

PUBLIC WORKS

PUBLIC WORKS COMMISSION

Jef Fasser, Chair
David De Long, Vice Chair
Andrea Solomon
James Terry
K.C. Winslow

The Public Works Commission acts as the Town's Road, Water and Sewer Commissioners, and advises the Public Works Director in the Department's efforts to maintain and protect the Town's public works, utility and solid waste/recycling services. The Commission also advises Town Meeting, the Town Manager, Planning Board and other Town officials and boards on matters that concern Town water and sewer service, drainage and roads. The Commission is also responsible for setting policy and rate schedules for water, sewer and solid waste services; for acting as an appeals board for right of way permits and water and sewer regulations and account matters; and for approving minimum standards for the final layout of Town roads.

The Public Works Commission also provides a forum for review of water, sewer and solid waste rates, the annual roads and sidewalk program, public street layout, and water and sewer extensions.

The ongoing activities of the Commission can be found throughout the year on the web at www.concordma.gov

Highlights of the Commission's activities for 2021 included (in chronological order):

- Reviewed and voted affirmatively to approve an appeal of denial of increase in wastewater flow for property located at 13B Commonwealth Ave. with outlined recommendations.
- Conducted a presentation and discussion relative to winter maintenance on private roads.
- Conducted a general fund capital planning session.
- Conducted a Public Hearing and approved revised curbside collection and disposal rates effective April 1, 2021. There was no change in the cost of weekly disposal tags or six month barrel stickers.
- Conducted a discussion regarding the Concord Country Club, groundwater conservancy review. Formal recommendation from the PWC to the Zoning Board of Appeals relative to potential impacts of a proposed irrigation system was made.
- Discussed various articles in preparation for Town Meeting. Article 9 was noted as being of particular interest to public works as there were notable FY21 Town Budget line item adjustments related to the Monument St. culvert failure and unanticipated costs associated with COVID management needs relative to solid waste.
- Conducted a Roads Program Briefing.
- Presided over a drinking water system overview presentation.
- Conducted a Roads Program Public Meeting
- Reviewed a new Concord Public Works Tree Planting Guide, which was created and made available to residents.
- Reviewed and voted affirmatively to approve the extension of the Heywood Meadow stone wall in the public right of way at the intersection of Heywood Street and Lexington Road.
- Conducted an overview of the Water/Sewer FY22 budget.
- Conducted the Water and Sewer Rate public hearing and approved the FY22 rate schedules.
- Conducted a review with information presented by the Director of Planning and Land Management of Warrant Article 38 that talks about amending and increasing housing density in Residence C Districts.
- Expressed appreciation to Andrew Boardman for his service as a Public Works Commissioner for the past six years.
- Discussed the State of Water Conservation Update and voted to remove the mandatory 1-day per week outdoor water use restriction effective July 23, 2021.

- Conducted a Roads Program Preview to allow residents to provide feedback prior to initiation of work and a subsequent Roads Program Update detailing plans for future pavement management program incorporating culverts and drainage work.
- Conducted a presentation of the MS4 Stormwater Management Plan.
- Reviewed and voted to support the Recreation Department's Recreation Facilities Strategic Plan CPS Application.
- Conducted a presentation of the solid waste and recycling program survey and development of a Request for Proposal for curbside services for up to a ten year term.
- Conducted an Envision Concord – Bridge to 2030 overview. Voted to authorize the Director of Public Works to update the Select Board on progress and goals relating to this endeavor.
- Conducted a presentation relative to winter maintenance.
- Reviewed a General Fund Capital Budget Plan.

The Public Works Commission and Concord Public Works continue to focus on their joint goal of promoting greater community involvement in Concord Public Works projects and programs. This deliberate strategy has resulted in greater responsiveness to all stakeholders and positive project outcomes. Examples of these efforts include neighborhood on-site meetings for large infrastructure improvement projects, and outreach meetings for the Roads Program. In addition, the Director continues to review the activities of Concord Public Works through the monthly Director's report and the Public Works Commission sets aside time for public comment during each meeting.

CEMETERY COMMITTEE

Leo Carroll, Chair
 Brian Davidson, Vice Chair
 Rebecca Purcell
 Rod Riedel
 Jerry Soucy

Concord cemeteries are an important asset to the Town. Visitors, historians and residents use them as a window to the past, pleasant places for solitude and contemplation, as well as a final resting place. Concord cemeteries, including Old Hill (1635), South Burying Ground (1697), and Sleepy Hollow (1855) total about 55 acres. Highway and Grounds Superintendent Aaron Miklosko carefully tended to the overall concerns of the Town's cemeteries, while Cemetery Supervisor Tish Hopkins managed burials, cemetery upkeep, grounds, and plot purchases and sales, and Ms. Justine St. John faithfully maintained the meeting minutes and other administrative duties. Concord is fortunate to have such hard-working public servants in the positions they devotedly fill. Sadly, the Committee noted the passing of former Administrative Assistant, Mallory Price who was a dedicated public servant who was outstanding in every way a person can be measured.

The Concord Cemetery Committee consists of five members responsible for oversight of the operation and maintenance of all Town owned cemeteries and burial grounds, and for establishing policies and procedures for these facilities. The Committee saw two members, Chair Paul Cooke and Vice-Chair Andrea Solomon reach their term-limits, departing with a great deal of appreciation for all they accomplished. Rebecca Purcell and Rod Riedel joined the Committee as its newest members. The Committee was pleased to have both Susan Bates and Linda Escobedo of the Select Board acting as Liaisons to the Board during various points in the year.

Cemetery Grounds Maintenance

Einstein's Landscaping's contract for cemetery lawn care and spring and fall cleanups was extended for an additional year for \$119,656. Mayer Tree conducted tree work addressing a number of dead and hazardous trees. Daedalus, Inc. was selected

to complete a cleaning and small repair work of the Melvin Memorial. Mr. Carroll and Superintendent Miklosko, in consultation with the Town Engineer, conducted a survey of the Cemetery's many stonewalls, identifying several in various states of disrepair, and created a priority repair list.

