UVLSRPC Regional Plan 2015

Chapter 7

Utilities, Infrastructure, and Public Services

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7.1   WATER, SEWER, AND STORMWATER INFRASTRUCTURE

Above: The Connecticut River in the Town of Cornish.

Vision

The region's water, sewer and stormwater infrastructure will be resilient and maintained in a state of good repair to support existing development centers and local economic development initiatives.

Water Supplies (From Source to Tap)

Only 1% of all water on earth is fresh and accessible, and most of it is groundwater. The other 99% of water on Earth is salt water or glacial ice. Today, the technology to treat the remaining 99% of water sources is not efficient and too expensive to deploy on a large scale. The protection, use, and quality of fresh water sources is vital to the region's public health, fire protection, economic development, and quality of life.[1]

Water Sources and Protection

The Region's drinking water comes from surface water and groundwater supplies which are recharged from rain and snowfall within the watersheds.

Some municipalities, such as Claremont, Hanover, Lebanon, New London, Newport, Springfield, and Sunapee rely on nearby rivers, lakes, and reservoirs for their primary source of drinking water. Other municipalities including Canaan, Enfield, Grantham, and Plainfield rely on groundwater through stratified drift aquifers or bedrock wells as their primary source of drinking water. Some municipalities share in joint water systems to assist smaller adjacent towns. For example, New London and Springfield share the same water system precinct. Residents and businesses outside of the region's municipal drinking water systems rely on private wells as their main source of drinking water.[2]

The protection of drinking water sources is important to public health and the quality and quantity of drinking water supplies. For more information on water resource protection see the Water Resources section of the Natural Resources Chapter of this plan.

Private Residential and Non-Residential Community Systems

Many residents and businesses in the region are not connected to a municipal drinking water system and rely on private wells or community systems as their source of drinking water. Private water wells supply drinking water to approximately 35 percent of New Hampshire's population, but are not regulated or monitored for water quality or quantity by federal or state agencies. The New Hampshire Department of Environmental Services (DES) registers new private wells and recommends that communities require water quality and quantity testing. The DES Private Well Testing Program encourages well owners and local governments to perform laboratory tests to test water quality in wells to protect consumers from harmful contaminants. The town of Hollis, NH has a good example of this type of program in the form of a zoning overlay district. [3]

Regulation, Maintenance, and Protection of Drinking Water Supplies in the Region

Public water supplies in the region are depicted on the water infrastructure map (see right).[4] There are 358 public water supplies in the region. Twenty-six of the twenty-seven municipalities in the region are home to at least one public water supply.

The following table shows regulation, maintenance, and protection initiatives that are detailed in individual municipal Master Plans addressing drinking water source quality and protection:
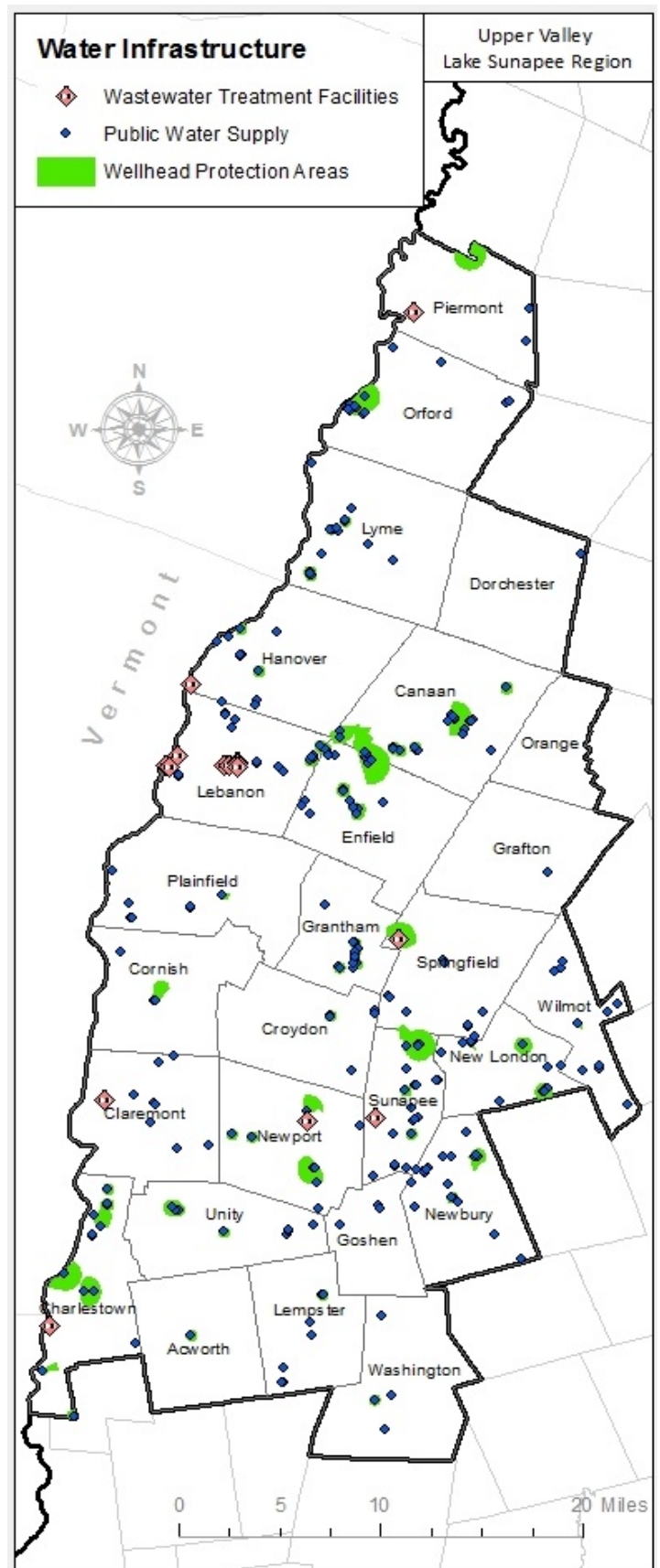

Water Infrastructure

◇ Wastewater Treatment Facilities
• Public Water Supply
▮ Wellhead Protection Areas

Upper Valley Lake Sunapee Region

Figure 7.1.1- Municipal Source Water Protection Strategies in the UVLSRPC Region

Strategies	Communities	
Convening Drinking Water Protection Committees and/or Developing Source Water Protection Plans	Canaan New London	Lebanon
Identifying Watershed Protection Areas and/or Developing Shoreland Protection District Plans	Canaan Charlestown Claremont Grantham Hanover	Lebanon New London Newport Plainfield Sunapee
Developing Aquifer/Groundwater Protection Zones Plans and Ordinances	Canaan Grantham Hanover Lebanon	Newport Plainfield Sunapee
Implementing a Regular and Standardized Water-Testing Program	Canaan Lebanon	Plainfield
Conducting Public Education and Outreach	Canaan Charlestown Hanover	Lebanon Newport Plainfield
Encouraging Low Impact Development	Canaan Charlestown Grantham Hanover Lebanon	New London Newport Plainfield Sunapee
Conserving Land Near Water Sources	Canaan Claremont Lebanon	Grantham Hanover
Developing Recreation Standards and Limits	Canaan Grantham	Hanover
Upgrading and/or Expanding Aging Infrastructure	Charlestown Enfield New London Lebanon	Newport Sunapee Springfield
Developing and Enforce Floodplain Development Regulations	Enfield Hanover	Newport Lebanon
Completing a Wetlands Source Inventory and Mapping	Grantham Hanover	Lebanon Newport
Preparing Drought Management Measures	Hanover	Lebanon
Coordinating with Other Municipalities in the Region	Grantham Hanover Lebanon	New London Newport Springfield
Identifying Stormwater Management Measures to Minimize Non-Point Pollution	Croydon New London	Newport Plainfield
Identifying and/or Developing a Future Water Supply	Enfield Hanover	Lebanon

