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# NIAGARA-ON-THE-LAKE SUES QUARRY OWNER OVER ALLEGED ENVIRONMENTAL VIOLATIONS: POTENTIAL IMPACTS ON LOCAL PROPERTY OWNERS

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## ABSTRACT

This paper examines the environmental challenges and legal implications associated with settling ponds in aggregate extraction operations, especially in the context of climate change. It highlights the role of settling ponds in managing runoff and sediment, while addressing the potential factors that can undermine their effectiveness, such as inadequate design, high flow rates, and insufficient maintenance. The paper delves into the specific impacts of extreme weather events, rising temperatures, and altered precipitation patterns on the functionality of settling ponds. Additionally, the paper explores the potential repercussions for property owners, including property value depreciation, stigma damage, legal and cleanup costs, for impacted communities. It underscores the importance of robust infrastructure planning and proactive measures to mitigate these risks. Recommendations include enhancing settling pond requirements, regular monitoring and reporting, financial assurances, revocation of permits for non-compliance, and fostering meaningful community engagement and transparency. The conclusion emphasizes the need for larger and more resilient settling ponds to accommodate changing climate conditions, ensuring environmental protection and the health, safety, and welfare of local communities. By implementing stringent regulations and effective management practices and oversight, regulators and municipalities in Ontario can better address the challenges posed by climate change and contribute to a sustainable future.

**Keywords:** Quarry; Environmental Violations; Local property; Sediments; Risks

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**Niagara-On-The-Lake Sues Quarry Owner over Alleged Environmental Violations: Potential Impacts on Local Property Owners**

## 1. INTRODUCTION

The environmental impact of quarry operations and the effectiveness of settling ponds in managing runoff and sediment have become increasingly important topics in light of climate change. As extreme weather events become more frequent and severe, the capacity of these ponds to mitigate environmental pollution is being put to the test. This paper explores the role of settling ponds in quarries, examining factors that can undermine their effectiveness and proposing solutions to enhance their functionality. It also addresses the potential legal and financial implications for property owners affected by aggregate extraction operations[1] and environmental contamination. By understanding these challenges and implementing proactive measures, regulators and municipalities can better protect natural water bodies and ensure the health, safety, and welfare of communities. A pending lawsuit is illustrative of the potential for an inadequately sized settling pond failing to contain water runoff and sediments and cause environmental harm with unintended consequences for impacted neighbouring property owners.

## 2. ENVIRONMENTAL LAWSUIT AND STATEMENT OF CLAIM

Niagara-on-the-Lake has initiated a lawsuit against a local quarry owner at 545 Line 8 Rd (123.46 acres),[2] in operation since 1980, for approximately $1.2 million, alleging that the quarry discharged material into the Cole Drain in August 2022.[3] A Permit to Take Water (No. 3324-BGALVQ), to dewater perpetually below the water table, allows for a maximum volume of 4,320,000 litres per day until December 31, 2030, while the license to permit aggregate extraction under the Aggregate Resources Act (ARA) has no expiry date. The Statement of Claim filed in Ontario Superior Court Justice on May 29, 2024, alleges that Arriscraft Canada Inc. breached the following four Acts by allowing a "large volume of water" from the quarry settling pond to end up in local ditches and eventually in the Cole Drain, approximately 1.5 kilometres downstream:

*1. The Environmental Protection Act (EPA): Prohibition, contamination generally*

No person shall discharge into the natural environment any contaminant, and no person responsible for a source of contaminant shall permit the discharge into the natural environment of any contaminant from the source of contaminant, in an amount, concentration or level in excess of

[1] Aggregate extraction refers to the process of removing raw materials such as sand, gravel and crushed stone from natural reserves like quarries and pits. This process typically involves the use of heavy equipment, such as excavators and bulldozers, and in cases where rock is being mined, detonation of explosives is usually involved to break the rock into manageable.

[2] PIN 46372-0054, GeoWarehouse.