Cemetery Subcommittees: Columbarium and Cemetery Landscape and Groundcover

- Ms. Solomon and Mr. Soucy, later joined by Mr. Davidson after Ms. Solomon's departure, continued to study building a columbarium in Sleepy Hollow's Knoll section. Since a 2018 public hearing on gravesite supply, the Committee has been aware of a demand in Concord for a structure for the interment of cremated remains. A potential area for a columbarium was identified on the slope on the Cemetery's western side. The Town Engineer conducted a site assessment.
- A Cemetery Landscape and Groundcover Subcommittee was established with Mr. Carroll and Mr. Riedel to address the issue of soil erosion, which since its inception has long plagued Sleepy Hollow Cemetery. The loss of a number of centuries old shade trees, combined with a lack of irrigation and fertilization, has created areas of significant soil erosion. Climate change and a number of recently introduced insects, such as woolly adelgid, are distressing many of the trees that provide shade necessary for certain ground covers. The Town has placed fresh loam and grass seed in many sections with various degrees of success. The subcommittee, in consultation with area experts, is working to identify native trees and plants that will prove to be a more successful groundcover than the current grass, thereby decreasing soil erosion.

Master Plan Project Update

- *Records Scanning:* The Committee continued to oversee the contract with Boston Computer Scanning for the scanning and recording of the Cemetery's hand-written paper records, including that of deeds, into a secure accessible electronic format. In addition to being more secure, the electronic records will also be coordinated via GPS with maps showing where each grave is located. The project also aims to

make these records accessible to the public.

Boston Computer Scanning was hired in 2020 to do the work with a contract bid for \$9,547.

- *Headstone Restoration Project:* Amos Doolittle's 1775 plate, depicting the events of the April 19th Alarm, includes an early image of the Town's burial ground with broken and leaning headstones. Almost two and half centuries later, the fight against time and elements continues with a number of older headstones that are in need of repair or restoration. Ms. Hopkins did a superlative job of photographing all such headstones and created an inventory and priority repair list. In 2021 the Superintendent and the Cemetery Supervisor solicited bids for this work, and a contract for just over \$9,000 was awarded to Gravestone Services of New England, LLC.
- *Mausoleum Lots:* At the end of 2020, the Committee celebrated the approval of six mausoleum lots, which was the culmination of a complicated project that spanned five years. The Committee worked with the Town Engineer to identify the specific lot locations; three lots near the Pope Tomb, and three lots in the Knoll section that would be appropriate for building mausoleums.

Cemetery Woodlands and Trails

The Committee spent time reviewing the important woodlands and trails that are part of the Sleepy Hollow Cemetery's campus. This area is fundamental to supporting the goal of a garden cemetery, contains Cat Pond, the Cemetery's water feature, is part of the Authors Ridge vista, provides visitors an area of reflection, and incorporates the nature concept that was such an integral part of the Cemetery's Transcendentalist residents. The Committee received a comprehensive presentation from Bryan Windmiller on the Blanding's Turtle habitat in the Cemetery. The Committee continued to hear concerns about bicycle usage in the Cemetery with the most concerning being the occasional disturbance to funeral services. The Committee authorized the posting of several signs on its paths reminding visitors to recognize their entry into sacred ground, and to act accordingly. The Committee continues to monitor any change to the Reformatory Branch Trail on its northern border, and how it may impact the Cemetery. The

Committee sent letters to other Town committees requesting, that when appropriate, the committees work together for the protection of the Cemetery.

Memorial Day/Veterans' Day

The Maynard Elks put out American flags on the veterans' graves in Sleepy Hollow Cemetery for Memorial Day. Ms. Hopkins has faithfully overseen these memorial activities for many years, removing the flags at the end of the year and preparing them for the retired-flag burning ceremony during the Veterans' Day Observance.

Cemetery Website and Media

Mr. Cooke drafted and presented a document titled "A History of the Oversight of Concord's Public Cemeteries 1841-1864", which can be found on the Cemetery website. The filming for two television shows took place, one a Ken Burns documentary about the American Revolution, and the other an episode for the program "Greatest Cemeteries in the World".

Statistics

For 2021 there were 112 interments and one disinterment at Sleepy Hollow Cemetery. Forty-Seven of these interments were Concord residents at the time of their death. Thirty-Two of the interments were full burials and 80 were cremations. Lot sales for the year totaled 66 with seven of those being sold to eligible former residents. The Cemetery Staff maintains a waiting list for the purchase of burial plots in the old section of Sleepy Hollow Cemetery for burial plots that are sold back to the Town by the present owners. There are many lots available in the Knoll Section of Sleepy Hollow Cemetery.

Friends of Sleepy Hollow

The Friends of Sleepy Hollow is a private, non-profit organization whose purpose is promoting the preservation, beautification and appreciation of the historic burial grounds in Concord. The Friends updated and enhanced the Handley Commemorative Garden and also assisted with the Tyler family's generous gift of plantings on Bartlett Avenue. This is the latest of a long line of generous and thoughtful contributions the Friends have made as they continue to be a much-appreciated asset to the cemetery.

ADMINISTRATION

Alan H. Cathcart
Director of Public Works

The Concord Public Works Team continues to focus on its principal mission to enhance the quality of life for those living, working or visiting the Town of Concord, and through sound management, communication, leadership, innovation, teamwork and vision provide dependable, high quality, responsive public works and utility services, consistent with community values and at reasonable costs to Concord's citizens, businesses, institutions and visitors for today and into the future.

Protecting the Town's Infrastructure/Providing Essential Services

Concord Public Works (CPW) is comprised of four Divisions. These include two staff divisions: Administration (including Recycling and Solid Waste Management) and Engineering and two line divisions: Highway & Grounds (which includes Cemetery Operations) and the Water & Sewer Division. The Department is responsible for planning and managing a large segment of the Town's infrastructure.

These assets include Concord's roads and roadsides; curbs and sidewalks; catch basins, storm drains, culverts and outfalls; traffic islands; guardrails; street signs and traffic signals; public shade trees and park trees; Town parks, common areas, playgrounds, ball fields, and recreation equipment; Town cemeteries; the Town's compost site and closed landfill, including the earth products and snow storage facility; the public water supply including its storage, pumping, and distribution systems; the Town's sewer collection, pumping, and treatment systems; and CPW buildings and equipment.

Delivering key services including water service; sewer service; recycling, curbside trash collection and disposal service; yard waste disposal; and winter snow and ice management along with other storm and safety services is also a core responsibility of Concord Public Works.

CPW Team, Programs & Organization

Concord Public Works is made up of 53 dedicated

individuals with a wealth of experience. It is a team that is passionate about Concord, which takes great pride in their work, and fully understands their stewardship responsibilities.

Infrastructure Improvements and Initiatives

Once again, the team at Concord Public Works is pleased to provide the Town of Concord with quality and responsive service. The Divisional Reports that follow summarize a series of initiatives and accomplishments in 2021.