Water Use (From Tap to Drain)

Water has two different uses: consumptive and non-consumptive. Consumptive use of water occurs when the water is removed from the source and unavailable for other uses. Examples of consumptive use are irrigation, livestock, industrial use, public water supply, mining/extraction, and cooling of thermoelectric power generation. Non-consumptive use occurs when the water remains in or is immediately returned to the source. An example of non-consumptive use is hydroelectric power generation.[5]

Projected Regional Water Use in 2020

NHDES and the U.S. Geological Survey (USGS) created a study using U.S. Census block data to estimate the amount of water demand, use, withdrawals, and wastewater return flows for each census block in the state for the years 2005 and 2020.[6]

Total water withdrawal (community and household wells) in the UVLSRPC Region is estimated to be 11.2 million Gallons per Day (MGD). That demand is projected to be filled from 48.8% Groundwater and 51.2% Surface Water sources. Total wastewater return flow in the region is estimated to be 12.5 million Gallons per Day in 2020. This increased demand will place additional pressure on the water and wastewater systems that have experienced capacity issues, including the systems in Lebanon and Hanover.

Positive Recharge Examples

Surface Water (Commercial, Industrial, Mining, Fish Hatcheries)

Domestic Groundwater

Non-Consumptive Use Examples

Hydroelectric Power

Negative Recharge Examples

Groundwater (Commercial, Industrial, Mining, Fish Hatcheries)

Snow Making

Irrigation

Thermoelectric Power

Community System (No Recharge)

The following table highlights water demand in selected municipalities across the UVLSRPC Region.

Figure 7.1.2- Municipal Water Use in the Region [7]

Town	Municipal Water Use
Canaan	• Capable of yielding 1 Million Gallons per Day
Claremont	• Capable of yielding - 1 Million Gallons per Day • Plant Capacity - 4 Million Gallons per Day • Currently operating - 1.8 Million Gallons per Day (33%capacity)
Eastman	• Eastman Village Water District (private) serves all of Eastman • Some properties have private wells
Enfield	• Groundwater Bedrock Wells Capacity – 110 Gallons per Minute • Average Daily Consumption – 40,000-50,000 Gallons • Demand is 73% residential, 19% multi-family, 5% commercial, 3% other
Grantham	• Private wells serve most residences and businesses
Hanover	• Average demand – 1.2 Million Gallons per Day • Estimated combined safe yield of all sources o Prior to disinfection improvements – 2.5 Million Gallons per Day o After improvements – 2 Million Gallons per Day • System has 1695 users o 1472 residential, 189 commercial, 19 municipal, and 15 industrial (population served estimated less than 10,000 people)
Lebanon	• Source Capacity – 7.93 Billion Gallons • One well site capable of yielding 1 Million Gallons per Day • Average use – 1.56 Million Gallons per Day o Demand is 42% residential, 42% commercial, 13% industrial, and 3% municipal • Plant capacity average daily demand – 3.5 Million Gallons per Day • Demand could reach plant capacity by 2026
New London/ Springfield	• Inter-municipal water precinct for portions of the towns of New London and Springfield o Average consumption of 280,000 gallons/day in winter and 320,000 gallons/day in summer o Colby Point wells have maximum capacity of 750,000 gallons/day
Newport	• Serves more than 5,000 individuals
Plainfield	• Plainfield (municipal and private) relies solely on groundwater • Meriden Village Water District capable for expansion
Sunapee	• Two storage tanks – 300,000 and 700,000 gallons • 506 service connections to Village system • Reservoir serves 195 homes

Issues Affecting Water Use in the Region[8]

- *Development of Larger Lots*
  - o Larger lot sizes correlates with more lawncare, toilets, sinks, showers, dishwashers, hot tubs, and pools.

- *Climate Change*
  - o A substantial amount of water is used for lawns, golf courses, and crops. The amount of water used is affected by temperature and precipitation. When the temperature increases, more water is used. A longer growing season also has an affect on the amount of water use and affects soil absorption.

- *Aging Infrastructure*
  - o Leaks in infrastructure can cause a substantial amount of water loss over time. Some older water infrastructure in New Hampshire contain blow-off valves where water is released to prevent lines from freezing.

- *Lack of Public Education*
  - o Public education and support for water conservation is important. Facts regarding the importance and availability of water, protection of water sources, conservation of use, treatment and distribution facilities, and infrastructure need to be available and disseminated to the public in order to gather support for water conservation efforts.

- *Conservation Investments*
  - o Conserving water and updating infrastructure (both community systems and business/residential systems) can be costly in the initial capital outlay but cost-effective in the long-term.

There are many reasons why water conservation is important including the following[9]:

- Growing competition for water supplies;
- Concerns regarding impacts of water withdrawals and uses on water resources, stream flows and patterns, wetlands, and aquatic life;
- Cost and issues of developing and using other water sources;
- Cost of treating and pumping water;
- Cost of wastewater treatment process;
- Cost of expanding the capacity of current water systems;
- Growing support for environmental protection and natural resource conservation.

Wastewater Treatment and Discharge (From Drain to Source)

Above: Hanover Wastewater Treatment Plant

Over 80% of the water quality problems in New Hampshire waters are related to pollutants found in stormwater runoff and wastewater (NHDES, 2012).[10]

Sanitary Sewers

The most common municipal sewer systems in the region are sanitary sewers. Sanitary sewers are underground pipe systems that transport sewage from houses and commercial buildings to a wastewater treatment facility (WWTF) for treatment or disposal. Some industrial locations are served by sanitary sewers that carry industrial wastewater.

Although sanitary sewer systems work well to transport sewage safely to a treatment facility, occasional discharges of untreated sewage can happen. These discharges are called sanitary sewer overflows (SSOs). SSOs can be caused in many ways including blockages, power failures, vandalism, aging infrastructure, line breaks, defects allowing stormwater and groundwater to overflow the system, and inadequate design, operation, and maintenance. The U.S. Environmental Protection Agency (EPA) estimates there are at least 23,000 – 75,000 SSO events per year. The untreated sewage could contaminate nearby water sources causing water quality issues, public health concerns, and wildlife and environmental impacts.

This estimate does not include sewage backup into buildings which could cause further public health concerns as well as property damage.[11]

Combined Sewer Systems

In the late 1800s, many American communities combined their waste system with existing stormwater drainage sewers into a combined sewer system in one pipe. These systems would then drain into nearby water bodies. At the time, it was thought that there would be enough dilution to render the water harmless.

Combined sewer systems (CSSs) collect domestic sewage, municipal wastewater, and stormwater runoff in a single pipe system. This wastewater is transported to a wastewater treatment facility (WWTF) to be treated and then discharged to a nearby water body. CSSs are designed to hold a certain capacity during normal precipitation events. However, during heavy rainfall or snowmelt, the combined sewer system will occasionally overflow and discharge excess wastewater into nearby water bodies.

