



CITY OF DOVER, NEW HAMPSHIRE MASTER PLAN

2009 Update to the Community Facilities and Utilities Chapter

Sustainable Infrastructure

COMMUNITY FACILITIES AND UTILITIES CHAPTER – 2009
(DATA UPDATED THROUGH MAY, 2009)

Sustainable Infrastructure

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CITY OF DOVER

CERTIFICATE OF ADOPTION

Agenda Item#: 3B

Adopting: Community Facilities and Utilities Chapter of the Master Plan

WHEREAS: The Planning Board and Planning Department, have written and completed the Community Facilities and Utilities chapter of the Master Plan in accordance with RSA 674:3, and

WHEREAS: A concerted effort was undertaken to include participation by the general public through the use public meetings, a telephone survey, and a citizen steering committee; and

WHEREAS: A formal public hearing on said Chapter, in accordance with RSA 675:6, was held before the Planning Board on December 8, 2009; and

WHEREAS: The Dover Planning Board voted on December 15, 2009 to adopt the Community Facilities and Utilities Chapter;

NOW, THEREFORE, BE IT RESOLVED BY DOVER PLANNING BOARD THAT:

- 1. The Community Facilities and Utilities Chapter of the Master Plan is adopted and certified in accordance with RSA 674:4;
2. The Planning Board Chairman is authorized to sign and label as "adopted" the final reproduced documents of said Chapter; and
3. The Planning Department is authorized to forward a certified copy of the adopted Chapter to the Office of Energy and Planning, as required by RSA 675:9.

AUTHORIZATION

Approved as to Legal Form:

[Signature] 12.17.09
Allan B. Krans, Sr.
City Attorney

[Signature]
Ronald A. Cole
Planning Board Chair

Date of Adoption: 12-15-09

Members in Favor: 9

Members Opposed: 0



CITY OF DOVER

CERTIFICATE OF ADOPTION

Agenda Item#: 3B

Adopting: Community Facilities and Utilities Chapter of the Master Plan

BACKGROUND MATERIAL:

According to New Hampshire Planning and Land Use Regulation 674:2, the Master Plan is intended to clearly and practically propose the best and most appropriate future development of the City under the jurisdiction of the Planning Board, to aid the Board in designing ordinances, and to guide the Board in the performance of its other duties in a manner that achieves the principles of smart growth, sound planning and wise resource protection.

The Master Plan is a set of statements about land use and development principles for the municipality with accompanying maps, diagrams, charts and descriptions to give legal standing to the implementation of ordinance and other measures of the Planning Board. A Master Plan should lay out a physical plan which takes into account social and economic values describing how, why, when and where the community should build, rebuild and preserve. This physical plan should be comprehensive in nature, and have a long range vision – 10 years is the average. The master plan shall include, at a minimum, the following required sections:

- A vision section
- A land use section

The master plan may also include the following sections:

• A transportation section	• A cultural and historic resources section
• A community facilities section	• A regional concern section
• An economic development section	• A neighborhood plan section
• A natural resources section	• A community design section
• A natural hazards section	• A housing section
• A recreation section	• An implementation section
• A utility and public service section	

Dover has completed Master Plans in 1963, 1978, 1988, 1998 and 2000. In 2007, the Land Use Analysis Chapter was completed and adopted and in 2009 the Recreation Chapter was completed and adopted.





Section
1

Goals and Objectives

Introduction

To increase the usability of this plan, the “icon key” at left was produced. The icons will appear throughout the chapter to help readers identify concepts and ideas that will be used and explained. Furthermore, words in *italics* are defined at the end of the chapter.

The folder icon represents information obtained through demographic data gathering. The pencil icon represents information gathered by the committee through the use of the Speak Out Dover! sessions. The checkmark icon represents information from the UNH Survey Center telephone survey. Finally, the book icon indicates that there is further information available in an Appendix to this chapter.

I C O N K E Y	
	Demographic information
	Speak Out Dover! Result
	UNH Telephone Survey
	Check the Appendix

Speak Out Dover!

During the summer of 2006, the City of Dover sponsored a Speak Out Dover series as part of a larger city-wide effort to foster citizen participation in setting directions for City government. Primarily conceived to allow citizen input into the master planning process, Speak Out Dover became an opportunity for the citizens of Dover to communicate their thoughts and concerns about the community and to offer ideas and visions for what they hope to see Dover become in the future. This Speak Out Dover series was modeled after a similar effort undertaken by the City in 1995 as part of a public participation process in preparation of an update of the City’s Master Plan.

More than 220 people took part in the seven Speak Out Dover sessions that began in July and ended in August. Of those who came to the Speak Out Dover sessions, 56 completed a written questionnaire designed to provide City government with a greater understanding of what it is the citizens of Dover value in the community and what changes they would like to see. In addition, the questionnaire was placed on the City web-site to allow those citizens that could not attend one of the sessions to be able to complete the same questionnaire. Approximately 27 citizens took the time to download the questionnaire off the web-site, fill it out and submit it to the Planning Department.

The seven Speak Out Dover sessions were held at various locations around the City that were accessible to the general public. These locations were specifically selected in order to insure that all of the residents were given an opportunity to participate in a neighborhood setting. One

session was held in each of the City's six wards and the seventh session was held at City Hall.

**SPEAK OUT LOCATIONS
AND DATES**

1. Horne Street Elementary School | July 13, 2006
2. Dover Public Library | July 18, 2006
3. St. Thomas Aquinas High School | July 27, 2006
4. Garrison Elementary School | August 1, 2006
5. Strafford County Courthouse | August 10, 2006
6. St. Johns Methodist Church | August 16, 2006
7. Dover City Hall | August 29, 2006

The last Speak Out Dover session was one last opportunity for any citizen to answer the questions and provide their input on the future of the City. Additionally, the final session was used to summarize the results from the first six Speak Out Dover sessions held up to that point.

The Speak Out Dover sessions generated many diverse interests and concerns that were broadly representative of the various neighborhoods of Dover. Speak Out Dover participants were guided in their discussions by a moderator that prompted them to consider topics that fell into five major categories:

The Speak Out Dover sessions generated many diverse interests

- (1) Neighborhood strengths and needs for improvement;
- (2) What people value about the City of Dover and how it can improve;
- (3) The needs of families and how government can meet those needs;
- (4) The reasons why people volunteer for community service and what it would take to become more active;
- (5) What people's vision is for the kind of community they would like to see Dover become in the future?

A report summarizing the responses in each of these five categories from all seven of the Speak Out Dover sessions was completed in the fall of 2006, and is enclosed in the Appendix of the Land Use Analysis Chapter.

Telephone Survey

The City of Dover hired the University of New Hampshire Survey Center to complete a Master Plan Telephone Survey of a random sampling of Dover citizens. The telephone survey was conducted during the second week of June, 2007. A total of 411 surveys were successfully completed. The survey contained about 50 questions and took approximately 10 to 15 minutes to complete on the telephone. The questions in the survey were developed by a local sub-committee with the assistance of the staff of the UNH Survey Center.

The survey provided an opportunity for citizens to express their opinions on a variety of topics including the quality of municipal services, economic development, growth, and transportation. Residents were also asked several demographic questions so that the results can be cross-tabbed by factors such as age, education level, income, and the ward they reside in.

The results of the telephone survey will be used to help formulate the recommendations of each of the chapters of the Dover Master Plan. The survey is a crucial scientifically accurate component of the public participation process to encourage citizen involvement. This survey follows the City's successful Speak Out Dover sessions held in each ward of the City during the summer of 2006. A similar telephone survey was completed in 1995 as part of the previous Master Plan update.

Goals and Objectives

OVERALL GOAL:

The City of Dover should strive to effectively meet the municipal, social, educational, and utility service needs of its residents and businesses in a responsible and efficient manner. When the delivery of such services is in the City's interest, consideration should be given to regional cooperation.

Public Facility Goal Plan for, develop and maintain an efficient system of public facilities and services to accommodate anticipated growth and development.

- Objective 1: Promote a pattern of growth and development that is sustainable and allows for cost effective delivery of services consistent with the needs of the City.
- Objective 2: Assure that the public health and safety of the City's residents are met.
- Objective 3: Program public facility improvements through a Capital Improvement Program (CIP) that is based upon the policies and actions from this Master Plan and an appropriate system of priorities.
- Objective 4: Encourage public/private cooperation in planning for and financing improvements to the City's public facilities.
- Objective 5: Encourage educational programs that use a variety of community resources including conservation lands, historic resources, community facilities and local businesses.
- Objective 6: Establish a task force to identify, evaluate and implement a formal City-wide Building Maintenance Plan that identifies and addresses maintenance issues in a cost effective and efficient manner.
- Objective 7: Consider requiring that new municipal building construction meet *LEED* certification standards and take steps to improve the energy efficiency of existing municipal buildings and operations.
- Objective 8: Encourage the Energy Advisory Committee to develop an Energy Action Plan to reduce dependence on traditional fossil fuels within municipal operations and decrease electricity and natural gas consumption.

CITY OF DOVER, NH COMMUNITY FACILITIES & UTILITIES

- Utility Goal** **Provide a high quality, well-maintained system of public and private utilities that accommodates future development and is consistent with the City's growth policies.**
- Objective 1: Operate, maintain and upgrade the City's water, storm water and sewer facilities within the existing service area consistent with the health and safety needs of the City's residents at a reasonable cost in accordance with the City's operating budget and Capital Improvement Plan.
- Objective 2: Extension of utilities into areas outside existing utility service areas shall be assessed with the goal of providing efficient, cost effective services taking into consideration the secondary costs to the City (such as schools, fire, police, recreation and environmental impact).
- Objective 3: Work cooperatively with private utility companies in the planning and development of facilities to ensure that Dover's residents are properly serviced.
- Objective 4: Where practical and feasible, encourage the placement of utilities underground that allows for future expansion and long-term capacity.
- Objective 5: Program public utility improvements through a Capital Improvement Program that is based upon the policies and actions from this Master Plan and an appropriate system of priorities.

Community Facilities

This section describes Dover's Community Facilities that are crucial to the goal of providing the highest quality municipal services to Dover citizens.

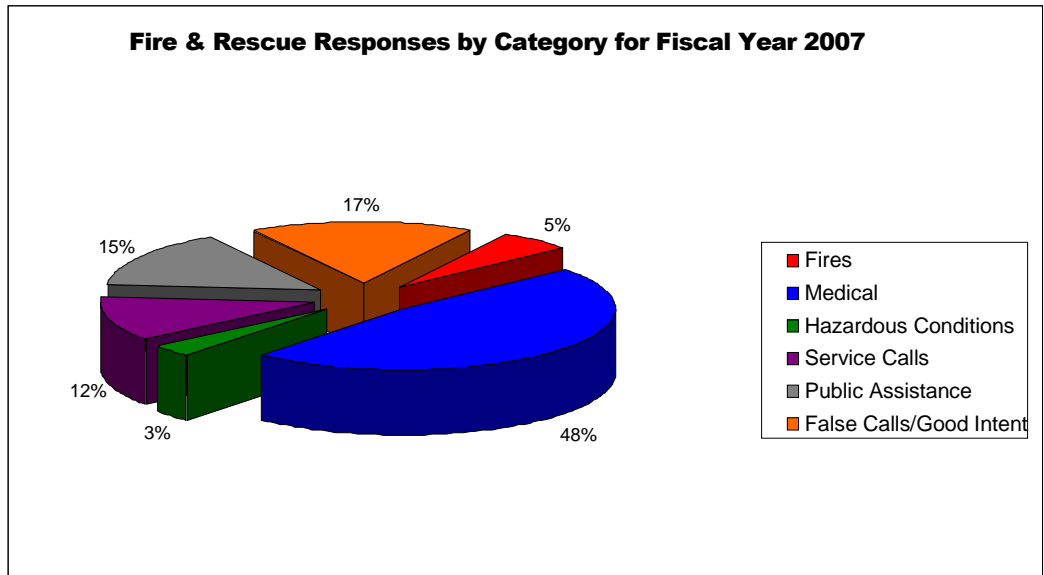
Introduction

The citizens of Dover have come to expect a high level of municipal services from the City and its employees. The City delivers a wide and diverse range of services to the residents and businesses of the City. This section describes the major community facilities that the City operates and the municipal departments that occupy those facilities. Since the 2000 version of this chapter was adopted, there have been some major new community facilities built in Dover, including the Dover Middle School on Daley Drive and the Public Works Facility on Mast Road. Additionally the former Middle School underwent a major renovation to be transformed into the McConnell Center and the City has constructed the Liberty North End fire station off of Sixth Street. In some cases these facilities were necessary to meet new demands placed on the City by growth and in other cases the facilities were needed to address some longstanding deficiencies in services and facilities.

One central theme throughout this section is the need for adequate funding for routine maintenance of facilities, both existing facilities that may be one hundred years old and newly constructed facilities that will require planned maintenance so that they will last for another one hundred years. A comprehensive facility maintenance plan would include all facilities the City (both municipal and school) is responsible for, with a schedule for routine maintenance tasks and an inspection schedule for regular review of key components of each facility. The Committee realizes that implementation of this plan would require staff resources and funding for replacement parts and maintenance supplies, but in the long run, well maintained facilities will operate more efficiently and have a longer useful life. It seems that maintenance is usually one of the first items that is cut or reduced when the budget comes under scrutiny in an effort to reduce costs. Deferred maintenance will result in higher costs in the future.

Fire Protection and Emergency Management

The City of Dover Fire and Rescue Service is comprised of 51 full-time uniform employees and three part-time support staff operating from three locations. In addition, the City maintains a fleet of four engines, an aerial platform style ladder truck, three ambulances, a heavy rescue and several support vehicles. This department is responsible not only for fire suppression, but also for other services including a paramedic level emergency medical service, vehicle extrication, water rescue, high-angle rescue, and hazardous materials response. The department also provides a number of non-emergency services including fire prevention and code enforcement, inspection services, hazard public education, fire investigation, vehicle and residential lock-out services, and car seat installations. During Fiscal Year 2007, this agency responded to 5,085 calls for service. Approximately 2,375 of those calls for service were medical emergencies and approximately 275 were fire related emergencies.



The Fire and Rescue Service has prepared a Strategic Plan for the years 2006 through 2011 that documents the current status of service, as well as considerations for future actions to meet its mission. This Strategic Plan is incorporated by reference into this Master Plan and will be referred to frequently in this document.

One of the questions asked of Dover citizens during the UNH Telephone Survey dealt with how they rated the Dover Fire Services.

Excellent:	51%
Good	38%
Fair	2%
Poor	0%
Don't Know	9%

Buildings and Equipment - The Fire and Rescue Service has three locations, the Central Fire Station, the South End Fire Station and the new Liberty North End Station.

The Central Station is located on Broadway in downtown Dover and this facility is a three-story, 7000 sq. ft. brick structure built in 1899. The apparatus bay is 3,000 sq. ft. while the remainder of the space is devoted to offices, kitchen, training/day

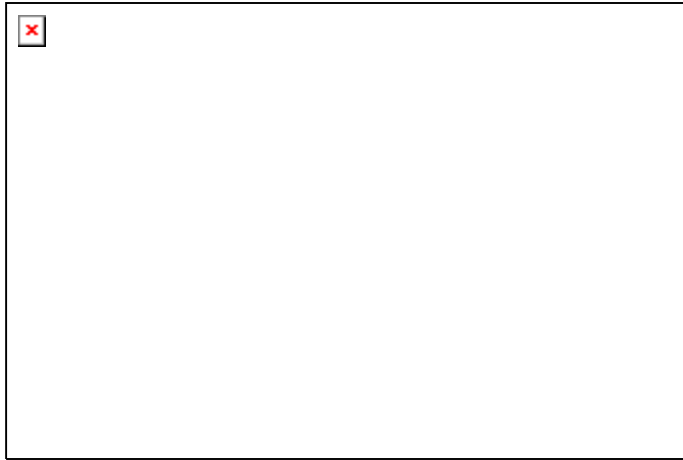
CITY OF DOVER, NH COMMUNITY FACILITIES & UTILITIES

room, physical training/locker room, and bunk rooms. Originally built to house three vehicles and a small number of firefighters, today the station has five vehicles including two engines, two ambulances, and a utility vehicle.



The South End Station, located on Durham Road just south of Exit 7 on the Spaulding Turnpike, started as an approximately 6,000 sq. ft. single story block structure built in 1967 with a small addition completed in 1999 and another addition of a second floor over part of the building in 2005 raising the total square footage to approximately 7,500 square feet. The apparatus bay is 4,664 sq. ft. with the remaining space devoted to a kitchen, physical training room, and bunk rooms. The 2005 addition renovated the undersized bunk area and single bathroom into a training room and new bunk rooms, locker areas, and bath/shower rooms were moved to the second floor.

CENTRAL FIRE STATION AT 9-11 BROADWAY



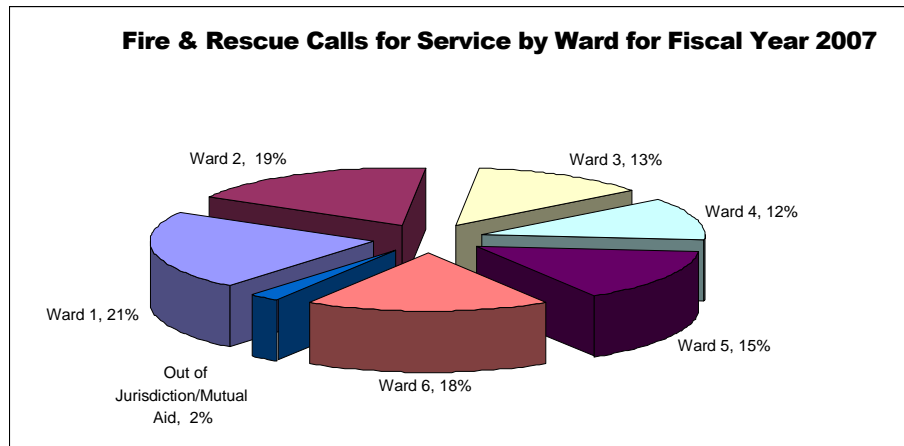
SOUTH END FIRE STATION AT 25 DURHAM ROAD

The Liberty North End Station is located at 262 Sixth Street. This station serves as the headquarters for Dover Fire & Rescue. With a daily staff of Chief officers, the Fire Prevention Bureau and the City of Dover Inspection Services, Liberty station is home to a frontline engine, a heavy rescue unit, a 100' Tower Ladder and a reserve ambulance. The apparatus are staffed with a Lieutenant and 3 firefighters.

Staffing and Current Response Statistics

The number of fire personnel on duty at any one time decreased from a high of 13 per shift in 1979 handling 700 calls for service, to 9 personnel in 1990 handling 3,200 calls for

service. At the recommendation of the 2000 Master Plan, staffing has increased to the current level of 11 personnel per shift to manage the approximate 5,000 calls for service per year that the department currently receives. Recommendations established by the International City Managers Association call for shift staffing of 16 personnel to accomplish all simultaneous fire suppression tasks as identified through task analysis research. Additionally, industry standards developed by the National Fire Protection Association and OSHA regulations impact the recommended number and how those individuals are deployed. Staffing at 16 per shift is the long term goal of the City of Dover Fire & Rescue as community growth provides the necessary financial resources to fund the staffing.



One of the main action items identified in the 2000 Master Plan was the construction of a North End Fire Station. Summarizing from the Fire & Rescue Strategic Plan, one of the main issues necessitating the additional station was an increasing call volume in that area based on growth. In the last eight years, call volume in Ward 6 increased 86% from 475 calls per year approximately to nearly 900 per year. Additionally, response time benchmarks were not being met because of the distance from the other stations. The third main issue was the increasing number of simultaneous calls. Sixty times a month on average, staff were deployed on two or three emergencies at the same time leaving little to no reserve. The North End Station was seen as a solution that would impact positively all three of those issues.

The Fire & Rescue established as a benchmark, after careful analysis described in detail in the Department's Strategic Plan, four minutes of travel time from a station to an emergency. Prior to the construction of the Liberty North End Station, a six minute travel time was typical for the bulk of Ward 6 and could be 8 minutes or more when influenced by traffic and weather. The Liberty North End Station primary response area provides overlap and reduces response times in parts of Ward 5 and Ward 1 and provides additional resources when the other stations are operating at other emergencies and are unavailable. It was noted in the 2000 Master Plan that "much of the City's recent and projected growth has been north and west of the downtown area, much of it outside the one and one-half to two mile radius from the existing fire stations". This statement has proven completely true with the recorded 86% increase in call volume in Ward 6 since 1998.

Mutual Aid

Currently, the City has mutual aid agreements with the surrounding communities. During Fiscal Year 2007, Fire & Rescue Service provided mutual aid approximately 110 times and received mutual aid during approximately 50 emergencies. In most cases where mutual aid was received by the City of Dover Fire & Rescue, multiple vehicles responded from multiple communities per incident so that after careful analysis, it was found that the amount given equals the amount received. These mutual aid agreements keep over all costs down by allowing a lower level of overall staffing amongst communities, while providing surge capacity for major events.

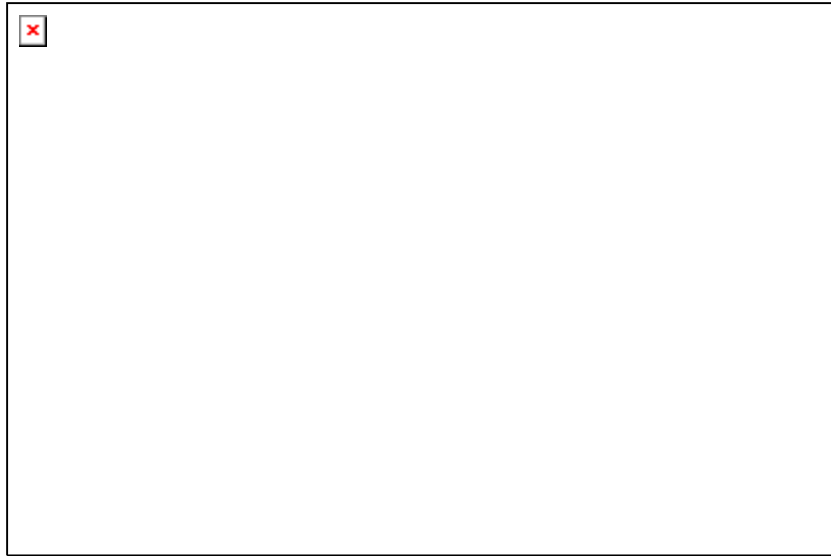
Emergency Medical Services

In addition to fire suppression, the department also provides emergency medical services. The City has 20 paramedics who are cross-trained in fire, rescue and hazardous materials handling with all other personnel certified as Emergency Medical Technicians or Intermediate Emergency Medical Technicians and cross trained similarly. Approximately 70% of the time when the shift staffing is at 10 personnel, the primary ambulance operates from the Central Fire Station. When shift staffing is at 11 which occurs when no personnel are on leave for vacations, educational purposes or other reasons which is the other 30% of the time, the City is split into two districts for medical emergencies and an ambulance is staffed at both stations providing the shortest response time.

Since the 2000 Master Plan, the number of cross trained paramedics and EMT-Intermediate level certifications have increased 25% and placement of paramedic level medical equipment has expanded to all fire engines in addition to the ambulances. Medical related calls for service have also increased from 36% of the total call volume to 46% of the total call volume as well. The Fire & Rescue has also outsourced ambulance billing after analysis showed this was a more cost effective solution than handling the billing process in house. Ambulance billing revenue has also increased over 100% in that time from \$300,000 annually to nearly \$700,000 annually. More detailed information as to how the Fire & Rescue's Emergency Medical Services operates can be found in the Department's Strategic Plan.

Emergency Management

Fire and Rescue Service is responsible for emergency management. All communication is handled through the Public Safety Communications Center. In the event of a major disaster, such as a severe winter storm, the Emergency Operations Center in City Hall is opened to coordinate all emergency-related activities. This facility currently has ample space to accommodate key City officials and is equipped with an emergency generator and key communications equipment. Although the space is adequate at present, more appropriate and functional space is needed in order to provide necessary emergency services. Since the 2000 Master Plan, there have been two major flood events and several major snow and ice events where the EOC concept was utilized to manage the exponential increase in calls for service to all City Department's.



COCHECHO RIVER FLOODING APRIL 2007 AT HENRY LAW PARK

Status of the Recommendations From the 2000 Master Plan

In the year 2000 City of Dover Master Plan, the following **RECOMMENDED** action items were mentioned for the Fire & Rescue Service. The present status of each item is explained.