[3] Werner, K., "Niagara-on-the-Lake suing quarry owner for $1.2 million,"*NiagaraontheLake Advance*, December 2, 2024. <https://www.niagarathisweek.com/news/council/niagara-on-the-lake-suing-quarry-owner-for-1-2-million/article_da798f4e-12c8-57b2-9f6c-c0bdfc4b63cb.html>.

that prescribed by the regulations. R.S.O. 1990, c. E.19, s. 6 (1), EPA.

*2. The Ontario Water Resources Act (OWRA): Discharge of polluting material prohibited*

Every person that discharges or causes or permits the discharge of any material of any kind into or in any waters is guilty of an offence. R.S.O. 1990, c. 0.40, s. 30 (1), OWRA.

*3. The Drainage Act (DA): Municipality may sue for cost of damage to drainage works*

A municipality in which a drainage works or part thereof is situate may bring an action for damages against any person who destroys or injures in any way a drainage works, including any bench mark or permanent level, and any damages ordered by the referee to be paid shall be paid to the municipality and used for the construction, maintenance or repair of the drainage works. R.S.O. 1990, c. D.17, s. 82 (1), DA. "Drainage works" includes a drain constructed by any means, including the improving of a natural watercourse, and includes works necessary to regulate the water table or water level within or on any lands or to regulate the level of waters of a drain, reservoir, lake or pond, and includes a dam, embankment, wall, protective works, or any combination thereof.

*4. The Fisheries Act (FA): Harmful alteration, disruption or destruction of fish habitat*

No person shall carry on any work, undertaking, or activity that results in the harmful alteration, disruption, or destruction of fish habitat. R.S.C., 1985, c. F-14, s. 35 (1), Fisheries Act.

The town argues that Arriscraft Canada Inc., which operates the quarry located between Concession 5 and 6, is responsible for the formation of a sludge-like and putrid material in the drain, which it rushed to clean up, costing about $1.2 million.[4] After responding to residents' complaints and contacting the provincial Ministry of the Environment, Conservation and Parks (MOECP), officials confirmed an odour and saw a "petroleum-like sheen and black sludge" in the drain's waters. On August 17, 2022, a ministry field officer confirmed that a "spill had occurred" and directed the town verbally to clean up the area, with written direction provided later.

The town claims that "but for the discharge of the sulphate-laden water from the quarry, the environmental incident would not have occurred." The town's statement of claim alleges that the company is in breach of several statutory and common law provisions, including:

- Allowing discharge into the natural environment causing an adverse effect under the Environmental Protection Act (EPA);
- Failing to take any necessary remedial actions;

[4] Wright, R., "Town of NOTL sues quarry for $1.2M over 'environmental spill'", *Niagara Now*, December 4, 2024. <https://niagaranow.com/news.phtml/town-of-notl-sues-quarry-for-1-2m-over-environmental-spill/>.

- Allowing the discharge of material that would impair water quality contrary to the Ontario Water Resources Act (OWRA);
- Violating the Drainage Act (DA) and Fisheries Act (FA).[5]

The town had signed an agreement with Burnstein Brick Ltd., the previous quarry owner, in September 1980. It was agreed that if there was any erosion, silting, toxic or chemical damage to the drains and watercourses downstream from the quarry, and it was determined the company was responsible, then the owner would be required to make necessary repairs at its cost. Arriscraft acknowledged that the agreement with the town remains on the property's title "but denies" that the agreement is binding on the company.

Niagara-on-the-Lake retained Accuworx Inc. and GHD Ltd. as its environmental contractor to clean up the surrounding water. The contractor built a berm to stop the water flow, and pumper trucks emptied the Cole Drain. An estimated 1.8 million litres of water was removed, with about 1.1 million litres shipped to Mors Refining in Beamsville, and about 700,000 litres sent to Niagara Region's sewage treatment plants in Niagara-on-the-Lake and St. Catharines.

