

FINAL REPORT

of the

**Commission to Study Methods  
and Costs of  
Sewage, Sludge and Septage Disposal**

(HB 699, Chapter 253, Laws of 2007)

November 1, 2008

## A. Introduction

The adoption of House Bill 699 during the 2007 Legislative session established a Commission to study the methods and costs of sewage, sludge and septage disposal. The Commission was chaired by Rep. Deborah Wheeler and consisted of the following members:

Rep. Deborah Wheeler, Chair  
Rep. Burton Williams  
Rep. Scott Merrick  
Sen. Martha Fuller Clark  
Patricia Hannon, Clerk      Dep't of Environmental Services, Water Division  
Thomas Seigle                Dep't of Environmental Services, Waste Management Division  
Ken Flesher                  Assoc. Professor, UNH Thompson School of Applied Science  
James P. Malley, Ph.D.      Prof. of Civil Engineering/Environmental Engineering, UNH  
Carl Majewski                UNH Cooperative Extension  
Jane Manning                Dep't of Health & Human Services, Public Health Services  
Christopher Northrop        Office of Energy & Planning  
Richard Uncles                Dep't of Agriculture, Markets & Food

The specific duties prescribed in the bill were as follows:

- The sewage, sludge and septage disposal commission shall study:
- I. The costs involved with the disposal of sewage, sludge and septage.
  - II. The options used for sewage, sludge and septage disposal.
  - III. The technological alternatives to disposal methods used in NH and their costs.
  - IV. The economic feasibility of alternatives to current disposal methods.
  - V. The environmental impact of current and alternative disposal methods.
  - VI. The public health effect of current and alternative disposal methods.
  - VII. The definition of biosolids.

The Commission met on eight occasions and received testimony from many interested parties and technical presenters. A compilation of the meeting minutes can be found in Appendix C of this report. It was noted that a parallel committee had been established by House Bill 1491 to study the publicly owned treatment plant needs of NH, and had completed its report in November 2007. This Commission has, therefore, focused its efforts on the disposal of sludge and septage in New Hampshire.

## B. Definitions

1. Septage: RSA 485-A:2, IX-a states: "Septage" means material removed from septic tanks, cesspools, holding tanks, or other sewage treatment storage units, excluding sewage sludge from public treatment works and industrial waste and any other sludge"

2. Sludge: RSA 485-A:2, XI-a states: "Sludge" means the solid or semi solid material produced by water and wastewater processes, excluding domestic septage; provided, however, sludge which is disposed of at solid waste facilities permitted by the department shall be considered solid waste and regulated under RSA 149-M."
3. Sewage: RSA 485-A:2, X states: "Sewage" means the water carried waste products from buildings, public or private, together with such groundwater infiltration and surface water as may be present."
4. Biosolids: RSA 485-A:2, XXII states "Biosolids" means any sludge derived from a sewage wastewater treatment facility that meets the standards for beneficial reuse specified by the department."

## **C. Current Septage, Sludge & Sewage Management in NH**

### **Septage**

The term "septage" describes the liquids and solids that are pumped from a septic tank or cesspool and also includes wastes pumped from holding tanks and marine toilets. Septage must be removed on a regular basis and transported for disposal at permitted sites or facilities designed to process and treat such wastes. For the past 20 years, more than 80% of the rapid growth and development that has occurred in New Hampshire has taken place in areas that utilize decentralized wastewater systems (septic systems). This has resulted in the generation of nearly 100 million gallons of septage for disposal annually, nearly double what was generated 10 years ago. This volume has exceeded the state's existing capacity to properly manage septage, causing nearly 20 percent of that volume to be disposed in other states during 2007. The Department of Environmental Services (DES) is the state agency that regulates the transportation, land application, treatment and disposal of septage so that it is managed in an environmentally sound manner.

Calculating the volume generated by any waste stream is challenging, particularly when assumptions are necessary to provide planners with information for future needs projections. With septage, several variables come into play that further complicate any projections based upon current activities. Much of the problem arises from the fact that septage generated at the household level is essentially put into storage until the homeowner decides to have it removed. Other waste streams, such as garbage or food wastes, are generated and disposed of promptly, typically because the storage of the waste is above ground and becomes a space and nuisance concern. For septage, there is less incentive for timely removal for several reasons, one of which is that septic systems are designed to provide a relatively long period of treatment (storage). The storage is below ground, which in turn contributes to an "out of sight, out of mind" mentality. In addition, the fee associated with having a tank pumped contributes to homeowner delay or neglect of this important maintenance activity.

Effective management of septage is important to help protect the public health and water resources of New Hampshire. Septage management takes place at many levels, from the homeowner who must maintain his/her septic tank by having it pumped on a regular basis (every 2-5 years), to the hauler who pumps and inspects septic tanks, then transports septage to the final disposal site or facility where it is processed and treated. In addition, economic factors affect how septage is managed as individuals seek lowest cost disposal options. Homeowners naturally want low cost pumping services and septage haulers want low cost disposal fees at the recipient sites or facilities. Therefore, both disposal costs and capacity play an important part in septage management.

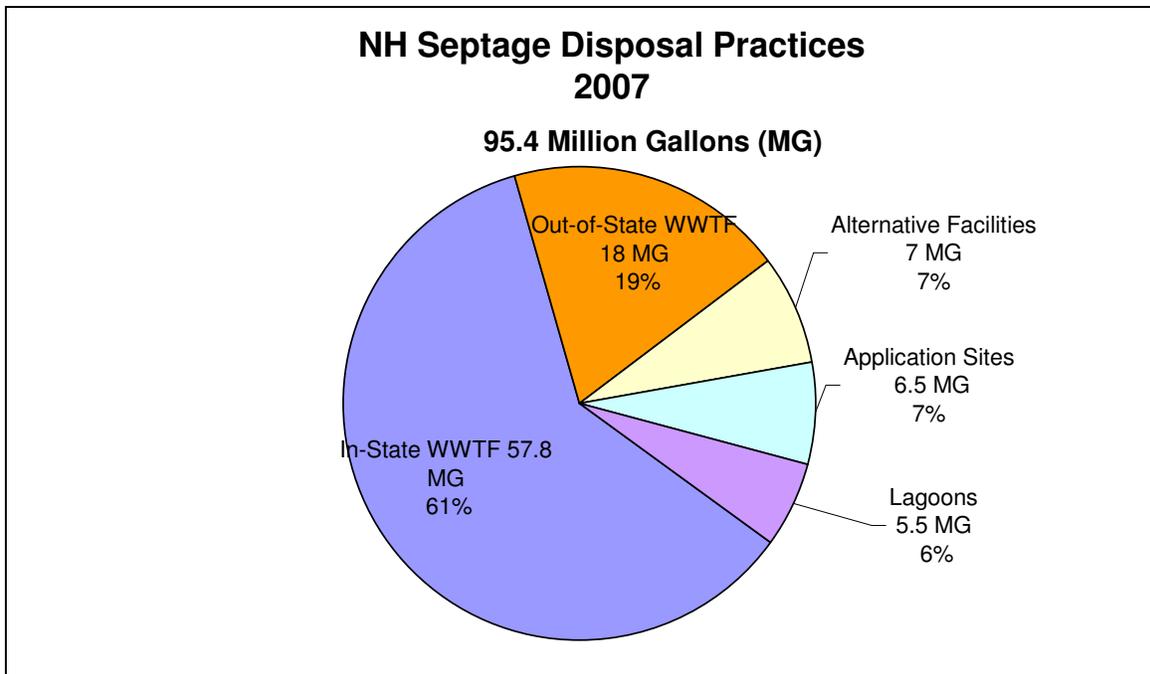
In 2007, 95.4 Million Gallons (MG) of septage was generated in New Hampshire for disposal and was managed in the following ways:

- NH Wastewater Treatment Facilities (WWTFs) - 57.9 MG (61%)
- Out-of-State Wastewater Treatment Facilities - 18.3 MG (19%)
- Innovative/Alternative Septage Only Facilities – 7.0 MG (7%)
- Land Application – 6.6 MG (7%)
- Unlined Septage Lagoons – 5.6 MG (6%)

The following charts summarize the average costs associated with septage management and illustrate New Hampshire’s septage disposal practices during 2007. Costs for septage disposal at facilities that received New Hampshire’s septage during 2007 were determined by means of a telephone survey conducted by the Department of Environmental Services. Costs do not include transportation to the site or facility, and in the case of land application, do not include the value of the land.

**Average Disposal Costs Per 1000 Gallons**

<b>In-State</b>		<b>Out-of-State</b>	
WWTFs	\$78	WWTFs	\$94
Unlined Septage Lagoon	\$42		
Innovative/Alternative Facilities	\$80		
Land Application Sites	\$25		



### **Septage Disposal in the North Country**

Certain regions of the state have a greater septage disposal capacity deficit than others. For example, in the “North Country”<sup>1</sup> region of New Hampshire there are 11 septage disposal locations<sup>2</sup>, which treat nearly 3 million gallons of the 3.25 million gallons of septage generated annually. Eight of the locations are publicly owned WWTFs and the remaining three are privately owned (including one land application site). Land application sites are typically functional from May to October.

The privately owned septage facilities treat about half of the septage generated in the region (1.5 million gallons/year). The majority of septage treatment occurs in Lisbon at the Schofield Facility, which treated 1.4 million gallons in 2007. The two remaining facility sites, the Boudreault Septage Lagoon in Haverhill and Rexford’s septage land application site in Lancaster, each process approximately 100,000 gallons per year. The privately owned facilities only accept waste from specific haulers and are not necessarily available to every area septage hauler. Although the Boudreault facility stopped accepting septage in September 2007, there are plans to reopen the facility in 2009 by replacing the unlined septage lagoon with a subsurface treatment system.

<sup>1</sup> For the purposes of this report: the “North Country” is a region comprised of 33 towns, including all the towns of Coos County (Berlin, Carroll, Clarksville, Colebrook, Columbia, Dalton, Dixville Notch, Dummer, Errol, Gorham, Jefferson, Lancaster, Milan, Northumberland, Pittsburg, Randolph, Shelburne, Stark, Stewartstown, Stratford, and Whitefield) as well as Bath, Bethlehem, Easton, Franconia, Haverhill, Landaff, Lisbon, Littleton, Lyman, Monroe, and Sugar Hill.

<sup>2</sup> Septage disposal locations are in the Towns of Berlin, Colebrook, Gorham, Groveton, Haverhill, Lancaster, Lisbon, Littleton (2), Pittsburg, and Stratford.

