

# *The* **Source**

A Publication of the Ontario Ground Water Association

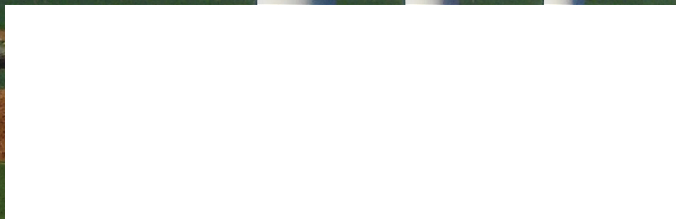
## *Latest News from the OGWA*

*(Not necessarily all 'Good Vibrations')*

*Chatham-Kent Water Wells  
and Wind Turbines*

*Page 12)*

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A Publication of the Ontario Ground Water Association

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750 Talbot Street  
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Published for:  
The Ontario Ground Water Association  
750 Talbot Street,  
St. Thomas ON N5P 1E2

Tel: 519.245.7194  
Fax: 519.245.7196  
Email: ogwa@ogwa.ca

Advertising  
Jennifer Hudson,  
Administrative Assistant  
Tel: 519.245.7194 ext 101  
Fax: 519.245.7196  
E-mail: admin@ogwa.ca

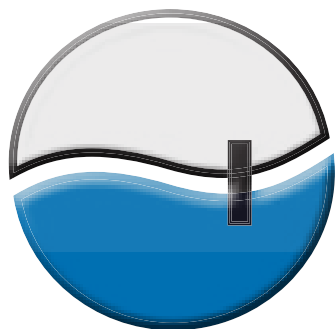
Accounts  
Debbie Stojkovic  
Tel: 519-245-7194, Ext.102  
Fax: 519-245-7196  
E-mail: accounts@ogwa.ca

Editor  
K.C. Craig Stainton  
Executive Director  
Extension 103  
E-mail: executivedirector@ogwa.ca

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**K.C. Craig Stainton**,  
Executive Director  
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# PRESIDENTS REPORT

Hi everyone,

I hope that the wet spring hasn't held you up too much, and that you are well on your way to another successful year. The OGWA has been busy working on your behalf in the weeks since our last gathering in London.

Most significantly, the Board of Directors has just completed a series of strategic planning meetings. These goal setting and strategy sessions have given our organization renewed focus and a clear path forward for the next 3-5 years. It has been a while since this process was last done, and we are excited to get moving on a number of different fronts.

They broadly include:

- Enhanced member benefits / continuing education
- Communications, outreach and advocacy
- Streamlining our organizational structure and processes

We quickly got to work on our goal of bringing more government attention to the importance of ground water. As your president, I had the opportunity to represent you, and the OGWA, at Queen's Park on June 5th. It was in response to the affects that wind turbine installations are having on water wells in the Chatham-Kent area. We were able to work with Essex MPP Taras Natyshak, Water Wells First representative Kevin Jakubec, affected citizens Mark and Marilynn St. Pierre, and Joel Gagnon from the University of Windsor. The efforts of MPP Natyshak in Question Period and the following press conference highlighted the human health impacts wind turbines are having on the local aquifers. We strongly advocated that projects such as this need to take into account the affects they might have on local aquifers and include active measures for ground water protection.

We further discussed that any number of activities can affect ground water in the province. We outlined how this included the improper storage of radioactive waste, the disposal of garbage in old quarries and gravel pits, industrial chemicals, PFSA's from fire fighting, low dose pharmaceuticals and micro-plastics, and the over-development of natural recharge areas.

Your staff is settling into their new home at the CASO station in St. Thomas and, along with the Board of Directors, has been busy with numerous other projects. They include working on the Annual Scholarship Fundraising Golf Tournament help on September 20th, preparations for next year's continuing education offerings, planning for next year's AGM and conference, and much more. Stay tuned!

As you can see we are off to an exciting start, and we look forward to continuing to work on your behalf. Please feel free to contact me, other members of the Board of Directors, or the OGWA office if you have any questions, concerns, or suggestions to share.

Get out there and get wet!

**Matt Wilson**

President – Ontario Ground Water Association

**Jennifer Hudson**, Administrative Assistant  
519-245-7194 Ext.101  
Fax: 519-245-7196 | admin@ogwa.ca

**Debbie Stojkovic**, Accounts  
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# EXECUTIVE DIRECTOR'S MESSAGE

I have spoken often in this column of change and how we are left sometimes scrabbling to keep current in an everchanging world. Safe it is to say that changes have not shown any tendency toward slowing down, perhaps if anything they are tending to ramp up.

Technology is certainly a big part of the scenario. We've become trained to expect things to have become outdated "old" in just a few years. Coupled with the deterioration in quality our modern world has brought us it is no wonder we have become a "throw away society". The problem is there is more to it than buying new and throwing the old away. Some things are different, changes that are less apparent than getting a new car or computer. Price changes we notice immediately whether it be the addition of tariffs on steel, or the change in value of the dollar these changes are immediately noticeable right there at the bottom of the invoice. They are easier to keep track off for that reason.

The tough changes to keep track of are those that have to do with regulation or things we do not encounter ever day. Unless they are announced widely, we miss these changes even though it is our responsibility to be aware.

Workman's Safety Insurance Board regulations (reportedly under discussion this summer) will likely bring forth change. What kind of notice will we be given, or these changes only become apparent to us because we have the benefit of someone in our midst like Ellaline Davies of Safety Work Consulting who will give us the heads up on what we need to be aware of?

It occurred to me while writing this that I had not specifically alerted you all to the change in acceptable limits for arsenic in the Ontario Drinking Water Standards. The maximum acceptable limit for arsenic has been changed from 0.025 mg/L to a more stringent value of 0.010 mg/L. The ministry has provided a two-year phase in for this amendment which came into effect January 1, 2018. So, compliance with the 0.010 mg/L for drinking water system owners must in place by January 1, 2020. I am sure if you are a drinking water system owner you were notified, you knew of this but for folks on the periphery, those who only occasionally encounter drinking water systems it must be a challenge to stay updated on the changes in maximum acceptable limits and consultations that are in process.

