

CHARLOTTE WATER

Stowe Regional Water Resource Recovery Facility

As our region continues to grow, we will need to be able to process more wastewater. The Stowe Regional Water Resource Recovery Facility will use a regional approach to wastewater treatment. This innovative facility will serve communities in northwestern Mecklenburg County and the Cities of Belmont and Mount Holly in eastern Gaston County.

REGIONAL APPROACH TO WASTEWATER MANAGEMENT

The new Stowe facility will streamline wastewater treatment services for the region by:

- Eliminating a long pumping system in Mecklenburg County
- Replacing two aging wastewater treatments plants in Belmont and Mount Holly
- Localizing wastewater treatment at this new state-of-the-art facility.



PROJECT PLANNING PROCESS

Charlotte Water partnered with other utilities and agencies to plan for the future. We studied how to manage wastewater in the region while forecasting for growth.

The results of these studies led to the Stowe Regional Water Resource Recovery Facility. The planning studies made recommendations for each component of the project.

- Charlotte Water should build should build a new wastewater treatment facility.
- The new facility should be located along the Catawba River near the Long Creek Pump Station.
- Charlotte Water should partner with the Cities of Belmont and Mount Holly to replace aging treatment plants with pump stations.
- Through this partnership, Charlotte Water would provide regional wastewater services for northwestern Mecklenburg County and eastern Gaston County.

PROJECT PLANNING TIMELINE



*Please note that schedules are approximate and subject to change

WHAT WOULD HAPPEN IF THIS PROJECT IS NOT BUILT?

The existing wastewater treatment plants in Mount Holly and Belmont are aging. They need major upgrades to support regional growth and new treatment regulations. These expansions and new technologies would be very costly for these cities to do alone.

Charlotte Water would have to keep pumping wastewater more than 20 miles. It currently goes from northwestern Mecklenburg County to Pineville for treatment. The underground pipes that carry this wastewater would need to be replaced.

The Stowe Project is cheaper than each of these upgrades combined. It is also less impactful to these communities during construction.

WASTEWATER JOURNEY



01

WASTEWATER IS PRODUCED

Wastewater is the used water that runs down the drains from households, businesses, and factories.

02

WASTEWATER IS TRANSPORTED

Wastewater flows through underground pipes. It travels from the homes and businesses to the closest pump station.

3A MOUNT HOLLY PUMP STATION

Wastewater arrives at the Mount Holly Pump Station. It is then pumped through an underground pipe. It travels deep underneath the Catawba River and Long Creek to the Long Creek Pump Station.

3B BELMONT PUMP STATION

Wastewater arrives at the Belmont Pump Station. It is then pumped through an underground pipe. It travels deep underneath the Catawba River to the Paw Creek Pump Station

04 WASTEWATER PIPELINES

The Mount Holly and Belmont Pump Stations are located on the west side of the Catawba River. The Charlotte Water system is located on the east side. These facilities are connected through underground pipelines called force main pipes. Wastewater is pumped through pipes deep underneath the Catawba River and Long Creek. These pipes are installed in bedrock about 65-75 feet underground.

5A LONG CREEK PUMP STATION

The wastewater flows from the Mount Holly Pump Station arrive at the Long Creek Pump Station. The wastewater then goes to the new Stowe Headworks and Influent Pump Station. There it will go through the first two steps of the treatment process. The wastewater is then pumped under Long Creek through force main pipes to the Stowe Facility for further treatment.

5B PAW CREEK PUMP STATION The wastewater flows from the Belmont Pump Station will arrive at the Paw Creek Pump Station During Phase 1 the Paw Creek Pump Station will send wastewater to the Invin

Station. During Phase 1, the Paw Creek Pump Station will send wastewater to the Irwin Creek Wastewater Treatment Plant. During Phase 2, the Paw Creek Pump Station will begin sending wastewater to the expanded Stowe Facility for treatment.

06 STOWE REGIONAL WATER RESOURCE RECOVERY FACILITY

Wastewater arrives at the Stowe Regional Water Resource Recovery Facility. It was pumped under Long Creek from the Long Creek Pump Station and Stowe Headworks and Influent Pump Station. Here it will go through the final three steps of the treatment process. This process meets heightened water quality standards. Biosolids will be separated and pumped to the McAlpine Creek Wastewater Management Facility. Once the water has been fully treated, clean water is recycled back into the Catawba River.

PROJECT COMPONENTS

There are several facilities that will be constructed as part of the overall Stowe Project.