These combined sewer overflows (CSOs) can contain untreated stormwater, sewage, industrial waste, toxic materials, and other debris that are potential sources of water pollution. These pollutants can pose a risk to public health, wildlife, and water quality for recreation or consumption.[12]

The City of Lebanon has been working with the EPA and New Hampshire Department of Environmental Services (NHDES) to abate its CSOs. In the spring of 1996, the EPA issued an administrative order for Lebanon to complete a CSO facility plan to identify the most cost-effective solution to meet and maintain water quality standards. In 2000, the EPA approved Lebanon's CSO facility plan and required the city to eliminate their seven remaining CSO outfalls by the end of 2012. This date was later extended to the end of 2020. The overall project is being accomplished in phases to separate the combined sewer system into separate sewer and stormwater systems. The City of Lebanon also is required to complete an assessment of its wastewater collection system's capacity, management, operation and maintenance practices to identify sources of infiltration/inflow and eliminate sanitary sewer overflows.[13]

Septic Systems

Approximately one in four U.S. homes have on-site septic systems or a small community cluster system to treat their wastewater (U.S. EPA 2014).[14]

Septic systems are underground wastewater treatment structures that are primarily utilized in rural areas. Septic systems use a combination of nature and technology to treat wastewater from domestic plumbing sources. If the system is working properly, the wastewater will be treated to protect public health and preserve water quality.

Septic systems that are properly maintained are a good way to treat wastewater. However, these systems can malfunction, causing pollution and public health risks. Homeowners and property owners are usually responsible for maintaining on-site septic systems, which can require hiring professionals to inspect and clean the septic tank. Septic system life can be extended if homeowners practice water conservation and avoid flushing large items or grease down their drains.

State and local governments are responsible for regulating individual on-site septic systems with EPA guidance and assistance. The EPA regulates larger-capacity septic systems and also provides guidance, manuals, and policies to help guide on-site septic management programs. The EPA has also developed a program to educate homeowners about septic systems called *SepticSmart*.[15]

Stormwater Management

Water from rain or snow melt that does not infiltrate into the ground is called stormwater. In undeveloped areas, stormwater infiltration happens naturally. The stormwater moves into soils where bacteria, nutrients, and contaminants are filtered out and the naturally-filtered water recharges nearby groundwater sources. Each soil type has its own rate of infiltration, which is the volume of water that infiltrates into the ground in a given period of time.

Development creates impervious surfaces (e.g. buildings, roads, sidewalks, parking lots, etc.) that prevent stormwater from infiltrating into soils, which can affect water quality and water movement (hydrology). The increase in impervious surfaces can directly affect water quality by increasing the amount of pollutants and bacteria in stormwater. These changes to water quality could affect wildlife, habitat, recreation, drinking water supply, and treatment costs. Increased impervious surfaces would cause a higher volume of stormwater to flow and collect over a larger surface causing higher flows in receiving streams. The velocity of the stormwater at this volume can cause flash flooding and erosion along routes to receiving streams. [16]

Stormwater Infrastructure

Most stormwater infrastructure in the region is a municipal separate storm sewer system (MS4). (This excludes the remaining combined sewer systems in Lebanon. See section on Combined Sewer Systems on Page 7-8). A MS4 is a stormwater system made up of catch basins, culverts, curbs, gutters, ditches, man-made channels, storm drains, and drainage systems along roads and municipal streets. The MS4 is publicly owned by a state, city, town, or other public entity.

NPDES Phase II Requirements

The EPA's National Pollutant Discharge and Elimination System System (NPDES) Stormwater Phase II establishes requirements for small MS4s to regulate land disturbances greater than one acre. The requirements apply to municipalities located in or near an urbanized area or central place (as defined by the U.S. Census). New Hampshire has 45 communities that must comply with NPDES Phase II requirements including Charlestown, Claremont, Enfield, Hanover, Lebanon, and Newport. These communities are required to develop and implement a stormwater management program to reduce the discharge of pollutants from its MS4s to the "maximum extent practicable".[17]

Inventorying Stormwater Infrastructure

New Hampshire's nine regional planning commissions, in coordination with the New Hampshire Department of Environmental Services (DES), Department of Transportation (DOT), and the University of New Hampshire (UNH) have been partners in the development of the New Hampshire Statewide Asset Data Exchange System (SADES). Through SADES, a computer mapping program has been developed to assist inventorying stormwater culverts in the state. With UVLSRPC assistance, the Town of Grantham began an inventory of its town-owned culverts using the SADES mapping program in the summer of 2014. The benefit of using this program is that the Town of Grantham Department of Public Works will know the location of each culvert, the condition of the culvert and surrounding structures, and environmental information about the surrounding receiving water body. This information is useful in developing maintenance and upgrade priorities for

stormwater infrastructure, and understanding where stormwater flows in the event of a hazard spill or heavy pollution.

Green Infrastructure

Another method of stormwater management systems is utilizing green infrastructure. Green infrastructure mimics nature by using vegetation, soils, and natural processes to soak up and store water in more developed areas. Examples of green infrastructure include rain gardens, permeable pavements, planter boxes, bioswales, and green roofs to help connect habitat and vegetation throughout impervious surfaces to assist in stormwater management.

The City of Lebanon has developed a *Green Infrastructure* section in its *Long-Range Multimodal Transportation Plan.* In the plan, the City outlines a variety of Best Management Practices (BMPs), such as higher engineering standards for managing stormwater runoff, less tree and vegetation removal when developing areas, and clustering development to conserve land and reduce infrastructure costs. By utilizing these measures, the City can better manage stormwater and maintain water quality.[18]

Pollution Prevention and Treatment

Stormwater is a non-point pollution source and the management of stormwater is the responsibility of everyone in the community. Some simple ways people can help lower the risk of stormwater pollution include maintaining motor vehicles to reduce the risk of fluid leaks and other vehicle debris, limiting fertilizer and chemical uses especially near storm drains and stormwater flow ways, and avoiding littering because it can clog stormwater infrastructure and pollute receiving water bodies.
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While one method of reducing stormwater-related pollution risk is reducing development, development is needed for the region's social and economic growth. Thus, the most practical way to reduce the risk to water quality from stormwater is to limit land disturbances during development. Limiting land disturbances and development in certain areas will help to slow stormwater flow, maintain peak flows, increase infiltration areas, and treat stormwater on-site.

An emerging way to address stormwater management is through performance-based zoning ordinances that require natural buffers of thick vegetation around surface waters such as lakes, wetlands, ponds and streams. These buffers will help slow down the flow of stormwater and help filter out contaminants before discharging to receiving surface water.

Stormwater management is important during all stages of development including planning and design, design review, construction, and post-construction controls. The EPA and NHDES require permits to address the impacts of developments on large sites, but they do not require permits on smaller sites. These small-scale developments can have impacts on water quality if not regulated. The EPA and DES encourage communities to adopt local stormwater management ordinances to help regulate development on small-scale sites.[19]

Strategies for Regional Water Protection, Treatment, Use, and Wastewater Discharge

- *Enhance Public Education and Engagement Initiatives*

  o It is important to educate the public on water importance, resources, protection, use, infrastructure, and conservation. It is also important to engage the public in efforts to protect and conserve water resources. Most communities and homeowners in the region use septic systems. Educating the community on their own infrastructure and systems, through programs such as the EPA's *SepticSmart,* can help maintain water quality.

- *Shift Program Focus to Watersheds and Sub-Watersheds Rather than Water Bodies*

  o Currently most programs and regulations are focused on separate types of resources (rivers, lakes, wetlands, groundwater) and uses (drinking water treatment, wastewater, point pollution). All of these issues are interconnected and need to be managed as a single watershed resource to better ensure the quality and quantity of water for the region. State and local governments can work together to create and manage watershed programs.

- *Maintaining and Repairing Infrastructure*

  o Maintaining and repairing all infrastructure systems including; drinking water, storm water, wastewater, and water storage is essential. Regular maintenance will prolong the life of infrastructure, reducing the need for costly capital expenditures.