Through the OGWA's reciprocal membership with ONEIA and my seat on their Water Committee I recently received a draft copy of the Made-in-Ontario Environment Plan/Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health 2020. Some lite reading, I am sure but a necessity. Similarly, through the ground water committee of the OWWA a copy of the Guideline Technical Document for Public Consultation "Escherichia coli in Drinking Water" from Health Canada this consultation period ending August 16th of this year. While the recommendation is to reaffirm the existing guideline a MAC for E. coli of none detectable per 100 mL in drinking water, last updated in 2013 it is important for the OGWA to be part of the process and aware of the ability to comment.

As I am sure you are aware when Premier Ford shuffled his cabinet, he named a new Minister of the Environment, Conservation and Parks. What you may not know is that the new minister The Honourable Jeff Yurek is our neighbour, his constituency office is located here at 750 Talbot Street East. Minister Yurek has accepted our request for a meeting to discuss ground water in Ontario and we are in the process of scheduling. This is a great opportunity for the OGWA it has been some time since we have been able to speak face to face with a Minister of the Environment.

Recently the Ministry of the Environment, Conservation and Parks has announced the ability to file Water Well Records online. In consultation with some of our members the Ministry has been working on this for a while now. As some Water Well Contractors are not as computer savvy as others this will be optional, and the traditional paper record filing will remain in place for those who prefer that method. The OGWA Board of Directors will hold their August meeting at the Ministry's offices at 125 Resources Rd. and receive a consultation on and demonstration of the new system. We are looking forward to this opportunity and thank Shelley Kilby and Tim Cheng the Ministry staff involved. Shelly is the Coordinator, Water Well Management Program at the Environmental Monitoring and Reporting Branch and Tim is the Groundwater Database & Systems Specialist, Water Well and MISA (Municipal Industrial Strategy for Abatement)

Reporting and has been responsible for Water Well Records with specific regard to the mapping portal. Another great opportunity for the OGWA Board spearheaded by Board Member Bruce Hietkamp, thank you Bruce.

Have you checked out "Perkopolis.com"? As the name suggests there are more "perks" available to you than ever before as an OGWA member. Check out the advertisement included in this edition of the Source. If you have problems accessing the program speak to Jennifer Hudson in the OGWA office for help.

Our annual golf tournament is coming in October please join us on the links for a fun day of raising money for the students in our industry. The money raised goes toward the scholarship dollars presented to students every year. With lunch and dinner included it is a great deal for a very worth while cause. There is information on the tournament in this edition of the Source as well as on our web pages.

Lastly don't forget to contemplate setting aside time in late March or early April to attend our Convention and Annual General Meeting. The Committee is working on securing a venue as I write this. Stay tuned for more information, I understand the search is on in the area around Muskoka.

Please don't forget the Well Wise Water Testing Program, you can offer your clients a discounted price on the results come compared to the Ontario Drinking Water Standards with a copy of the Appendix for definitions it is extremely straight forward to understand.

We have recently signed a contract with Annex Publications who publish Ground Water Canada. They will have printed this issue for us and will also print the next issue. In 2020 the two magazines our Source and Ground Water Canada will come to you together as one unit. More changes.

Any suggestions you may have on benefits, any questions you may have on ground water or any help you may wish as a member; do not hesitate to contact this office. We are here to serve you our members in this industry. The OGWA is "dedicated to protecting and promoting Ontario's most precious resource – ground water".

**Craig Stainton**

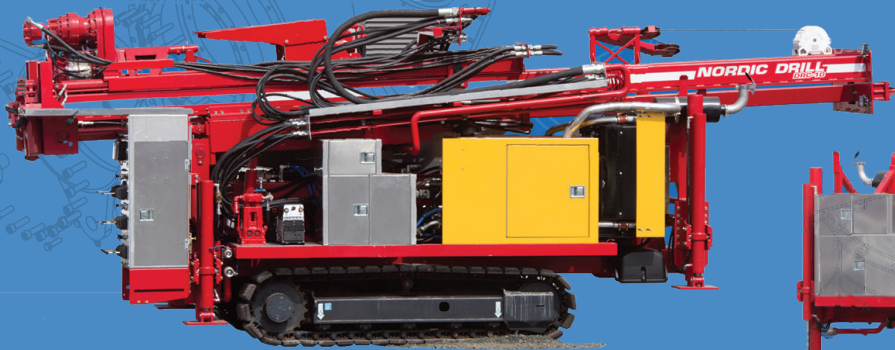
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# Measuring Groundwater Levels

By Bill Clarke. Edited by Linette Keller

Every once in a while, it behooves our industry to have a look at where it's been in order to celebrate the evolving technology that has allowed huge advances in groundwater data collection. But more importantly, this kind of retrospective also assures that best practices from the past are not lost. The methods of data collection for basic groundwater studies have changed extensively over the last 40 years, and these methods are the focus of this article.

A comprehensive set of water level data is the best way to characterize the local groundwater regime, and this data can usually be obtained in with minimal cost. At the very least, it is highly advantageous (and often necessary) to know the direction of groundwater flow. At least three wells surveyed for elevation and screened in the same aquifer are required for triangulation of the water level readings. The surface of the groundwater can then be calculated to show direction and rate of groundwater flow on that discrete day of measurement. Groundwater levels can be measured through the seasons to observe any significant changes in flow patterns. How to make full use of this data set is a conversation for another day. In the early days, there were chalk lines (graduated steel tapes with chalk applied to the bottom 3m or so which would come off when dipped in a well) for accessible wells or bubbling tubes (also known as air lines, in which air was compressed and produced a pressure gauge reading which allowed for calculation of the water level) for inline turbines where the system was closed. These methods were approximate and acceptable for individual water supply wells. When groundwater contamination studies became common, there was a need to obtain more accurate data, and on a frequent basis.

A common and inexpensive solution was a fibreglass tape measure with a "plop" attached to the end. The plop was commonly a short length of tubing, fitted with a cap and eye bolt at one end. The water measurement technique required an ear to the top of the casing and a slow but steady release of the tape so that it was clear when the plop hit the water surface. The plop could be reeled back a short distance and the field tech performed a "jigging" action, releasing a short tape length with each jig, until a

"plop" sound could be repeated and the water level measurement then noted. The plop was and is a reliable tool for measuring water levels in wells, but there are challenging situations with rapidly changing water levels, like pumping tests.

With changing legislation in 1980, and municipalities adopting groundwater protection strategies, long-term pumping tests became common. Homemade electric wire tapes started to show up, with occasional graduated measurements (one foot or one metre) marked on the wire. A carpenter's tape was used to refine that actual measurement to the top of the water surface in each well.