## 3. THE INVESTIGATION

An investigation by the town's environmental consultant identified sulphate-reducing bacteria (SRB) as the cause of the impact on the Cole Drain water, with GHD pinpointing the quarry pond discharge as the source. Sulfate-reducing bacteria (SRB) in quarries typically originate from the soil and groundwater in the area. These bacteria are naturally occurring and thrive in anaerobic (oxygen-free) environments, such as those found in settling ponds and other water bodies within the quarry. Vaughn Mangal, an assistant professor in the chemistry department at Brock University, explained:

- While SRB may not pose explicit health problems, they can lead to poor water quality and corrosion of plumbing and culvert pipes.
- These bacteria can create harmful conditions for aquatic life due to lack of oxygen.
- SRB plays a huge role in the environmental cycling of mercury. It can convert inorganic mercury to methyl mercury, a powerful neurotoxin, which can create "hot" spots with high concentrations of methyl mercury, posing environmental and health risks.[6]

[5] Werner, K., "Niagara-on-the-Lake suing quarry owner for $1.2 million,"*NiagaraontheLake Advance*, December 2, 2024. <https://www.niagarathisweek.com/news/council/niagara-on-the-lake-suing-quarry-owner-for-1-2-million/article_da798f4e-12c8-57b2-9f6c-c0bdfc4b63cb.html#:~:text=The%20town%20alleges%20a%20discharge%20of%20water%20from,material%20into%20the%20Cole%20Drain%20in%20August%202022>.

[6] Slobodian, S., "Environmental 'spill' substance is finally identified," *Niagara Now*, October 19, 2022. <https://niagaranow.com/news.phtml/environmental-spill-substance-is-finally-identified/>.

### 3.1 GHD Observation: Sulphate Concentration and Cole Drain

"GHD noted that the sulphate concentration in the sample from the quarry discharge water from the quarry pond was higher than any sulphate concentration detected downstream and significantly higher than would be expected in rainwater." The Cole Drain runs generally north along various Concession roads and Line roads and discharges into one of the Four Mile Creek tributaries, which flow into the Upper and Lower Virgil reservoirs and eventually Lake Ontario. The quarry settling pond is connected to the Cole Drain by a roadside ditch on Line 8.

According to Arriscraft, an annual third-party review in 2023 by WSP, an environmental advisory company, found that the operations "did not exceed any limits prescribed by the Environmental Compliance Approval." However, even if a company meets regulatory standards, it can still be held liable for environmental pollution under common law or civil law claims.[7] The size or capacity of the settling pond is not disclosed, and it is unknown whether any debris was cleaned out before WSP's review or how often accumulated sediments are removed. The cleaning schedule for settling ponds in quarries typically ranges from every 30 to 45 days.

## 4. SETTLING POND FUNCTION

A settling pond, also known as a sedimentation pond or settling basin, is a type of pond used to remove settleable matter and turbidity from wastewater through sedimentation. These ponds are commonly used in industries like mining, construction, and agriculture to manage stormwater runoff and process wastewater. Here's how they work:

1. *Inflow:* Water carrying sediment and other particles enters the pond.
2. *Sedimentation:* The water flow slows down, allowing heavier particles to settle to the bottom of the pond.
3. *Clarified Water:* The cleaner, clarified water flows out from the top of the pond, often through a controlled outlet.

Settling ponds help protect the environment by reducing the amount of suspended solids and pollutants that can be carried into natural water bodies. They are designed to handle a specific volume of water and should be properly maintained to ensure they function effectively, especially during extreme weather events. In Ontario, Certificates of Approval are required under the Ontario Water Resources Act to discharge water from a pit or quarry. If polluting material escapes into any waterways the licensee is obligated by statute to self-report any polluting discharge, which is an ineffective way to manage the potential risk of environmental contamination. However, self-reporting of a discharge of polluting material from a settlement pond is problematic for several reasons:

1. *Delayed Response:* There can be a significant delay between the

[7] Adam Chamberlain. "Guide to Doing Business in Canada: Environmental protection," *Gowling WLG*, October 4, 2024. <https://gowlingwlg.com/en-gb/insights-resources/guides/2023/doing-business-in-canada-environmental-protection>.

occurrence of the discharge and the reporting, allowing pollutants to spread and cause more extensive environmental damage.