ENGINEERING DIVISION

Stephen Dookran, P.E. Town Engineer

Concord Public Works (CPW) Engineering Division is responsible for the planning, design, engineering and construction administration of the Town's roadways, sidewalks, bridges, and stormwater/drainage infrastructure assets. Engineering provides a wide range of professional engineering, construction management, and permitting administration for other CPW divisions as well as for other Town departments and divisions. This work is performed by a team led by the Town Engineer and includes the Assistant Town Engineer, two Public Works Engineers, the Associate Engineer, the GIS Analyst and the Administrative Assistant. During 2021, the only change in staffing was the resignation of a Public Works Engineer and the backfilling of that vacant position. Through the COVID-19 pandemic, Engineering continued to work effectively with a combination of in-office work and remote work when in-office presence was not required.

Roads Program

A field survey by StreetScan was conducted in the summer of 2021 to obtain an update of the pavement condition of the 108 mile road network. The average condition of public roads, measured as "pavement condition index" (PCI) shows a

deterioration from 77 (from last survey conducted in 2018) to 67 today.

Construction of 2020 Roads Improvement Project
Engineering staff oversaw the reconstruction and repaving of 0.8 miles that included Park Lane, Lewis Road, Warner Street, and Bedford Court and the milling and pavement overlay of Partridge Lane (0.48 miles).



Partridge Lane Final Paving Design, Bidding and Construction of the 2021 Roadway Improvement Project

Final design and bid documents were prepared. The project was put out for bid in the spring of 2021 and included 0.8 miles of roadway reconstruction and paving of Prescott Road, Peter Spring Road, and Cranefield Road and 0.5 miles of milling and pavement overlay of Minuteman Drive and Arrowhead Road. Construction started within FY2021 with the completion planned for later in 2021.

Mill and Fill Maintenance

Incorporated into the Roads Program was targeted pavement milling and repaving of areas of pavement that are not the full width of the street. The pavement restoration was performed on 0.34 miles that included Old Pickard Road and Elm Street.

Road Crack Sealing

In 2021, Engineering requested bids and executed a contract that implemented 11.5 miles of crack sealing on selected streets in town.

Hubbard Street Improvements

Engineering staff completed the final design of improvements to the roadway, ADA compliant ramps and sidewalks, and the drainage system. A contract was executed with Newport Construction Corp. National Grid replaced the gas main and Comcast relocated the final section of overhead wires underground. Newport will start construction in the fall of 2021 and complete the work by summer 2022. This project is partially funded by a Complete Streets grant obtained in 2020.

Commonwealth Avenue Improvements

This project which is partially funded by a Complete Streets grant was under design by The Engineering Corp. (TEC). Engineering staff presented the preliminary design to the West Concord Advisory Committee and the Commission on Disability and their feedback is to be incorporated into the final design. Construction is expected to start in spring of 2022. CMLP and National Grid need to complete minor utility work.

Sudbury Road Crosswalk at Seven Star Lane

The design and bidding documents of this project partially funded by a Complete Streets grant were prepared by Engineering staff. Construction by Allied Paving Corp. was completed in 2021. Old Marlborough Road Safety Improvements The Town received a Shared Streets and Spaces Municipal Grant to be used for traffic improvements on two crossings of the Bruce

Freeman Rail Trail, school zone signage and speed monitoring on Old Marlborough Road. Engineering prepared the design and bid documents and executed a construction contract for work to be completed later in 2021.

Sidewalks/ADA Compliance/Crosswalks

Curb Ramps Improvements

The addition of three new and the reconstruction of two curb ramps to meet ADA requirements were incorporated in the 2020 Roads Program and the 2021 Roads Program. Additionally, eight curb ramps were reconstructed/constructed on the Sudbury Road Crosswalk Project and the Emerson Field Project.

Crosswalks Added

Two new painted crosswalks were added in 2021. One was on Sudbury Road at the intersection of Oxbow Road and Seven Star Lane and the second one was on Peter Spring Road at the intersection of Cranefield Road.

Pavement Markings

Engineering implemented the annual town-wide pavement markings project using two contracts in 2021. The pavement markings were repainted at least once except in the areas where thermoplastic markings were implemented in 2020. Additionally, an inventory of town-wide striping and signing was taken using a vendor, StreetScan, with a report to follow in FY2022.

On Street Parking Changes

The final design for the Complete Streets - Commonwealth Avenue project proposed the removal of two parking spaces to incorporate crosswalk bump-outs, and the handicap parking spaces on the north side of the street is planned to be relocated.

Parking Lots

The Stow Street Parking lot adjacent to the library was redesigned by Engineering with construction scheduled to start late 2021 and to be completed in 2022. The new layout increases the parking space count by 14 and 2 handicap parking stalls.



Sudbury Road Crosswalk Completed

Guardrail Projects

Phase 2 of the guardrail replacement on Annursnac Hill Road replaced 1,242 linear feet of deteriorated guardrail with timber post Cor-Ten weathering steel guardrail. Additionally, 36 linear feet of guardrail was installed as part of the Complete Streets – Sudbury Road Crosswalk project.

Stormwater/Drainage Improvements

Under the Roads Programs, Engineering designed and implemented asphalt berms to prevent erosion of the edges of roadways and directed stormwater into existing drainage systems by regrading of the finished paved surface. Multiple drainage infrastructure improvements included replacement of 10 failed catch basin structures, the installation of 2 new catch basin structures, and 30 feet of new pipe. Plans for construction in FY2022 for Hubbard Street and the Stow Street Parking Lot include replacement/installation of 327 linear feet of pipe, replacement/installation 19 leaching and regular catch basins, replacement of 2 manholes, and the installation of an infiltration structure.

Culverts

The failure of a major culvert on Sawmill Brook under Monument Street needed emergency repairs. The CPW team installed a temporary pumping operation to manage the flooding of approximately 19 acres upstream. Funding was secured, permits were acquired and a contract was executed for construction at the beginning of FY2022.



Upstream – Sawmill Brook Culvert Repair

National Pollutant Discharge Elimination System (NPDES) MS4 Permit

The Town prepared for the filing in September 2021 of the “Year Three” Annual report, which included:

- Mapping update of the Town’s Stormwater infrastructure including outfalls and conveyance systems, and refined catchment delineation.
- Maintaining of the Town’s municipal reporting.
- Outfall screening and sampling – dry weather screening and sampling of the Town’s remaining 53 MS4 outfalls, of which 5 were found flowing during dry weather completing the requirement of dry weather screening and sampling of all 154 MS4 outfalls within the first 3 years of the permit i.e. by June 30, 2021.
- Public Participation and Education –Public participation and education programs continued for residents on stormwater issues. Residents were welcomed to participate in the Town’s Hazardous Waste Disposal and Drop off events. Residents abutting road improvement projects all received information on how to prevent stormwater pollution.
- Development of the Retrofit of the Town’s Stormwater Management Plan and regulations began.