STOWE REGIONAL WRRF

Stowe Regional Water Resource Recovery Facility

The Stowe Facility will serve northwestern Mecklenburg County, Belmont, and Mount Holly. Charlotte Water will operate the facility. It will sit along the Catawba River in Mecklenburg County. The facility is sited on a peninsula where the Catawba River and Long Creek meet.

The Stowe Facility will receive wastewater flows from the Long Creek Pump Station and Paw Creek Pump Station. This facility will use the latest treatment technologies. The cleaned water is then recycled back into the Catawba River.

In the short term, this facility will be able to treat up to 15 million gallons of wastewater per day. Long term, it can be expanded treat up to 25 million gallons per day.

Construction Schedule: 2022–2026 *Please note that schedules are approximate and subject to change.



LONG CREEK PUMP STATION

Long Creek Pump Station

The existing Long Creek Pump Station is getting an upgrade. We are also building a second facility next to it called the Stowe Headworks and Influent Pump Station.

These two stations will transport wastewater flows from Mount Holly and northwestern Mecklenburg County. Wastewater first will flow to the Long Creek Pump Station. Flows will then go through the first two steps of the treatment process at the new Stowe Headworks and Influent Pump Station. Then the flows will be pumped through two wastewater pipelines under Long Creek. These pipes are about 75 feet underground, deep in the bedrock. The pipelines will connect to the Stowe Facility to finish treatment.

Construction Schedule: 2022-2025

*Please note that schedules are approximate and subject to change.



MOUNT HOLLY PUMP STATION

Mount Holly Pump Station and Force Mains

The new Mount Holly Pump Station will sit on the site of the existing treatment plant at Tuckaseege Park. Two wastewater pipelines will be installed under the Catawba River and Long Creek. The pipes are about 65 feet underground, deep in bedrock. They will connect Mount Holly to the Long Creek Pump Station. The pump station will send Mount Holly's wastewater to Charlotte Water for treatment. Mount Holly will retire the existing treatment plant. The City is studying options for the plant's equipment and land.

Construction Schedule: 2022-2025

*Please note that schedules are approximate and subject to change.



BELMONT PUMP STATION

Belmont Pump Station and Force Mains

The new Belmont Pump Station will sit on the site of the existing wastewater treatment plant off North Tenth Street. Two wastewater pipelines will be installed under the Catawba River. These pipes will be installed deep underground in the bedrock. They will connect Belmont to the Paw Creek Pump Station. The pump station will send Belmont's wastewater to Charlotte Water for treatment.

During Phase 1 of the Project, Belmont's wastewater will be treated at the Irwin Creek Plant. During Phase 2, Belmont's wastewater will be treated at the Stowe Facility. Belmont will retire the existing treatment plant. The City is studying options for the plant's equipment and land.

Construction Schedule: 2024–2027 *Please note that schedules are approximate and subject to change.





TRAILS

Trails

To build the Stowe facility, we needed to close some existing trails for safety. There were three trails located on Charlotte Water's property that had to be closed: Whitewater Center's Tortuga Trail and Needle Trail, and Carolina Thread Trail's Long Creek Preserve Trail.

We understand how important these trails are to our communities. That's why we're working with the Whitewater Center and Catawba Lands Conservancy. The Whitewater Center built the Field Trip Trail to offset their trail closures. Our partnership with the Catawba Lands Conservancy will allow for new trails and better connections in the trail network. The Stowe Community Benefit Project will build an educational walking trail and a multi-use path. All this means more adventure for you.

Construction Schedule: 2022–2027 *Please note that schedules are approximate and subject to change.



STOWE ACCESS

ROADS

Stowe Access Roads

Charlotte Water is building two access roads. These roads will provide access to the new Stowe Facility and the Long Creek Pump Station.

We will build a Southern Access Road to link the Long Creek Pump Station and the Stowe Facility. The Southern Access Road will include a bridge over Long Creek. A multi-use path will run along it for bicycles and pedestrians. We are also building a new Northern Access Road off Belmeade Road. It will follow the existing Duke Energy transmission line corridor to the Long Creek Pump Station.

Construction traffic will use existing roads while permanent access roads are being built. On the west side, traffic will enter through an industrial park off Belmeade Drive. On the east side, traffic will use Whitewater Center Parkway and Hawfield Road.

Construction Schedule: 2022-2024

*Please note that schedules are approximate and subject to change.