2. *Underreporting:* There is a risk of underreporting or inaccurate reporting of the discharge, either unintentionally due to lack of monitoring or intentionally to avoid regulatory penalties.
3. *Lack of Oversight:* Without independent and credible verification, there is no guarantee that the reported information is accurate or complete, leading to potential gaps in environmental protection.
4. *Public Trust:* Self-reporting undermines public trust in the regulatory system, allowing companies to police themselves without sufficient and credible external oversight.
5. *Inconsistent Standards:* Different companies may apply varying standards for what constitutes a reportable discharge, leading to inconsistencies in environmental protection efforts.

These issues highlight the importance of robust regulatory oversight and independent monitoring to ensure that environmental protections are effectively enforced.

### 4.1 Settling Pond Factors

A settling pond is designed to manage water runoff and sediment generated during aggregate extraction operations. The pond allows suspended solids and other particulate matter (PM) to settle out of the water before it is discharged (offsite), helping to control water pollution and protect local waterways and communities. The effectiveness of a settling pond can be undermined by several factors, including:

1. *Topographical Mapping:* Inaccurate and outdated topographical maps used for the design and construction of settling ponds (sediment ponds), and without sufficient contour resolution can result in inadequate design.
2. *Inadequate Design:* If the pond is not properly designed to handle the volume and type of sediment, it may not effectively trap all particulate matter onsite.
3. *Hydrocarbon Contamination:* Oils and lubricants from machinery and equipment can affect the settling process and aquatic life.
4. *High Flow Rates:* During heavy rainfall or rapid inflow, the increased water flow can disturb settled particles and carry them out of the pond and offsite.
5. *Sedimentation and Overflow:* This can be exacerbated by intense rainfall and degrade water quality downstream, impacting ecosystems and local communities.[8]
6. *Vegetative Buffers:* Planting vegetation around the settlement pond can help stabilize the soil, reduce erosion, and provide additional

[8] Apdohan, A.G., Apdohan, J.R.D., & Seronay, R.A., "Hydrological modeling for settling pond management in nickel mines: the Case of Hinatuan Mining Corporation in Tagana-an, Surigao del Norte, Philippines", (2025) 11 Model. Earth Syst. Environ., 96. <https://doi.org/10.1007/s40808-025-02302-5>.

filtration for runoff. Without such vegetation, the effectiveness of the pond in controlling sediment and pollutants can be compromised.

7. *Insufficient Maintenance:* Over time the pond's capacity to settle new particles can be compromised without regular removal of accumulated sediments.
8. *Chemical Imbalance:* Lack of appropriate chemical treatment (e.g., flocculants) can reduce the effectiveness of sedimentation. If discharge water of acceptable quality cannot be achieved by physical settling alone, additional treatment methods, including chemical treatment, may be used.[9] Inorganic flocculants like aluminium sulphate and ferric chloride can be considered pollutants if not managed properly. When used in water treatment, they can generate sludge that requires proper disposal. Additionally, they can affect the pH of the treated water and, if released into natural water bodies, can harm aquatic life.[10] Cationic anionic, and non-ionic polymer flocculants have different levels of toxicity. For example, cationic flocculants tend to be more toxic to aquatic life compared to anionic and non-ionic types. Additionally, polyacrylamides can break down into acrylamide, a substance known for its potential toxicity to both humans and aquatic organisms.[11, 12]
9. *Wind and Surface Disturbance:* Wind can create surface waves that resuspend settled particles, and other surface disturbances can have a similar effect.

### 4.2 Mitigation Measures and Financial Assurance

To ensure effective management of potential pollution discharges from settlement ponds, it is essential to implement robust mitigation measures and financial assurance mechanisms. One such approach is the requirement for $5 million surety bonds or letters of credit. These financial instruments provide a guarantee that funds will be available to address any environmental damage resulting from pollution discharges.