Cambridge Turnpike Improvement Project

The Cambridge Turnpike was fully opened to traffic in December 2020 and all work was finally completed in 2021.

Right of Way/Driveway Permitting

Issued a total of 220 permits - 147 Right of Way permits and 73 Driveway permits utilizing the new Full Circle platform for digitally executing permits. Performed inspections for each permit.

Private Development Plan Reviews

Reviewed approximately nine projects including the following that required significant effort: Middlesex School Synthetic Turf Field at 1400 Lowell Road, Chase Bank at 1134 Main Street, Concord Children’s Center at 250 Old Bedford Road. Performed field observation of soil testing for stormwater management.

Town-Requested Engineering Services

- Design of completion of the drainage system on Prairie Street with leaching catch basin
- Review and identification of potential drainage issue related to the extension of the Heywood Meadows Stone Wall
- Survey to locate the 6 mausoleum plots and the Indian Burial Sites in Sleepy Hollow Cemetery
- Surveys to determine if various trees that require removal are located inside the Town's Right of Way or are inside private property
- Engineering support for the Emerson Recreation Field Complex
- Reviewed signage for Concord Park Assisted Living on Commonwealth Ave
- Reviewed and provided construction over site for the Concord Academy concrete sidewalk
- Prepared the base map for the Sleepy Hollow Cemetery Digital mapping software
- Engineering support on the phases of the Bruce Freeman Rail Trail under development and further reviews of the NPS Battle Road Trail.
- Engineering services for the Traffic Management Group

GIS

GIS staff completed the implementation of a Work Order System for the Highway & Grounds Division and started the development of a similar system for Water/Sewer to aid in routine operations and tracking resident requests. CPW mobile technology and applications continued to be leveraged to complete tasks such as: hydrant winterization and flushing, catch basin cleaning, sewer manhole inspections, registered irrigation, chlorine sampling and compost stickers. The new electronic permitting system (Full Circle) for driveway and right of way permits went live in 2021. Staff also created Phase I stormwater mapping for the Town's MS4 Reporting.

Grants of Location/Private Utilities in Public Ways

- *Main Street and Baker Avenue* – Comcast petition to install additional coaxial cable.
- *Hubbard Street* – Comcast Pole Petition for removal of overhead wires.
- *Walden Street* – Walden Pond Reservation Bathhouse sewer force and water service replacement.

HIGHWAY AND GROUNDS

Aaron Miklosko
Highway & Grounds Superintendent

The Highway & Grounds Division of Concord Public Works (CPW) maintains approximately 107 miles of public streets, along with the associated drainage systems consisting of approximately 62 miles of drain lines, 3,630 catch basins, 216 culverts, 1,640 drainage manholes, 431 outfalls, 162 leaching structures, 15 detention basins, 7 bio-retention areas, and 3 dams. The Highway & Grounds Division also maintains 58 miles of sidewalks, 3,055 signs, over 90 vehicles and equipment and the Town's compost site. The Division is also responsible for 82 acres of public parks and grounds that consist of 50 acres of active recreation areas. The Highway & Grounds Division maintains all public shade trees and park trees under the direction of the Town's Tree Warden.

Winter Maintenance Program

Concord's winter maintenance program requires accurate prediction of winter weather events and formulating strategic plans for the deployment of staff and resources. CPW relies on many resources to achieve this, including real-time weather forecasting information provided by the Town's contracted weather service, Precision Weather Forecasting. Concord Public Works also utilizes roadway weather information system technology (Frost Technologies) in several strategic locations in Concord to provide real-time weather data during snow events.

Winter maintenance activities include de-icing, roadway plowing, sidewalk clearing and snow removal from municipal lots and business district frontages. Concord's winter maintenance program has many components, including an anti-ice pre-treatment approach in which CPW crews apply a brine solution to designated roadways around Concord when conditions allow. This environmentally sustainable technique prevents snow and ice from bonding to the roadway. This allows for a reduction in salt use before and after a weather event, saving time and money, as well as reducing environmental impacts.

The first significant snow response during the 2020-2021 winter season occurred on October 30, 2020 with a total accumulation of 3 inches of snow. Throughout the season, CPW responded to 19 winter weather events and the Town saw a total of 51.5 inches of snow.

Roads, Sidewalk, and Drainage Maintenance

CPW's Highway & Grounds Division completed routine maintenance and improvements to Concord's roads and sidewalks throughout the year. Early spring maintenance consisted of sweeping streets and sidewalks, repairing lawn areas, straightening street signs and leveling stone dust sidewalks throughout the Town.

The town-wide street sweeping program was completed by July 1, 2021. CPW performed additional sweeping of all arterial roads again in November to remove leaves and other debris from catch basin grates to prevent clogging in the stormwater drainage system and prevent street flooding during heavy rain events. The Highway & Grounds Division also performed weekly sweeping in the business districts, which include Concord Center, Thoreau Depot and West Concord throughout the season.

Street sign replacement continued with most work being prioritized by CPW via the Town's Traffic Management Group, which includes representatives from Highway & Grounds, Engineering and the Concord Police Department. CPW prioritized improvements affecting sightlines for signage and pedestrian safety.

During the spring growing season, roadside mowing began. The Town purchased a new boom-mounted rotary mower, which was designed to be used with a front loader. This new piece of equipment improved efficiency and was a great addition to the roadside mowing program.

Full-depth roadway patching, sidewalk reconstruction and drainage infrastructure repairs continued to be a major priority for the Highway & Grounds Division. CPW cleaned 190 catch basins in 2021, removing 76 cubic yards of material from the storm drain system. Ongoing monitoring and maintenance of other environmental infrastructure

including bio-retention areas, detention basins, drain swales, culvert headwalls and outfalls continued in 2021.

Compost Site Management

The Town's compost site at 755 Walden Street was open seasonally Wednesdays and Saturdays for residents to access the site for the disposal of brush, leaves and invasive species. In 2021, this facility was visited over 19,000 times by residents during the months of April – December. CPW continued to utilize the compost site for equipment storage and as a staging area for surplus wood debris generated from tree maintenance activities. During the winter season, the site is used for snow storage, which is hauled to this location from parking lots and business district areas following snow plowing events.

Parks and Grounds

CPW's Highway & Grounds Division continued to provide a high level of maintenance service at the Town's parks, athletic fields, traffic islands and outdoor facilities in 2021.