Eventually, these tapes were made commercially with a flat wire that showed detailed graduation marks (inches or centimetres). In this incarnation of the tapes, there was a cylindrical stainless probe at the end of the tape that reliably closed the electrical circuit when it touched the water surface, and offered both an audio signal and a visual queue with a red light, for when one was standing beside a rather loud generator during a pumping test.

As a backup in the field, I bring a fibre tape (30 metres) and a plop to each site. If the electric tape malfunctions, at least some data can be obtained while on-site. Also, the plop, or a copper slug (a plop that has been filled with ballast material), can be used to obtain soundings to the top of a submersible pump, or to the bottom of the well.

In addition, there are those occasional situations where the electric tape does not respond. For example, it is rare when the groundwater is not very conductive, but it does happen. This can render the electrical tape useless. Also, there are occasions when observation is required in wells which have been flushed to remove fine materials from inside the well screen. To minimize the impact on the groundwater chemistry during this flushing, distilled water is often used. If the well is located in a slow-moving groundwater regime (silt/clay), then it could be a long time before the local groundwater displaces the distilled water. Until displacement occurs, the electric tapes are not reliable; but the plop is.

By the early 1990's, pressure transducers were available. This style of data logger could be programmed to record changes in pressure (head levels) above the logger while it was suspended in a well. This technology changed everything! Programmed data loggers could take pressure readings at optimum intervals. Comprehensive data from slug tests and pumping tests allowed

for consistent data interpretations with very high levels of confidence. Once field techs were convinced that the data loggers were reliable, then sleep deprivation became less of an issue for long term tests (e.g. 72 hours), when on-going manual readings were required. Some manual readings are always beneficial during a pumping test, but more as an infrequent spot check to observe any radical and unexpected change in water levels.

For most monitoring wells and some pumping wells, dangling a data logger on a length of stainless-steel cable is reliable and relatively low risk. The logger can be retrieved at least once a year for download of data. Data recovery twice a year is recommended so that a malfunction does not result in the loss of too much data.

But, there are still tricky situations. Upon logger retrieval at active pumping wells, it is way too easy to have the logger get jammed between the electrical wire and where the wire is taped to the pump's drop pipe. Under these circumstances, a direct-read cable is preferred. The logger is attached to the communication cable and installed only once (for the length of the project, or the life of the logger battery).

Further revolutions in groundwater level monitoring came in at the turn of the century, when remote data acquisition became possible. Telemetry installations can be implemented at remote sites, or sites where the groundwater data needs to be checked frequently. This technology is reliable with a reasonable cost.

It is also necessary to recognize the evolution of computers. Vast amounts of data can be collected, managed, processed and presented with relative ease. With so much data being obtained by a variety of agencies (academic, government, industry, consultants), it is time to make this data available to provincial (state) and federal agencies, who have the resources to incorporate the massive data bases into geological and groundwater models. This is necessary if we are to protect the precious water resources – both groundwater and surface water.

In summary, over the last 40 years groundwater monitoring has gone from occasional and approximate data sets, to on-going and accurate data sets. Groundwater trends and patterns can be readily observed at all current sites. This has led to a more comprehensive understanding of groundwater regimes, which in turn will allow for better stewardship of the groundwater resources.



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### Ontario Taking Action to Reuse Soil and Hold Polluters Accountable Proposed Changes Clarify Rules and Remove Barriers for Redevelopment May 1, 2019 1:00 P.M.

Ontario's government is protecting what matters most by safeguarding ground and surface water and preserving human health through proper management of excess soil and strengthened enforcement against environmental violations, including illegal soil dumping. The province's proposed changes will reduce the risk of soil being mismanaged and put vacant lands back to use.

Ontario is proposing to introduce changes that will make it safer and easier for more excess soil to be reused locally and properly by clarifying rules for managing and transporting excess soil and ensuring healthy soil is not sent to landfills, while penalizing those who dump soil illegally. We are also strengthening our enforcement tools by enabling penalties that will effectively remove the economic benefits of breaking environmental laws, such as illegal dumping and modernizing the process to seize vehicle plates to hold polluters accountable.

"Excess soil is a growing concern for communities, developers and our environment," said Rod Phillips, Minister of the Environment, Conservation and Parks. "When improperly managed, excess soil can negatively affect ground water quality, farmland and other sensitive areas. Lack of clarity around the rules has also resulted in sending healthy soil to landfills. Our proposed changes will help ensure better environmental protection and ensure those who don't follow the rules are held responsible."

The proposed changes posted on the Environmental Registry include:

- Clarifying rules associated with the reuse and management of excess soil to help ensure environmental protection and limit the amount of soil being sent to landfills. This would also reduce soil management costs for industry.
- Removing unnecessary barriers to redevelop and revitalize vacant lands and put them back to good use, while maintaining human health and environmental protection.
- Strengthening compliance and enforcement measures against polluters by imposing administrative penalties and modernizing the process to seize vehicle plates for environmental infractions.

Our commitment to managing excess soil is part of the government's Made-in-Ontario Environment Plan to protect our air, land and water, prevent and reduce litter and waste, support Ontarians to continue to do their share to reduce greenhouse gas emissions, and help communities and families increase their resilience to climate change.

#### QUICK FACTS

- In their 2016 Waste Management Industry Survey, Statistics Canada estimated that almost two million tonnes of soil go to Ontario landfills as waste, some of which are reusable.
- Trucking excess soils 60-100km to landfills and other locations, rather than greater reuse onsite and locally, creates significant costs and greenhouse gas concerns.
- Managing excess soils represents an estimated 14 per cent of overall construction costs, with trucking and tipping fees being a large part of that cost.
- An industry study has reported that projects that use excess soil management best practices for local soil reuse have reported an average cost savings of nine per cent.
- Municipalities have indicated significant cost savings for reuse of excess soils locally, with some project savings ranging from \$800,000 to more than \$1,000,000.
- Each year, a number of incidents of illegal dumping in Ontario are reported to the ministry and relate to various materials (e.g. soil, oils & greases, sewage).
- Ontario will also introduce a new regulation under the Environmental Protection Act that enables prescribed persons, such as developers, to make alternations to sanitary collection and stormwater systems, as long as specific conditions are met.

