



Town of Stoneham, Massachusetts

STORMWATER MANAGEMENT MANUAL

Operations and Maintenance for Municipal Facilities

June 2020



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ACRONYMS AND ABBREVIATIONS

AST	Aboveground Storage Tank
BMP	Best Management Practice
CWA	United States Environmental Protection Agency's Clean Water Act
DEP	Massachusetts Department of Environmental Protection
DPW	Department of Public Works
EPA	United States Environmental Protection Agency
IDDE	Illicit Discharge Detection and Elimination
MCM	Minimum Control Measure
MS4	Municipal Separate Storm Sewer System
MSDS	Material Safety Data Sheet
NPDES	National Pollutant Discharge Elimination System
NOI	Notice of Intent
SWPPP	Stormwater Pollution Prevention Plan
SPCC	Spill Prevention, Control and Countermeasure
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
UST	Underground Storage Tank
WQS	Water Quality Standards

1 INTRODUCTION

As part of the National Pollutant Discharge Elimination System (NPDES) General Permit for small Municipal Separate Storm Sewer Systems (MS4), the Town of Stoneham (Town) has adopted pollution prevention and good housekeeping controls intended to ensure that municipal operations and activities conducted at municipally-owned facilities do not contribute to stormwater pollution. In most urbanized areas such as Stoneham, stormwater is conveyed through a system of catch basins and pipes commonly referred to as a stormwater drainage system. Stormwater pollution can be conveyed through the stormwater drainage system and affects the quality of the Town's surface waters including Spot Pond, Crystal Lake, Sweetwater Brook, Burbank Stream, and many more.

These good housekeeping controls, referred to as best management practices (BMPs), are standard operating procedures for municipal personnel and for use at all municipal-owned facilities. These BMPs are intended to serve as guidance for properly conducting municipal-wide operations such as street sweeping, cleaning out catch basins, and general maintenance of the stormwater drainage system, and municipal-owned facilities including vehicle maintenance, vehicle washing, lawn care, and materials management.

1.1 Manual Purpose and Scope

The purpose of the Stormwater Management Manual (Manual) is to provide standard operating procedures for typical facility operations and activities to reduce and eliminate contamination that may enter Town facilities' stormwater drainage systems. These standard operating procedures are referred to as best management practices (BMPs) in this manual.

The BMPs in this Manual were selected based on a review and inventory of operations and activities at municipal-controlled facilities. The BMPs are intended to provide straightforward and up-to-date procedures for municipal personnel to follow in conducting their day-to-day activities. The Manual should be reviewed annually and periodically revised whenever operations and/or activities at these facilities change or in response to regulatory or permit changes.

1.1.1 Organization of Manual

The Manual is organized into the following sections:

- Section 1: Provides an overview of the Manual's purpose and content, as well as watersheds and water quality overviews.
- Section 2: Provides a listing of municipal leasees'/site users' responsibilities to adhere to permit regulations.
- Section 3: Provides BMP fact sheets for operations and activities conducted at municipal-controlled facilities. These BMP fact sheets are intended to be used as guidance that include suggested BMPs, inspection procedures and maintenance procedures. Each BMP fact sheet

includes a list of targeted facilities and operations, and pollutant constituents. These fact sheets are simple (two to three pages) and are intended to be copied and distributed as necessary to facility personnel, and/or contractors who work on-site.

- Appendix A: BMP Activities Assessment & Pollution Prevention Team - Identifies BMP activities relevant to specific Town properties and facilities that have been inspected as part of the good housekeeping work. A Pollution Prevention Team has been assigned for facilities requiring a SWPPP along with a list of SWPPP facilities and the location of where the corresponding SWPPP info can be found.
- Appendix B: Facility Stormwater System Maps - Includes stormwater system maps for the specific Town facilities inspected. Attributes including stormwater drainage system components (drain manholes, catch basins and gravity mains) and, if applicable, discharge points (stormwater outfalls) are shown for each inspected facility. Maps should be made available to necessary facility personnel and contractors who work on-site.
- Appendix C: Training Sign-In Sheet - Provides a blank sign-in sheet for use at future training sessions for each facility.
- Appendix D: Good Housekeeping Inspection Form - The Inspection Form should be used at each facility on an annual basis. It serves as a checklist for facility managers to ensure that BMPs are being properly implemented and that if any new activities are being conducted, additional BMPs are implemented.
- Appendix E: Municipal Standard Operating Procedures (SOP) for catch basin cleaning, street sweeping, and winter maintenance.
- Appendix F: Municipal Structural Best Management Practices (BMP)

1.1.2 Manual Updates

The Manual should be reviewed and updated on an annual basis after the Good Housekeeping Inspection Form (Appendix D) is completed for the various Town facilities. If during any Municipal facility inspections, additional activities are identified, additional BMPs should be placed in this Manual. In addition, BMPs should be revised based on updated procedures and protocols adopted by the Town, or in response to regulatory changes or permit conditions.

1.2 Stormwater Pollutants and Impacts on Water Quality

Pollutant impacts to the receiving surface waters of Town facilities can be attributable, to an extent, by contaminated runoff that enters the facilities' stormwater drainage systems and discharges through outfalls.

1.2.1 Watersheds and Pollutants of Concern

Receiving surface waters and pollutants of concern for the Town of Stoneham are listed in Table 1. Additionally, Total Maximum Daily Loads (TMDLs) established for the area have been noted. TMDLs are regulatory limits established for pollutants to surface waters in order to maintain water quality standards.

The municipal separate storm sewer system (MS4) outfalls that are covered by the NPDES permit are provided on the stormwater system maps found in Appendix B. These maps also provide details on the layout of the stormwater drainage system, including catch basins, manholes, and pipes. These maps provide important information to guide actions described in this Manual.

Table 1. Stoneham Surface Water Classifications and Impairment Categories

Receiving Waterbody and Segment ID	Surface Water Class	TMDL Category	Impairment
Buckman Pond	Class B*	Category 3*	Insufficient Information
Burbank Stream	Class B*	Category 3*	Insufficient Information
Crystal Lake (MA93018)	Class A	Category 3	Insufficient Information
Dark Hollow Pond	Class B*	Category 3*	Insufficient Information
Doleful Pond	Class B*	Category 3*	Insufficient Information
North Stream	Class B*	Category 3*	Insufficient Information
Quarter Mile Pond	Class B*	Category 3*	Insufficient Information
Spot Pond (MA71039)	Class B*	Category 3	Insufficient Information
Spot Pond Brook	Class B*	Category 3*	Insufficient Information
Sweetwater Brook	Class B*	Category 3*	Insufficient Information

*Waters Classified based on 314 CMR 4.00 General Water Classifications

1.2.2 Pollutant Impacts on Water Quality

Typical pollutants, including environmental effects and sources, found in stormwater runoff include the following:

Sediment

- Sediment is often viewed as the largest pollutant load associated with stormwater runoff in an urban setting. The loadings have been shown to be exceptionally high in the case of construction activity.
- Sediment is associated with numerous impacts in surface waters, including increased turbidity, effects on aquatic and benthic habitat and reduction in capacity of impoundments.
- A number of other pollutants often attach to, and are carried by, sediment particles.

Nutrients

- The nutrients most often identified in stormwater runoff are phosphorous and nitrogen.
- In surface waters, these nutrient loads can lead to heavy algae growth, eutrophication and low dissolved oxygen levels. Nutrients enter the stormwater drainage system in a variety of ways, including landscaping practices in parks and recreation areas, leaks from sanitary sewers or septic systems, and animal wastes.

Organic Matter

- Various forms of organic matter may be carried by stormwater in urban areas. Decomposition of this material by organisms in surface waters results in depleted oxygen levels.
- Low levels of dissolved oxygen severely impact water quality and life within surface waters.
- Sources of organic matter include garbage and yard waste.

Bacteria (Pathogens)

- High bacteria levels may be found in stormwater runoff as a result of garbage, pet waste, and illegal connections from sanitary sewers or leaking septic systems.
- The impacts of bacteria on surface waters may affect recreational uses and aquatic life as well as impose health risks.

Oil and Grease

- Numerous activities produce oil, grease and lubricating agents that are readily transported by stormwater.
- The intensity of activities, including vehicle traffic, maintenance and fueling activities, leaks and spills, and manufacturing processes within an urban setting contribute heavily to the level of these pollutants present in adjacent surface waters.

Heavy Metals

- Heavy metals such as copper, lead, zinc, arsenic, chromium and cadmium may be typically found in urban stormwater runoff.
- Metals in stormwater may be toxic to some aquatic life and may accumulate in aquatic animals.
- Sources of metals in stormwater may include automobiles, paints, preservatives, motor oil, and various urban activities.

Temperature

- Stormwater runoff increases in temperature as it flows over impervious surfaces. In addition, water stored in shallow, unshaded ponds and impoundments can increase in temperature.
- Removal of natural vegetation (such as tree canopy) opens up water bodies to direct solar radiation.
- Elevated water temperatures can impact a water body's ability to support certain fish and other aquatic organisms.

Pesticides and Herbicides

Stormwater Management Manual

- Pesticides and herbicides in stormwater runoff can be toxic, even at low concentrations, to aquatic life and the birds that feed on them.

Trash and Debris

- Trash and debris including floatables, plant debris, animal wastes, street litter and other material may contain pollutants including metals, pesticides, bacteria and other toxins.
- Trash and debris can harbor bacteria, vectors, and low dissolved oxygen concentrations in surface waters affecting aquatic life.

Vectors

- Vectors including mosquitoes and rodents can frequent in standing waters, including drainage structures, and eventually live and reproduce in such structures resulting in disease spread and a local nuisance.

2 TOWN OF STONEHAM STORMWATER MANAGEMENT POLICY

The Town of Stoneham recognizes and is in full agreement with the Clean Water Act's National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems. The Town's approach and detailed implementation schedule is provided in the Stormwater Management Program (June 2019). A copy is available at the Department of Public Works or online at <https://www.stoneham-ma.gov/DocumentCenter/View/1803/Stoneham-SWMP--070119>.

2.1 Other Related Policies and Protocols

The municipality's current documented policies and protocols that are applicable to good housekeeping include the following:

- Illicit Discharge Detection and Elimination Plan
- Stormwater Rules and Regulations
- Catch Basin Inspection and Cleaning Standard Operating Procedures (SOP)
- Snow Removal and De-Icing SOP
- Street Sweetening SOP

2.2 Requirements of Leases

The following is an example language that can be inserted into Town leases:

"The Town of Stoneham has submitted a Notice of Intent (NOI) to the Massachusetts DEP and EPA to obtain coverage under the NPDES Small MS4 General Permit. A copy of the NOI is available for review. In order to comply with the Permit requirements, the Town has developed Best Management Practices (BMPs) that parties leasing Town owned properties must adhere to. These BMPs contain pollution prevention and source control techniques to minimize the impact of those activities upon dry-weather urban runoff, stormwater runoff, and receiving water quality.

Activities performed at the facility leased shall conform to the Permit and BMPs, and must be performed as described within all applicable BMPs. The lessee shall fully understand the BMPs applicable to activities conducted at the facility leased prior to conducting them and maintain copies of the BMPs at the leased facility throughout the agreement duration.

Evaluation (or cost) of activities performed at the facility leased may be conducted by the Town to verify compliance with BMP requirement and may be required through lessor self-evaluation as determined by the Town."

2.3 Requirements of Contractors on Town Property

The following is example language that can be inserted into municipal field program contracts:

“The Town of Stoneham has submitted a Notice of Intent (NOI) to the Massachusetts DEP and EPA to obtain coverage under the NPDES Small MS4 General Permit. A copy of the NOI is available for review. In order to comply with Permit requirements, the Town has developed Best Management Practices (BMPs) that parties conducting the municipal activities must adhere to. These BMPs apply to any party conducting municipal activities and contain pollution prevention and source control techniques to minimize the impact of those activities upon dry-weather urban runoff, stormwater runoff, and receiving water quality.

Work performed under this CONTRACT shall conform to the Permit requirements and BMPs, and must be performed as described within all applicable BMPs. The CONTRACTOR shall fully understand the BMPs applicable to activities that are being conducted under this CONTRACT prior to conducting them and maintain copies of the BMPs throughout the CONTRACT duration. The applicable BMPs are included as Exhibit ___ of this CONTRACT.

Evaluation of activities subject to BMPs performed under this CONTRACT may be conducted to verify compliance with BMP requirements and may be required through CONTRACTOR self-evaluation as determined by the Town.”

3 BEST MANAGEMENT PRACTICES

Guidance on good housekeeping best management practices (BMPs) to be performed at Stoneham's Municipal facilities is presented using the fact sheets provided in this section. Each of the fact sheets provides a description of the practice, the pollution prevention approach, suggested practices, inspection procedures and maintenance procedures. In addition, the targeted facilities, operations, and pollutant constituents are identified. All of the suggested BMPs do not need to be implemented for the targeted facilities and operations. The BMPs that reduce an influx of pollutants to the stormwater drainage system to the maximum extent practicable should be considered for implementation.

Implemented BMPs should be reviewed annually for effectiveness using the Good Housekeeping Inspection Form provided in Appendix D and adjusted as necessary.

3.1 Fueling Operations and Petroleum Tank Storage

Purpose and Approach

Vehicle fueling operations can impact water quality if stormwater runoff from areas with these activities occurring within them becomes polluted by components of the fuel. Spills and leaks that occur during vehicle and equipment fueling can contribute hydrocarbons, oil and grease, as well as heavy metals to stormwater runoff. It only takes 1 gallon of oil to contaminate 1 million gallons of drinking water. Similarly, activities and leaks from petroleum storage tanks have the potential to contaminate stormwater runoff.

In the Inspection Matrix Fueling Operations and Petroleum Tank Storage are separate inspection forms.

Best Management Practices (BMPs)

General Practices

- Store fluids in labeled, plastic or metal container with a lid.
- Place flammables in a fire safe cabinet.
- Place drip pans under leaking vehicles, valves, spigots, and pumps.
- Routinely check for leaking vehicles.
- Do not conduct any vehicle maintenance near catch basins.
- Vehicle maintenance should be done in covered facility.

Fueling

- Ensure that all fueling activities are not conducted near catch basins or that procedures are in place to control any spills.
- Fuel storage tanks should be placed in impervious surfaces with no cracks or gaps; secondary containment is recommended.
- Provide barriers such as posts, guard rails, or bollards where tanks are exposed to prevent collision damage with vehicles.



Targeted Facilities and Operations

- All Fleet Vehicle and Equipment Operations
- All Facilities with petroleum storage tanks

Targeted Pollutants

- Sediment
- Trash
- Metals
- Oil & Grease

Reference

- "California Stormwater Quality Association Municipal BMP Handbook"

- Post signs at the fuel dispenser or fuel island warning vehicle owners / operators against “topping off” of vehicle fuel tanks.
- Label drains within the facility boundary by paint/stencil (or equivalent) to indicate whether they flow to the sanitary sewer, to a catch basin, or into a dry well.

Petroleum Storage Tanks

- Ensure that outdoor storage areas are covered with a roof.
- Clearly tag or label valves and restrict access to valves.
- Provide secondary containment for all ASTs and portable containers of petroleum containing liquids.
- Place drip pans, absorbent materials, and/or secondary containment measures beneath all mounted container taps.
- Maintain spill kits that are clearly marked and located near all locations where loading and unloading of USTs or ASTs occur.
- Keep drums and other containers in good condition. Replace when drums and other containers when leaks, corrosion, or deterioration is identified.
- Label new or secondary containers with the product name and hazards.
- Keep SPCC Plan up-to-date and implement accordingly.
- Clean up spill and leaks that occur during loading and unloading operations promptly and dispose of materials properly.
- Drums are stored indoors and in an area with secondary containment free of materials that may damage drums.

Inspection Procedures

Fueling

- Identify locations of floor drains and catch basins and know where they discharge to. Floor drains should be connected to the sanitary sewer system and catch basins should be connected to the stormwater drainage system.
- Regularly inspect vehicles and equipment for leaks and repair immediately.
- Inspect fuel storage tank foundations, connections, coatings, tank walls and piping system. Look for corrosion, leaks, cracks, scratches and other physical damage that may weaken the tank or container system.
- Inspect fueling areas, catch basin inserts, containment areas and drip pans on a regular schedule.

Petroleum Storage Tanks

- Regularly inspect stormwater collection structures for petroleum sheen before draining. When sheen is detected, water should be removed and disposed of properly via sanitary contractor.
- Regularly Inspect storage areas for Spills and leaks.

Maintenance Procedures

- Sweep the maintenance area on a regular basis to collect loose particles. Wipe up spills with rags and other absorbent material immediately. Do not hose down the area to a catch basin.

- Keep ample supplies of spill cleanup materials on-site. Clean up spills immediately.
- Properly train employees, leases/site users, hired contractors and any other personnel working with vehicles on fueling and handling oil and waste oil.

3.2 Vehicle Washing

Purpose and Approach

Wash water from vehicle and equipment cleaning activities performed outdoors or in areas where wash water flows onto the ground can contribute toxic hydrocarbons and other organic compounds, oils and greases, nutrients, phosphates, heavy metals, and suspended solids to stormwater runoff. It is important to be responsible with soap and detergents used during washing to ensure phosphates and other contaminants do not enter water bodies. Most soap products contain phosphates that can increase algae growth and degrade surface water quality.

Best Management Practices (BMPs)

General

- Use biodegradable, phosphate-free detergents for washing vehicles as appropriate.
- Mark the area clearly as a wash area.
- Post signs stating that washing is only allowed in wash area and that discharges to the stormwater drainage system are prohibited. Facility employees should know where catch basins are.
- Provide a trash container in wash area. Vacuum floor mats or shake them into trash.
- Those that use facility to wash vehicles (e.g., students) should be informed of proper washing protocols.

Vehicle and Equipment Cleaning

- Install sumps or drain lines to collect wash water or construction of a berm around the designated area and grading of the area to collect wash water as well as prevent stormwater run-on.
- Consider washing vehicles and equipment inside the building if washing/cleaning must occur on-site.
- If washing must occur on-site and outdoors:
 - Use designated paved wash areas. Designated wash areas must be well marked with signs indicating where and how washing must be done. This area must be covered or bermed.
to collect the wash water and graded to direct the wash water to a treatment or disposal facility, or washing must take place on a grassed area.
 - Cover the wash area when not in use to prevent contact with rain water.



Targeted Facilities and Operations

- All Fleet Vehicle and Equipment Operations

Targeted Pollutants

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease
- Organics

Reference

- “California Stormwater Quality Association Municipal BMP Handbook”

- Cover and protect catch basins during washing.
- Use hoses with nozzles that automatically turn off when left unattended. Use high-pressure, low-volume sprays.
- Perform pressure cleaning and steam cleaning off-site to avoid generating runoff with high pollutant concentrations. If done on-site, no pressure cleaning and steam cleaning should be done in areas designated as wellhead protection areas for public water supply.

Disposal

- Filter and recycle wash water if possible.

Inspection Procedures

- Inspect floor drain systems regularly; use only those that discharge to a sanitary sewer.
- Inspect nearby catch basins annually.

Maintenance Procedures

- Maintain a map of on-site stormwater drainage system locations to avoid discharges to the stormwater drainage system.
- Take precautions against excess use and spillage of detergents.
- Clean vehicles only where wastes can be captured for proper disposal, such as a commercial vehicle wash station.

3.3 Vehicle and Equipment Maintenance

Purpose and Approach

Vehicle repair and service (e.g., parts cleaning and fueling), replacement of fluids (e.g., oil change), and outdoor equipment storage and parking (dripping engines) can impact water quality if stormwater runoff from areas with these activities occurring on them becomes polluted by a variety of contaminants. Spills and leaks that occur during vehicle and equipment fueling can contribute hydrocarbons, oil and grease, as well as heavy metals to stormwater runoff. It only takes 1 gallon of oil to contaminate approximately 1 million gallons of drinking water.

Best Management Practices (BMPs)

- General Practices
- Fueling
- Vehicle Maintenance
- Disposal
- Used Oil

General Practices

- Store fluids in labeled, plastic or metal container with a lid.
- Place flammables in a fire safe cabinet.
- Place drip pans under leaking vehicles, valves, spigots, and pumps.
- Routinely check for leaking vehicles.
- Do not conduct any vehicle maintenance near catch basins.
- Vehicle maintenance should be done in covered facility.



Targeted Facilities and Operations

- All Fleet Vehicle and Equipment Operations
- Golf courses
- Cemetery

Targeted Pollutants

- Metals
- Oil & Grease
- Organics

Reference

- “California Stormwater Quality Association Municipal BMP Handbook”

Fueling

- Keep fueling areas clean and fuel tanks protected.
- Fueling activities should be conducted away from storm drains.
- Before fueling, make sure there is a fully stocked spill kit in the close vicinity so spills can be cleaned up immediately.

Vehicle Maintenance

- Provide a designated area for vehicle maintenance on an impervious surface.
- Keep equipment clean; don't allow excessive build-up of oil and grease.
- If possible, perform all vehicle fluid removal or changing inside or under cover:
 - Keep a drip pan under the vehicle while you unclip hoses, unscrew filters or remove other parts.
 - Promptly transfer used fluids to the proper waste or recycling drums. Don't leave drip pans or other open containers lying around.
 - Keep drip pans or containers under vehicles or equipment that might drip during repairs.
 - Do not change motor oil or perform equipment maintenance in non-appropriate areas.
- If temporary work is being conducted outside, use a tarp, ground cloth or drip pan beneath the vehicle or equipment to capture all spills and drips.

Disposal

- Fluids should be recycled or properly disposed.
- Full pans should be dumped into 55-gallon drums.
- Drain fluids from out-of-service vehicles.
- Dispose of debris including oil filters, oil cans, rags, and clean-up supplies.
- Vehicle fluids should never be dumped down catch basins.
- Interior floor drains should discharge to holding tanks or be sealed.

Used Oil

- Recycle used oil.
- Do not mix wastes with used oil.

Inspection Procedures

- Identify locations of floor drains and catch basins and know where they discharge to. Floor drains should be connected to the sanitary sewer system and catch basins should be connected to the stormwater drainage system.
- Regularly inspect vehicles and equipment for leaks and repair immediately.
- Inspect fuel storage tank foundations, connections, coatings, tank walls and piping system. Look for corrosion, leaks, cracks, scratches and other physical damage that may weaken the tank or container system.

- Inspect fueling areas, catch basin inserts, containment areas and drip pans on a regular schedule.

Maintenance Procedures

- Sweep the maintenance area on a regular basis to collect loose particles. Wipe up spills with rags and other absorbent material immediately. Do not hose down the area to a catch basin
- Keep ample supplies of spill cleanup materials on-site. Clean up spills immediately.
- Properly train employees, leases/site users, hired contractors and any other personnel working with vehicles on fueling and handling oil and waste oil.

3.4 Building and Grounds Maintenance

Purpose and Approach

Typical building maintenance includes cleaning operations, such as outside pressure washing of buildup and repairs. Implement applicable suggested BMPs to reduce the influx of pollutants to the stormwater drainage system to the maximum extent practicable.

Nutrient loads generated by lawns can be significant which is why it is important to monitor which chemicals (if any) are applied to lawns and also use products that are safe for the environment. Pesticide runoff can contribute pollutants that contaminate drinking water supplies and are toxic to both humans and aquatic organisms.

It is important to reduce pesticides, herbicides, fertilizers, and lawn debris from entering surface and ground water supplies by washing and cleaning up with as little water as possible, following good landscape management practices, preventing and cleaning up spills immediately, keeping debris from entering the stormwater drainage systems, and maintaining the stormwater collection system.

Best Management Practices (BMPs)

Landscaping Activities

- Reduce or discontinue the use of chemicals (insecticide, herbicide, or fertilizer) on lawns
- Do not apply any chemicals (insecticide, herbicide, or fertilizer) directly to surface waters, unless the application is approved and permitted by the state.
- Use mulch or other erosion control measures on exposed soils.
- Check irrigation schedules so pesticides will not be washed away and to minimize non-stormwater discharge.
- Place temporarily stockpiled material away from watercourses and drain inlets, and berm or cover stockpiles to prevent material releases to the stormwater drainage system.
- Use hand or mechanical weeding where practical.