1. *Undertake the design, find an appropriate location, and construct a third fire station for the North End of the City in order to efficiently and safely meet existing needs as well as future growth in this area.*

Since the 2000 Master Plan, land located directly across from Glenwood Avenue on Sixth Street and owned by Liberty Mutual, was identified as the optimum station location. Liberty Mutual was approached and this land was donated to the City. Funding for the new station's construction was approved in the FY 2008 CIP. The construction was complete and the opening of the new North End Liberty Fire Station occurred in November of 2008. **COMPLETED**

2. *Add a Training Officer to the department staff. Depending upon the nature of this position, an alternative might be to have an individual responsible for training on a part time basis with responsibility for other needed duties the rest of the time. Consideration should be given to outsourcing this function.*

Since the 2000 Master Plan, the Training Officer position was added to department staff and a regular and consistent training program was established. The three main areas that the Training Officer focuses on for training include: employee's emergency medical recertification requirements, employee refreshment on fire suppression topic training including new equipment and policies, and vehicle operator competency. Performance improvement have been shown through a higher overall level of emergency medical certifications, by faster hose line deployment during fires, and by a reduction in high profile apparatus accidents. Currently due to retirements, this position is temporarily

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unfilled while a testing process is established to fill the position. Outsourcing will be evaluated again to compare cost to value relationships before implementing the final direction for this position. Increasing OSHA and NFPA operational requirements nationwide maintain the need for continuing this program. **COMPLETED**

3. *Seek to achieve personnel levels based upon the standards established by the City/County Managers Association in its Managing Fire Services publication.*

Shift staffing levels have increased to 11 personnel per shift with a minimum staffing of 10 personnel. This is up from the year 2000 staffing of 10 personnel per shift with a minimum staffing of 9. The Liberty North End Station construction was approved with the understanding that the shift staffing minimum would have to become 12 personnel per shift. Funding for these additional personnel was included in the FY 2009 operating budget. The goal will be continue with incremental staffing additions to the International City Managers Association recommendation of 16 personnel per shift, added in pace with any increases in calls for service as the City grows. Like item 2 above, this is impacted by increasing OSHA and NFPA operational standards and regulations. **ON GOING**

4. *In coordination with the City's Water and Sewer Division, continue to improve water flows throughout Dover to improve the City's ISO ratings.*

The City has an active water system improvement program. A bid has been awarded and construction is currently occurring on a North End water system loop connector between Sixth Street and Old Rochester Road. This will eliminate water pressure fluctuations in the North End, the City's high growth area for both commercial and residential construction, and eliminate one area that currently does not have hydrant coverage. An additional water distribution well on French Cross Road is nearing completion with other improvements planned – please refer to the Water Department section of this chapter for further details. **COMPLETED**

5. *Continue to provide programs and services to the community that encourages fire prevention and provides public safety education.*

Since 2000, the public education program has expanded to an all hazards focus. Educating to decrease demand has become the mission. One major example is the establishment of an elderly services program with the program development funded entirely by grant funding. This program educates in all aspects from slip/trip/and fall prevention to stove top fire extinguishment. Other programs include the continuation of the Children's Fire Safety Festival theatrical safety presentations, utilization of a new Fire Safe Trailer for smoke detector and family escape plan training, CPR for citizens classes, and the growing Child Safety Seat Installation Program now serving over 200 families a year. A fire extinguisher training program exists for home and industry with funding allocated for the purchase of a new fire extinguisher training systems. Research shows that dollars and effort spent now positively impact future service demand. **ON GOING**

6. *Acquire emergency generators for all emergency shelters that do not currently have such equipment.*

Both the Dover Middle School, which is the primary shelter, and Dover City Hall, currently have emergency power generators. Most other emergency shelters like the Dover Baptist Church on Washington Street, do not have this capability and this need should be prioritized in the future. The number of small portable generators has expanded, but these are more appropriate for point of use and not meant for entire buildings. **ON GOING AND PARTIALLY COMPLETED**

7. *Establish a vehicle replacement program based upon the expected life cycle of critical fire safety apparatus that is programmed into the Capital Improvements Program.*

The Fire and Rescue Service has a comprehensive replacement vehicle schedule identified in the long term capital improvements program. The Strategic Planning Committee recommends allocating \$250,000 per year in the operating budget for this program though this remains unfunded at this time. **ON GOING**

8. *Establish a task force to evaluate the potential for the delivery of more cost effective services through integration of both the Police Department and Fire and Rescue Service into a combined Public Safety Department.*

This concept was evaluated as outlined in the 2000 Master Plan and found to be not operationally feasible or fiscally beneficial. **COMPLETED**

9. *Consider adopting an impact fee ordinance for the Fire Department that would enable the City to collect fees to offset the fiscal impact of new development.*

Since the 2000 Master Plan, a plan review and permit fee structure was established City wide which included the Fire and Rescue Service. In 2004, an additional “fee for service” program was proposed and defeated by City Council vote. The long standing policy for ambulance service response billing continues today with periodic fee increases occurring and coinciding with the increases as determined by various Federal Government and Medicare billing regulations.

In October of 2008, the Planning Board voted to adopt three additional impact fees, including a fire impact fee. The fee is charged to new development to cover impacts on capital facilities due to growth. **COMPLETED**

Other Accomplishments Since 2000 Master Plan Update

10. *Purchase of a new Truck One, an aerial ladder platform vehicle.*

Another significant accomplishment since 2000 was the replacement of the 20 year-old “Truck One” which was an aerial ladder platform vehicle capable of reaching 102’ high. The cost of replacing this vehicle was \$821,000. Purchased in 2009, the truck is needed due to the number of large mills, seven and eight story apartment buildings, and large commercial and retail buildings.

Police Department

The Dover Police Department is currently housed in a 13,159 square foot space in the basement of Dover City Hall where it has been since 1935. In this space are offices, meeting rooms, storage areas, a booking room and cell block. Additionally, several off site locations are being used. These include community outreach prevention programs, evidence and found property storage and the storage of specialized vehicles. At present there are seventy-nine employees, 46 being full time sworn police officers, a dramatic reduction from the 55 officers in 2004. There are eleven full time civilians and twenty-one part time civilians. One part-time sworn officer acts as the department's prosecutor, which was previously a full-time sworn position.

Since 1988, the department has been an internationally accredited law enforcement agency with its most recent accreditation having been awarded in March of 2007. The department was also recognized by the Commission on the Accreditation of Law Enforcement Agencies as a Flagship Department due to the exceptional level of attainment for over the past two decades.

Organization

The department is organized into two major divisions—Field Operations and Support Services. Field Operations personnel provide “first contact” services with the public and include patrol officers, first line supervisors, public safety dispatchers and the parking enforcement function. The Support Service personnel serve in a variety of support functions and include detectives, school resource and neighborhood officers, the training function, records bureau and prosecution. In 2005 the City of Dover Teen Center along with the Court Diversion Program and the Community Service function was transferred to the Police Department

The department currently operates a Comprehensive Community Policing and Drug Prevention Program that is supported by federal grants. This program is focused on early intervention and interaction with the youth of the community in an effort to continue to maintain a low crime rate in the City while projecting a positive image of the police.

In general, the department deploys its patrol personnel in four ways: on foot, in patrol vehicles, on bicycles and on horses. A regional Special Response Team has also been instituted to deal with incidents involving high risk arrests such as narcotics, felony or hostage taking. This group has also been trained for search and rescue.



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Police Activity

Much of the department’s activity is generated through police dispatchers. In 2008 the department received 133,522 telephone calls or the equivalent of 366 per day. This generated 31,731 calls for service for the city with 26,171 being police specific, an increase of 7.9% over 2007.

Police Telephone Calls Generating Service Calls – 2000 to 2008

	TOTAL	POLICE	% POLICE
2000	34,883	27,954	77%
2001	36,435	29,520	81%
2002	33,294	26,480	80%
2003	33,081	25,348	77%
2004	31,375	23,653	75%
2005	30,253	22,362	74%
2006	29,246	23,217	79%
2007	30,190	24,254	80%
2008	31,731	26,171	82%

The department is also responsible for dealing with incidents in the station lobby as well as radio/computer transmissions. In 2008 there were 125,195 radio transmissions; 93,264 state computer transmissions and over 2,218 alarms received through department alarm monitors.

One of the questions asked of Dover citizens during the UNH Telephone Survey dealt with how they rated the Dover Police Services.

Excellent: 43%

Good 45%

Fair 4%

Poor 2%

Don't Know 6%

Activities requiring criminal investigations are categorized as Part I and Part II. Part I activities are the most serious crimes as defined by the FBI such as murder, burglaries, thefts or assaults. Part II investigations are lesser crimes and are defined as criminal mischief, liquor law violations, runaways and traffic violations. The department has been successful in maintaining a below average crime rate along with a well above average solvability rate, in part due to its community-oriented programs that are directed at reducing crime and delinquency.

Police Department Activity By Category – 1999 to 2008

Category	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	AVE
Collisions	988	1,053	1,140	1,112	1,130	1,039	994	923	988	918	1,034
Motor Vehicle Stops	6,764	8,496	9,817	6,807	6,234	5,251	4,333	6,414	7,246	9,312	7,020
<i>Criminal Investigations</i>											
Part 1	916	789	907	849	792	862	691	816	831	802	828
Part 2	1,857	1,616	1,864	1,928	1,472	1,626	1,491	1,823	1,521	1,574	1,696
Total Crimes	2,773	2,403	2,771	2,777	2,264	2,488	2,182	2,639	2,352	2,376	2,521

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Activity by Reporting Area: The following figure presents police activity by geographic reporting area from 1999 to 2007.

Areas are generally separated by the Cochecho River for North/South designation and Central Avenue/Durham Road for East/West designation. (Example: Northeast is north of the Cochecho River and east of Central Avenue not including the Miracle Mile or overlapping areas of the downtown.)

The public's perception of crime was one of the topics covered in the UNH Telephone Survey. Citizens were asked how much of a problem crime is to them. The results showed that crime was considered only a minor problem by most:

<i>Major Problem</i>	<i>17%</i>
<i>Minor Problem</i>	<i>60%</i>
<i>Not a Problem</i>	<i>18%</i>
<i>Don't Know</i>	<i>4%</i>

As a follow up, citizens were asked if the City was doing enough to reduce crime. 76% of the respondents said that the City was doing enough.


Police Department Activity By Reporting Area – 1999 to 2007

Beat	1999	2000	2001	2002	2003	2004	2005	2006	2007	AVE.
Northeast	3,346	3,559	3,587	3,177	3,148	2,776	2,615	2,624	2,726	3,062
Northwest	3,265	4,274	4,778	4,395	4,043	3,712	3,605	4,106	4,159	4,055
Miracle Mile	1,950	2,055	2,290	1,807	1,535	1,329	1,175	1,108	1,295	1,616
DTN (1,2) (excludes HQ)	4,099	4,281	4,297	3,925	3,548	3,460	3,590	3,956	4,872	4,003
Police HQ	1,614	1,255	1,212	947	993	966	1,011	892	858	1,083
Southeast	5,591	4,970	5,775	4,945	4,971	4,464	3,992	4,499	4,568	4,864
Southwest	5,145	6,230	6,199	5,873	5,814	5,401	5,133	4,899	5,956	5,628
DHA (MP)	1,155	952	1,002	1,019	938	1,171	980	774	1,053	1,005
DHA – other	123	124	135	107	138	112	91	160	108	122

(1)Bordered by Kirkland Street, Atkinson Street, Chestnut Street, New York Street, Main Street, Henry Law Ave to Williams Street); (2) Includes Dover District Court generated activity.

Space and Personnel Needs

At present the Police Department is operating in a facility that is undersized and insufficient to meet the needs of the agency or the community. There is a lack of both work and storage space. As the City continues to grow, this situation will become more problematic. Future growth will also require a level of personnel to accommodate this growth.

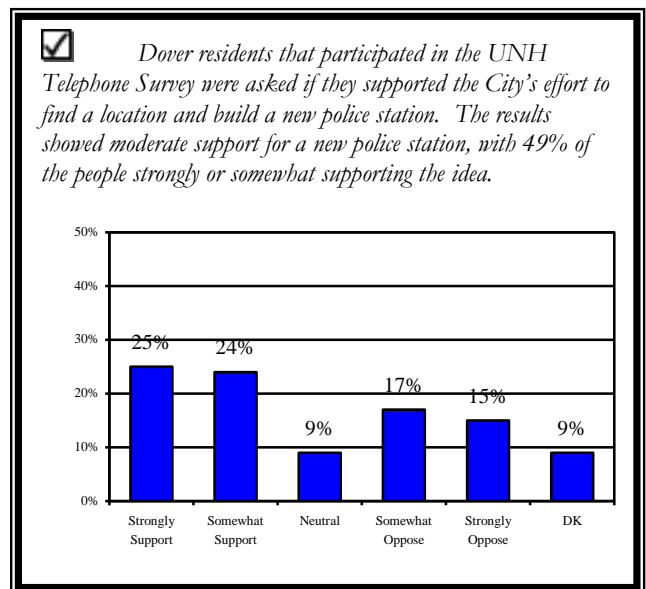
 *During the Speak Out Dover sessions held during the summer of 2006, the attendees were asked about the things they liked most about their neighborhood. The fifth most popular response was the lack of crime and feeling of safety.*

In 2001, a space needs assessment was conducted by engineers at Lassel Architects at the request of the City

CITY OF DOVER, NH COMMUNITY FACILITIES & UTILITIES

of Dover. That study declared that the Dover Police Department needed 28,107 SF to provide adequate space for all employees and programs with an additional 8,000 SF required for proper police vehicle and large item evidence storage.

In 2007 the City retained the services of AG Architects to conduct a comprehensive Space Needs Assessment of City Hall and various other offices/departments outside of City Hall, including the police station. AG Architects collected data on the functions of each department through questionnaires and personal interviews with department representatives. The consultant calculated existing and future space needs, and then developed alternative concept plans that address those needs. The options of expanding the Police Station on the same site and building a Police Station on a new site were examined by the consultant. The final recommendation of AG Architects was for a Police Station on a new site. Based on the assessment of the consultant, it was recommended that a 33,462 gross square foot facility, plus an outside impound lot and other parking needs, be built on a new site, possibly in conjunction with a future municipal parking garage. The cost of a new Police Station was estimated to be between \$12,930,000 and \$15,400,000, not including the site purchase cost if the facility was not built on City-owned property. When considering the potential locations for a new police station, strong consideration should be given to placement on existing City-owned property in the downtown area. Cost savings for this option would be significant.



The adopted FY10-15 Capital Improvements Program contains funding of \$12,600,000 in Fiscal Year 2014 for a new Police Station. The amount would appear to be on the low side, given the consultant's cost estimate and current inflation rates.

SUMMARY OF POLICE STATION ISSUES

Outdated Facility

The Dover Police Department currently operates out of an outdated facility that can negatively impact the quality of service delivery.

The Dover Police Department is physically located in the basement of City Hall, where it occupies 13,159 square feet. The facility, in and of itself is inadequate, with officers at work stations in the hallways.

Physical Plant Issues

The department suffers with substandard HVAC system, unresolved problems with ventilation and mold, leaking gray water pipes, electrical issues, ground water incursion concerns, and facility security issues, as outlined below:

- HVAC Systems

The HVAC systems installed in the late 1970's and early 1980's are incapable of properly heating or cooling the facility during times of peak need and are prone to frequent breakdown.

- Ventilation

Poor/no ventilation in the gym and shower area along with long put-off facility repairs has led to a rampant mold problem in that area. The problem has become so significant wood rot is clearly visible.

- Electrical

The advent of the computer age has taxed the departments' electrical system to the point of failure and brown-out on several occasions. A "Band-Aid" approach to fixing the electrical problem promises still further issues going forward.

- Humidity/Ground Water Incursion

Unresolved humidity and ground water incursion in an evidence room has forced the transfer of that evidence to the already overcrowded secure evidence storage area adjacent to the Crime Lab.

- Crime Lab Space Considerations

The end product of both the crime scene and accident investigation teams is very good, despite the restrictions imposed upon them by the facility when it comes to performing their functions. Ever increasing enhancement of crime scene processing techniques and the deployment of related new technologies is increasing overall conviction rates and lowering the total cost of investigations and staffing overtime in Dover and across the Nation. The courts and citizen's are more and more relying on and having much higher expectations from crime scene investigative protocols and procedures with each new success that is disclosed. Failing to keep up the pace with these advances will naturally retard our progress and efficiency, which has allowed more effective budgets and realistic results.

- Physical Security

The current facility suffers from a number of physical security concerns.

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During “business” hours the department has a walk-up “window” whereby customers can come in and speak to a receptionist. The window is made of common window glass to allow the receptionist to talk with customers. The window provides no ballistic protection.

The Detective Bureau and the area occupied by the Command Staff also pose security concerns. These areas are generally low traffic areas, and they all have ground level windows that would provide easy access to the facility. Additionally, windows into the dispatcher area, the division commanders and chief’s office rest at street level and have no barriers to protect the occupants/visitors to those offices from vehicle incursion, posing a significant risk from accidental or intentional vehicle operation.

Fleet Security

The Dover Police Department works to maintain the current fleet of vehicles and their contents in top condition; available for service or support assignments. These city assets spend most of the time parked on a public street, with minimal security. In the past the fleet has been scratched and dented by passersby, and in one case the windows of three patrol cars were shot out by someone with a BB gun. With this history, and given post 9/11/01 security concerns, efforts should be undertaken to properly secure the fleet.

Security of Computer/Network Communications Center

While cognizant of the space issues present in the Police Headquarters, there is concern that in these times of additional security concerns there is a window to the outside located at ground level which allows access to the computer and network communications center. The window quite literally opens the facility to possible natural or manmade scenarios that could cripple the departments’ ability to deliver services at the required level endanger the data bases and repositories, and severely impact service delivery until all systems could be restored.

It should also be noted that the main men’s bathroom facility for City Hall is located directly above the Computer Center and could easily be damaged from any potential (City Hall) related water incursion issue.

Finally, the avenue or walkway from Locust Street that leads to the front door of the police department provides unobstructed access for motor vehicles.

Acute Storage Space Shortage

As a general statement, space within the existing facility is inadequate for the department as a whole. There is a particularly acute shortage of space within the Records Bureau.

In summary, there is an immediate need to find another “home” for the police department as soon as possible.

Recommendations

1. Establish a police facility as recommended in the 2007 Space Needs Assessment, with consideration being given to re-location into existing available buildings in the downtown area or the construction of a new facility in conjunction with a potential municipal parking garage. The existing station does not meet the existing needs of the department that is “over-utilizing” available space.
2. Upgrade and update the department’s impoundment area to provide for indoor and outdoor space for evidentiary purpose of storage and investigation. Such an area should be included as part of the new police facility.
3. The department should take steps to secure the computer/network communications center and records bureau from natural or manmade events that could otherwise jeopardize the continuous operation of the department.
4. The Capital Improvements Program (CIP) should use the AG Architects cost estimate plus historical inflation rate to more accurately reflect future costs for a new Police Station.

Schools


The City of Dover currently operates three elementary schools (Woodman Park, Garrison, and Horne Street), a middle school, and a senior high school with a regional career and technical center. All of these facilities are within a three-mile radius of City Hall. The middle school opened its doors in January 2000 and accommodated students for grades six, seven, and eight. The fifth grade classes from the elementary schools were relocated to the middle school in September 2000. The School District implemented a kindergarten program in 1998.

The Dover School District serves more than 4,000 students. The challenging academic program is complemented by a full array of extracurricular activities including music, sports, clubs, social events, drama, and service learning opportunities. There is a Curriculum Council which creates a framework for the school's reform efforts.

Educational Quality Indicators

The school district's basic education program and facilities are approved by the State of New Hampshire Department of Education through its "Approval Designation" program. Dover's schools are currently approved to the year 2010. Dover High School is also accredited by the New England Association of Schools and Colleges for the ten-year period from 2007 to 2017.

Each year the district administers state assessment tests to students in grades 3 through 8, in grade 10 in reading, mathematics, writing, and, for the first time in 2007, science. Starting in 2002, student results were reported both as proficiency levels and as scaled scores. Current Dover student scores are at or slightly above state average on the reading and mathematics test.

New England Comprehensive Assessment Program (NECAP) test results for Fall 2006 and Fall 2007 are contained in Table A of Appendix 1.  In 2008, students were also tested in science.

At present, more than 65% of the senior students at the high school take the SAT exams. Over the past several years, the Dover student's scores have been at or slightly above the national average on the verbal and mathematics tests.

Future Needs

In November 2006, the Dover School District formed a "Future Needs Committee" with a mission to examine three critical issues impacting the Dover School District. The issues were as follows: Determine the need for establishing an all-day kindergarten program; Redistrict the elementary school population to achieve equitable enrollment levels; Review methods and practices and establish an attainable plan that addresses our aging school

One of the questions asked of Dover citizens during the UNH Telephone Survey dealt with how they rated the Dover Public Schools.

<i>Excellent:</i>	<i>11%</i>
<i>Good</i>	<i>40%</i>
<i>Fair</i>	<i>16%</i>
<i>Poor</i>	<i>5%</i>
<i>Don't Know</i>	<i>28%</i>

The strongest support for the schools came from those people that had one child in the Dover school system (24% excellent).

buildings. Each issue was assigned to a sub-group consisting of administrators, teachers, parents, and community members.

- A. Student Capacity/Redistricting Committee
- B. Kindergarten Review Sub-Committee
- C. Facilities Renovation Sub-Committee

A detailed analysis of the scope of work conducted by each of the three committees is explained in the following sections:

A. Student Capacity/Redistricting Committee: In 1998, Garrison Elementary School housed 633 kindergarten through grade five students. In 2006, the student population, kindergarten through grade four students, stood at 379 children. In contrast, Horne Street School (kindergarten through grade 5) population in 1998 stood at 439 students. In 2006, as a kindergarten through grade four facility, Horne Street School population stood at 474 children.

The Woodman Park School underwent a \$12.3 million renewal project. A 32,215 square foot addition was occupied in August 2007 and the original facility had a “makeover” that included a new power plant, roof, complete electrical and technology revitalization, full abatement, and other significant structural improvements. The school added 12 classrooms and is now equipped to handle up to 600 children.

Since 1998, both Garrison Elementary and Horne Street Schools have undergone significant building projects. At Garrison Elementary School, a three-year project resulted in four additional classrooms, remodeled administration suite, a new library, and a full-size gymnasium. At Horne Street School, four new classrooms and a cafeteria were built between 2000 and 2002. Both buildings also saw the removal of six portable classrooms that were used for twelve years as “temporary” classrooms.

Based on a study of past, current, and future enrollment trends, it was the recommendation of the committee to reestablish boundary lines in the Horne Street School area, thus enabling a shift of approximately 100 children to Garrison Elementary School.

Given the geographical size and shape of Dover and with three elementary schools, periodic redistricting will be required to even out enrollments and class sizes within the district.

B. All-Day Kindergarten: The Dover School District introduced a half-day kindergarten program in 1998. With State Department of Education aid, the community funded the construction of four classrooms (2 each at Garrison Elementary and Horne Street Schools) to accommodate this educational initiative. Since this time, the School District has provided early childhood education to over 2,000 children. Current research in the area of early childhood education is clear in this area: An all-day kindergarten program is significantly more effective than a half-day program.

In December of 2006, a survey of current and future parents of elementary school children was conducted to determine the need and support for an all-day kindergarten program. With over 800 responses, the overwhelming majority, (80%) supported a full-day kindergarten program. However, there were two questions to be addressed before implementing this program. The first question involved the facilities: Is there sufficient space in all three elementary schools to support and house a full-day program? The answer is more complex than a simple 'yes' or 'no.'

At Garrison Elementary School there is sufficient room to support a full-day kindergarten program. The shifting student population, along with recent renovations and additional classroom space, can easily accommodate the program. With the renovations now complete at Woodman Park School, there is



Woodman Park School

sufficient room to accommodate a full-day program. Although Horne Street School can accommodate full-day kindergarten for all children, the related arts program will be impacted. Classes such as art and music will be displaced and will have to "travel" from class to class instead of being housed in a classroom.

The second question addressed funding: Will the district be able to fund a full-day program? Approximately \$175,000 in transportation funds will be saved as a result of the elimination of the mid-day kindergarten run. These, and other, funds will provide the lion share of the cost of a full-day program. The district would need an additional \$300,000 to \$350,000 in new funds to cover the cost associated with educational support and materials for the all-day program for all students.