Regular maintenance schedules continue to be a priority for the Highway & Grounds Division. Maintenance activities were completed in an environmentally sensitive and sustainable manner. Frequent mowing, ball field preparation and field painting was completed with a goal of providing consistent playing conditions for Concord's youth sports programs and other users within the community. The Highway & Grounds Division also continued to support public-private partnerships with local organizations, such as the West Concord Green Thumbs, to maintain the hanging flower baskets that lined the streets in West Concord and the community gardens.

In April of 2021, the Town received bids for the Emerson Park Improvements: Phase I that included improvements to ADA access, a new irrigation system and irrigation wells, a new playground surface and swing set, new drinking fountains, and some additional infrastructure upgrades. The contract was awarded to Kilmoyley Construction of Lowell, MA. The project is expected to be completed in Spring of 2022.

Trees

CPW's Highway & Grounds Division and the Town's Tree Warden continued the implementation of the urban forestry management plan, which was developed by Davey Resource Group. In 2021 the Town planted 103 new trees, which included public shade trees, set-back plantings and Cemetery trees.

CPW tree crews performed routine right-of-way tree maintenance throughout the roadway network. Trees were trimmed up to a height of 15 feet and over-hanging hazards were removed. The CPW Highway & Grounds Division also responded to several severe storm events, in which trees were damaged or fell into the right of way and required removal.

The Town renewed the tree maintenance services contract in 2021 with Mayer Tree Services. This service contract has once again proved valuable to the Town for storm response, emergency hazardous tree issues, pruning and general forestry maintenance.

In 2021, the Town published an informational document titled "Concord Public Works – Tree Planting Guide." CPW staffed worked closely with a professional graphic designer, Robert O'Brien, and members of the Friends of Concord Trees to create this informative and attractive document. Electronic copies are available on the Town website.

Cemetery

CPW's Cemetery Division provided burials year-round and properly maintained the Town's three cemeteries. A great deal of pride is taken in the professional and compassionate service that is provided to residents. In 2021 there were 112 interments and one disinterment at Sleepy Hollow Cemetery. Forty-seven of these interments were Concord residents at the time of their death. 32 of the interments were full burials and 80 were cremations. Lot sales for the year totaled 66 with 7 of those being sold to eligible former residents.

The use of contracted landscaping services continued for the mowing and seasonal cleanup needs of Sleepy Hollow Cemetery with a renewed contract with Einstein's Solutions, Inc. CPW's Cemetery Supervisor, with assistance from the

Highway & Grounds Division, provided mowing and spring/fall cleanups for the Old Hill Burying Ground and South Burying Place. CPW crews performed all other maintenance for the cemetery including pothole patching, tree and stump removal and water system maintenance.

RECYCLING AND WASTE

Melissa Simoncini

Environmental Services Program Administrator

Curbside Collection, Disposal, and Processing

The municipal curbside collection program provided trash and recycling services to 3,675 households. Subscribers to the municipal curbside collection program set out 957 tons of mixed paper, 635 tons of commingled containers, and 2,505 tons of trash for collection.

DropOff SwapOff Participants

Year May October

2016	918	749
2017	894	947
2018	945	865
2019	930	842
2020	-	425
2021	630	790

Curbside Collection Subscribers (as of June 30)

Year	Number of Subscribers	Recyclables collected(tons)	Trash collected (tons)	Recycling Rate
FY17	3,639	1,716	2,548	40%
FY18	3,671	1,720	2,637	39%
FY19	3,663	1,618	2,619	39%
FY20	3,564	1,616	2,563	39%
FY21	3,639	1,660	2,648	37%

Curbside Recycling Rate

Residents using Concord's municipal curbside collection program recycled 38% of the materials they set at the curb. This figure does not include yard waste, which residents manage at home or drop off at the Composting Site on Saturdays and Wednesdays, April through mid-December. It also does not include the tons of materials collected for recycling at the semi-annual DropOff-SwapOff events, nor does it include information on the more than 1,000 households that contract with private haulers for the collection of their trash and recyclable materials.

Reuse and Recycling DropOff & SwapOff Events

In 2021, Concord Public Works was able to hold both spring (May 15) and fall (October 16) DropOff events. Pre-registration for social distancing and contact tracing allowed CPW to welcome 630 and 790 participants respectively without notable traffic or delays. Thanks to the many volunteers who make these events possible and all the participants for pre-registering and paying online. We are working hard to bring back the SwapOff portion of the event in 2022.

Unwanted Medication & Sharps Collection

Unwanted medication & sharps are no longer collected at the DropOff & SwapOff events, as there are bins for Sharps and Unwanted Meds collection in the front vestibule of the Fire and Police Station (209 Walden St) that is open to the public 24/7/365.

Hazardous Products Collection

Subscribers to the curbside collection program receive one free pass per year to the Minuteman Household Hazardous Products Facility in Lexington (for up to 25 lbs. or 25 gallons of hazardous waste). The facility is generally open one weekend day a month from April – November. Two-hundred and eight curbside subscribers visited the Minuteman facility during the April-November 2021 events.

Additionally, Concord Public Works (CPW) hosted a hazardous waste collection for residents and businesses in Town every other year. The next event at Concord Public Works will be September 2022.

Composting Site Turns Yard Waste into Garden Gold

From April through December 2021, residents made more than 19,000 visits to the 755 Walden Street Compost Site, dropping off leaves, grass clippings and brush. The paint shed re-opened in April 2021, after being closed in 2020 due to COVID-19, allowing 448 residents to drop off paint at the paint shed and 143 residents to pick up paint for reuse. Styrofoam™ block, string lights and Christmas Trees were also accepted for recycling at the facility after the December Holidays.

Landfill Inspection & Reporting

MassDEP requires an annual landfill inspection by a third-party MassDEP-approved inspector for closed landfills in the Commonwealth. Concord Public Works coordinated the annual landfill inspection with Weston & Sampson. The inspection was conducted in November of 2021. The annual landfill inspection report included a summary of the 2021 monitoring results at the landfill. There were no deviations from applicable performance standards in water or air quality identified.

The Town’s closed landfill post closure monitoring and maintenance requirements in accordance with 310 CMR 19.132, mandate groundwater and landfill gas monitoring. There are nine groundwater wells and twenty-three soil gas probes associated with the 755 Walden Street closed landfill. The former landfill, which has now been put back into productive beneficial reuse with the construction of a utility scale solar facility, received formal closure certification from MassDEP on 10/16/13.

Keeping Mercury Out of the Environment

During 2021, Concord Public Works collected 6,731 linear feet of fluorescent light bulbs, 1,908 pounds of nickel cadmium, lithium, and lead acid batteries, and 3,192 compact fluorescent bulbs from residents and municipal facilities, for recycling.