Targeted Facilities and Operations

- All Municipal Facilities

Targeted Pollutants

- Sediment
- Nutrients
- Trash
- Metals
- Bacteria
- Oil & Grease
- Organics
- Low Dissolved Oxygen

Reference

- “Mass Highway Stormwater Handbook”
- “Massachusetts Stormwater Handbook, Vol. 2, Chapter 1”
- “California Stormwater Quality Association Municipal BMP Handbook”

- Employ mowing techniques to maintain a healthy lawn and minimize chemical use—no more than 1” of lawn should be removed from each mowing (grasses kept at 2.5” to 3.0” high are more heat resistant than close-cropped grass). Keep mower blades sharp and leave clippings in place after mowing.
- Do not allow clippings to collect or be raked or swept onto catch basin grates.
- Water plants in the early morning.

Fertilizer and Pesticide Management

- Follow manufacturers’ recommendations and label directions.
- Do not apply insecticides within 100 feet of surface waters such as lakes, ponds, wetlands, and streams.
- Use less toxic pesticides that will do the job, whenever possible and use the minimum amount needed. Avoid use of copper-based pesticides if possible.
- Do not use pesticides if rain is expected.
- Do not mix or prepare pesticides for application near catch basins.
- Calibrate fertilizer distributors to avoid excessive application.
- Apply pesticides only when wind speeds are low.
- Work fertilizers into the soil rather than dumping or broadcasting them onto the surface.
- Irrigate slowly to prevent runoff and then only as much as is needed.
- Dispose of empty pesticide containers according to the instructions on the container label.
- Use up the pesticides. Rinse containers and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Implement storage requirements for pesticide products with guidance from the local fire department and the Massachusetts Department of Agricultural Resources.
- Provide secondary containment for pesticides.

Debris Removal

- Compost or mulch yard waste to be used as mulch and topsoil.
- Sweep up yard debris instead of hosing down.
- Clean pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.
- Do not leave yard waste in the street or sweep it into catch basins or streams.

Pressure Washing of Buildings, Rooftops and Other Large Objects

- In situations where soaps or detergents are used and the surrounding area is paved, pressure washers must use a waste/water collection device that enables collection of wash water and associated solids. A sump pump, wet vacuum or similarly effective device must be used to collect the runoff and loose materials. The collected runoff and solids must be disposed of properly.
- If soaps or detergents are not used and the surrounding area is paved, wash water runoff does not have to be collected, but must be screened. Pressure washers must use filter fabric or some

other type of screen on the ground and/or in the catch basin to trap the particles in wash water runoff.

- If you are pressure washing on a grassed area (with or without soap), runoff must be dispersed as sheet flow as much as possible, rather than as a concentrated stream. The wash runoff must remain on the grass and not drain to pavement. Ensure that this practice does not kill grass.

Building Repair, Remodeling and Construction

- Do not dump any toxic substance or liquid waste on the pavement, the ground or toward a catch basin.
- Use ground or drop cloths underneath outdoor painting, scraping and sandblasting work, and properly dispose of collected material daily.
- Use a ground cloth or oversized tub for activities such as paint mixing and tool cleaning.
- Clean paint brushes and tools covered with water-based paints in sinks connected to sanitary sewers or in portable containers that can be dumped into a sanitary sewer drain. Brushes and tools covered with non-water-based paints, finishes or other materials must be cleaned in a manner that enables collection of used solvents (e.g., paint thinner, turpentine, etc.) for recycling or proper disposal. Use a catch basin cover, filter fabric or other similarly effective runoff control mechanism if dust, grit, wash water or other pollutants may escape the work area and enter a catch basin. The containment device(s) must be in place at the beginning of the workday and accumulated dirty runoff and solids must be collected and disposed of before removing the containment device(s) at the end of the work day. When pressure-washing to remove paint, collect wash water and dispose of it properly, as outlined above.
- If you need to de-water an excavation site, you may need to filter the water before discharging to a catch basin or off-site. In this case, you should direct the water through hay bales and filter fabric or use other sediment filters or traps.
- Store toxic material under cover with secondary containment during precipitation events and when not in use. A cover would include tarps or other temporary cover material.

Inspection Procedures

Building Maintenance

- Sweep paved areas regularly to collect loose particles and wipe up spills with rags and other absorbent materials immediately. Do not hose down the area to a catch basin.

Grounds Maintenance

- Minimize excess watering and repair leaks in the irrigation system as soon as they are observed.
- Inspect and remove accumulated debris from grounds.
- Routinely monitor lawns to identify problems during their early stages.
- Identify nutrient/water needs of plants.
- Inspect for problems by testing soils.

Maintenance Procedures

Grounds Maintenance

- Sweep paved areas regularly to collect loose particles.
- Wipe up spills with rags and other absorbent materials immediately.
- Do not hose down the area to catch basins.
- Keep mower blades sharp.
- Do not sweep yard waste, debris, clippings, etc. into catch basins or surface waters.

3.5 Fire Training and Hose Flushing

Purpose and Approach

Fire training and hose/hydrant flushing requires certain procedures in order to prevent pollutants from entering the surrounding stormwater system. Training and cleaning fire equipment requires the use of chemicals that can be collected by runoff and distributed into adjacent waterways. This must be prevented along with hose and hydrant flushing activities collecting pollutants and being discharged into the drainage system.

Best Management Practices (BMPs)

- If possible, conduct training at a designated facility built and engineering for training activities.
- Sweep, vacuum or use any other dry-cleaning method on pavement to clean up debris and sediment before flushing or training.
- Direct hydrant or hose flushing flows to landscaped or green areas when possible and without causing erosion or damage to the landscape.
- Use haybales, filter socks or other filtration devices at all stormwater structures during all activities.
- When using foam, block storm drain inlets with plastic sheeting and sandbags to divert flow to sanitary system (with DPW approval).
- Limit use of straight streams and fog streams during training.
- Conduct vehicle and equipment cleaning indoors or at a facility that is connected to the sanitary sewer system.
- Use biodegradable, phosphate-free detergents (if needed) when cleaning.
- Conduct all maintenance and repair of fire vehicles and equipment indoors when applicable.

Inspection Procedures

- Inspect training or flushing site for petroleum leaks or spills prior to flushing or fire training activities
- Inspect vehicles prior to going to training site to ensure there are no leaks
- Check that spill kit is fully stocked and on site.
- Locate all drainage structures and stormwater conveyances on site.
- Check for MSDS's for fire fighting chemicals.



Targeted Facilities and Operations

- Fire Department
- Parking Lots for Fire Training

Targeted Pollutants

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease

Reference

- “California Stormwater Quality Association Municipal BMP Handbook”

Maintenance Procedures

- Repair any leaks on vehicles or equipment before going to training or flushing site.
- Routinely clean fire vehicles and equipment in a designed wash area to eliminate chemicals, gas, or any other pollutants from traveling to the training site. See Section 3.3 Vehicle and Equipment Maintenance for more BMPs.
- When on site, properly install filtration devices or barriers for stormwater structures.
- Update MSDS's for each vehicle for fire fighting chemicals.
- If a chemical spill or leak is reported on site, use the spill kit that is on site and proper clean up procedures. Properly dispose of waste and report to the DPW.

3.6 Outdoor Waste Management & Disposal

Purpose and Approach

Waste management entails the selection of the individual products, the correct use and storage of the product, and the proper disposal of associated waste(s). It is important to be responsible with common chemicals and solvents including paints, cleaners, and automotive products to reduce contamination to stormwater runoff.

Best Management Practices (BMPs)

Materials Maintenance

- Routine cleaning of workspaces
- Proper collection/disposal of waste
- Product selection
- Product use and storage
- Routine vehicle and equipment maintenance and inspection
- Employee training

Materials Inventory

- Identify all hazardous and non-hazardous substances by reviewing purchase orders and conducting a walk-through of the facility.
- Compile Material Safety Data Sheets (MSDSs) for all chemicals. These should be readily accessible to all facility employees.
- Label all containers of significant materials that include cleaners, fuels and other hazards.
- Identify handling, storage and disposal requirements of all chemicals.
- Use environmentally friendly or non-hazardous substitutes when appropriate that include, but are not limited to, H₂Orange₂, Orange Thunder and Simple Green®.
- Keep hazardous materials and waste off the ground.
- Provide secondary containment, when appropriate.
- All drums and containers should be in good condition and properly labeled.
- Loose materials/stockpiles should be covered with tarps or placed in shelter.

Solid Waste Management

- Trash storage bins, dumpsters and disposal areas should be clean and free of debris, especially those located near catch basins.
- Dumpsters should be maintained in good condition and securely closed at all times.
- Clean up equipment and materials.



Targeted Facilities and Operations

- All Municipal Facilities
- All Fleet Vehicle and Equipment Operations

Targeted Pollutants

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease
- Organics
- Low Dissolved Oxygen

Reference

- “California Stormwater Quality Association Municipal BMP Handbook”

- Dispose of solid waste within local, state and federal laws.
- Temporary trash storage should be inspected weekly before being emptied by waste management contractor.
- Debris piles, including sweeping, construction and wood debris should be covered. Covers should be inspected weekly before waste is removed off-site. Compost yard debris does not need to be covered.

Inspection Procedures

- Inspect dumpsters and trash containers for leaks and make sure they are covered.
- Inspect material storage sheds (inside and outside) to verify items are not exposed to precipitation and are covered or in enclosed areas.
- Inspect stormwater discharge locations and on-site stormwater drainage infrastructure (e.g., catch basins) for contaminants, soil staining and plugged discharge lines.
- Physical on-site verification of sealed floor drains (or redirected to sanitary sewer).

Maintenance Procedures

- Repair or replace any leaking/defective containers and replace label as necessary
- Maintain caps and/or covers on containers
- Maintain aisle space for inspection of products/wastes
- Routinely clean work spaces
- Properly collect/dispose of waste
- Routinely maintain and inspect vehicles and equipment
- Train employees, leases/site users, hired contractors and any other personnel performing materials management activities routinely and when new products enter the facility on proper use, storage, disposal and safety concerns. Material Safety Data Sheets (MSDSs) should be reviewed and readily accessible in central facility location
- Review any Spill Prevention, Control and Countermeasure (SPCC) Plans in place for a specific facility for petroleum products.

3.7 Outdoor Material Storage

Purpose and Approach

It is necessary to use certain methods when storing raw or finished materials outside on a site to ensure stormwater runoff does not become contaminated and then enter the drainage system. Materials may be stored in containers, on platforms or pads, in bins or boxes, or in piles. Storage areas that are exposed to rainfall and direct runoff can contribute pollutants to stormwater when solid materials wash off or materials dissolve into the runoff.

Best Management Practices (BMPs)

In order to ensure proper outdoor material storage, it is important to use the following practices:

- Properly label each outdoor storage bin or area.
- Create a berm around storage areas to contain any potential spills or leaks.
- Keep storage areas away from stormwater drainage structures.
- Ensure all liquids stored outside on a paved impervious surface are stored with a secondary containment mechanism.
- All chemical, drums, or bagged materials should also be placed on secondary containment.
- Cover treated wood products, other storage areas and/or bins with permanent or seasonal structures.
- Keep all storage areas secure to prevent vandalism and unauthorized access.

Inspection Procedures

- Inspect all storage areas and bins routinely for spills or leaks.
- Inspect all secondary containment and structures that are used for cover and ensure there are no breaks or cracks.
- Check for properly labeled containers and storage areas.



Targeted Facilities and Operations

- All Municipal Facilities

Targeted Pollutants

- Sediment
- Nutrients
- Trash
- Oil & Grease
- Organics
- Low Dissolved Oxygen

Reference

- "Massachusetts Stormwater Handbook, Vol. 2, Chapter

- Inspect spill kit and confirm all components are fully stocked.
- Identify the location of all stormwater drainage structures and ensure stored materials are not in the surrounding area.

Maintenance Procedures

- Repair or replace any leaking or defective containers and replace labels or signage as necessary.
- Ensure spill kit is readily available and stocked.
- If spills or leaks have occurred, use a spill kit and proper clean up equipment and properly dispose of any materials or waste.
- Repair or replace any damaged secondary containment or structures used for cover.
- Regularly sweep and clean up any litter in or around the storage areas.

3.8 Painting & Equipment Loading/Disposal

Purpose and Approach

Containing paint and debris is essential on a work site so that the chemicals can be properly disposed of and not pollute the surrounding area. Properly maintaining and cleaning all painting equipment is also necessary to ensure chemicals are not being spilt or distributed on site.

Best Management Practices (BMPs)

It is important to use the following practices and control measures to prevent paint and other chemicals from entering the stormwater system:

- Store paints, coatings, and solvents in a covered and well-ventilated area. Keep containers closed in storage area when not in use. Refer to Section 3.12 Hazardous Material Storage for more BMPs for storage.
- Remove excess paint from spent barrels and cans to allow residual paint to dry.
- Properly dispose of spent barrels and cans as solid waste once residual paint is dry.
- When possible select water-based latex paints, they emit fewer chemicals and lower levels of chemical vapor.
- Contain painting activities and use other methods such as drop cloths, tarps, etc. under the painting/work area to contain any paint chips, drips, or spills.
- Install filtration devices or barriers to prevent chemicals, paint residue, or any other pollutants from entering the stormwater system.
- Wash all painting equipment in an approved wash area or wash rack. Refer to Section 3.2 Vehicle Washing for more BMPs.
- Use dry cleaning methods to clean up hardened paint residue and properly dispose as a solid waste.



Targeted Facilities and Operations

- All Municipal Facilities

Targeted Pollutants

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease

Reference

- "Massachusetts Stormwater Handbook, Vol. 2, Chapter

Inspection Procedures

- Inspect storage area for any leaks or spills.
- Identify the location of all stormwater drainage structures where painting is being completed.
- Inspect all structures for paint residue or chemical sheen.
- Inspect vents and air circulation in ventilated storage area.

Maintenance Procedures

- Repair or replace any leaking paint containers in the storage area.
- Routinely clean all paint equipment and repair any leaks or defects.
- Remove paint chips from drainage structures if any have collected.
- Update all MSDSs and keep files on painting site.

3.9 Outdoor Vehicle and Equipment Storage

Purpose and Approach

Vehicles and equipment stored outdoors such as fleet parking can be a potential source of pollution during rain events. Vehicle and other equipment such as snow-blowers or lawnmowers can contain oils, coolants, and fuel which have the potential to leak from the vehicle or equipment. If these items are stored outdoors, leaks have the potential to be introduced to the stormwater system by surface runoff caused by rainfall. Note that this section pertains only to outdoor storage of vehicles and equipment, and that the maintenance of such vehicles and equipment is covered under Section 3.3 Vehicle and Equipment Maintenance.

Best Management Practices (BMPs)

In order to ensure proper outdoor storage for vehicles and equipment, it is important to use the following practices:

- Fleet parking area and surrounding storage area(s) should be kept neat and orderly.
- Provide trash receptacles in parking area(s) and maintain signage indicating “No Littering”
- Store vehicles and equipment prone to leaking under cover.
- Drain fluids from long-term inactive, decommissioned, and wrecked vehicles and equipment as soon as possible.
- Use drip pans or other spill/leak containment where fluid draining cannot be conducted.
- Clean spills/leaks promptly and dispose of properly.
- Use dry cleaning methods (sweeping/vacuuming) to remove debris from impervious parking area(s).

Inspection Procedures

- Regularly inspect vehicle and equipment and storage area(s) for signs of leaks/spills.
- Regularly inspect stormwater collection structures for petroleum sheen before draining. When sheen is detected, water should be removed and disposed of properly via sanitary contractor.



Targeted Facilities and Operations

- All Fleet Vehicle and Equipment Operations
- Golf Courses

Targeted Pollutants

- Metals
- Trash
- Oil & Grease
- Organics
- Low Dissolved Oxygen

Reference

- “Massachusetts Stormwater Handbook, Vol. 2, Chapter 1”

Maintenance Procedures

- Regularly perform dry cleaning methods (sweeping/vacuuming) for impervious surfaces that vehicles and equipment are stored on.
- Keep storage and parking area(s) clean and orderly.
- Utilize spill/leak prevention and containment for stored vehicles and clean any spills/leaks promptly with proper disposal.
- Provide trash receptacles in the parking and storage area(s).

3.10 Salt/Sand and Salt Brine/Calcium Chloride Storage

Purpose and Approach

Proper road sand/salt storage is necessary to prevent contamination to surface and ground water supplies. Salts are very soluble—once in contact with water there is no way to remove salt. The major reasons for keeping salt covered and controlling use are that salt:

- Kills vegetation
- Corrodes infrastructure
- Blocks catch basins, swales, and other drainage structures
- Increases sedimentation to streams and rivers
- Even small quantities (5% road salt) contain phosphorus, nitrogen, copper, and cyanide

Pollutants often attach to sand particles and excessive sand washed into the stormwater drainage system can clog catch basins. In order to ensure proper sand/salt management, it is important to address the following items:

- Proper Storage
- Proper Use
- Proper Removal
- Proper Disposal

Best Management Practices (BMPs)

Proper Storage

Storage facilities for sand/salt mixtures should have the following key elements:

- Covered structure on impervious surface
- Drainage should be diverted away from storage facility
- Sand/salt handling should be done within storage facility
- Should not be located in a water supply watershed or within 100 year floodplain



Targeted Facilities and Operations

- All Municipal Facilities
- Facility Access Roads and Parking Lots

Targeted Pollutants

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease
- Organics
- Low Dissolved Oxygen

Reference

- “Mass Highway Stormwater Handbook”
- “Massachusetts Stormwater Handbook, Vol. 2, Chapter 1”
- “California Stormwater Quality Association Municipal BMP Handbook”

Proper Use

- Establish a low salt area near any water bodies or residential areas.
- When feasible, use higher percentage of sand in sand/salt mixture.
- Regulate the amount of road salt applied to prevent over-salting of motorways and increasing runoff concentrations.
- Vary the amount of salt applied to reflect site-specific characteristics, such as road width and design, traffic concentration and proximity to surface waters.
- Provide calibration devices for spreaders in trucks to aid maintenance workers in the proper application of road salts.
- Establish air temperature and snow depth conditions favorable for successful use of salt.
- Use alternative materials, such as sand or gravel, in especially sensitive areas.
- Use alternative products such as Magic Salt.

Proper Removal

- Street sweeping of facility access roads and parking lots in spring and fall.
- Catch basin cleaning once per year.

Proper Disposal

Disposal of sand/salt mixtures should never be done in the following areas:

- Wetlands or surface waters
- Stormwater drainage system
- Well locations and public drinking supplies

Dispose of sand/salt mixtures at appropriate disposal sites:

- Locate disposal sites adjacent to or on pervious surface in upland areas away from water resources and wells.
- Maintain the disposal site with silt fence and other barriers on the downgradient side of the site.

Salt Brine and Calcium Storage

- Store brine and liquid deicers in well maintained and clearly labeled storage tanks.
- Immediately repair spills and leaks from storage tank fittings, valves and pumps.
- For tanks located outside, utilize secondary containment (double walled tanks or containment dikes) with 110-125% of the capacity of the largest tank.
- House storage tanks and mixing equipment inside protective barriers (bollards, jersey barriers, etc).
- Use drain or inlet covers to prevent collection of accidental deicer spills/leaks from entering the storm system.
- Keep MSDS on site and accessible.

Inspection Procedures

- Inspect salt storage shed for leaks on a regular basis, including fall and spring.
- Inspect salt application equipment, including calibration equipment and spreaders.
- Inspect salt regularly for lumping or water contamination.
- Inspect surface areas for evidence of runoff – salt stains in ground near and around the salt storage shed, loading area or down slope.
- Inspect for excessive amounts of salt on roads.
- Perform regular scheduled inspection and maintenance of Salt Brine and Calcium storage tanks and fittings, valves, and pumps.

Maintenance Procedures

- Service trucks and calibrated spreaders regularly to ensure accurate, efficient distribution of salt.
- Educate and train operators on hazards of over-salting to roads and environment at the beginning of the snow season as part of meetings with supervisor and drivers.
- Repair salt storage shed leaks.
- Perform regularly scheduled maintenance on Salt Brine and Calcium storage tanks and accessories (valves, fittings and pumps), and immediately repair leaking or dripping connection on tanks.

3.11 Material Stockpiles

Purpose and Approach

Stockpiled materials such as snow, soil, gravel, and mulch represent a source of pollution during rain events. When stored unprotected outdoors, material stockpiles are exposed to precipitation. When the eroded material enters the stormwater system, the sediment can quickly fill the sumps of catch basin structures. The eroded material is also a surface that pollutants can adhere too and then enter the drainage system, leading to pollution in the waterways and environment.

Best Management Practices (BMPs)

In order to ensure proper material stockpile management, it is important to use the following practices:

- Store materials indoors whenever possible.
- When planning a location for a stockpile, use a relatively level site away from slopes, water features, and stormwater drainage structures.
- Store outdoor stockpiles under a covered area or use tarps for cover.
- Implement erosion control systems at storage site perimeter. Common practices include sediment basins, silt fences, or grass filter strips.
- Install berms, curbing and/or grading to prevent precipitation runoff into stockpile areas.
- Use catch basin filter inserts for catch basins located near outdoor material stockpiles.

Snow Dump/Stockpile

- Select snow storage sites before snow season begins. These sites should be on a pervious surface and away from stormwater features and wells.
- Place silt fence or sediment barrier as down grade side of site to collect any sediment from meltwater.
- Clean up and properly dispose of litter and sediment after snow season is over.



Targeted Facilities and Operations

- All Municipal Facilities

Targeted Pollutants

- Sediment
- Nutrients
- Metals
- Trash
- Oil & Grease
- Organics
- Low Dissolved Oxygen

Reference

- “Massachusetts Stormwater Handbook, Vol. 2, Chapter 1”

Inspection Procedures

- Inspect all material stockpiles for proper cover.
- Inspect the condition of all erosion control structures
- Identify the location of all stormwater drainage structures and ensure stockpiles are not in the surrounding area.

Maintenance Procedures

- Regularly sweep and clean up any eroded material in stockpile storage area.
- For snow storage areas, clean up litter and collected sediment from snow melt at the end of the snow season.
- Remove debris from catch basin filter inserts.
- Repair or replace any damaged tarps, structures used for cover, or erosion control systems.
- Move any stockpiles that have been placed within the vicinity of any drainage structures.

3.12 Hazardous Material Storage

Purpose and Approach

It is important to properly store hazardous materials (including antifreeze, paints, solvents, and cleaners) to prevent them from contaminating stormwater runoff. Hazardous materials include:

- Cleaning agents: solvents and drain cleaners
- Vehicle maintenance fluids: motor oil, gasoline, antifreeze, degreasers, and radiator flush
- Water treatment chemicals
- Paints

Best Management Practices (BMPs)

In order to ensure proper hazardous material storage, it is important to address the following items:

- Loading / Unloading
- Container storage
- Maintenance
- Disposal

Loading / Unloading

- All facilities should have proper procedures in place for loading and/or unloading hazardous materials received, especially areas located near catch basins.
- Do not conduct loading and unloading of exposed hazards during wet weather, whenever possible.
- If feasible, load and unload all materials and equipment in covered areas, such as building overhangs at loading docks.
- Load / unload only at designated loading areas.
- Use drip pans underneath hose and pipe connections and other leak-prone spots during liquid transfer operations, and when making and breaking connections.

Container Storage

- Keep containers away from high traffic areas



Targeted Facilities and Operations

- All Municipal Facilities

Targeted Pollutants

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease
- Organics
- Low Dissolved Oxygen

Reference

- “Massachusetts Stormwater Handbook, Vol. 2, Chapter 1”
- “California Stormwater Quality Association Municipal BMP Handbook”

- When possible, store indoors. If stored outdoors, cover all containers and drums or place under shelter.
- Place containers in a designated area that is paved, free of cracks and gaps, and impervious in order to contain leaks and spills. The area should also be covered. Store containers on pallets.
- Provide secondary containment for hazardous materials and waste placed outdoors.
- Log inventory and supply MSDSs for all stored materials.
- Chemicals should be kept in original labeled containers. Containers should not be glass.
- Containers should not be overfilled. Install overfill protection on storage tanks/drums.
- Properly stack containers and drums.
- Storage areas should be enclosed, clean and organized.
- Minimize storage on-site. Lock storage areas and provide warning signs.
- Contractors should be trained on delivery and storage practices.
- Segregate reactive/incompatible materials (such as chlorine and ammonia).
- Place drip pans under container spout.

Maintenance

- Routinely inspect storage spaces and containers for leaks and cracks.
- Train maintenance personnel, employees, leases/site users, hired contractors and any other personnel working with hazardous materials for spill cleanup.

Disposal

- Properly dispose of hazardous materials.
- Recycle when possible.

