responsible for Cootes Paradise about the extent of the spill. Additionally, during the years the spill was ongoing, several citizens tried to draw the City’s attention to the state of the water in the Harbour. For instance, in late 2015, an Anishinaabe activist named Kristen Villebrun and her friend Wendy Bush spent three days on a floating raft in Hamilton Harbour to draw attention to the city’s neglect of its water and shoreline, only for their efforts to be ignored by the City (Whitlock, 2022). Overall, the events leading up to and following “Sewergate” reflect the City’s failure to honour and prioritize water justice advocacy.

Burlington Street Spill, November 2022

On November 22nd, 2022, the City of Hamilton discovered a hole in a sewer that allowed wastewater from 39 houses to be flushed directly into Hamilton Harbour for more than 25 years. City staff made the discovery while reviewing video footage for an unrelated maintenance issue that revealed misfitted pipe in a combined sewer pipe spilling into a large storm sewer that was discharging into Hamilton Harbour. Later, it was determined that approximately 337 million litres of untreated wastewater had leaked into the Harbour (Hristova, 2022). Further investigations traced the accident back to the mid 90s when a contractor incorrectly set up a sanitary sewer pipe to drain into a pipe that is supposed to flow only stormwater into Lake Ontario (Moro, 2022).



Figure 4: City crew working to repair 26-year-old misfitted sewer pipe near Burlington and Wentworth streets (The Spec)

The wastewater policies relating to the November 2022 sewage spill failed in one major way: **lack of effective monitoring and inspections**. Again, Hamilton residents were left wondering how this spill could occur over such an extended period of time without being detected—especially when the City of Hamilton had video footage of this particular hole in the sewer for almost a decade. CCTV footage can be a valuable tool for monitoring sewer infrastructure—especially in the older parts of Hamilton where pipe accessibility is nearly impossible. The paradox of Hamilton’s current wastewater inspection policy is there are tens of thousands of sewer connections in the city and a minor sewage line running from 40 houses is not going to be inspected unless a problem is reported. However, there is often no way of knowing if a problem exists until the pipes are inspected. Therefore, while Hamilton’s current inspection policy may be a way for the City to save labour and inspection costs, it is consistently failing to identify small holes in the minor sewer lines.

It is important to note this 337 million litre spill did not have nearly the same impacts as the 24 billion litre Chedoke Creek spill, and it remains “unclear how much of a negative impact” the more recently discovered spills have had on wildlife in the Harbour (Hristova, 2023). Nevertheless, a concerning pattern has emerged with multiple incidents of untreated wastewater discharge, indicating the failure of policies to effectively prevent and address such spills.

RECOMMENDATIONS

Over the course of the past few years, the City of Hamilton has been undergoing the process of updating their Water, Wastewater, and Stormwater Master Plan, which is set to be completed this Summer 2023 (City of Hamilton, 2022). Therefore, the new Master Plan represents an opportunity to improve upon the limitations of the previous plan and formulate a better approach in response to Hamilton’s specific needs. In light of recent circumstances, the City of Hamilton should revise its wastewater policies by taking the following steps:

- **Develop a sampling program.** Currently, Hamilton does not have a regular physical sampling plan in place to consistently test treated wastewater and supplement the computer monitoring programs that have proven susceptible to failure. Such programs are important to establish sampling particularly in the areas that discharge into the natural environment. For example, the City of Toronto faces similar challenges to Hamilton in terms of dealing with aging wastewater infrastructure and combined sewer overflow spills. However, the City of Toronto has established an “Outfall Monitoring Program” that involves “inspection and sampling of every storm sewer outfall discharging into Lake Ontario and Toronto’s watercourses” and “frequent monitoring of “priority outfalls” (areas of known, intermittent concern) (City of Toronto, 2023). If Hamilton had a similar program established in 2014, sampling at the Main/King CSO outfall into Chedoke Creek would have reported higher E. coli levels and alerted City staff to a spill much earlier resulting in significantly less of an environmental impact.

- **Set specific conditions that will prompt staff to investigate spills.** The City of Hamilton’s current system of waiting for problems to be reported is not effective. Based on past events and known problematic areas, Hamilton should set “trigger conditions, parameters, and/or limits to initiate further investigation to identify spills and unauthorized discharges of untreated sewage” (MECP, 2023). This could represent monthly inspections of sewer outfalls, CSO tanks, and access points in the sewer networks, or establishing regular inspections of the older, combined sewer pipes.
- **A review and update of current inspection and monitoring programs that include plans for when the computer systems may fail.** As established, the City of Hamilton’s current policies for monitoring wastewater systems are deeply flawed. In order to improve wastewater monitoring and identify other potentially existing spills/holes, the City’s current policies must be consistently and systematically reviewed and updated. Future updates to Hamilton’s current policies should include plans that prepare for when computer monitoring systems fail, and supplement virtual monitoring with physical inspections.
- **Determine the feasibility of doing a detailed in-pipe inspections.** With proper funding and resources, the City of Hamilton could conduct a detailed, in-pipe, system-wide audit. Such comprehensive inspections would be the best way to identify holes and potential spills in the City’s sewage infrastructure. However, given the City’s aging wastewater network, a system-wide audit of this nature would create challenges in terms of pipe accessibility and expenses.

CONCLUSION

Given the City of Hamilton’s current wastewater policies, it is possible there are more sewage leaks (similar to the November 2022 discovery) occurring throughout the City right now that have yet to be identified. Lack of sufficient wastewater infrastructure monitoring and inspections has already resulted in three confirmed system failures within the past 8 years. But Hamilton is not the only city struggling with wastewater management. Other, older, industrial cities in Canada face similar challenges as sewage networks continue to age around rapidly growing cities. Ultimately the policies themselves cannot be fully understood in isolation; they are merely one aspect of a larger, more complex system. Even the strongest policies are rendered useless if not implemented and evaluated in with consideration to intersectional impacts. With the recent sewage spills drawing attention from the public and all levels of government, Hamilton will be facing increased pressure to finally address the flaws in the City’s current wastewater management policies and systems. The recommended actions offered in this paper are not only feasible, but necessary in order to catch neglected sewage leaks and prevent future incidents. City of Hamilton staff and officials must ask themselves whether continued inaction is worth the costs to the wildlife, the Harbour, and the taxpayers, who will end up paying the steepest price.

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