- *Increase Utilization of Low-Impact Development (LID) and Green Infrastructure*

  o Low-Impact Development (LID) and Green Infrastructure refers to the use of vegetation, soils, and natural processes to manage stormwater. LID techniques and green infrastructure are cost-effective approaches to stormwater management and should be integrated into municipal Master Plans.

- *Assist Municipalities in Developing Financial Assistance Programs for Septic System Repair and Replacement*

  o An obstacle that many septic system owners face is the costs of repair or replacement of the system. Developing financial assistance programs will help make repair and replacement more affordable.

- *Assist Municipalities in Adopting Stormwater Management Ordinances*

  o The NHDES encourages municipalities to develop and implement Stormwater Management Ordinances to supplement EPA and DES regulations. The DES outline for Municipal Stormwater Management Ordinances focuses on post-construction methods to reduce pollution and erosion caused by stormwater runoff that affects water quality and hydrology.

- *Assist Municipalities in Completing Stormwater Infrastructure Inventories and Mapping*

  o Assist municipalities in assessing and mapping current stormwater infrastructure using the SADES mapping

program and DES and DOT guidelines. The data collected in the culvert inventory mapping is useful for identifying the location of the culvert, condition of the structure, receiving systems or water bodies, flow patterns, environmental details, and if the culvert is functioning at high capacity.

- *Consider Establishing Conservation Rates*

  o New Hampshire communities generally have low water rates for water consumers. There have been suggestions to change the rate structure and charge increasing rates for greater water use in order to encourage water conservation.[20]

- *Recycle and Reuse Wastewater*

  o Wastewater that has been treated (but is not suitable for drinking) or is a by-product of wastewater treatment processes can be recycled for many other uses such as irrigation for parks, crops, and golf courses, mixing concrete, or firefighting. This water can also be treated further to help replenish groundwater supplies.

- *Fix Leaking Drinking Water Pipes*

  o Each year, many drinking water systems lose up to 20% of treated drinking water due to leaks and failures in piping systems. Fixing leaking infrastructure can significantly reduce the loss of treated drinking water and save on energy costs.[21]

- *Promote the EPA's WaterSense Program*

  o The EPA's WaterSense program (similar to the EPA's EnergyStar Program for electricity) helps consumers and businesses conserve water by setting labeling standards for products, such as shower heads, faucet fixtures, clothes washers, dishwashers, and other appliances that are 20% more water-efficient than competing products. These products not only conserve water but can also save consumers money through cheaper water bills and possible rebates or tax incentives.

- *Require and Provide Incentives for Agricultural Water-Use Efficiency and Soil and Manure Management*

  o Agriculture is a major user of groundwater and surface water. Agricultural soils of prime, statewide, or local importance account for over 30% of the total land area in the region. (See Agriculture section in the Natural Resources Chapter of this plan.) While not all of this land is used for agricultural purposes, agricultural water-use efficiency is important to conserving water resources. Strategies that can be used in the region include switching from flood irrigation to drip irrigation or reducing the use and control of nitrogen-rich fertilizers through better soil management practices.

7.2   BROADBAND INFRASTRUCTURE AND DEVELOPMENT

Vision

The region will have fast, reliable, and affordable broadband service through a competitive marketplace throughout all parts of the region.

Why Is Broadband Important?

Broadband is, in 2014, what electricity was to New Hampshire in the 1930's - a necessity. As a predominantly rural state, the availability of high-speed internet is one of the most significant factors that will impact the ability of communities in New Hampshire to achieve economic growth and maintain quality of life. In a relatively short period of time, fast and reliable broadband has become essential for economic and community development and is critical infrastructure for public safety, education, health care, business and government operations.

Communities today face many challenges: a competitive global marketplace; an aging population; the need for a better-educated and better-prepared workforce; and access to health care. These issues are magnified in rural areas as the distance between households and services makes it difficult to access certain resources and opportunities. The financial resources traditionally available to overcome these challenges are often unavailable to rural communities and regions. New solutions are required. Broadband can help community leaders find innovative solutions to these challenges.

There is no doubt that we live in an information society, and broadband connects us to opportunities and services. Whether training for a new skill, a new language, or completing an online course - broadband facilitates access to information in many different forms. In 2010, it was estimated that there were almost 200 million Americans or 63% with access to

broadband at home, up from 8 million or 3% in 2000. While this is an impressive increase, there are still many Americans with insufficient access to broadband services.

Regional Broadband Demand

The Upper Valley Lake Sunapee Regional Broadband Stakeholders Group identified that different users of broadband in the region have unique needs: for family, for business, for schools and students, for telework, for healthcare delivery, for visiting nurse associations, for municipalities, and for non-profits. The needs and demands by sector are based on feedback from surveys (including the 2013 phone survey conducted by UNH Survey Center), two public forums and fifteen sector-specific interviews.

Three major themes cross-cut all sectors and are evidence of how quickly "online business" has become mainstream and is transforming how business is conducted:

- *Telework/Tele-education:* Employees are increasingly working beyond the four walls of their employers' headquarters, e.g. at home, satellite locations, and travelling for business locally and globally. Both employers and employees face challenges to achieving a connected workforce because there is limited high-capacity broadband service in residential and rural neighborhoods. Educational institutions also seek tele-education opportunities, either online learning as a supplement to the classroom or curricula delivered fully online.
- *Doing More Business Online:* All businesses and organizations interviewed reported that they have a growing dependence on online interaction with external companies or organizations. It is essential to have

sufficient broadband service to conduct online business with suppliers, customers, accounting/billing services, electronic medical records firms, off-site IT/security back-ups and partnering organizations, such as Inter-Library Loan, Code Red reverse 911 system and state agencies.

- *Online Training and Professional Development:* Access to training and professional development online, including keeping up to date with training on ever-changing technology is imperative. There is a particular need for training in sectors that rely on volunteers, such as local government, social services and public safety.

New Hampshire Broadband Mapping and Planning Program (NHBMPP)

The New Hampshire Broadband Mapping and Planning Program (NHBMPP) is a comprehensive, multi-year initiative that began in 2010 with the goal of understanding where broadband is currently available in New Hampshire, how it can be made more widely available in the future, and how to encourage increased levels of broadband adoption and usage. Funded through the National Telecommunications and Information Administration (NTIA), the NHBMPP is part of a national effort to expand broadband access and adoption.