Another 4,044 linear feet of fluorescent bulbs and 1,948 pounds of computers and electronics were collected from businesses at the April and September business recycling events.

Grants

The Town of Concord received access to a MassDEP Mattress Recycling Incentive (MRI) grant program for the transportation and recycling of residential mattresses and up to \$7,500 for a container for the collection of mattresses. The total value of this grant is estimated at \$17,394.97. The more mattresses recycled, the more value our community will realize. For information on how to recycle your mattress visit www.concordma.gov/mattress.

Concord Public Works also obtained a Recycling Dividends Program (RDP) grant from MassDEP in the amount of \$7,200. The grant can be utilized to purchase recycling-related equipment including but not limited to curbside recycling bins, compost bins, public space recycling bins, etc.

Visits to the Composting Site

Year	Leaves & Grass	Brush	Paint Drop-Off	Paint Pickup
2016	6,558	590	267	183
2017	9,968	684	437	178
2018	8,459	5,250	492	177
2019	6,871	4,367	410	116
2020	14,257	7,040	<i>closed</i>	<i>closed</i>
2021	12,883	6,243	448	143

WATER AND SEWER

Jeffrey A. Murawski, P.E., Superintendent

In 1974 and 1976, Annual Town Meeting established separate Water and Sewer Enterprise Funds, to ensure that the operation, maintenance and capital investments in Concord's water and sewer systems would be financially viable. Expenses incurred for each system are covered by revenues from customers of each respective enterprise. Monthly billing is performed, and dozens of requests for new, replacement and rehabilitated water and sewer services from customers are reviewed for compliance with system plans and policies, including connection fees, and monitoring. The Water and Sewer Division of Concord Public Works (CPW) is responsible for managing the day-to-day operations of drinking water and sanitary sewer infrastructure. As of the end of FY-2021, the total assets for each system are 25.9 million and 17.1 million dollars, respectively.

Water System

Concord was provided with legislative authority to establish a public water system in 1872. In 1874, water from Sandy Pond, Lincoln, began flowing through the original network of water mains to Concord Center. Today, the water system has evolved to include six groundwater wells and one surface water source (Nagog Pond), seven water pumping stations, two water treatment facilities, and a high-pressure water main network consisting of over 135 miles of pipe. Two covered storage reservoirs, one located on Annursnac Hill and the other located on Pine Hill in Lincoln provide total reserve capacity of 7.5 million gallons. There are presently 5,651 accounts receiving potable water service and fire protection from this supply. This represents approximately 95% of Concord residents and businesses, along with a small number of properties along the Route 2A water main from Nagog Pond that are in the Town of Acton.

Regulations and Policies

State Water Management Act (WMA)

Registration statements authorizing continued operation of "grandfathered" water rights were set to expire on December 31, 2021 unless Department

of Environmental Protection Agencies (MassDEP) received a completed and signed Registration Renewal Request Form by June 15, 2021; the Division submitted a completed Renewal Request Form on June 11, 2021. Due to "COVID Order No. 42" issued by Governor Baker, the expiration dates of MassDEP permits and approvals including WMA Registrations were extended to April 7, 2023. On August 9, 2021, MassDEP issued Concord an "Order to Complete" (OTC) initiating a formal WMA renewal process. The OTC included new management and operating provisions relating to drinking water withdrawal "allowances" with consideration of demand management practices to balance environmental protection goals.

Federal Lead and Copper Rule Revisions (LCRR)

On January 15, 2021, EPA published notable regulatory revisions to the Lead and Copper Rule. The final rule was signed on June 10, 2021, with an effective date of December 16, 2021 and a compliance deadline of October 16, 2024. Several notable developments associated with this new rule include: development of lower lead action levels, development of a public-facing lead service line (LSL) inventory, as well as a LSL replacement plan; increased education outreach and an annual notification requirement to customers with LSLs or service lines of unknown material; annual testing of schools and early education and childcare facilities, and updated sample site selection and sample collection procedures. Staff will continue to monitor developments as they relate to the LCRR and take steps to proactively address the impending new requirements ahead of the 2024 compliance deadline.

Water Use and Demand Management

Concord's WMA registration and permit presently provides a cap on "authorized" water withdrawals of up to 2.51 million gallons per day (MGD) on average, or 916 million gallons per year, to meet all residential, commercial, institutional, and municipal needs. Conservation limits identified within the permit include an allowance of 65 gallons per day per capita (RGPCD) for residences and a 10% allowance for system losses (primarily attributed to leaks). In 2021, the total water production required to meet our system demands was 1.77 million

gallons per day or 647.0 million gallons for the year. A peak day demand of 3.04 million gallons was recorded on June 29, 2021. The RGPCD and total system losses (or “unaccounted” for water use) were calculated to be 62.4 gals/day and 12.2%, respectively.

Massachusetts Drought Management Plan

In accordance with Drought Management Plan guidelines provided through the State’s Office of Energy and Environmental Affairs (EEA), a Level 1 Mild Drought was declared on April 8th, 2021. The Town’s local mandatory lawn watering restriction, imposed in accordance with Concord’s “Seasonal Demand Management Plan”, had already been in effect since June 24th, 2020 in response to a long-standing regional drought and to prevent a late spring demand spike at a time when Nagog Pond was not available to allow for the completion of planned intake replacement work. Early May rainfall events provided some relief, but a mandatory lawn watering restriction remained in effect until Nagog intake work was completed and over 10-inches of rainfall was recorded in July. On July 23rd, the mandatory Lawn Watering Restriction was lifted and deescalated to a voluntary Seasonal Water Conservation Advisory.

Integrated Water Resource Planning Initiative

Working collaboratively with CPW’s Engineering and Administrative Divisions, as well as with the Town’s Sustainability Director, Water & Sewer Division staff began the process of identifying programmatic gaps in our understanding and compliance goals associated with long-term water supply, wastewater, and stormwater programs. Internal staffing vacancies and transition challenges prevented significant advancement in these efforts.

Water Main Leak Detection

New England Water Distribution Services LLC (Windham, NH) performed a water main leak detection survey on approximately 50% of the water distribution system. The acoustic survey targeted water mains, hydrants, select gate valves, and select service lines located in the southern half of the distribution system. Minor leaks were identified at five (5) hydrants, accounting for an estimated loss of approximately 6.57 million gallons per year. Four of five leaks have been repaired.