Statewide, nearly 80% of septage disposal depends on municipally owned WWTFs. In contrast, the North Country has a limited number of public WWTFs and so must export a portion of its septage, equal to roughly 250,000 gallons per year. Nearly 100,000 gallons are transported south of the region for disposal to recipient facilities as far away as Allenstown, NH. The remaining volume is disposed at out-of-state facilities in So. Berwick, Maine and Canaan, Vermont<sup>3</sup>. Septage disposal costs in the North Country generally tend to be slightly higher than the state average.

## **Sludge**

The term “sludge” is used to describe the solid or semisolid material produced by water and wastewater treatment processes, and includes industrial sludges. The term “biosolids” means any sludge from a municipal wastewater treatment facility that meets DES standards for beneficial reuse. “Short paper fiber” (SPF) refers to industrial sludge produced by the treatment of wastewater generated by the papermaking (pulping) process and that meets DES standards for land application. As with septage, DES is the state agency that regulates the transportation, land application, treatment and disposal of sludge, biosolids and short paper fiber to ensure environmentally sound management of the material.

How are septage, sludge and biosolids related? Septage, when disposed at wastewater treatment plants, contributes to the quantity and quality of sludge and biosolids generated at those facilities. Currently, nearly 80% of New Hampshire’s septage is disposed at wastewater treatment plants.

Sludge and biosolids are typically generated at centralized locations often owned and operated by municipalities or political subdivisions, and sometimes by private industry. Because most of NH’s recent growth and development predominately took place in “non-sewered” areas, the state has not experienced the same degree of increase in the annual amount of sludge/biosolids generated.

Presently in New Hampshire and throughout the United States, three major management options exist for sludge/biosolids. They are incineration, landfilling and land application. In 2007, 97,600 wet tons (WT) of sludge were generated in the state, which was disposed of in the following ways:

- Land Application (Class A & B Biosolids)    39,456 WT (40%)
- Landfilling    26,317 WT (27%)
- Incineration (City of Manchester only)    22,530 WT (23%)
- Out-of-State Disposal    9,280 WT (16%)

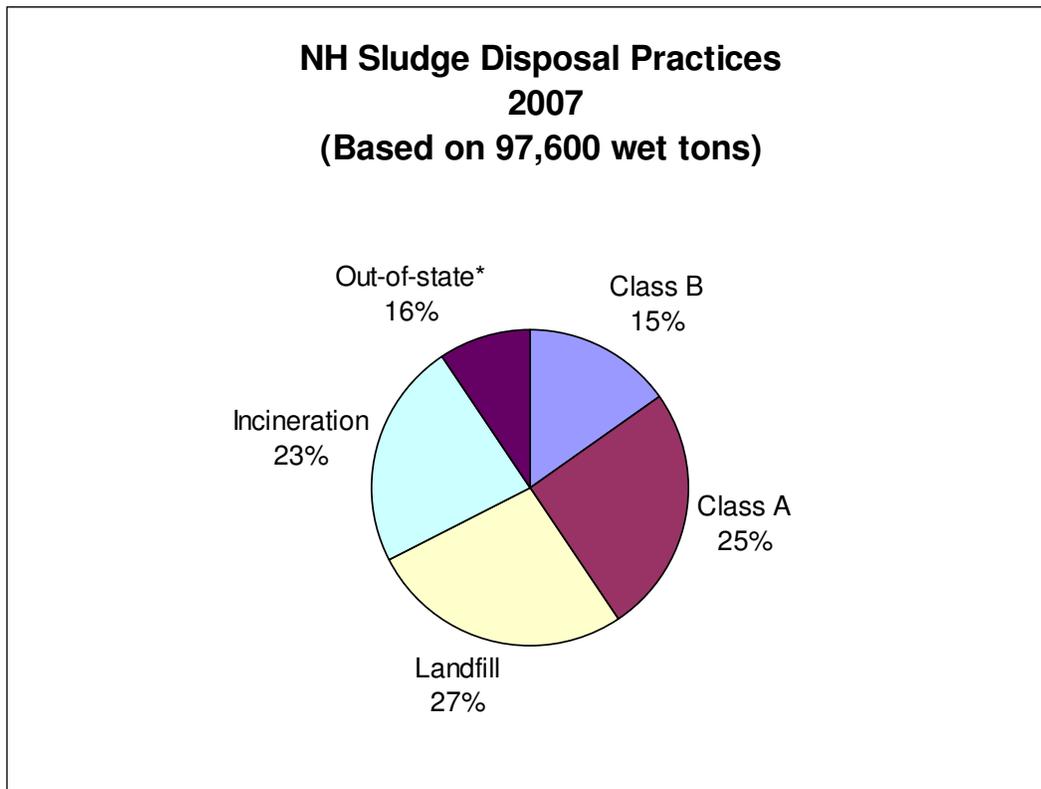
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<sup>3</sup> Canaan, VT is connected by sewer lines to Stewartstown, NH.

The following charts summarize the average costs associated with sludge management and illustrate New Hampshire’s sludge disposal practices during 2007. Costs for sludge disposal at facilities that received New Hampshire’s sludge during 2007 were determined by information submitted by members of the regulated community in response to inquiries made by the Department of Environmental Services. Costs do not include transportation to the site or facility and, in the case of land application, do not include the value of the land.

### Disposal Cost Summary Per Wet Ton

In-State		Out-of-State	
Landfilling	\$75	Landfilling	\$77
Biosolids Land Application	\$40	(Based on data collected by USEPA for average landfill tipping fee in Northeast)	
Incineration (Manchester only)	\$71		



\* Sludge transported to out-of-state facilities may be land applied, disposed at a landfill or incinerated.

### Sewage

Sewage is defined in accordance with RSA 485-A:2, X as “the water carried waste products from buildings, public or private, together with such groundwater infiltration and surface water as may be present.” Sewage is then transported through an underground

infrastructure of pipes and pump stations, which deliver it for processing and treatment to centralized or decentralized wastewater treatment facilities. The treated liquid portion of sewage (effluent) is ultimately discharged to the ground or surface water. The solid portion of the sewage (sludge) is managed in New Hampshire as discussed in the above section.

There are currently 85 publicly owned and 27 privately owned wastewater treatment facilities in the state. Most of the wastewater treatment facilities in New Hampshire were built subsequent to the passage of the Clean Water Act in 1972, and many have reached (or passed) their projected design life expectancy (20-30 years). The state's wastewater treatment plants were designed and constructed to meet the estimated needs of the communities they serve. Presently, nearly 25% of the municipal facilities are operating at 80% of their design capacity. These facilities will require upgrades in the near future to keep pace with growth.

NH House Bill 1491, Chapter 309, Laws of 2006, established a legislative study Commission "to study the publicly owned treatment plant needs of New Hampshire and state laboratory water tests and fees". The final report of the HB 1491 Study Commission, submitted to the legislature in November 2007, concluded that "wastewater treatment facility needs in New Hampshire are significant, costly and are growing every year." The current needs for the state's wastewater infrastructure are likely to be in the order of 1 billion dollars over the next 10 years. For more detailed information on sewage treatment options currently employed in the state, as well as the facts, findings and conclusions of the HB 1491 Study Commission, please refer to the Commission's final report, which can be accessed and downloaded through this link: [www.gencourt.state.nh.us/statstudcomm/details.aspx?id=1829&rbl=1&txtyear=2006&chks=1&chksc=1&txtbillnumber=HB1491](http://www.gencourt.state.nh.us/statstudcomm/details.aspx?id=1829&rbl=1&txtyear=2006&chks=1&chksc=1&txtbillnumber=HB1491)

#### **D. Alternatives for Disposal**

There are many emerging technologies on the market for the handling of sewage, sludge and septage. This Commission received testimony from DES regarding pilot projects in Seabrook and Woodsville that may significantly reduce the quantities of sludge produced by wastewater treatment facilities and also reduce energy usage at the plants. Other testimony was received from the Water Pollution Control Association, the NH Sierra Club, North East Biosolids and Residuals Association (NEBRA), Citizens for Sludge Free Land, UNH, NH Association of Septage Haulers (NHASH) and others regarding promising technologies. While there are many new technologies being developed and piloted, many are not yet proven for reliable and economical application on a large scale. Please see Appendix A for "Thoughts and Experiences on Sewage Sludge Disposal" prepared by James P. Malley, Jr., Ph.D., professor at the University of New Hampshire and a Commission member.

A common component of many of the alternative technologies involves either capturing the energy contained in the waste material or conserving energy during material processing. This coincides with our nation's increased focus on energy production and conservation in light of higher fossil fuel prices and concern over climate change. A

fairly strong consensus has emerged that increased energy independence is a desired goal. This can be accomplished through conservation and use of indigenous energy resources. Where practical, this approach should be applied when developing the future infrastructure and processes for sewage, septage and sludge disposal.

Alternative technologies presented to the Commission include:

## **Sludge**

### ***Incineration with Energy Recovery –***

The City of Manchester's WWTF disposes of its sludge by incinerating it and using the heat generated for processing purposes at the facility. This has worked well for the city over the years.

The City of Portsmouth is in the process of planning for a new WWTF. One possibility that it was considering for disposing of the generated sludge was to dry it and use it as a fuel for electricity generation. The Commission heard that the City was exploring the possibility of building a sludge drying facility near the Schiller generation plant. Waste heat from the Schiller plant would be used to dry the sludge. The dried sludge would then be used as a supplemental fuel at Schiller to generate electricity.

One of the boilers at Schiller was recently converted to burn wood instead of coal as its fuel source. The owner of the facility, PSNH, receives renewable energy credits for the electricity generated from this boiler because of this conversion.

Sludge does not qualify under our state law (RSA 362-F) as a fuel that can be used to receive these credits when it is burned directly to generate electricity. It may be worth exploring whether it should qualify, within the context of its life cycle greenhouse gas emissions profile in comparison with other disposal options. Worth noting is that any methane extracted from sludge does qualify under the law as an eligible fuel for receiving the credits.

### ***Bioreactor Landfills –***

In a bioreactor landfill, liquid or air is injected or re-circulated in a controlled fashion into the waste mass in order to accelerate decomposition of the waste. This can be done either aerobically (with oxygen) or anaerobically (without oxygen). Bioreactors operating under anaerobic conditions generate methane which can be captured and used to create electricity and/or to provide heat either on-site or elsewhere. Liquid sludge can be injected into the landfill waste to enhance microbiological processes and increase methane production. Research is ongoing relative to the operation of existing bioreactors.

