

Watershed Plan for the North Chili Tributary of Black Creek O-117-19-7

IV. Water Infrastructure Existing Conditions and Problems

A. Sanitary Sewer Management

1. Unauthorized Stormwater Connections to Sanitary Sewers

Unauthorized connections have a negative impact both to the public and to the Monroe County Department of Environmental Services (DES) by creating additional treatment costs, as well as consuming available reserve capacity that could be used for future development growth within the community.

In 1996-1997, a door-to-door survey was performed in the North Chili tributary drainage basin of approximately 1,100 homes, of which 670 homes were actually inspected. Sixty-two of the inspected homes (approximately 10%) were found to have illegal connections to the sanitary sewer system. These connections place an additional strain on the sanitary system.

Acknowledged during the survey was a renewed sense of confidence by DES inspection staff that huge strides have been made with regard to new construction. Currently, development review by both Town and County departments has increased the awareness of stormwater-related problems and deficiencies, and has resulted in our ability to specify up-to-date materials, and also ensure proper stormwater management within respective design approvals.

It was also found that the older, more established sections of the drainage basin were the ones most susceptible to having improper connections to the sanitary sewer system as a result of:

- Storm sewers that are old, inadequate, or nonexistent in many parts of the basin, not allowing for sump pump discharge to be properly piped.
- Roof downspout connection to the sanitary sewer.
- Antiquated materials used. Historically galvanized pipes were used to convey sump pump discharge, which inherently would corrode over time, causing earth blockages and tree root intrusions to the point of total refusal (lack of ability to convey water), forcing the homeowner to possibly relocate the discharge to the sanitary sewer lateral.
- Ice storm mentality. As a result of the sustained power failure during the course of the 1991 ice storm, many residents unfortunately used their sanitary lateral as a means to remove undesirable groundwater from their basements in lieu of their sump pumps.

2. Infiltration and Inflow (I/I)

Definitions:

Inflow: The direct discharge or entrance of any flow of extraneous ground or surface water to a sanitary sewer system from roof/gutter drains, submerged manhole covers, outside area drains, foundation drains, and basement groundwater sump pumps. Inflow usually results in sudden high rates of flow of short duration.

Infiltration: The entrance of water, other than wastewater, into a sewer system from the ground through such means as defective pipes, pipe joints, connections or manholes. The sources are usually widespread and inadvertent, and the flow is relatively steady during times of high groundwater levels.

The area of North Chili within this drainage basin is serviced by the Watch Hill trunk sewer, which drains the general area from Westside Drive and Union Street to Golden Road near Westside Drive. The trunk sewer and its tributaries vary in size from 8-18 inches in diameter. At Golden Road it connects to a 30-inch interceptor which has sufficient conveyance capacity to avoid surcharging (exceeding capacity) during storm events.

Over the past decade, the system has become overloaded by I/I flows to the extent that basement backups and excessive surcharging generates the need to provide bypass relief into local surface waters. In response to the problem, in 1997 the King Road trunk sewer was installed, running somewhat parallel to the existing Watch Hill trunk sewer, to temporarily create additional sewer capacity, and to provide the potential for additional growth and development within North Chili and to the west. However, the King Road trunk sewer did not correct the underlying I/I problem.

3. Sanitary Sewer Lines

Within the North Chili tributary watershed area, there presently are no sanitary sewers south of King Road or a projection of King Road westerly to the Town boundary line. Also there are no sanitary sewer lines along King Road. Properties lying north of King Road and its westerly projection have sewer lines available for use or for extensions.

The trunk sewer that provides sanitary sewer service for this northern area is commonly called the Watch Hill trunk sewer. It was built in the 1960s from Golden Road to Union Street as development advanced.

For a number of years prior to 1997, during wet weather events or during high ground water conditions, the trunk sewer would overflow because of an infiltration/inflow (I/I) problem (stormwater flowing into the sanitary sewer) throughout this service area. Stormwater entering the sanitary sewer system from unapproved sump pump

and roof gutter downspout connections would inundate the trunk sewer resulting in surcharges, surface discharges to creeks and sewer backups into house basements.

In 1997 the Monroe County Division of Pure Waters, on behalf of the Gates-Chili-Ogden (GCO) sewer district, put into service a 27-inch diameter relief sewer. This sewer, as shown on Map 10, was installed parallel with and north of King Road from Golden Road to Union Street. It is commonly called the "King Road trunk sewer." Although the I/I problem still exists, the King Road trunk sewer generally resolved the overflow, surface discharge and house backup problems that had plagued the area. In addition, the 27-inch diameter line has reserve sanitary sewer capacity. This reserve capacity is available to serve future development, particularly in the area south of King Road. Three residential developments have already begun using the new trunk sewer: King Forest and Springbrook subdivisions north off of King Road and Union Square subdivision west of Union Street.

B. Onsite Wastewater Management

Within this watershed, housing units and commercial facilities on several major roads are served by on-site wastewater management facilities.