The Division continues to maintain its commitment to its comprehensive water conservation program that encourages efficient water use via seasonal increasing block rates, the provision of complimentary residential water saving devices including showerheads, aerators, garden nozzles, rain gages, and toilet fill cycle diverters, as well as customized outreach and assistance to customers who are interested in learning more about indoor and outdoor water savings opportunities. As funds allowed, the Division continued to offer rebates on water saving toilets and high-efficiency clothes washing machines.

Water Quality and Drinking Water Compliance

In compliance with Federal and State drinking water requirements, Concord tests and reports for a wide range of regulated substances, with routine and non-routine activities. While no water quality standards were exceeded in 2021, public notice was issued for an ongoing Bromate issue relating to the unfiltered Nagog Pond water supply despite the fact that Nagog Pond was not operated during 2021. EPA’s strict adherence to a questionable interpretation of regulatory language fails to provide for a notification “exemption” when a source of supply is not actually used. As such, on June 2, 2021, a direct mailing was sent to all customers in Concord and Acton. Staff will continue to work with our consulting engineers and MassDEP to evaluate temporary treatment optimization practices at the existing ozone facility to determine if the low levels of Bromate can be mitigated when Nagog Pond is in operation.

Per- and Poly-fluoroalkyl (PFAS) Substances

In accordance with recently adopted drinking water standards established by MassDEP (2020), beginning in spring of 2021, “quarterly” sampling for these substances began at all groundwater supply sources. To date, all sample results have been below the 20 parts per trillion (ppt) MassDEP Maximum Contaminate Limit (MCL). Nagog Pond was not sampled as the supply was not activated during 2021.

Lead Service Line Replacement Program

CPW’s Water Division continues to eliminate lead service lines in Concord, which account for less than

5% of the active services in Concord. The typical cost for a private contractor to replace a lead service line is \$5,000 or more per the American Water Works Association (AWWA). To incentivize property owners to replace their lead service lines, the PWC approved a Lead Service Line Replacement Program (LSLRP) in May 2017; this program enables Division personnel to perform work on private property, which is otherwise not commonly allowed, at a cost not to exceed \$1,500. Participating customers are also offered an interest-free 12-month payment plan. Over three dozen lead service lines have been replaced since the program's inception, with one emergency replacement completed in mid-July after a reported service leak.

Nagog Pond Update

Environmental Partners Group (EPG) continued to partner with staff and special counsel (Mackie Shea Durning PC) to advance permitting and final design needs associated with the Nagog Pond Filtration Plant upgrade. While there is no notable progress to report with respect to the Treatment facility, D&C Construction, of Weymouth, MA completed the replacement of the deep section of the existing 16-inch, cast iron raw water intake pipeline (circa 1909). Their work included the installation of approximately 1,100 linear feet of new 16-inch High Density Polyethylene (DR11). This new section of intake, which extends beyond the limits of the Nagog Pond Cove, was furnished with a new screen assembly equipped with a mechanical cleaning system.

While Division crew invested considerable effort in preparing temporary ozone equipment for seasonal operation of the facility, reduced summer water demands, attributed to aggressive water conservation messaging coupled with increased precipitation in July and beyond, resulted in Nagog not being put into operation during 2021.

Water Pumping Station Rehabilitation and Upgrades

Division crews continued to perform routine operation and maintenance of the seven water production facilities and related treatment systems which make up our total water supply. In addition

to these routine inspection and service activities, capital upgrades are also planned and performed on the millions of dollars of assets including associated mechanical, electrical, plumbing and instrumentation and control systems housed within these facilities. Notable improvements performed within the past year include:

Annursnac Reservoir Improvements Project

During the fall of 2021, DN Tanks, Inc., of Wakefield, MA performed renovation work including the installation of a new concrete floor, metalwork on the geodesic dome to improve access and ventilation of this 2.5 million gallon storage facility and the fabrication of a retrieval and placement system for a dedicated water mixing system.



Annursnac Reservoir Improvements Project

Water Mains

The water distribution system consists of approximately 136 miles of water main ranging in size from 6-inch to 16-inch. A replacement/rehabilitation program has been developed to maintain and improve upon system service reliability. Improvement/replacement projects are prioritized based on age, condition, and material of pipe. Plans and schedules are further refined with consideration to other public works initiatives such as drainage improvements, annual CPW Roads Program or CMLP underground initiatives. Each year, new mains may also be added to the system to allow for service to new or existing properties where

frontage to the municipal water distribution system had not otherwise existed. During 2021, no new replacements or additions were performed.

Emergency Water Main Repairs

Based on the age and condition of water main located throughout the water distribution system, it is not uncommon for sections to fail. When they do, they can cause sudden pressure drops or water discoloration that can affect a few customers or larger neighborhoods. Depending on the nature and location of each break, individual water service interruptions can also occur and last for several hours. This past year, the Division performed emergency repairs at the following locations:

- MacIntosh Lane (Concord Green), on September 28th, 2021
- Commerford Road, on October 29th, 2021
- State Route 2, Westbound Approach to Rotary, on November 4th, 2021
- Monument Street, on December 26th, 2021

SEWER SYSTEM

Concord was provided with legislative authority to create a municipal sewer system in 1894. By early 1900 a small centralized collection system carried wastewater from Concord center via a network of gravity mains to a collection chamber located at 141 Keyes Road where it was then pumped to a cluster of filter beds located approximately one mile away on fields located adjacent to Great Meadows. The present system consists of approximately 34 miles of collector mains (gravity and low pressure), two pumping stations, six neighborhood lift stations and a 1.2 MGD treatment plant. The present sewer system serves over 1,905 customers, or 35% of the community.

Regulations and Policies

Sewage Release Notification Bill

The Massachusetts legislature enacted a new state-wide sewage notification bill signed into law on January 12, 2021. The purpose of the bill is to increase public notice and awareness of antiquated