Inspection Procedures

- Check loading and unloading equipment regularly for leaks, including valves, pumps, flanges and connections
- Look for dust or fumes during loading or unloading operations
- Inspect storage areas regularly for leaks or spills
- Conduct routine inspections and check for external corrosion of material containers
- Check for structural failure, spills and overfills due to operator error or failure of piping system
- Check for leaks or spills during pumping of liquids or gases from truck or rail car to a storage facility or vice versa
- Visually inspect new tank or container installations for loose fittings, poor welding and improper or poorly fitted gaskets
- Inspect tank foundations, connections, coatings, tank walls and piping system. Look for corrosion, leaks, cracks, scratches and other physical damage that may weaken the tank or container system.

- Replace containers that are leaking, corroded or otherwise deteriorating with ones in good condition. If the liquid chemicals are corrosive, containers made of compatible materials must be used instead of metal drums.
- Label new or secondary containers with the product name and hazards

Maintenance Procedures

- Conduct regular inspections and make repairs as necessary. The frequency of repairs will depend on the age of the facility.
- Check loading and unloading equipment regularly for leaks.
- Sweep area regularly with dry broom.
- Conduct major clean-out of loading and unloading area and any sumps prior to October 1 of each year.
- Repair or replace any leaking/defective containers and replace labels as necessary.
- Maintain caps and/or covers on containers.
- Maintain aisle space for inspection of products/wastes.
- Train employees, leases/site users, hired contractors and any other personnel working with hazardous materials on proper procedures when new hazardous materials are used.

3.13 Catch Basin Cleaning

Purpose and Approach

It is important to remove sediments that have collected in the sumps of catch basins. Sediments can have a high concentration of pollutants including metals and hydrocarbons. These sediments can also clog downstream drainage systems and transport pollutants to nearby water bodies.

Best Management Practices (BMPs)

- Provide this BMP sheet to any catch basin cleaning contractor who will work on-site.
- EPA recommends to clean basins when solids reach one-third the depth from the basin bottom to the invert of the lowest pipe into or out of the basin.
- Target cleaning for early Spring or late Fall.
- Clean structures prior to rainy season.
- Clean manually or with equipment (i.e., bucket loaders).
- Properly dispose of catch basin material (MADEP and EPA requires chemical analysis to determine if substance is hazardous waste).
- Repair damaged catch basins including outlet traps.
- Install hoods if catch basins do not have them.
- Install outlet traps if catch basins do not have them.
- Inform employees that catch basins are part of the stormwater collection system and not the septic system.
- Maintain a log of cleaning activities. Information should include amount of cleanings removed and areas with heavily filled basins.

Inspection Procedures

- Inspect catch basins, grates and ditches at least twice per year (best times are before the start and before the end of the rainy season).
- Inspections should be incorporated during yearly routine cleaning.



Targeted Facilities and Operations

- All Municipal Facilities
- Facility Access Roads and Parking Lots

Targeted Pollutants

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease
- Organics
- Low Dissolved Oxygen

Reference

- “California Stormwater Quality Association Municipal BMP Handbook”

Maintenance Procedures

- Clean catch basins annually. Catch basins should be checked for sediment levels in sump, in accordance with the inspection schedule discussed above. Those in areas that accumulate a significant amount of sediment should be cleaned more frequently.
- During catch basin repairs, any missing hoods should be replaced.

3.14 Pavement Maintenance

Purpose and Approach

Pavement cleaning and repairs are essential components towards keeping municipal lots and roadways safe for travel and functional. However, if debris continually collects on paved surfaces and it not properly removed, it can collect pollutants and enter the drainage system with stormwater runoff. Also, while conducting pavement repair, it is important that the chemicals used do not enter the stormwater system and pollute the waterways.

Best Management Practices (BMPs)

The following items should be addressed to help prevent pollutants from entering the drainage system during pavement maintenance:

- Schedule regular sweeping to remove sediment and debris from paved surfaces.
- Keep work sites clean and orderly and remove debris from construction in a timely fashion.
- Use dry cleaning methods for spills and leaks on site and properly dispose of waste after clean-up is complete.
- Load and transfer hot bituminous material away from stormwater structures and watercourses.
- Cover and seal nearby stormwater catch basins, inlets, and manholes before applying seal coat, slurry seal, etc.

Inspection Procedures

- Locate all stormwater structures that are surrounding or along the path of construction.
- Check to see that there is a fully stocked spill kit on site.

Maintenance Procedures

- Sweep and properly dispose of any sediment during regular scheduled cleaning and post-construction.
- Use a spill kit for any leaks or spills on site and properly dispose of waste.
- For sweeping or pavement construction, cover and seal stormwater structures surrounding the site.



Targeted Facilities and Operations

- Facility Access Roads and Parking Lots

Targeted Pollutants

- Sediment
- Nutrients
- Trash
- Metals
- Bacteria
- Oil & Grease
- Organics
- Low Dissolved Oxygen

Reference

- “California Stormwater Quality Association Municipal BMP Handbook”

3.15 Street and Parking Lot Sweeping

Purpose and Approach

Street and parking lot sweeping includes self-propelled equipment to remove sediment from paved surfaces that can enter catch basins or receiving waters. Sweeping is most effective for removing coarse particles, leaves, and trash. Regularly sweeping reduces catch basin cleaning.

Best Management Practices (BMPs)

- Implementation
- Sweeper Operation and Maintenance

Implementation

- Provide this sheet to any sweeping contractors that will work on-site.
- Prioritize by sweeping the dirtiest roadways more frequently.
- Sweep before rain events to prevent particles and pollutants from entering runoff.
- Sweep as early in the spring as possible (after snowmelt).
- Sweep in June (after trees drop seeds and flowers) to prevent phosphorus-laden runoff.
- Any visible sediment should be swept up (including sand/salt mixtures and granular material).
- Control the number of points where vehicles leave the site to allow sweeping to be focused on certain areas.
- Sweep up the smallest particles feasible.
- Sweep in pattern to keep spilled material from being pushed into catch basins.
- Before sweeping, manually rake sand from turf areas on surfaces to be swept.
- Properly dispose of sweepings as a solid waste (dumpsters). If possible, recycle fall leaf sweepings by composting.
- Maintain a log of sweeping activities. Information should include amount of sweepings removed and heavily sedimented areas.

Sweeper Operation and Maintenance

- Adjust broom frequently to maximize efficiency of sweeping operations.



Targeted Facilities and Operations

- Facility Access Roads and Parking Lots

Targeted Pollutants

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease
- Organics
- Low Dissolved Oxygen

Reference

- "Massachusetts Stormwater Handbook, Vol. 2, Chapter 1"
- "California Stormwater Quality Association Municipal BMP Handbook"

- After sweeping is finished, properly dispose of sweeper wastes.
- Do not use kick brooms or sweeper attachments that tend to spread dirt.
- When unloading sweeper, make sure there is no dust or sediment release.

Inspection Procedures

- Regularly inspect streets and municipal parking lots for debris.

Maintenance Procedures

- Adjust broom frequently to maximize efficiency of sweeping operations.
- After sweeping is finished, properly dispose of sweeper wastes. Street sweepings are regulated as solid waste by the Commonwealth of Massachusetts and can be used in a variety of ways, including as a landfill cover, compost additive, or as fill in a public way. (MassDEP Policy BWP-94.092).
- Do not use kick brooms or sweeper attachments that tend to spread dirt.
- When unloading sweeper, try to avoid dust or sediment release.
- Inspect sweepers to check that they are properly maintained and repaired.

3.16 Spill Prevention and Response

Purpose and Approach

It is important to have a plan in place in the event a spill should occur so contaminants do not mix with stormwater runoff. A plan can be effective at reducing risk of contamination to surface and groundwater contamination—but only effective with personnel training, availability of cleanup supplies, and management ensures procedures are followed.

- Create a well thought out and implemented plan
- Post a response checklist in any hazardous waste storage area with contact information (including emergency phone numbers), and spill containment procedures
- Train employees, leases/site users, hired contractors and any other personnel working with spill prevention activities
- Regularly update plan, checklists, and contact information
- Regularly inspect spill potential areas
- Facilities with aboveground storage tanks (ASTs) and underground storage tanks (USTs) greater than 1,320 gallons and 42,000 gallons must have Spill Prevention Control & Countermeasure plans in place.

Spill Prevention and Response Plan

An effective Spill Prevention and Response Plan should include the following:

- Description of the facilities, the address, activities and materials involved.
- Identification of key spill response personnel and hospital contacts.
- Identification of the potential spill areas or operations prone to spills/leaks.
- Identification of which areas should be or are bermed to contain spills/leaks
- Facility map identifying the key locations of areas, activities, materials, structural BMPs, etc.



Targeted Facilities and Operations

- Facilities with Fueling Activities and Hazardous Wastes
- Facility Access Roads and Parking Lots

Targeted Pollutants

- Nutrients
- Metals
- Oil & Grease
- Organics

Reference

- “Oil Spill Prevention, Control and Countermeasure Plan, Lancaster Complex, Lancaster, MA”, August 2003
- “California Stormwater Quality Association Municipal BMP Handbook”

- Material handling procedures and safety measures for each kind of waste.
- Spill response procedures including:
 - Assessment of the site and potential impacts
 - Containment of the material
 - Notification of the proper personnel and evacuation procedures
 - Clean up of the site
 - Disposal of the waste material
 - Proper record keeping procedures
- Plan to protect all catch basins in the event of a spill.
- Descriptions of spill response equipment, including safety and cleanup equipment.

Best Management Practices (BMPs)

Spill/Leak Prevention

- If possible, move material handling indoors, under cover, or away from catch basins or sensitive water bodies.
- Properly label all containers so that the contents are easily identifiable.
- Berm storage areas so that if a spill or leak occurs, the material is contained.
- Cover outside storage areas either with a permanent structure or with a seasonal one such as a tarp so that rain will not come into contact with the materials.
- Check containers (and any containment sumps) often for leaks and spills. Replace containers that are leaking, corroded, or otherwise deteriorating with containers in good condition. Collect all spilled liquids and properly dispose of them.
- Store, contain and transfer liquid materials in such a manner that if the container is ruptured or the contents spilled, they will not discharge, flow or be washed into the stormwater drainage system, surface waters, or groundwater.
- Place drip pans or absorbent materials beneath all mounted taps and at all potential drip and spill locations during the filling and unloading of containers. Any collected liquids or soiled absorbent materials should be reused/recycled or properly disposed of.

- Only transport the minimum amount of material needed for the daily activities and transfer materials between containers at a municipal yard where leaks and spill are easier to control.
- If paved, sweep and clean storage areas monthly, do not use water to hose down the area unless all of the water will be collected and disposed of properly (e.g., sanitary sewer)
- Install a spill control device (such as a tee section) in any catch basins that collect runoff from any storage areas if the materials stored are oil, gas, or other materials that separate from and float on water. This will allow for easier cleanup if a spill occurs.
- If necessary, protect catch basins while conducting field activities so that if a spill occurs, the material will be contained.
- Keep ample supplies of spill cleanup materials including Speedi Dry and absorbent boom pads on-site. Train all employees, leases/site users, hired contractors and any other personnel working with spill prevention activities on where materials are stored.

Spill Clean Up

- Small non-hazardous spills:
 - Use a rag, damp cloth or absorbent materials for general cleanup of liquids.
 - Use brooms or shovels for the general cleanup of dry materials
 - If water is used, it must be collected and properly disposed of. The wash water cannot be allowed to enter the stormwater drainage system.
 - Dispose of any waste materials properly.
 - Clean or dispose of any equipment used to clean up the spill properly.
- Large non-hazardous spills
 - Use absorbent materials for general cleanup of liquids.
 - Use brooms, shovels or street sweepers for the general cleanup of dry materials.
 - If water is used, it must be collected and properly disposed of. The wash water cannot be allowed to enter the stormwater drainage system.
 - Dispose of any waste materials properly.
- Clean or dispose of any equipment used to clean up the spill properly.
- For hazardous or very large spills, the Fire Department and/or a private cleanup contractor may need to be contacted to assess the situation and conduct the cleanup and disposal of the materials. Keep spill contractor contact information available for all employees.
- Chemical cleanups of material can be achieved with the use of absorbents, gels, and foams.
- Remove the adsorbent materials promptly and dispose of according to regulations.
- If the spilled material is hazardous, then the used cleanup materials (rags) are also hazardous and must be sent to a certified laundry facility or disposed of as hazardous waste.

Reporting

- Report any spills immediately to key spill response personnel.
- Report spills in accordance with applicable reporting laws. Spills that pose an immediate threat to human health or the environment must be reported immediately.
- Federal regulations require that any oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hour).

- After the spill has been contained and cleaned up, a detailed report about the incident should be generated and kept on file. The incident may also be used in briefing staff about proper procedures.

Inspection Procedures

- Inspect secondary containment systems periodically to identify any operational problems.
- Inspect containers for leaks, areas near catch basins and stormwater outlets, and floor drains for indications of spills.

Maintenance Procedures

- Protect drains with oil absorbent materials.
- Clean out catch basins on regular schedule (annually).
- Repair any damage secondary containment structures and replace all containers that have leaks.

Arcadis U.S., Inc.

500 Edgewater Drive

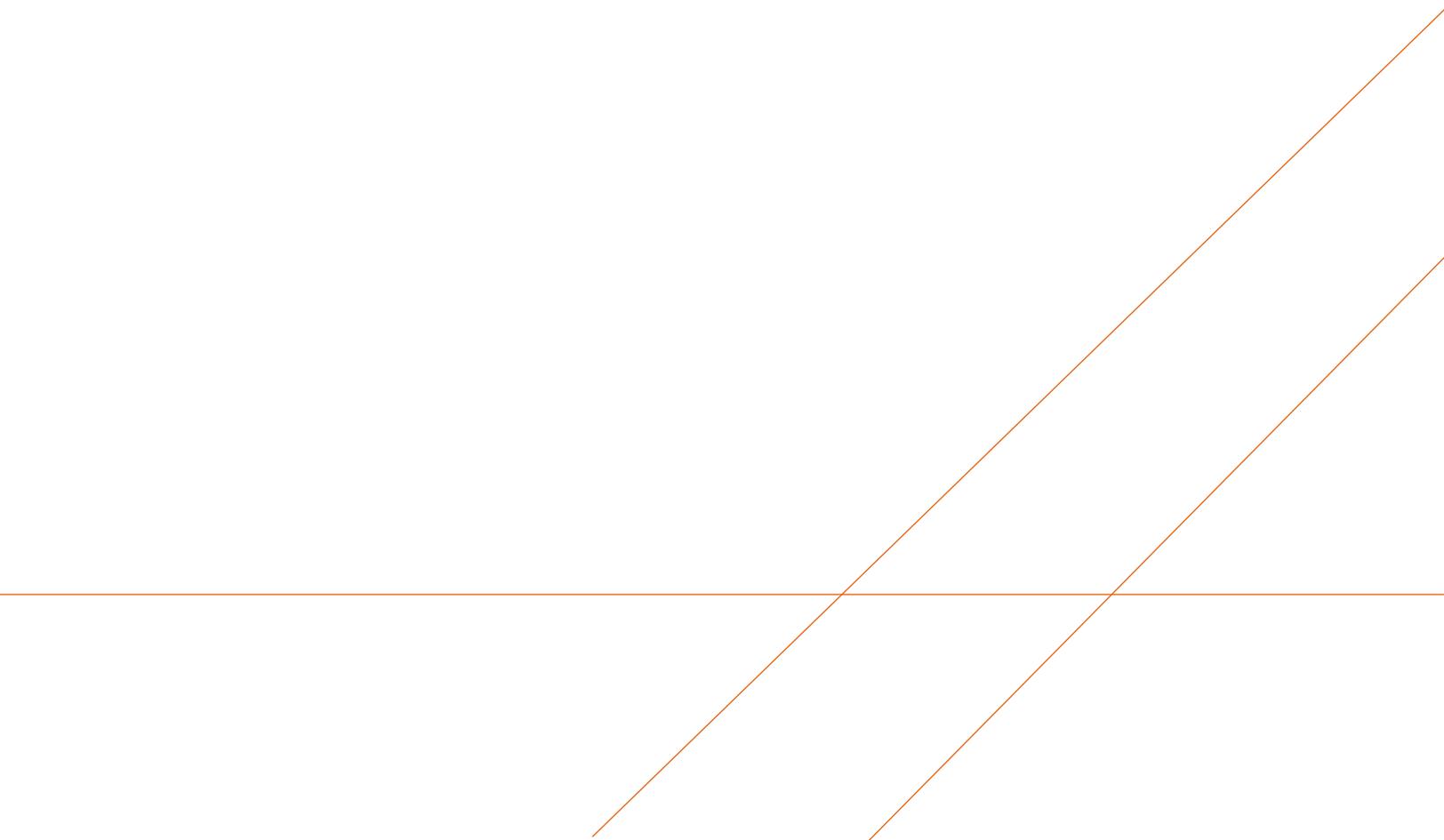
Suite 511

Wakefield, Massachusetts 01880

Tel 781 224 4488

Fax

www.arcadis.com



Appendix A: BMP Activities Assessment & Pollution Prevention Team





Town of Stoneham

Pollution Prevention Team

Facility: DPW Garage

Name:	Title:
Brett Gonsalves	Director of Public Works
Eric Richard	Deputy Director of Public Works



Town of Stoneham

Pollution Prevention Team

Facility: Stevens St. Recycling Center

Name:	Title:
Brett Gonsalves	Director of Public Works
Eric Richard	Deputy Director of Public Works

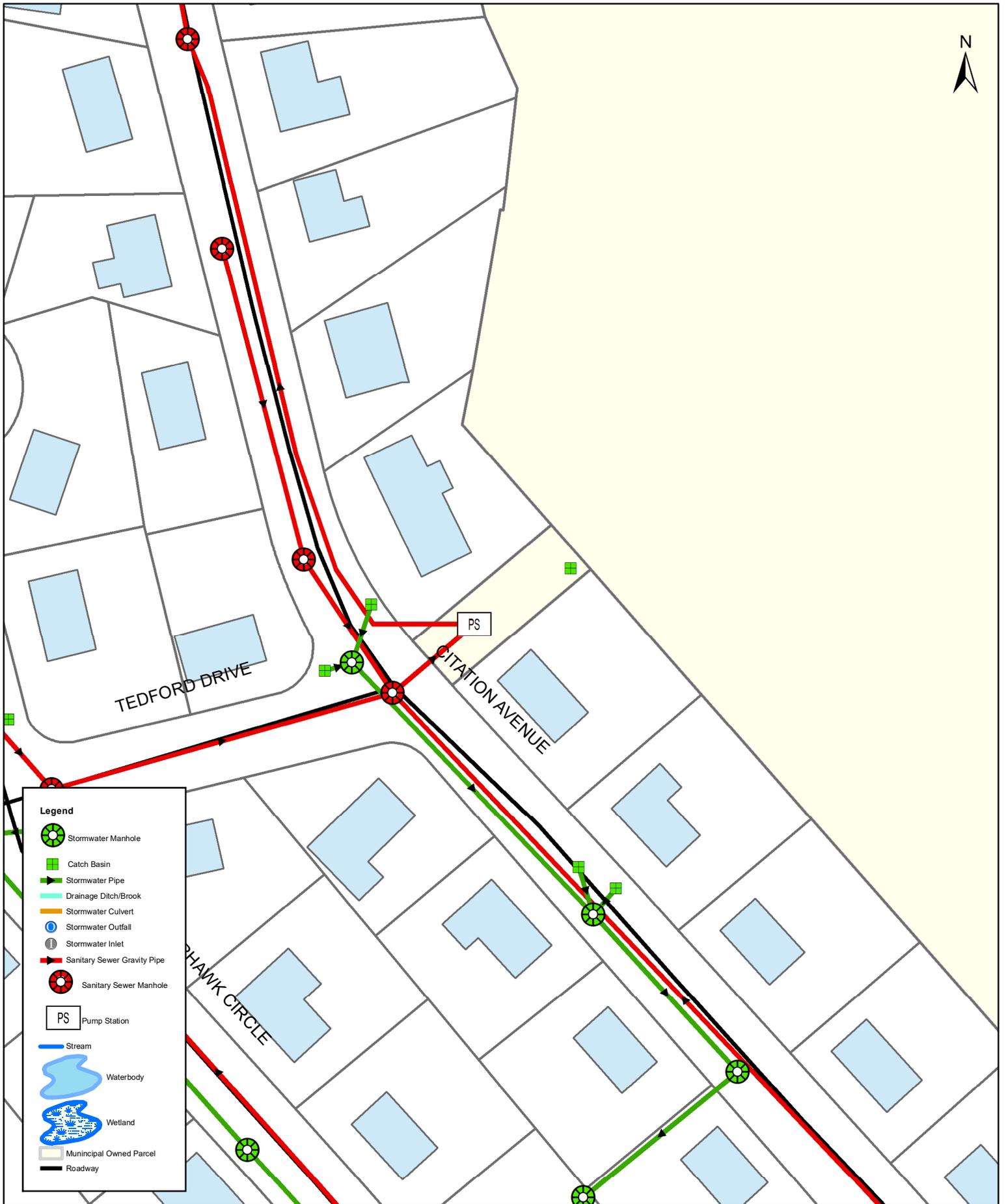
The following facilities require a SWPPP in accordance with the National Pollutant Discharge Elimination System (NPDES) General Permit for small Municipal Separate Storm Sewer Systems (MS4):

1. DPW Garage
2. Stevens St. Recycling Center
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

The SWPPP facilities list will be updated as needed. The Pollution Prevention Team can be found in Appendix A. The facility description and floor drains for the SWPPP facilities can be found on the Facility Stormwater System Maps in Appendix B.

Appendix B: Facility Stormwater System Maps





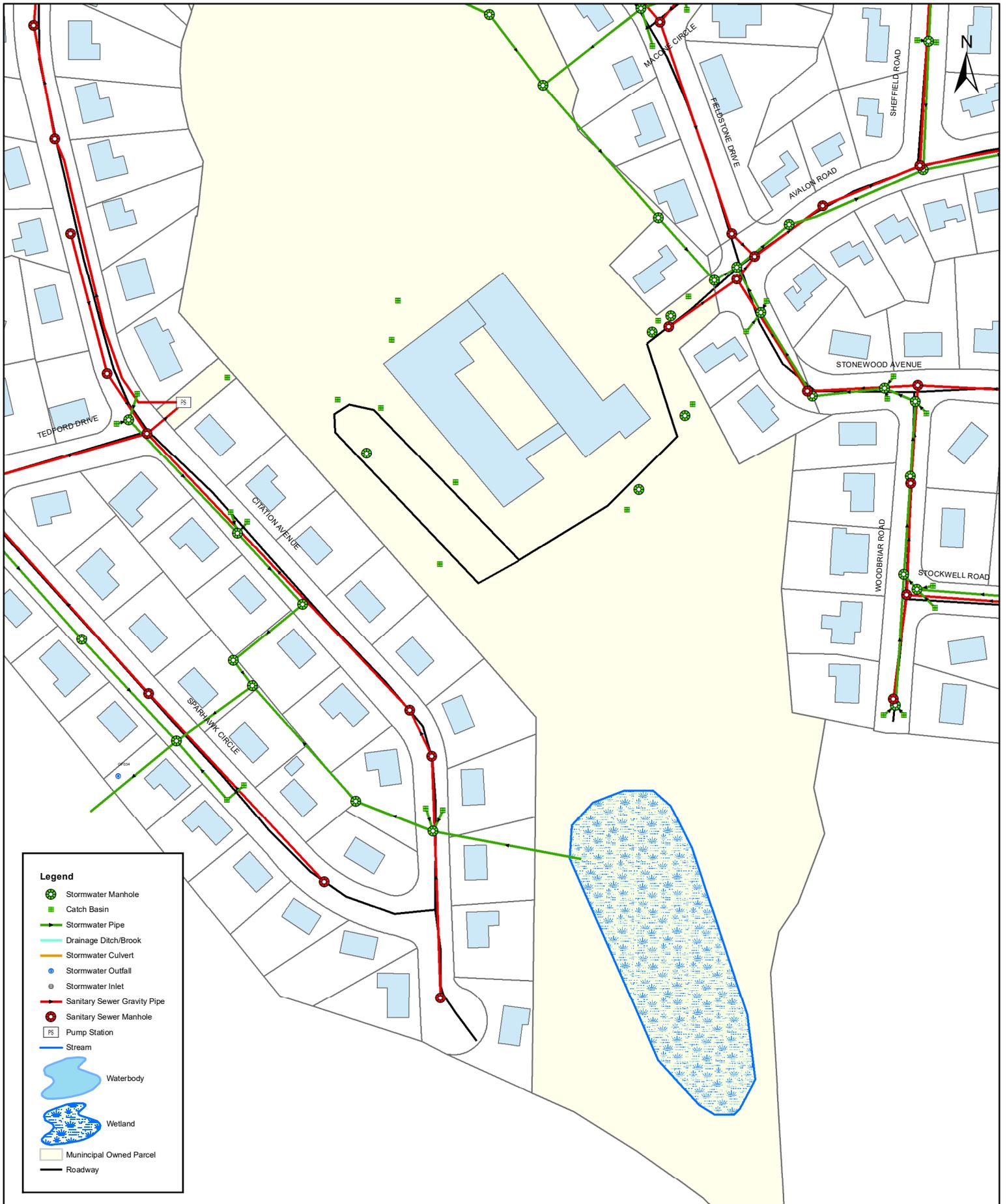
Legend

- Stormwater Manhole
- Catch Basin
- Stormwater Pipe
- Drainage Ditch/Brook
- Stormwater Culvert
- Stormwater Outfall
- Stormwater Inlet
- Sanitary Sewer Gravity Pipe
- Sanitary Sewer Manhole
- Pump Station
- Stream
- Waterbody
- Wetland
- Municipal Owned Parcel
- Roadway



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Citation Avenue Pumping Station
Address: Citation Ave.