### ***Sludge Digester with Energy Recovery –***

Anaerobic sludge digesters are tanks in which sludge is digested by bacteria in the absence of oxygen. They are installed at WWTFs to decrease the volume of sludge by up to 50% and to produce methane, which can be used as a heat source for internal processes and/or to generate electricity. They can provide significant sludge disposal cost and energy savings to WWTFs. The City of Nashua's egg-shaped sludge digester, which was installed at its WWTF in 2000, provides approximately \$1 million a year in operational savings.

### **Septage**

#### ***Biological Treatment with Constructed Wetlands –***

The biological processes that exist in wetlands can be used to treat septage. The plants along with the microbial and physical-chemical processes that exist in wetlands can effectively treat the nutrients and contaminants found in sludge. The use of constructed wetlands is more challenging in more northern climates such as New Hampshire due to the slowed biological activity in the colder months of the year. A facility was built using federal money in East Kingston over 10 years ago and remains operational.

#### ***Solids Removal and Composting –***

Septage that has had the solids removed from it places significantly less of a load on any WWTF that accepts it for disposal. This allows a WWTF to accept much larger quantities of septage. In 2003, the Town of Pittsfield entered into a cooperative agreement with a private operator to remove solids from septage headed to the town's WWTF. This allowed the Pittsfield WWTF to handle up to 3 million gallons per year of septage, a huge increase over the 60,000 gallons the facility previously accepted. Much of the septage came from surrounding communities. DES provided a grant of \$33,504 to fund this pilot project because of the valuable septage disposal service it provided to the region.

Pittsfield has decided not to continue with this public/private arrangement because of the high cost of disposing of the solids. The private operator would like to build a facility that would not only remove the solids, but also process them to make a compost/top soil product that would have greater value.

## **E. Environmental and Public Health Effects**

There was considerable testimony regarding the various septage and sludge management methods, particularly with respect to land spreading and possible related health effects. It was explained by representatives of DES that New Hampshire's regulations regarding the standards for treatment and use of septage, sludge and biosolids are risk based. The state's standards for beneficial reuse of these materials are more comprehensive and stringent than federal standards. DES regulations for

land application of sludge and biosolids were developed based upon health risk assessments calculated using the exposure pathways of inhalation, ingestion and absorption. Sludge is analyzed for 177 potential contaminants to include: metals, volatile organic chemicals, semi-volatile organic chemicals, pesticides, dioxins and polychlorinated biphenyls (PCBs). Please see Appendix B for a “Comparison of State and Federal Regulatory Requirements for Land Application of Sewage Sludge”. Prior to land application, biosolids, septage and sludge must be treated to attain appropriate levels of pathogen and vector attraction reduction. In addition to testing and treatment requirements, land application is subject to regulated management standards which include, but are not limited to, setback distances to surface waters and restricted public access to sites. Therefore, if properly managed and regulated, landspreading should not pose any significant health risks.

The emergence of the discovery of personal care products and pharmaceutical products in sludge, septage and sewage was discussed; however, currently there is not much information available on the fate or transport of these numerous contaminants. DES has committed itself to tracking current and future research on this issue as well as other research that pertains to the land application of septage and sludge. As new scientific information develops, DES will modify septage, sludge and sewage management practices as appropriate to protect human health and the environment.

## **F. Conclusions**

Based on all the testimony and data gathered, it is clear that the disposal of sewage, sludge and septage is an important issue in New Hampshire. Current practices are adequate for the protection of human health, safety and the environment, but there is a deficit of septage disposal capacity in the state that does not currently address today’s disposal needs. Costs of disposal are significant and are expected to only increase with the rising cost of fuel and energy. Approximately 60% of the residents in New Hampshire are served by private septic systems and as this number increases the septage disposal problem will increase accordingly. Insuring adequate septage disposal capacity for future needs is critical to environmental protection of the state’s water resources.

It is important to insure that current disposal practices are adequately monitored and controlled. Because sewage, sludge and septage can contain pathogens, they can pose a threat to human health and the environment if they are not handled properly. New technologies or innovations to current technologies must be encouraged but considered on a case by case basis, with careful study of technical, environmental, public health and economic criteria.

## **G. Commission Recommendations**

1. Funding for the State Aid Grant to municipalities for wastewater infrastructure must be maintained. The program of providing additional grant money for septage related projects is important and must be maintained to encourage development of new projects and technologies.

2. The feasibility of providing state aid grants for public/private partnerships should be explored. This type of program could encourage the private sector to get involved in developing treatment or disposal facilities in concert with municipalities.
3. NH should continue to evaluate emerging technologies and work with both the public and private sector to provide sufficient and safe disposal for sludge and septage.
4. The definition of "Biosolids" was adopted into state statute in 2000 and into DES administrative rules in 2007. The definition is appropriate and no changes are recommended.
5. It is appropriate to investigate organic wastes as a potential source of energy.

## **Appendix A**

Thoughts and Experiences on Sewage Sludge Disposal

Prepared by

James P. Malley, Jr., Ph.D.  
University of New Hampshire

Thoughts and Experiences on Sewage Sludge Disposal  
For the HB 699 Committee

Prepared by

James P. Malley, Jr., Ph.D.  
Professor of Civil/Environmental Engineering  
Chairman Environmental Engineering Program  
University of New Hampshire

October 24, 2007

Sewage sludge disposal has been an issue of significant political, economic and technical discussions for well over 30 years. Assembled here are some thoughts on the subject which have been pulled together from my experiences since 1980 when I was involved in some of the initial composting and land application work on sludges at Rutgers University.

1. There is no single simple solution to this complex problem and clearly one size cannot fit all in terms of sewage sludge treatment and disposal/use issues.
2. Communities are faced with the reality that large quantities of sludge are going to be generated as growth occurs and as environmental restrictions on the effluent water quality continue to become stricter.
3. All solutions used or proposed to date have pros and cons. The solutions that have stood the test of time have been those which are robust, practical and cost effective. In terms of risk assessments and risk calculations, these are difficult and can be controversial. The solutions which have stood the test of time have done so in part from the fact that the overall benefits have outweighed the perceived risks based upon empirical observations.
4. There are always opportunities for innovative solutions and many have and will continue to be invented. Many of these innovative solutions have not become widely used because they have not been able to scale-up to meet the quantities of sludge generated or they have been far too costly or the promise of the resulting product has not met expectations.
5. Efforts to minimize the wastewater generated as well as efforts to minimize the amount of hazardous materials in the wastewater using pollution prevention techniques remain essential and should increase as consciousness of sustainability grows among the public.
6. Any process for sludge treatment will only be as effective as the monitoring and control practices and requirements (which include sampling and testing) that are used. Most of the difficulties with sludge treatment and disposal/use practices noted in the past can generally be tied back to a lack of adequate monitoring and control of processes.

7. In my experience, conventional and sound engineering practices for sludge treatment and disposal/use have been effectively employed and include the following (for the purposes of brevity, I will omit discussion of sludge pumping, thickening and dewatering):
  - a. Composting and land application or landfilling of the resulting solids.
  - b. Anaerobic digestion with energy recovery from the gas generated and land application or landfilling of the resulting dewatered sludge cake or pellets.
  - c. Aerobic digestion and land application or landfilling of the resulting dewatered sludge cake or pellets.
  - d. Dewatering, waste-to-energy combustion of the sludge with energy recovery and monofil disposal of the resulting ash.
  - e. Lime stabilization of the sludge followed by landfilling or land application or landfilling of the resulting dewatered sludge cake or pellets.
8. As noted in the literature there has been a national move away from landfilling in an attempt to prolong municipal solid waste landfill life and capture the valuable resources present in the sludge. The ultimate decision on whether or not to landfill treated sludges is normally based on the regional economics.
9. In general, waste-to-energy options for sludge have been on the decline due in part to the capital and operation and maintenance costs for these facilities as well as a growing public dislike for incineration processes due to concerns over air emissions, carbon balance and global warming.
10. Difficulties have been reported with use of improperly lime stabilized sewage sludge that is then land applied. The most common difficulties cited are odor from this practice. Lime stabilization needs to have adequate process monitoring and control for it to remain a viable option and minimize impacts to neighboring communities.
11. Difficulties have also been reported with improper land application techniques especially if treated sludges are not dewatered prior to land application. The most common difficulties cited are odors and aerosols. Land application practices must be adequately monitored and controlled to remain a viable option and minimize impacts to neighbors.
12. As mentioned above, the process is very dynamic and the marketplace is very active. Hence there are new modifications to these conventional sludge disposal options as well as proposed new products and innovations such as "aerobic thermophilic sludge digestion" each year. In general, these new modifications, innovations, and products as well as all conventional options must be considered on a case by case basis. A careful study including all scientific, technical and economic criteria as well as the local desires of the people must be weighed prior to selecting and implementing a final sludge treatment and disposal/use option.
13. Current interests/ideas span the gambit from using sludge as part of biofuel cells to using sludge as part of biodiesel generation to using sludge in construction materials. However, most interests and ideas remain at the bench or pilot stage (alpha); a select few

may be ready for beta testing and over time typically 5 to 10 years one may emerge in a full scale application. I am unaware at present of any technologies positioned to take a significant market share away from the conventional sludge approaches mentioned here.

Based on the current information on available, emerging and proven sewage sludge treatment and disposal/use technologies it is my conclusion that a three part approach is warranted:

- Increased efforts for pollution prevention and wastewater (hence sludge) minimization should be undertaken.
- A site specific and detailed engineering evaluation of sludge treatment and disposal/use alternatives must be undertaken for a given sludge generator prior to selection of the best alternative.
- The selected sludge treatment and disposal/use alternative must be adequately monitored and controlled to insure the process meets all applicable rules and regulations.