The School Board voted unanimously to support the inclusion of a full-day program for kindergarten students in the 2008/2009 school year. Budget constraints derailed the plan to implement full-day kindergarten programming for all students. The School Board chose to implement a partial full-day program using funds available from transportation accounts and other economies to support full-day programming for at least 50% of the projected 240 students. The School Board intends to phase in full-day programming for all students no later than the 2010/2011 school year. This plan is currently on track and the District expects 250 full-time kindergarten students in September 2010.

C. Facilities Review: The Dover School District has over \$100M in building assets that must be maintained to assure a healthy and safe environment for students, staff, and members of the community. Observations over the past five years indicate that three schools, Horne Street Elementary, Garrison Elementary, and Dover High School, are in need of major renovations. A facility sub-committee was formed to assess and examine each building's aging infrastructure. The outcome of work by the sub-committee resulted in nine recommendations, including a preliminary figure to invest nearly \$32M in facility repairs and upgrades that will adequately serve the students of Dover for the next quarter of a century.

1. Facilities Renovation Sub-Committee Goals and Objectives: The primary objective of the Facilities Renovation group was to address the methodology for updating the district's aging facilities. The Committee's focus was for assessment of the Garrison, Horne, and High School structures. Dover Middle School was nine years old and Woodman Park Elementary School recently completed extensive renovation. Committee members determined the most effective approach would be to focus on the following three objectives:


- a. Determine the level of maintenance and repairs in order of least to greatest priority.
- b. Assess the safety, operational efficiency, energy efficiency and space efficiency needs.
- c. Develop a long-range plan for capital improvements that integrates the findings and recommendations of the Future Needs Committee.

2. Review of Facilities: All three schools have experienced some level of renovation or addition built within the past five years. The data in Table B of Appendix 1 demonstrates the type of construction to the facility and the total square footage. 📖

3. Future Building Space Needs: Growth in Dover has remained relatively stable over the past 10 years. According to the Land Use Analysis Chapter, the year 2020 could see the population grow to 30,450 inhabitants.

In 2004, the City's Planning Department noted the "housing starts" data (Table C of Appendix 1 📖) indicates that 0.38 students are generated from every new single-family dwelling built in the city. However, not all students are educated in the Dover School District and may elect to attend the Cochecho Technical Academy Charter School, or a private facility such as St. Mary's Academy, Portsmouth Christian Academy, or St. Thomas Aquinas.


More recently, the Planning Department has updated their projections and, for planning purposes, notes that single-family subdivisions built within the past five years had an average of 0.47 public school age children per unit.

Historical data of student enrollment in the District has been evaluated and can be reviewed for further study (Tables D and E of Appendix 1). 

4. Student Enrollments: Over the past ten years, the Dover School District has experienced an 8% (not including pre-school) growth in student population. This increase is due primarily to the increase in high school students from our two sending schools, Barrington and Nottingham (See Table E). Future projections of Barrington and Nottingham students show a slight downward trend for the next few years. Another factor associated with the increase in high school population is students are staying in school longer. The Dover High School dropout rate is declining, as is the student failure rate.

Since 1997 through 2008, the level of student enrollment in grades one through four has slightly increased from 1,014 to 1,105, which is a manageable growth rate of 9.0%.

Future Enrollment Forecast


Using the Association of School Business Officials (ASBO) Interactive *K-12 Enrollment Forecasting* program, an analysis of future student enrollment was conducted and is attached as Table F in Appendix 1. 

Many decisions made in school districts – especially those regarding staffing, facilities, and funding – are heavily dependent on knowing future student enrollment. *K-12 EnrollForecast* generates a five-year forecast of K-12 student enrollments. The ability to accurately forecast student enrollment is important to school administrators. Enrollment determines staffing levels, facility needs, and state funding amounts. Given the lead time necessary to adjust staffing, construct facilities, and plan budgets, administrators obviously must know how many students to expect at each grade level in future years.

There are a variety of methods available to forecast student enrollment. The one that has proven the most reliable over decades of use is the cohort survival method. It fares well even when compared to more sophisticated methods that employ multiple regression. It was this reliability and relative simplicity that led to its choice as the method employed.

The basic concept behind cohort survival is simple: From historical records, what percentage (ratio) of students in a cohort (e.g. first grade) “survive” or make it to the next grade level (second grade). We can use this information to forecast future enrollments. When forecasting kindergarten, we examine birth data from five years earlier to determine how many of these babies show up as five-year-old kindergarteners.

Any forecast longer than five years will be based on children not yet born. Accordingly, such forecasts are of dubious accuracy and carry a high risk of being significantly in error. For this reason, *EnrollForecast* does not attempt to forecast enrollment beyond five years.

Barrington and Nottingham five year projected enrollments (see Table G in Appendix 1 ) are based upon current elementary and middle school enrollments.

Using the mean five-year Birth to Kindergarten Survivor Ratio of 35.63% reveals the student population will increase significantly over the next five years. With the current student population (2006/2007) of 4,089 K-12 students, the forecast reveals a growth of 412 or approximately 10% by the 2011/2012 school year.

If these projections are realized, there are major implications for both the elementary and high school facilities. The elementary (K-4) population could exceed 1,600 students while the high school could exceed 1,775 students. There is insufficient capacity between the three elementary schools to accommodate 300+ additional students. At the high school, the facility would be operating at or above capacity.

The Barrington and Nottingham tuition agreements expire in 2014 and 2016 respectively. The Barrington School District has expressed their intent to build a comprehensive regional high school by 2015. However, there is no guarantee Barrington will build a high school. Additionally, the Dover High School Career Technical Center is scheduled for renovation, with cost reimbursement of up to 70%, in the school year 2016/2017.

With Garrison Elementary and Dover High School being considered for extensive renovations, a review of enrollment data may facilitate the decision-making process on when to schedule renovations and may assist in the determination to expand classroom space at these two facilities.


To renovate Dover High School with 1,750 students in attendance will prove to be a monumental undertaking. The decision when to renovate may hinge on the Barrington School District's future school plans, coupled with the Career Technical Center renovation schedule proposed by the Department of Education.

School Board Approved Facilities Needs Assessment


Based upon the findings of the Facilities Renovation Review Committee submitted in April 2007, the School Board recognized the need for the District to undertake a more extensive assessment of its buildings and projected enrollments to assess the needs of the future. In August of 2007, the School Board selected the New England School Development Council (NESDEC) to conduct a Professional Facilities Needs Assessment Study of three aging facilities in the District: (Garrison Elementary, Horne Street Elementary, and Dover High Schools)

NESDEC contracted with Habeeb and Associates Architects, Inc., to perform the assessment. In late February 2008, the report was completed and submitted to the Superintendent's Office. The complete architectural and demographic reports are attached (Attachments (1) and (2)) for review).

As part of the Facility Needs Assessment, NESDEC was also tasked to perform a more in-depth report of enrollment histories and projections using a more sophisticated version of the *K-12 EnrollForecast* software. This version includes additional variables that might affect projections, including the most current US Census figures, age cohort data, national

birth rates, enrollment histories, City of Dover Planning Department statistics, local birth rates, and historical birth to kindergarten registration information for the City of Dover. Table H in Appendix 1 provides updated enrollment history and projections based upon this data. 

Recommendations:

The School Board should work cooperatively with the City Council to fund the Capital Improvement Program to provide for these renovation projects (Table I in Appendix 1 

- Renovate Horne Street School no later than 2010
- Renovate Garrison Elementary School no later than 2012
- Renovate Dover High School and Career Technical Center no later than 2015

The intent is to completely renovate each building and replace electrical, plumbing, windows and flooring/abatement wherever necessary.

In February 2009, the School Board authorized the formation of a Joint Building Committee to oversee the renovation and possible addition to Horne Street School. Dennis Mires Architects has been retained to develop addition options and to assess the scope of work required to bring Horne Street School up to current standards. The project is anticipated to run eighteen months and, when complete, Horne Street School should have a capacity to accommodate up to 500 students.

The School Department should develop a detailed maintenance plan for all schools that covers the electrical, plumbing, heating, and telephone systems. Funding dedicated to the maintenance of the buildings and its systems should be included in each operating budget.

Public Library

The Dover Public Library, built in 1905, is constructed of brick and granite with a slate roof. Its size is 20,000 square feet spread over three floors. In 1988, a 6,000 square foot, 2-story addition was completed on the library's parking lot side which included an enlarged Children's Room on the ground level, and an expanded periodical and seating area on the main floor. The original building was structurally reinforced and its electrical, heating and sprinkler systems were updated. Only the 1988 addition has central air conditioning. At present, the library space is allocated as follows:

<u>Space</u>	<u>Square Feet</u>
Fiction; Non-fiction Stacks	2,624
Periodicals/Reading Room	1,025
Mezzanine	750
Main Desk Area	504
Children's Room	2,224
Reference	1,000
Meeting Rooms (3)	1,675
Browse Room	525
Public PC Area	375

The three meeting rooms include the Trustees Room, the Learning Center (for tutoring) and the Lecture Hall. In total, these rooms were used by public non-profit groups 547 times during 2008. Additionally, another 10,529 people attended 331 library-sponsored programs for children, adults and teens.

The library is open six days a week, totaling 56.5 hours per week (Closed Sundays). Currently the library has six full-time librarians, 17-part time employees and one custodian.

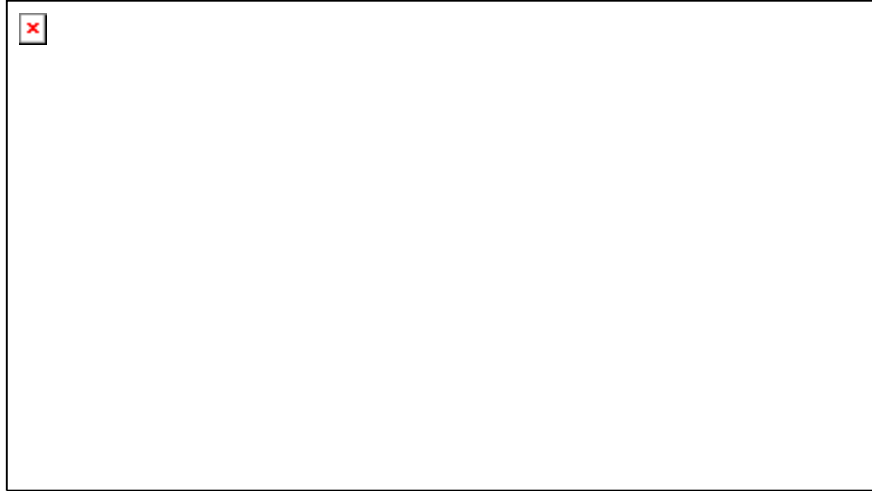
There have been dramatic increases in library use over the most recent decade. The largest circulation increases have occurred in media collections such as DVDs, CDs and audiobooks, and in books for teens. Online library use has increased greatly as well with nearly 1.7 millions hits on the library's main website. Plus, in 2008, there were 30,367 individual in-house uses of ten Internet workstations by the public (over 950% increase since 1998):

One of the questions asked of Dover citizens during the UNH Telephone Survey dealt with how they rated the Dover Public Library.

<i>Excellent:</i>	<i>48%</i>
<i>Good</i>	<i>31%</i>
<i>Fair</i>	<i>4%</i>
<i>Poor</i>	<i>0%</i>
<i>Don't Know</i>	<i>17%</i>

The strongest support for the library came from those people that were 60 to 69 years old (59% excellent) or whose education level was greater than college (61% excellent).

Library Internet Use – 1998 to 2006

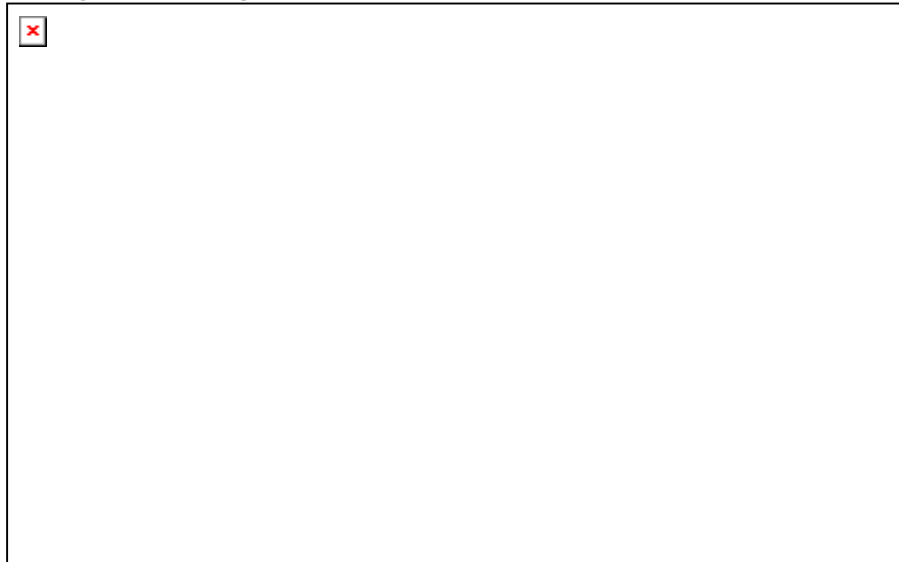


There is also substantial public utilization of the library’s Wi-Fi network, installed in 2005, for free web connectivity from patrons’ own laptops. Wireless customers can be seen accessing the Internet at all hours, even from the library parking lot or front lawn.

During the SpeakOut Dover sessions held during the summer of 2006, the attendees were asked about the things they liked most about the City of Dover. The fourth most popular response was the library.

There has been a concerted effort to offer more library services online, available 24/365 at www.dover.lib.nh.us. 22 electronic databases are available through our web site, as well as free downloadable audiobooks, access to the library catalog, two active wikis and a blog. Remote logins to the library’s online catalog were 29,117 in 2008 (up 400% over the last decade); plus, nearly 13,000 “holds” (item requests from patrons) out of a total 18,117 were placed online.

Library Remote Logins – 1998 to 2006



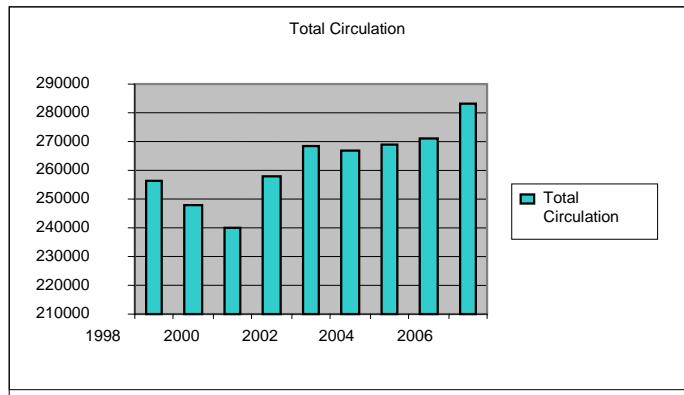
Library Holds Filled – 1998 to 2006



The library also now sends electronic hold and overdue notices to its patrons via email. The library’s two websites, www.dover.lib.nh.us and <http://images.dover.lib.nh.us>, present a wealth of historical Dover information and old local photographs that are digitally scanned. These sites received, respectively, 1,682,438 and 423,676 hits in 2008.

The library houses just over 95,000 print volumes including nearly 26,000 children’s books. There are also almost 5300 audiobooks and music CDs, and 3400 DVDs/videos. In 2008, the total number registered library cardholders was 27,590 (over 87% of Dover’s population) and circulation of books, periodicals and media items totaled 298,956 (198,319 adult/YA and 100,453 children’s), an increase of 11.6% since 1998.

Library Total Circulation – 1998 to 2006



Recommendations

The recommended Action Items have been broken down into two (2) sections.

- The Building section outlines significant identified needs. Several of these should be a priority in the immediate term to prevent further additional damage to the

plant. Most, if not all, of the areas of concern result from delayed or deferred maintenance. Once the critical items are addressed to prevent further damage to the building, the overarching long-term need is that the Library building becomes part of a formal City-wide Building Maintenance Plan that addresses maintenance issues according to pre-determined timetables.

- The Space Needs section provides a potential solution to the projected demands of an ever-growing user group. The Space Needs Assessment (AG Architects, PC of July 12, 2007) addresses the square foot impact in addressing the most critical of these areas.

I. Building

The library is generally in good condition, with several recent improvements. In 2008, skylights linking the old building with the new addition were replaced. Installed in 1988, the skylights had multiple failed seals and leaks. Additionally, new windows were installed in 2008 in the library to replace leaking window sills and panes. Nevertheless, major deficiencies include the following priority areas:

- A century-old slate roof in need of significant repair.
- Several areas of interior ceiling and woodwork damage caused by water continuously leaking through the roof. (Funding to replace 1988 EPDM flat roof was passed 3/11/09 by City Council).
- Crowded Parking Lot: as McConnell Center agencies' programs have grown, and library usage has increased, from 9-2 on weekdays, it is often difficult to find a parking spot in the Library Parking Lot. This has led to numerous and often daily patron complaints.

Other plant concerns include the following:

- Lack of central air conditioning in the pre-1988 portion of the building.
- Exterior brick requires repointing in several areas.

The list seeks only to illuminate the most glaring issues causing present and continuing damage to the building, which almost without exception (e.g., air-conditioning) are driven entirely by deferred or delayed maintenance. Individually they do not typify Master Plan items. They do serve however to highlight the opportunity Dover has to identify, evaluate and put into place a formal City-wide Building Maintenance Plan that identifies and addresses maintenance issues in a more effective and efficient manner.

II. Space Needs

The Library is attempting to meet an increasing and changing public demand. The creation of the "information superhighway" threatened to make libraries less relevant, but libraries adapted and embraced new technologies and are more prominent and more popular than ever. The Dover Public Library will continue to assume a larger civic role, redefining the library as another community center for the 21st Century, balancing traditional needs and operations with outreach to the wider community. If the old model

of the library was the inward-focused community “reading room”, the new one is more like a community “front porch”.

The Space Needs Assessment quantifies the additional square foot needs of key identified areas where the library is currently providing services.

- Expanded seating areas for patrons, especially for laptop users accessing the Wi-Fi network and for Internet users (average of 82 users per day, each for 90-minute spans) seeking time on the library’s public workstations. There are often waiting lines for Internet use. There is no room to increase the number of public workstations available despite growing public demand.
- Additional stack ranges to address existing space shortages in Children’s, Periodicals and Special Collection areas.
- Increased Media shelving for ever expanding circulating audio-visual materials (DVD and CD collections).
- Additional Public Meeting areas. (In 2008, the library held 547 public meetings in its three meeting rooms).

One possible solution to these and other space needs (without expanding the size of the current library building through a costly addition) would involve a shared-use collaborative effort between the library and the McConnell Center. Physically linking the public library to the McConnell Center next door via a glass-enclosed bridge or walkway at each building’s 2nd floor level would be beneficial and efficient for both buildings. With a direct-access bridge to the McConnell Center overflow computer-users could gain access to the DALC Computer Lab and expanded public meeting space would relieve some of the pressure on the existing space in the Library. A 2005 cost estimate (Lassel Architects) to build a bridge to the McConnell Center was about \$450,000, but another addition to the library could cost millions and reduce the number of parking spaces available to patrons. There is a natural synergy between the programs and services at the library and many of the agencies at McConnell (e.g.: Dover Adult Learning Center, the HUB, and the Senior Center). The two share much of the same patron base. The library has over 27,000 cardholders and a bridge would lead many of them to take greater advantage of McConnell programs as well. The library has many things to offer their clientele and can more closely develop shared programs and municipal efficiencies with McConnell Center agencies and boards.

Physically linking the Library and the McConnell Center is just one idea on how to address current and future needs. It is seen as a critical first step and it is the recommendation of this Master Plan that a coordinated analysis be undertaken considering the Library, McConnell Center and City Hall to identify common issues and service arenas in order to best utilize the significant space that is concentrated in this area of the City in an effort to best meet the expanding and changing needs of the citizens of Dover. Perhaps never before has there been a greater need for such collaboration. A linked Dover Public Library/McConnell Center/City Hall will contribute much to the creation of a physical commons or campus in downtown Dover that benefits the public as a whole.

City Hall

The present City Hall was dedicated in 1935 and was designed to be completely fireproof. The only wood used in construction was for interior finishing. It contains one million bricks, 190 tons of steel and 16 fireproof vaults. It has three functional floors. The basement houses the Police Department. On the main or second floor there are a number of City administrative offices including: City Manager, City Clerk/Tax Collection, Information Technology, Assessing, Economic Development, and Planning and Community Development. The third floor holds the Legal Office, Finance, Accounting, Purchasing, and Water and Sewer billing, a large auditorium and the City Council Chambers/conference room. The auditorium can hold up to 900 people. Human Services, the administrative offices of Community Services, and Building and Inspection Services which were located in City Hall, have been relocated. Human Services was moved to the McConnell Center; Community Services to the Public Works facility on Mast Road; and Inspection Services to the North End Fire Station. The relocation of Human Services has increased accessibility to the community and having additional space has created a more functional and professional looking work area.

In 2007, the City of Dover retained the services of AG Architects for the purpose of preparing a Space Needs Assessment for City Departments at City Hall, the Police Station, the Library, City offices within the McConnell Center, the Cemetery Chapel Facilities and Grounds offices, and the Lowell Street Pump Station offices. The study's purpose



was to develop a comprehensive solution for meeting future anticipated space needs and developing design concepts. The consultant performed an evaluation of City Hall Departments, conducted an in-depth inspection of City Hall, developed projections for future needs, and prepared conceptual plans for appropriate options.

There were three steps taken in preparing the study. The first involved collection of data on functions for each Department. A combination of a Department Questionnaire, interviews with Department Heads, and a review of existing facilities provided a base of information for understanding City services and available space. The second step focused on providing future projections of population, its impact on City Hall, and preparing a space needs program to meet these future needs. The final task was to develop two alternate concept plans that address the present and future space needs for City Hall and the Police Department. A matrix was developed to compare these two options, including

costs. As part of the review, AG Architects had the mechanical systems of the building analyzed by consultants. C&M Engineering studied the electrical system and recommended that the existing electrical system be removed and replaced during building renovations. The mechanical systems, including the heating system, hot water system, ventilation, plumbing and sprinkler system, were analyzed by Yeaton Associates. The consultant recommended the replacement of the hot water system, exhaust system, plumbing fixtures, and sprinkler system. A new air conditioning and ventilation system was recommended.

Option A proposed to keep the Police Station and City Hall together and to expand the existing building to accommodate both, at an estimated cost of \$18-20 million. Option B proposed that a new Police Station be constructed off site and that City Hall expand into all three floors of the existing building, at an estimated cost of \$16.3-19 million. The consultant recommended Option B. After the initial report was prepared, the City asked the consultant to prepare additional options that would be less expensive and allow for a phased implementation of the reorganization. The consultant developed four additional options and the City Council decided to implement Option D, which called for a reorganization of City Hall departments and staffing and moderate wall modifications. This option had a price tag estimated at \$238,300. For more detailed information, the reader is referred to the City of Dover Space Needs Assessment prepared by AG Architects, PC, dated July 12, 2007, which is incorporated by reference as part of this Master Plan. During 2008 and 2009, several offices within City Hall were relocated and some offices were renovated, with new furniture and work stations. The major change was the combining of the City Clerk and Tax Collector offices.

Status of 2000 Master Plan Recommendations

The following are recommendations from the 2000 version of the Master Plan, with an update on progress made on each.