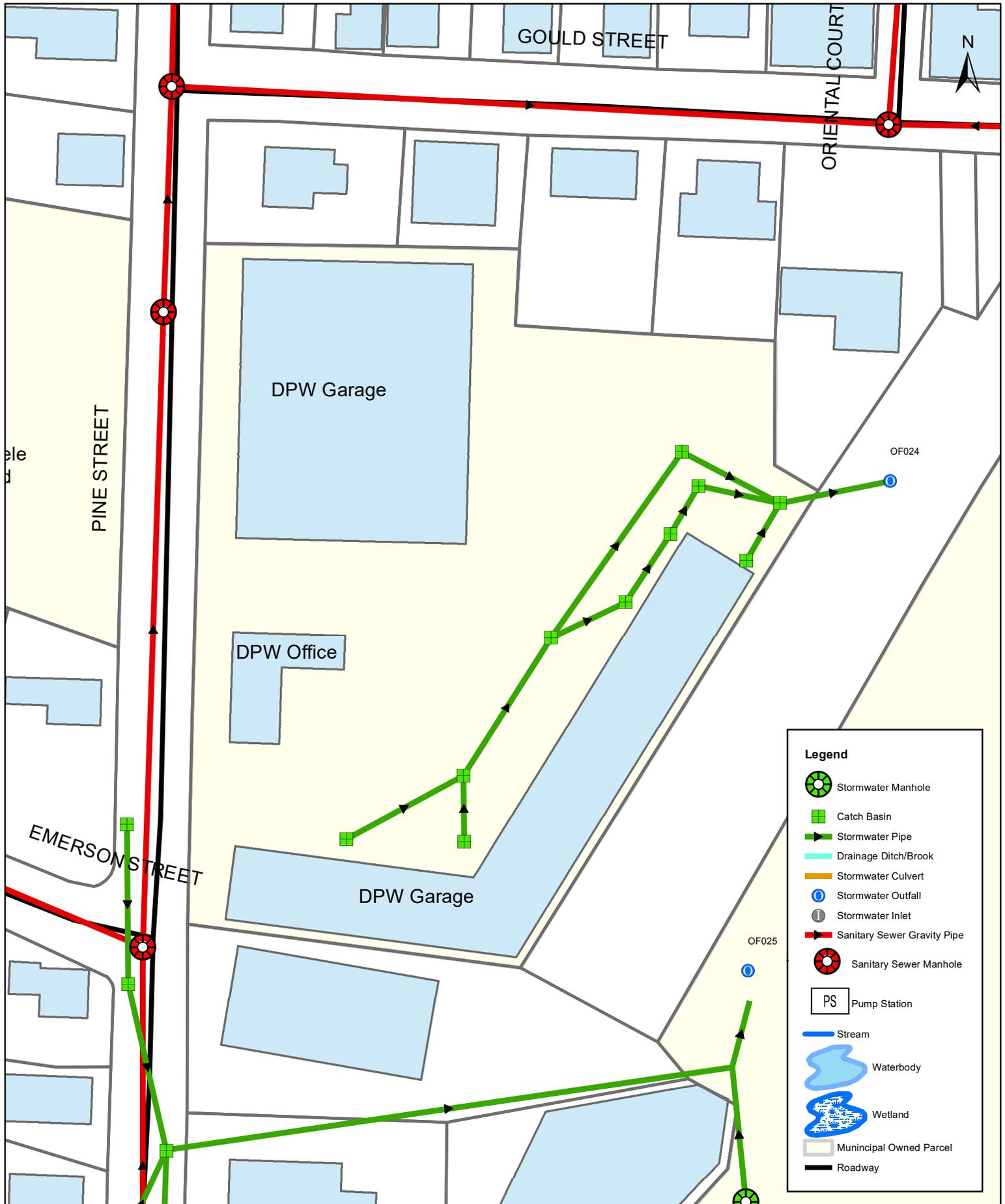
Legend

- Stormwater Manhole
- Catch Basin
- Stormwater Pipe
- Drainage Ditch/Brook
- Stormwater Culvert
- Stormwater Outfall
- Stormwater Inlet
- Sanitary Sewer Gravity Pipe
- Sanitary Sewer Manhole
- Pump Station
- Stream
- Waterbody
- Wetland
- Municipal Owned Parcel
- Roadway



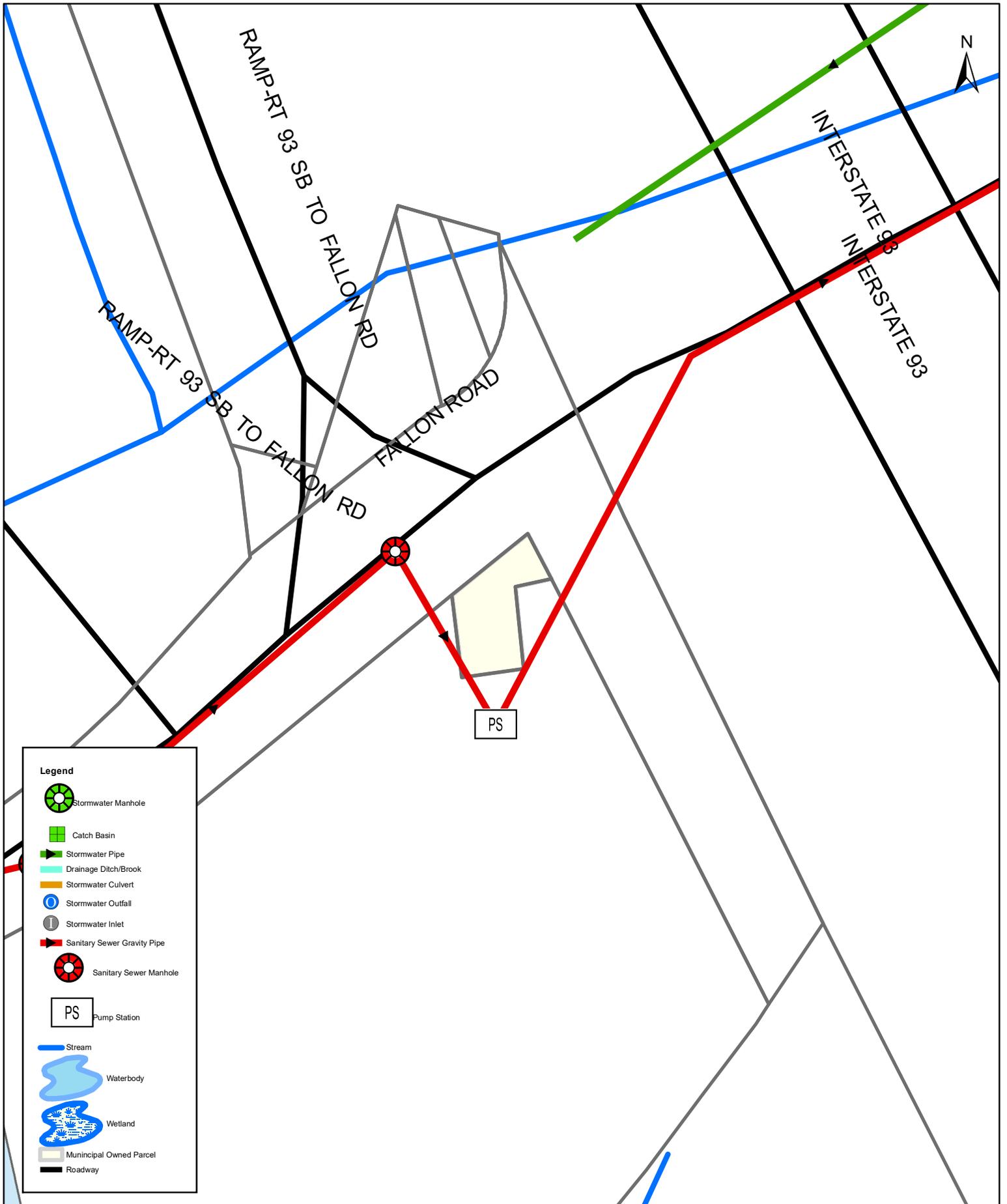
**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Colonial Park Elementary School
Address: 30 Avalon Rd.



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: DPW Garage and Office
Address: 16 Pine St.



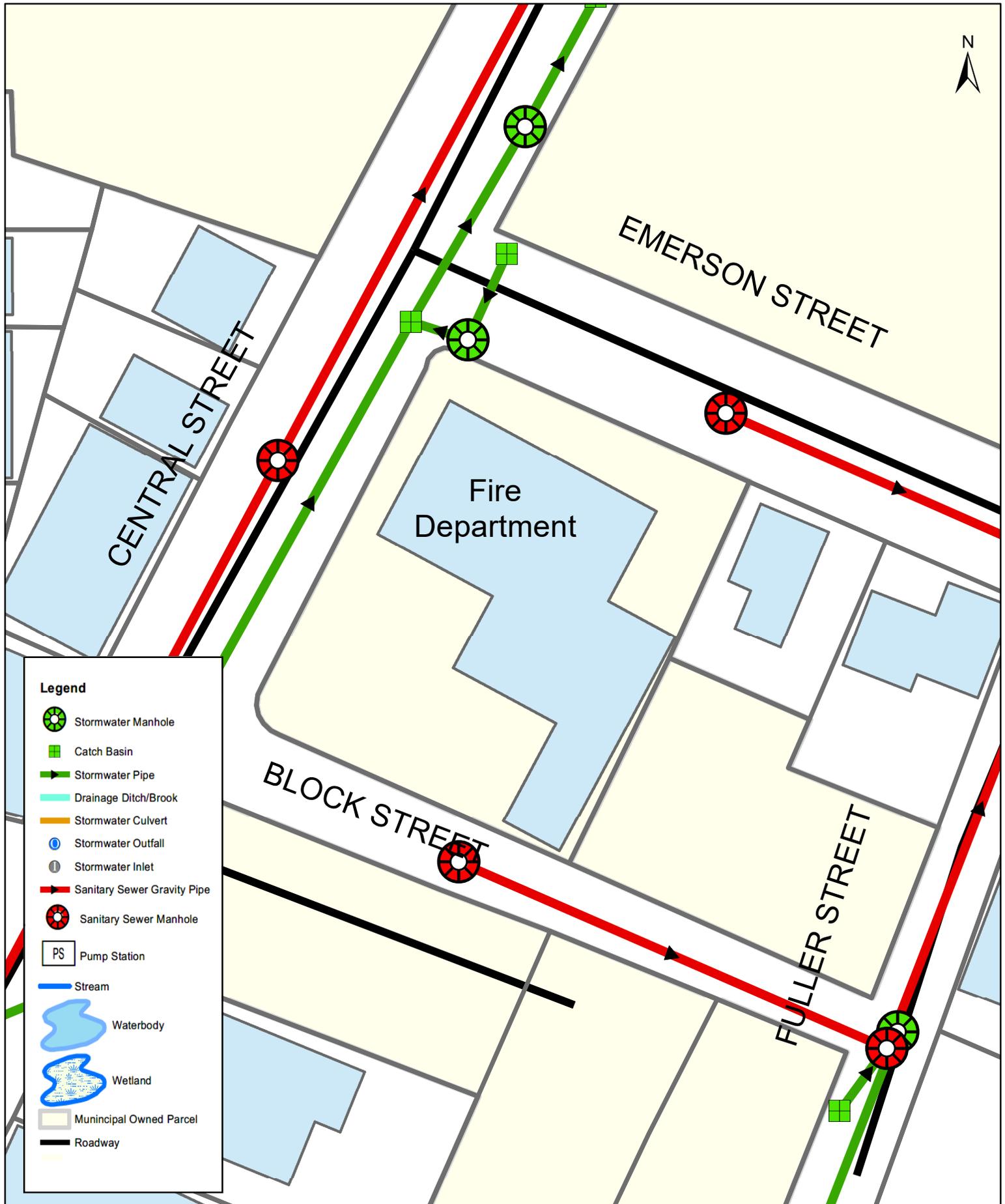
Legend

-  Stormwater Manhole
-  Catch Basin
-  Stormwater Pipe
-  Drainage Ditch/Brook
-  Stormwater Culvert
-  Stormwater Outfall
-  Stormwater Inlet
-  Sanitary Sewer Gravity Pipe
-  Sanitary Sewer Manhole
-  PS Pump Station
-  Stream
-  Waterbody
-  Wetland
-  Municipal Owned Parcel
-  Roadway



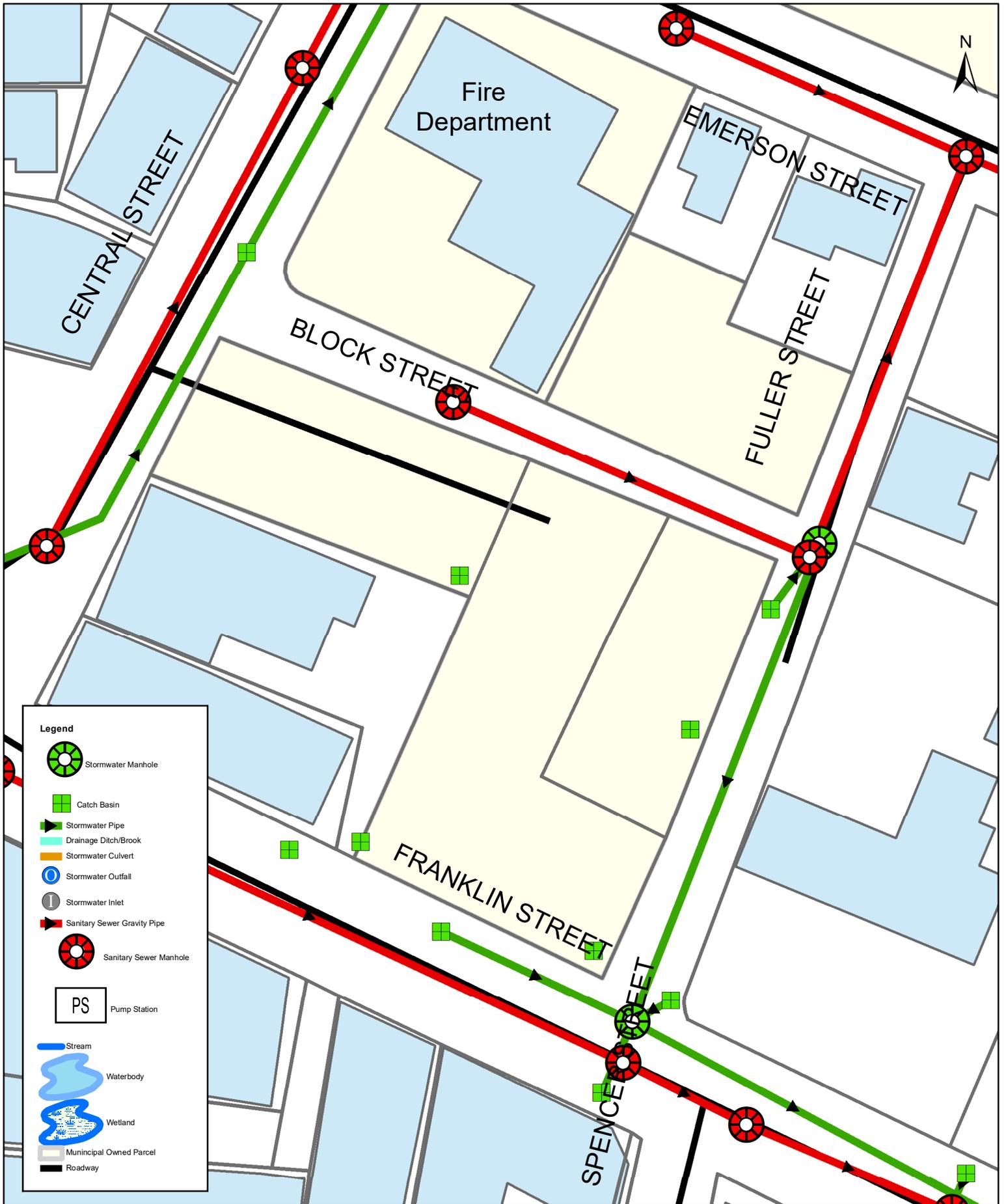
**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Fallon Road Pumping Station
Address: Fallon Rd.



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Fire Department
Address: 25 Central St



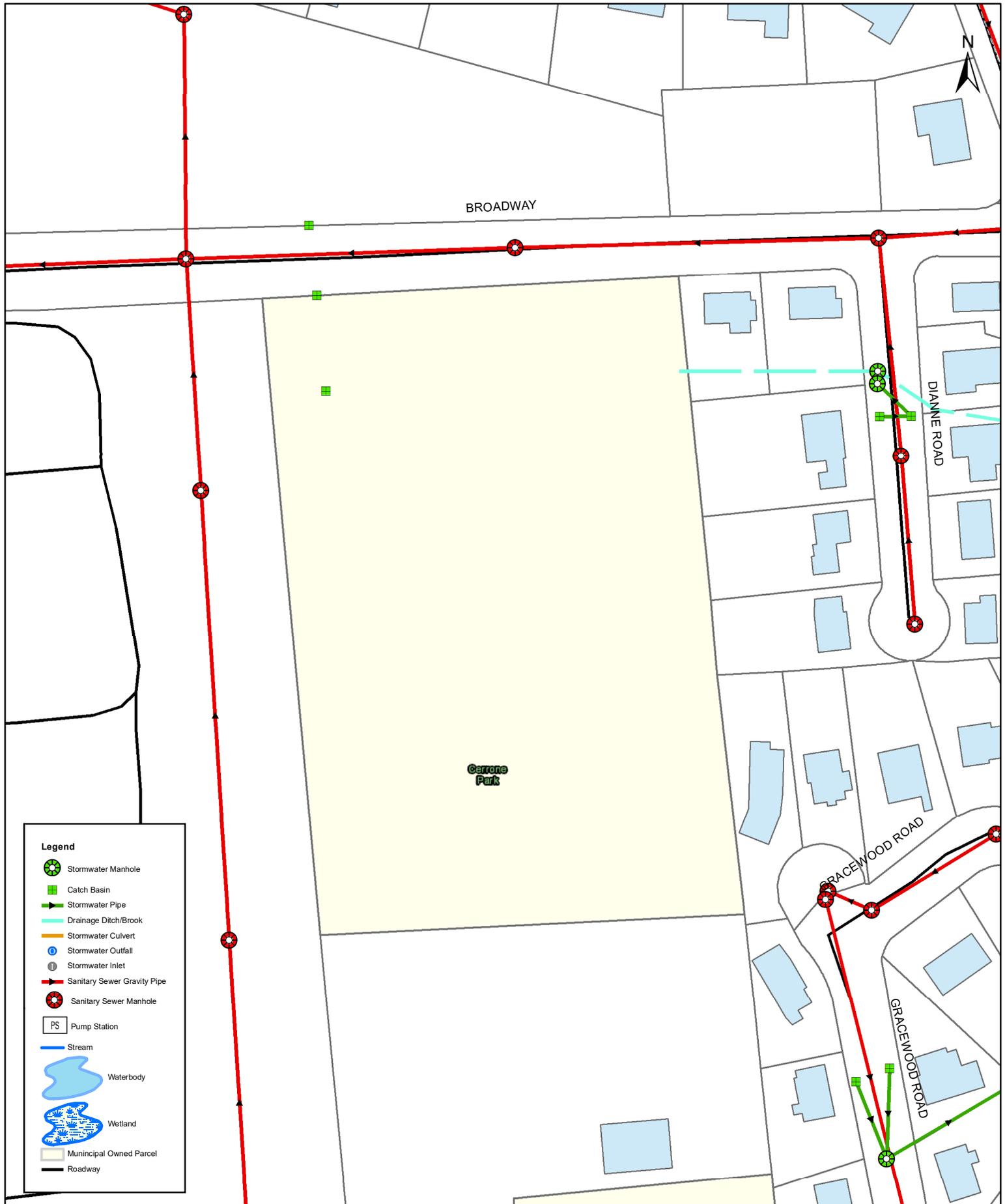
Legend

- Stormwater Manhole
- Catch Basin
- Stormwater Pipe
- Drainage Ditch/Brook
- Stormwater Culvert
- Stormwater Outfall
- Stormwater Inlet
- Sanitary Sewer Gravity Pipe
- Sanitary Sewer Manhole
- PS Pump Station
- Stream
- Waterbody
- Wetland
- Municipal Owned Parcel
- Roadway



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Fuller Street Parking Lot
Address: Fuller St.