## **Appendix B**

Comparison of State and Federal Regulatory Requirements for  
Land Application of Sewage Sludge



## COMPARISON OF STATE AND FEDERAL REGULATORY REQUIREMENTS FOR LAND APPLICATION OF BIOSOLIDS

2008

Regulation	State (Env-Wq 800)	Federal (40 CFR Part 503)	
Pathogen Reduction	State requirements based on federal rule	Establishes standards for pathogen reduction	
Vector Attraction Reduction (VAR)	Uses federal VAR standards, but does not allow VAR at land application sites	Establishes standards for VAR	
Metals Standards	Regulates 14 metals	Regulates 9 metals	
	Limit (mg/kg)      Loading (kg/ha)	Limit (mg/kg)	Loading (kg/ha)
Arsenic	32                      10	75	41
Cadmium	14                      5	85	39
Chromium	1000                      300	Not regulated	Not regulated
Copper	1500                      300	4300	1500
Lead	300                      200	840	300
Mercury	10                      5.6	57	17
Molybdenum	35                      18	75	Not regulated
Nickel	200                      89.3	420	420
Selenium	28                      100	100	100
Zinc	2500                      500	7500	2800
Antimony	26 <sup>(1)</sup> Not regulated	Not regulated	Not regulated
Beryllium	0.95 <sup>(1)</sup> Not regulated	Not regulated	Not regulated
Silver	200 <sup>(1)</sup> Not regulated	Not regulated	Not regulated
Thallium	21 <sup>(1)</sup> Not regulated	Not regulated	Not regulated
Organic Chemicals	Regulates 155 organic contaminants including dioxins and PCBs	Not regulated	
Testing and Evaluation of Sludge Quality	Requires Sludge Quality Certification (DES approval) <ul style="list-style-type: none"> <li>• Prior to certification, 4 tests, 60 days apart for 177 analytes</li> <li>• After certification, Ongoing testing for 177 analytes</li> </ul>	No prior evaluation or approval required, testing for 9 metals 1 to 12 times per year	
Site Permits	Site Permit required for land application at a specific location	No site specific permit required	
Class B, Land application setback	Wells Property line Surface water Dwellings Roads Bedrock/Groundwater	10-meter setback from waters of the United States	
Transportation	Regulates the transportation of Class B and untreated sludge	Not regulated	
Facility Permit	Requires facilities permits for the storage and/or the treatment of sludge not associated with an NPDES permit	Not regulated	
Management of industrial sludge and water treatment sludge	Regulates the removal, transportation, and disposal of these materials	Not regulated	
Regulatory Oversight	5 staff in Concord	1 part-time regulator in Boston	

(1) – The limits for antimony, beryllium, silver, and thallium are guidance values.

## **Appendix C**

Compilation of Meeting Minutes

**Commission to Study Methods and Costs of Sewage, Sludge, and Septage Disposal**  
**(HB 699, Chapter 253:1, Laws of 2007)**

**Meeting Minutes for September 25, 2008**

**LOB Room 303**

**Commission Members in Attendance:**

Rep. Deborah Wheeler (Commission Chair)

Rep. Burton Williams

Carl Majewski, Educator, UNH Cooperative Extension (replacing Tom Buob/retired)

Patricia Hannon, Dep't of Environmental Services (DES), Water Division (Clerk)

Thomas Seigle, DES, Waste Management Division

**Invited Guests Seated at Table**

Rep. Virginia Heard

Rep. Derek Owen

Without a quorum present, at 9:08 AM, Rep. Wheeler, Commission Chair, called the meeting to order.

The meeting began with a brief presentation from Tom Niejadlik, representing the Air Resources Division of DES. Mr. Niejadlik had been asked to attend the meeting to provide information and answer questions on the state's renewable energy portfolio, and discuss the definition of the term "biomass" contained therein. Suggesting legislation in the Commission's Final Report to the Legislature to amend the definition of "biomass" had been a topic at the last meeting. A copy of New Hampshire's Electric Renewable Portfolio Standard was distributed to Commission members. Rep. Williams asked about the toxicity of air emissions from burning sludge. Mr. Niejadlik responded saying the state has adopted health based standards for air emissions that are very protective of human health and the environment. Carl Majewski, UNH Coop. Extension, asked about special handling for the resultant ash. Shelagh Connelly, RMI (audience member), stated that her company recycles Manchester's ash as a component of manufactured topsoil. Ms. Connelly also added that she brought in language to modify the definition of "biomass" by adding "sewage sludge" in Chapter 362-F, the Renewable Energy Portfolio. This task had been requested of Ms. Connelly by Rep. Williams at the previous Commission meeting. Rep. Williams stated that he would like to see this recommendation for a definition change in the Commission's final report. Doug Bogen, Clean Water Action (audience member), asked Tom Niejadlik about mercury emissions from Manchester's sludge incinerator. Mr. Niejadlik state that mercury emissions have reduced over the years because much of the mercury has been removed the waste stream.

Caroline Snyder, Citizens for a Sludge Free Land (audience member), stated that the State of Virginia had convened a similar study group (as the HB 699 Commission) but

Virginia provided funds to hire a consultant. The State of Virginia issued a 62 page report on the subject. Caroline Snyder was not able to bring a copy of the report to the meeting, nor was she able to provide insight as to the contents of the report.

Darlene Johnson was the second speaker of the morning. Ms. Johnson owns her own septage hauling business with her husband (Paul Johnson), is a partner in a septage disposal business (Septage Disposal Solutions) and acts as a liaison between DES and the NH Association of Septage Haulers (NHASH). She gave a brief history of septage disposal in the state and spoke of a chronic shortage of septage disposal capacity in New Hampshire. Ms. Johnson spoke of her work as a member of the Septage Task Force and the statutory obligation of municipalities to provide or assure access to septage disposal for their residents (RSA 485-A: 5-b). She expressed concerns about keeping septage disposal costs reasonable. Rep. Williams asked about Ms. Johnson's experience regarding septage land application. Ms. Johnson spoke of the specific permit requirements and soil testing requirements that her company complies with for the land application of septage at their permitted site in Canterbury (visible from I-93 South near Exit 18).

The third and final speaker of the morning was Bill Gosse who owns his own septage hauling business, is also a partner in Septage Disposal Solutions (with Darlene and Paul Johnson) and acts as a liaison between DES and the NHASH. Mr. Gosse reiterated the need for local, affordable septage disposal. He spoke about the Pittsfield Pilot Project (of which he is a partner) and spoke of septage pre-treatment and dewatering options that are employed in Pittsfield. Mr. Gosse brought out three samples (in jars) of septage, treated septage filtrate and septage solids. He spoke of the need for grant money to be extended not only to municipalities but to the private sector as well. Rep. Williams stated that keeping the state aid grant money in the budget should be part of the recommendations of the Commission's final report. Mr. Gosse continued speaking about the costs of operating a septage facility, to include the price of 3-phase electrical power. Rep. Heard asked about the costs and Mr. Gosse responded that he spends \$4-5,000 annually for electricity. He said that septage solids could generate methane which could produce electricity-but in NH, you would need a regional septage facility to collect enough solids. Mr. Gosse said that 3 million gallons of septage when dewatered produces (only) 200 yds. of septage solids. He stated that he performs septage treatment activities in Pittsfield on < 1 acre of land, and hoped that the successful Pittsfield project would be duplicated throughout the state to help alleviate the septage disposal capacity shortage.

Rep. Wheeler stated that the meeting would have to adjourn early today, due to other obligations. Since there were no further speakers, questions or comments, Rep. Deborah Wheeler, Commission Chair, adjourned the meeting at approximately 10:25 AM. The next Commission meeting was not scheduled.

**Next Meeting Date, Location and Time: TBA**

**Commission to Study Methods and Costs of Sewage, Sludge, and Septage Disposal**  
**(HB 699, Chapter 253:1, Laws of 2007)**

**Meeting Minutes for August 12, 2008**

**LOB Room 303**

**Commission Members in Attendance:**

Rep. Deborah Wheeler (Commission Chair)

Rep. Burton Williams

Carl Majewski, Educator, UNH Cooperative Extension (replacing Tom Buob/retired)

Ken Flesher, Associate Professor, UNH Thompson School of Applied Science

Patricia Hannon, Dep't of Environmental Services (DES), Water Division (Clerk)

Thomas Seigle, DES, Waste Management Division

Without a quorum present, at 9:12 AM, Rep. Wheeler, Commission Chair, called the meeting to order. Rep. Wheeler distributed copies of a proposed outline, submitted by Chris Northrop, Dept. of Energy and Planning, for review by Commission members for the final report. She then told the Commission that Chris Northrop was retiring from state service and would no longer be attending future Commission meetings.

Commission members were also introduced to Carl Majewski, UNH Cooperative Extension (Cheshire County), replacing Tom Buob former Commission member, who has also retired.

Chris Rueggeberg, representing Citizens for a Sludge Free Land, also distributed handout material to Commission members.

Patricia Hannon, DES, distributed 4 handouts to Commission members, and then offered a 15 minute presentation to summarize the content of each article. The first article, published in Newsweek Magazine, June 2008, refuted the sensational allegations of an article written by Associated Press (AP) reporters Heilprin and Vineys regarding the use of biosolids for soil lead remediation, in a poor, black, Baltimore neighborhood. The Dean of Johns Hopkins University School of Public Health stated (in Newsweek) that the AP article had been both "misleading and inaccurate". The AP article has been the catalyst for Congress to call for an investigation on issues of land application of biosolids. The second article was the summary page of a research paper written by Dr. Ian Pepper, et al. (University of Arizona) and was published this year in the Journal of Environmental Quality. Their research focused on the sustainability of the land application of Class B biosolids, during which they examined the fate and transport of potential biological and chemical hazards with the biosolids, and the influence of long term biosolids application on soil characteristics. Dr. Pepper, et al. concludes that long term land application of biosolids is sustainable. Ms. Hannon also distributed an article about the use of sewage to grow algae which is then converted into biofuel. She reiterated a statement made by Chris Northrop, OEP, at the last meeting, saying we should be thinking of our waste

streams as a resource. She stated that organic wastes like septage and sludge could be used to produce energy and provide fertilizer, as they do at the Nashua Wastewater Treatment Plant (WWTP). The final article that Ms. Hannon distributed was about the pilot project occurring at the Seabrook WWTP (since June 2008), that reduces the sludge generation at the plant by approximately 70%. Prior to taking her seat, Ms. Hannon also gave a written summary of septage disposal issues in the “North Country” to Reps. Wheeler and Williams for review. Rep. Burton Williams had requested at the last Commission meeting that Ms. Hannon write and submit a brief summary of the septage disposal issues that face towns in the northernmost part of the state.

Next, the guest speaker for the day, George Neill, DES Wastewater Engineering Bureau, took the floor to further expound on the Seabrook project as well as 2 other proposed innovative projects in the state. Mr. Neill explained that the Town of Seabrook was very happy with the preliminary results of the pilot project which has substantially reduced the cost of solids management at the plant by \$13,000 per month. He offered a brief description of the process that first requires thickening of the sludge, which is then added to an aerobic digester where thermophilic bacteria digest and biodegrade the sludge. After substantial digestion has occurred, the sludge is transferred into a bioreactor where strong oxidants (sulfuric acid and peroxide) are added to the mixture, thus degrading and digesting the sludge even further. At the end of the process, the sludge has been reduced by nearly 70% (although the optimal goal is 85% according to company literature). The company provided retrofitting of the solids handling system for the wastewater plant at no cost to the town. The company, PMC BioTec, is also allowing Seabrook to make payments (to them) from the town’s cost savings on sludge handling. The pilot project required no capital expenditure nor posed a financial risk to the Town of Seabrook. Rep. Williams asked what type of wastewater treatment plant does Seabrook have? Mr. Neill answered that it was an oxidation ditch, similar to what Bristol has. Ken Flesher, UNH, asked if this sludge management system could be used on larger plants like Manchester’s WWTP? Mr. Neill answered yes, but most likely the economics would not support that change for Manchester as their current method of incineration seems to be working well for them. Rep. Williams asked if smaller wastewater plants would benefit from this sludge management system? Mr. Neill stated that they could, but a cost effective analysis would have to be performed before that type of decision could be made. Rep. Williams asked if Manchester generates energy from their sludge incinerator? Tom Seigle, DES, answered that Manchester’s wastewater treatment plant uses the heat generated from incineration.