The NHBMPP is managed by the GRANIT (Geographically Referenced Analysis and Information Transfer) System within the Earth Systems Research Center at the University of New Hampshire (UNH), and is a collaboration of multiple partners. These include: the NH Office of Energy and Planning (OEP), NH Department of Resources and Economic Development (DRED), UNH Cooperative Extension (UNHCE), UNH Information Technology (UNHIT), and the state's nine regional planning commissions (RPCs).
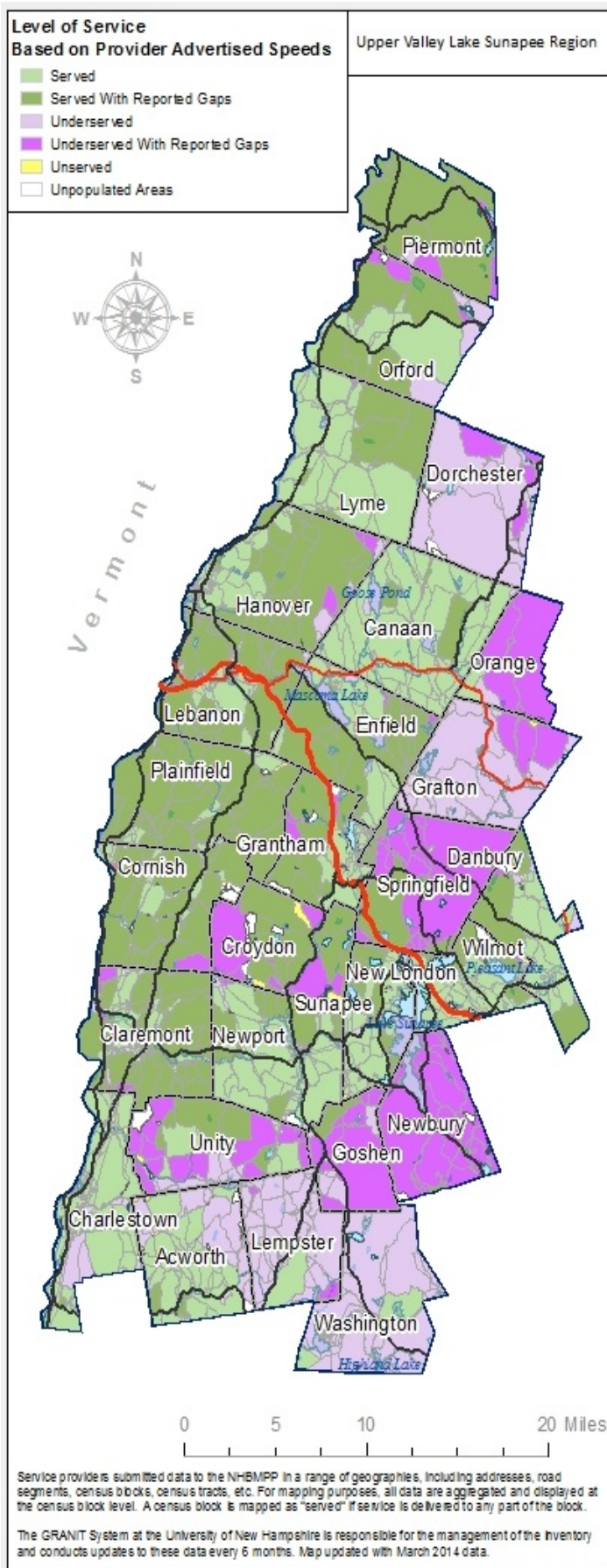
Broadband Availability in the Region

Most residents of the region have access to one or more types of broadband service, but there is wide variety in the speed and quality of service. In a 2013 phone survey of residents of the Southwest and Upper Valley Lake Sunapee regions conducted by the UNH Survey Center, 88% of survey respondents reported that they have wired service to their home (DSL, cable or fiber). Where there are gaps in wired service, residents and business owners rely on fixed wireless (5%), satellite (3%) or cellular service (3%).

Only 1% of survey respondents reported that they rely on dial-up Internet service and 16% reported that they do not have Internet service at home. Of the 16% without Internet service, 7% gave the primary reason for not having Internet as "It is not available where I live." The lack of availability of any type of broadband service remains an issue in two areas: (1) pockets of unserved roads in rural areas with low population density and (2) gaps or "dead zones" in cellular service coverage due to terrain and limited cell tower deployment, primarily in rural areas.

For most of the region, there is now the question of broadband service capacity – a question of speed. To better analyze this question, the New Hampshire Broadband Mapping and Planning Program (NHBMPP) established a multi-tiered system for levels of service *(See Level of Service Map):*

- *Served*
  - Maximum Advertised Download Speed: 6+ Megabits per second (Mbps)
  - Maximum Advertised Upload Speed: 1.5+ Mbps

- *Underserved*
  - Maximum Advertised Download Speed: 768 kbps - 6 Mbps
  - Maximum Advertised Upload Speed:

Level of Service
Based on Provider Advertised Speeds

Upper Valley Lake Sunapee Region

- Served
- Served With Reported Gaps
- Underserved
- Underserved With Reported Gaps
- Unserved
- Unpopulated Areas

Service providers submitted data to the NHBMPP in a range of geographies, including addresses, road segments, census blocks, census tracts, etc. For mapping purposes, all data are aggregated and displayed at the census block level. A census block is mapped as "served" if service is delivered to any part of the block.

The GRANIT System at the University of New Hampshire is responsible for the management of the inventory and conducts updates to these data every 6 months. Map updated with March 2014 data.

200 kbps - 1.5+ Mbps

- *Unserved*
  - Maximum Advertised Download Speed: < 768 kbps
  - Maximum Advertised Upload Speed: < 200 kbps

Reported Gaps are areas where the NHBMPP has received responses indicating that no service is available. Additionally, areas where speed tests have been completed that do not meet the minimum speed criteria are flagged as having a gap in service.

The Upper Valley Lake Sunapee region is unevenly served by a level of broadband service that would allow for intensive internet applications. The 6 Mbps/1.5 Mbps level of service is available in more than two-thirds of municipalities in the region, but in nearly all towns, residents have reported gaps in service. The southeastern part of the region (Acworth, Unity, Lempster, Goshen, Washington and Newbury), the northeastern part (Springfield, Grafton, Dorchester, Orford and Piermont) and parts of Grantham and Croydon are underserved, meaning that the highest advertised broadband service speed is less than 6 Mbps/1.5 Mbps.

Level of Competition
In New Hampshire, more than sixty companies provide broadband internet services to residences, businesses or both. The technology used to deliver broadband varies (e.g. cable, DSL, fiber, T-1 lines, fixed wireless, cellular and satellite) and the speed tiers and pricing structures offered also vary widely. Wired and fixed wireless service commonly provide unlimited data service at a given speed tier, although the delivered service speed may vary considerably from the advertised maximum speed. Cellular and satellite service providers

commonly set monthly data caps or "throttle" service speeds for heavy users, which stymies the full utilization of broadband services for residents and business owners who rely on these technologies.

The highest degree of competition in the broadband marketplace (considering all types of technology, speeds and pricing) is in the municipalities of Lebanon, Hanover, Enfield, Plainfield and Claremont. The southeastern and northeastern parts of the region, as well as parts of Croydon and Grantham have lower levels of competition.

While there may be several choices within a community, there is not necessarily a competitive choice because each provider offers a different type of service at a different price point. The 2013 survey found that 43% of survey respondents in the Southwest and Upper Valley Lake Sunapee regions reported that they are using their current internet service provider because they consider it to be the only option available. For respondents that have a dialup or satellite connection, 59% say that it is the only option available.

Towns without cable franchise agreements (between the municipality and the cable company that authorizes the company to provide service in the town) tend to have lower levels of competition and lower maximum speeds. As of January 2014, New London is the only municipality in the Upper Valley Lake Sunapee region with two cable franchise agreements: one with Comcast, one with TDS Telecom.

Investments in Expansion

Significant improvements have been made over the last five years to bring basic broadband service to unserved areas; the gaps where people must rely on dial-up, satellite or cellular service are gradually shrinking. At the same time, incremental progress is being made to roll

out fiber-optic broadband service capable of providing high-capacity bandwidth up to 1 Gigabits per second speeds, but much more work remains to be done to provide broadband capable of serving the region's needs in the future.

FairPoint Communications recently completed an expansion of broadband service to 95% of their customers. This was a requirement of the New Hampshire Public Utilities Commission's approval of FairPoint's 2008 purchase of Verizon's land-line telephone service areas. To fulfill the 95% requirement, FairPoint has extended broadband service to more than 100,000 additional homes and business in 215 communities around the state over the past five years, a total investment of $72 million. This includes service expansions to areas of the Upper Valley Lake Sunapee region that were previously reliant on dial-up or satellite Internet service, including neighborhoods in Canaan, Croydon, Dorchester, Enfield, Goshen, Grantham, Hanover, Lebanon, Lempster, Newbury, Newport, Orange and Sunapee.