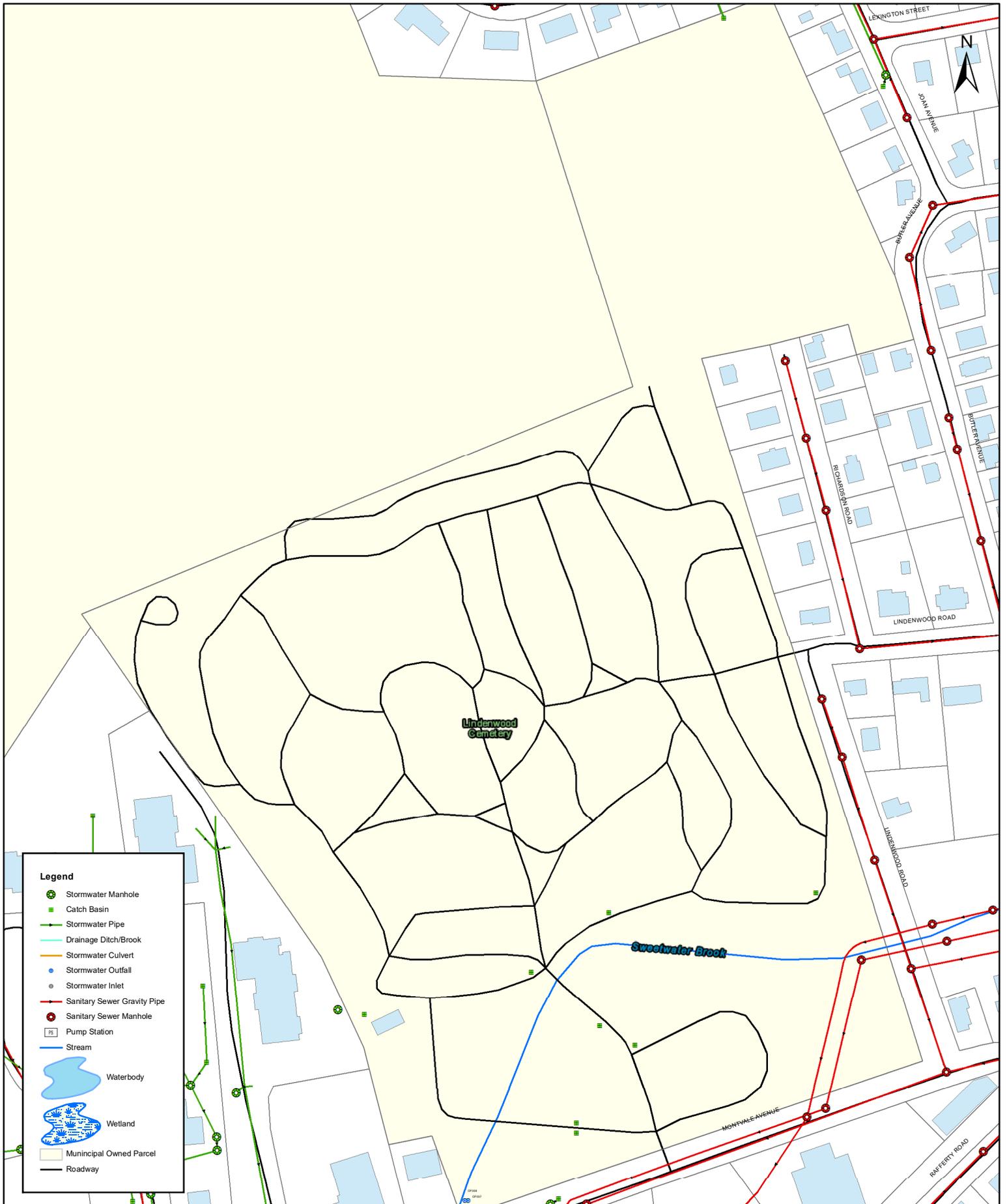
Legend

-  Stormwater Manhole
-  Catch Basin
-  Stormwater Pipe
-  Drainage Ditch/Brook
-  Stormwater Culvert
-  Stormwater Outfall
-  Stormwater Inlet
-  Sanitary Sewer Gravity Pipe
-  Sanitary Sewer Manhole
-  PS Pump Station
-  Stream
-  Waterbody
-  Wetland
-  Municipal Owned Parcel
-  Roadway



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Joseph C. Cerrone Memorial Park
Address: 255 Broadway



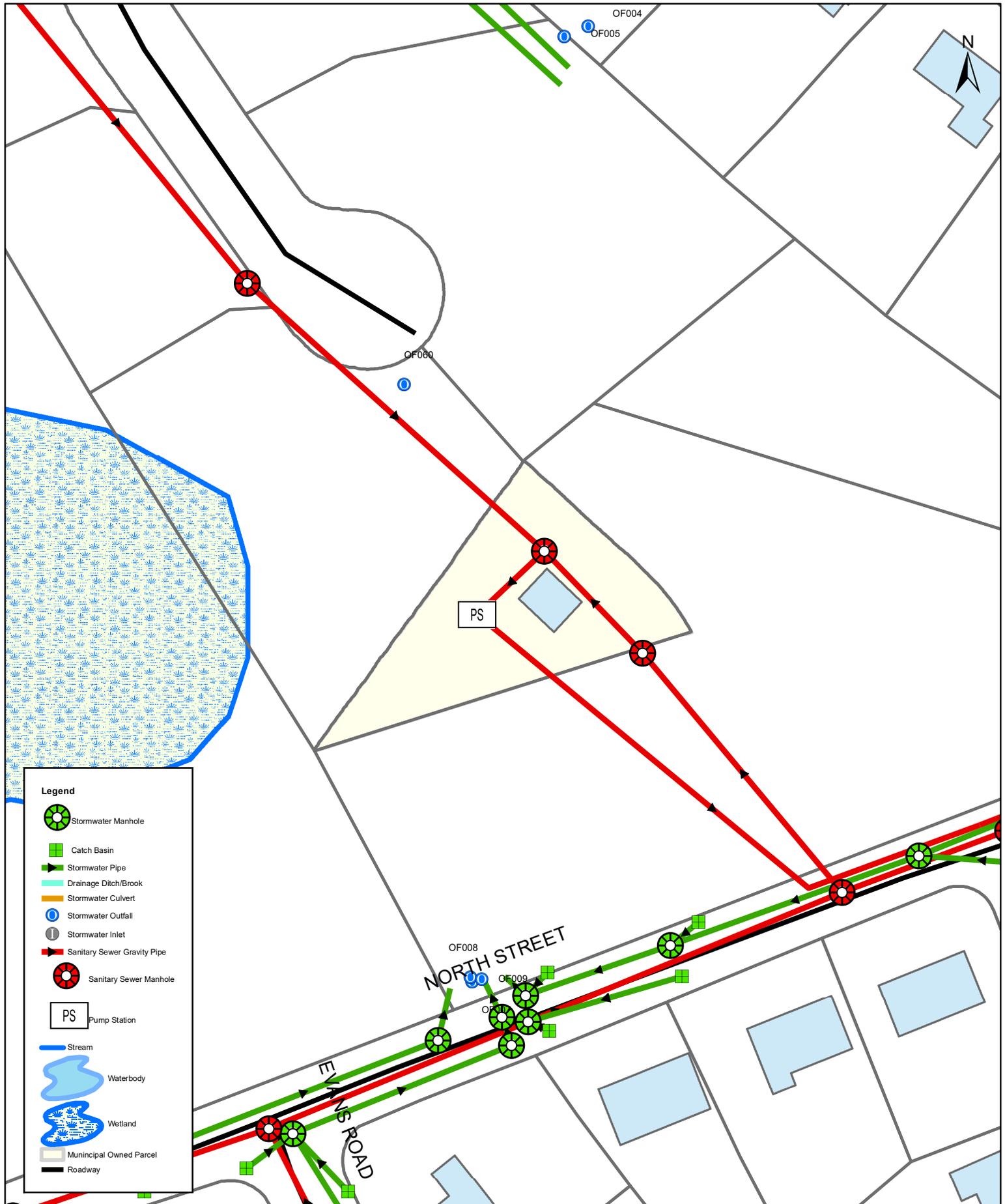
Legend

- Stormwater Manhole
- Catch Basin
- Stormwater Pipe
- Drainage Ditch/Brook
- Stormwater Culvert
- Stormwater Outfall
- Stormwater Inlet
- Sanitary Sewer Gravity Pipe
- Sanitary Sewer Manhole
- PS Pump Station
- Stream
- Waterbody
- Wetland
- Municipal Owned Parcel
- Roadway



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Lindenwood Cemetery
Address: Montvale Ave.



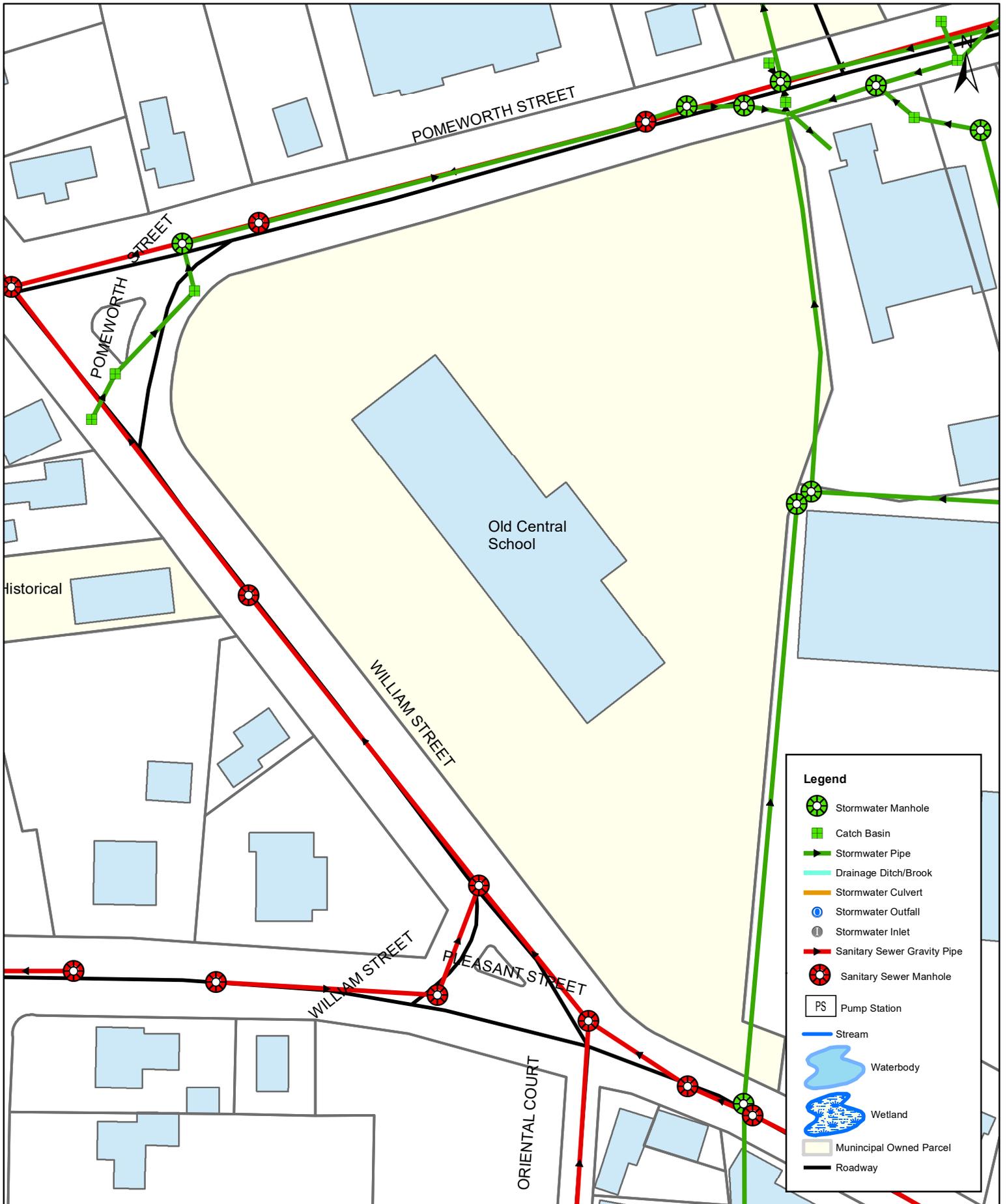
Legend

-  Stormwater Manhole
-  Catch Basin
-  Stormwater Pipe
-  Drainage Ditch/Brook
-  Stormwater Culvert
-  Stormwater Outfall
-  Stormwater Inlet
-  Sanitary Sewer Gravity Pipe
-  Sanitary Sewer Manhole
-  Pump Station
-  Stream
-  Waterbody
-  Wetland
-  Municipal Owned Parcel
- Roadway



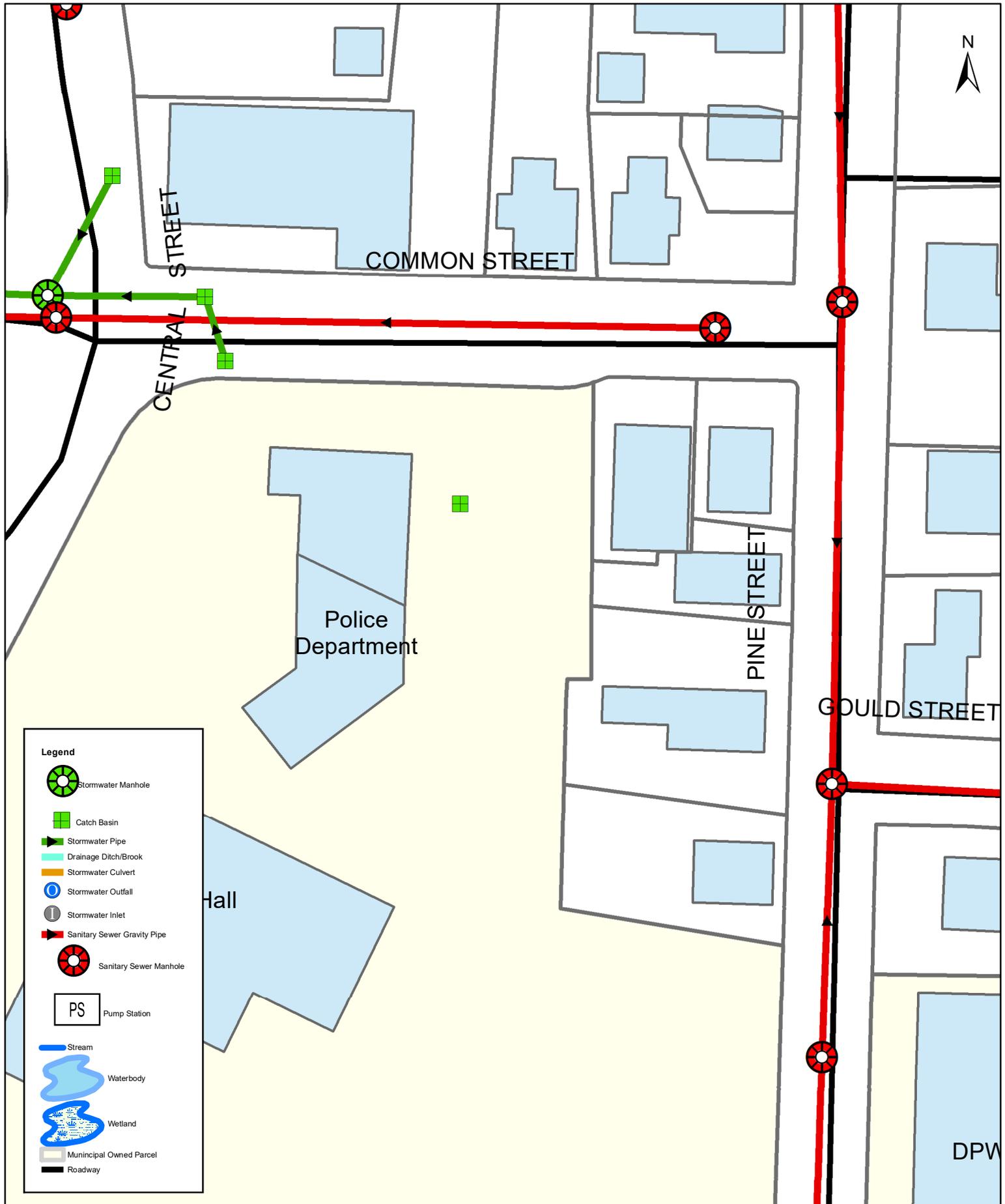
**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: North Street Pumping Station
Address: North St.



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Old Central School
Address: 25 William St.



Legend

-  Stormwater Manhole
-  Catch Basin
-  Stormwater Pipe
-  Drainage Ditch/Brook
-  Stormwater Culvert
-  Stormwater Outfall
-  Stormwater Inlet
-  Sanitary Sewer Gravity Pipe
-  Sanitary Sewer Manhole
-  Pump Station
-  Stream
-  Waterbody
-  Wetland
-  Municipal Owned Parcel
-  Roadway



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Police Department
Address: 47 Central St.



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Pomeworth Field
Address: Calthea St.



Legend

- Stormwater Manhole
- Catch Basin
- Stormwater Pipe
- Drainage Ditch/Brook
- Stormwater Culvert
- Stormwater Outfall
- Stormwater Inlet
- Sanitary Sewer Gravity Pipe
- Sanitary Sewer Manhole
- Pump Station
- Stream
- Waterbody
- Wetland
- Municipal Owned Parcel
- Roadway



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Recreation Park
Address: 99 Dale Ct.



Longbow Road

Rita Road

OF010

OF011

Hall Road

PS

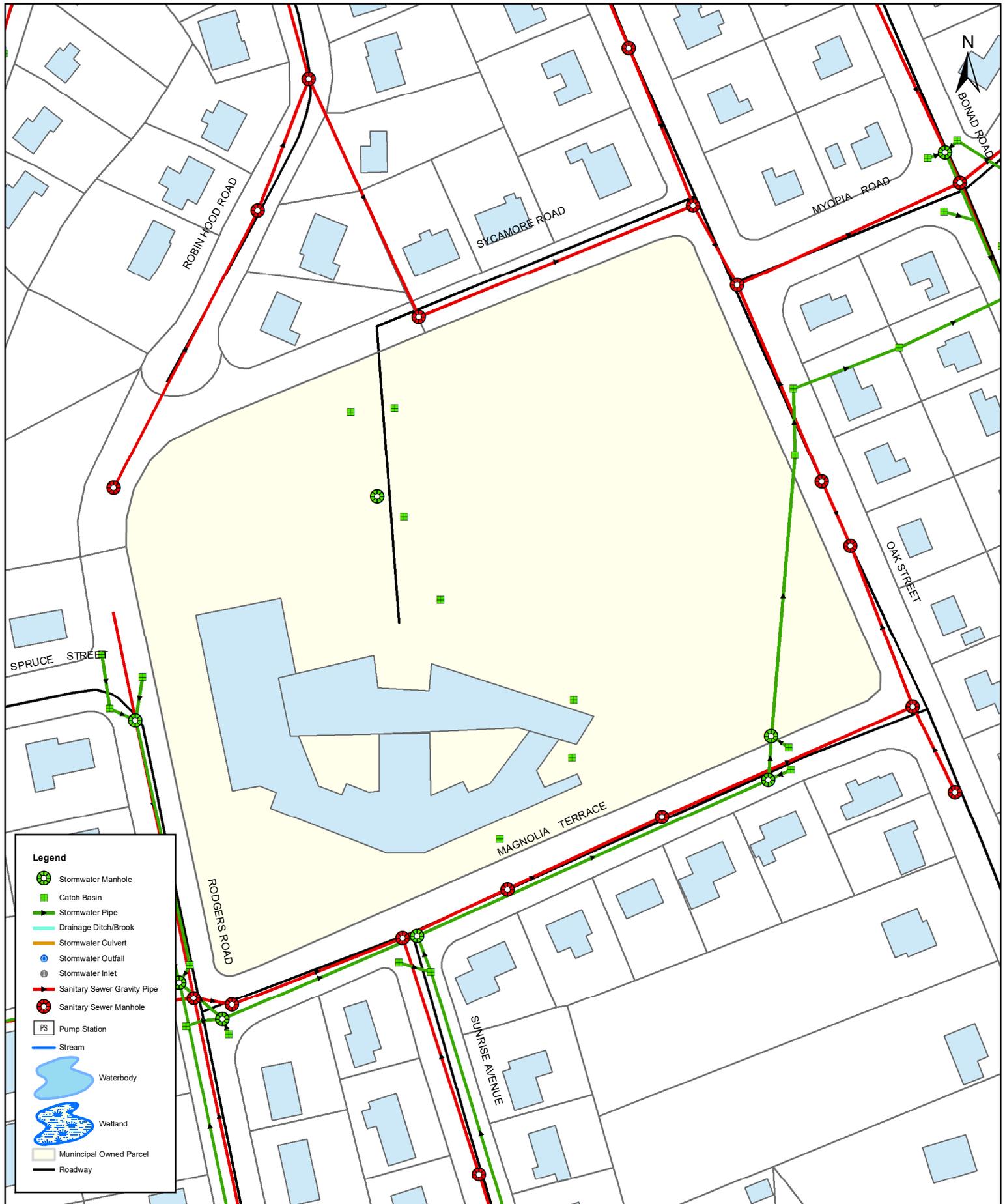
Legend

-  Stormwater Manhole
-  Catch Basin
-  Stormwater Pipe
-  Drainage Ditch/Brook
-  Stormwater Culvert
-  Stormwater Outfall
-  Stormwater Inlet
-  Sanitary Sewer Gravity Pipe
-  Sanitary Sewer Manhole
-  Pump Station
-  Stream
-  Waterbody
-  Wetland
-  Municipal Owned Parcel
-  Roadway



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Rita Road Pumping Station
Address: Rita Rd.



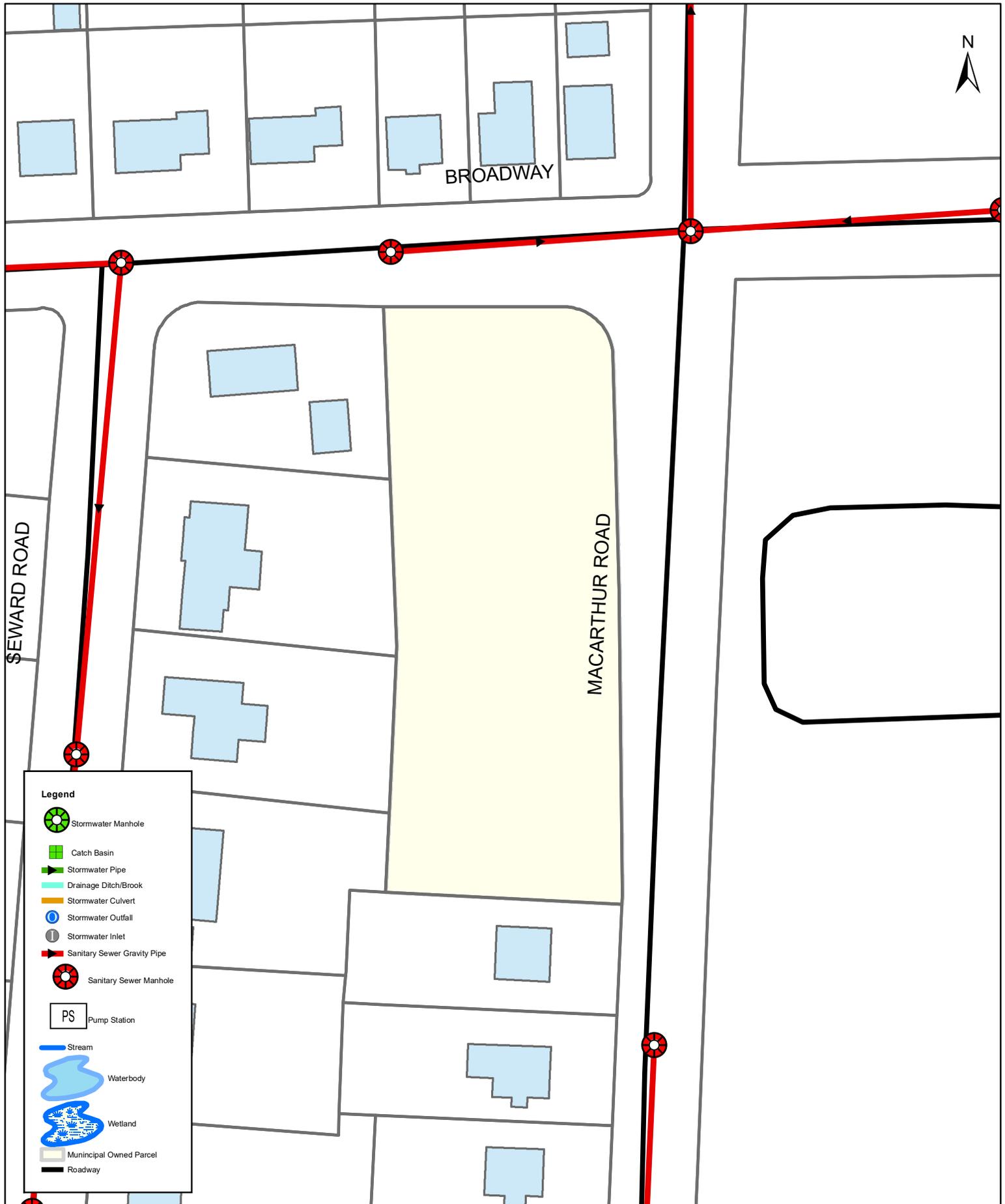
Legend

-  Stormwater Manhole
-  Catch Basin
-  Stormwater Pipe
-  Drainage Ditch/Brook
-  Stormwater Culvert
-  Stormwater Outfall
-  Stormwater Inlet
-  Sanitary Sewer Gravity Pipe
-  Sanitary Sewer Manhole
-  Pump Station
-  Stream
-  Waterbody
-  Wetland
-  Municipal Owned Parcel
-  Roadway



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Robin Hood Elementary School
Address: 70 Oak St.