George Neill continued his presentation with a brief description of a recent meeting that he and other DES staff had been invited to attend with the City of Portsmouth and its consultants regarding the wastewater treatment plant the city will be building and how the city intends to manage the sludge that will be generated. The Environmental Protection Agency (EPA) estimates that sludge management costs represent approximately 50% of an operations and maintenance (O&M) budget for a wastewater treatment plant. Portsmouth is considering the purchase of a piece of property adjacent to Schiller Station, owned and operated by Public Service of New Hampshire (PSNH), to which the city would bring the sludge from the wastewater treatment plant for drying.

The (no cost) excess heat from Schiller Station would be used to dry the sludge, which would then be burned at Schiller Station to co-generate electricity. The city has not decided that this is the method the wastewater treatment plant will employ for solids handling, but the proposal is under serious consideration. George Neill stated that it would be an opportune time to plan for a regional sludge handling facility (next to Schiller Station) stating that there would be an economy of scale advantage to the concept. Shelagh Connelly, RMI (audience member), suggested that the Commission should recommend legislation in the final report, to modify the definition of “biomass” in the renewable energy portfolio to include “wastewater solids”. Because wastewater solids were omitted from the definition of “biomass” in the original legislation, power plants are currently not able to receive “renewable energy credits” for their use as an energy source. Chris Rueggeberg (audience member), Citizens for a Sludge Free Land, stated that his handout for today’s session also mentioned the Portsmouth project, and that he and Caroline Snyder (audience member), Sierra Club, had also met with the City of Portsmouth to discuss sludge management issues. Rep. Williams requested that Shelagh Connelly provide a memo to the Commission suggesting legislation to amend the definition of “biomass” for the next legislative session. Caroline Snyder stated that she (and the Sierra Club) would support that legislation.

The final project George Neill spoke about is proposed to occur at the Woodsville WWTP. Mr. Neill thought the pilot project would be underway by the end of next month. The project will employ “micro media filtration” which will remove about 70% of the solid material at the headworks of the wastewater treatment plant. The solid material is harvested and (would be) placed in a gasification unit to generate energy; however, the Woodsville project will not include a gasification unit as part of the pilot. Then, the wastewater is further treated through a sand media which has been inoculated with exotic, anaerobic bacteria that has been harvested along the deep ocean floor near the tectonic plates. Wastewater moves up the columns under pressure to attain (it is claimed by the company) a high level of treatment. The process generates a very small amount of sludge. Mr. Neill stated that DES was skeptical about the process because there is only one plant utilizing this technology and it is located in California. The company wants to demonstrate that their technology is also suitable in cold climates. Ken Flesher, UNH, asked if the bacteria were continuously harvested from the ocean. George Neill answered that he hoped the process was self-sustaining or that they learn how to grow this bacteria in the lab. Rep. Wheeler stated that she had just learned about the fascinating types of life that exist around these deep ocean plates, never expecting that this information would connect with wastewater treatment. Rep. Williams said that there are advances in technology every day. He then asked Mr. Neill if DES had enough staff to keep ahead of the rapidly emerging technologies. Mr. Neill stated that DES could absolutely use more staff, giving as an example that there are only 2 staff members in the Design and Review Section of the Wastewater Engineering Bureau who must review (and approve) all wastewater related projects in the state, prior to the commencement of construction. He went on to say that DES relies heavily on the integrity of environmental engineering consultants; and when DES is skeptical about a new technology we allow pilot projects to be performed (like Woodsville). He stated that it is DES’ responsibility to be careful with public funds, but at the same time, DES is not close-minded to new technologies.

He cited the example of solar powered mixers, now in use at the Rochester WWTP, whose use at the plant began as a pilot project and are now installed permanently. The solar powered mixers are saving the City of Rochester thousands of dollars in electricity costs. Mr. Neill stated that DES is considering rule changes to encourage the use of “green” technologies, and would support changes to the statute that controls the funding of projects through the State Aid Grant to do the same. Using the Nashua WWTP as an example (once again), George stated that investing in the egg-shaped digester (several years ago) was a very expensive option for the City, but the “green choice” paid off through the generation of electricity and the resulting 50 % volume reduction of their solids. After the production of energy, Nashua’s (well digested) biosolids are able to be land applied. Rep. Williams stated that DES should be at the lead on “green” and innovative technologies and it was not up to the municipalities. Rep. Wheeler expressed interest in visiting the Woodsville WWTP when the proposed project was up and running. George Neill, DES, suggested that a “road trip” would be in order.

After Mr. Neill concluded his presentation, Caroline Snyder asked to speak to Commission members in order to offer rebuttal information to the article distributed earlier in the meeting (by Patricia Hannon, DES) relative to the use of biosolids for soil lead remediation in a poor, black neighborhood. Carolyn Snyder read from an article which was published in an international journal and offered the opinion that the original assessment of the situation (in the AP article) was correct.

Rep. Wheeler requested that Shelagh Connelly invite a septage hauler to the next meeting. Ms. Connelly responded affirmatively. Since there were no further questions or comments, Rep. Deborah Wheeler, Commission Chair, adjourned the meeting at approximately 10:25 AM.

**Next Meeting Date, Location and Time:**

**Thursday, September 25, 2008, Room 303, Legislative Office Building  
9:00 AM – 12:00 PM**

**Commission to Study Methods and Costs of Sewage, Sludge, and Septage Disposal**  
**(HB 699, Chapter 253:1, Laws of 2007)**

**Meeting Minutes for June 12, 2008**

**LOB Room 303**

**Commission Members in Attendance:**

Rep. Deborah Wheeler (Commission Chair)

Rep. Burton Williams

Tom Buob, Educator, UNH Cooperative Extension

Ken Flesher, Associate Professor, UNH Thompson School of Applied Science

Patricia Hannon, Dep't of Environmental Services (DES), Water Division (Clerk)

Christopher Northrop, Office of Energy & Planning (OEP)

Thomas Seigle, DES, Waste Management Division

Also seated at the table: Rep. Virginia Heard (invited guest)

Without a quorum present, at 9:10 AM, Rep. Wheeler, Commission Chair, called the meeting to order, and asked Commission Members at the table to introduce themselves. Rep. Wheeler stated that we need to be thinking about the Commission's Final Report due to the Legislature on November 1<sup>st</sup>. She solicited ideas from Commission Members regarding how to begin the creative process. Rep. Wheeler asked the members to review the Commission's assigned duties as described in HB 699. She also stated that she has already received written information from Patricia Hannon, DES, and Prof. James Malley, UNH. She added that the organizations "North East Biosolids and Residuals Association" (NEBRA), "Citizen's for a Sludge Free Land" and "Clean Water Action" have submitted information for consideration, too.

Rep. Williams stated that the Commission has not collected enough information on septage disposal yet, and he thinks the Commission is spending too much time discussing the land application of biosolids. Rep. Heard stated that the presentation on bioreactor landfills given by Prof. Jenna Jambeck, UNH (at the April 22<sup>nd</sup> meeting) was very informative and parts of her presentation should be included in the Commission's Final Report. Rep. Heard also stated that septage and sludge can be dried and used for fuel. Tom Seigle, DES, stated that we should review the Final Report of the HB 1491 Study Commission which studied the needs of NH's wastewater treatment plants (as presented by George Neill, DES, and former HB 1491 Study Commission Member, at an earlier meeting). Shelagh Connelly, RMI (audience member), said that Final Report of the Great Bay Estuary Study Commission (created by SB 70) should now be available on the internet, and suggested the HB 699 Study Commission Members read it.

Caroline Snyder, Citizens for a Sludge Free Land (audience member), said that there are new septic system designs which produce less septage because the systems don't have to be pumped as often. She also said we cannot continue to land apply sludge on farmland because it ruins the land and is not a sustainable practice. She added that Commission

Members should take the time to review the Randolph, VT Study (which she had distributed at an earlier meeting). Doug Bogen, Clean Water Action (audience member) thought Caroline Snyder made some good suggestions and encouraged everyone to read the Great Bay Estuary Study Commission's Final Report which concludes with a summary of 4 proposed wastewater management alternatives involving the towns in NH's seacoast region that participated in the study.

Ken Flesher, UNH, stated that Commission Members should first read documentation related to assigned topics and examine the Commission's goal(s). He stated that there is not one clear management choice but certain management options seem better than others. The Commission should examine the pros and cons of each option. Chris Northrop, OEP, agreed with Ken Flesher, and said the Commission's Final Report should outline the current options for sludge and septage management, summarize alternative management methods, make recommendations that are optional for municipalities and possibly suggest new legislation. Rep. Williams stated that HB 699 was sponsored by people who did not like biosolids or land application. He also stated that he has concurrently been involved with a solid waste study commission and is impressed with recent innovations in the solid waste management field.

Shelagh Connelly, RMI, offered that she heard the HB 699 Study Commission was going to become a "standing" study commission. Ms. Connelly also stated that she took great exception to Caroline Snyder's comments that land application of biosolids is bad for farmland, and emphatically disagreed with the statement. Rep. Heard replied that she thought that there were some troubling aspects to land application. Tom Buob, UNH Cooperative Extension, cautioned about nutrient loading on limited land areas that receive biosolids.

Chris Northrop, OEP, exclaimed that we were jumping ahead of ourselves. First we should pull together the current and new management methods, impacts and costs for septage and sludge; then perhaps something will start to surface. Tom Seigle, DES, stated we should begin with an outline and then fill it in. Rep. Williams said DES can do a lot of the work for the Final Report. He then recommended that the HB 699 Study Commission become a standing commission; he stated that perhaps that will be the suggested legislation put forward in the Final Report. Patricia Hannon, DES, responded that she has submitted several pages of information for consideration to the Commission that (in her opinion) indeed satisfied duties I, II & VII of the Commission, as described HB 699.

Ken Flesher, UNH, suggested the Commission include a case study in the Final Report. Rep. Heard followed up the idea by saying we could use the cost information outlined in Prof. Jambeck's presentation on bioreactor landfills. Caroline Snyder stated again that (in her opinion) land application of biosolids degrades farmland and is not a sustainable practice.