REGIONAL SOLIDS TRANSFER PROJECT

Regional Solids Transfer Project

The Regional Solids Transfer Project will occur over several years and multiple phases. Underground pipelines will be built to transport biosolids. This project uses a regional approach to biosolids treatment.

Biosolids are the organic matter removed from wastewater during the treatment process. Biosolids can be used to add nutrients to farms, landfills, and remediation sites.

The biosolids will come from three facilities: the new Stowe Facility, Irwin Creek Wastewater Treatment Plant, and Sugar Creek Wastewater Treatment Plant. The pipelines will send them to the McAlpine Creek Wastewater Management Facility for treatment

Construction Schedule: 2023-TBD



PROJECT BENEFITS



MEETING FUTURE WASTEWATER NEEDS

Charlotte Water is building a wastewater treatment facility to meet the needs of our growing region. Between 2014 and 2034, the population in the Stowe service area is projected to increase by 136% with about 100,000 new residents moving into the area. This growth will increase the amount of wastewater produced in the area.

The new Stowe facility is ready to meet those needs. When constructed, the new Stowe Facility will process and treat up to 15 million gallons of wastewater per day.

Charlotte Water has plans for the Stowe Facility to meet the community's needs far into the future. As part of this planning, the Stowe Facility will accommodate future expansion. While there is no set timeline, there are plans to expand the capacity to 25 million gallons of wastewater daily.



CONSOLIDATING WASTEWATER FACILITIES

The new Stowe Facility will replace two aging treatment plants. Mount Holly and Belmont will retire their old wastewater treatment plants and send their flows to Charlotte Water. This will streamline wastewater treatment services for the region.

Building the new Stowe Facility is the most cost-effective and sustainable option. The facility will be a state-of-the-art, innovative wastewater treatment plant. This means that the treated water we recycle into the environment will be even more clean before.

Additionally, only one plant will be recycling treated water into the Catawba River. Replacing two discharges with one discharge will reduce impacts to the environment. Once wastewater has been fully cleaned, it is returned to the river. This output is called a discharge and is permitted by environmental regulators. Currently, both Mount Holly and Belmont discharge into the Catawba River. The new Stowe Facility will consolidate these into just one discharge. This will reduce any impacts to the river shoreline or wetlands from discharges. Also, water from the new Stowe Facility will meet higher water quality standards.



MINIMIZING WASTEWATER PUMPING

Charlotte Water currently pumps wastewater 27+ miles for treatment. It flows from northwestern Mecklenburg County to the McAlpine Creek Wastewater Management Facility. That means we are pumping wastewater from North Lake Mall all the way to Pineville! That is a long way for wastewater to travel for treatment. The new facility will be much closer to where the wastewater is produced. So, what would happen if we did not build a new wastewater facility? Charlotte Water would need to replace more than 20 miles of underground pipes. Doing so would be an expensive project.

Pumping wastewater 20+ miles for treatment uses a lot of energy. Having a plant closer to northwestern Mecklenburg County will reduce the energy used and reduce the chance of a spill.



PROMOTING ENVIRONMENTAL SUSTAINABILITY

At Charlotte Water, we aim to preserve our natural environment. The new Stowe Facility is an important part of enhancing our environmental sustainability.

This project will have many positive impacts on the natural environment. The new Stowe Regional Water Resource Recovery Facility will benefit the environment in four ways:



More effectively purify wastewater with innovative treatment practices. Water from the new facility will meet higher standards. This will help improve water quality in this area of the Catawba River and linked waterways.



Reduce the distance wastewater must flow for treatment. This will save energy and reduce the chance of a spill.



Reduce the number of facilities recycling treated water into the Catawba River. This will reduce impacts to wetlands and the river shoreline.



Conserve land on the 90-acre Community Benefit Project property. Future generations will be able to enjoy the natural environment.

INVESTING IN OUR COMMUNITY

Community Benefit Project

Charlotte Water purchased 90 acres next to the Stowe Regional Water Resource Recovery Facility. This land will host the Community Benefit Project for our neighbors. We want to create a space that encourages people to connect with each other and the environment. Our goal is to encourage community connections and well-being.

We worked for several years to engage community members in the planning process. For this Project to be a success, we needed insights from the people who will use this space most often.

We hosted an online workshop and survey. We also formed a Community Stakeholder Committee made up of people who live and work in the area. Through community participation, we created a collective vision for the Project.

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The access to nature and the water. The opportunity for my family to ride bikes along a trail or get out for a change of scenery.