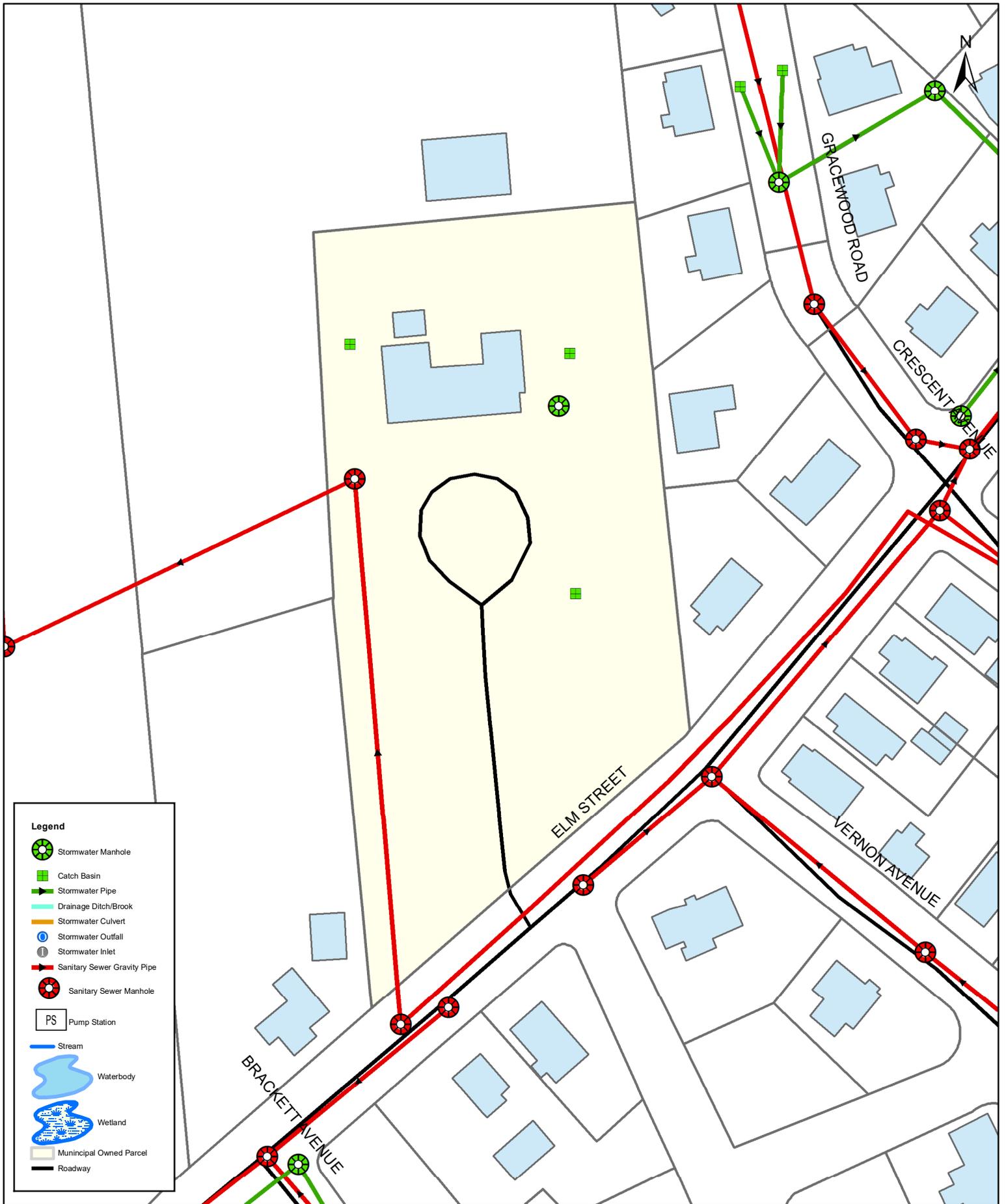
Legend

-  Stormwater Manhole
-  Catch Basin
-  Stormwater Pipe
-  Drainage Ditch/Brook
-  Stormwater Culvert
-  Stormwater Outfall
-  Stormwater Inlet
-  Sanitary Sewer Gravity Pipe
-  Sanitary Sewer Manhole
-  Pump Station
-  Stream
-  Waterbody
-  Wetland
-  Municipal Owned Parcel
-  Roadway



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Rounds Playground
Address: MacArthur Rd.



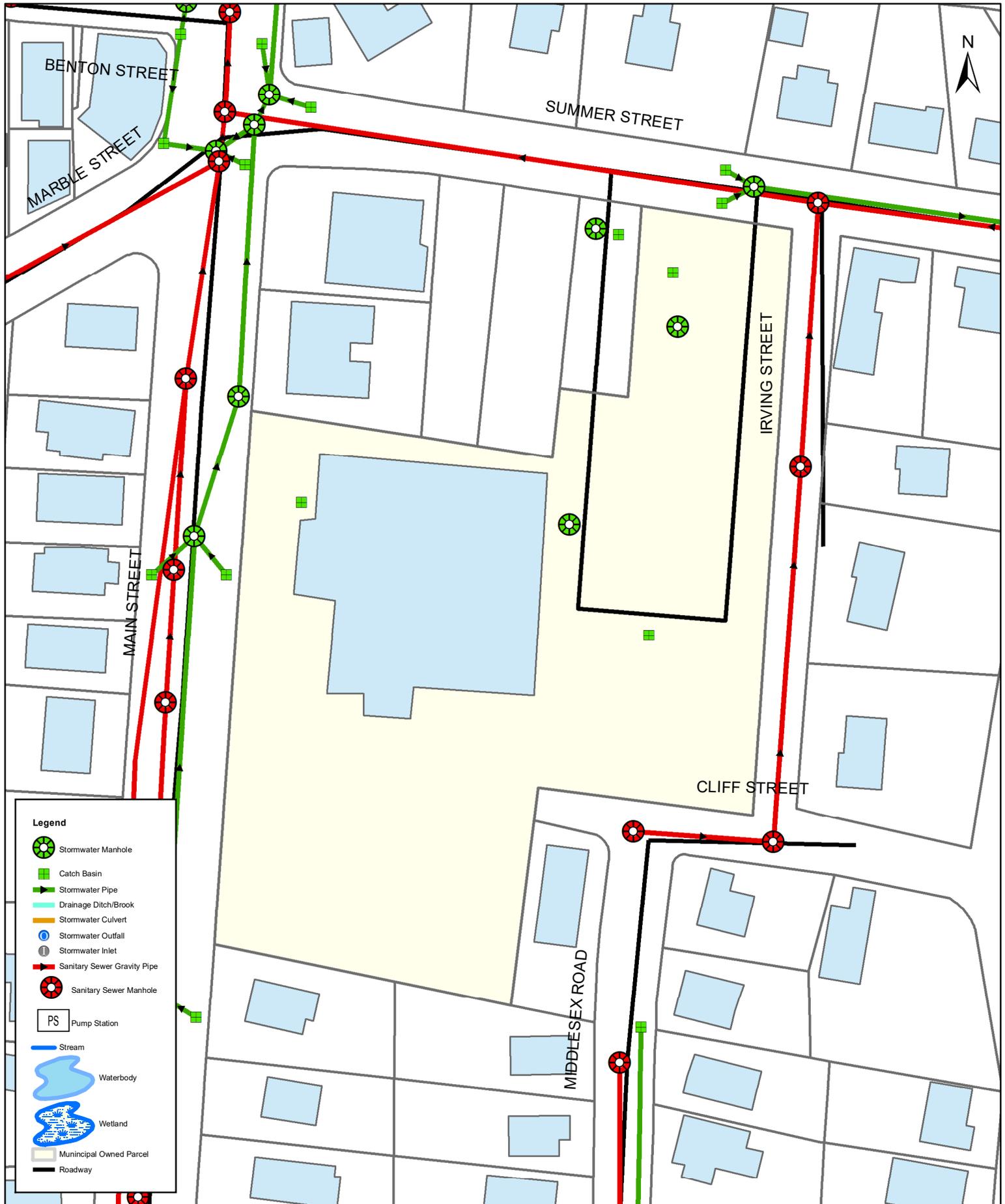
Legend

-  Stormwater Manhole
-  Catch Basin
-  Stormwater Pipe
-  Drainage Ditch/Brook
-  Stormwater Culvert
-  Stormwater Outfall
-  Stormwater Inlet
-  Sanitary Sewer Gravity Pipe
-  Sanitary Sewer Manhole
-  Pump Station
-  Stream
-  Waterbody
-  Wetland
-  Municipal Owned Parcel
-  Roadway



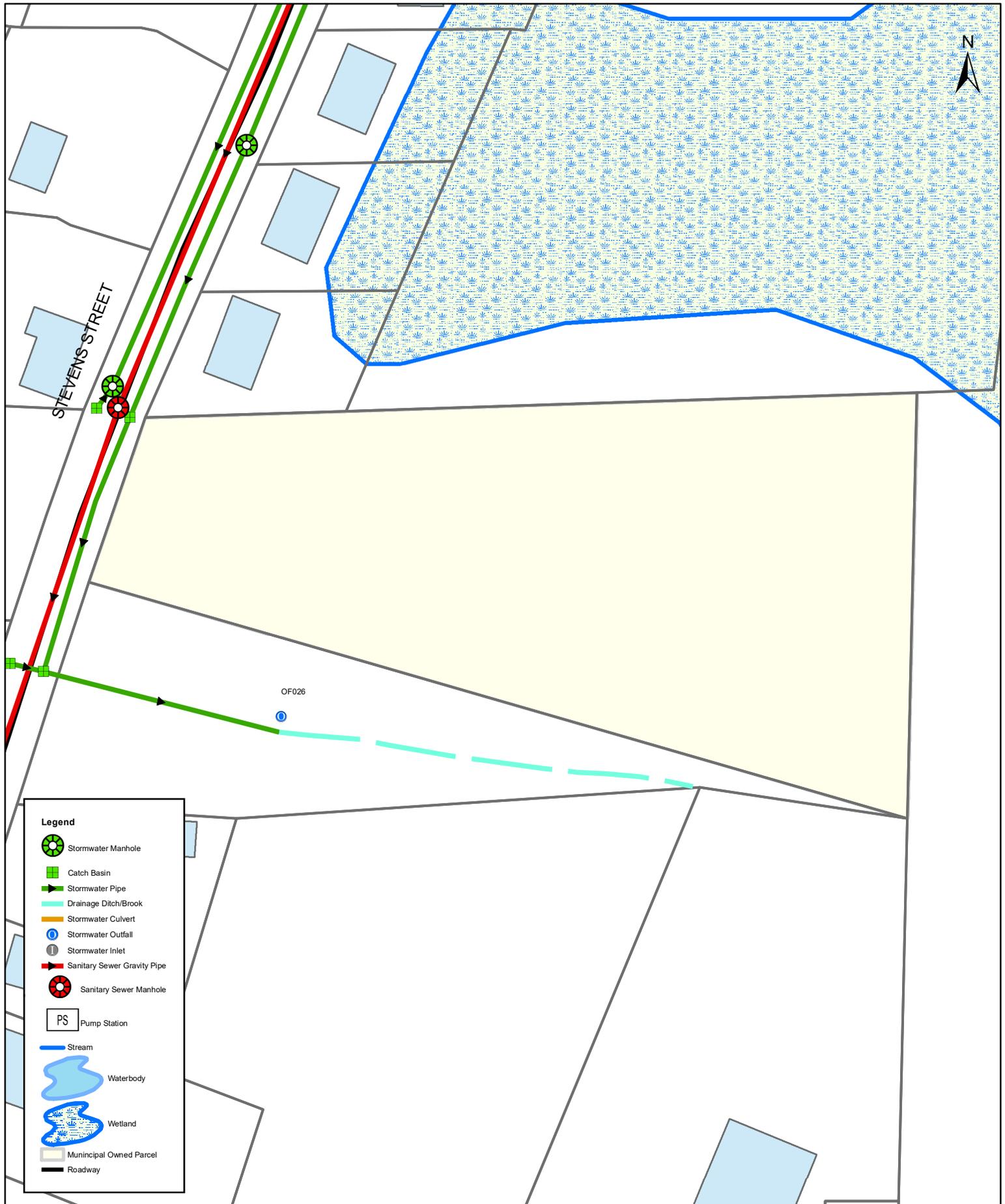
**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Senior Center
Address: 136 Elm St.



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: South Elementary School
Address: 11 Summer St.



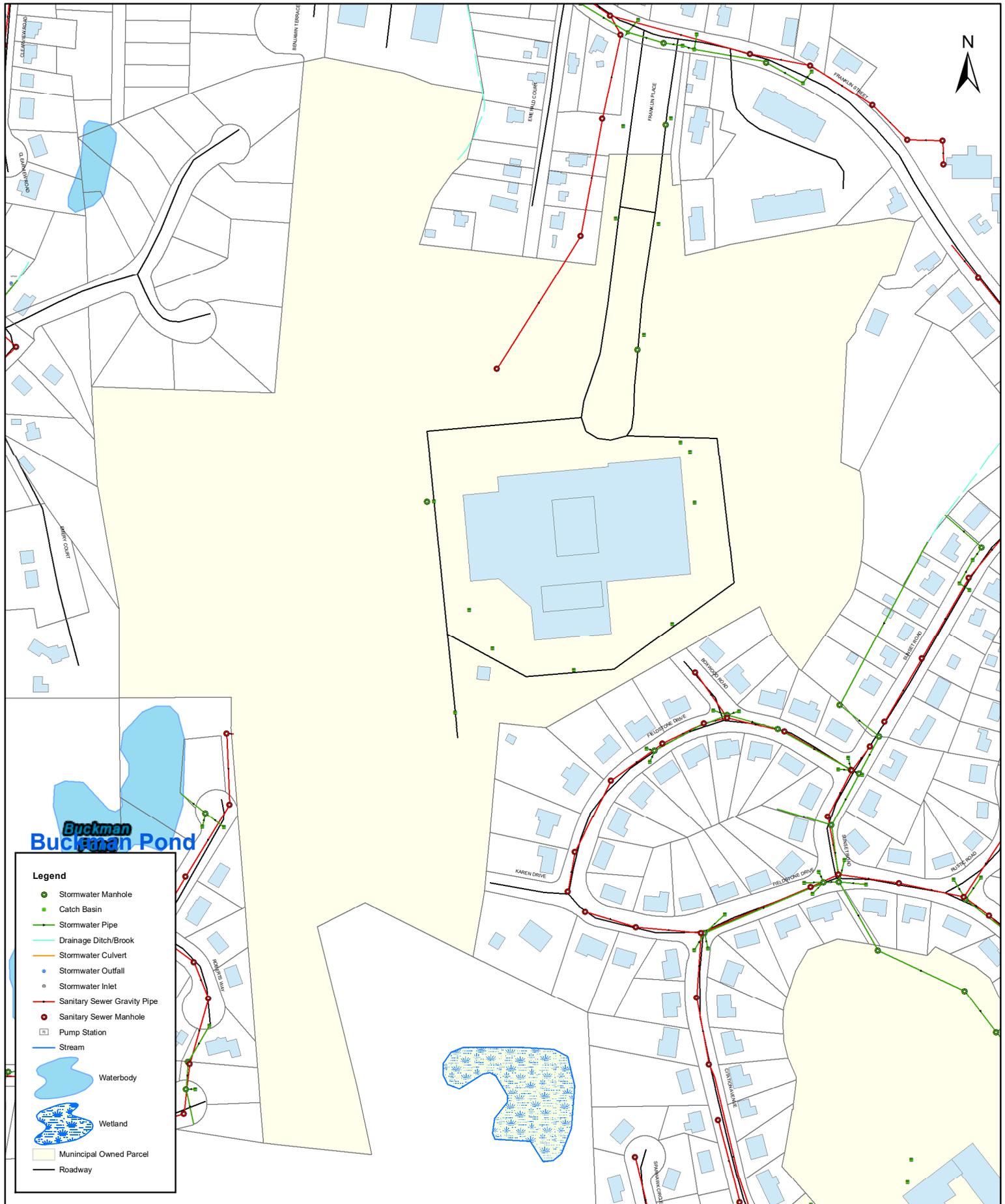
Legend

-  Stormwater Manhole
-  Catch Basin
-  Stormwater Pipe
-  Drainage Ditch/Brook
-  Stormwater Culvert
-  Stormwater Outfall
-  Stormwater Inlet
-  Sanitary Sewer Gravity Pipe
-  Sanitary Sewer Manhole
-  Pump Station
-  Stream
-  Waterbody
-  Wetland
-  Municipal Owned Parcel
-  Roadway



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Stevens Street Recycling Center
Address: 48 Stevens St.



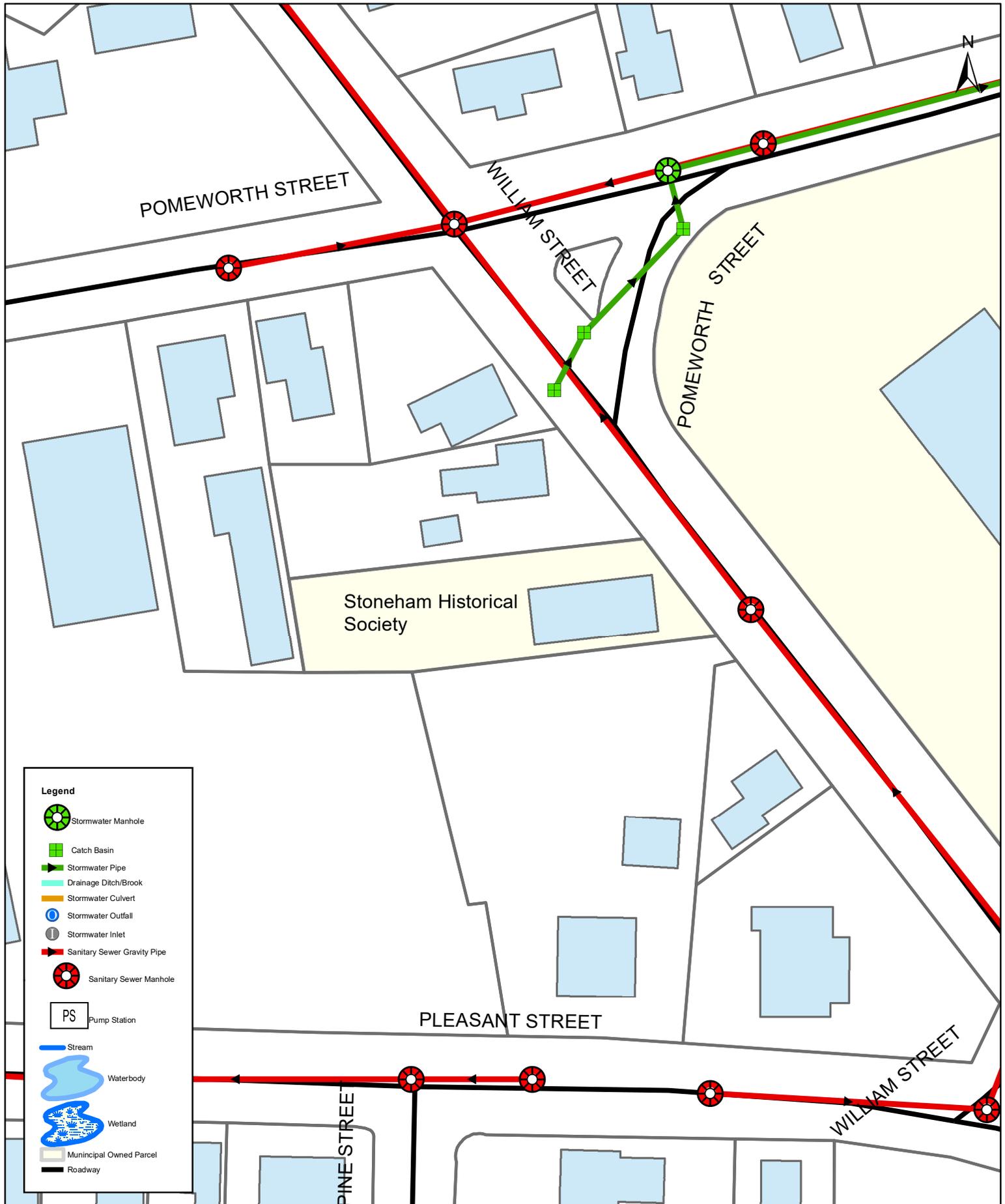
**Buckman
Buckman Pond**

- Legend**
- Stormwater Manhole
 - Catch Basin
 - Stormwater Pipe
 - Drainage Ditch/Brook
 - Stormwater Culvert
 - Stormwater Outfall
 - Stormwater Inlet
 - Sanitary Sewer Gravity Pipe
 - Sanitary Sewer Manhole
 - Pump Station
 - Stream
 - Waterbody
 - Wetland
 - Municipal Owned Parcel
 - Roadway



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Stoneham High School
Address: 149 Franklin St.



Legend

- Stormwater Manhole
- Catch Basin
- Stormwater Pipe
- Drainage Ditch/Brook
- Stormwater Culvert
- Stormwater Outfall
- Stormwater Inlet
- Sanitary Sewer Gravity Pipe
- Sanitary Sewer Manhole
- PS Pump Station
- Stream
- Waterbody
- Wetland
- Municipal Owned Parcel
- Roadway



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Stoneham Historical Society
Address: 36 William St.

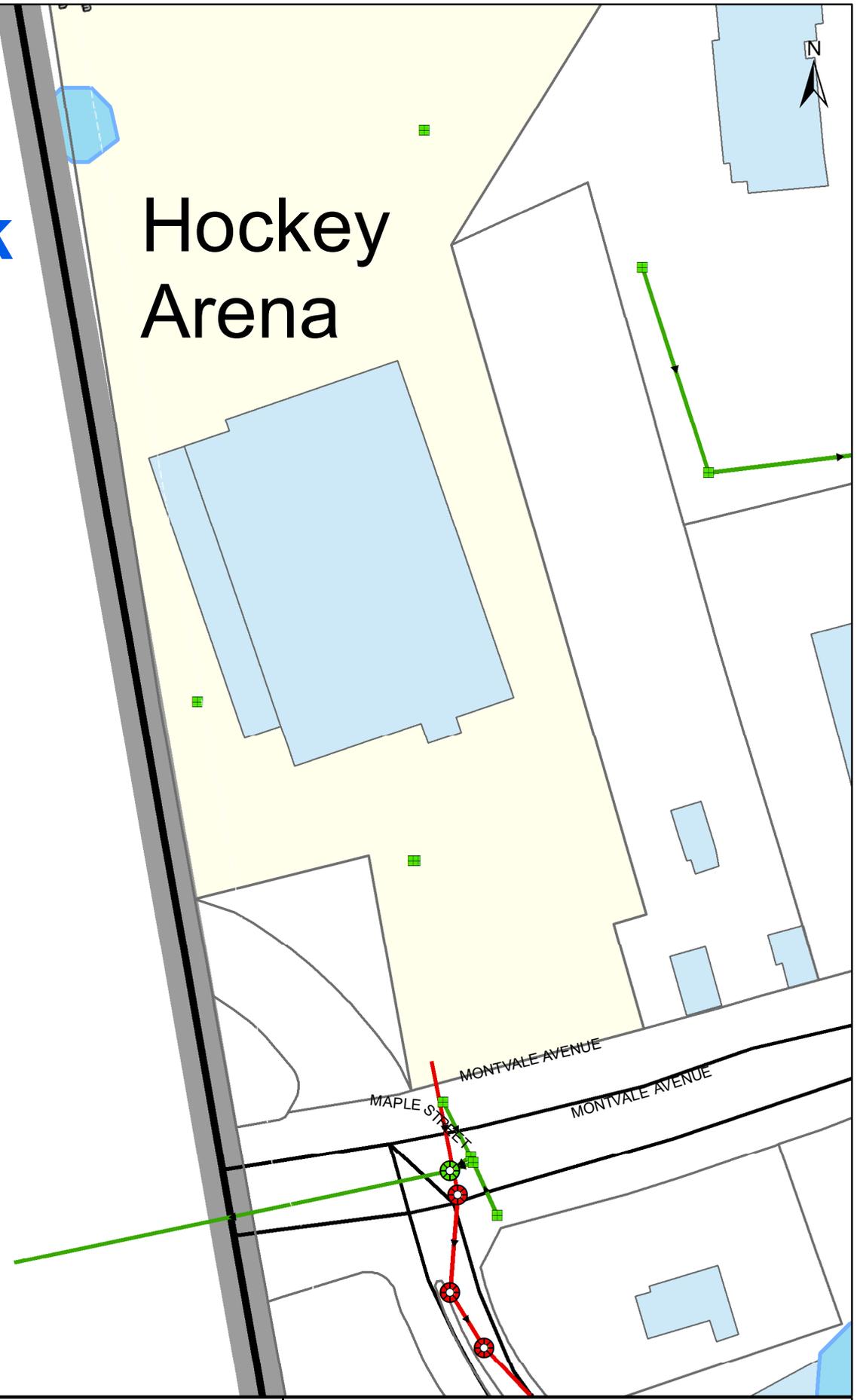
Burbank Pond

Hockey Arena



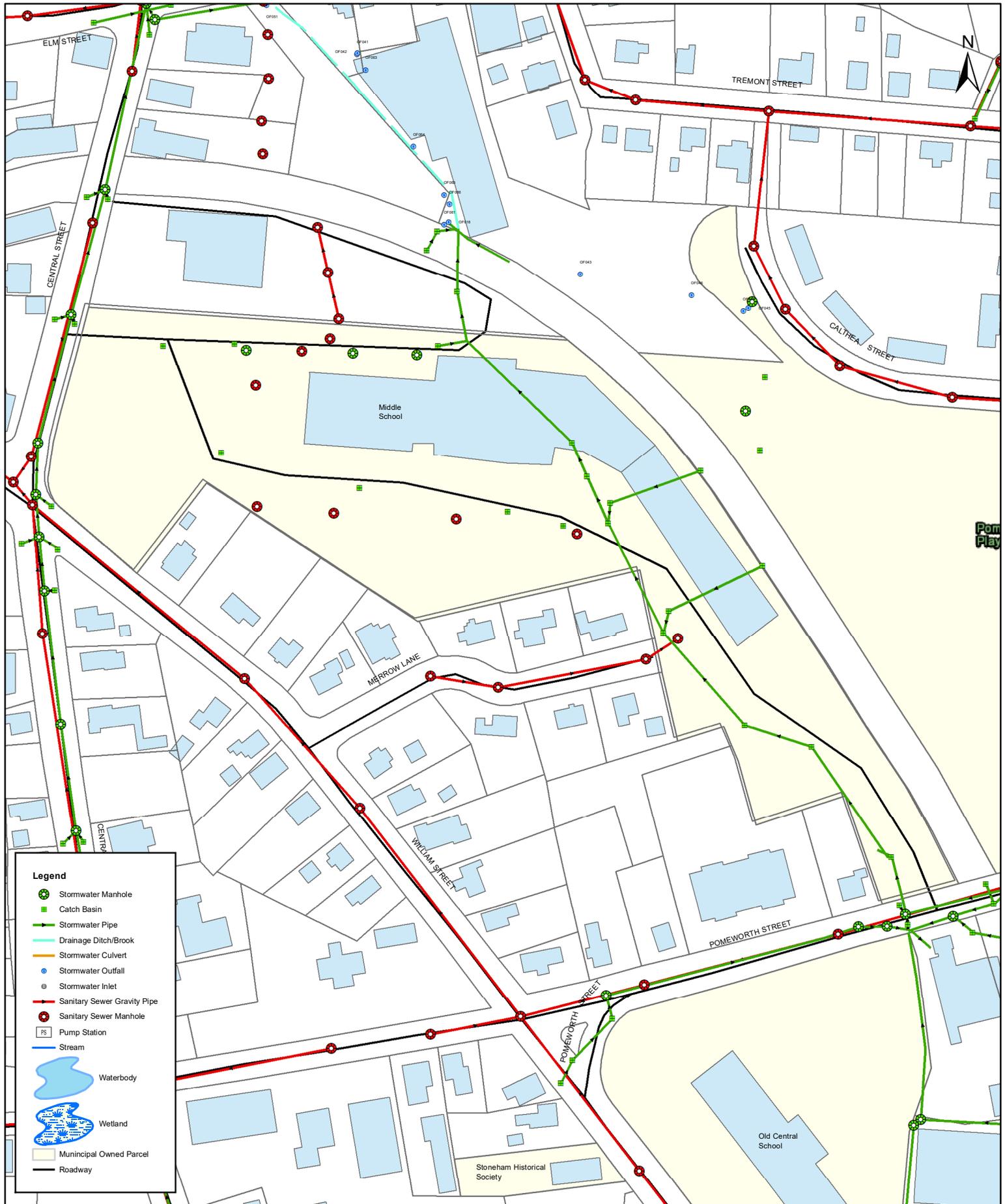
Legend

- Stormwater Manhole
- Catch Basin
- Stormwater Pipe
- Drainage Ditch/Brook
- Stormwater Culvert
- Stormwater Outfall
- Stormwater Inlet
- Sanitary Sewer Gravity Pipe
- Sanitary Sewer Manhole
- Pump Station
- Stream
- Waterbody
- Wetland
- Municipal Owned Parcel
- Roadway



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Stoneham Arena
Address: 101 Montvale Ave.