Implement a formal, visible and continuing program to achieve more efficient and effective operations. This is an ongoing process which will include a Quality Customer Service initiative and a Process Incentive Improvement Program for all City employees. We have made and will continue to make progress performing operational and financial reviews resulting in the realignment of organizational responsibilities by the consolidation of duties, implementation of new technology, and streamlining processes. Information has been and will continue to be provided to the City Council and the community through the Monthly Manager's Report. Areas that have seen progress include the implementation of the SCADA system, to allow off-site tracking of operations. The City and School Department recently consolidated the workers' compensation program to identify one individual for both entities that would serve as the point of contact for employees and act as liaison with the workers' compensation vendor/administrator. **ONGOING**

Implement a formal annual summit between the Dover City Council and the Dover School Board to discuss common goals, challenges and financial issues. There has been progress made by having a Joint Fiscal Committee comprised of City Council and School Board members. There was also an Ad-Hoc Committee formed between the City Council and the School Board having the charge to evaluate and recommend areas that can be consolidated between the City and the School Department. A result from this committee includes the servicing of

School Department vehicles through the City's Fleet Services operation rather than through a contract vendor. There will be a continued effort to further enhance the open communication between City and School to discuss common goals, challenges, and financial issues. **ONGOING**

Upgrade the internal utility systems in City Hall including electrical, telephone and HVAC. Completed projects since 2000 include a new heating system in City Hall and a consolidated phone system for all City and School departments through Bay Ring Communications. Electrical work is ongoing and additional upgrades are expected as a result of the Space Needs Assessment. One additional upgrade was the replacement of all windows in City Hall with aluminum, double hung, double-glazed windows during 2007. **ONGOING**

Upgrade and update the City's management information system (MIS) to allow City departments to share common data. Significant progress has been made with the implementation of Docutron, an electronic archiving/retrieval system. The use of citizen volunteers has allowed departments to scan archive documents in to an electronic format for easy access. Docutron has also allowed for the implementation of an electronic sign-off process for resolutions and ordinances. The flexibility of the system allows Information Technology personnel to designate access rights for the information stored in Docutron. **ONGOING**

Maintain, upgrade and expand the City's website to provide efficient access to City information and the availability of services. Some progress has been made with the website, including a redesign of department web pages. A uniform design has been implemented to provide a more professional appearance to the website as well as making it easier for the public to navigate around the site. **COMPLETED**

Recommendations

1. The City should develop a detailed maintenance plan for City Hall that covers the electrical, plumbing, heating, and telephone systems. Funding dedicated to the maintenance of the building and its systems should be included in each operating budget.
2. A coordinated analysis should be undertaken of the Library, McConnell Center and City Hall to identify common issues and service arenas in order to best utilize the significant space that is concentrated in this area of the City in an effort to best meet the expanding and changing needs of the citizens of Dover.
3. The City should work to implement the recommendations of the Space Needs Assessment as funding allows. This includes the upgrades to the mechanical and electric systems as outlined by the consultants.
4. The City should relocate the Police Station out of City Hall into a downtown location, consistent with the recommendation contained in the Police Department section.
5. Renovations to City Hall should be done in a manner that respects the historic nature of the structure so that the building will retain its historic integrity.

McConnell Center

In 2000 the City of Dover opened a new Middle School on Durham Road next to the High School. In doing so it provided an opportunity for reuse of the previous Middle School building located within the urban core. Over the years various uses were proposed and studied. The McConnell Center Renovation project is a multi-million dollar rehabilitation of a 103,000 square foot former school facility into a multi-generational human service based community center. The goal is to provide an environment where health, education, recreation and cultural agencies can interact and provide programming for the citizens of Dover.

In 2004 the City Council assembled a reuse committee, comprised of city officials, human service representatives, School representatives, and community members, which was put together to define a vision and use for the building. By December of 2004, that committee submitted its report to the Council. Acting on that report, the Council then appointed an Oversight Committee, which had a similar composition as the reuse committee, to determine the tenant mix, the financial structure for the building and how it would be governed. The vision that the 2004 committee developed was one based upon a Community Center, whereby various human service agencies and non-profits would be housed in the building and would offer various health, education and recreation opportunities to citizens.

The 2005 Committee utilized that model and found tenants, such as the Dover Adult Learning Center of Strafford County, the HUB, as well as many other potential tenants. That committee also oversaw the work performed by the architect – Lassel Architects of Berwick ME, as the design for the building’s interior moved forward. Finally, in October of 2005, the Committee went out to bid and selected Martini Northern as the Construction Management firm to complete the renovations. Martini began its work in early January 2006, and completed the project in December of 2006.

The scope of the work involved internal renovations ranging from life safety improvements to new trim and finishes, including but not limited to:

- Upgrade the electrical system
- Upgrade the plumbing system
- Installation sprinkler system
- Installation of two elevators
- Completion of some interior finished for common areas
- Possible demolition of neighboring building Site work coordination (utility connection, parking areas, grading, drainage and entranceways)

The project had a cost of \$6.4 million, which was garnered through municipal operating budgets, Capital Improvement Budgets and Community Development Block Grant funds. Including the fit out of the individual spaces, the total budget for the building was over \$7.9 million.

CITY OF DOVER, NH COMMUNITY FACILITIES & UTILITIES

One constant element was to pay tribute to the heritage the building represented. Originally constructed in 1904, the building was designed by Alvah T. Ramsdell, who was also the architect of the Dover Children's home. In 1928 an addition was added, which is now the middle section of the building. The architect of the addition was J. Edward Richardson who also designed the Dover City Hall. A final wing was added in 1980. The community wanted to enhance the historical elements of the building but also wanted to tie it together in a non-institutional manner. The wood trim was enhanced in the 1904 and 1928 wings and colors were selected to represent the periods of construction.

One important element of the building renovation was energy efficiency. Over 250 windows were replaced. In the 1904 and 1928 buildings, pictures from the era of construction were used to select appropriate window designs, and while vinyl windows were installed they reflect a color and design used in 1904. Additionally, while 2 elevators were installed in the structure, they were done with minimum impact to the exterior of the building.

The multi-faceted McConnell Center encourages a diversity of people to grow, connect, recreate and build lives of purpose and meaning by:

- Creating a collaborative environment for community-based nonprofit organizations, government, schools and volunteers to support each other's activities.
- Balancing opportunities and services to meet the interests and needs of area residents.
- Fostering creative partnerships between the McConnell Center, businesses, and health-related community services.

The building will act as a central location for people to gather for human and community service needs as well as a variety of life enrichment activities. Located in the center of Downtown Dover along with the City Hall, Public Library and District Court, the building anchors the civic core. The Dover Recreation Department has relocated to the McConnell Center from the Butterfield Gym, which was renovated for occupancy by the Children's Museum. The Dover School Administrative Unit moved into the building in 2008 and occupies more than 5,000 square feet on the top floor. The Community Outreach Bureau, which includes a Teen Center (of the Police Department), has also relocated there. In addition to the non-profits located within the building, public meeting and conference space was created to assist in the public's ability to meet.

In keeping with the mission and vision for the building, tenants of the building must be not for profit and must serve a social or human service need within the community. "Anchor" tenants for the building, having signed 25 year leases, include the Dover Adult Learning Center of Strafford County, the HUB Family Resource Center and Wentworth Douglas' Pete's Place.

Future capital needs for the building include the replacement of the entrance off St. Thomas Street to make it compliant with the American with Disabilities Act (ADA). This work was originally included in the overall project, but was removed due to financial constraints. The work would involve new doorways, hardware and finishes to the existing

entrance. The City is utilizing 2009 Community Development Block Grants to fund the replacement of the St. Thomas Street entrance to make it ADA compliant.

A second need was the replacement of the 1904 roof. A roofing study was performed on the roof prior to the renovation work and that study was used to justify patchwork as opposed to replacing the roof. During the 2007 Mother's Day storm, sections of the roof failed due to the wind and rain and there some water damage to the building. Emergency repairs were made to fix the leaks. A roofing consultant was hired to determine the extent of the repairs that were needed and that information was used to solicit bids from roofing contractors. The bids came in at \$100,600 for the 1904 section, \$115,000 for the 1928 section, and \$20,400 for the 1981 section, for a total of \$236,000. The repairs were made in the spring of 2008.

A portion of the lease charge assessed to certain non-municipal building tenants is dedicated to fund future capital projects. These tenants pay \$0.40 per square foot into a capital reserve fund to be used for capital projects, such as those listed above. In 2007, the capital reserve fund payments amounted to less than \$5,000, a figure clearly inadequate to pay for future capital improvements needed. As to routine building maintenance, those costs are being paid out of the operating budget collected from the tenant's payments.

The Public Library section of this chapter contains a discussion of the potential benefits of the McConnell Center and library sharing space, services and users such as computer users and meeting rooms. There is a natural synergy between the programs and services at the library and many of the agencies at the McConnell Center.

Recommendations

1. The City should consider renegotiating existing lease agreements to include a more realistic lease charge for capital projects and make sure that all future lease agreements follow suit. All tenants, including City tenants, should be required to pay the capital portion of the lease fee so that there is adequate funding in the future to pay for capital needs.
2. A coordinated analysis should be undertaken of the Library, McConnell Center and City Hall to identify common issues and service arenas in order to best utilize the significant space that is concentrated in this area of the City in an effort to best meet the expanding and changing needs of the citizens of Dover
3. The City should develop a detailed maintenance plan for the McConnell Center that covers the electrical, plumbing, heating, and telephone systems. Funding dedicated to the maintenance of the building and its systems should be included in each operating budget.
4. The roof sections on the building should be replaced as soon as deemed necessary according to the selected bid received from the roofing contractor

Community Services Department

Introduction and Purpose

The Community Services Department is organized as shown in Figure 1. It has many important functions, some of which are described in other sections of the master plan (See the Transportation Chapter for streets, bridges and sidewalks). The major improvement for the department since the 2000 Master Plan was the construction of the Pierre Bouchard Public Works Facility in 2001. The new Public Works facility is located at 271 Mast Road. Activities based at this building include administration, engineering, environmental programs, fleet services, and public works and utilities. The old “City Barn” had been determined to have insufficient space and inadequate ventilation, lighting, and amenities as well with an unpaved and disorganized service yard. There was also the concern that a public works garage was not the highest and best use of the waterfront. The relocation has afforded the City the opportunity to pursue redevelopment of the waterfront for mixed use development.

The purpose of this section is to provide a brief description of the 10 year vision for the following divisions shown in Figure 1.

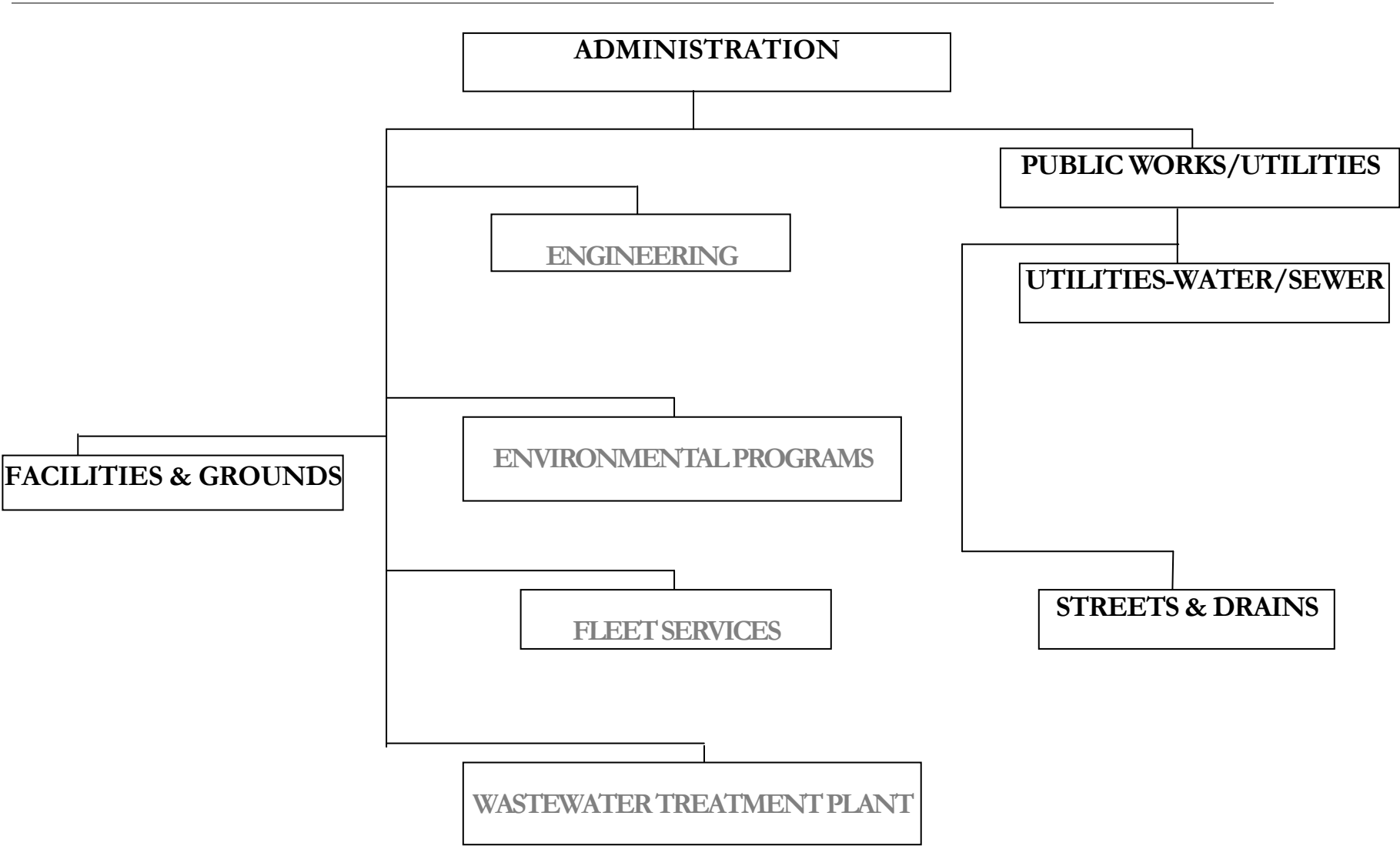
Community Services Divisions

1. Waste Management
2. Fleet Services
3. Facilities, Grounds and Cemeteries
4. Water System
5. Sewer System
6. Storm Water Management

Each of the above sections is organized according to the following outline:

1. Brief description of the mission and functions
2. Current personnel available to carry out those functions
3. Physical location and space available for this activity
4. Accomplishments since the 2000 Master Plan
5. Current issues/problems to be addressed and resolved
6. Current programs in place to address those issues
7. Current demand; future demand (where applicable)
8. Current supply; future supply (where applicable)
9. Future problems/issues that must be addressed
10. Recommendations to address/resolve those future problems
11. Personnel and space needed in the future to get the job done
12. Priorities and costs, with required schedules to achieve success
13. Coordination with other City activities
14. References and detailed reports available.

Figure 1 – Community Services Department Organization



Waste Management

Mission and functions

The waste management program is under the jurisdiction of the Community Services Department with oversight from the Solid Waste Advisory Committee. Waste management is controlled under Chapter 97 of the City's Code. At present the City is under contract with Pinard Waste Systems to haul and manage the City's residential waste. Large industrial and commercial generators are responsible to contract for their own waste collection. The City has a curb-side Bag & Tag and recycling program whereby residents purchase trash disposal bags for waste that is collected and disposed of in Turnkey Landfill in Rochester. In addition, the City provides recycling bins for a variety of recyclable materials including glass, cans, newsprint, plastic and paperboard. Residents are responsible for placing the recyclable materials at curbside for the once-a-week collection by Pinard Waste Systems that also picks up the bags of waste. By prior arrangement with the City, individuals can also have used appliances picked up at curbside.

The Waste Management Division supplies over 700,000 trash bags to nearly 30,000 Dover residents annually. Annually the City disposes of approximately 5,500 tons of residential waste and recycles approximately 6,200 tons of material. In addition to that, the division responds to resident complaints and problems and resolves over 400 City of Dover work orders per year. The division handles illegal dumping issues and also operates the City's Recycling Center. The recycling center not only services the community, but also accepts over 33 different recyclable materials, hauls over 3,000 tons of recyclables off-site annually as well as conducts an annual Hazardous Waste Collection free to residents.



One of the questions asked of Dover citizens during the UNH Telephone Survey dealt with how they rated the Dover garbage collection.

<i>Excellent:</i>	<i>21%</i>
<i>Good</i>	<i>53%</i>
<i>Fair</i>	<i>13%</i>
<i>Poor</i>	<i>6%</i>
<i>Don't Know</i>	<i>7%</i>

The strongest support came from those people that had lived in Dover for 20 to 29 years (54% excellent) and the least support came from residents of Ward 5 (14% poor).

Current personnel

The current Solid Waste/Recycling personnel include one Solid Waste Coordinator, one Solid Waste Assistant and one Heavy Equipment Operator.

Physical location and space available

The recycling center is located at 265 Mast Road in a section next to the Public Works Facility. The center is 360 feet by 330 feet wide.

Accomplishments since the 2000 Master Plan

- The City's solid waste contractor has changed to Pinard Waste Systems.
- The City has begun collecting construction debris year round.
- The purchase of an industrial weigh scale to accurately weigh construction debris for residents.
- The Waste Management Division has added a permanent Heavy Equipment Operator position.

Current issues/problems to be addressed and resolved

A current issue or problem at the recycling center is the lack of funds to replace hauling containers used for wood, brush and yard waste.

Current programs in place to address those issues

Currently there are no programs in place to address current issues within the Waste Management Division.

<input checked="" type="checkbox"/>	<p><i>One of the questions asked of Dover citizens during the UNH Telephone Survey dealt with how they rated the Dover recycling.</i></p> <table> <tr> <td><i>Excellent:</i></td> <td style="text-align: right;"><i>34%</i></td> </tr> <tr> <td><i>Good</i></td> <td style="text-align: right;"><i>45%</i></td> </tr> <tr> <td><i>Fair</i></td> <td style="text-align: right;"><i>12%</i></td> </tr> <tr> <td><i>Poor</i></td> <td style="text-align: right;"><i>4%</i></td> </tr> <tr> <td><i>Don't Know</i></td> <td style="text-align: right;"><i>6%</i></td> </tr> </table> <p><i>The strongest support for recycling services came from those people that had lived in Dover for 10 to 19 years (43% excellent) or whose education level was greater than college (41% excellent).</i></p>	<i>Excellent:</i>	<i>34%</i>	<i>Good</i>	<i>45%</i>	<i>Fair</i>	<i>12%</i>	<i>Poor</i>	<i>4%</i>	<i>Don't Know</i>	<i>6%</i>
<i>Excellent:</i>	<i>34%</i>										
<i>Good</i>	<i>45%</i>										
<i>Fair</i>	<i>12%</i>										
<i>Poor</i>	<i>4%</i>										
<i>Don't Know</i>	<i>6%</i>										

Current and future demand

No data.

Current and future supply

No data.

Future problems/issues

One future issue is the rising cost of solid waste collection and disposal and how to pay for that. The Bag & Tag Program keeps pace with that and affects those costs but as costs rise, is there a better way? One issue at the recycling center is the condition of the recycling office and its state of disrepair. A new office/scale house is desperately needed as a leaking roof and mold within the trailer walls is a current problem.

Recommendations

Recommendations for the division are as follows:

1. One half of all recycling center generated revenues should be set aside in an established fund for use by the Solid Waste Coordinator for major recycling related purchases upon approval by the Solid Waste Committee.
2. A sub committee should be formed to study all other available means of offsetting rising solid waste collection and disposal costs including alternate solid waste/recycling programs.
3. The *Integrated Waste Management Plan* should be updated every five years, with special attention paid to the life expectancy of the Turnkey Landfill.
4. Continue to increase the varieties of recyclable material accepted at the recycling center.
5. Improve on the city-wide recycling rate of 52% by finding more ways of making recycling easier.
6. Find a suitable location in the city to compost residential yard waste and chip brush.

Personnel and space needs

Personnel and space needs are adequate at this time.

Priorities and costs, with required schedules to achieve success

No data.

Coordination with other City activities

The Solid Waste/Recycling Division employees assist other departments on a regular basis. The recycling center roll off truck is used for hauling snow from the downtown area and used to haul pipe and materials for the Streets Division. Solid Waste/Recycling personnel plow for the Streets Division in the winter and also assist the Fire Department with all vehicle accidents and respond to all chemical or oil spills on City streets.

References and detailed reports available

The Environmental Programs Division of the Community Services Department, in cooperation with the Solid Waste Advisory Committee, prepared an *Integrated Waste Management Plan* in May of 1999. **This plan is incorporated by reference as part of this Master Plan.** The plan lays out the City's strategy for the following: bag and tag, construction and demolition debris, curbside recycling, appliances and large metal items, recycling drop-off center, yard waste and composting, leaf and brush collection, automotive waste, household hazardous waste, illegal dumping and contract negotiation.

Fleet Services

Mission and functions:

The Fleet Services division within the Community Services Department services and maintains city vehicles for the following Departments: Community Services, Inspection, Police, School, Recreation, Assessing, and Administration. The division also performs these services for outside municipalities and departments such as: Dover House Authority, Strafford County Sheriff, Riverside Rest Home, Strafford County Attorney's office, Town of Madbury, and Town of Lee. Outside services are performed at an hourly rate plus parts.

The division provides quality vehicle repair services and implements vehicle management practices to all City of Dover vehicles at an economical cost.

Current Personnel:

The current Fleet Services personnel include four (4) Heavy Equipment Mechanics and one (1) Fleet Supervisor.

Physical location and space available:

Fleet Services operates out of the Mast Road Public Works Facility, which consists of 10,000 square feet area comprised of office space, parts/inventory room, paint booth and repair and lift bays.

Accomplishments since 2000 Master Plan:

Not part of 2000 Master Plan.

Current issues/problems to be addressed and resolved:

The consistent funding of vehicle and heavy equipment replacement programs is needed to replace equipment in a timely manner which allows for reduced repair cost, better employee productivity and increased fuel savings. In addition, the City is in need of an idle policy which will save fuel and vehicle wear. The division currently utilizes fleet management software called Computerized Fleet Analysis, CFA, which was purchased

and installed in 1996. This program tracks vehicle repairs, maintenance intervals and vehicle repair costs. A newer, more productive version of this software has been developed and should be implemented, allowing the division to track more accurately vehicle repairs and fuel cost, warranty items and parts inventory.

Current programs in place to address those issues:

Capital Improvement Program
Police Vehicle Replacement Program

Current and future demand:

Current and future demand for service should remain constant with the potential for a slight decrease with continued adherence to the existing vehicle replacement programs.

Current and future supply:

The vehicle inventory list is provided in Table A of Appendix 2. 

Future supply needs may vary depending on staffing levels, new technological advances in equipment that may increase efficiencies.

Future problems/issues:

With the increasing fuel costs, keeping the vehicles tuned up and running efficiently will become even more important. Purchasing more fuel efficient vehicles will become more of a priority.

Recommendations:

1. Update existing fleet management software with a more current version.
2. Maintain a consistent and appropriate level of vehicle replacement funds.
3. Initiate fuel savings measures with economical, fuel efficient vehicles.
4. Explore the use of alternative fuel vehicles that utilize fuels such as compressed natural gas (CNG), ethanol, and biodiesel. This could be a regional effort with a shared distribution facility.
5. Institute a City-wide idling policy for all City vehicles and personnel.

Personnel and space needs:

Current space is adequate for the existing operation and will accommodate future expansion.

Personnel are currently adequate to provide an exceptional level of service although as levels of outside repair service increase it may be necessary to increase staff in order to provide the same level of service.

Accomplishments:

Fleet Services, for the last 7 years, has instituted a program called in-sourcing. This program consists of performing vehicle repair services for local towns and non-profit institutions for an hourly fee, plus parts cost. This service generates revenue to offset increasing costs of labor, insurance and budgetary items. Since its organization, the division has been successful in level funding its budget and even reducing it on occasion. Fleet Services continues to provide these services with the same amount of personnel it has had for 15 years.

Facilities, Grounds and Cemeteries


The mission of this division is to provide and maintain safe and clean city buildings, parks, playgrounds, ball fields, trails, equipment and other facilities for the safety and quality of life of the community. This division also provides for the operation and maintenance of the four City cemeteries in an efficient, safe, accurate and professional manner. Maintenance of the municipal traffic light system, traffic and street signs, and all city trees is also a responsibility of the division.

The division maintains the interior and exterior of 19 municipal buildings. The following is a list of those building and their locations:

City Buildings Maintained by Facilities & Grounds

Building	Number	Street Address
Armory	99	Oak St
Butterfield Building	6	Washington St
Camp Sun N Fun		Bellamy Rd
Cemetery Barn	35	South Pine St
Central Fire Station	9-11	Broadway
City Hall	288	Central Ave
Ice Arena	110	Portland Ave
Indoor Pool	9	Henry Law Ave
Library	73	Locust St
McConnell Center (front)	61	Locust St
McConnell Center (back)	30	St. Thomas St
Liberty North End Fire Station	262	Sixth St
Outdoor Pool (Thompson Bathhouse)	130	Portland Ave
Pine Hill Chapel, Tomb and Cemetery Barn	131	Central Ave
Police Dept	46	Locust St
Public Works Building, Salt Shed & Pole Barn	271	Mast Rd
Shaws Lane Concession Building		Shaw's Lane
South End Fire Station	25	Durham Rd
Transportation Center	33	Chestnut St
Veterans Building	156	Back River Rd
Wastewater Treatment Plant	484	Middle Rd

In addition to the building maintenance, the division is responsible for the grounds maintenance at each of these locations and 54 other public areas. This includes maintenance of park and playground equipment at Applevale Park, Bellamy Park, Henry Law Park, Garrison School Park, Garrison Hill, Guppy Park, Horne Street Park, Hancock Park, Longhill Park, Maglaras Park, Morningside Park, Park Street Park, Amanda Howard Park, and Woodman Park.

