Barnes Aquifer

Protection Advisory Committee

Report on Fiscal Year 2009 Activities
(July 2008 to June 2009)

Prepared by the
Pioneer Valley Planning Commission
In cooperation with
The Barnes Aquifer Protection Advisory Committee

November 2009

BARNES AQUIFER PROTECTION ADVISORY COMMITTEE
(BAPAC)

Fiscal Year 2009, July 2008 to June 2009 Annual Report
Prepared by Pioneer Valley Planning Commission

Acknowledgements

The Pioneer Valley Planning Commission would like to acknowledge the contributions of the municipal members of the Barnes Aquifer Protection Advisory Committee:

Charles Darling, Westfield, 2007-2008Chair
Kenneth Taylor, Westfield
Michael Czerwiec, Easthampton, 2007-2008 Vice Chair
Robert Newton, Easthampton
Thomas Newton, Easthampton
Stuart Beckley, Easthampton
Chester Seklecki, Easthampton
Jeff Burkott, Holyoke
Alicia Zoeller, Holyoke
John Barrett, Holyoke
Joseph Slattery, Southampton
Mark Girard, Southampton

PVPC Staff Credits

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Pioneer Valley Planning Commission

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James Kenneth "Ken" Taylor Dedication
1929-2009

Ken Taylor was a fervent advocate for the Barnes Aquifer and a founding member of the Barnes Aquifer Protection Advisory Committee (BAPAC). As a biologist and passionate environmental advocate he brought a wealth of knowledge to BAPAC. He served over 40 years as a professor, including 15 years as Chairman of the Biology Department at Westfield State College. A very dedicated member of city government, he served over 40 years as Chairman of the City of Westfield Conservation Commission and played an important role in the growth of Westfield. He was recently recognized as the longest serving Chairperson in Massachusetts' history. A long-standing member of the Westfield River Watershed Association, he held various leadership positions, including President, in over 50 years of service. More recently he helped found the Winding River Land Conservancy in 1998 and was President from 2004 to 2006. He was also a long time member of the Hampden Conservation District and the Massachusetts Association of Conservation Districts. Ken's unwavering commitment to the long term protection of the Barnes Aquifer will be remembered and carried out in through the on-going mission of BAPAC.

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Summary of Accomplishments for Fiscal Year 2009

BAPAC reviewed and commented on 11 Developments of Regional Impact in Westfield, 6; Southampton, 3 (one of these spanned the Easthampton city line); and, Easthampton, 3. Commercial, industrial and residential development pressure continues to be a concern for the Zone II recharge area.

With assistance from Antioch graduate student Julie Thomason, BAPAC performed a literature review of structural best management practices (BMPs) for aquifer protection. BMPs were evaluated for their effectiveness at pollutant removal and recharge. The literature review included Low Impact Development techniques. Based on the literature review, there appears to be much research and data that is still needed to determine whether or not LID systems offer the level of pollutant removal prior to recharge necessary for continued long-term protection of the aquifer.

Mapping of monitoring wells within the Zone II was completed under a grant from the Massachusetts Environmental Trust. The well log data was used to input information about the structure of the aquifer throughout the Zone II into a model developed by Professor Robert Newton at Smith College and Hampshire College student Nicholas Newcomb. Using this model, contamination from the Northampton Landfill on Glendale Road was predicted to reach the Maloney Well in Easthampton due to depleted dissolved oxygen levels which impact geochemistry and transport of certain metals.

A fourth and fifth round of private well sampling under the Road Salt Impact Study were performed by the Town of Southampton, City of Westfield and Smith College. In April 2008, 90 wells in Southampton, Westfield and Holyoke were sampled for sodium, chloride, nitrate nitrogen, calcium, magnesium, potassium, lithium, sulfate, nitrate, dissolved silica, arsenic, lead, barium, and hardness. Of those samples, 38 were salt impacted from road salt and 17 other wells had naturally high sodium levels. The results of the June 2009 sampling were not available as of the writing of this report.

The 2009 Green Award was presented to Professor Robert Newton and the Center for Aqueous Biogeochemistry Research at Smith College during National Drinking Water Week May 3-9, 2009 at Smith College. Professor Newton has been an active member of the Barnes Aquifer Protection Advisory Committee for

15 years. His expertise as a hydrogeologist has been invaluable to BAPAC in evaluating plans and proposals for developments of regional impact over the Barnes Aquifer.