Judy Silva, NH Municipal Association (audience member), expressed concern that the Commission might feel they had the right to mandate municipalities to adopt newer and

costlier technologies for septage and sludge management. She cautioned the group about the prohibition on unfunded mandates. Judy Silva spoke of her work with the Septage Task Force a few years ago and how there had been a recommendation that the state build (own and operate) a septage disposal facility, but the project never proceeded due to lack of funding. She stated that without funding, there is limited opportunity for the Commission to offer meaningful recommendations to municipalities. Caroline Snyder said she thought there were a number of federal grants for renewable energy technologies that could involve sludge and septage management practices.

Rep. Williams brought the discussion back to septage management. Patricia Hannon, DES, spoke of some of the issues the state is facing in regard to septage management, to include new and stringent phosphorus limits (on effluent) in recently issued EPA permit renewals to wastewater treatment plants. Ms. Hannon spoke about septage being rich in phosphorus and that over 75% of the state's septage is disposed at wastewater treatment plants. She stated that in the future, wastewater treatment plants may have the overall capacity to accept septage, but be unable to do so because of newly imposed regulatory limits on phosphorus concentrations in the permit conditions. She spoke of the successful "Pittsfield Pilot Project", where septage is dewatered and treated for phosphorus removal before septage filtrate is introduced into the plant. This method of septage pre-treatment has allowed the Pittsfield WWTP to increase septage receiving from 60 thousand gallons per year to 3 million gallons per year. The increased septage disposal capacity at the Pittsfield WWTP has provided a septage disposal solution for 5 additional neighboring towns. She added that due to the hard work of the Septage Task Force (mentioned earlier by Judy Silva) and the support of the NH Legislature, a grant program was developed to provide municipalities up to 50% of the eligible costs for funding improvements at wastewater treatment plants that increase septage disposal capacity. She also explained to the Commission why DES has remained proactive in creating adequate in-state septage disposal capacity, in order to keep septage pumping and disposal an affordable activity for the average homeowner. Ms. Hannon went on to explain how proper care and maintenance of a septic system directly relates to protecting the state's water resources. She added that because fuel costs are soaring, there is increased economic and environmental motivation to keep travel distances short to septage disposal facilities. Ms. Hannon stated that much of the information she had just presented is contained in the pages she has written for inclusion in the Commission's Final Report. Copies of the submittal were then distributed to Commission members for review.

Rep. Williams inquired about new technologies for sludge dewatering, as the town of Bristol was interested in purchasing a used "plate and frame" press for the wastewater treatment plant. Tom Seigle, DES, spoke of plate and frame presses, belt filter presses, screw presses and centrifuges. Mr. Seigle mentioned that the Winnepesaukee River Basin Program recently installed centrifuges. He also spoke about incineration of sludge; the method the City of Manchester employs which also recovers an energy benefit. Rep. Williams inquired about stack emissions. Mr. Seigle responded by saying Manchester's incinerator has a scrubber and the emissions are tested by the Air Resources Division of DES. Chris Northrop, OEP, offered an opinion that perhaps our thinking should be turned around about the disposal of septage and sludge. Perhaps the Commission should

begin viewing this material as a resource to municipalities. Joel Anderson, Legislative Researcher (audience member), stated that the language in HB 699 allows the Commission freedom to make recommendations in the Final Report.

Caroline Snyder asked Pat Hannon, DES, to provide information on an energy recovery pilot project (she had heard) was occurring at the Woodsville WWTP. She stated that Executive Councilor Burton was interested in the project. Ms. Hannon responded by saying she did not have information on the project with her to share with Commission Members. Shelagh Connelly contributed that Woodsville generates class A biosolids which provides some relief to farmers from the current fertilizer shortage.

Both Rep. Williams and Chris Northrop, OEP, agreed that the Commission's Final Report needs to capture alternative septage and sludge management methods and make recommendations. Rep. Williams also stated that New Hampshire's "North Country" has a septage disposal capacity deficit, and perhaps DES could write about it. Chris Northrop stated that the Commission should start its Final Report by summarizing the outline, and Commission members could fill in the gaps via e-mail prior to our next meeting.

As Rep. Wheeler was preparing to adjourn the meeting, Caroline Snyder asked for and received permission to handout some articles which raise concerns about the land application of biosolids (2 of the 5 articles were written by Caroline Snyder).

Rep. Wheeler stated that the room in which we were currently meeting is scheduled to be renovated during July; therefore, the next meeting should be scheduled for August. Since there were no further questions or comments, Rep. Wheeler, Commission Chair, adjourned the meeting at approximately 10:45 AM.

**Next Meeting Date, Location and Time:**

**Tuesday, August 12, 2008, Room 303, Legislative Office Building  
9:00 AM – 12:00 PM**

*Commission to Study Methods and Costs of Sewage, Sludge, and Septage Disposal*  
*(HB 699, Chapter 253:1, Laws of 2007)*

**Meeting Minutes for April 22, 2008**

**LOB Room 303**

*Commission Members in Attendance:*

Rep. Deborah Wheeler (Commission Chair)

Rep. Burt Williams

Tom Buob, Educator, UNH Cooperative Extension

Patricia Hannon, Dep't of Environmental Services, Water Division (Commission Clerk)

Tom Seigle, Dep't of Environmental Services (DES), Waste Management Division

Richard Uncles, Dep't of Agriculture, Markets and Food (DAM&F)

Also seated at the table: Rep. Virginia Heard (invited guest)

Without a quorum present, at 1:05 PM, Rep. Wheeler, Commission Chair called the meeting to order, and distributed copies of the meeting agenda.

The first presenter of the afternoon was Jenna R. Jambeck, Ph.D., Research Assistant Professor, Environmental Research Group, Dep't of Civil Engineering, University of New Hampshire (UNH), who spoke about "Bioreactor Landfills". Professor Jambeck offered 2 handouts to the Commission members. One was titled "Best Management Practices Guide for Co-Disposal of Biosolids at Lined Landfills", and the other was a "Landfill Overview" that was a copy of a PowerPoint presentation on the fundamentals of landfill design, construction and operation. She spoke of state and federal regulations that pertain to landfill design, construction and operational issues. Rep. Wheeler asked how long the life of a landfill liner is. Dr. Jambeck answered that the liner is designed to last (at least) for the proposed life of the landfill plus 30 years of post closure monitoring. Dr. Jambeck then spoke of the formation of methane due to the biodegradation of the wastes. Rep. Williams inquired about the amount of gas the Rochester Landfill produces-and the project to supply UNH with waste gas generated electricity was briefly discussed. The professor told us that methane is a much stronger greenhouse gas than carbon dioxide, and there are varying opinions among researchers as to the amount of fugitive gas emissions released from landfills (emissions not captured) into the atmosphere. The opinion ranges are wide, between 20-80% of methane emissions may escape (uncaptured) from the landfill. Rep. Williams asked about the advantages of adding biosolids to the landfill. Prof. Jambeck stated that (in the correct amount) the addition of biosolids helps to generate (more) gas faster. Tom Seigle, DES, asked what was the optimal ratio. She answered if the amount of biosolids increases beyond 25% (by volume) of the waste stream, it can result in landfill operational challenges (like side slope instability). Prof. Jambeck spoke of a "bioreactor" landfill research project that she worked on in Florida (and was the focus of her "Best Management Practices" handout). The State of Florida funded the project for 8 million dollars. She stated that the landfill

option for biosolids has advantages and disadvantages like any other disposal option. She also stated that current research has demonstrated that leachate characteristics did not vary in a statistically significant way when biosolids were co-disposed with garbage in a landfill. Although, she thought there may be some concerns about mercury. Richard Uncles, DAM&F, asked if there were any bioreactor landfill projects that were exclusive for biosolids. Dr. Jambeck answered: “no”.

The next presenter of the afternoon was Ned Beecher, Executive Director, Northeast Residuals and Residuals Association (NEBRA). Mr. Beecher had 4 handouts for the Commission members. Mr. Beecher spoke of the recent negative articles on biosolids published by the Associated Press, and written by Heilprin and Vineys. He provided information that the articles were somewhat “sensational” and not representative of balanced reporting, stating that he had been interviewed for the article and his statements were not even mentioned. Mr. Beecher also spoke of the concerns of “Personal Care Products and Pharmaceuticals” (PCPPs) being prevalent in our environment, and the detection of small amounts of PCPPs in drinking water supplies around the country. He also spoke of a recent US District Court decision in Georgia relative to the land application of biosolids (which occurred during 1979-1990) and the court’s decision that biosolids land application was the cause of poisoning the land and killing the farmer’s cows. He spoke of the complexities of the case and the amount of time that had passed since the suspect land application had occurred. Mr. Beecher also handed out an article on using Class A compost (in a poor black neighborhood of Baltimore, MD) to remediate the bioavailability of lead in the soil. He stated that there is a lot of political controversy about this activity-and the US Senate will be looking into it. He provided a handout from the Kennedy Krieger Institute and Johns Hopkins University which explained the project and offered supporting scientific documentation of the validity of the remediation method. Lastly, he spoke of the greenhouse gas emissions analysis of biosolids management in Merrimack, NH, and handed out information on that subject, too. In summary, he stated the analysis shows that green house gas emissions are significantly increased by disposing biosolids in the landfill as opposed to the current method that the Town of Merrimack employs, which is composting. In closing he stated that the Earth Day message he wanted to leave with the group was that the state (and the nation) should be using biosolids and septage in the highest manner, that we can extract both energy and fertilizer value from these renewable resources. A copy of Mr. Beecher’s remarks was distributed to the Commission members.

Next, the meeting continued with a presentation from Caroline Snyder, Ph.D., representing the local chapter of the Sierra Club and Citizens for a Sludge Free Land. She distributed handouts to Commission members that provided replies (from Citizens for a Sludge Free Land) to the DES responses regarding statements in a handout that she distributed at the last Commission meeting, titled: “Myths About Land Application of Sewage Sludge”. Caroline Snyder expressed hope that DES would not feel the need to respond to the latest comments contained in the current handout. Dr. Snyder also gave Commission members copies of the articles (referenced above) written by Heilprin and Vineys, published by the Associated Press which focused on 2 events: 1) a Georgia farmer who recently won a monetary settlement from the USDA claiming the use of

biosolids poisoned his land and killed his cows, and 2) a poor, black Baltimore, MD, neighborhood where biosolids based fertilizer was utilized for soil lead remediation. Dr. Snyder spoke of the recent Georgia farm court case, and read a paragraph from the judge's 45 page decision which accuses senior EPA officials of suppressing some scientific data relative to biosolids land application research. In regard to the use of biosolids for lead remediation in Baltimore, she stated that even after treating the soil, the lead was still there. She then stated that it was clear to her that managing biosolids in a bioreactor landfill should be the chosen method for disposal in NH (and the nation). She also stated that she hoped this Commission did not become a forum where the issues of biosolids land application were debated because (in her opinion) it was clear there is no reason for such a debate as land application is not a viable option.