There are numerous other facilities that the City owns and maintains. A list of such facilities was developed by reviewing the property insurance policy of the City. The list is included in Appendix 2 as Table B and provides the facility location, insured value, construction material, size and date of construction, if available. 

There are nine fulltime personnel available to carry out this mission. There are also four part-time custodians and numerous summer employees.

The Facilities, Grounds, and Cemetery office is located at 131 Central Avenue at the former chapel at Pine Hill Cemetery. The chapel building, which was built in 1900, is in need of repair for issues such as a leaking slate roof, disintegrating interior plaster walls, deteriorating foundation walls, inadequate gutters, and energy inefficient doors and windows.

Pine Hill Cemetery

The City of Dover cemetery has been in use since 1730 and provides a final resting place for residents and non-residents of Dover. There are no restrictions on who can be buried here.

The city employs a cemetery coordinator and hires seasonal help for grounds maintenance as needed. The maintenance work is divided equally between the Facilities and Grounds division and seasonal hired help. The Facilities and Grounds division is responsible for the burials. Inmates from the Strafford County Jail perform grounds work as well, including mowing, trimming, and raking.

The cemetery is located at 131 Central Avenue and totals about 75 acres. The old part of the cemetery takes up roughly 35 acres and the new area about 40 acres. There are 7.5 miles of roads and lanes.

The number of burials at the cemetery and the sale of burial plots have fluctuated over the past ten years, but have been in decline recently. The table below provides information on the number of regular burials, cremations and graves sold over the past ten years.

CEMETERY ACTIVITY – 1998 to 2008

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Reg. Burials	56	56	65	63	56	46	50	54	59	39	40
Cremations	24	23	28	44	29	28	27	35	32	27	33
Total Burials	80	79	93	107	85	74	77	89	91	66	73
Reg. Graves Sold	47	61	77	83	60	55	78	35	43	60	39
Cremation Spaces	7	5	9	10	11	16	6	21	14	16	19

There are some cemetery issues that need to be resolved. Currently there is a drainage problem in the group 24 section of the cemetery. Repaving of all the paths is also needed. Many of the old sugar maples planted throughout the cemetery are in decline. Extensive pruning and some tree removal is necessary, along with planting new trees to replace the dead or dying ones.

There are around 15 acres still open and available for use. In the future, new roads will need to be laid out for development of the available space in the cemetery.

In addition to the Pine Hill Cemetery, the City also maintains three other cemeteries – the Austin-Tuttle Cemetery on Gerrish Road, the Roberts Cemetery on Dover Point Road, and the Pinkham Cemetery on the corner of Dover Point Road and Ayers Lane.

Per Chapter 3-55 of the Dover Code, municipal cemeteries are overseen by a five member Cemetery Board appointed by the City Council. The Cemetery Board sets general policies for the operation of the cemeteries and makes recommendations on the expenditure of donations and bequests.

Recommendations

1. The current offices for the Facilities, Grounds and Cemeteries Division are sub-standard and a new or replacement facility should be considered a priority. A new building in Pine Hill Cemetery should be examined. This building could house the administrative offices and maintenance storage space for the equipment. Another option that should be considered is moving the operations to the Public Works facility on Mast Road. This is the potential for savings in operational costs by being located with the other Community Services personnel.
2. The City should develop a detailed maintenance plan for all City buildings and facilities that covers the electrical, plumbing, heating, and telephone systems. Funding dedicated to the maintenance of each building and its systems should be included in the City's operating budget.
3. The Facilities, Grounds and Cemeteries Division should develop an assessment of the physical condition of each building and facility that it is responsible to maintain. One of the first steps would be to document baseline information for each facility, including the age of the facility, construction history, any renovations done on the facility, maintenance history, and a list of issues or problems with the facility. Each facility should be analyzed to determine its useful life and a maintenance schedule should be developed with the goal of extending the life of the facility.
4. The City should conduct a study to determine how many years the remaining space in Pine Hill Cemetery will meet the needs of the citizens, so that it can start looking for additional cemetery space or developing a plan to more efficiently utilize the existing cemetery space.
5. The City should develop a tree replacement program in the cemeteries to insure that new trees are planted to replace those trees that are lost due to disease or weather.

Water System

The City of Dover has municipal water service available to almost 68% of the City’s land area and provides water to over 85% of the City’s households and businesses. Currently the system provides for 8100 customers. The Water Division is funded through user fees charged to customers based on their water consumption.

19 full time personnel, who are cross-trained and responsible for the operation in both the water and wastewater fields, maintain the system. The water system is State certified as a grade two treatments for our filter plants and wells, and a grade three for distribution system such as meters backflows, mains and hydrants. The majority of the operators hold State certifications to operate and maintain the water system.

One of the questions asked of Dover citizens during the UNH Telephone Survey dealt with how they rated the Dover drinking water.

<i>Excellent:</i>	15%
<i>Good</i>	47%
<i>Fair</i>	22%
<i>Poor</i>	7%
<i>Don't Know</i>	9%

The highest opinion of drinking water came from those people that had lived in Dover for 20 to 29 years (27% excellent). Those with the poorest opinion of water were people that live in apartment buildings (20% poor).

The existing system consists of eight gravel-packed wells, approximately 150 miles of water main, 1090 hydrants, three water treatment plants at Lowell Avenue, the Griffin Well, and French Cross Rd, and a 4 million gallon concrete storage tank on Garrison Hill. The Bouchard Well and the French Cross Road water treatment plant came on line in 2007. The water treatment plant was necessary to remove high levels of iron and manganese in the Bouchard Well. The water treatment plant was constructed with additional capacity to treat water from the Hughes Well, which also has high iron and manganese levels.

The City is adding a number of chemicals to the water for the benefit of the customers. Fluoride, zinc polyphosphate, and Chlorine, the amounts are published in the yearly in the Consumer confidence report provided to customers.

Water Drawn from Eight Wells

Water supply in the City is provided entirely from groundwater withdrawal. Surface water withdrawals from the Bellamy and Isinglass Rivers during certain times of the year supplement the recharge of two aquifer areas—the Pudding Hill and Hoppers Aquifers. The following is a brief description of the City’s wells. A more detailed explanation can be found in the 1988 Master Plan that provides specifications for each well. A Groundwater Protection Ordinance seeks to protect the quantity and quality of the ground water within the area that each of the city’s wells draws water. Primary and secondary groundwater protection zones have been established for each of the City’s eight wells, and the ordinance regulates land uses that are appropriate within a specified protection zone. Public education and outreach is performed through direct mailings, and articles published in Community Notes reminding residents of their obligation to help protect the City’s water supply through appropriate behavior.

Griffin Well

Developed in the late 1960's, the Griffin Well is located in the Pudding Hill Aquifer near the Bellamy River. This well has the ability to produce sustained yields of 500 gallons per minute (gpm). Because of the iron and manganese problems that have developed in the well, a treatment facility was constructed in 1990 to remove these metals. In addition, the City had to install air stripping equipment in 1998 to remove Volatile Organic Compounds (VOCs) that have been traced to Madbury Metals on Knox Marsh Road. Recently MTBE, a gasoline additive, has been detected in the ground water emanating from the metal recycling facility and heading toward the Griffin well at levels above the State of New Hampshire's drinking water standard. While only trace levels are currently reaching the Griffin well, it is anticipated that higher levels will reach the well in 2008 or 2009. New Hampshire Department of Environmental Services (NHDES) is funding a study to characterize the extent and path of the MTBE contamination and to identify methods to treat the contamination should the MTBE reach the Griffin well in unacceptable levels. The study should be completed in the first quarter of 2008.

Ireland Well

Developed in the early 1960's, this well is also located in the Pudding Hill Aquifer between Mast Road and Knox Marsh Road south of the Bellamy River and has sustained yields of 600 gpm. Unlike the Griffin Well the water quality is excellent and the well is pumped year round unless it is taken out of service for maintenance and repairs. The pH is adjusted with an alkali additive prior to being pumped into the system. In 1996 the City began to add phosphate to stabilize the high iron and manganese in the water.

Calderwood Well

On line since 1972 this well is located in the Hoppers Aquifer off Glen Hill Road near the Barrington line. This well has sustained yield of 500 gpm, although it may produce up to 700 gpm for short periods of time. It has excellent water quality, requiring only additions of alkali prior to being pumped into the system.

Campbell Well

This well was developed in 1989, located in the Hoppers aquifer near the Calderwood Well, has sustained yield of 400 gpm. With recharge from the Isinglass River, the yield can be increased up to 600 gpm. It runs year round and is only taken out of service for maintenance and repairs. It has excellent water quality, requiring only additions of alkali prior to being pumped into the system.

Smith & Cummings Wells

These two wells were developed in 1958 and 1967, respectively, and are approximately 100 feet apart. They are located in the Willand Pond Aquifer between Glenwood Avenue, Central Avenue, the Spaulding Turnpike, and Indian Brook Drive. Together they have a sustained yield of 535 gpm. In the past, high benzene concentrations were detected in the water.. The water from these wells is pumped to the Lowell Avenue treatment plant where it is treated with an air stripper to remove contaminants, filtered to remove iron

and manganese and then transmitted to the Garrison Hill reservoir tank for distribution to the system. The plant also has a clear well tank capacity of .5 MG for addition storage

Hughes Well

The Hughes Well in the Barbadoes Aquifer is located off Old Stage Road near Barbados Pond. It has been online since 1969 and has the capacity to yield 300 gpm. Since the well water contains high levels of iron and manganese, it was used as a back-up well during high demand periods or when the Campbell or Ireland Wells were out of service. In 1996 the City began to add phosphate to stabilize the high iron and manganese, allowing the well to be used for up to eight months of the year. Treatment capacity at the French Cross Road water treatment plant was incorporated to treat water from the Hughes well

Bouchard Well

The Bouchard Well is located off French Cross Road near the Bellamy Reservoir. It has been developed as an additional water supply source for the City and came on line in June 2007. The well is 180 feet deep and has a yield of 700 gpm. As part of the development of the Bouchard well, the French Cross Road water treatment plant was built to handle elevated levels of iron and manganese. The new plant is designed to handle the Hughes well in the future.

Aquifer Recharge Stations

Isinglass River Recharge

Provides fresh water pump from the Isinglass River to a recharge basin located in the Hoppers pit of Glen Hill Road, the City of Dover has a permit for 2.1 MGD from September to April for this operation. The current pump house has been flooded twice and was out of service in 2007, but was restored and put back in service in the spring of 2008.

Bellamy River Recharge

Provides fresh water pump from the Bellamy River to a recharge basin which is located in the gravel pit. The Bellamy River recharge operated by the City became redundant when Dover Sand and Gravel resumed their washing operation using Bellamy River water in 2005. If and when Dover Sand and Gravel ceases washing operations, the City will re-establish an infiltration basin and begin recharging the aquifer with Bellamy River water

Storage Tank Capacity's

Garrison Hill Reservoir

Based on the report given to the City of Dover by Earth Tech in 2006, their analysis showed that the existing 4MG tank provides the needed volumes of equalization, fire flow and emergency storage for the existing service area. The tank is inspected every 5 years without taking it out of service using scuba divers; the tank was inspected and cleaned in 2006, with the outside of the tank repaired in 2000.

Lowell Avenue Treatment plant

The plant has a clear well capacity of 0.5 MG, the water from this tank is directly pump to the Garrison Reservoir

French Cross Road Treatment Plant

The new plant has a capacity of 0.97 MG, and is currently link to the Garrison Hill tank to pump water till the tank is at it maximum level.

Major Changes Since 2000 Master Plan

The attacks of 9/11 have brought the security of our facilities to the forefront of our operations. A potential attack on the water system can happen from many different sources and the utility needs to plan for the possibility. Items include prevention and recovery should an event occur:

1. Continue with security upgrades at wells and treatment facilities. Need for better sensors around doors and windows, camera installations and fencing.
2. Continue with back flow program for all homes, currently only new homes are required to install a backflow valve.
3. Recovery from an event would range from needing backup power supply for wells and treatment plants, to temporarily needing water supply from a neighboring community. Interconnecting with a neighboring community’s distribution system would allow one community to supply water to a neighbor in the case of an emergency. We have implemented this system in 2006 when Somersworth’s water plant was disabled due to flooding. Our system provided 500gpm to Somersworth in a time of need by using a fire truck.

A water interconnection study was performed by a consultant for a coalition of Seacoast NH communities in 2005. The study was financed by a grant from the Department of Environmental Services and the 10 participating water suppliers. The goal of the study was to identify and conceptually plan the best direct connection locations to each of our neighboring cities and towns. The study proposed the infrastructure required to make the connections and estimated costs to design and construct each interconnection. Dover had potential interconnections with Rochester, Somersworth, Portsmouth, and Durham proposed.

An item that has come before the City Council is the North end water pressure. The City hired a consultant to conduct a study in 2007, to address the issue. The study concluded that a new water tank and booster station will be required to increase the water pressure. The Dover Utilities Commission has reviewed the study and received a presentation from the consultant who provided additional information which had been requested by the DUC. The DUC will likely make a recommendation to the City Council on the need for the water tower project in 2009. The 2010-2015 CIP contains \$6.6 million for the project to improve water pressure in the North end.

One of the questions asked of Dover citizens during the UNH Telephone Survey dealt with how much of a problem water pressure is in Dover.

<i>Major Problem:</i>	<i>11%</i>
<i>Minor Problem:</i>	<i>20%</i>
<i>Not a Problem:</i>	<i>61%</i>
<i>Don't Know</i>	<i>9%</i>

While Ward 6 residents were 3 times as likely to feel that water pressure was a major problem, there were still more Ward 6 residents that felt that water pressure was not a problem (34%) than a major problem (31%).

The division water maps are in need of updating. The GPS system is not working due to radio signal conflicts with the SCADA system on Garrison Hill. Efforts to resolve the issue have been unfruitful.

The City has experienced several major power outages, and only one of the eight wells has a permanent back up generator. The backup generator at the Griffin well can no longer be used due to the water needs to go through the treatment plant, and the generator is not large enough to handle additional pumping requirements. The water division has one portable generator available, and it can be used at Ireland and Calderwood wells. This situation is not sufficient if a long outage were to occur. A prolonged power outage would result in water rationing as only half of the City's daily demand could be produced.

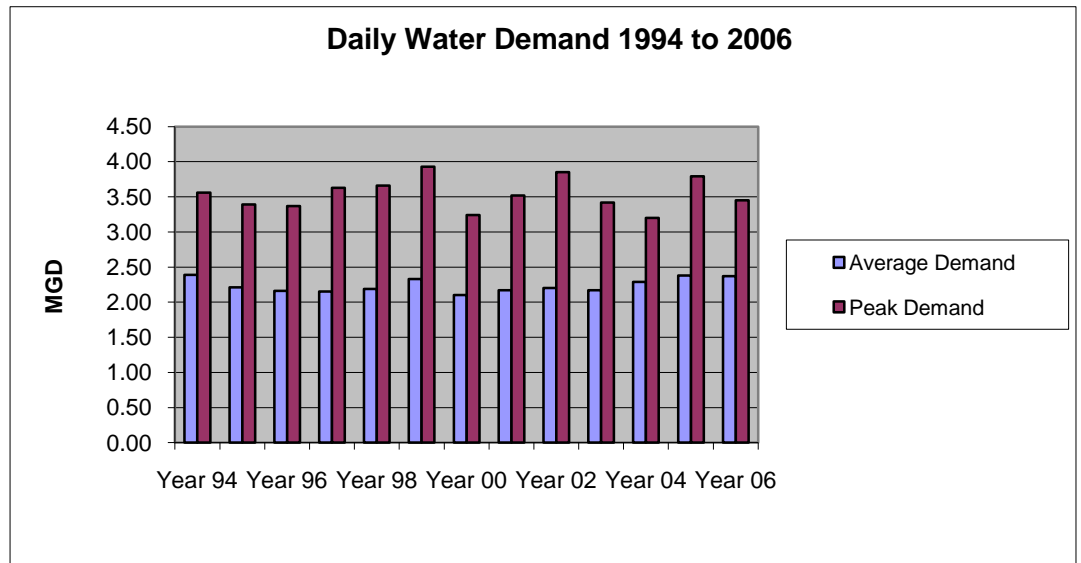
Tracking of work orders for maintenance work needs to be upgraded. The Water Division is currently using Golf course management software, TRIMS, for this purpose. A software program that is designed specifically for Public Works and utilities is needed.

Current Water Demand

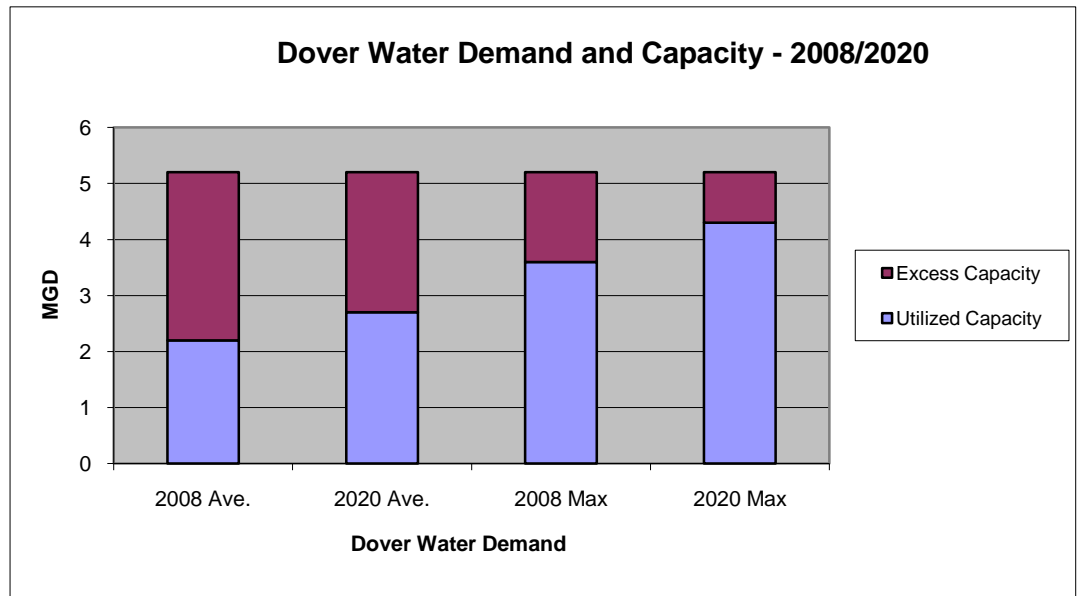
Dover's eight wells have a combined safe yield pumping capacity of 5.2 million gallons per day.

Average daily demand represents the amount of water a community consumes in 24 hours when daily consumption is averaged through the year. During the period between 1994 and 2006 the average daily use of water remained relatively stable between 2.0 million gallons per day (mgd) and 2.2 mgd. The average demand has remained at this level due to the reduction in industrial users, a change out of the commercial and residential meters, and a concerted program to find and repair leaks within the system. Based on the work done for the interconnection study Dover's average daily demand is expected to increase to 2.7 mgd by 2020 see graphs.

The maximum amount of water entering the water system during the course of one day within a particular year is the maximum day demand. Such a day is usually a direct result of weather conditions that result in increased use of water, typically during a hot dry summer period. During the past 13 years the maximum day demand has remained relatively stable as well and ranged from 3.556 mgd in 1994 to 3.45 mgd in 2006, with a high of 3.99 in 1999. The Average peak demand is 3.54 mgd for the past 13 years. Based on the work done for the interconnection study Dover's maximum day demand is expected to increase to 4.3 mgd by 2020.



At present, both the average daily and maximum daily demand can be met with the existing well system.



Exploration for Additional Water Sources

The City of Dover contracted with several hydrogeological consultants to conduct searches for additional water supplies. This exploration program resulted in the development of the Bouchard Well and the Cotton Farm site bedrock well. Other potential well sites at the Bagdon/Kirkwood Property on County Farm Cross Road and the Reyners Brook site an area off upper Sixth Street were drilled, but did not result in wells with enough water to support a public supply well. Another potential well site was

drilled in 2007 on the Day property near Blackwater Brook. The pump test showed the well could supply about 100 gallons per minute of excellent quality water. Another well of comparable yield would need to be found nearby to make the Day property viable as a future water supply well for the City.

Capital Projects Completed Since the 2000 Master Plan

The 2000 Master Plan recommended a number of water capital projects to improve the system. The following is a list of those projects, which have been completed.

1. Implemented a System Control and Data Acquisition (SCADA) monitoring system on all water system equipment to ensure real-time monitoring and control of water levels and flows.
2. The Water division completed the new radio meter replacement program. This allows the City of Dover to bill quarterly, instead of semi annually, and eliminate the estimated bills. The other benefit is the system can be read in ten days instead of the 5 to 6 weeks it used to take to complete. The City has seen an approximately 75% deduction in labor force to do meter reading, allowing staff to completed other important maintenance activities.
3. Developed the Bouchard Well and Water Treatment Plant, The treatment facility can also service the Hughes Well in the Barbados Aquifer.
4. Provided each customer an Annual Consumer Confidence Report since 2000
5. Implemented a directional flushing program
6. Implemented hydrant pumping program using driving routes
7. Numbered both private and public hydrants in the system
8. Studied the feasibility of installing a sand filter treatment system at the Lowell Avenue Treatment Plant for removal of iron and manganese.
9. Replaced water main on Grove Street from Sixth Street to Ash Street
10. Replaced water main on Maple Street from Sixth Street to Grove Street
11. Replace water main on Hough Street from Maple Street to Grove Street
12. Replace water main on Ash Street from Maple Street to Grove Street
13. Replaced water main on Dover Point Road From Hawthorne Road to connection at Spaulding near Cote Drive
14. Replaced the water main on Pierce Street
15. Replace water main on Preble Street
16. Replaced water main on Twombly Street
17. Replaced water main on Dover Street
18. Replace water main on Park Street from Ham Street to Hill Street
19. Replaced water main on East Concord Street
20. Replaced water main on Baker Street
21. Replaced water main on Everett Street
22. Replaced water main on Freeman's Court
23. Replaced water main on Fisher Street
24. Replaced water main on Sonnett Street
25. The city extended a new 12" main on Sixth Street from Cherrywood toward Long Hill Road
26. Replaced the main on Old Rochester Road
27. Replaced main on Fourth Street
28. Replaced main on Chestnut Street From Fourth Street to Sixth Street


- 29. Replaced main in Washington Street from Whittier Street to Taylor Road
- 30. Replaced main on Columbus Avenue from Littleworth Road to Tolend Road
- 31. Replaced main on Sixth Street from Whittier Street to Central Avenue
- 32. Replaced Main on Whittier Street from Sixth Street to Glenwood Avenue
- 33. Replaced Main on Glenwood Avenue from Central Avenue to Spaulding Turnpike

Existing Problem Areas

ISO Fire Flow Problems

The City needs to provide water mains large enough to provide adequate fire flows. Minimum fire flow standards are established by the Insurance Service Organization (ISO) to establish insurance rates for a city. There are standards for minimum fire flows for residential, commercial, and industrial sites. The last evaluation done for the City was in the fall of 1997. ISO and city staff conducted 32 tests throughout the city, and received a report in 1998. Out of 32 tests 12 fell below the minimum requirements. The city did replace mains on Dover Point Road., Boston Harbor Road, Maple Street and Grove Street. New tests need to be done in these area’s to obtain updated results.

	Flow at 20 PSI Needed GPM	Flow at 20 PSI Available GPM
1. Hampshire Circle area	1250	1100
2. Central Avenue & Old Rochester Rd.	3000	1000
3. Broadway & Highland Street	3000	700
4. Country Club Estates	750	400
5. Westwood Circle area	1000	800
6. Crosby Road area	3500	2900
7. Central Avenue & Mill Street	3500	2700
8. Alumni Drive & Durham Road	2500	2400
9. Dover Point Road/Gerrish Road	6000/5000/3500	2900
10. Dover Point Road/Royer Lane	3000	2200
11. Dover Point Road/Boston Harbor	2700	900
12. Maple Street/Ash Street	3500/4250	2700

Table C of Appendix 2 identifies lines deficient in flushing velocities capacity and maintenances problems such as number of water breaks. 