In addition, FairPoint will be investing in an additional $3.3 million in further broadband expansion efforts. Approximately $2.8 million of service quality penalty monies incurred during 2009 through 2011 are being invested through an agreement with the New Hampshire Public Utilities Commission, with FairPoint contributing $500,000 on its own. It is estimated that an additional 2,500 homes and businesses will receive DSL broadband service. Areas in the Upper Valley Lake Sunapee region that have recently had service extensions include sections of Charlestown, Claremont, Enfield, Goshen, Grafton, Lyme, Newport, Orange, Piermont, Unity, and Wilmot. Looking ahead, FairPoint received $848,000 in Connect America Funds that it will leverage to bring broadband access or higher speeds to areas of eighteen towns over the next three years, including parts of Lyme and Newbury.

DSL is the most common technology used in FairPoint's broadband expansion, although the Seacoast and greater Nashua areas of the state have a faster fiber-optic service called FAST, which has speeds of up to 50 Mbps. The Town of Newbury reports that their town offices are served by fiber optic service through FairPoint, and two other companies are rolling out fiber-optic networks in other parts of the region. TDS Telecom is advertising a "Fiber-to-the-Home" initiative in the Towns of New London and Wilmot and the Twin Lake Villa section of Springfield, as well as other towns outside of the Upper Valley Lake Sunapee region. New Hampshire FastRoads, LLC, has constructed Fiber-to-the-Home in two census blocks in the Town of Enfield and a fiber-optic backbone through parts of Orford, Lyme, Hanover, Lebanon, Enfield, Springfield, New London, Sunapee, Newport, Claremont, Goshen and Lempster. Five service providers are now offering service over the fiber-optic network and FastRoads is beginning the planning process for the next phase of construction.

Regional Broadband Plan

The Upper Valley Lake Sunapee Regional Planning Commission, advised by a group of broadband stakeholders representing multiple interests from 19 communities in the region, developed a Regional Broadband Plan to better understand current broadband (or high-speed Internet service) availability in the region, to identify the challenges and barriers to universal access, and to plan for increased broadband adoption and utilization over the next six years.

This plan establishes four performance-based goals to achieve the regional vision of "fast, reliable and affordable broadband service through a competitive marketplace throughout all parts of the Upper Valley Lake Sunapee Region" and "a future with rural regions having the opportunity to access broadband services equal to that in metropolitan areas."

The regional broadband plan is intended to serve as a comprehensive document that describes broadband availability in the Upper Valley Lake Sunapee region and identifies ways to increase broadband adoption and utilization. The plan serves as a guidance document for communities, policy makers, businesses, institutions, and residents to better understand the availability and need for and utility of broadband now and into the future.

Looking ahead to future needs, the Federal Communications Commission's National Broadband Plan calls for gigabit service (1 Gbps or higher down/up) to all community anchor institutions by 2020. Currently, this speed is only available in a few locations in the region – one census block in Hanover, three census blocks in Claremont, four census blocks in Washington and eleven census blocks in Lebanon. Again, the southeastern and northeastern parts of the region, as well as parts of Croydon and Grantham, have the lowest speeds of broadband available.

2020 Broadband Goals for our Region

1. Provide affordable broadband service that would support telework and tele-education (20 Mbps download, 10 Mbps upload) in all areas of the region.

2. Build "Gigabit Communities" – expand "big broadband" (1 Gbps download, 1 Gbps upload) to all community anchor institutions and city/town centers, with extensions to residential and outlying areas.

3. Encourage marketplace entry of competitive, innovative service providers.

4. Work towards parity in broadband service availability across the rural areas of our region, the downtowns and village centers of our region, and metropolitan areas in the Northeast.

Issues and Challenges

Key Challenges to Broadband Expansion

A number of geographic, economic and regulatory barriers exist that make it difficult for the Upper Valley Lake Sunapee region to have universal broadband access. The region's low population density creates a low return on investment for wired broadband expansion, while hilly terrain presents physical barriers to wireless broadband deployment. Financing options and funding sources are limited for expanding broadband to unserved and underserved areas, which is compounded by utility pole attachment issues that increase the costs of expanding wired broadband and create delays in deployment.

Unlike other northern New England states, New Hampshire lacks state-level leadership, which has led to smaller broadband expansion efforts as well as slow progress on financing and regulatory reforms to facilitate additional expansion. Municipalities in the region, lacking the leverage and clout of larger entities and more populated regions, have struggled to have their need for better broadband heard and understood at the state level.

Broadband Development Strategies

The Regional Broadband Plan focuses on five high-priority strategies:

- Expand financing options and funding sources for enhancing both telework-supporting and gigabit broadband.
  - o Priority Action: Support reform of the federal Connect America Fund (part of the Universal Service Fund) to allow more funds to be available to New Hampshire broadband providers for expansion.
  - o Priority Action: Pass state legislation that promotes new options for

broadband financing, such as tax credits for companies that extend service to underserved areas and permitting municipalities to bond for broadband expansion.

- Remove barriers to entry into the marketplace by competitive, innovative service providers.
  - o Priority Action: Reform state legislation and policy governing utility pole attachments and the use of public rights-of-way to streamline providers' access to poles and underground conduit.
  - o Priority Action: Provide technical assistance to municipalities updating telecommunications ordinances to facilitate fixed wireless and cellular service expansion in a context-sensitive manner.

- Enable municipalities in our rural region to plan proactively for broadband service expansion and improvements.
  - o Priority Action: Support inter-municipal or regional coordination on broadband expansion efforts, including expansion of the FastRoads consortium.

- Build statewide leadership capacity to promote broadband.

- Overcome barriers of affordability and digital illiteracy.

> **Note:** Following the release of the UVLSRPC Regional Plan, the Federal Communications Commission (FCC) has revised the federal definition of broadband to connection speeds of 25 megabits per second or higher. More information can be found at www.fcc.gov.