## 5. HISTORIC FLOODING EVENTS IN NIAGARA-ON-THE-LAKE

Niagara-on-the-Lake has experienced several significant flooding events over the past decade. Here are some notable incidents:

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9 B-6 Guidelines for Evaluating Construction Activities Impacting on Water Resources. <https://www.ontario.ca/page/b-6-guidelines-evaluating-construction-activities-impacting-water-resources?form=MG0AV3>.

10 Understanding the Different Types of Flocculants and Their Applications in Water Treatment, *Floc Systems Inc.*, Mar 4, 2024. <https://flocsystems.com/understanding-different-types-flocculants/>.

11 Increase Your Settling Ponds Efficiency With Polymer Flocculants, *Clearwater Industries, Inc.*, Une 3, 2021. <https://clearwaterind.com/increase-settling-ponds-efficiency-polymer-flocculants/>.

12 Selma Diizyol, "An evaluation of toxicity effect on flocculants usage in Environmental aspects," Faculty of Engineering, Department of Mining Engineering, Selcuk University, Turkey. <https://www.i-sem.info/PastConferences/ISEM2014/ISEM2014/papers/A2-ISEM2014ID130.pdf>.

- *June 18, 2024:* The town experienced severe rainfall, with approximately 45 mm of rain in less than an hour and 80-90 mm of rain falling within less than 12 hours. This led to rapid water level increases and sudden flooding overwhelming sewers, drains, culverts, ditches, storm ponds, causing tremendous damage to homes and properties. Many residents suffered through backed-up sewage in their homes, creating messy cleanups and dangerous biohazards.[13, 14]
- *July 10, 2024:* Another heavy rainfall event occurred, with similar rainfall amounts to those on June 18, causing extensive flooding.
- *Annual Flooding in Dock Area:* The Dock Area in Niagara-on-the-Lake has a long history of annual flooding due to its previous marshland nature. This area continues to experience flooding each year, impacting residents and businesses.[15]

The terms 100-year and 500-year storms have been widely discussed by experts, politicians and water management officials. "For a storm to be classified as a 100-year storm in Niagara, Miller said four inches (101.6 mm) of rain must fall in 12 hours, while a 500-year storm is 11 inches (279.4 mm) over the same period of time."[16] However, the frequency and intensity of these storms over the summer of 2024, and, in recent years, have raised questions about the responsibility and relevance of such characterizations when evaluating the effectiveness of local infrastructure now and into the future. Planning for a 100-year storm event, which has a 1.0% chance of occurring in any given year, is inadequate given the increasing frequency and intensity of extreme weather events.

Given the evolving climate realities, relying on a 100-year storm event for infrastructure planning is no longer sufficient. Modern infrastructure planning must incorporate climate resilience, using future climate scenarios and adaptive strategies to better protect communities from extreme weather. This includes designing infrastructure that can withstand more frequent and intense storms and updating planning criteria as new climate data becomes available. Settling ponds in pits and quarries need to be larger to account for extreme weather events, and to prevent water, whether polluted or not, from discharging offsite and causing environmental damage. This is especially important since a pit or quarry in Ontario can remain operational indefinitely with no restriction on the depth of extraction (i.e., below the water table).

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13 Media Release – Niagara-on-the-Lake's Response to Recent Flooding Events and Ongoing Efforts. <https://www.notl.com/recreation-community/community-news/media-release-niagara-lakes-response-recent-flooding-events-and>.

14 Wright, R., "Summer of the Flood: Torrential rains caused untold damage to NOTL homes and properties." *TheRegional*, Sep 5, 2024. <https://www.theregional.com/summer-of-the-flood-torrential-rains-caused-untold-damage-to-notl-homes-and-properties/>.

15 Niagara-on-the-Lake's "Dock Area" was Once a Marshland, *Niagara on the Lake Museum*, April 9, 2024. <https://niagaranow.com/news.phtml/the-once-in-couple-generation-storms-are-such-terms-accurate/ https://www.notlmuseum.ca/blog/title/niagara-on-the-lake-s-dock-area-was-once-a-marshland>.