Lastly, Patricia Hannon, DES, (although not on the agenda) asked if she could respond to some of the information presented by Caroline Snyder. Patricia Hannon first spoke to the use of biosolids for soil lead remediation. She stated that research has demonstrated the land application of biosolids does not make the lead (in the soils) disappear but instead significantly reduces the bioavailability of the lead to any person or animal that comes in contact with the treated soils. The use of biosolids also allows for a vegetative cover to grow on the soil, thereby reducing erosion and fugitive dust. The fertilizer that had been used (in this specific instance) was available at local hardware stores and was used in Maryland on golf courses and residential gardens. Then, Ms. Hannon reminded the Commission that the Georgia court case involved a land application activity that was conducted between 1979-1990, long before the current federal regulations were in effect (1993). In addition, she stated, the State of New Hampshire's regulations for land application of biosolids are far more stringent and comprehensive than the federal regulations, and therefore, the issues involved with the Georgia case are not applicable to New Hampshire. She concluded her comments by handing out a summary comparison chart elaborating the differences between the federal (40 CFR Part 503) and state regulations (Env-Wq 800).

Since there were no further questions or comments, Rep. Wheeler, Commission Chair, adjourned the meeting at approximately 3:05 PM.

**Next Meeting Date:**

**Thursday, June 12, 2008, Room 303, Legislative Office Building  
9:00 AM – 12:00 PM**

**Commission to Study Methods and Costs of Sewage, Sludge, and Septage Disposal**  
**(HB 699, Chapter 253:1, Laws of 2007)**

**Meeting Minutes for November 15, 2007**

**LOB Room 303**

**Commission Members in Attendance:**

Rep. Deborah Wheeler (Chair)

Rep. Burton Williams

Ken Flesher, Associate Professor, UNH Thompson School of Applied Science

Patricia Hannon, Dep't of Environmental Services (DES), Water Division (Clerk)

Christopher Northrop, Office of Energy & Planning (OEP)

Thomas Seigle, Dep't of Environmental Services, Waste Management Division

At approximately 9:40 AM, Rep. Wheeler, Commission Chair, called the meeting to order, and asked Commission members if they had received the HB 699 interim report which had been filed with the Legislature on November 1<sup>st</sup>. All replied affirmatively. Rep. Wheeler then requested that Doug Bogen, Program Director, Clean Water Action (CWA) continue where he had finished presenting information to the Commission at the October 25th meeting. Mr. Bogen resumed his place as speaker, but said that his presentation was essentially done, although he would be glad to answer questions or have a discussion on the issues he had presented previously. Ken Flesher, Associate Professor, UNH Thompson School, asked Mr. Bogen his opinion about centralized vs. decentralized wastewater systems, and what was truly the goal? Was it to maintain natural systems or to properly dispose of waste in the most economical way possible? Mr. Bogen thought that sending treated wastewater to the ocean was not preferable to keeping the treated wastewater in the watershed. He advocated for cluster housing, and to set-up communities in the future to provide for better treatment of water with shared septic systems that were more efficient to operate. Prof. Flesher stated that cluster systems can have high start-up costs, increased maintenance requirements, and asked "who is responsible for the proper operation and maintenance of these systems?" Mr. Bogen did not know who would be responsible. Prof. Flesher added that decentralized cluster systems often have many pumps to maintain, which he would view as undesirable, difficult to maintain and costly to operate. Would there be cost sharing? Mr. Bogen stated that operation and maintenance costs would be lower than a conventional (centralized) wastewater treatment plant, but he would have to find out more detailed information. Patricia Hannon, DES, stated that decentralized systems would periodically generate septage for disposal when tanks were pumped during proper maintenance, and asked where this material would be disposed if we no longer had conventional wastewater treatment plants (currently 77% of NH's septage is disposed at "conventional" wastewater treatment plants). Mr. Bogen suggested that perhaps we should have both kinds of facilities.

Christopher Northrop, OEP, stated that the septage disposal issue in NH is cause for concern. He asked what are some of the alternatives for septage disposal? Mr. Bogen spoke of a facility (the "Eco Machine") in So. Burlington, VT, which was a research facility, but is no longer operating due to lack of funding. The "Eco Machine" was an innovative septage disposal facility which utilized plants and natural systems for water purification. He went on to say that one size does not fit all, and he envisions that this country will be redesigning its environmental infrastructure over the next 20 years. Patricia Hannon, DES, spoke of 2 septage-only facilities in NH where plants and constructed wetlands have been used as the treatment process. There is one in East Kingston, built over 10 years ago with federal grant money, and is still operational today. There was one (now closed) which utilized a green house setting and constructed wetlands located in Weare. Ms. Hannon offered to bring a DES publication on the East Kingston Facility to the next meeting. She reminded Commission members that there were (still) solids to manage at these 2 facilities at the end of the treatment process.

Rep. Williams stated that the Commission needed to return to the task at hand, namely, what to do with septage and sludge? He stated that he hated to see the landfilling of sludge which could be beneficially used on farm fields; and we should encourage new technologies (but be wary of those technologies not fully proven.) Rep. Williams asked if DES could come up with the costs for operating a wastewater treatment plant (per household) vs. the costs for septic system construction? Ms. Hannon stated she could bring in some ballpark figures to the next meeting.

Shelagh Connelly, President, RMI, Inc. (a company that land applies biosolids and other residuals in New England) was recognized from the audience, and told Commission members about a number of web-sites containing topical information about wastewater technologies that may be well-suited to small communities (links to various web-sites had been e-mailed to Commission members). She asked if the Commission would like a presentation summarizing some of this information at the next meeting? Christopher Northrop, OEP, said he would like to see a presentation on systems suitable for NH. Ms. Connelly also spoke of the recent Water Environment Federation Conference held in San Diego, with 19,000 attendees from around the world, all gathered to discuss water issues that are of concern to the planet. She then spoke of simple technology currently being employed in Nashua and Franklin which significantly reduces the amounts of sludge generated at these 2 wastewater treatment facilities. In the case of Nashua's egg shaped digester, the methane is captured to create electricity to help power the facility.

Ms. Connelly also spoke of the recent report issued by the HB1491 Study Commission assessing the needs of NH's publicly owned wastewater treatment plants. The report states that 1 billion dollars of funding will be required over the next 10 years by NH's wastewater treatment plants in order to make the necessary upgrades. Most plants in the state (and in the nation) were built during the 1970's (after the adoption of the Clean Water Act, 1972), with 90% federal construction grant funding, and have reached the end of their projected lifespan. She then stated that Sen. Cilley was preparing a resolution for

the upcoming legislative session to support increased federal funding for upgrading wastewater treatment plants. Both Rep. Williams and Ms. Hannon stated that availability of state and federal grant money plays a very important role in municipalities being able to upgrade environmental infrastructure or employ new technologies. Thomas Siegel, DES, responded by saying that economics and changing regulations drive the market. He supported the memo provided to the Commission at the last meeting by Dr. Malley, UNH, which offers good practical advice on wastewater/sludge management for municipalities, and suggests that they keep their options open. (Although not stated at this meeting, it should be noted that Dr. Malley was also a member of the HB 1491 Study Commission.)

Rep. Williams stated he wanted to see DES take a more active role in recommending new technology. Ms. Hannon responded by saying that the department is proactive on these issues, and already has staff in the “Wastewater Operations Section” that offers technical assistance to municipalities and provides educational opportunities about emerging technologies. In November, DES provided 3 informational meetings at different locations around the state for local officials from municipalities who have “stressed” wastewater treatment plants.

Ms. Connelly added that the NH Waster Pollution Control Association publishes a newsletter “The Collector” which often contains information about new technologies being employed by wastewater treatment facilities around the state. She added that not all new technology is expensive or “high-tech”, and described a freeze-thaw sludge dewatering sock being used by 2 wastewater treatment facilities in the state. She also asked us to remember that whether we are reducing the volume of sludge generated at a facility or making electricity from sludge through the use of a bioreactor, there are still solids to manage at the end of the process.

Rep. Wheeler, Commission Chair, thanked Mr. Bogen and Ms. Connelly for the information provided. She then distributed some written material provided by Caroline Snyder, representing the Sierra Club.

Due to the proximity of the holidays, it was suggested that we not meet again until January. Although a meeting date of January 17<sup>th</sup> was initially agreed upon, new information has arisen (subsequent to this meeting) regarding the room availability-which has now put the scheduling of our next meeting date/time and location on hold temporarily.

**Next Meeting Date: (Tentative) January 17, 2008, Location and Time: TBA**

**Commission to Study Methods and Costs of Sewage, Sludge, and Septage Disposal**  
**(HB 699, Chapter 253:1, Laws of 2007)**

**Meeting Minutes for October 25, 2007**

**LOB Room 303**

**Commission Members in Attendance:**

Rep. Deborah Wheeler

Rep. Burton Williams

Tom Buob, Educator, UNH Cooperative Extension

Matthew Cahillane, Dep't of Health & Human Services (DHHS), Public Health Services

Ken Flesher, Associate Professor, UNH Thompson School of Applied Science

Patricia Hannon, Dep't of Environmental Services (DES), Water Division

Christopher Northrop, Office of Energy & Planning (OEP)

Thomas Seigle, Dep't of Environmental Services, Waste Management Division

At 9:35 AM, Rep. Wheeler, Commission Chair, called the meeting to order. A "hand-out" entitled "Thoughts and Experiences on Sewage Sludge Disposal for HB 699 Study Commission" written by James P. Malley, Jr. Ph.D., Professor of Civil Engineering, and Chairman of the Environmental Engineering Program at UNH (a Commission member who was unable to attend today's meeting), was provided to the Commission by Ken Flesher, Associate Professor, UNH Thompson School and Commission member.