Recommendations

- 1. Reconstruction of the wellhead buildings, space is very limited, address the issue of no containment for chemicals, separate room for chemicals, electrical services are out of code, energy efficiency’s, and standby power
- 2. Improve security of the water system against potential intruders and threats.

3. Update the distribution system mapping, the majority of our plans are 20 years old and the city will be losing the institutional knowledge over the next 10 years
4. Upgrade on the hydraulics' program, the current program is a dos base, and needs to be a windows base software
5. Continue with replacement of mains due to maintenance issue or potential looping or prior to or in conjunction with road projects
6. Continue the ground water exploration program to identify potential future water sources. As Dover continues to grow and develop the number of potential new well locations dwindle. A public water supply well requires the protection of all land within a 400 foot radius around the well. Often times this requires the cooperation of multiple landowners willing to sell or provide protective easements on their property.
7. The City has a good supply of water at present; however, maintaining good water quality is of utmost importance. Acquisition of undeveloped property or conservation easements of land within the recharge area of municipal wells is a very effective way to protect water quality. It also preserves the rural character of the City while providing wildlife habitat and recreational opportunities for residents.
8. Investigate the feasibility of instituting a program of life-cycle costing for all Water Division assets to determine the annual expenditures required to maintain an efficient system of water service to the citizens of Dover.
9. Based upon the results of the life-cycle costing program, prioritize and schedule the repair, maintenance, and, when necessary, the construction of those water facilities as part of the City's capital improvement planning process.
10. Seek opportunities to implement the recommendations of the Seacoast NH Emergency Interconnection Study, creating permanent connections to neighboring water systems which allow one another to supply water during an emergency.
11. Create an emergency conservation ordinance, which may be implemented during period of severe drought in order to conserve water to the greatest extent possible.
12. Obtain State certification of all employees of the division.

Sewer System

History

The first sewers in the City of Dover were constructed in the 1840's and consisted of wood. Gradual expansion of this wooden system took place until the late 1860's when the construction of the first brick sewer began on Court Street. By 1870 brick sewers on Washington Street and Central Avenue were started and by 1874 the first cement pipe was laid into the ground.

Use of the sewers for the conveyance of storm water began around 1880. Within five years the capacity of the system was insufficient and emergency relief sewers had to be constructed to reduce the load in many areas. The City continued to allow the connection of drainage lines to the Municipal Sewer System as recent as the mid 1960's. Even today significant amounts of infiltration into the sewerage treatment system occur during periods of heavy rain. The consulting firm of Wright-Pierce is currently conducting an inflow and infiltration study for the City to identify specific problem areas.

Historically, industrial waste received little or no treatment prior to being dumped directly into the river. Several shoe and leather companies dumped waste containing dyes, oils, solvents, and various chemicals into the system. Industries producing insecticides, meat by-products, plastic, and paper products also contributed toxic material to the system.

Between 1975 and 1980 the Cochecho Separation Project connected the entire sewer system north of the Cochecho River to a sewage treatment plant. During this same period the South Side Sewer Project expanded the system to the Dover Point area.

In 1990, Dover replaced the primary treatment plant located at the end of River Street. It began operation in the early 1960's. The current secondary treatment plant, located off Middle Road, came on line in 1991. A pump station was constructed near the River Street site to transfer sewage, previously routed to the primary plant, to the new secondary plant via a 36" force main, which is a pipe that conveys wastewater under pressure.

In 2004 the City of Dover was issued a consent order, to do additional testing at the WWTP, pump station upgrades, and to have a preventative maintenance program to address the collection system and pump stations.

Existing System

There are approximately 119 miles of sewer lines existing in the City of Dover, of which 15 miles are force mains. The lines vary in size from 8" to 36" in diameter and service approximately 38% of the area of the City and 85% of its residents. The lines generally consist of vitrified clay, reinforced concrete, cement asbestos, and more recently polyvinyl chloride (PVC). These facilities are mapped and available through the GIS Office of the City's Environmental Services Division.

In addition, there are 20 pump stations located throughout the City to pump sewage to the waste treatment plant.

River Street Pump Station

Built in 1991, this is the City of Dover's largest station, handling 75% of the sanitary flows, with a capacity of 13,700 GPM. The station is also the preliminary treatment before being pumped to the wastewater treatment plant, such as grit and heavy solid removal. The pump station also adds sodium hypochlorite into the force main to increase the treatment process at the WWTP. The station Master Plan was conducted in 2007, to address the needs of the stations infrastructure.

Charles Street Pump Station

Built in 1963, this is the City of Dover's second largest station, handling flows from the Durham Road, Bellamy Road, Mill Street, Industrial Park and Rutland Street area. The station had upgrades in 1980, and a total reconstruction in 2006. The station has three ten inch Gorman Rupp self priming pumps with a capacity of 2600 GPM each. The station is also equipped with a flow meter, new generator and grinder for heavy solids. The station is impacted by high Inflow and Infiltration and the majority of the City of Dover I&I program has been in this sewer shed.

Mill Street Pump Station

Located at the end of Mill Street, this station handles flows from the Stark Avenue, Elliott Park, and Mill Street and pumps directly in the Charles Street pump station. The station is equipped with a new standby generator in 2004, and two six inch Gorman Rupp self priming pumps purchased in 2005, with a capacity of 485 GPM.

Crosby Road Pump Station

Built in 1983, this station is located on Crosby Road, handles flows on Crosby Road, Faraday Drive, and residential development on Ezras Way and Emerald Drive. This station is part of the Charles Street sewer-shed. The station is equipped with standby power and two four-inch Gorman Rupp pumps with a capacity of 200 GPM.

Middle School Pump Station

Built in 1998, this station is located on Daley Drive, handles flows from the Middle School only, and is part of the Charles Street sewer shed. The station has standby power provided through the school generator, and has two three-inch pumps, with a capacity of 120 GPM.

Varney Brook Pump Station

Built in 1979, it is the City of Dover's third largest station, located at the end of Gerrish Road and handles flows from the Morningside Drive area, and everything south of the Applevale Drive area. The station has three six inch Flow Serve pumps, purchased and installed in 2001 with a capacity of 1600 GPM each. The station is equipped with a bar rack to handle heavy solids, and has standby power. The station pumps its flow directly to the WWTP and this work was completed in 2007, by rerouting the force main. The station also had an addition to handle chlorine injection if needed.

Piscataqua Pump Station

Built in 1980, and located on Wentworth Terrace Drive, it handles flows in the lower Dover Point Road area, pumps to a gravity line, then flows to Varney Brook Station. The

station is equipped with standby power, bar rack, and has two four-inch Flow Serve pumps purchased in 2001, with a capacity of 800 GPM.

Boston Harbor Pump Station

Built in 1980 and located at the intersection of Route 4 and Boston Harbor Road, the station handles lower Spur Road and homes in the Boston Harbor Road area. The station is equipped with standby power and has two three inch Gorman Rupp pumps, with a capacity of 243 GPM. A new generator was installed in 2006. This station is part of the Piscataqua sewer-shed.

Leighton Way Lift Station

Built in 1979 and located at Heaphy Lane and Leighton Way, the station handles twelve to twenty homes in this area. The station is an air lift type station, and has two small tanks that fill with wastewater then air is forced into tanks to force wastewater out. The station is equipped with standby power, with a new generator in 2006. This station is part of the Piscataqua sewer shed

Brickyard Pump Station

Built in 1987 and located on Isaac Lucas Circle, this station is part of the Varney Brook sewer-shed, which handles flows from Isaac Lucas Circle, Brickyard Drive and Waterloo Circle. The station is equipped with a one pump standby power, and has two four-inch Gorman Rupp pumps with a capacity of 220 GPM.

Mast Road Pump Station

Built in 1986, this station is located in the intersection of Spruce Lane and Mast Road and is part of the Varney Brook sewer shed. The station is equipped with a one pump standby power with two six-inch Gorman Rupp self priming pumps, with a capacity of 480 GPM.

Spruce Drive Pump Station

Built in 1978, this station is located on Spruce Drive and is part of the Varney Brook sewer shed and handles flows for the homes on Spruce Drive. The station has no standby power, and has two four-inch pumps with a capacity of 200 GPM.

Cochecho Pump Station

Built in 1976, this station handles flows from the Portland Avenue, Atlantic Avenue, and Cochecho Street areas. The station is equipped with standby power and has two four-inch Allis Chambers pumps, purchased in 2006 with a capacity of 485 GPM.

County Farm Pump Station

Built in 1992, this station is located on County Farm Road, and handles the County complexes, Riverside rest home, County Jail, and Seacoast Hospice. Due to the additional capacity needed for the expansion of the County jail a new force main was installed in 2006. The station is equipped with a one pump standby power and two three-inch Gorman Rupp pumps with a capacity of 235 GPM.

Strafford Pump Station

Built in 1950, this station is located on New Rochester Road, and handles the northern portion of New Rochester Road and Old Rochester Road. In 1980 the station received

new pumps and controls. The station has no standby power and is equipped with two four-inch Gorman Rupp pumps purchased in 2005 with a capacity of 350 GPM.

Cranbrook Pump Station

Built in 1957, this station is located mid way on Cranbrook Drive and handles flows for a portion of Old Rochester Road, Cranbrook Drive, Strafford Road and Wellington Avenue area. In 1979 the station received new pumps and controls; the station has no standby power and is equipped with two four-inch Gorman Rupp pumps purchased in 2005 with a capacity of 200 GPM.

Watson Road Pump Station

Built in 1999, this station is located on Sandpiper Drive and handles flows for Sandpiper Drive and the Cardinal/Lennon Drive development. The station is equipped with standby power and two three-inch Gorman Rupp pumps with a capacity of 120 GPM.

Hampshire Circle Pump Station

Built in 1993, this station is located on Hampshire Circle, and handles the flows for Hampshire Circle, Pleasant View, Mineral Park Drive, and Addison Place. The station is equipped with standby power and two three-inch Gorman Rupp pumps with a capacity of 150 GPM.

Mount Pleasant Pump Station

Built in 1986, this station is located on Back Road, and handles flows from Back Road, Henry Law Avenue and Mulligan Drive. The station is equipped with a one pump standby power and two three-inch Gorman Rupp pumps with a capacity of 100 GPM.

Clay Hill Pump Station


Built in 1999, this station is located on Sullivan Drive, and handles flows from Sullivan Drive and Evergreen Valley Drive. The station is equipped with a one pump standby power and two three-inch Gorman Rupp pumps with a capacity of 100 GPM.

Secondary Treatment Facility

In the early 1970's Federal regulations mandated through the Clean Water Act upgrading Dover's primary treatment facility on River Street to a secondary facility. Since that site did not have sufficient space for an upgraded facility, in 1987 the City contracted to have a new site selected and a new treatment facility designed. The new facility located off Middle Road, was completed in 1991 and also included a sludge treatment and composting.

A new 18,700 GPM capacity pump station was constructed on River Street. Wastewater is collected at the River Street station from the existing collection system and pumped 19,400 feet to the new facility. The pump station contains four pumps with screening and grit removal facilities. A 36-inch force main was installed between the River Street pump station and the wastewater facility along Back Road and Middle Road.

The average daily flow capacity of the new facility is 4.7 million gallons per day (MGD) with a peak flow of 16.8 MGD. The facility was originally designed to meet wastewater flows through the year 2005 based on population projections from the New Hampshire

Office of State Planning (NHOSP). Population for the year 2005 was estimated to be 31,300 and it was assumed that 90% of the City would be serviced by the system. The design of the facility, as well as the size of the parcel on which it was constructed on (36 acres) allows for a 33% increase for future capacity. Since that time the population estimates for Dover have been revised. In 1995 Dover's population was 25,950 and the projected population for 2005 was 28,700 or 8% less than was projected for the project. Population projections from the NHOSP in 1997 indicate that Dover will reach a population of 31,704 in 2020. Given this projection, it would appear that the facility will have sufficient capacity to a period between 2015 and 2020. The last population statistics taken in 2004 was 28,495. The city had completed a number of upgrades to the wastewater facility to improve operation and to meet NPDES limits. For the year 2006 the yearly average flow was 3.54 MGD. The flows have generally increased over the past years (See Table D in Appendix 2). 

Odor Control Upgrade

In the early to mid ninety's a number of attempts were exercised to curb odors caused by the long detention time in the force main. Masking agents and permeable covers were purchased and installed. This method didn't reduce the odors to an expectable level for the neighbors to live with. In 1997 an RFP was put out for a flat cover system with odor filtration. The city staff felt that this would be the best long term fix for the ongoing odor issue. In late spring of 1997 the installation of aluminum flat covers with a Bio-Filtration system was started. This included the covering of the Primary Clarifiers and Aeration Basins. HDPE ductwork connected the cover system to a modular biofiltration system. The facility has seen a drastic odor reduction from this project.

Construction of a New Blower Building

The original design of the wastewater facility had the blower room on the second floor of the process building. The blower room housed three 125 HP positive displacement blowers to supply air for the secondary treatment process. The 50 HP sludge storage tank blowers, silencers and associated piping were installed in this room as well. From as early as 1992 there was a vibration problem with the blowers being housed on the second floor. This included premature failures of the blowers and motors as well as physical cracking to the building. After years of studies and recommended fixes that were unsuccessful, the city moved forward to design and construct a new blower building. In 2003 the city broke ground on a new structure behind the process building. This new building houses the three aeration blowers, VFD's and silencers. All other equipment was left in the old blower room to save on size and overall cost of the project.

Outfall Improvements

In 2001 the City funded a study to asses the condition of the facility's outfall structure. The results indicated that 13 of the 52 ports were clogged and functioning improperly. The new design called for cleaning and dredging around the diffuser as well as the installation of 26 duck billed pinch valves. The new valves open and close depending on the facility's flow. At a no flow condition the valves are closed preventing any debris to enter the diffuser. This project helped the city increase the effluent dilution from 78:1 to over 100:1.

UV System Upgrade

The facility had a first generation Fisher Porter Ultraviolet Disinfection system. This system was designed and installed and to meet a total coliform limit of 1000MPN/100ml. When the city received the final NPDES permit for the new facility in 1991 the limit was 70MPN/100mL. This disinfection system was under designed from the first day that the facility took flow. Due to the facility violating coliform limits on a number of occasions the city had evaluations conducted by outside experts. Through the evaluations many in house improvements were made to get the most out of the system. As parts and service became unavailable the city decided to fund and have a state of the art Trojan 3000 Plus disinfection system designed and installed. The system was designed to meet shellfish fecal coliform limits of 43MPN/100mL. The Trojan system went on line in November of 2004.

SCADA System Installation

As the facility's PLC system (electrical controls) became obsolete the city moved forward to have SCADA (supervisory control and data acquisition) system designed and installed. The installation was completed in 2006. This replaced a system that no longer had parts or service available to the city. The SCADA system is used to monitor and remotely control all of the facility's equipment.

Wastewater Facility Future

The NPDES permit states that when the effluent discharged for a period of three consecutive months exceeds eighty percent of the 4.7 MGD design flow the permittee will submit to the permitting authorities a projection of loadings up to the time when the design capacity of the treatment facility will be reached and a program for maintaining satisfactory treatment levels consistent with approved water quality management plans. Before the design flow will be reached, or whenever the treatment necessary to achieve permit limits cannot be assured, the permittee may be required to submit plans for facility improvements. As the facility reaches eighty percent of its design flow (3.76 MGD) the city should look into a treatment expansion or a way to further reduce flows from Inflow and Infiltration. As previously mentioned the facility was designed on a parcel for a 33% expansion. Other options might be additional treatment units such as final effluent filters. Any options will be dictated by current or future NPDES permits. To look at all possible options the city will need to have an engineering study conducted to determine the best technology for meeting all regulative issues.

Capital Projects Completed Since the 2000 Master Plan

1. Acquisition of four new pump stations Watson Road, Clay Hill, Middle School, and Hampshire Circle.
2. Completion of the SCADA project on all the sewer pump stations, this project has increased our efficiencies operators would do actual station checks Monday Wednesday and Friday, and all alarm handling was done through the Police dispatch, with SCADA we can see each station by computer daily, and alarm handling is done at the DPW facility. Now more time is dedicated to maintenance rather than station checks.

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3. New Chemical feed lines and VFD's on the pumps at River Street pump station.
4. New VFD drives on four pumps at River Street pump station.
5. Total Reconstruction of the Charles Street Pump station.
6. New pumps at Strafford, Cranbrook, Varney Brook, Piscataqua, Mill Street pump stations.
7. New standby power at Boston Harbor and Leighton Way, and Mill Street pump stations.
8. Relocated force main from Varney Brook to wastewater treatment plant.
9. Replace sewer main on Durham Road from fire station to Mast Road.

Sewer Lines Replaced or Installed Since 2000

Replaced the line on Glenwood Avenue from Central Avenue to Whittier Street.
Replaced the line on Fourth Street from Snow's Court to Washington Street.
Replaced the line on Washington Street from Fourth Street easement line to Cambridge Tool.
Replaced the line on Prospect Street from Washington Street to end of line. (I&I project)
Installed a new line on Prospect Street about 350 feet for failing septic systems.
Installed a new line on Spur Road for failing septic systems.
Installed a new line on Upper Sixth Street for failing septic systems.
Replaced a portion of the line on Cedarbrook Drive.
Replace the line on Essex Street from Portland Street Forest Street.
Replaced the line on Maple Street from Sixth Street to the end of Maple Street Ext.
Replaced the cross country line from Roosevelt Avenue to Glenwood Avenue.
Replaced the line on Central Avenue from Glenwood Avenue to Morin Street.
Replaced the line on Park Street near Hill Street 300 feet. (Dead end portion)
Replaced the line on Sunset Drive from Cataract Avenue to the end of the street. (I&I project)
Replaced the line on Bellamy Road from Cataract Avenue to Hartswood Road (I&I project)
Replaced the line on West Knox Marsh Road from Bellamy Road to the end. (I&I project)
Replaced the line on Silver Street Ext. from Silver Street to the end.
Slip lined a new line on Mill Street from Charles Street to lower Mill Street.
Installed a new line on Arcola Street.
Replace sewer inspection unit.

Sewer Division Accomplishments Since 2000

Removed over 100 Illicit connections throughout the City of Dover
Cleaned sewers in far North end area, and in the Portland Avenue area
Television inspected sewers in the far North end area and Portland Avenue areas
Identified all manholes and mains on the GIS system
Rated all sewer mains in the GIS system
Adopted the preventative maintenance program for the collection system
Improved efficiency for the County Farm pump station

Major Changes Since 2000 Master Plan

The EPA issued the City of Dover with a consent order to correct and identify maintenance activities to prevent overflows, either natural or manmade. The staff did write the PM (Preventive Maintenance) plan for the City of Dover collection system, and submitted it to the EPA, and are trying to meet the requirements of that document. The collection system can be broken down into four major areas, pump stations, sewer mains and manholes, Inflow and Infiltration (I&I) and illicit connections.

Pump Stations

The City of Dover maintains 20 pump stations, some very new and others having 20 plus years of operation. With River Street being our largest station, a master plan was done in 2007 by Wright Pierce, with hopeful upgrades in 2008, 2009 CIP. Leighton way pump station is over 20 years old and the manufacturer is out of business and parts are getting hard to come by, and the State DES will not sign off on future air injector stations. Varney Brook station will need a complete reconstruction as the station is our third largest, and since the relocation of the new force main the WWTP plant is experiencing some hydraulic surges due to the on/off pumping. Also the capacity of the station has decreased from 2000GPM to 1600GPM due to the maintenance problems on the original pumps. New pumps have been installed. This decrease may have an impact on the station as the system gets older in the sewer shed.

Sewer Mains and Manhole

The City of Dover plans to clean and television inspect sewer mains in a ten year cycle. This cycle is part of an overall PM (Preventative Maintenance) plan; however the Utility Division has fallen short of this requirement due to personnel. Our resources are shared with the water utility and personnel are not adequate especially during the warmer months. We are currently two areas behind, and may have to extend out the plan of cleaning if the EPA permits us to. Sewer mains and manholes were inputted into the GIS to assist operators with cleaning and TV inspection work. Size and distance between manholes needs to be corrected, and new maps published. The staff has rated each sewer main in the system for its condition with #1 being the best and #5 the worst. See Table E in Appendix 2 for a list of the sewer mains with the worst rating. 📖

Inflow & Infiltration

Inflow is when non wastewater is allowed to enter the Sanitary System by man made sources such as catch basin, roof gutters, and sump pumps. Infiltration source are from leaking pipes and manholes. I&I removal gives the City of Dover more capacity at the WWTP, as stated in the treatment plant section the more I&I removal the more time it gives the city before a upgrade needs to happen. The Division has been working with a consultant from Wright Pierce since 1999 to remove major sources of I&I. An I&I study was completed, and the City has done some construction activities, with the latest work being done in the Bellamy Road, West Knox Marsh Road area. The City has experienced only two wet weather overflows since 2003, and they were storms in 2006. The Division has asked for 250,000 dollars per year in the CIP to continue to reduce the amount of I&I in the system.

Illicit Connections

Illicit connection is when a source such as a sewer line from a home or business is tied to the drain system. During the 1970's the city did a major separation project, however not every homes was tied to the sanitary lines. The City of Dover has removed over 100 such connections since 1980, but through the new storm water rules, we are required to test outfalls and investigate any wastewater sources we find. The testing of the out falls is new for the City of Dover and staff and lab costs have not been determined.

Recommendations

The City needs to continue to upgrade the existing system. Many of the capacity problems are interrelated and need to be addressed comprehensively. Detailed engineering will be needed for many of the problems.

1. Upgrade sewer mains based on their rating set fourth in the GIS database.
2. Continue the City's program for correcting inflow/infiltration (I/I) problems into the sewer system. The purchase of multiple flow meters will help in isolating the major sources within the system.
3. Investigate the feasibility of instituting a program of life-cycle costing for all Sewer Division assets to determine the annual expenditures required to maintain an efficient system of sewer service to the citizens of Dover. Currently Leighton Way and Varney Brook pump stations should be addressed.
4. Based upon the results of the life-cycle costing program, prioritize and schedule the repair, maintenance, and, when necessary, the construction of those sewer facilities as part of the city's capital improvement planning.
5. Address the sewer maintenance preventative maintenance program requirements for cleaning and TV inspection, and the staff to conduct the maintenance activity.
6. Obtain software to assist staff on addressing capacity problems in the system.
7. Continue with illicit removal program.
8. Obtain State certification.

Storm Water Management

The majority of the storm water system is the old combined systems develop in the late 1800 and earlier. During the late 1970's a new sanitary system was installed to separate sanitary sewer, from storm sewer to minimize the impact at the wastewater treatment plant, leaving the combined system to become the current storm drain system. The downtown core is the majority of the old system - Central Avenue, Broadway, Portland Avenue, Fourth Street, Silver Street and Court Street area's. This system consists of granite box, and stone culverts, cement and clay pipe. On the outer portions of the city,

there are clay, concrete pipe, steel culverts, and asbestos cement and PVC mains, and ditch lines. The existing storm water drainage system network is composed of:

- Catch Basins (2857)
- Drain Manholes (651)
- Miles of Pipe (67)
- Discharge Locations (204)
- Culverts (290)
- Detention and Retention Ponds (36)
- Miles of open Street drainage (100)

A new storm drain system was installed in the lower and upper squares on Central Avenue and Washington Street during the late 1970's Urban Renew project and in early 1980's Upper Washington and a portion of Arch Street was completed. Over the last ten years new systems on a portion of Fourth Street., Sixth Street., Fisher Street., and Glenwood Avenue through reconstruction projects. A new system is being replaced on Henry Law Avenue during the reconstruction of 2008.

The Environmental Projects Manager is responsible for storm water NPDES permitting and compliance. The GIS technician maintains all mapping elements of the storm water system. The Engineering Division provide drainage design, construction oversight, inspection, and plan review services for all proposed public and private development projects in the City. The Storm water system is maintained by three staff members from the Streets Division of the Community Services Department. The staff is responsible for maintenance of the City streets and drainage as well all snow operations.

The Geographic Information System maintains the mapping of the entire closed storm water drainage system. The maps show the location of all catch basins, drain manholes, piping, and discharge points. Detailed data associated with each of the structural elements has been partially collected. As built plans are required for all development projects approved by the Planning Board once construction is complete. The plans are delivered in hard copy as well as in digital format for import to the GIS. The plans must be on the same geographic coordinate system as the City's GIS system to facilitate importation.