1. Davis Road

Houses on Davis Road have septic systems. Most septic systems were installed here in the 1960s and 1970s and are standard-design septic systems. Those installed in recent years (1996-1997) are raised fill systems. Raised fill systems are installed when high groundwater is encountered. (High groundwater level determines the depth of sand and percolation rate determines the size in square feet of the system.) Raised fill systems require that sand be installed on the site so that the effluent from the septic tank can be distributed over the sand. The sand filters the remaining pollutants from the wastewater before it is discharged to the earth below.

2. King Road

Houses on King Road are served by septic systems. Most of these systems were installed in the 1960s. In 1997 one complaint resulted in the replacement of one septic system on King Road. Another complaint led to a repair of a system.

3. Union Street

Most of the buildings on Union Street are served by septic systems. There are several commercial land uses on this road, and there is at least one fill system, indicating that there are some problems with high groundwater. Septic system installations occurred in this area starting in the 1950s and were altered as recently as 1994.

Up until 1997, the North Chili Community Church discharged wastewater to the North Chili tributary. In 1997, the facility was able to connect to a sanitary sewer.

Union Processing has three discharges permitted by a State Pollution Discharge Elimination System permit. All three discharge to the main North Chili tributary.

- (a) One discharge is from an oil separator and is permitted to discharge a maximum of 47 gallons per minute of flow. The flow at this discharge point remained at 40 gallons per minute throughout 1997. At this site there is a requirement to monitor for Biochemical Oxygen Demand (BOD), pH, oil and grease, and ammonia. The permit standard for pH at this site is a minimum of 6 and a maximum of 9. The permit standard for oil and grease is a daily average of 10 mg/L and a daily maximum of 15 mg/L. No permit standard is set for BOD. As shown in Table 2, during 1997 the Union Processing monthly average BOD values ranged from 19 mg/L to 113 mg/L.

Month	Average BOD Value mg/liter	Average Flow gallons/minute
January	71.2	40
February	73	40
March	35.3	40
April	19.2	40
May	30.9	40
June	22.5	40
July	41.9	40
August	22.5	40
September	20.95	40
October	21.1	40
November	106.1	40
December	113	40

- (b) The second discharge is required to be periodically monitored for flow and oil and grease. The permit includes a maximum standard for oil and grease of 15 mg/L.
- (c) The third discharge is cooling water. Data collected at this discharge are for temperature, flow and pH. The pH permit standard is the same as the first discharge. At this discharge point, the flow of cooling water increased from an average of 1800 gallons per day through July of 1997 to an average of 3600 gallons per day during the last four months of 1997. The value remains at 3600 gallons per day in January of 1998. This discharge may represent a substantial portion of the stream flow in this tributary. The data from this discharge is shown in Table 3.

Table 3. Union Processing, Discharge #3, 1997 Flow Data in Gallons Per Day		
Month	Average Flow	Maximum Flow
January	900	1800
February	1800	1800
March	1800	1800
April	1800	1800
May	1800	1800
June	1800	1800
July	1800	1800
August	2600	2600
September	3600	3600
October	3600	3600
November	3600	3600
December	3600	3600

4. Paul Road

Houses on Paul Road are served by septic systems. Septic systems in this area were constructed beginning in the 1950s. In at least one location, a septic system built in 1976 was repaired in 1982. Also, for at least one septic system built in 1971, laundry waste was not connected to the septic system and is likely being discharged to the watershed. There was a complaint about a septic system failure in 1992 at one location in the watershed.

C. Stormwater Runoff Management

Existing stormwater management features within the North Chili tributary watershed have been mapped as shown on the mile-square maps available at the office of the Chili Superintendent of Public Works.

1. Storm sewers in the watershed are generally adequate in capacity but are shallow in depth and very flat. Because of this, it is sometimes difficult to connect roof gutters and basement drains to these storm sewers. Catch basins and yard inlets are not always located at lowest elevation points in the roads and residential yards, which results in periodic ponding.
2. Ditches along roads and rear/side yards become silted in and filled with weeds. Routine maintenance is not always feasible in rear yard areas. Roadside ditch cleaning is not usually appreciated by homeowners trying to maintain their front lawns. The Town Public Works Department is cleaning some of the main tributary branches as time and funding allow.
3. Road culverts appear to be of adequate capacity. Periodic flushing of driveway culverts and roadway culverts is performed by the Town Highway Department.

4. Manmade stormwater impoundments, constructed as a component of development, do exist in several locations and are shown on the mile-square maps available at the office of the Chili Superintendent of Public works. These impoundments, with emergency storage and outflow control, have been very useful in minimizing the rate of runoff into downstream channels.

The facility in Union Square is a key example of a stormwater impoundment that includes water quality features, whereas older facilities were designed to provide storage and control rate of discharge only.

5. Three natural wetlands, located west of Brian Drive, east of King Road, and south of King Road (see Map 3), act as reservoirs and outflow control facilities to reduce runoff impacts on downstream areas. One small area located on the North Chili tributary just west of Union Street, which is regulated by the U.S. Army Corps of Engineers, has some blockage that backs water into Hubbard Park and along Parkway. A cooperative effort must be arranged to allow improvement of this backup situation.