#### LEARN MORE

- Made-in-Ontario Environment Plan (<https://www.ontario.ca/page/made-in-ontario-environment-plan>)

Gary Wheeler Communications Branch  
416-314-6666  
Emily Hogeveen Minister's Office  
[Emily.Hogeveen@ontario.ca](mailto:Emily.Hogeveen@ontario.ca)

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# To a Mouse... Chatham-Kent Water Wells and Wind Turbines (with apologies to Robert Burns)

Joel E. Gagnon, PhD, CPG, LPG

School of the Environment/Great Lakes Institute for Environmental Research, University of Windsor

## Introduction

I am not a poetry aficionado, however, even I find the immortal words of the Bard of Ayrshire to be particularly poignant when considering the groundwater quality problems facing some residents of rural Chatham-Kent (C-K). To groundwater scientists, engineers, and well contractors, the 1785 poem *To a Mouse* by Robert Burns, which contains the oft quoted “The best laid schemes of mice and men go often askew”, is not mere poetic verse but a deftly eloquent reminder of how those that live and work in the natural world must be cognizant that its unforeseen complexities have a way of undoing even the best designed plans. Field personnel know, that upon logging the first borehole, conducting the first slug test, or measuring the first grain size distribution, to always be prepared for and accepting of the possibility that, despite all available resources, they did not quite “get it right”, and to be prepared to adapt to unanticipated outcomes. When faced with these unforeseen circumstances, these field experts use the entirety of their knowledge and experience to objectively assess the situation, and ultimately make critical and effective decisions on a real-time basis. This is referred to figuratively as “thinking on one’s feet” and is an invaluable trait among field personnel. These individuals recognize that they work in a world with inherent uncertainty and are well prepared to adapt to this reality. If only the rest of the world were so equipped to address these unexpected but inevitable situations, our jobs as groundwater scientists, engineers and well contractors would be greatly facilitated. I will return to this allegory after first providing some insights into the groundwater issues currently facing rural C-K.

## A Brief History

For over 100 years, rural residents of C-K have relied on groundwater extracted from a contact aquifer that occurs at the interface between the glacial overburden (predominantly clay till) and Kettle Point (KP) shale bedrock that underly the region. Area water well contractors know that locating significant groundwater yields can be problematic, often requiring multiple attempts to construct a viable well. Once located, however, groundwater quality was good and yields adequate to supply family farms, including livestock operations, with many wells being constructed without need for screens or filter packs. Some area residents characterize the water as having a ‘sweet’ taste, and widespread groundwater quality and persistent well maintenance issues were previously unknown in the area.

The situation changed in the former Dover Township in 2007, when Marsh Line Wind constructed five industrial wind turbines around the community of Dover Centre. Impacts to groundwater quality, in the form of dramatically increased turbidity, were reported by local residents, however, the linkage with wind turbine installation and operation was not established at that time. The situation in Dover Centre was repeated in 2012, when installation of wind turbines was recognized as the cause of increased turbidity in groundwater wells in the vicinity of the East St. Clair Wind turbines. In an August 2012 letter, Monte McNaughton, PC MPP for Lambton-Kent-Middlesex informed then Minister of Energy Chris Bentley that pollution of water wells by sediment was associated with construction of the East St. Clair Wind turbines near Mitchell’s Bay. Regardless, wind turbine installation continued, and previously unseen water quality issues have persisted in the area since.

Recognizing that impacts to groundwater quality in the vicinity of the Marsh Line Wind and East St. Clair Wind developments likely resulted from wind turbine construction and operation, some residents in the vicinity of the proposed North Kent Wind development in the former Chatham Township undertook a baseline water quality study prior to commencement of wind turbine construction in 2017 – something that had not been done before the Marsh Line Wind and East St. Clair Wind developments. At the time of the preconstruction testing, evidence of water quality impacts, including excessive turbidity, was not observed (Clarke, 2018). Upon commencement of construction of the North Kent Wind turbines, however, increased turbidity was observed, which was reported in several well interference complaints to the then Ministry of Environment and Climate Change (MOECC). The data and analysis presented by Clarke (2018) confirmed that water quality had been impacted and that well interference was caused by North Kent Wind turbine installation and operation.

Despite evidence to the contrary, the linkage between industrial wind turbine installation and operation and water quality impacts has been disputed by certain wind farm developers and politicians, the C-K medical officer of health (Colby, 2019), and the MOECC. To this geoscientist, however, what has transpired in C-K since 2007 is a straightforward application of the scientific method and illustrates how we must be prepared to accept and address its unanticipated outcomes – regardless of how “inconvenient” they might be. Observations made by residents in the vicinity of the Marsh Line Wind project (increased groundwater turbidity) led to the

hypothesis that wind turbine installation and operation can cause groundwater quality impacts. In the case of C-K, this hypothesis has been validated not once but twice with the subsequent installation of the East St. Clair Wind and North Kent Wind developments, after which similar groundwater quality impacts were observed. Furthermore, in the absence of any other cause, wind turbine installation and operation are the only plausible explanation for the timing, location, and scale of the groundwater quality impacts observed in the region. How many more times need this hypothesis be tested before its validity is accepted by naysayers? How much more of this aquifer (or other aquifers) must be destroyed? How many more people must suffer the practical challenges and potential health effects posed by daily use of impacted groundwater? When will the affected people be provided with long term, reliable solutions to a situation for which they bear no responsibility?

## Uncertainty Abounds

Over the past year, I have visited several homes in the former Dover and Chatham Townships, and observed first-hand the groundwater quality issues many area residents face daily. Assessment of the situation is ongoing, however, groundwater impacts vary from location to location and comprise one or a combination of: 1) excessive turbidity and sediment production, which leads to rapid plugging and fouling of filters and damage to equipment (e.g., water softeners, washing machines, pressure tanks), 2) increased gas production, which is likely dominated by methane but also likely contains radon (Ford et al., 2015), and 3) biomass/film formation, which leads to fouling of water systems and undesirable odor, taste and appearance. In some cases, the affected families have lived on these properties for five generations and report that these impacts were not observed in the area until wind turbine installation and operation commenced.