The meeting continued with a PowerPoint presentation by Shelagh Connelly, President, RMI, Inc. (a company that land applies biosolids and other residuals in New England) and Joseph Ducharme, Jr., P.E., President/CEO, TTG Environmental Consultants, LLC, both speakers representing the NH Water Pollution Control Association (NHWPCA). NHWPCA is a non-profit organization for wastewater professionals, whose goals include protecting NH waters, providing education to citizens about water conservation, and promoting a cleaner environment. The focus of the 40 minute presentation was a summary of current processing, treatment and management methods for sewage, sludge and septage in New Hampshire and around the nation. They reiterated some of the NH septage and sludge management statistics that the Commission heard in the presentation from Patricia Hannon, Supervisor, DES Residuals Management Section (and Commission member) regarding "Septage and Sludge Management in New Hampshire" during the September 20<sup>th</sup> meeting. The speakers stressed the importance of having a stable environmental regulatory framework upon which municipalities plan multi-million dollar facilities for sewage, sludge and septage treatment/reuse/disposal. "Handouts" of the presentation were provided. Also discussed were issues of energy recovery from sludge as well as the need for greater pollution prevention (P<sub>2</sub>) programs. Pollution prevention programs serve to improve the quality of wastewater, sludge and septage through source reduction of contaminants.

The next speaker of the morning was Doug Bogen, Program Director of Clean Water Action (CWA). CWA is a national nonprofit organization that works for the attainment of clean, affordable water through outreach and education. Mr. Bogen offered a 20 minute presentation on current water issues. Mr. Bogen stated that he agreed with the broad concepts presented by Ms. Connelly and Mr. Ducharme. However, Mr. Bogen felt that there should be a new approach to water management issues that is not so compartmentalized, but instead more in tune with natural systems. Mr. Bogen distributed some "hand-out" materials to support his presentation. He described man-made wetlands and greenhouse technologies where plants are used to treat and remove contaminants from wastewater. He spoke of decentralized wastewater units being preferable (in some cases) to large, regional wastewater treatment plants. Mr. Bogen stated that in his opinion, conventional wastewater treatment plants (as we know them now) will be obsolete in the future. Since time was running short, Rep. Wheeler asked Mr. Bogen to return to the next Commission meeting to complete his presentation. Rep. Wheeler also suggested that Chris Rueggeberg, representing Citizens for a Sludge Free Land, who had again requested time to address the Commission, return to the next meeting for that purpose.

Rep. Wheeler, Commission Chair, adjourned the meeting at approximately 11:00 AM.

**Next Meeting Date: November 15, 2007, at 9:30 AM,  
Room 303, Legislative Office Building**

*Commission to Study Methods and Costs of Sewage, Sludge, and Septage Disposal*  
*(HB 699, Chapter 253:1, Laws of 2007)*

**Meeting Minutes for September 20, 2007**  
**LOB Room 303**

*Commission Members in Attendance:*

Rep. Deborah Wheeler

Rep. Burton Williams

Matthew Cahillane, Dep't of Health & Human Services (DHHS), Public Health Services

Ken Flesher, Associate Professor, UNH Thompson School of Applied Science

Patricia Hannon, Dep't of Environmental Services (DES), Water Division

Christopher Northrop, Office of Energy & Planning (OEP)

Thomas Seigle, Dep't of Environmental Services, Waste Management Division

Richard Uncles, Dep't of Agriculture, Markets & Food (DAMF)

At 2:45 PM, Rep. Wheeler, Commission Chair, called the meeting to order once a quorum was present. Rep. Wheeler distributed copies of the minutes from the Commission's first meeting on August 9<sup>th</sup>. The first activity on the afternoon's agenda was to have a PowerPoint presentation from Patricia Hannon, Supervisor, DES Residuals Management Section (and Commission member) regarding "Septage and Sludge Management in New Hampshire". During the presentation Ms. Hannon spoke of the state and federal regulations pertaining to septage and sludge management. She provided statistical information about the amounts of both septage and sludge that are currently generated in the state and the methods by which they are either beneficially used or disposed. Since NH has been the fastest growing state in New England for 4 straight decades, and 80% of new development has taken place in non-sewered areas, the significant trend for increased septage generation was noted. Hard copies of the presentation were distributed to Commission members (electronic or paper copies of the presentation are available).

Christopher Rueggeberg, an audience member representing Citizens for Sludge Free Land, requested and was given permission to address the Commission. Mr. Rueggeberg spoke of new technologies for sludge and septage management being employed elsewhere in the nation, such as bioreactor landfills and high temperature gasification facilities. He expressed concerns regarding land application and offered written material to the members of the Commission and audience supporting his views. He requested permission to show the Commission a movie at the next meeting called "Sludge Diet". Rep. Williams responded to the suggestion by saying the movie's content and focus are not pertinent to the legislatively mandated duties of this study Commission.

Shelagh Connelly, a member of the audience representing RMI, Inc. (a company that recycles residuals) was recognized by Rep. Wheeler and stated that she did not realize the Commission was amenable to receiving presentations from the audience. She then

requested the opportunity to provide a presentation at the next Commission meeting. Rep. Wheeler responded positively.

Next, Doug Bogen, a member of the audience representing Clean Water Action, stated he was very interested in the subject of septage and sludge management and had information he would like to share with the Commission. He requested and was granted the opportunity to give a presentation at the next meeting, also.

The Commission's next meeting date and time was scheduled for October 25<sup>th</sup> at 9:30 AM. After scheduling the next meeting, Richard Flanders, a member of the audience, and Director of the Winnepesaukee River Basin Program (Franklin Wastewater Treatment Plant, a state owned and operated facility, serving 10 towns in the Lake's Region, which receives a significant portion of the state's septage for disposal and land-applies all of their wastewater treatment plant's biosolids) asked for the opportunity to speak at another meeting, as he was unable to be present on October 25<sup>th</sup>. Mr. Flanders was granted permission to give a presentation at a future date.

Rep. Wheeler, Commission Chair, adjourned the meeting at approximately 3:45 PM.

**Next Meeting Date: October 25, 2007, 9:30 AM,  
Room 303, Legislative Office Building**

**Commission to Study Methods and Costs of Sewage, Sludge, and Septage Disposal**  
**(HB 699, Chapter 253:1, Laws of 2007)**

**Meeting Minutes for August 9, 2007**

**Commission Members in Attendance:**

Rep. Scott Merrick

Rep. Deborah Wheeler

Rep. Burton Williams

Matthew Cahillane, Dep't of Health & Human Services (DHHS), Public Health Services

Patricia Hannon, Dep't of Environmental Services (DES), Water Division

Christopher Northrop, Office of Energy & Planning (OEP)

Thomas Seigle, Dep't of Environmental Services, Waste Management Division

Richard Uncles, Dep't of Agriculture, Markets & Food (DAMF)

Once a quorum was present, Rep. Merrick (acting as Interim Chairman), called the meeting to order shortly after 2:30 PM. Commission members seated at the table were asked by Rep. Merrick to introduce themselves. Nominations were taken for Commission Chair, Vice Chair and Clerk. Rep. Wheeler was appointed Chairperson of the study commission, Rep. Merrick was selected as Vice Chair, and Patricia Hannon, DES was appointed Clerk. Since none of the UNH representatives were in attendance, it was suggested that the Commission write a letter to the University to encourage their participation. Richard Uncles, DAMF stated that the Legislative record indicated that some of the UNH appointments have been made. Rep. Williams suggested that we do not hold another meeting until September when it is more likely to get better participation. Then, the group scheduled the next meeting date for the Commission on September 20<sup>th</sup>, at 2:30 PM, *possibly* in Room 303 of the Legislative Office Building (but the location is unconfirmed). Rep. Merrick, Vice Chair suggested that we briefly discuss the duties of the Commission. Rep. Wheeler, Chair said that we need to look the current costs involved in managing sewage, sludge and septage as well as the economics of alternative management methods. Rep. Merrick, Vice Chair stated that we need to look at the definition of "biosolids". Patricia Hannon, DES stated that the current definition has been in state statute since 2000 and in May 2007 the Joint Legislative Committee on Administrative Rules (JLCAR) approved a new set of Sludge Management Rules which incorporates the statutory definition of "biosolids". Rep. Merrick, Vice Chair suggested that DES provide a refresher for the Commission on land application at the next meeting. Rep. Williams suggested that the presentation by DES include copies of the Sludge Management Rules (Env-Wq 800) and the Septage Management Rules (Env-Wq 1600). Rep. Williams suggested that studying sewage did not make sense as it simply flows through a pipe. He suggested that the Commission needs to keep in mind the definition of terms. Rep. Merrick, Vice Chair asked that a list of Legislative Bills on the subject of septage and sludge which were passed in the past 7 years also be provided for the next meeting. Joel Anderson, House of Representatives, Committee Researcher (seated in the gallery) stated that he would be able to put the list together for the next meeting.

Matthew Cahillane, DHHS was asked to present a list of diseases that could be issues of public health concern with inappropriate disposal of septage or sludge, at the next meeting. Rep. Wheeler, Chair stated that the Interim Report was due from this Commission (to the Legislature) on November 1, 2007. Rep. Merrick, Vice Chair asked members what they thought the report should contain. Rep. Williams offered that the report should state that the Commission agrees with the definition of “biosolids” and finally put that issue to rest. The Interim Report should discuss the public health aspects of land application of septage and sludge and look at what the state’s current septage and sludge management methods are. Richard Uncles, DAMF asked how much septage and sludge is land applied annually in NH and what are the trends for those management methods. Rep. Williams said that the trends for septage generation should be looked at, and where the state is headed. Rep. Wheeler, Chair asked if (most) septage was disposed at wastewater treatment plants. Patricia Hannon, DES stated the majority of septage is disposed at wastewater treatment plants (WWTPs), and that DES has already compiled statistical data on septage and sludge management methods which would be included in the DES presentation for the next meeting. Christopher Northrop, OEP asked about the background of HB 699 which created this study commission. Rep. Merrick, Vice Chair (one of the HB 699 co-sponsors) stated there are a number of *long term* septage and sludge management issues to consider, without jumping to conclusions. Richard Uncles, DAMF asked what happened to the House Bill (last session) which addressed the issues of wastewater treatment plants refusing to take septage from towns with land application bans. Patricia Hannon, DES stated that HB 836 was voted Inexpedient to Legislate (ITL). Asking a follow-up question, Richard Uncles, DAMF asked if the Franklin WWTP has continued its policy of imposing a surcharge on the septage tipping fee if the septage originated in a town with a land application ban. Patricia Hannon, DES stated that to the best of her knowledge, no changes had been made to the septage pricing structure at the Franklin WWTP. Rep. Wheeler, Chair asked the members what else should be included in the Interim Report, and Rep. Merrick, Vice Chair replied that maybe we should wait until we hear from the other members at the next meeting. Rep. Wheeler, Chair adjourned the meeting at approximately 3:30 PM.

**Next Meeting Date: September 20, 2007, 2:30 PM, Location TBA**