

to us and that is why we were early adopters of improving and protecting the river quality.

“There are many, many old industrial towns like New Glasgow that can benefit from environmental initiatives. New Glasgow was founded as a shipbuilding and rail car manufacturing town and now we’re making wind turbines. We’re the first municipality to install its own windmill that is also actually made here. Old industrial towns such as New Glasgow cannot exhaust their natural resources. They must capitalize on them. We’ve been using our environment and revitalization projects to support business and to draw large companies to our city and to Pictou County. We have a tremendous spirit of entrepreneurship that is accelerated by doing the right thing.

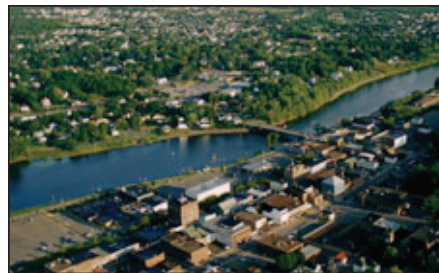
“Being good stewards of the environment makes good sense from a number of perspectives. If you maintain the

quality of the river, your residents will enjoy it and it helps to attract new residents and businesses. We have challenges with a declining population so we must work hard to keep and attract people to our area. By insuring that our rivers are clean, our water is great, having the best facilities, being environmentally responsible, embracing wind energy and looking to renewable and sustainable products, we are providing the highest quality of life at the lowest possible cost for our residents and employers. For us, this is good long-term urban planning.

“At the end it’s about using the right products and making sure that if there’s better technology out there, you take a good look at it. That’s what we try and do. We tested what we saw as a product that could provide greater advantages for us, and it does work well for us. HDPE pipe is pretty amazing stuff.”



Large diameter corrugated HDPE pipe was buried underneath roads in New Glasgow for its CSO Project.



Above: images of the beautiful town of New Glasgow, Nova Scotia.

ABOUT PPI

The Plastics Pipe Institute Inc. (PPI) is the major trade association representing all segments of the plastic pipe industry and is dedicated to promoting plastics as the material of choice for pipe applications. PPI is the premier technical, engineering and industry knowledge resource publishing data for use in development and design of plastic pipe systems. Additionally, PPI collaborates with industry organizations that set standards for manufacturing practices and installation methods.



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CORRUGATED HDPE PIPE IMPROVES WASTE WATER QUALITY IN PROGRESSIVE NOVA SCOTIA TOWN

Sewer Overflow Reduction Program Is Latest Infrastructure Improvement; Environmental Initiatives Are “Smart Business” States Mayor

NEW GLASGOW, Nova Scotia - When your goal is to be true to your town’s 135-year-old motto, ‘Let New Glasgow Flourish’, one of the first places you start is by rebuilding the infrastructure. And it’s not just a phrase; it’s a way of life and path of guidance for the mayor, town council and residents of this town.

The latest project focused on those ambitions is a Combined Sewer Overflow (CSO) program for the town of nearly 10,000 to remove storm water from its sanitary sewer system. The installation of new storm sewers for 12 streets and upgrading of 12 pumping stations will help remove the storm water from the sewer system and make the East River Environmental Control Centre operate more efficiently.

“We are upgrading our infrastructure every chance we get because it’s important,” stated Barrie MacMillan, Mayor of New Glasgow. “We want to separate the storm water and we’re doing that at a couple of areas within the town. The major area being upgraded is a tidal estuary for salt and fresh water, and is the centerpiece of our riverfront revitalization. This combined sewer overflow reduction is a critical

project for us on a number of levels.”

“Today, this is a prime concern for the majority of municipalities across North America” observed Tony Radoszewski, executive director of the Plastics Pipe Institute, Inc. (PPI), a non-profit trade association that promotes plastic pipe.

“In the past, rainwater flowed into the sanitary sewer system and was then treated. Extra storm water would, during times of a heavy rain, create an overflow. This Combined Sewer Overflow generally discharged into a nearby water body. With the latest EPA Phase II requirements in the United States and similar regulations approved by the Canadian Council of Ministers of the Environment in 2009, controlling and managing storm water runoff is imperative, not only for the good and welfare of people, but also to meet these new governmental standards,” Radoszewski continued. “New Glasgow has found the way. Their program is a cutting edge blueprint for successful storm water quality improvements that deliver to federal Canadian mandates requiring the reduction of combined sewer systems. Their example is a good one to lead the way for achieving broad reaching compliance.”