To date, although opinions have been expressed about potential health effects, structured studies conducted by qualified persons designed to quantify the potential health hazards posed by these groundwater impacts have not been undertaken. The investigation by Clarke (2018) confirmed that particles contained in the groundwater comprise KP shale. Studies by Armstrong (1986) and Reichenbach (1993) show that KP shale: 1) contains anomalously high concentrations (some in excess of 1500 parts per million) of several potentially hazardous metals (e.g., As, Cd, Co, Cr, Mo, Pb, Se, Th, U, V, Zn), 2) exhibits the highest concentrations of many of these metals in the uppermost few meters of the shale, which corresponds with the interval immediately underlying the contact aquifer, and 3) has the highest concentrations of many of these metals (e.g., As, Mo, Pb, U, V) in association with the highest total organic carbon (TOC) contents (up to 15% TOC). Furthermore, many of these metals are not included in the routine water quality testing that is conducted to assess the suitability of a well for human use, therefore, it is unknown whether exposure to metals originating from the KP shale has been a long-standing issue in the area.

The presence of KP shale particles in combination with dissolved gases in the groundwater is troubling from a health

hazard perspective. Armstrong (1986) proposed several mechanisms to explain the metal distributions in the KP shale, including as adsorbed species, in diagenetic precipitates (oxyhydroxides), and as structurally bound within mineral grains, which would influence the environmental fate and potential toxicity of the metals. For example, anomalously high metal concentrations in the uppermost part of the KP shale and their association with high TOC contents suggest that these metals could be predominantly adsorbed on or contained within the organic fraction. Depending on its solubility, the organic fraction could desorb or dissolve and release metals if the shale particles were subjected to changes in environmental conditions, such as a reduction in pH. Release of metals could occur without dissolution of the inorganic (silicate mineral) fraction of the shale. The potential for metals to be leached from KP shale has not been assessed, consequently, there is considerable uncertainty with respect to the potential health effects posed from ingestion of KP shale particles.

Residents of C-K that use groundwater that has interacted with KP shale have the potential to be exposed to a combination of hazardous substances (dissolved metals, metals-containing particulates, and radon) in multiple media (water and air) via multiple exposure routes (inhalation, ingestion, and dermal contact). The uniqueness and complexity of this exposure scenario necessitates that structured study be done to quantify the associated health risks. Thus far, such studies have not been undertaken. Furthermore, comparing concentrations of individual dissolved metals in filtered groundwater samples to criteria that were developed for single substance exposures is inadequate to assess the potential health risks associated with such complex exposure scenarios. In situations such as this, an epidemiological study of disease rates in C-K residents would be a prudent first step toward understanding the potential health risks associated with groundwater use in the area. Is there a statistically significant increase in disease rates in the population that might be attributable to groundwater use? If so, how would these disease rates be affected by increased exposure to KP shale-related hazardous substances resulting from wind turbine installation and operation? Data required to initiate an epidemiological study (disease metrics and spatial distributions) likely already exist and could be accessed with cooperation from local and provincial health agencies.

Potential long-term health effects notwithstanding, rural residents of C-K currently face the ongoing, daily, practical challenges and costs of trying to use water containing large quantities of suspended sediment, dissolved gases, and biomass. The immediacy and severity of the human toll caused by these water quality issues have been all but ignored by the wind turbine developers, municipality, and province. The costs to address these impacts have, in one case, exceeded \$15,000. Furthermore, the measures undertaken by individual C-K residents to address the aesthetic impacts and make the water “usable” may or may not address the potential health hazards, and uncertainty remains as to whether the treated water is actually “safe” to use.

## Back to the Bard

Over the past year, I have twice witnessed responses by the Ontario PC government when C-K water quality issues were raised in Question Period on behalf of the affected residents by Taras Natyshak, NDP MPP for Essex. In both instances, government responses amounted to finger pointing, self absolution, blame laying, and promises that the situation was being looked into and something would be done. Specific information pertaining to potential government response actions, however, was not provided on either occasion. What is required for the citizens of C-K is not politicking but political leadership. What is required by wind farm developers, the C-K medical officer of health, the MOECC (now the Ministry of Environment, Conservation and Parks), and the Ministry of Health is recognition that those best able to determine whether water quality in the area has changed are the people that have relied on the resource for generations. What is required is that these companies and public servants recognize what groundwater scientists, engineers and water well contractors know all too well – that “best laid schemes ... go often askew” and unforeseen geologic complexities can cause unexpected outcomes; the solutions to which necessitate vision and action. The residents of C-K relying

on this resource deserve the political leadership necessary to help them overcome the weighty challenges imposed on them through no fault of their own.

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# Development Water Discharge

*Dwayne Graff, 1st Vice President OGWA*

A new topic or item on the regulatory radar, where does your development water go? There was a day one could have their development water go almost anywhere nobody gave much of a thought as to where the water was going or where it was ending up.

Fast forward to today and it is becoming a significant technical problem for well contractors. Some time ago we were involved in a deep bedrock monitoring well drilling program and had a rather unfortunate incident with our discharge water. We were working beside a creek and had a 50,000L containment/settling tank set up for all drilling development water. We were to contain it, let it settle and discharge the clear water into the sanitary sewer system, we could not discharge anything into the creek.

In all municipalities there is a discharge criterion for both storm and sanitary sewers. The criteria relate to several chemical parameters and is generally known as the sewer use bylaw. The parameter of most concern to drilling contractors is Total Suspended Solids (TSS). This is a measurement of water clarity, measured in parts per million (PPM / mg/L). Most sewer use bylaws have a maximum total suspended solids criterion for storm sewers of 15 ppm TSS – which is essentially clear and 350 ppm TSS for sanitary discharges.

Back to the creek site story. We were working under the supervision of a consultant and had arranged permission to discharge water following settling in our tank to the sanitary sewer located in the roadway. We obtained permission from the municipality, had a traffic plan and signage, all bases were covered. After discharging we were informed there was turbid water being observed in the creek. After stopping discharge and some investigation it was determined we were not discharging into the sanitary sewer but rather the storm sewer. Somehow these manholes had been misidentified.

Legally we were required to report the issue to the MECP. They performed their due diligence a brief investigation and couldn't find any signs of impairment to the water quality in the creek. The consultant quickly initiated some streamflow monitoring for both water quality and base flow. The monitoring continued for a period of a few weeks following the initial discharge. The MECP evidently wasn't sure what to do so they passed the case on to the Federal office of Environment Canada. This is where it gets interesting – and terrifying for those involved.

I became keenly aware of the power the Federal government has. All parties involved in the project provided statements, documents and technical information as part of their review. The consultant had collected a lot of stream flow and water quality data up and downstream of the work area. We learned that the water being discharged into the storm sewer was often cleaner (lower TSS) than observed in the base flow of the creek. This fact does not warrant one to do what they like, and the 15 ppm criteria is still the maximum amount allowed for discharge.