Annual Water Report Summary Table					
Water Statistics	2021	2020	2019	2018	2017
Miles of Main	135.9	135.7	134.7	133.6	133.5
Hydrants	1,336	1,330	1,330	1,328	1,328
Main Pipe - New (linear feet)	1,002	1,000	500	442	1,073
Main Pipe - Replaced or Rehabilitated (lf)	0	7,932	3,337	6,735	626
Main Breaks	4	4	3	4	5
Number of Service Accounts	5,651	5,641	5,634	5,623	5,605
Total Water Demand (million gal.)	647	722	664	673	674*
Daily Average Demand (million gal.)	1.77	1.97	1.82	1.84	1.85*
Peak Day Demand (million gal.)	3.04	3.85	3.36	3.18	3.04
Unaccounted for Water (percent)	12.2	9.9	6.0	6.0	8.7
Residential per Capital per day (gal.)	62.2	75	66	66	65
Annual Precipitation (inches)	54.91	42.26	51.18	57.53	45.49
Mean Annual Precipitation (inches)	42.23	42.16	42.15	42.09	41.98
Residential Rate per Unit (unit = 7.48 gal.)					
Base Rate- Step 1	\$0.0654	\$0.0592	\$0.0564	\$0.0537	\$0.0516
Conservation Rate – Step 2 (May 1 – Oct. 31)	\$0.1367	\$0.1243	\$0.1184	\$0.1128	\$0.1084
Conservation Rate – Step 3 (May 1 – Oct. 31)	\$0.1726	\$0.0583	\$0.1495	\$0.1423	\$0.1367
General Service Rate per Unit of 7.48 gallons					
Step 1 - (<50 Units)	\$0.0651	\$0.0592	\$0.0564	\$0.0537	\$0.0516
Step 2 - (>50 Units)	\$0.0826	\$0.0751	\$0.0715	\$0.0681	\$0.0655

sewer infrastructure which, based on the original design, can allow for untreated or partially treated sewage discharges to be introduced to public waterbodies. MassDEP has been tasked to develop regulations that will establish specific release triggers and notification procedures.

NPDES Permit

Concord continues to operate its wastewater treatment facility in accordance with a National Pollutant Discharge Elimination System (NPDES) permit in accordance with conditions issued in 2013. As these permits are issued for 5 year terms, a request for renewal was submitted and reviewed by the EPA in August 2018. With consideration of long-standing wastewater capacity interests of the Town, the application included a request for an increase in permitted discharge from 1.2 MGD to 1.4 MGD. Other than acknowledgement of receipt, to date, there has been no formal response issued by the EPA.

Sewer Pumping Stations

Sewer pumping stations carry wastewater from local networks of gravity flowing pipes (collection system) and then pump this wastewater to a central wastewater treatment facility located off of Bedford Road. The size and complexity of each pumping station depend upon local land elevations, topography, and the volume of wastewater handled. The Lowell Road and Assabet Sewer Stations are the two largest facilities in Concord, designed to handle flows from the most densely populated and commercialized neighborhoods of West Concord and Concord Center. Six smaller neighborhood lift stations serve less populated areas of Town with much more modest physical footprints.

The Lowell Road and Assabet Sewer pumping station upgrade designs, completed by Kleinfelder in 2020, was publicly bid and awarded to D&C Construction (D&C) of Weymouth, MA. These stations were last upgraded in the mid-1980s and have served well beyond their anticipated design life. The COVID-19 pandemic resulted in global manufacturing delays of goods and equipment which had a significant effect on the construction schedule for the station upgrades. D&C began construction activities in October 2020, and

substantial completion for the Assabet Station and Lowell Road Station was achieved in the Summer of 2021 and September 2021, respectively.

Division crews continued to perform routine operation and maintenance of the eight operating sewer facilities.

Collection System

The sewer collection system is composed of over 34 miles of gravity and low-pressure collection main (ranging in size 2-inch to 27-inch diameter) with manholes that allow for access and maintenance of this system. Approximately 50% of Concord's sewer collection system is made up of clay pipes – much of it dating back to the original sewer system installed over 100 years ago. Concord continues to investigate the condition of this infrastructure and repair or replace it as needed to reduce preventable inflow and infiltration (I/I). Inflow and infiltration refers to stormwater and groundwater that flows into the sanitary wastewater collection system through illicit connections or leaking pipes.

Infiltration and Inflow Program

Inflow & Infiltration Plan

In accordance with a MassDEP approved Infiltration/Inflow (I/I) Control Plan (2018), the Division completed a trenchless sewer rehabilitation project in the Hubbard Street area of Town, which cured-in-place lined approximately 2,342 linear feet of sewer main. Within 2021, no additional sewers were CCTV-inspected, or smoke tested. Division crews do routinely conduct sewer cleaning using the Division's jetter/vacuum truck, as a part of capacity, management, operations and maintenance (CMOM) best management practices for sewer system operations.

There were no reportable sanitary sewer overflows (SSOs) identified within Concord's collection system. The Treatment Plant, however, did experience one reportable SSO on August 11th, 2021 and a second reportable SSO on December 10th, 2021. Both SSO's were contained within the facility grounds with no untreated wastewater being introduced to nearby surface water. The 12-month (rolling average) of wastewater flow processed

through Concord's wastewater treatment plant was 1.07 MGD, below the 1.2 MGD permitted capacity assigned to this facility. The combined total of the infiltration rate (of groundwater) and the inflow rate (stormwater) into the collection system was estimated at approximately 12.1% of the total sewer flow for the year. This rate falls within acceptable industry limits and well below "excessive" rates as defined by the MassDEP.

Wastewater Treatment Plant Operations

Woodard & Curran, Inc. (Portland, ME) continues to operate the Concord Wastewater Treatment Plant (WWTP), located off of Bedford Street. They are operating in the 10th year of a 10-year service contract. The Water and Sewer Division continues to work closely with Woodard & Curran to ensure day to day operations and maintenance is performed in a quality manner. Within the past year, the facilities and associated equipment ran reliably, in compliance with State and federally issued permits, with numerous equipment and facility rehabilitation and replacements.

Sewer Statistics	2021	2020	2019	2018	2017
Assabet Pumping Station					
Total Pumped (million gallons)	Unavail-	62.38*	88.18	94.28	88.09
Monthly Average (million gallons)	able at	6.24*	7.35	7.86	7.34
Daily Average (million gallons)	time of	0.20*	0.24	0.26	0.24
	report				
Lowell Road Pumping Station					
Total Pumped (million gallons)	Unavail-	297.27	314.07	350.37	312.64
Monthly Average (million gallons)	able at	24.77	26.17	29.20	26.05
Daily Average (million gallons)	time of	0.81	0.86	0.96	0.86
	report				
Bedford Street					
Total Pumped (million gallons)	7.90	7.41	7.33	7.92	6.18
Monthly Average (million gallons)	0.66	0.62	0.61	0.66	0.51
Daily Average (million gallons)	0.02	0.02	0.02	0.02	0.02
Collection System					
Number of Service Accounts	1,905	1,649	1889	1876	1,869
Miles of Sewer Main	34.03	34.03	34.03	34.03	34.03
Main Pipe Inspected (lf.)	2,342	48,941	48,000	4,515	11,350
Main Pipe Replaced/Rehabilitated (lf.)	2,342	12	0	0	0
Rate per Unit (unit = 7.48 gallons)	\$0.1212	\$.1188	\$.1165	\$.1153	\$.1141

**Based on 10 months – station flow meter bypassed for rehabilitation project*