“We want to lead the way environmentally, with a strong focus on the quality of our water.”
- Mayor Barrie MacMillan



Large diameter corrugated HDPE pipe was easily maneuvered into place even in tight areas.

New Glasgow has seen the effects of weather pattern changes and recently experienced more severe storms. A few years ago the north coastal city was pounded by several 100-year storms, which resulted in flooding of the downtown area. Even the flow volume from smaller storms due to the combined sewer and storm water system would overload the treatment plant. It was in 2009 that the city decided to take a closer look at the causes and find a solution to its combined sewer system.

A task force led by Bob Funke, P.Eng., who was then the town's chief engineer, determined it was time to construct a trunk line extending from the downtown area to the river and intercept a secondary sewer that was causing flooding in another part of town.

"We did a fairly good amount of investigation to determine the storm sewer shed areas," Funke explained, "and pinpointed two different areas where a trunk sewer line would cause positive reduction of combined storm sewer overflow. We sized the pipe, and found corrugated high-density polyethylene (HDPE) pipe provides a decided advantage, and is significantly better than the concrete pipe.

"Looking at the water volumes and the various friction losses with the various pipes led us to using 900mm (36-inch) diameter HDPE pipe which enabled us to save a diameter or two by using it instead of concrete. The HDPE pipe has very favorable Manning's rating which means a better friction loss. This was critical because we had some deep cuts of between twelve to fifteen feet and in some cases our slopes were one percent or less. When you are designing a sewer separation project to be installed in tight quarters, you have to look at the smallest diameter pipe that can deliver the largest volume of water. If you can take a half size off that, six inches means a lot to the construction crew. We

would not have been able to do this project without the HDPE pipe." Some 740m (2400 feet) of pipe was used.

Contractor Dan Tupper of Tupper Excavating further explained the situation for the McLean Street project. "When you're 15 feet in the ground between sewers,

water mains and underneath high voltage lines and all the fiber optic conduits we have today and digging in and around those areas in very tight real estate, you want the smallest pipe possible. The HDPE pipe made it pretty simple for us.

"The ability to thread this pipe through very difficult areas was a key consideration. Concrete pipe is big and comes in eight-foot lengths. If you have half a street open and you can drop in a 20-foot length of HDPE pipe and easily get it filled in time – that's three lengths of concrete pipe and we couldn't get larger sizes of concrete pipe underneath some of the tight areas."

The McLean Street section of New Glasgow is in a tidal area, and has tides of four to five feet. For Tupper and his crew, this meant getting the pipe in the ground and buried as quickly as possible.

"When you're down in the ground 15-18 feet and you have to deal with 4-5 feet of tide, you get into a mess. For about 1,000 feet we were fighting tidal water, and in a few situations we were down in 10 -12 feet of water.

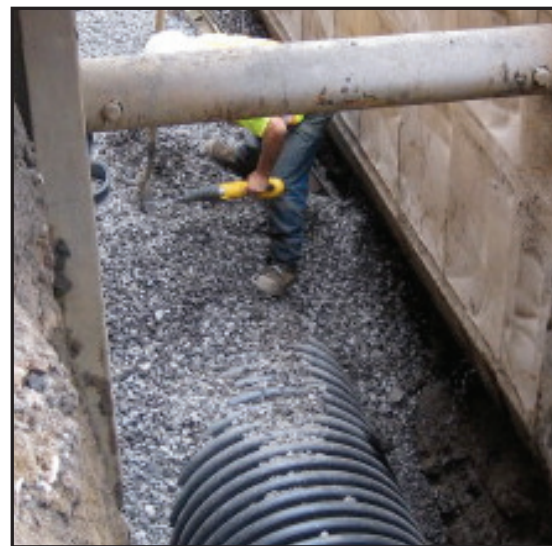
"We constructed a dam at the river which helped. We pumped that down below the river level but we could only hold back about five feet of water. Once the tide got over that level and the water started squirting around the ground, we had to abandon until the next tide which was 12 hours later. Still, we were able to move safely and quickly getting in two or three lengths a day. We found it easy to use the HDPE pipe and didn't have any problem with it. Plus it's tough and it's versatile."