16 Wright, R., "The once-in-couple-generation storms: Are such terms accurate." *Niagara Now*, August 29, 2024.

## 6. CLIMATE CHANGE AND SETTLING PONDS[17]

A 530-page January 2023 report commissioned by the Ontario government, titled the Provincial Climate Change Impact Assessment,[18] projects a soaring number of days with extreme heat across Ontario, as well as increases in flooding and more frequent wildfires. Climate change can exacerbate the risk of pollutants escaping from settling ponds due to several factors:

- *Weather Events:* The increased frequency and intensity of extreme weather events, such as heavy rainfall and flooding, can overwhelm the capacity of settling ponds to effectively contain and treat runoff water. This can lead to the overflow or breach of pond containment systems, allowing pollutants to escape into nearby water bodies.
- *Temperature Changes:* Rising temperatures can affect the biological processes in settling ponds, potentially altering the effectiveness of sedimentation and the breakdown of organic matter.
- *Altered Precipitation Patterns:* Climate change can alter precipitation patterns, resulting in increased volumes of water that need to be managed. This puts additional stress on existing infrastructure, potentially leading to failures in containment systems.

## 7. POTENTIAL IMPACTS ON PROPERTY OWNERS

A spill offsite from a pit or quarry settling pond can result in unintended impacts on neighbouring property owners' use and enjoyment of their property, and deprecation of their properties, which in most cases is their most valuable asset, and often a major source of capital used to fund their retirement years.

1. *Property Values:* An environmental lawsuit can create uncertainty and concern among property owners, potentially leading to a decrease in property values. Buyers may be hesitant to purchase properties near the site of a spill (discharge) due to perceived risks.
2. *Stigma Damage:* Even if the property itself is not directly affected, the stigma associated with the environmental issue can lead to a decrease in property values. This is known as "stigma damage," where the market perception of risk reduces the property's value.
    - Stigma claims can be challenging to prove in court, as they rely heavily on perception and market reaction rather than concrete physical damage. However, the fact that pits and quarries in Ontario operate under a license with no expiry date and no restriction on the depth of extraction could strengthen the

[17] Lynch, S., "Planning for climate resilience in the aggregate industry," *Rock to Road*, December 9, 2024. <https://www.rocktoroad.com/planning-for-climate-resilience-in-the-aggregate-industry/>.

[18] Crawley, M., "A grim report about climate change in Ontario was kept quiet for 8 months," *CBC*, Sep 13, 2023. <https://www.cbc.ca/news/canada/toronto/ontario-climate-change-impact-assessment-1.6964662>.

argument for a likely recurrence of similar events. This ongoing risk can contribute to the perception of stigma, as it suggests that residents and property owners may face repeated environmental issues.

3. *Legal and Cleanup Costs:* If the lawsuit results in a ruling against Arriscraft, the company may be required to cover the costs of cleanup and remediation. This could lead to increased scrutiny and regulation of similar operations in the area, potentially affecting other property owners.
4. *Community Relations:* The lawsuit can strain relations between the quarry company and the local community. Property owners may become more vocal in their opposition to aggregate extraction operations, leading to increased activism and potential changes in local land use policies.
5. *Insurance and Liability:* Property owners may need to review their insurance policies to ensure they are covered for potential environmental risks. Additionally, they may need to consider the potential liability if contamination spreads to their property.
    - Most standard homeowner policies do not typically cover environmental pollution.[19] The cost of Environmental Impairment Liability (EIL) insurance can vary depending on several factors, such as the level of risk, the type and use of property, and the specific coverage needed. Generally, EIL insurance can be more expensive for properties near industrial operations, such as pits or quarries, due to a higher risk of contamination.