7.3   WASTE MANAGEMENT

Vision

All residents and businesses in the region will have access to efficient, environmentally responsible, and affordable waste management. The region's waste generation will be reduced through increased recycling, composting, and purchase of products containing recycled materials, and utilization of products with lower toxicity.
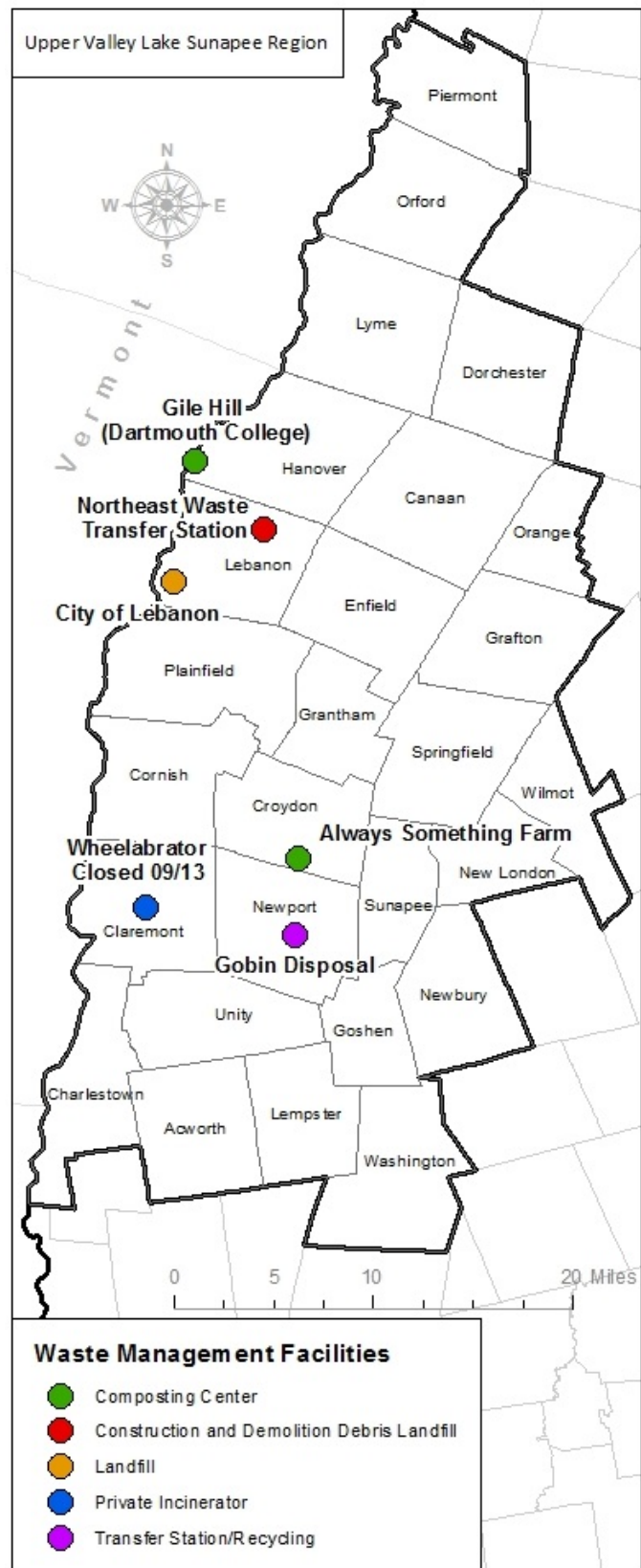
Managing Waste Demand

Every residential household as well as commercial, institutional, and industrial entity generates waste. The question is what to do with all of that waste. It must go somewhere. Should it be reused, recycled, composted, or disposed of at an incinerator or at a landfill? Or perhaps the first question is can the amount of waste generated be reduced in the first place so it does not have to be managed. The *Waste Management Facilities Map (right)* shows the location of waste management facilities in and around the region.

Source Reduction and Reuse

We are a consumer society, and nationally, waste generation is linked to the health of the economy. The stronger our economy, the more things people buy—thus, replacing items and throwing them in the trash. According to a study by Economist Michael McDonough of Bloomberg Brief, there is a tight correlation between waste shipped by rail to landfills and Gross Domestic Product.

Reducing waste generation is called "source reduction." For a household, this might include buying in bulk, reusing

Upper Valley Lake Sunapee Region

Waste Management Facilities

- 🟢 Composting Center
- 🔴 Construction and Demolition Debris Landfill
- 🟠 Landfill
- 🔵 Private Incinerator
- 🟣 Transfer Station/Recycling

items such as food containers, reducing toxicity such as using nontoxic cleaners, sharing or renting large items like rototillers instead of buying them, or taking an old sheet and cutting it up into cleaning rags instead of buying cloths. These same concepts can be used by businesses and institutions. There are many ways to reduce waste generation. For industrial entities, this can include re-evaluating how products are made to considering more efficient methods that not only reduce waste but also save costs. Source reduction saves natural resources, conserves energy, reduces pollution, reduces the toxicity of our waste, and saves money for consumers and businesses.

Some states are looking at "product stewardship," which requires the retailer to take back any product remainder or its packaging, such as paint. Several states have passed legislation to join with PaintCare, including Vermont, Maine, Connecticut, Rhode Island, Minnesota, California, and Oregon. PaintCare is an industrial driven organization developed by the American Coatings Association to assist states in developing paint take-back programs. When customers purchase paint in these participating states, the cost will be adjusted to pay for the take-back program. The customer can then return to a designated drop-off site with any leftover paint for reuse, remanufacturing, recycling, or incineration. This is a relatively new organization that will work to provide greater local remanufacturing opportunities to produce new paint from old. The New Hampshire legislature recently considered a paint product stewardship bill, and will likely revisit the topic in a future legislative session.

Recycling and Composting

Recycling is the collection of used, reused, or unused items that would otherwise be considered waste to be sorted and processed into raw materials. The raw materials, such as

aluminum or glass, are then remanufactured into new products. An important part of recycling is "buying recycled" products to provide a market for recycling. For example, aluminum (soda), steel (canned food), glass (bottles and jars), boxboard (cereal), and molded paper (egg cartons) are all cost-effectively recycled.

Composting takes wastes such as food scraps, yard trimmings and other organic materials (potentially paper products) and converts them into a useable soil amendment for gardeners and landscapers. New Hampshire regulations make it more difficult to compost food waste than in other states. It is hoped that the NH Department of Environmental Services will revise their regulations to make it easier for food waste composting programs to develop in NH. About 15% of the waste stream is made up of food waste and about 14% is yard trimmings. Certain types of paper could also be composted if the temperature of the composting pile were high enough.

Recycling and composting prevent the emission of many greenhouse gases and water pollutants, save energy, supply valuable raw materials to industry, create jobs, stimulate the development of green technologies, conserve resources for future generations, and reduce the need for new landfills and incinerators.

Some states and municipalities mandate recycling and composting. Vermont recently passed Act 148 which requires facility owners and haulers that offer services for managing trash to also offer services for managing mandated recyclables, leaf and yard materials, and food residuals.

New Hampshire laws ban landfill disposal or incineration of several items as provided in the following table:

Figure 7.3.1- Banned Landfill Disposal Materials in New Hampshire

Banned Material	Year/RSA	Examples	Alternative Management
Wet-Cell (lead acid) Batteries	1991 – RSA 149-M:27, II	Vehicle batteries	Valuable for resale or return to manufacturer or scrap dealer
Leaf & Yard Waste	1992 – RSA 149-M:27, III	Leaves, brush, limbs	Can easily be composted at the home or the transfer station
Electronics	2007 – RSA 149-M:27 IV	Any video display device, central processing unit of a computer, or non-mobile video display media recorder/player	Collections at transfer stations or one-day collections; some retailers take back; donations
Mercury Items	2008 – RSA 149-M: 58	Fluorescent lamps, thermometers, thermostats, tilt switches, manometers, button batteries	Can be collected at HHW collections, but expensive; towns can collect lamps; Thermostat Recycling Corporation
Construction & Demolition (C&D)	2007: RSA 125-C: 10-c (prohibits combustion of the wood component	Until 1/1/14, municipal transfer station may continue to burn unpainted and untreated C&D wood (this may be extended)	Salvaged wood components may be reused for their original purposes; some C&D is ground up and used as daily landfill cover

Some municipalities choose to require recycling and some have instituted a "pay-as-you-throw" system of residential waste disposal. This is a way to encourage recycling by making it free or cheaper than throwing away the trash. The Town of Unity has special bags for waste disposal at a fee while recycling is free. This incentive program encourages people to recycle.

Recycling equipment can be expensive. Municipalities can apply to the *New Hampshire the Beautiful* program for funding to pay for recycling equipment and signs. They also support recycling in schools by purchasing recycling collection containers and trailers through the New Hampshire School Recycling Club.

Energy Recovery

Energy recovery from waste is the conversion of waste materials into useable heat, electricity, or fuel through a variety of processes, including combustion, gasification, pyrolization, anaerobic digestion, and landfill gas recovery. This process is call waste-to-energy.

The Lebanon landfill is developing a waste gas recovery system to generate energy. A waste-to-energy incinerator owned by Wheelabrator in Claremont recently closed in September 2013. Although the facility provided energy and a disposal option for surrounding municipalities, there were many local concerns that the facility was causing unacceptable levels of air pollution.