At the end of the investigation Environment Canada did not pursue conviction as we had copious notes and field data documenting what we were doing. We had implemented a fully logical plan to deal with development water discharge in compliance with the legislation, however they recognized there was an honest mistake in manhole selection. All parties involved also had a clean record and no prior history of wrongdoing in similar situations.

While we were not prosecuted. I will however share the fines that could be applicable for such an event. The following is not the complete list but lists the range of fines one can be eligible to receive:

## **Offence and Punishment:**

**40 (1) Every person** who contravenes subsection 35(1) is guilty of an offence and liable

- (a) on conviction on indictment,
  - (i) in the case of an individual,
    - (A)** for a first offence, to a fine of not less than \$15,000 and not more than \$1,000,000, and
    - (B)** for a second or subsequent offence, to a fine of not less than \$30,000 and not more than \$2,000,000, or to imprisonment for a term not exceeding three years, or to both,
  - (ii) in the case of a person, other than an individual or a corporation referred to in subparagraph (iii),
    - (A)** for a first offence, to a fine of not less than \$500,000 and not more than \$6,000,000, and
    - (B)** for a second or subsequent offence, to a fine of not less than \$1,000,000 and not more than \$12,000,000, and

Note the fines are not only for the corporation but can also be applied to any individual involved in the project. The monetary value of these fines should have everyone's immediate attention.

One of my objectives this year is to work with the MECP to further clarify the legal requirements for discharge of development water. In some locations the MECP has reportedly stated that ANY water discharge must not only be contained and treated it cannot be discharged in any location without meeting applicable discharge criteria for sanitary or Storm water quality. Specifically, no discharge to grassy field/infiltration, yet in some areas it is not a concern.

From my perspective this is over the top and unreasonable, especially where the water couldn't possibly enter a surface water feature/receptor. So, it requires clarification as the rules seem to change vastly from site to site. As one can see from the list of fines plus costs this is an item worthy of clarification and attention. The costs of compliance for this type of discharge water are very significant so are the fines.

I recommend you use caution when discharging development water on a drilling site.

## Grundfos To Spend \$3.5 Million Expanding The Oakville Location

On Thursday, July 11th at 10:00 am Grundfos Canada will break ground on its \$3.5 million expansion of their Oakville Location, 2941 Brighton Road. This investment underlines our continued commitment to the Oakville community and will have a long-lasting impact on the local economy and beyond.

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The completion date for this expansion is scheduled for July 2020.

Grundfos Canada

Simon Feddema  
President



# COURT BULLETINS – MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS

## Drinking Water System Owner fined \$4,500 for Safe Drinking Water Act Violation

June 14, 2019 11:00 A.M.

Convicted - Nadia Pellegrino

Court Location - Belleville Court

Description of Offence - The convictions relate to failing to comply with a ministry order by failing to confirm that a certified operator had been retained to conduct regulatory checks, maintenance and tests on the drinking water system.

Date of Offence - During the period on or about May 16, 2017.

Date of Conviction - June 3, 2019

Penalty Imposed - Nadia Pellegrino was convicted of two violations under the Safe Drinking Water Act and was fined \$4,500 plus a victim fine surcharge of \$1,125 and was given 6 months to pay the fine.

Background:

- The Bridgewater Apartments Well Supply is a non-municipal year round residential drinking water system located on Bridgewater Road in Actinolite.
- At the time of the violations, Nadia Pellegrino was the sole director of a numbered company that owned the drinking water system.
- In July 2016, the ministry inspected the drinking water system and identified several non-compliance issues. An inspection report with actions required was provided to the company and Ms. Pellegrino.
- Among the required actions was the need to arrange for a certified operator to conduct operational checks, maintenance and tests on the drinking water system

and to provide written confirmation to the ministry. The defendant failed to comply.

• A ministry order was issued and required that the defendants meet many of the same requirements outlined in the inspection report. The order was not complied with.

• The ministry's Investigations and Enforcement Branch investigated and laid charges, resulting in two convictions.

## Food Processing Company fined \$35,000 for Ontario Water Resources Act Violation

February 15, 2019 4:00 P.M.

Convicted - Highbury Canco Corporation

Court Location - Windsor

Description of Offence - The conviction relates to permitting the discharge of a material into the Selkirk Drain which may impair the quality of the water.

Date of Offence - During the period on or about November 19, 2018.

Date of Conviction - January 21, 2019

Penalty Imposed - Highbury Canco Corporation was convicted of one offence under the Ontario Water Resources Act and was fined \$35,000 plus a victim fine surcharge of \$8,750 and was given sixty days to pay the fine.

Background:

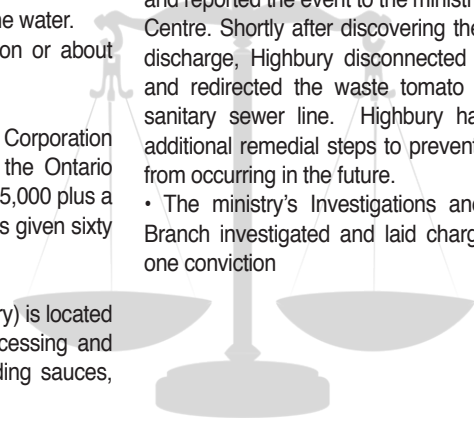
- Highbury Canco Corporation (Highbury) is located in Leamington and specializes in processing and canning tomato-based products including sauces, soups and salsa.

• Highbury owns two private sewage lines. One line collects storm/non-contact cooling water that discharges to the Selkirk Drain. The other line collects the waste process waters, including liquid tomato waste, which accumulates in a separate sewer line that goes to the Leamington Pollution Control Centre for treatment before eventual discharge to Lake Erie.

• On November 19, 2018, a municipal employee observed that the waters in the Selkirk Drain appeared red in colour. Municipal inspectors were dispatched to investigate the source and traced it to the Highbury facility. They confirmed that a spill of tomato-based soup inside the plant had entered a floor drain, which was connected to the storm water line and therefore discharged to the Selkirk Drain.

• Highbury cooperated with the municipal inspectors and reported the event to the ministry's Spills Action Centre. Shortly after discovering the source of the discharge, Highbury disconnected the floor drain and redirected the waste tomato product to the sanitary sewer line. Highbury has since taken additional remedial steps to prevent similar events from occurring in the future.