### 7.1 Potential Litigation Costs and Challenges for Impacted Property Owners

Environmental contamination often poses complex challenges for property owners, especially when legal disputes arise. Below is an exploration of the key issues that need to be navigated and the potential costs that impacted property owners may face in such circumstances.

1. *Litigation Costs:* Property owners may incur substantial legal expenses if they need to pursue or defend against claims related to environmental contamination. This includes lawyer fees, expert witness costs, and other legal expenditures. The financial burden can be significant, especially for individual homeowners.
2. *Uncertain Outcomes*: Environmental litigation can be complex and unpredictable. Even with strong evidence, the outcome of a lawsuit is never guaranteed. Property owners could find themselves entangled in lengthy, drawn-out legal battles against well-funded corporations,

[19] Shier, D. S. K., "Homeowners Denied Environmental Coverage For Contamination – Doctrine of Imminent Peril." *Willms & Shier*. May 25, 2016. <https://www.willmsshier.com/docs/default-source/articles/article---homeowners-denied-environmental-coverage-for-contamination---doctrine-of-imminent-peril---ds-as---may-25-2016.pdf>.

facing stressful and financially draining processes with uncertain results.

3. *Burden of Proof:* Proving environmental damage and its impact on property value can be challenging, even under a "more probable than not" legal standard of proof. Property owners must often provide scientific and technical evidence to demonstrate the extent of contamination and its direct effects on their property, which can be costly and time-consuming.
4. *Potential for Appeals*: Legal decisions can be appealed based on a mistake in law, a significant misunderstanding of the evidence, or procedural errors that affect the outcome of the case,[20] leading to prolonged legal proceedings. This can delay resolution and increase costs for all parties involved.
5. *Settlement Pressures*: Many environmental cases are settled out of court to avoid the uncertainties of litigation. However, settlements might not always fully compensate property owners for their losses, and the pressure to settle can be considerable.

## 8. PROHIBITION OF WATER DISCHARGE TO ENHANCE ENVIRONMENTAL PROTECTION AND HEALTH, SAFETY AND WELFARE

The increasing frequency and intensity of extreme weather events due to climate change present significant challenges for all communities in Ontario. The ongoing and perpetual nature of aggregate extraction licenses, combined with inadequate infrastructure planning for extreme weather, heightens the risk of environmental contamination and poses severe consequences for property owners, local ecosystems, and community well-being. Prohibiting water discharge offsite from pits and quarries is vital to protect natural water bodies, including waterways, rivers, tributaries, lakes, and wetlands. Water discharge that causes ditches or culverts to overflow can damage downstream properties, potentially leading to lawsuits based on trespass, nuisance, or negligence. Aggregate resources, including licensing, site plan and regulatory requirements, are posted on the Ontario Aggregate Resources Corporation website.[21]

As a legal remedy, affected property owners can seek compensation for damages caused by such discharges, invoking principles such as the Rule in Rylands v. Fletcher,[22] which holds parties strictly liable for damage caused by the escape of harmful substances from their land. With no expiry date, the perpetual nature of an aggregate license, and no restriction on the depth of extraction in Ontario significantly increases the risk of offsite pollution and

[20] How to proceed with a civil appeal. <https://www.ontariocourts.ca/coa/how-to-proceed-court/civil-family/civil-appeal/?form=MG0AV3>.
[21] https://www.ontario.ca/page/aggregate-resources?form=MG0AV3
[22] Case Analysis of Ryland v. Fletcher [1868] UKHL 1 (1868) LR 3 HL 330. Case Analysis of Ryland v. Fletcher [1868] UKHL 1 (1868) LR 3 HL 330.

downstream impacts on area property owners. Environmental cleanup can be costly and may lead to irreversible harm. Additionally, persuading the polluter to accept financial responsibility voluntarily can be challenging and may result in costly and drawn-out litigation against a well-funded adversary. The implications for downstream property owners include health risks, lowering property values, and stigmatizing the area as undesirable.