Legend

- Stormwater Manhole
- Catch Basin
- Stormwater Pipe
- Drainage Ditch/Brook
- Stormwater Culvert
- Stormwater Outfall
- Stormwater Inlet
- Sanitary Sewer Gravity Pipe
- Sanitary Sewer Manhole
- Pump Station
- Stream
- Waterbody
- Wetland
- Municipal Owned Parcel
- Roadway



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Stoneham Central Middle School
Address: 101 Central St.



Unicorn
Golf
Course

Stoneham
Oaks Golf
Course

Stoneham Oaks
Golf Course

Hockey
Arena

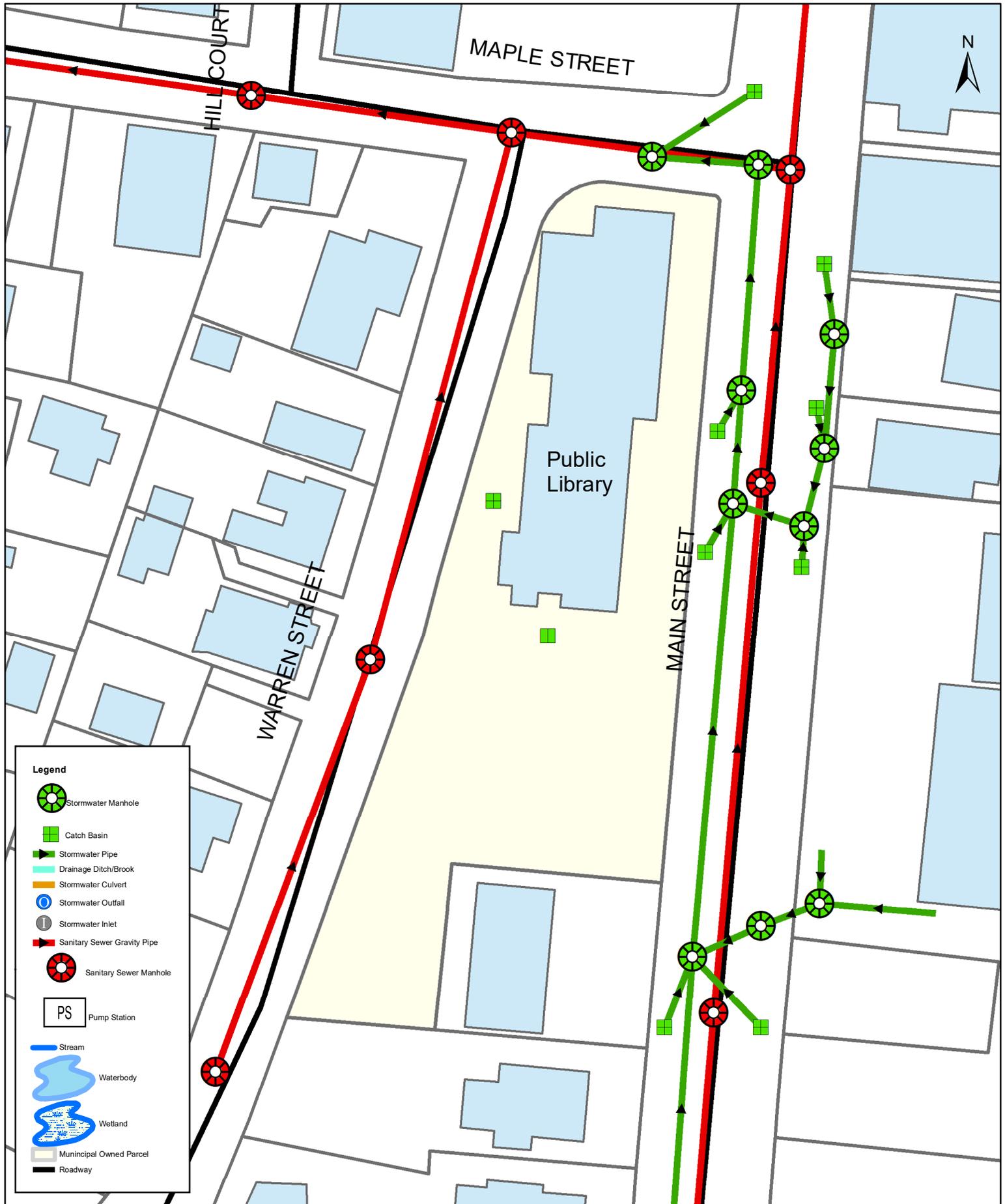
Legend

-  Stormwater Manhole
-  Catch Basin
-  Stormwater Pipe
-  Drainage Ditch/Brook
-  Stormwater Culvert
-  Stormwater Outfall
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-  Sanitary Sewer Gravity Pipe
-  Sanitary Sewer Manhole
-  Pump Station
-  Stream
-  Waterbody
-  Wetland
-  Municipal Owned Parcel
-  Roadway



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Stoneham Oaks Golf Course
Address: 101 Rear Monvale Ave.



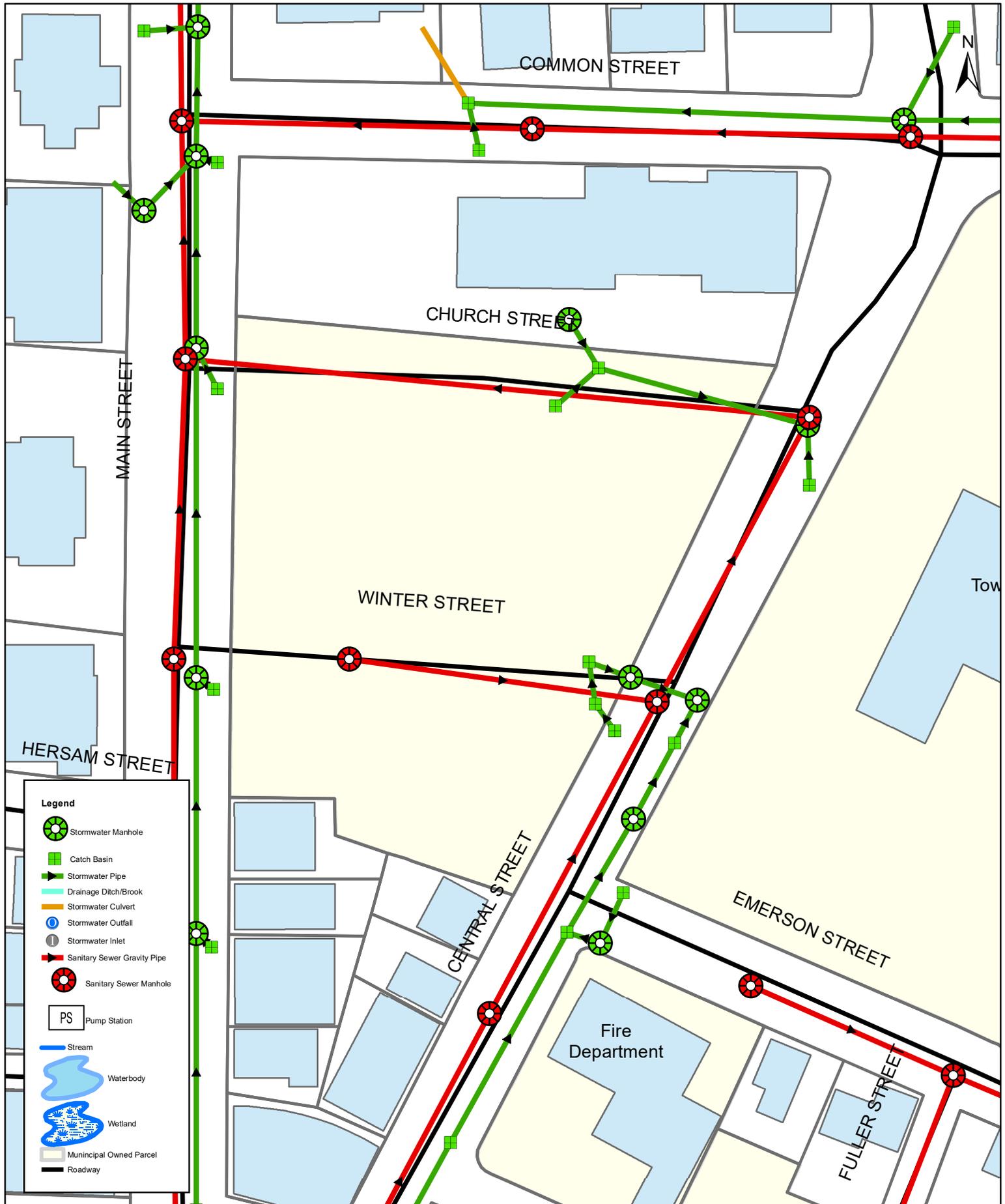
Legend

-  Stormwater Manhole
-  Catch Basin
-  Stormwater Pipe
-  Drainage Ditch/Brook
-  Stormwater Culvert
-  Stormwater Outfall
-  Stormwater Inlet
-  Sanitary Sewer Gravity Pipe
-  Sanitary Sewer Manhole
-  PS Pump Station
-  Stream
-  Waterbody
-  Wetland
-  Municipal Owned Parcel
-  Roadway



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Stoneham Public Library
Address: 413 Main St.



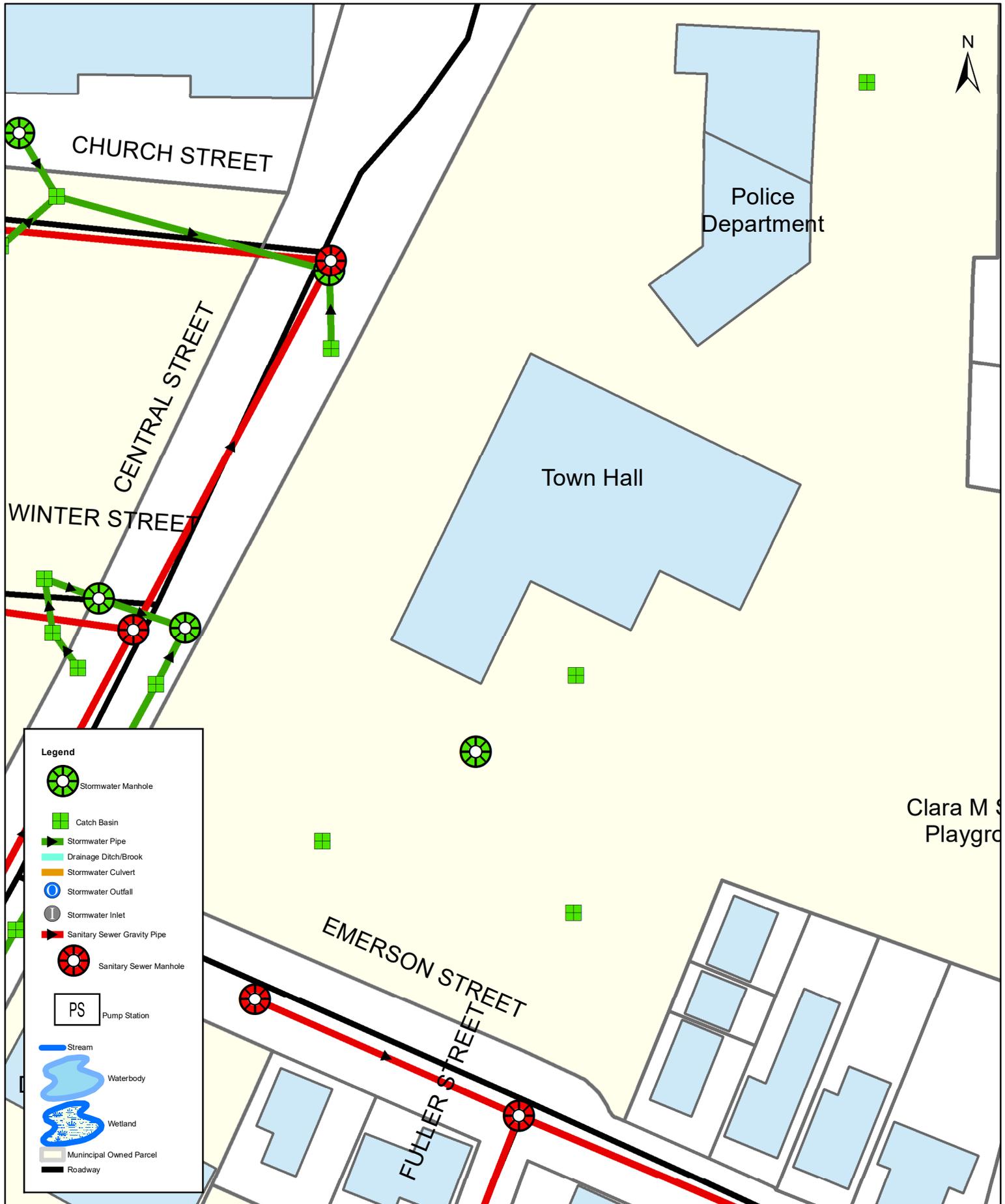
Legend

- Stormwater Manhole
- Catch Basin
- Stormwater Pipe
- Drainage Ditch/Brook
- Stormwater Culvert
- Stormwater Outfall
- Stormwater Inlet
- Sanitary Sewer Gravity Pipe
- Sanitary Sewer Manhole
- Pump Station
- Stream
- Waterbody
- Wetland
- Municipal Owned Parcel
- Roadway



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Stoneham Town Common
Address: 340 Main St.



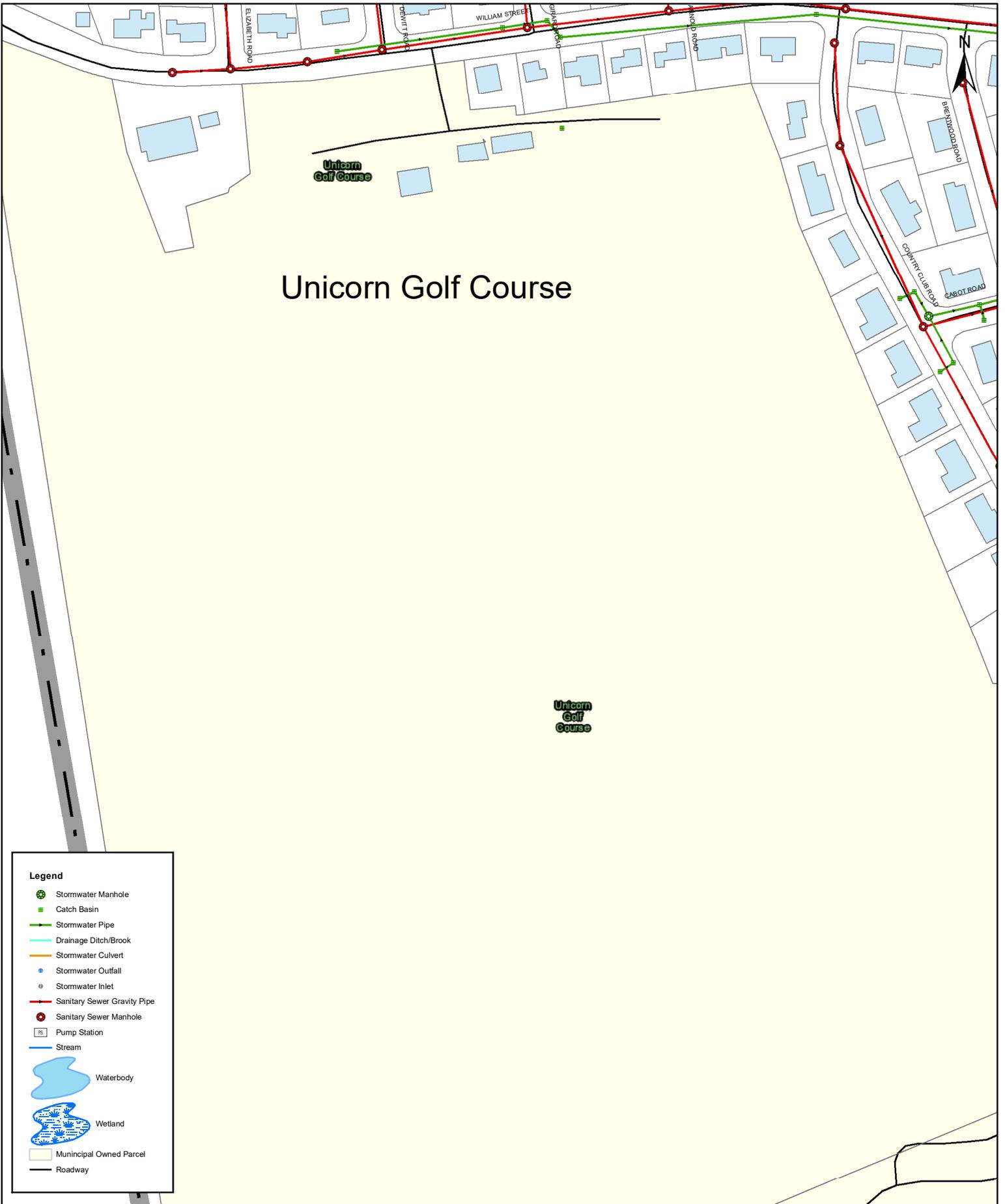
Legend

- Stormwater Manhole
- Catch Basin
- Stormwater Pipe
- Drainage Ditch/Brook
- Stormwater Culvert
- Stormwater Outfall
- Stormwater Inlet
- Sanitary Sewer Gravity Pipe
- Sanitary Sewer Manhole
- Pump Station
- Stream
- Waterbody
- Wetland
- Municipal Owned Parcel
- Roadway



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Town Hall
Address: 35 Central St.



Unicorn Golf Course

Unicorn
Golf
Course

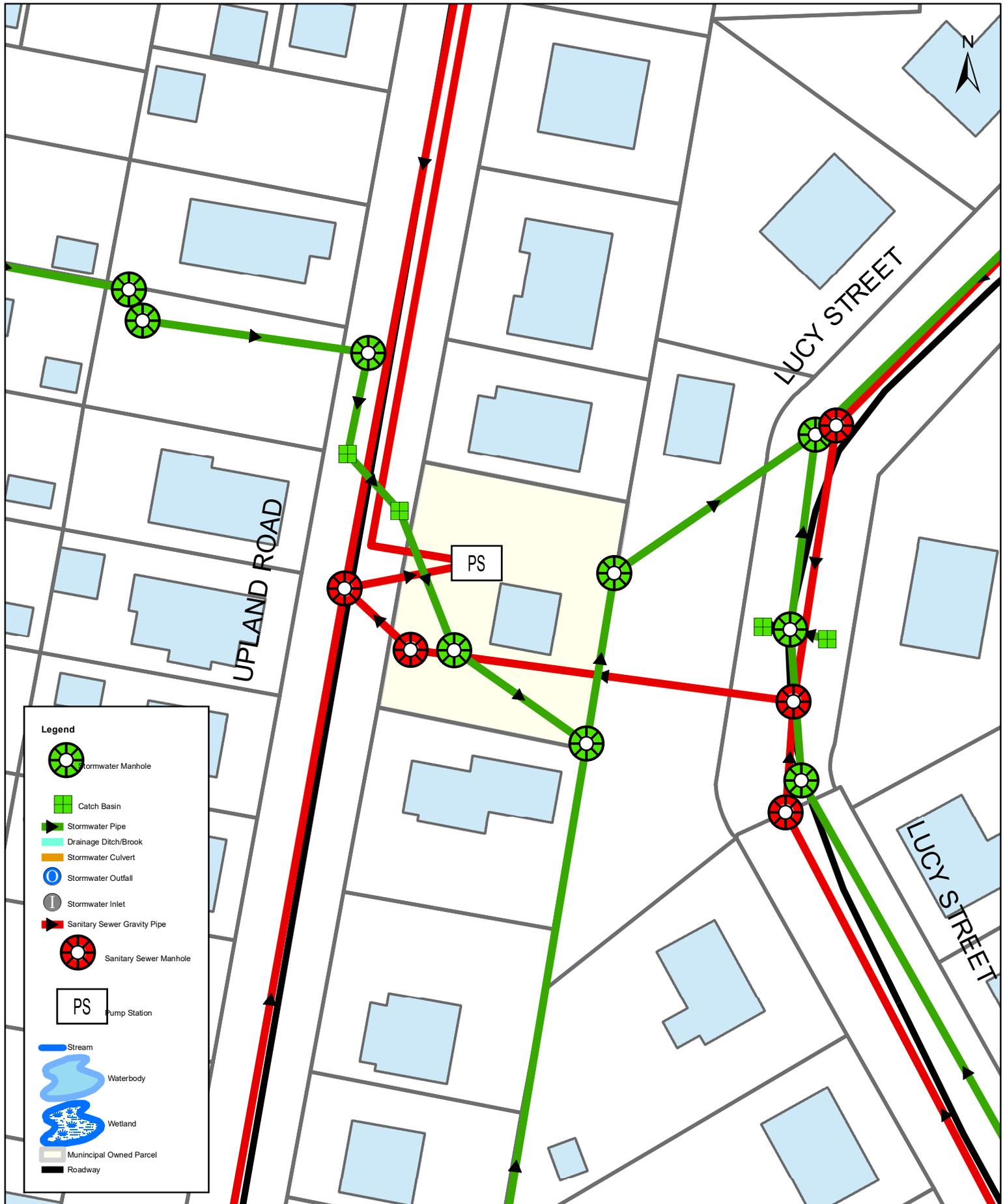
Legend

-  Stormwater Manhole
-  Catch Basin
-  Stormwater Pipe
-  Drainage Ditch/Brook
-  Stormwater Culvert
-  Stormwater Outfall
-  Stormwater Inlet
-  Sanitary Sewer Gravity Pipe
-  Sanitary Sewer Manhole
-  Pump Station
-  Stream
-  Waterbody
-  Wetland
-  Municipal Owned Parcel
-  Roadway



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Unicorn Golf Course
Address: 460 William St.