Disposal

Landfills are the most common form of waste disposal nationally. There is only one solid waste landfill in the region: The Lebanon Solid Waste and Recycling Facility owned by the City of Lebanon. Several older landfills existed in the region, but closed when more stringent regulations were adopted by the state and federal governments.

There are two landfills outside the region that the region's municipalities use: 1) The Mount Carberry Landfill in Berlin, NH; and 2) The North Country Environmental Services Landfill in Bethlehem. In addition, commercial waste companies collecting municipal waste may haul it to their own landfills out of state. This would include Vermont, although they have stringent laws about accepting out-of-state municipal solid waste. Vermont does allow disposal of out-of-state construction and demolition waste. The State of Vermont's waste management practices impact our region.

Currently, several Vermont towns take their waste to the City of Lebanon's landfill. A potential landfill in North Hartland, Vermont may change that although for the moment it

has been determined to be unlikely. If the Vermont towns currently using the Lebanon landfill switch to taking their waste to another facility, then the Lebanon facility may provide more options for communities that currently do not have a contract to use the Lebanon landfill. This might save long hauling distances for some towns, and is dependent upon total costs for transportation and the disposal (tip) fee.

While the City of Lebanon has taken many steps to responsible manage their landfill, including expanding recycling and purchasing digesters, the capacity of the Lebanon landfill is finite.

Hazardous Waste

Most households, businesses, and industries generate at least some hazardous waste. Households purchase hazardous products every day from the local grocery store such as cleaners, oil-based paint and paint-related products, nail polish and remover, glues, automotive fluids, pesticides, swimming pool chemicals, and mercury-containing devices like the batteries in hearing aids, cell phones, tools, computers, and singing greeting cards.

Businesses and industries have a lot of the same hazardous waste as households, but they may also have hazardous wastes from their manufacturing processes.

When hazardous waste is dumped down the drain or flushed down the toilet, it goes into a septic system or wastewater treatment plant. These facilities are not designed to remove all chemicals from the water, which could result in pollution in our streams and rivers.

Methods of managing hazardous waste include not producing it in the first place. There are often non-toxic or less-toxic alternatives to hazardous products. These were mentioned in the "Source Reduction" section of this plan.

There are also collection systems for hazardous waste to keep it out of the waste stream of our disposal landfills and incinerators that are not intended for hazardous waste, including:

1. Permanent collection sites;

2. One-Day hazardous waste collections including satellite collections in more rural towns.

In the region, there are typically 14 communities that participate in the Commission's annual household hazardous waste collections. This number and the municipalities vary somewhat each year depending on the preference of the municipalities. Historically, about 900 households in the region participate in any given year. The cost per household ranges from $45 to $60 depending upon the quantity of waste brought, the type of materials, and the amount of grants obtained to offset the cost. Other collections also occur in the region. For example, Grantham provides a municipal collection every other year.

Hazardous waste management is expensive, yet it is much cheaper than cleaning up contaminated water and soil. Typically, hazardous waste is not recycled. It is taken to landfills and incinerators that are licensed to accept hazardous waste. This is not ideal, but even though hazardous waste is still being discarded, it is done in a responsible way to prevent accidents and pollution.

Universal Waste & Used Oil

Universal wastes are a special group of hazardous wastes that are very common. The NH Department of Environmental Services has made it easier to manage these types of waste because they are so common.

This does not include used oil, but includes antifreeze, batteries, cathode ray tubes (e.g. TV/computer screens), fluorescent lights, mercury-containing devices such as thermometers and thermostats, and some pesticides.

Universal waste collection methods are much less expensive than accepting this waste at a special hazardous waste collection. Identifying and disposing of universal waste can result in municipal cost savings.

Many municipalities accept universal wastes and used oil at their transfer stations. Not all municipalities accept all the universal waste items or used oil due to lack of staff or liability concerns. There are also some stores and garages that will take back selected automotive materials (e.g. antifreeze and batteries) or used oil for free.

Municipalities may take advantage of programs for collecting some waste items, including:

1. Using the State DES contract for municipal collection of fluorescent bulbs and ballasts;

2. Obtaining a State DES oil collection grant for equipment to collect oil;

3. Working with the Thermostat Recycling Corporation program to provide a collection system for thermostats at an initial one-time $25/container fee;

4. Using the free Call2Recycle program to collect rechargeable batteries;

5. Using the motor vehicle reclamation program – a municipal fund developed from registration fees to pay for the management of used tires, used oil, and motor vehicle batteries; and

6. Applying for a State DES household hazardous waste grant (the Commission does this on behalf of municipalities participating in the regional collections).

Unwanted Medicines

Many people have medicines in their bathroom medicine chest or other cupboards where they are collecting old prescriptions in case they need them later. This is a dangerous practice for many reasons. Taking, or selling, someone else's pain medication is becoming increasingly common.

There are also poisonings from accidental misuse of medications. For example, when someone with poor eyesight may take the wrong medicine, or an elderly person can't remember if he/she took their medication and takes it twice, or a child thinks the pills are candy, or the dog chews through the bottle and eats the medication, poisoning results. These sound like unusual events, but in 2012, the U.S. Poison Control Centers received half a million calls. In 2009, The Northern New England

Improper disposal can also pollute our groundwater. Accordingly, medicines should not be dumped down the drain or flushed down the toilet. In partnership with the Dartmouth Hitchcock Medical Center Pharmacy, the Commission has provided unwanted medicine collections in conjunction with its annual household hazardous waste collection days. In addition, during the summer of 2013, the Town of Hanover and the City of Lebanon installed medicine drop boxes in their police stations. This is a great way to provide accessible proper disposal. There have also been federally-provided medicine collections twice per year by the U.S. Drug Enforcement Administration.

If there is no collection available, the U.S.

The number of deaths in New Hampshire attributable to drug-related deaths – the majority of which are prescription drug-related – has outnumbered traffic related fatalities in four out of the last five years.

The New Hampshire rate of young adults reporting non-medical use of pain relievers in the past year is the second highest among the states and territories.

Call to Action: Responding to New Hampshire's Prescription Drug Epidemic, July 2012
The New Hampshire Governor's Commission on Alcohol and Drug Abuse Prevention, Intervention, and Treatment.

Poison Center managed nearly 6,000 pediatric poisoning exposures in New Hampshire alone.

Proper storage of medicines so that no one but the appropriate user can access them is important to prevent intentional and unintentional misuse. Proper disposal of unwanted or expired medicines can eliminate household clutter and reduce the possibility of accidental poisonings.

Environmental Protection Agency and the State of New Hampshire recommend putting the medicines in the trash rather than putting them down the drain.

Waste Management Improvement Strategies

- Educate the public about banned landfill items, universal waste collection programs, household hazardous waste collection programs, and unwanted medicine disposal and collection programs.

- Provide technical assistance to municipal leaders and transfer station workers about proper waste management and available funding programs to assist in providing opportunities for responsible waste management.

- Increase participation on Household Hazardous Waste Collections by expanding rural satellite collections.

- Continue to develop the Healthy Home: Clean Safe and Save program to promote non-toxic household cleaning alternatives.

- Install additional unwanted medicine drop boxes at police stations around the region.

- Partner with waste haulers to provide adequate recycling and composting opportunities to increase participation rates.

- Create a culture of waste reduction and hazardous waste reduction by increasing communication between the public and municipal waste management programs.

- Work with NH DES to amend the food waste composting regulations. This might require pilot food waste composting programs.

- Encourage schools to increase their recycling programs and develop food waste composting programs.

- Encourage cooperation between municipalities to share resources and combine marketing efforts.

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