### 8.1 Recommended Prohibition against Water Discharge: Enhancing Environmental Protection, Health, Safety and Welfare

To mitigate these risks, it is recommended that stricter provincial regulations and appropriate municipal land use controls be imposed and enforced, including:

1. *Enhanced Settling Pond Requirements*: Mandate larger and more robust settling ponds for pits and quarries to handle increased stormwater volumes and prevent overflow and discharge. This measure protects local water bodies and prevents offsite impacts to neighbouring communities, ensuring that no water is discharged either onsite or offsite.
2. *Regular Monitoring and Reporting*: Require frequent monitoring and reporting of water quality and sediment levels in settling ponds to ensure compliance with environmental standards, and prevent nuisance and trespass.
3. *Revocation of Permits for Non-Compliance*: Implement a policy whereby permits and licenses for operating pits and quarries can be revoked if there are repeated violations of environmental regulations, ensuring accountability and encouraging better management practices.
4. *Community Engagement and Transparency*: Ensure local communities are fully informed, appropriately represented, and engaged in the decision-making process regarding aggregate extraction operations and their environmental impact.

By imposing these measures, the aggregate industry in Ontario can be held accountable for protecting our communities and environment, while proactively addressing the challenges posed by a changing climate. Ensuring robust infrastructure, transparent processes and stringent regulations will contribute to a more sustainable and resilient future.

According to a report by the Auditor General of Ontario, from 2018 to 2022, only 36% to 52% of the pit and quarry sites visited were compliant with regulations. Despite high rates of non-compliance, enforcement actions were rarely pursued putting the environment and communities at risk.[23] Permitting the aggregate extraction industry to self-report also lends itself to potential non-compliance with regulatory requirements and additional risk to the environment and its inhabitants.

[23] Ministry of Natural Resources and Forestry. (2023). Management of aggregate resources: 2023 value-for-money audit. <https://www.auditor.on.ca/en/content/annualreports/arreports/en23/AR_mgmtaggregates_en23.pdf>.

## 9. CONCLUSION

The environmental and legal implications of aggregate extraction operations and the effectiveness of settling ponds in managing runoff and sediment are critical concerns in the context of climate change. As extreme weather events become more frequent and intense, the capacity of these ponds to mitigate environmental pollution is being tested. This paper has examined the factors that can undermine the effectiveness of settling ponds, such as inadequate design, high flow rates, and insufficient maintenance. It has also highlighted the impacts of extreme weather events, rising temperatures, and altered precipitation patterns on the functionality of settling ponds.

The potential repercussions for property owners include property value depreciation, stigma damage, legal and cleanup costs, and strained community relations. To mitigate these risks, it is essential to implement robust infrastructure planning and proactive measures, including enhanced settling pond requirements, regular monitoring and reporting, revoking permits for non-compliance, and fostering meaningful community engagement and transparency.

By adapting the design and management of settling ponds to the evolving climate realities, alongside appropriate regulatory oversight and municipal land use policies that achieve permanent land use compatibility, natural water bodies, including waterways, rivers, tributaries, lakes, and wetlands can be better protected. Ensuring the health, safety, and welfare of local communities requires stringent regulations and effective management practices. Addressing the challenges posed by climate change and implementing sustainable practices can contribute to a more resilient and environmentally responsible future.

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## AUTHOR'S DECLARATION AND ESSENTIAL ETHICAL COMPLIANCES

*Author's Contributions (in accordance with ICMJE criteria for authorship)*

This article is 100% contributed by the sole author. He conceived and designed the research or analysis, collected the data, contributed to data analysis & interpretation, wrote the article, performed critical revision of the article/paper, edited the article, and supervised and administered the field work.

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The author(s) solemnly declare(s) that this research has not involved any human subject (body or organs) for experimentation. It was not a clinical research. The contexts of human population/participation were only indirectly covered through literature review. Therefore, an Ethical Clearance (from a Committee or Authority) or ethical obligation of Helsinki Declaration does not apply in cases of this study or written work.

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The author(s) has/have NOT complied with PRISMA standards. It is not relevant in case of this study or written work.

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