Being Good Neighbors

At Charlotte Water, we pride ourselves on being good neighbors. We operate throughout the region and our neighbors tend to barely notice us. We promise to be considerate to our neighbors who live, work, and play in the Stowe project community.

For us, the Community Benefit Project is about preserving the natural beauty of this area for future generations. We will continue fostering our relationships with nearby schools and organizations. Our goal is to leave a lasting legacy of community connection and well-being. We are excited to call this area our home.

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It would be great to have a space for teachers & students to gather outdoors, get their hands dirty and learn about all the great things nature has to offer. It would help encourage kids to take a step away from technology and connect with the outdoors and the world around them. I think an outdoor educational space would be beneficial to the schools, teachers & students in the area!

We used the community feedback we received to brainstorm ideas for the Project. We partnered with an architecture firm to design several options.

WHAT WE HEARD FROM THE COMMUNITY



What is your relationship with the Catawba River Area?



What do you think is missing from this area that the Stowe Community Benefit Project could help address?

- Recreation: Trails, Hiking, Biking, etc.
- Playgrounds
- Water Access
- Community Gathering / Event Spaces
- Outdoor Learning
- Other (please specify)



PROJECT BENEFITS

INVESTING IN OUR COMMUNITY

Community Benefit Project

After careful review, Charlotte Water selected this Community Benefit Project.



An Educational Walking Trail that will be accessible for pedestrians and cyclists. It will also include interactive educational components.



A Multi-Use Path along the new entrance road and bridge over Long Creek.



A Public Meeting Space inside the new Stowe administration building. It will be available to the public for meetings, workshops, and events.



A Collaborative Partnership with the Catawba Lands Conservancy to identify future trails and trail connections on the 90-acre property. We also intend for this land to serve as a privacy buffer around our facility.



Ongoing School Partnerships to support a collaborative ESTEM program to advance environmental, science, technology, engineering, and math education.











WASTEWATER PIPELINE INSTALLATION PROCESS

Charlotte Water will provide wastewater services for Mount Holly and Belmont. To do so, the Mount Holly and Belmont pump stations need to connect to Charlotte Water pump stations through underground pipelines. These are called force main pipes.

To install these pipelines, we will use a construction method called HDD (Horizontal Directional Drilling).

A tunnel is drilled into bedrock and then the pipe is pulled through that tunnel.

This tunnel will be 65 to 75 feet under the bottom of the Catawba River and Long Creek. That's around the height of a 6-story building! To do this, we first survey the river. A bathymetric survey measures the elevation of the riverbed. We also take rock samples to learn where we can install the pipe.



Horizontal Directional Drilling is one of safest ways to install a pipeline. By drilling underground, there is minimal disturbance to the natural resources on surface.

HDD is an industry-preferred method for installing long pipelines under bodies of water. It was selected specifically for this project following extensive reviews.





The Stowe Project is installing wastewater pipelines in three locations:

- One set of pipes will be installed under the Catawba River and Long Creek to connect the Mount Holly Pump Station to the Long Creek Pump Station.
- A second set of pipes will be installed under Long Creek to connect the Long Creek Pump Station to the Stowe Regional Water Resource Recovery Facility.
- A third set of pipes will be installed under a different section of the Catawba River to connect the Belmont Pump Station to the Paw Creek Pump Station.

PROJECT IMPLEMENTATION

The construction of the Stowe Facility will be carried out in two phases. Phase 1 is currently underway and expected to be completed in 2026. Once Phase 1 is completed, the Stowe Facility will have the capacity to treat 15 million gallons of wastewater per day. Wastewater from Belmont and Mount Holly will be treated at Charlotte Water facilities. During Phase 1, Mount Holly's wastewater will be treated at the Stowe Facility. Belmont's wastewater will be treated at Charlotte Water's Irwin Creek Wastewater Treatment Plant.

Phase 2 will focus on future expansion of the Stowe Facility. The facility will be expanded to process up to 25 million gallons of wastewater per day. After this expansion, the Stowe Facility can accept Belmont's wastewater from the Paw Creek Pump Station. There is no timeline for Phase 2 right now, but Charlotte Water has designed the Stowe Facility to accommodate it. This will ensure the Stowe Facility can continue to meet the community's wastewater needs far into the future.



CHARLOTTE WATER

Stowe Regional Water Resource Recovery Facility



Facility design is subject to change.

PROJECT PARTNERS







Learn more about the project by visiting www.stoweregionalwrrf.com



Last Revision: 5.30.2023