"Over the years we've become more confident in using plastic pipe," said Funke. "We had experience when it started coming on the market here in Nova Scotia as a culvert pipe and it's become a standard replacement for metal culvert pipe. Concrete was also being used, but for some of our applications it was difficult. The stubby pipe lengths are heavy and are not exactly easy

to install. The HDPE pipe has 20-foot lengths that go together easily. Plus the HDPE pipe enabled us to get the flow rate we needed in a smaller diameter pipe. What the Institute [PPI] preaches about the benefits of plastic pipe is true. The contractors love it and



"HDPE pipe enabled us to get the flow rate we needed in a smaller diameter pipe."
- Bob Funke, P. Eng.



Installation of 900mm (36-inch) diameter corrugated HDPE pipe under phone and internet utility cables and water mains was typical for this project.

most wouldn't use anything else."

The pipe used was a double walled (smooth inside, ribbed outside) corrugated HDPE pipe from Soleno called Solflo® Max and manufactured locally at the Soleno McAdam, New Brunswick plant. The Solflo Max corrugated HDPE pipe meets ASTM standards for F405 and F667, and complies with Canadian Standards Association, CAN/CSA B182.6. Soleno is a member company of the PPI.

"When you dig up concrete pipe after a period of time, it often has cracks caused by acids in the rain and water, plus salt water and chemicals - pH and acidity," PPI's Radoszewski stated.

"HDPE can withstand these attacks. Acids and salt in the water will eat concrete. This is a significant consideration for any project, and critical for the endurance and success of this project near the water.

"HDPE pipe is inert to these problems. And on the system design end, when you have a 20-foot section of pipe compared to an eight-foot one, there are fewer joints. Having fewer joints reduces the chance of leaks; plus, HDPE joints are water-tight.

"This particular job had a number of challenges, including salt and fresh water coming together, a highly saline environment, tight installation and even tighter budgets. HDPE pipe was the key to meeting the goal for the mayor and this project," Radoszewski concluded.

"The plastic pipe is very interesting," summed up Mayor MacMillan. "It's interesting because it seems to be a better product and is sustainable. Our engineer told me the thing that he liked about it was that it provided a good, tight seal around the manhole. My engineering department is very confident about the plastic pipe. We're very happy with the contractor installing it and, most importantly, the project is within budget. It's good all the way around."

More of the Mayors Perspective

"We have a very progressive town council, which I'm proud to lead," he stated. "New Glasgow has continually been at the forefront of the green movement in Nova Scotia. During the past few years we've done a lot of projects, including the storm and sanitary sewer separation program. We're a small municipality just under 10,000 people in rural Nova Scotia, so money doesn't come very easily. That means that every time you get an infrastructure project you need to make the most of the funds you have for it.

"A reduction in the Combined Sewer Overflow (CSO) is one of the major green initiatives we've taken on recently. We've also constructed state-of-the-art water treatment facilities, and we have an excellent sewerage processing plant that has produced a high level of sewage treatment since 1972.

Today, we continue to exceed the water quality standards in Canada.

"We want to lead the way environmentally, with a strong focus on the quality of our water. This includes very, very low leakage rates, a high degree of sewage treatment, and the CSO reduction program. I feel New Glasgow is well ahead of the new national standards which many municipalities in this country will be struggling to now attain. But we've been there for quite a while and we have a lot of other green initiatives that we're doing for a small town. We are really making a dent in driving down our CO2 limits and improving our water quality.

"There's a business case to be made for proper environmental stewardship. If you have the highest quality of water and the lowest possible leakage, you're able to deliver a quality product and your people like it. They're proud of it.

"In our area we have a beautiful river that runs right through the middle of our town, the East River of Pictou, which is the centerpiece of our community. New Glasgow is the place where we want to live. The river and the surrounding natural environment are important



New Glasgow's combined sewer reduction project was on grade, on budget and on time.



Mayor Barrie MacMillan is a progressive visionary who sees the benefits environmental programs can bring to his city. He was elected mayor in 2008, and served as the executive director of the Pictou County Chamber for Commerce for 19 years.