• The ministry's Investigations and Enforcement Branch investigated and laid charges resulting in one conviction



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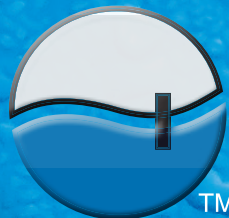
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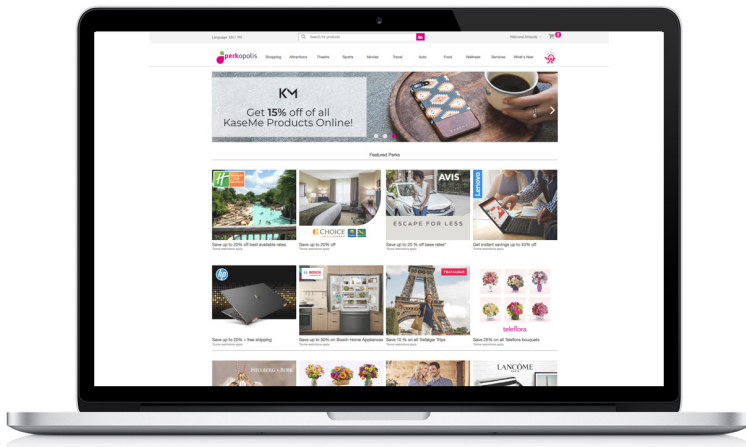
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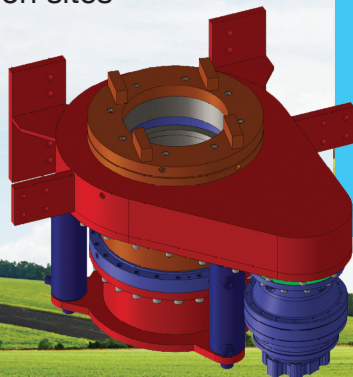
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       MEMBERSHIP RENEWAL: *Fill in all information, including # of Licenced Well technicians, their names, & T-numbers.*

       Check for authorization to insert a link to the OGWA website on your corporate website.

NOTE: The logo of the Ontario Ground Water Association (OGWA) is a registered trademark (TM). Permission for its reproduction is RESTRICTED TO MEMBERS IN GOOD STANDING for advertising purposes. Investigation into unauthorized use may result in legal action.

       Check to indicate you understand that under Canadian Anti-Spam Legislation, you agree to allow OGWA to send general email news, bulletins, and event notices in addition to standard communication regarding your membership or invoicing.

       By applying for membership in the OGWA, I acknowledge I have read and agree to follow the OGWA Code of Conduct.

Company Name: \_\_\_\_\_

Contact Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ Prov: \_\_\_\_\_ Postal Code: \_\_\_\_\_

Phone/Ext: \_\_\_\_\_ Cell: \_\_\_\_\_ Fax: \_\_\_\_\_ Alt Ph: \_\_\_\_\_

Toll Free: \_\_\_\_\_ Other: \_\_\_\_\_

E-mail: \_\_\_\_\_ Billing Email: \_\_\_\_\_

Website: \_\_\_\_\_ Head Office Region or County: \_\_\_\_\_  
(see Page 2 for full list):

\*\* CONTRACTORS—MOECC Contractor Licence #: \_\_\_\_\_ Expiry Date: \_\_\_\_\_

**\*\*MANDATORY: MOE CONTRACTOR LICENCE # REQUIRED ABOVE FOR ALL QUALIFIED CONTRACTORS**

**New Membership & Renewal Instructions** **December 2018 for the Year 2019**

Whether you are a new or renewing member of the OGWA it is most important that you take the time to fill out the Membership Application **completely**. New fees have been approved by the Board of Directors. Manufacturers & Suppliers wishing to add Salespeople to their membership, please add them as Associate members at \$110.00 (HST incl) per person and list on reverse.

Page 2 requires equally critical attention. The regions your company operates in and the services you provide are how we direct inquiries from the public. The information you list for your technicians and ground water professionals is critical to maintaining the information required for OGWA mailings and proper credit for Continuing Education Courses for MOECC Tech license renewals.

**Please contact the office@ (519) 245-7194 with any difficulties BEFORE you send an incomplete form.**

<input checked="" type="checkbox"/> <b>CHOOSE MEMBERSHIP CATEGORIES</b>	<b>FEE TO REMIT (HST Incl)</b>	<input checked="" type="checkbox"/> <b>CHOOSE MEMBERSHIP CATEGORY</b>	<b>FEE TO REMIT (HST Incl)</b>
<input type="checkbox"/> Driller <input type="checkbox"/> Pump Installer <input type="checkbox"/> Environmental/Geotechnical Driller			
Ground Water Contractor – 1 Licensed Technician	\$ 350.00	Manufacturer	\$ 815.00
Ground Water Contractor – 2 Licensed Technicians	\$ 425.00	Supplier	\$ 615.00
Ground Water Contractor – 3 Licensed Technicians	\$ 500.00	Ground Water Scientist / Engineer – Less than 10 Ground Water Professionals	\$ 515.00
Ground Water Contractor – 4 Licensed Technicians	\$ 575.00	Ground Water Scientist / Engineer – 10 to 20 Ground Water Professionals	\$ 815.00
Ground Water Contractor – 5 or more Licensed Technicians	\$ 650.00	Ground Water Scientist / Engineer – More than 20 Ground Water Professionals	\$ 1,250.00
**Government & Associate Member(s) (see qualifying details Page 2)		Enter \$110.00 X =	\$
Please Consider a Donation for OGWA Projects			<b>Donation:</b> \$
Please Consider Donating to the OGWA Scholarship Fund			<b>Donation:</b> \$
<b>TOTAL:</b>			<b>\$</b>

**PAYMENT OPTION:**        Credit Card        Cheque        Monthly (Total Fees divided by 10 months +\$3/Month Admin Fee)

Visa or Mastercard #: \_\_\_\_\_ Expiry: \_\_\_\_\_

Name on Card: \_\_\_\_\_ 3 Digit CVV# \_\_\_\_\_

**CHEQUES PAYABLE TO:** Ontario Ground Water Association, 232 Central Ave., London, ON N6A 1M8

**Please Continue and Complete Page 2 (OVER) ...**



# ONTARIO GROUND WATER ASSOCIATION - 2019 MEMBERSHIP APPLICATION

COMPANY NAME: \_\_\_\_\_

Check all Ontario Counties/Regions where you provide service - for the OGWA website searchable members list:

<input type="checkbox"/> Brant	<input type="checkbox"/> Grenville	<input type="checkbox"/> Lambton	<input type="checkbox"/> Ottawa-Carleton	<input type="checkbox"/> Stormont-Dundas-Glengarry	<input type="checkbox"/> <b>All Ontario</b>
<input type="checkbox"/> Bruce	<input type="checkbox"/> Grey	<input type="checkbox"/> Lanark	<input type="checkbox"/> Oxford	<input type="checkbox"/> Sudbury	<input type="checkbox"/> Manitoba
<input type="checkbox"/> Chatham-Kent	<input type="checkbox"/> Haldimand	<input type="checkbox"/> Leeds-Grenville	<input type="checkbox"/> Parry Sound	<input type="checkbox"/> Temiskaming	<input type="checkbox"/> Quebec
<input type="checkbox"/> Cochrane	<input type="checkbox"/> Haliburton	<input type="checkbox"/> Lennox & Addington	<input type="checkbox"/> Peel	<input type="checkbox"/> Thunder Bay	<input type="checkbox"/> Canada
<input type="checkbox"/> Dufferin	<input type="checkbox"/> Halton	<input type="checkbox"/> Middlesex	<input type="checkbox"/> Perth	<input type="checkbox"/> Timmins	<input type="checkbox"/> USA
<input type="checkbox"/> Durham	<input type="checkbox"/> Hamilton-Wentworth	<input type="checkbox"/> Muskoka	<input type="checkbox"/> Peterborough	<input type="checkbox"/> Toronto (GTA)	<input type="checkbox"/> Other
<input type="checkbox"/> Elgin	<input type="checkbox"/> Hastings	<input type="checkbox"/> Niagara	<input type="checkbox"/> Prescott-Russell	<input type="checkbox"/> Victoria	_____
<input type="checkbox"/> Essex	<input type="checkbox"/> Huron	<input type="checkbox"/> Nipissing	<input type="checkbox"/> Prince Edward	<input type="checkbox"/> Waterloo	_____
<input type="checkbox"/> Frontenac	<input type="checkbox"/> Kawartha Lakes	<input type="checkbox"/> Norfolk	<input type="checkbox"/> Renfrew	<input type="checkbox"/> Wellington	_____
<input type="checkbox"/> Glengarry	<input type="checkbox"/> Kenora-Rainy River	<input type="checkbox"/> Northumberland	<input type="checkbox"/> Simcoe	<input type="checkbox"/> York	_____

**Required: All Licensed Technicians, Ground Water Professional, & Associate Members: Names, contact details & MOE licence numbers of Licenced Well Technicians or Ground Water Professionals employed by company (including owner or manager, if applicable). Complete additional pages if necessary. Members will receive The Source and OGWA updates to the address and emails indicated below.**

First Name:	Last Name:	Lic #: T-	Classes:
Mailing Address:			
Phone:		Email:	
First Name:	Last Name:	Lic #: T-	Classes:
Mailing Address:			
Phone:		Email:	
First Name:	Last Name:	Lic #: T-	Classes:
Mailing Address:			
Phone:		Email:	
First Name:	Last Name:	Lic #: T-	Classes:
Mailing Address:			
Phone:		Email:	
First Name:	Last Name:	Lic #: T-	Classes:
Mailing Address:			
Phone:		Email:	
First Name:	Last Name:	Lic #: T-	Classes:
Mailing Address:			
Phone:		Email:	

**Services provided: (check all applicable – to provide the best data for website searches and business referrals)**

**Drilling:**  Water Well  Dewatering  Geotechnical  Environmental  Other: \_\_\_\_\_

**Method:**  Cable tool  Rotary: Air  Mud  Reverse  Auger  Coring  Other: \_\_\_\_\_

**Well Pumps:**  Installation  Service / Repair

**Other:**  Water Treatment  Well Yield Tests  Hydrofracturing  Well Rehabilitation  Down hole Video  Geothermal

Please mail, fax, or e-mail back to: Ontario Ground Water Association 232 Central Ave., London, ON N6A 1M8  
Fax: 519-245-7196 Email: accounts@ogwa.ca

**\*\*Government and Associate Memberships:** "OGWA By-Law No.1- Government & Associate Division: Associate membership in the Corporation shall include all persons interested in the welfare and success of the Ontario Ground Water Association and the water well drilling industry; other than business, firms, companies and corporations that qualify for membership in the Contractors, Manufacturers & Suppliers, or Ground Water Scientists & Engineers\*. The government & associate division shall have no voting power."

\*This means if your company can be classified in one of these main membership categories, you are **not** eligible for Associate membership and must remit in the regular membership fee. Associate Memberships are available to persons/employees whose companies are full members.



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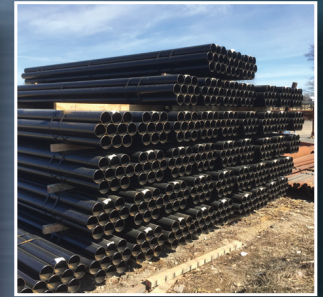
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- ♦ Threaded
- ♦ Weld On
- ♦ Sizes 2" to 36"



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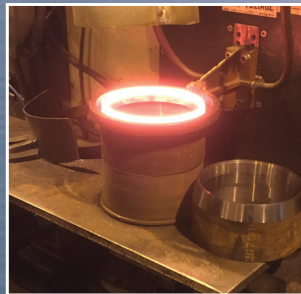
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Machining



Induction Heating



Coating



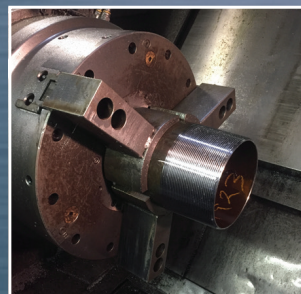
Stenciling



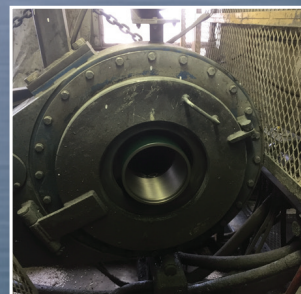
Material Handling



Threading



Buck On



Robotics