Historically the purpose and function of the storm water system was to remove water from streets and parking areas as quickly as possible for safety reasons. More recently and with the EPA's adoption of Phase 2 Storm Water regulations the quality of storm water is of equal concern and must be addressed as part of the City's management of the storm water system. To that end the City was granted a NPDES Storm water permit in May 2003 based on a five year Action Plan submitted to the EPA. Most of the tasks identified in the plan will be accomplished by the time the permit expires at the end of April 2008. A new five year permit will be granted in May of 2008 based on a new five year action plan which needs to be submitted in the spring of 2008. The EPA has not yet provided guidance in what the new requirements will be for the new permit.

Accomplishments Since the 2000 Master Plan

The EPA Phase 2 storm water regulations require that the community address six specific areas under the NPDES permit. They are:

- Public Education
- Public Outreach Public Participation/Involvement
- Illicit Discharge Detection and Elimination
- Construction Site Runoff Control
- Post-Construction Runoff Control
- Pollution Prevention/Good Housekeeping

The City has incorporated all of the elements required and found in the 2003 Action Plan. The Seacoast New Hampshire communities that are regulated under the Phase 2 requirements formed the Seacoast Storm Water Coalition. The purpose of the Coalition is to work together on projects that all the communities must address in common rather than each community duplicating the effort on their own. Examples of activities the Coalition has done are:

- Created an educational video dealing with storm water entitled “There Is No Away” which has been broadcast regularly on local cable access TV.
- Prepared training manuals for two areas of the Phase 2 requirements, Pollution Prevention/Good Housekeeping and Illicit Discharge Detection and Elimination.
- Conducted training for personnel on Illicit Discharge Detection and Elimination
- Conducted training of DPW field staff on Pollution Prevention/Good Housekeeping

Culverts, detention and retention structures, and open drainage swales and ditches which were previously unmapped are now completed.

The City has implemented a catch basin cleaning program with a goal to clean all City owned catch basins once every five years.

The City has developed and implemented an effective illicit connection detection and elimination program. Numerous sanitary sewer service connections have been removed from the storm water system and connected to the sanitary sewer collection system. Numerous citizen complaints have resulted in catching several violators illegally dumping paint into catch basins.


A Watershed Assessment and Management Plan are under development for Berry Brook. The plan is nearing completion and will identify numerous structural improvements to implement which will restore water quality and manage the flow of Berry Brook.

Provided outreach and education through Camp Sun and Fun Dover’s summer recreation program for school kids where storm water training and catch basin stenciling was completed.

Developed the first pet waste awareness program in the state of New Hampshire. The program was guided by a volunteer citizen committee and received financial and staff assistance from the NH Department of Environmental Services.

Current Issues/Problems to be Addressed and Resolved

The existing storm water infrastructure is a mix of new structures installed as part of development during the last 25 years, and very old structures and pipes that served as a combined sewer system until the 1970's. Since that point in time the storm system has received minimal maintenance, essentially repairing whatever fails or upgrading structures when roads are reconstructed. The storm water system annual budget is funded under the General Fund and Capital Improvement Program.

The Drain Division maintains a trouble spot list of areas due to flooding during rain events. See Appendix 2. 

Broadway Drainage: A small portion of the Broadway area is currently under the CIP, with the main concern under the rail road near Red's shoe barn. However legal matters have stalled the improvements in this area. The upper portion of Broadway area is currently under study with the water, sewer, and improvements on these streets.

Catch Basins: Since the City began implementing the Phase 2 program, an additional \$25,000 has been included in the budget to clean catch basins. The 5 year plan called for cleaning every catch basin once every five years at an estimated cost of \$25,000 per year. The catch basin cleaning has been contracted out during the first five year permit period. It has been found that all of the catch basins were not cleaned as the annual expenditure was not large enough to clean more than 400 catch basins each year. It has also been noted that cleaning catch basins once every five years is not adequate. Inspection of the drainage system in the Berry Brook area revealed that the catch basins were full of sediment 3 years after having been cleaned.

Funding Issues: As the EPA requirements stiffen, the City will be required to fund the improvements to the storm water infrastructure. Current funding will not be adequate to meet the needs. The City needs to consider alternative funding mechanisms such as the establishment of a Storm Water Utility. The utility would be similar to the sewer and water utilities that currently exist in Dover. Funding for those utilities comes from the users of the system. Storm Water Utilities have been developed in cities and counties across the country to address the funding issue, and there are numerous examples to review as potential models for Dover. During the 2008 legislative session a bill that would enable communities to form storm water utility districts was passed. The bill, known as House Bill 1581, was sponsored by Dover State Representative Thomas Fargo. The City should consider taking advantage of this new legislation to establish a storm water utility to fund the necessary improvements to the storm water system.

Maintenance Issues: Ditch line and retention ponds are not cleaned due to the lack of staff and equipment to do the work. The City needs to invest in a rubber tired excavator, or contract out this task annually. The excavator would also be used to assist with repairs due to the size and depths of the current system. The City will have to wrestle with the need to budget additional funding to increase preventative maintenance activities such as

catch basin cleaning and capital expenditures to replace and upgrade deteriorated and aged infrastructure.

Existing Conditions Survey: In order to develop a plan to improve the storm water infrastructure system the first step needed is to conduct an existing conditions survey. The conditions survey will rate the relative condition of the elements that make up the infrastructure. The survey will provide staff with information necessary to prioritize, budget, and schedule needed improvements to the storm water system. It will allow the department to develop a comprehensive plan and communicate to the City Manager and City Council a strategy to maintain the storm water drainage system.

Recommendations

1. Inventory and grade each storm water pipe in the system, with the analysis concentrating in the downtown core areas.
2. Include in the CIP process to purchase a rubber tire excavator to clean swales, ditch lines, and retention ponds.
3. Include in the next budget cycle to include three additional staff for maintenance activities for the storm water utility
4. Continue educating City staff and management, local Board and Commission members, and City Council members
5. Once EPA announces the requirements for a new NPDES permit, the City will need to prepare and submit a five year action plan for the Storm Water program.
6. Staff will need to update the City's Storm Water Management Plan in order to conform to the new EPA regulation requirements.
7. Continue outreach and education efforts in the community regarding what the adverse impacts to surface and ground water resources that storm water runoff can have; and what steps citizens can take to minimize those impacts.
8. The City should consider the establishment of a Storm Water Utility to generate funding for the construction and maintenance of the storm water system.
9. Continue participation in the Seacoast Storm Water Coalition working with neighboring communities on common aspects of storm water management to leverage financial and intellectual resources.
10. Implement recommendations of the Berry Brook Watershed Management Plan.

References and detailed reports available

- Dover Storm Water Management Plan 2001
- Dover EPA Phase II Storm Water Five year Plan 2003 – 2008
- Dover Phase II Storm Water Annual Report 2008 - 2009

Private Utilities

Natural Gas

The City of Dover is serviced by Until Corporation for natural gas, which completed the purchase of Northern Utilities in December of 2008. The company services approximately 1,900 customers in Dover. At present there is 400 pounds per square inch (psi) major transmission line that services Dover, Somersworth and Rochester. This transmission line runs along the eastern edge of Dover from Dover Point to the Somersworth municipal boundary. There are two locations where the City taps into this line through district regulator stations. At these stations the pressure is reduced to 60 psi to feed the intermediate pressure system that supplies gas to much of the City. Four additional regulator stations take the pressure from 60 psi to a ½ psi low pressure system that serves most of the downtown area. This low pressure system is adequate for the residential demand in this area, but would not be suitable for high demand industrial use. The system is currently in good shape and can accommodate growth. The industrial areas—Crosby Road and Enterprise Park are supplied by a 60 psi intermediate pressure system that meets demand and can sustain growth.

Until Corporation is currently updating its maps of Dover's systems and is putting it into digital format. The City should request a digital file of this information when it becomes available.

At present Until Corporation has no plan to expand the system in Dover. The supplier typically responds to growth and development as it occurs.

Electricity

Public Service Company of New Hampshire (PSNH) provides electric service to the City of Dover. PSNH is a subsidiary of Northeast Utilities in Connecticut.

The City of Dover is interconnected to the transmission system (primary voltage above 34.5kV) through the New England Power grid. The New England Power grid is regulated through the Independent System Operator (ISO-NE) based in Holyoke Massachusetts. Planning, ensuring adequate transmission facilities, and ensuring adequate generation capacity for the New England area is regulated through the ISO-NE.

The Dover area distribution system is operated and maintained by PSNH distribution (primary voltage 34.5kV and below) and is regulated through the New Hampshire Public Utilities Commission (NHPUC). PSNH is responsible for ensuring distribution facilities are adequate for system load levels. Distribution maintenance, distribution planning, restoration of electrical service during and after storm events, residential, commercial, and industrial development and design, are all functions provided by PSNH. PSNH also provides services in energy conservation, low income assistance, and economic development. PSNH gives back to the Dover community through support of local non-profits such as the Dover Chamber of Commerce, Dover Main Street, the United Way and other local non-profits.

Dover is served by three major 115kV/34.5kV distribution substations. Dover substation located on Cochecho Street serves the southern tier of Dover as well as Somersworth, Rollinsford, and North Rochester. The Madbury substation, located Perkins Road in Madbury, serves southwestern Dover as well as the parts of lower downtown. The Rochester substation serves a small amount of load on the Dover north-end. All three substations are used to serve loads in the Dover area. At any time, due to loading levels or restoration activities, various configurations involving these substations are employed to serve the load area of Dover.

Dover also has several smaller primary voltage substations located throughout the city. These lower voltage class substations are supplied through electric circuits originating from the larger 115kV/34.5kV substations described above. Although the smaller voltage class substations are located in the City of Dover, some of the loads served are in the surrounding communities. The smaller voltage class substations and areas served include the following:

- Stark Avenue substation – Located on Stark Avenue near the Bill Dube car dealership. Circuits serve part of Dover Point Road and part of the Dover south-end.
- Drew Road substation – located at the corner of Drew Road and Back River Road. Circuit serves the Back River Road, Drew Road and Garrison School area.
- Littleworth substation – Located on Route 9 between Crosby Road and Dover Industrial park. The circuits serve the areas of Knox Marsh Road, Route 9 to Barrington, Durham Road, and parts of Madbury.
- North Dover substation – Located behind the doctors park near Wentworth Douglas hospital. Circuits serve the area of Glenwood Avenue, and the upper south-end of Dover.

PSNH continues to improve the electrical system in the City of Dover. In recent years, the electric circuits servicing the Weeks Crossing were rebuilt and reconfigured. Several large businesses such as, Liberty Mutual, Measured Progress, and Fosters Daily Democrat have moved to the northern end of Dover. Venture Drive continues to expand with new businesses and the PSNH electric system has gone through several upgrades in recent years to serve this load.

Several large downtown projects are currently underway, all of which will have a significant impact on the electrical system in the southern downtown area. The waterfront development and the numerous building conversions underway will require some major electrical system upgrades.

PSNH's long-term policy is to improve and upgrade the system to meet current and future load growth needs. As the system is expanded, circuit back-ups from adjacent circuits are built to improve reliability and customer satisfaction. Remote operation for protective devices and remote circuit switching to back-up sources are part of the circuit expansion plans now and will take on a greater role going forward.

Electric Deregulation

Deregulation is the process of having the electric utility divest itself of electric generation and to provide an open market for the sale of electricity from seller of electricity to the end user. Price spikes and generation capacity deficiencies have caused several states to reconsider deregulation and some states have started to look into re-regulation. New Hampshire never fully deregulated and PSNH has been allowed to keep all their fossil generating units as well as the hydroelectric plants. The result of allowing PSNH to keep all of their generating facilities is that PSNH currently has some of the lowest electrical rates in all of New England.

Since 1996, PSNH's Peak Demand for electricity has grown by over 35 percent and has shifted from a winter to summer peaking. PSNH's energy rate for residents, small and large businesses remain competitive in New England. PSNH's energy rates are well below the regional average. The results provide customers electricity at actual cost, at rates regulated by the state, rather than the market price for electricity.

Telephone

Dover residents now have many more choices for local and long distance telephone service providers than they had even ten years ago. Fair Point currently has the franchise responsibility to provide telephone services in Dover. All the company's basic telephone services are available to anyone in Fair Point's 740, 742, 743, 749 and 750 exchanges.

Existing System

Fair Point's central office in Dover currently provides dial tone service to some 25,000 lines in the 603-742 exchange. Since the telephone exchange boundaries do not follow municipal boundaries, there are some residents from adjacent towns that are also serviced by this exchange. The central office is fully digital and has the ability to provide telecommunication services that are available in other urban areas of the state. The system also includes state-of-the art fiber optic cables on the major feeder routes—Route 16 (Spaulding Turnpike) north and south, Route 9 and Route 108. The fiber optic network provides a strategic system that allows Fair Point to expand its system as demand requires—including both residential and business growth.

Projected Growth

To project future growth, Fair Point forecasters use current statewide and local growth data, trends in the industry, and changes in residential calling patterns and historical growth in telephone access lines. Based on trends over a three-to-five year period, Fair Point plans its network growth accordingly. Although the growth forecasts have historically been fairly accurate, Fair Point may have to respond to unforeseen customer requirements such as the location of a large firm or facility. Fair Point has established a support organization that can respond to such demands as needed.

Industry Trends

The single most significant trend in the telecommunications industry during the next few years will be continued deregulation and the introduction of widespread competition both in local and long distance services as well as internet access. Dover’s residents currently have a choice of providers for local services as well as access to more than 200 long distance carriers. Some of the providers of telephone service include Qwest Communications, Bay Ring Communications, Vonage Phone Company, Unicel, Cellular One, AT&T, and Comcast. A few of these companies will have their own facilities and wires, but others will use Fair Point facilities to resell local telephone service. In addition, wireless service is becoming more popular as a means of providing local service without new wires or leased land lines. In the Seacoast more and more summer residents are not reconnecting to their land line system and are relying solely on their cellular phones. As this segment of the industry grows and the technology becomes more powerful, fewer and shorter transmission towers than those on line today should be needed.

Cable Television

Dover is serviced by Comcast of Maine/New Hampshire, Inc. for delivery of cable television services. The company has held a non-exclusive franchise with the City since April 15, 1971. Comcast filed a written request for renewal of its franchise on June 12, 2003. In 2004, the City Council appointed an 8-person Cable Franchise Review Committee to oversee the renewal process. Over the past four years the committee held public hearings and conducted a citizen survey as part of a community needs assessment. After considerable negotiations with Comcast, the City Council approved a franchise renewal agreement on November 28, 2007. The agreement’s term is for ten years and provides for full cable service to all residences in all areas of the City zoned for residential use within 12 months of the agreement being signed. In the future, Comcast will provide cable service to new residences provided that there is a minimum density of 15 homes per mile of line. In 2000 approximately 85% of the City’s households had cable service.

<input checked="" type="checkbox"/>	<i>One of the questions asked of Dover citizens during the UNH Telephone Survey dealt with how they rated cable television in Dover.</i>
<i>Excellent:</i>	<i>12%</i>
<i>Good</i>	<i>52%</i>
<i>Fair</i>	<i>20%</i>
<i>Poor</i>	<i>10%</i>
<i>Don't Know</i>	<i>6%</i>
<i>The lowest opinion of cable television came from residents of Ward 1 (24% poor). Those with the highest opinion of cable television were people that are 70 years of age or older or residents of Ward 6 (25% excellent).</i>	

Other features of the new agreement include the addition of another government access channel for educational purposes from a studio at Dover High School. The current government access channel, commonly known as Channel 22, broadcasts government programming, including live municipal meetings. The current cable studio in City Hall will be moved to a new studio in the McConnell Center as part of the new agreement. Comcast will pay an annual \$25,000 grant to the city's technology fund to help pay for a public wireless access system. Comcast will continue to provide free high speed internet access to schools and municipal buildings.

Recommendations for Private Utilities

1. On at least an annual basis communicate with each of the City's private utilities to determine their plans for any service changes or changes to their existing infrastructure to ensure that it is consistent with this Master Plan. At this time the City could also provide appropriate information to the utilities about its plans or other issues of concern.
2. The City should request that Unitil Corporation provide more detailed information on the existing gas system to assist the City in its design and planning efforts.
3. All new utility lines installed in Dover should be placed underground to eliminate the unsightly poles placed along roadways. When older utility poles are replaced, the old poles should be promptly removed.
4. The City should develop a comprehensive right-of-way management ordinance as it relates to the location and licensing of utility placement in the City rights-of-way.

APPENDICIES

APPENDIX 1 – SCHOOL TABLES

Table A – New England Comprehensive Assessment Program (NECAP) Test Summaries

There are four achievement levels of student performance on the NECAP tests. These levels describe a student's proficiency on the content and skills taught in the previous grade. Performance at Proficient (level 3) or Proficient with Distinction (level 4) indicates that the student has a level of proficiency necessary to begin working successfully on current grade content and skills. Performance at Partially Proficient (level 2) or Substantially Below Proficient (level 1) suggests that additional instruction and student practice is needed on the previous grade's content and skills

Fall 2006 NECAP Test Summaries

Reading Achievement Level	Level 4	Level 3	Level 2	Level 1
Dover	13%	60%	19%	8%
New Hampshire	14%	57%	20%	9%

Mathematics Achievement Level	Level 4	Level 3	Level 2	Level 1
Dover	20%	50%	17%	13%
New Hampshire	18%	47%	19%	16%

Fall 2007 NECAP Test Summaries

Reading Achievement Level	Level 4	Level 3	Level 2	Level 1
Dover	14%	59%	19%	8%
New Hampshire	16%	57%	19%	9%

Mathematics Achievement Level	Level 4	Level 3	Level 2	Level 1
Dover	23%	48%	18%	12%
New Hampshire	19%	47%	19%	15%

Writing Achievement Level	Level 4	Level 3	Level 2	Level 1
Dover	10%	37%	33%	19%
New Hampshire	12%	36%	35%	17%

CITY OF DOVER, NH COMMUNITY FACILITIES & UTILITIES

Table B: Construction History

<u>Garrison School</u>			
<u>Year</u>	<u>Classification</u>	<u>Square Footage</u>	<u>Number Classrooms</u>
1962, 1967, 1969	Structure Built	47,178	20
1999	Kindergarten Wing	2,500	2
2005	Media Center & classrooms	5,500	4
2006	Gymnasium	10,760	--
	<i>Total:</i>	<i>65,938</i>	<i>26</i>
<u>Home Street</u>			
<u>Year</u>	<u>Classification</u>	<u>Square Footage</u>	<u>Number Classrooms</u>
1957	Structure Built	33,914	17
1993	Library Addition	3,500	
1999	Kindergarten Wing	2,500	2
2002	Classrooms & cafeteria	8,322	4
	<i>Total:</i>	<i>48,236</i>	<i>29</i>
<u>High School</u>			
<u>Year</u>	<u>Classification</u>	<u>Square Footage</u>	<u>Number Classrooms</u>
1966	Structure Built	181,803	80
1989	Regional Career Tech Center	27,000	
1991	Weight Room	2,112	
2002	Alternative School	7,935	
2003	Freshman Academy	10,760	8
	<i>Total:</i>	<i>229,610</i>	<i>88</i>

Table C: Students Generated by Housing Type - 2004/2005 School Year

	Single Family	2-3 Family	Apartments	Condos	Mobile Homes
Elementary Schools	0.14	0.07	0.06	0.06	0.04
Middle School	0.13	0.07	0.04	0.06	0.04
High School	0.11	0.07	0.04	0.07	0.02
TOTAL:	0.38	0.21	0.13	0.19	0.10

CITY OF DOVER, NH COMMUNITY FACILITIES & UTILITIES

Table D: 10-Year Enrollment History for Dover School District (Not including pre-school)

Grade	Oct. 1998	Oct. 1999	Oct. 2000	Oct. 2001	Oct. 2002	Oct. 2003	Oct. 2004	Oct. 2005	Oct. 2006	Oct 2007
K	201	243	204	207	220	233	189	217	232	221
1	274	258	267	261	267	255	257	242	269	285
2	287	277	238	271	257	275	261	268	242	274
3	267	263	264	232	272	260	274	275	267	250
4	245	267	268	269	234	259	252	269	260	264
Self Contained	27	30	27	23	14	14	16	Integrated	Integrated	Integrated
5	239	254	*270	291	280	255	254	273	270	267
6	258	242	266	268	294	285	267	264	266	277
7	277	252	241	283	293	307	291	271	274	286
8	242	284	257	244	270	295	300	289	272	279
9	395	454	494	469	453	506	483	477	500	440
10	360	324	383	346	401	358	428	414	424	440
11	347	374	329	364	341	381	358	414	402	398
12	294	298	329	314	344	357	355	353	411	393
PG & VOC	154	137	147	177	143	140	138	103	129	108
Total Elem	1540	1592	1268	1263	1264	1296	1249	1271	1270	1294
Total Jr./Middle	777	778	1034	1086	1137	1142	1112	1097	1082	1109
Total High (include PG & VOC)	1550	1587	1682	1670	1682	1742	1762	1761	1866	1779
Grand Totals	3867	3957	3984	4019	4083	4180	4123	4129	4218	4182

* Grade 5 moved to Dover Middle School in 2000

Table E: Barrington and Nottingham 10-Year Enrollment History

District	Oct. 1998	Oct. 1999	Oct. 2000	Oct. 2001	Oct. 2002	Oct. 2003	Oct. 2004	Oct. 2005	Oct 2006	Oct 2007
Barrington	330	333	358	334	339	381	383	390	422	387
Nottingham	151	156	161	159	188	190	185	176	170	143

Table F: Student Enrollment History and Forecast Using Association of School Business Officials (ASBO) Interactive K-12 Enrollment Forecasting Software & not including pre-school:

	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12
K	220	233	189	217	232	257	263	286	320	315
1	267	255	257	242	269	282	312	320	347	389
2	257	275	261	268	242	273	286	317	325	353
3	272	260	274	275	267	245	277	290	320	329
4	234	259	252	269	260	259	238	269	282	311
5	280	255	254	273	270	271	270	248	280	293
6	294	285	267	264	266	275	275	274	252	284
7	293	307	291	271	274	277	286	287	286	263
8	270	295	300	289	272	270	274	283	283	282
9	453	506	483	477	500	473	470	475	491	492
10	401	358	428	414	424	424	401	398	403	416
11	341	381	358	414	402	413	413	390	388	393
12	344	357	355	353	411	394	405	405	383	381
Total	3,926	4,026	3,969	4,026	4,089	4,113	4,170	4,241	4,360	4,501
Change	107	100	(57)	57	63	24	57	72	119	141

Note: The totals shown above do not include elementary students who were assigned to Alternative Classrooms for School Years 2001 through 2004: School Year 01-02, 23 students. School Year 02-03, 14 students. School Year 03-04, 14 students. School Year 2005-2006, 16 students.

Table G: Projected Enrollment for Barrington & Nottingham Students Grades 9-12

	Estimated % to Dover	2008-09 (Gr. 8)	2009-10 (Gr. 7)	2010-11 (Gr. 6)	2011-12 (Gr. 5)	2012-13 (Gr. 4)
BARRINGTON	85%	113/96	99/84	94/80	102/86	104/88
NOTTINGHAM	80%	62/49	62/50	62/50	55/44	62/49

Projected 9th Grade Enrollment to DHS based on October 2007 Enrollment Reports (for current enrollment of grades 4 through 8)

Table H: New England School Development Council (NESDEC) Enrollment Projection Report:



Table I: Proposed Capital Improvement Project Funding

2010	2011	2012	2013	2014
Garrison	High School	High School	High School	Regional CTC
\$5,600,000	\$7,600,000	\$7,600,000	\$8,000,000	\$3,000,000

Note: The year is not considered the fiscal year but the year of bonding. Therefore, 2010 would mean that the funds are available in early calendar year of 2009.