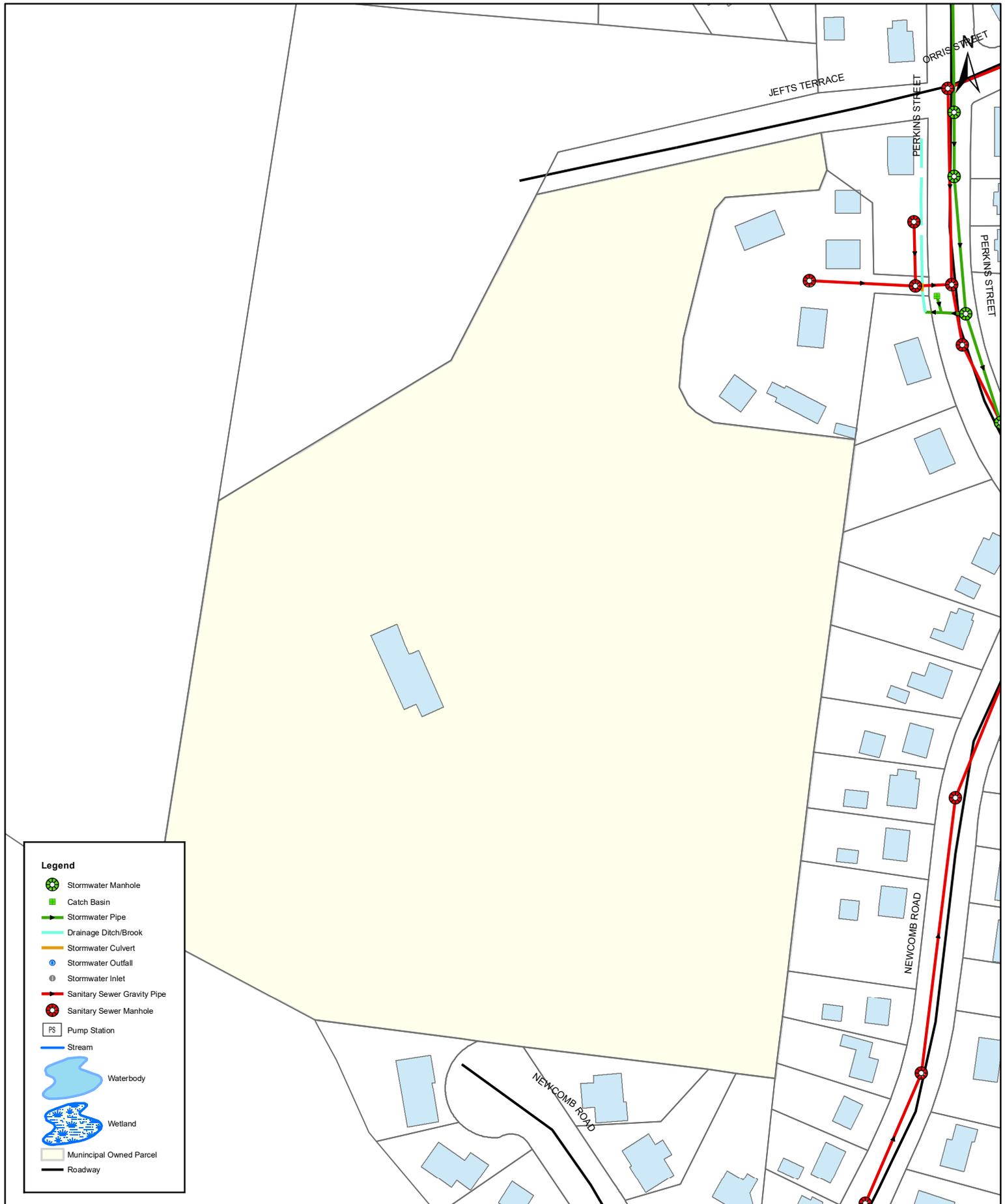
Legend

- Stormwater Manhole
- Catch Basin
- Stormwater Pipe
- Drainage Ditch/Brook
- Stormwater Culvert
- Stormwater Outfall
- Stormwater Inlet
- Sanitary Sewer Gravity Pipe
- Sanitary Sewer Manhole
- Pump Station
- Stream
- Waterbody
- Wetland
- Municipal Owned Parcel
- Roadway



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Upland Road Pumping Station
Address: Upland Rd.



Legend

-  Stormwater Manhole
-  Catch Basin
-  Stormwater Pipe
-  Drainage Ditch/Brook
-  Stormwater Culvert
-  Stormwater Outfall
-  Stormwater Inlet
-  Sanitary Sewer Gravity Pipe
-  Sanitary Sewer Manhole
-  Pump Station
-  Stream
-  Waterbody
-  Wetland
-  Municipal Owned Parcel
-  Roadway



**TOWN OF STONEHAM,
MASSACHUSETTS**

Facility: Whip Hill Park
Address: Whip Hill Road

Appendix C: Training Sign-In Sheet





**The Town of Stoneham
Municipal Facilities Good Housekeeping
Training & BMP Education Log**

Facility Name _____

Please print date, name and contact information. This will be kept as a record of stormwater training & education on site.

DATE	NAME & ORGANIZATION	ADDRESS	TELEPHONE	E-MAIL	TRAINING TYPE / BMP SHEET NAME

Appendix D: Good Housekeeping Inspection Form



FACILITY SITE COMPLIANCE INSPECTION COVER SHEET

Facility Name:	
Address:	
Facility Type/Department:	
Inspection Date and Time:	
Inspector:	

Facility Contact Information:

Name:	
Phone Number:	(____) - ____ - _____ ex ____
Email:	

Facility Information:

Site Description:	
Site Outfall(s):	
Receiving Water Body(ies):	
Spill Prevention Control and Countermeasures Plan?	
If Yes, Revision Date:	
Existing Structural BMPs:	

FACILITY SITE COMPLIANCE INSPECTION CHECKLIST

Facility Name: _____
 Address: _____
 Department: _____

Date: _____
 Inspector: _____
 Weather : _____

Question	Yes / No / N/A	If "YES", Describe Corrective Action
General		
Is there evidence of litter and debris in parking lots and paved areas?		
Is there evidence of a discharge, spill or leak on your site that has not been properly cleaned up? This includes dry sorbent materials that are not swept up.		
Are any storm drains, catch basins or ditches showing evidence of clogging or excessive sediment build-up?		
Fueling Areas		
Are spill kits missing from fuel islands or do they need to be restocked?		
Is there evidence of spills or leaks?		
Are fuel hoses exposed where they may be run over by vehicles or heavy equipment?		
Vehicle and Equipment Maintenance Areas		
Are materials stored indoors or under cover?		
Are maintenance activities being performed outside?		
Are wastes being improperly stored (outside, not on secondary containment, near storm drains, etc)?		
Are there leaks from any vehicles awaiting repair or decommissioning?		
Trash Storage Areas		
Are dumpsters uncovered?		
Do dumpsters have holes, missing plugs, or showing evidence of leaking?		
Are any waste storage containers cracked, leaking or damaged?		
Are dumpsters located on pervious ground area or away from watercourse to storm drain structures?		
Are universal wastes stored outdoors and not on secondary containment?		
Material Loading/Unloading and Storage Areas		
Are materials stored outside or not under cover?		
Are there signs of leaks or spills from storage containers?		
Are bulk hazardous materials/liquids stored outside and not in secondary containment?		
Do any containment pallets need to be drained? Check for sheen prior to discharge.		
Is there evidence of paint on the ground near loading areas or outdoor painting areas?		
Petroleum Tanks		
Are aboveground storage tanks not under cover?		
Are tanks clearly labeled/tagged?		
Is there evidence of any leaks or spills present?		
Vehicle and Equipment Storage		
Are fleet parking areas clean and orderly, with trash receptacles in the parking area?		
Is there any evidence of spills and leaks from stored vehicles?		
Salt Storage and Handling Areas		
Is there evidence of salt being discharged from the site or into the storm drain?		
Is there excess salt or sand on the pavement?		
Are there any leaks or spills of salt brine or calcium chloride in storage area?		
Hazardous Material Storage		
Are materials stored indoors or under cover?		
Are materials stored on secondary containment?		
Are storage containers clearly labeled with MSDS on file and accessible?		
Storm Drain System		
Are inspection records kept on file indicating cleaning and maintenance for storm drainage features?		
Is regular catch basin cleaning and other structure maintenance scheduled and performed?		
Are dry cleaning methods utilized on impervious surfaces that flow to storm drain inlets?		
Facility Changes		
Are there any changes in procedures, maintenance or equipment that would affect this SWPPP?		

Appendix E: Municipal Standard Operating Procedures (SOP)





Standard Operating Procedures
Town of Stoneham, Massachusetts
Department of Public Works
Catch Basin Inspection and Cleaning

Issue Date:
July 2019

APPROVED BY:

Brett F. Gonsalves
Director of Public Works

Introduction

Catch basins help minimize flooding and protect water quality by removing trash, sediment, decaying debris, and other solids from stormwater runoff. These materials are retained in a sump below the invert of the outlet pipe. Catch basin cleaning reduces foul odors, prevents clogs in the storm drain system, and reduces the loading of suspended solids, nutrients, and bacteria to receiving waters.

During regular cleaning and inspection procedures, data can be gathered related to the condition of the physical basin structure and its frame and grate and the quality of stormwater conveyed by the structure. Observations such as the following can indicate sources of pollution within the storm drain system:

- Oil sheen
- Discoloration
- Trash and debris

Both bacteria and petroleum can create a sheen on the water surface. The source of the sheen can be differentiated by disturbing it, such as with a pole. A sheen caused by an oil will remain intact and move in a swirl pattern; a sheen caused by bacteria or plant-based oils will separate or fracture and appear “blocky”. Bacterial and plant-based oil sheen is not a pollutant but should be noted.

Observations such as the following can indicate a potential connection of a sanitary sewer to the storm drain system, which is an illicit discharge.

- Indications of sanitary sewage, including fecal matter or sewage odors
- Foaming, such as from detergent
- Optical enhancers, fluorescent dye added to laundry detergent

Each catch basin should be cleaned and inspected annually at a minimum. Catch basins in high-use areas may require more frequent cleaning. Performing scheduled street sweeping will reduce the amount of sediment, debris, and organic matter entering the catch basins, ultimately reduce the frequency with which structures need to be cleaned.

Cleaning Procedure

Catch basin inspection cleaning procedures should address both the grate opening and the basin's sump. Document any and all observations about the condition of the catch basin structure and water quality on the Catch Basin Inspection Form (attached).

Catch basin inspection and cleaning procedures include the following:

1. Work upstream to downstream.
2. Clean sediment and trash off grate.
3. Visually inspect the outside of the grate.
4. Visually inspect the inside of the catch basin to determine cleaning needs.
5. Inspect catch basin for structural integrity.
6. Determine the most appropriate equipment and method for cleaning each catch basin.
 - a. Manually use a shovel to remove accumulated sediments, or
 - b. Use a bucket loader to remove accumulated sediments, or
 - c. Use a high pressure washer to clean any remaining material out of catch basin while capturing the slurry with a vacuum.
 - d. If necessary, after the catch basin is clean, use the Rodder/Jetter of the vacuum truck to clean downstream pipe and pull back sediment that might have entered downstream pipe.
7. If contamination is suspected, chemical analysis will be required to determine if the materials comply with the Massachusetts DEP Hazardous Waste Regulations, 310 CMR 30.000 (<http://www.mass.gov/dep/service/regulations/310cmr30.pdf>). Chemical analysis required will depend on suspected contaminants. Note the identification number of the catch basin on the sample label, and note sample collection on the Catch Basin Inspection Form.
8. Properly dispose of collected sediments. See following section for guidance. Collected sediments are brought to the DPW yard on Stevens Street. A waste hauling/disposal contractor is hired and responsible for proper disposal of the sediments.
9. If illicit discharges are observed or suspected, notify the Department of Public Works.
10. At the end of each day, document location and number of catch basins cleaned, amount of waste collected, and disposal method for all screenings.
11. Report additional maintenance or repair needs to the Department of Public Works.

Disposal of Screenings

Catch basin cleanings from storm water-only drainage systems may be disposed at any landfill that is permitted by MassDEP to accept solid waste. MassDEP does not routinely require stormwater-only catch basin cleanings to be tested before disposal, unless there is evidence that they have been contaminated by a spill or some other means.

Screenings may need to be placed in a drying bed to allow water to evaporate before proper disposal. In this case, ensure that the screenings are managed to prevent pollution.

Attachments

1. Catch Basin Inspection Form



Standard Operating Procedures
Town of Stoneham, Massachusetts
Department of Public Works
Snow Removal and De-Icing

Issue Date:
July 2019

APPROVED BY:

Brett F. Gonsalves
Director of Public Works

MA SMALL MS4 PERMIT REQUIREMENT SUMMARY:

Part 2.3.7.a.iii.5.

The permittee shall establish and implement procedures for winter road maintenance including the use and storage of salt and sand; minimize the use of sodium chloride and other salts, and evaluate opportunities for use of alternative materials; and ensure that snow disposal activities do not result in disposal of snow into waters of the United States. For purposes of this MS4 Permit, salt shall mean any chloride-containing material used to treat paved surfaces for deicing, including sodium chloride, calcium chloride, magnesium chloride, and brine solutions.

Personnel

A list of personnel who are responsible for snow and ice removal is on file at the DPW. Employees performing the procedures in this SOP shall attend yearly stormwater pollution prevention training.

Equipment

The municipality owns and maintains ice control and snow removal equipment listed in Table 2. Equipment maintenance shall be conducted consistent with Best Management Practices for pollution prevention for Vehicles and Equipment maintenance activities. The wash bay/ area is located at the Department of Public Works on Pine Street.

Plowing

When conditions warrant, plows are installed on the larger trucks to move snow from the traveled roadway. Average time to install a plow is approximately 30 minutes. Smaller trucks are available for plowing of residential streets and clearing public lots. Approximately 50 private contractors are hired by the Town to supplement the DPW's plowing capacity.

Sand Spreaders

When conditions warrant, sand spreaders are installed on the larger trucks to spread sand on the traveled roadway. Each sand spreader is calibrated once per year, prior to the deicing season. Sand spreaders are calibrated to dispense 250-300 pounds of sand per lane mile.

Salt Spreaders and Pre-Wetting Devices

When conditions warrant, salt spreaders are installed on the larger trucks to spread salt on the traveled roadway. Each salt spreader is calibrated once per year, prior to the deicing season. Salt application shall be calibrated to dispense rates of 250-300 pounds per lane mile.



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Department of Public Works

Snow Removal and De-Icing

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Six of the trucks are equipped with pre-wetting brine tanks which are calibrated prior to the deicing season. Pre-wetting application shall be calibrated to dispense rates [enter number e.g. 8] gallons of pre-wet liquid to 1 ton of salt.

A list of equipment for Winter Maintenance is on file at the DPW.

Materials

The major materials used in snow and ice control are coarse sand, coarse salt, and calcium chloride. These materials are stockpiled in advance of an event and are immediately available when needed and stocks are replenished between events.

Sand

Sand is used as an abrasive for traction on slick roadways. Approximately 2500 tons are anticipated to be used per year and are ordered from [enter contract] prior to each deicing season. Sand is stored in the covered facility located at the DPW yard on Pine Street. Loading areas and yards are swept periodically to prevent sand build-up and run-off.

Salt

Salt is used to expedite the melting of snow and ice from the street surface and also to keep the ice from forming a bond to the street surface. Approximately 1200 tons of salt are anticipated to be used per year and are ordered from [enter contract] prior to each deicing season. Salt is stored in the covered facility located at the DPW yard on Pine Street. Loading areas and yards are swept periodically to prevent salt build-up and run-off.

Pre-Wetting Chemical

Approximately [enter number] gallons of Calcium Chloride is estimated to be needed for pre-wetting. These chemicals are stored at the DPW in storage tanks equipped with appropriate spill control.

Procedures

Pre-Wetting Product Application

1. Whenever possible, the pre-wetting product is applied to the roadway prior to the beginning of a storm to prevent snow from bonding to the roadway surface, and also used when heavy frost or black ice is expected to be an issue for commuters. The DPW Director will instruct staff when anti icing is appropriate.
2. Prior to pre-wetting application, equipment will be checked to ensure proper working order and ensure proper calibration of equipment. All fluid levels will be checked and filled to proper levels, all lights must be in working order. A visual walk-around inspection of the truck or equipment must be made. Any repairs must be made and reported to a supervisor or mechanic before leaving the yard.
3. Pre-wetting chemical will be applied town-wide, with pre-wetting chemical first applied in the areas around the schools.
4. Vehicle optimal speed is 20-25 MPH.
5. Before parking any truck or equipment after use, all fluid levels will be checked and filled. All minor repairs will be done by the operator. Any repairs the operator cannot perform will be written up on the proper forms and turned in to the DPW Director. The DPW Director will determine importance and will assign the repairs according to schedule. All deicing chemical will be washed from equipment at the wash bay or designated wash area.



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Salt and Sand Application

1. Whenever conditions warrant, sand and/or salt is applied to the roadway prior to accumulation of snow to prevent compacted snow from bonding to the roadway surface. The DPW Director will instruct staff when sand/salt application is appropriate.
2. Prior to sand/salt application, equipment will be checked to ensure proper working order and ensure proper calibration of equipment. All fluid levels will be checked and filled to proper levels, all lights must be in working order. A visual walk-around inspection of the truck or equipment must be made. Any repairs must be made and reported to a supervisor or mechanic before leaving the yard.
3. The standard sand/salt application speed is: 20-25 mph.
4. Follow the prioritized route or schedule. This schedule is located on file at the DPW.
5. Before parking any truck or equipment after use, all fluid levels will be checked and filled. All minor repairs will be done by the operator. Any repairs the operator cannot perform will be written up on the proper forms and turned in to DPW Director. The DPW Director will determine importance and will assign the repairs according to schedule. All material will be washed from equipment at the wash bay or designated wash area.

Snow Plowing

1. As the storm develops and 3 inches of snow has accumulated, all of the drivers and available equipment will begin to plow their assigned routes.
2. Prior to plowing operations, equipment will be checked to ensure proper working order. All fluid levels will be checked and filled to proper levels, all lights must be in working order. A visual walk-around inspection of the truck or equipment must be made. Any repairs must be made and reported to a supervisor or mechanic before leaving the yard.
3. Avoid plowing, pushing, blowing or storing excess snow, deicer, or other debris in or near creeks, watercourses or storm drainage systems.
4. Reduce plowing speed in sensitive areas (near creeks, wetlands or other water courses) to prevent snow and deicing materials from entering waterways.
5. The standard plowing speed is: 20-25 mph.
6. Follow the prioritized route or schedule. This schedule is located on file at the DPW.
7. Before parking any truck or equipment after use, all fluid levels will be checked and filled. Blades or bolts, which need replacing, will be taken care of unless told to do otherwise. Chains that need repairs will be repaired. All minor repairs will be done by the operator. Any repairs the operator cannot perform will be written up on the proper forms and turned in to the DPW Director. The DPW Director will determine importance and will assign the repairs according to schedule.

Record Keeping and Documentation

1. Maintain a master schedule of prioritized snow and sanding routes and the miles or roads plowed or sanded. This document is on file at the DPW.
2. Keep copies of manufacturer's recommendations for equipment calibration, plowing speed and salt/sand application rates. These documents are on file at the DPW.
3. Keep records of the amounts of salt, sand, liquid deicer, and salt alternatives applied per season. These records are on file at the DPW.
4. Keep a list of all employees trained in the facility's Stormwater Pollution Prevention binder or computer file. These records are on file at the DPW.



Standard Operating Procedures
Town of Stoneham, Massachusetts
Department of Public Works
Sweeping Streets and Parking Lots

Issue Date:
July 2019

Approved by:

Brett F. Gonsalves
Director of Public Works

Purpose of SOPs:

Procedures for the operation and maintenance of street sweepers, frequency of sweeping, disposal of debris, and recordkeeping to prevent pollution from entering the stormwater sewer systems.

MA Small MS4 General Permit Requirement Summary:

Part 2.3.7.a.iii.3.

The permittee shall establish and implement procedures for sweeping and/or cleaning streets, and permittee-owned parking lots. All streets with the exception of rural uncurbed roads with no catch basins or high speed limited access highways shall be swept and/or cleaned a minimum of once per year in the spring (following winter activities such as sanding). The procedures shall also include more frequent sweeping of targeted areas determined by the permittee on the basis of pollutant load reduction potential, based on inspections, pollutant loads, catch basin cleaning or inspection results, land use, water quality limited or TMDL waters or other relevant factors as determined by the permittee. The permittee shall report in each annual report the number of miles cleaned or the volume or mass of material removed. For rural uncurbed roadways with no catch basins and limited access highways, the permittee shall either meet the minimum frequencies above, or develop and implement an inspection, documentation and targeted sweeping plan with two (2) years of the effective date of the permit, and submit such plan with its year one annual report.

Part 2.3.a.iii.4.

The permittee shall ensure proper storage of catch basin cleanings and street sweepings prior to disposal or reuse such that they do not discharge to receiving waters.

Equipment Inventory:

The following is a list of street sweeping equipment:

Equipment Number	Make	Description	Sweeper Speed (or other notes)
		Elgin Sweeper	



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Operations

1. Operate all sweepers and equipment according to the manufacturer's recommended settings, standards, and procedures.
2. While sweeping, drive between the optimal sweeping speed limit, as recorded in the equipment list above.
3. Sweeping will not take place during steady rain.
4. If spills occur or illegal discharges are seen, report to the Department of Public Works.

Maintenance

1. Sweepers will be checked for leaks after each use. Immediately contain and properly clean up any spills.
2. Regular preventative maintenance to prolong equipment use (such as greasing moving parts and minor adjustments) occurs.
3. Parts are replaced as necessary. Brushes are replaced when bristle length is less than **7 inches**.
4. Equipment is washed at the DPW yard on Pine Street to trap grease, oils and sediment.

Schedule

1. Street sweeping will primarily take place on a biannual basis between the months of April and June in the spring, and October and December in the fall.
2. All streets with curbing and/or catch basins shall be swept a minimum of once per year in the spring (following winter activities such as sanding). Streets are swept according to the street list/schedule which is on file at the DPW.
3. Priority roads and parking lots are identified on the basis of pollutant load reduction potential, based on inspections, pollutant loads, catch basin cleaning or inspection results, land use, impaired or TMDL waters or other relevant factors. These roads are swept a minimum of twice per year, and parking lots are swept a minimum of twice per year. A list of priority roads and parking lots is on file at the DPW. The list of priority roads and parking lots will be reassessed every year.
4. The sweeping schedule is assessed once per year and updated as necessary.
5. Events/activities that require special sweeping are parades.



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Storage and Disposal

1. Temporary storage of solid sweeping debris is on an impervious surface or in a truck/dumpster that is protected from runoff. The storage location(s) is/are DPW lot on Stevens St.
2. Solid sweeping debris is brought to the DPW lot on Stevens St. for temporary storage. It is then picked up by a third-party contractor for permanent disposal.
3. Decant water is discharged at the DPW garage on Pine Street.
4. Weighing process: The amount of solid sweeping debris will be weighed by the third-party contractor. The contractor provides a receipt to the DPW Director which indicates the amount of sweeping debris hauled away.

Training

1. Employees are trained once per year on this procedure and the proper operation of equipment. Employees are also trained on stormwater pollution prevention, spill and response, and illicit discharge detection and elimination procedures.

Record Keeping

1. Records are kept at the Department of Public Works.
2. Volumes of debris are recorded daily after each sweeping.
3. The number of curb miles swept per year is recorded.
4. A list of employees implementing the SOPs and the completion of their training(s) can be found at the DPW.

Revising the SOPs

1. These procedures are reviewed once per year and updated as needed.

Appendix F: Municipal Structural Best Management Practices (BMP)