APPENDIX 2- COMMUNITY SERVICES TABLES

TABLE A – FLEET SERVICES EQUIPMENT INVENTORY LIST

YEAR	MAKE	DESCRIPTION
2008	FORD	FOCUS
2008	FORD	FOCUS
2008	FORD	F350
2008	FORD	CROWN VICTORIA
2008	FORD	CROWN VICTORIA
2008	FORD	FUSION
2008	FORD	FOCUS
2007	FORD	CROWN VICTORIA
2007	FORD	CROWN VICTORIA
2006	FORD	F450
2006	INTERN'L	DUMP
2006	DODGE	CHARGER
2006	BOBCAT	MINI LOADER
2006	FORD	CROWN VICTORIA
2006	FORD	CROWN VICTORIA
2006	FORD	CROWN VICTORIA
2006	FORD	CROWN VICTORIA
2006	FORD	CROWN VICTORIA
2006	FORD	VAN
2006	FORD	CROWN VICTORIA
2006	FORD	CROWN VICTORIA
2006	FORD	CROWN VICTORIA
2006	FORD	CROWN VICTORIA
2006	FORD	CROWN VICTORIA
2006	HARLEY	MISC
2005	FORD	F350
2005	INTERN'L	DUMP
2005	INTERN'L	DUMP
2005	FORD	CROWN VICTORIA
2005	JOHN DEEREE	544J
2005	FORD	F350
2004	FORD	F250
2004	FORD	F350
2004	FORD	VAN
2004	INTERN'L	DUMP
2004	FORD	STEP VAN
2004	CONVINCER	N/A
2003	FORD	F350
2003	FORD	EXPEDITION
2003	FORD	CROWN VICTORIA
2003	VOLVO	
2003	JOHN DEERE	410G
2003	FORD	CROWN VICTORIA

CITY OF DOVER, NH COMMUNITY FACILITIES & UTILITIES

YEAR	MAKE	DESCRIPTION
2003	FORD	CROWN VICTORIA
2003	FORD	CROWN VICTORIA
2003	FORD	CROWN VICTORIA
2003	ZODIAC	HURRICANE
2002	JOHNSTON	MISC
2002	NITCO	POWER BOSS SWEEPER
2002	NEW HOLLAND	MINI EXC
2002	VACTOR	
2002	FORD	RANGER
2002	FREIGHTLIN	FC70
2002	JOHN DEERE	544H
2002	CHEVY	VAN
2002	LEAF VACCUM	LEAF VACCUM
2001	FORD	F250
2001	CHEVY	STEP VAN
2001	ZAMBONI	MISC
2001	FORD	CROWN VICTORIA
2001	INTERN'L	2500
2001	HOLDER	C9700
2001	FORD	F250
2001	FORD	F450
2001	MISC	AIR COMPRESSOR
2001	MISC	AIR COMPRESSOR
2001	FORD	CROWN VICTORIA
2001	FORD	CROWN VICTORIA
2001	HARLEY	
2001	FORD	CROWN VICTORIA
2001	FORD	CROWN VICTORIA
2000	FORD	EXPLORER
2000	FORD	F450
2000	INTERN'L	DUMP
2000	FORD	F450
2000	FORD	RANGER
2000	JOHN DEERE	544H
2000	FORD	CROWN VICTORIA
2000	FORD	CROWN VICTORIA
2000	FORD	CROWN VICTORIA
2000	FORD	CROWN VICTORIA
2000	FORD	CROWN VICTORIA
2000	FORD	CROWN VICTORIA
2000	FORD	CROWN VICTORIA
2000	FORD	CROWN VICTORIA
2000	FORD	CROWN VICTORIA
2000	FORD	RANGER
2000	FORD	CROWN VICTORIA
2000	FEATHERLIT	HORSE TRAILER
2000	FORD	CROWN VICTORIA

CITY OF DOVER, NH COMMUNITY FACILITIES & UTILITIES

YEAR	MAKE	DESCRIPTION
2000	FORD	CROWN VICTORIA
1999	INTERN'L	DUMP
1999	FORD	F250
1999	FORD	F450
1999	CHEVY	VAN
1999	FORD	RANGER
1999	FORD	F150
1999	INTERN'L	DUMP
1999	HOLDER	SIDEWALK TRACTOR
1999	FORD	RANGER
1999	CASE	590SL
1999	FORD	EXPEDITION
1999	ECONOLINE	TRAILER
1999	HUDSON	TRAILER
1999	PEQUE	TRAILER
1998	DODGE	RAM 2500
1998	DODGE	RAM 2500
1998	FORD	RANGER
1998	FORD	RANGER
1998	DODGE	2500
1998	DODGE	1 TON
1998	DODGE	VAN
1998	PEQUE	TRAILER
1997	FORD	F250
1997	CHEVY	S-10
1997	ECONOLINE	VAN
1997	CHEVY	DUMP
1997	FORD	CROWN VICTORIA
1997	FORD	CROWN VICTORIA
1997	FORD	CROWN VICTORIA
1997	FORD	CROWN VICTORIA
1997	FORD	CROWN VICTORIA
1996	GMC	TOP KICK
1996	NORTHERN B	TRAILER
1995	JEEP	CHEROKEE
1995	CHEVY	CORSICA
1995	FORD	CROWN VICTORIA
1995	CHEVY	CORSICA
1995	FORD	CROWN VICTORIA
1995	CASE	580SL
1995	FORD	CROWN VICTORIA
1995	FORD	CROWN VICTORIA
1995	FORD	CROWN VICTORIA
1994	JOHNSTON	V3000
1993	ZAMBONI	MISC
1993	CHEVY	P30 BUS

CITY OF DOVER, NH COMMUNITY FACILITIES & UTILITIES

YEAR	MAKE	DESCRIPTION
1993	YAMAHA	SUN CLASSIC
1991	CHEVY	1 TON
1991	FORD	MISC
1991	AUTOCAR	DUMP
1991	EAGER BEAV	CHIPPER
1991	TESCO	TRAILER
1991	TESCO	TRAILER
1989	DODGE	3/4 TON
1989	INTERN'L	DUMP
1989	CHEVY	1/2 TON
1989	JOHN DEERE	EXCAVATOR
1989	FORD	VAN
1989	CHEVY	CELEBRITY
1988	GMC	1 TON
1988	GMC	DUMP
1988	CHEVY	DUMP
1988	HOLDER	SIDEWALK TRACTOR
1988	CHEVY	3/4 TON
1988	FORD	K74 PATCH TRUCK
1988	CHILLICOTH	TRAILER
1987	CHEVY	DUMP
1987	JOHN DEERE	544E
1987	CHEVY	DUMP
1987	U-HAUL	TRAILER
1987	CUSTOM	TRAILER
1986	CHEVY	VAN
1986	HOMEMADE	TRAILER
1986	HOMEMADE	TRAILER
1985	DODGE	VAN
1985	BLANCHET	SNOW BLOWER
1985	CHEVY	DUMP
1985	JOHN DEERE	LOADER
1985	JOHN DEERE	LAWN TRACTOR
1985	SNOWCO	TRAILER
1984	CHEVY	1 TON
1984	FORD	VAN
1983	INTERN'L	DUMP
1982	DODGE	ARMOR
1980	MACK	DUMP
1979	GMC	C70
1974	ROCKWELL	SEWER RODDER
1973	INTERN'L	DUMP
1973	HOMEMADE	UTILITY TRL
	GOLD BLAT	MIXER
	HYSTER	FORK LIFT

CITY OF DOVER, NH COMMUNITY FACILITIES & UTILITIES

Table B Facilities Listing

**CITY OF DOVER
FACILITIES LISTING**

DESCRIPTION	ADDRESS	INSURED VALUE	CONSTRUCTI ON MATERIAL	SQ. FT.	YEAR
Armory	99 Oak St	2,048,000	mason	15,047	1961
Empty car garage	Glen Hill Rd	229,760	Metal	5,000	1961
Veteran's Bldg	156 Back River	347,687	Wood	2,522	
Butterfield Gym	6 Washington St.	4,001,522	Brick	26,227	
McConnell Center	30 St. Thomas St.	12,702,000	Brick	82,496	1904
City Hall/non-Police	288 Central Ave	6,120,254	Brick	44,844	1934
City Hall - Police	46 Locust St	2,622,966	Re: City Hall	57,144	
Police Storage	River Street	159,151	Metal	2,128	1982
Horse Stables Int'l/Ext'l Improvements	75 Cocheco St.	15,000	Wood		
Durham Rd. Fire Station	25 Durham Rd	1,015,000	Cinder Block	7,471	
Broadway Fire Station	9-11 Broadway	942,708	Brick	7,458	
Liberty North End Fire Station	262 Sixth Street	3,367,000	brick	17,554	2008
Sand/Salt Shed	River St.	48,000	Alum/Poly.	1,680	
New PW Facility	271 Mast Road	3,919,337	Prefab Steel	44,324	2001
New PW Fac. Sand/Salt Shed	271 Mast Road	220,000	Concrete Tent	9,240	2001
Pole Barn New PW Facility	271 Mast Road	258,582	Wood	6,700	2001
Recycling Center	271 Mast Road	89,453	Concrete	1,392	2002
Morningside Park Shelter	29 Riverdale Dr	1,600			
Garrison Hill Park Shelter	Garrison Hill	1,600			
Admin/Rec. Building	23 Bellamy Rd	233,425	Wood	2,240	
Garrison Hill Observatory	10 Garrison Hill	297,312		2,898	
2 Picnic Shelters	60 Henry Law Ave	9,400			
General Storage	271 Mast Road	12,900	Concrete	192	1989
Cemetery Tomb	131 Central Ave	95,685	Brick	432	1800
Cemetery Barn	35 So Pine St	307,161	Brick/block	4,224	1900
Cemetery Chapel/office	131 Central Ave	700,334	Brick/block	3,908	1911
Indoor Pool	6 Washington St.	3,426,000	Brick		1968
Guppy Park Softball Bldg	150 Portland Ave	6,400	Concrete block		1989
Guppy Pool Storage/Pump Bldg	150 Portland Ave	96,608	Concrete Block	576	
Guppy Pool Pavillion	150 Portland Ave	44,000	Wood	1,254	1990
Guppy Park Bath House	150 Portland Ave	108,784	Concrete Block	630	
Jenny Thompson Pool	150 Portland Ave	1,245,000	Concrete		
Shaws Lane field house	14 Shaws Lane	127,000	wood	1,200	2008
Train Station & Platform	32 Chestnut St	205,026	Wood	1,000	2001
Dover Public Library	73 Locust St.	3,099,005	Brick	24,081	1905
Cell Phone Tower	271 Mast Road	110,000	Metal		2003
Pedestrian Foot Bridge	30 River St	285,000	Wood	1,480	
Dover Ice Arena	110 Portland Ave	6,517,807	Metal/Concrete	61,854	2000
Total City		\$55,036,467			

CITY OF DOVER, NH COMMUNITY FACILITIES & UTILITIES

DESCRIPTION	ADDRESS	INSURED VALUE	CONSTRUCTION MATERIAL	SQ. FT.	YEAR
Bouchard Well	French Cross Rd	1,182,000	Brick/Concrete	7,490	2007
Water Treatment Plant	Lowell Ave	870,232	Brick/Concrete	2,328	1955
Well Cummings	40 Smith Well Rd	82,612	Concrete/wood	96	1968
Well Smith	Smith Well Rd	101,205	Brick/concrete	220	1969
Well Campbell	Glen Hill Rd	97,683	Brick/concrete	336	1983
Well Calderwood	110 Glen Hill Rd	106,938	Brick/concrete	288	1972
Well Hughes	Old Stage Road	108,088	Brick/concrete	400	1970
Well House Griffin	Mast Rd	642,360	Brick/concrete	4,750	1966
Well Ireland	Mast Rd	113,842	Concrete block	400	1959
Well Ireland-Pump House	Mast Rd	21,436	Prefab Bldg- Concrete	360	1988
Islinglass Pump House	Glen Hill Rd	23,603	Prefab Bldg- Concrete	100	1991
Old Pumping Station	Lowell Ave	245,694	Brick/wood	1,719	1888
Aluminium Storage	Lowell Ave	153,948	Aluminum/Wood	2,520	1968
Garrison Hill Water Tank	10 Garrison Hill	1,755,000	Concrete	NA	1970
Total Water		\$5,504,641			
W/W WWTP - Admin Bldg	484 Middle Rd	424,598	Block/brick	4,414	1991
W/W Treatment Plant	484 Middle Rd	13,417,549	Block/brick	10,608	1991
W/W Blower Building	484 Middle Rd	724,331	Block/brick	1,188	2002
W/W Composting Facility	484 Middle Rd	1,725,849	Metal	16,000	
W/W Pumping station	31 River Street	1,115,963	Concrete	3,225	1991
W/W Pumping station	25 Cocheco St	134,908	Concrete	113	1976
W/W Pumping station	56A New Rochester Rd	113,933	Brick	144	1950
W/W Pumping station	16B Cranbrook Ln	113,021	Brick	144	1957
W/W Pumping station	182 Crosby Road	71,673	Concrete/Wood	132	1983
W/W Pumping station	5A Spruce Dr	28,400	Fiberglass	36	1977
W/W Pumping station	25 Charles St	529,381	Block/brick	396	1963
W/W Pumping station	60 Mill St	101,553	Fiberglass	140	1963
W/W Pumping station	89 Garrish Road	447,576	Block/brick	832	1976
W/W Pumping station	Boston Harbor Rd	90,800	Metal	79	1987
W/W Pumping station	12A Leightonway	90,800	Metal	79	1976
W/W Pumping station	10 Wentworth Ter	568,383	Block/wood	320	1976
W/W Pumping station	135 Mast Rd	77,477	Block/wood	228	1986
W/W Pumping station	18 Mt Pleasant	52,823	Block/wood	120	1986
W/W Pumping station	Brickyard Est	189,256	Concrete	192	1987
W/W Pumping station	181 County Farm Rd	49,292	Wood	120	1987
W/W Pumping station	47 Hampshire Cir.	77,285	Concrete	288	1987
W/W Pumping station	18 Dailey Drive	62,803	Brick	169	
W/W Pumping station	31 Sullivan Drive	104,390		120	
W/W Pumping station	5 Sandpiper Drive	76,065		288	
Total Sewer		\$20,388,109			
GRAND TOTAL		\$80,929,217			

Table C Additional Water Line Capacity Problems

Location	From	To	Existing Main	Proposed Main
Central Avenue	Washington Street	Silver Street	10	16
Central Avenue	Lowell	Glenwood	6	16
Central Avenue	Tank	Washington	16/14	16
Silver Street	Central Avenue	Arch Street	10	16
Arch Street	Washington	Silver Street	6	16
Oak Street	Central Avenue	Broadway	6	8
Park Street	Hill Street	Oak Street.	6	8
Florence Street	Oak Street	Broadway	4/6	8
Coolidge Ave.	Oak Street.	Pearl Street	6	6
Pearl Street	Park	Broadway	6	8
Rollins Road	Oak	Greenhouse	6	12
Ela Street	Oak	Pearl	6	6
Ham	Broadway	Central Avenue	8	8
Redden Street	Horne Street	Oak Hill Drive	None	8
Cushing Road	Dover Point Road	Spaulding Tpk.	6	8
Hawthorn Road	Kent Road	6" on Hawthorn	None	12
Hough Street	Grove	Central Avenue	6	8
Hough Street	Maple	Hillcrest	6	8
Horne Street	Glenwood	Sixth street	6/8	8
Hull Ave	Hough	To end	6	6
Mt Vernon	Sixth	Lowell	4,6,8	8
Page	Lowell	end	6	8
Lowell	Central Avenue	End (WTP)	14	16
Lowell	WTP	Reservoir	12	12
Merry Street	Central Avenue	Ridge	6	6
Gilman	Ridge	End	6	6
Ridge	Merry	Gilman	6	6
Hall	Ridge	End	6	6
Morin	Central Avenue	End	6	6
Willand Ave	New Rochester	Old Rochester	6	6
Willard Road	New Rochester	End	6	6
Oxbow	Old Rochester	Old Rochester	6	6
Reservoir	Central Avenue	Mt Vernon	6	6
Chesley	Mt Vernon	Grove	6	6
Ash Street	Grove	Central Avenue	6	8
Ash Street	Maple	Horne	6	8
Glencrest	Glenwood	Horne	6	8
Bartlett	Glenwood	Wedgewood	6	8
St John	Broadway	Chapel	8	8
Chapel Street	Main	Portland	8	8

CITY OF DOVER, NH COMMUNITY FACILITIES & UTILITIES

Location	From	To	Existing Main	Proposed Main
Portland	Cocheco	Hancock	8	8
Rogers	Portland	Cocheco	8	8
Hancock Street	Portland	Forest Street	6	6
Forest	All	All	6	8
Cross Street	Atlantic	Elmwood	6	6
Elmwood	Cross	Oak	6	6
Fairview	Elmwood	Oak	6	6
Danbury Ct	Atlantic	End	6	6
Main Street	Washington	Broadway	8	12
Young Street	Main	Water	6	6
Water	Young	Washington	6	6
Washington	Water	Taylor Lane	8,10	12
Fourth	Central Avenue	Chestnut	6	6
Grove	Sixth	Third, to end	6	6
Fifth Street	Grove	Fourth	6	6
Third	Tracks	Grove	8	8
Chestnut	Tracks	Fourth	8	8
Third	Tracks	Central Avenue	6	8
Second	Central Avenue	Chestnut	6	8
Chestnut	Green	Washington	8	8
Fayette	Green	Washington	6	8
Snows Ct	Fourth to	Prospect	4	8
Prospect	Washington	Snows Ct	6	8
Highland Ave	Washington	End	6	6
Richmond Street	West concord	Washington	6	6
West concord	Arch	Lexington	6	6
Lexington	Washington	Silver	6	8
Cushing	Washington	Silver	6	12
Belknap	Washington	Silver	8	8
Atkinson	Washington	Silver	6	8
Locust	Washington	Silver	8	8
Folsom St	Cushing	Belknap	6	6
St Thomas	Belknap	Walnut	6	8
Nelson	Locust	Belknap	6	6
Church	Locust	Central Avenue	6	8
Kirkland	Locust	Central Avenue	6	8
Academy	Kirkland	Church	4	6
Angle	Central Avenue	Academy	4	6
Central Avenue	Silver	Charles Street	8	12
Locust	Trakey	Central Avenue	6	8
Belknap	Silver	Fisher	6	8
Elm	Silver	Fisher	6	8

CITY OF DOVER, NH COMMUNITY FACILITIES & UTILITIES

Location	From	To	Existing Main	Proposed Main
Summer	Central Avenue	Belknap	6	8
Hamilton	Belknap	Elm	4	6
Arch	Silver	Washington	8	12
Rutland	Central Avenue	Silver	6	8
Towle	Silver	Clifford	6	8
Clifford	Towle	Rutland	6	8
Woodman Park Dr	Clifford	Parker	6	6
Parker	Woodman Park Dr	Rutland	6	6
Silver Street ext	Silver sty	End	6	6
Bellamy Road	West Knox Marsh	Old Littleworth Rd	4	8
Old Littleworth Rd	Silver Street	Littleworth Road	8	12
Littleworth Road	Knox Marsh Road	Town line	8	12
Mill	Central Avenue	End	6	8
Charles	Central Avenue	Mill	6	8
Durham Road	Alumni	Mast Road	8	12
Renaud ave	Stark	Shamrock	6	8
Birchwood	Central Avenue	Shamrock	6	8
Keating Ave	Renaud	Hayes	6	6
Hayes lane	Keating	End	4	6
Woodland	Stark	Longmeadow	6	8
Beech	Stark	Longmeadow	6	6
Longmeadow	Beech	Woodland	6	6
South Watson	Stark	East Watson	6	6
Central Avenue	Mill	Silver	8	12/16
Central Avenue	Silver	Washington	10	16
Union Street	Central Avenue	Federal	6	8
South Pine	Central	Court	6	8
Court Street	Central Avenue	Tennyson	6	12
Locke Street	Court	East Watson	4	6
Samuel Hansen	Back	Mulligan	6	8
Old Dover Point Rd	Dover Point Road	Dover Point Road	8	8
Gerrish Road	Old Dover Point	Nute Road	6	8
Nute Road	Spur	End	4/6	8
Old Colony	Gerrish	End	6	6
Boyle Street	Court	End	6	6
Hanson Street	Central Avenue	Henry Law	6	8
George	Central Avenue	Henry Law	6	8
River Street	Henry Law	End	6	12
Crosby Road	12" on Crosby	8" on Crosby	None	12

CITY OF DOVER, NH COMMUNITY FACILITIES & UTILITIES

**TABLE D
Wastewater Facility Average Flows and Rainfall 2002-2006**

	2002			2003			2004			2005			2006		
	AVG.	MAX.	RAIN	AVG.	MAX.	RAIN	AVG.	MAX.	RAIN	AVG.	MAX.	RAIN	AVG.	MAX.	RAIN
JAN	2.5	3	2	2.7	3	1.47	2.7	3.4	0.5	3	6.2	2.8	3.9	5.5	3.4
FEB	2.8	3.2	2.4	2.8	4.8	3.7	2.6	3.1	1.4	3.3	5.2	6.8	3.6	6.9	2.5
MAR	3.3	5.1	5.5	4.7	9	2.9	2.7	4.2	3.2	4	9.9	5.4	2.6	3.3	1.2
APR	3	3.9	3.2	4.1	5.3	3.7	4.3	8.9	8.6	4.2	8.6	7.5	2.8	5	3.5
MAY	2.2	5.2	3.56	2.9	3.8	2.8	3.3	5.1	8.5	4.1	8.6	10.1	5.5	19.3	13.3
JUNE	2.8	3.8	3.4	2.5	3.5	3.5	2.5	3.4	3.1	2.9	3.6	2.6	4.5	8.9	12.7
JULY	2.1	2.4	0.68	2	2.4	1.8	2	2.3	2.8	2.3	2.8	1.1	2.6	3.9	5.61
AUG	1.9	2.5	0.15	2.1	2.8	2.21	2.2	3.7	7.3	2.1	2.7	3.4	2.2	2.9	2.8
SEP	1.9	2.5	0.32	2.1	2.6	3.3	2.3	4.3	4.5	1.9	2.2	2.4	2.1	2.4	2.9
OCT	2.3	3.5	3.7	2.5	5.4	6.48	2.3	3.1	1.4	4.1	10.8	15.5	2.8	6.4	6.8
NOV	2.8	4.5	2.1	2.7	3.6	2.1	2.5	4	4.3	3.6	6.1	6.4	6.7	6.5	5.2
DEC	3.2	6	0.5	3.2	5.1	3.2	3.1	4.8	4.2	3.7	7	6.3	3.2	4.4	2.9
AVG	2.56	3.8	2.29	2.85	4.2	3	2.7	4.19	4.1	3.26	6.14	5.6	3.54	6.28	5.2
TOTAL			27.5			37.2			49.8			67.6			62.8

TABLE E – SEWER MAINS WITH WORST CONDITION RATING

STREET	PIPE ID #	FLOW FROM	FLOW TO	MATERIAL	CONDITION OF PIPE
ANGLE ST	4284	4284	4216	CEMENT	5
ATKINSON ST	2407	2407	2406	CEMENT	5
BELKNAP ST	4286	4286	2411	CEMENT	5
BELLAMY RD	2577	2577	2573	VCP	5
BELLAMY RD	2754	2754	2577	VCP	5
BELLAMY RD	2753	2753	2754	VCP	5
BELLAMY RD	2579	2579	2578	VCP	5
BELLAMY RD	2578	2578	2753	VCP	5
CENTRAL AV	4283	4283	3568	CEMENT	5
FOLSOM ST	4187	4187	2435	CEMENT	5
FOREST ST	3156	3156	3051	VCP	5
GLENCREST AV	538	538	537	VCP	5
GROVE ST	4285	4285	3229	CEMENT	5
HAM ST	3149	3149	3071	CEMENT	5
HANCOCK ST	2253	2253	2252	VCP	5
HANSON ST	1375	1375	124	CEMENT	5
HORNE ST	516	516	515	VCP	5
HORNE ST	517	517	516	VCP	5
NELSON ST	2409	2409	2408	CEMENT	5
PAUL ST	1358	1358	1357	VCP	5
RICHMOND	2384	2384	2383	CEMENT	5
RICHMOND	2383	2383	2382	CEMENT	5
ROBINWOOD AV	1848	1848	1831	VCP	5
SHADY LN	1749	1749	1746	VCP	5
SHADY LN	1750	1750	1749	VCP	5
SILVER ST	2585	2585	2584	VCP	5
SILVER ST EXT	2584	2584	2583	VCP	5
SILVER ST EXT	2583	2583	2582	VCP	5
SMITH WELL RD	525	525	524	VCP	5
SNOW CT	3289	3289	3288	ACP	5
SNOW CT	3290	3290	3289	ACP	5
WALLINGFORD ST	1360	1360	1359	VCP	5
WALLINGFORD ST	1359	1359	1358	VCP	5
WASHINGTON ST	2366	2366	2365	VCP	5
WEST KNOX MARSH RD	4313	4313	131	VCP	5