Recommendations for Fiscal Year 2010

BAPAC should continue to promote regional action for protecting inter-municipal water resources. The key issues that should continue to be addressed through FY 2010 are:

- Support the implementation of best management practices for developments occurring within the recharge area through commenting on Developments of Regional Impact (DRI);
- Identify preferred Best Management Practices for pollutant removal and recharge and perform outreach to Planning Boards and developers to encourage better systems for aquifer protection;
- Seek funding to perform outreach to residents within TCE affected areas of the Zone II to ensure all private well users are not consuming contaminated water;
- Continue to seek funding to host a training workshop and discussion forum about the Barnes Aquifer for municipal officials;
- Seek funding to identify important parcels for the protection of the Barnes Aquifer;
- Continue to develop strong arguments and scientific data to support BAPAC's DRI comments; and,
- Continue public outreach and education about issues concerning the Barnes Aquifer and actions residents can take to ensure its protection.

INTRODUCTION

Importance of the Barnes Aquifer

The Barnes Aquifer has been widely recognized as one of the Commonwealth's most important regional groundwater supplies. The aquifer extends over 12 miles, providing water for over 60,000 residents in the communities of Easthampton, Southampton and Westfield. Although the aquifer extends into Holyoke, the City no longer draws water from the aquifer due to TCE contamination at its wells, closing the Pequot and Coronet Homes Wells in 1988. Nine active municipal wells and a large (108 unit) well field tap the regional aquifer, drawing a total safe yield of 21 million gallons per day. Portions of the aquifer in Easthampton have been designated a "sole source aquifer" by the U.S. Environmental Protection Agency.

Regional Approach to the Barnes Aquifer

The size, importance, and inter-municipal geography of the Barnes Aquifer demands regional cooperation and regional solutions to fully protect this critical water supply. Recognizing this, the PVPC and municipal officials from Easthampton, Holyoke, Southampton, and Westfield convened an initial meeting in March of 1988 to discuss cooperative strategies for protecting the Barnes Aquifer. Out of this meeting grew the idea for creating a regional aquifer protection advisory committee.

On September 26, 1988, the Barnes Regional Aquifer Protection Advisory Committee held its first meeting. This ad hoc committee began work on a regional water supply protection strategy, and on an inter-municipal compact to formalize municipal commitments to implement the strategy.

Creation of the Barnes Aquifer Protection Advisory Committee

In December 1989, the chief elected officials in the Cities of Westfield and Holyoke, the Towns of Easthampton and Southampton, and the Pioneer Valley Planning Commission signed the "Memorandum of Agreement for Barnes Aquifer Protection" at a public ceremony. This agreement to act cooperatively to protect a natural resource of regional significance was the culmination of a yearlong planning effort by PVPC and a voluntary advisory task force of local officials and residents. The intergovernmental compact created a standing Barnes Aquifer Protection Advisory Committee (BAPAC) with the authority to review and comment on "developments of regional impact" in the aquifer recharge area, and to develop a regional aquifer protection strategy.

Barnes Aquifer Protection Advisory Committee Membership

The inter-municipal contract that created BAPAC specifies how many members are selected to the committee. The chief elected officials of each member community is to appoint three representatives and PVPC is to appoint one representative. BAPAC members for Fiscal Year 2009 were:

Easthampton	Stuart Beckley, Planning Department
	Thomas Newton, Water Department
	Michael Czerwiec, Water Department
	Robert Newton, resident and Smith College
	Chester Seklecki, Board of Health
Holyoke	Jeff Burkott, Planning Department
	Alicia Zoeller, Conservation Commission
	John Barrett, Water Commission
Southampton	Joseph Slattery, Water Department
	Mark Girard, Planning Department
Westfield	Charles Darling, Water Department
	Kenneth Taylor, Conservation Commission
Pioneer Valley Planning Commission	
	Anne Capra, Principal Planner, BAPAC Facilitator

Issues Affecting the Barnes Aquifer

Trichloroethylene (TCE) Contamination

In the early 1990s, the aquifer extending from Easthampton to Westfield was rendered largely unsuitable as a drinking water supply when it was found to be contaminated with trichloroethylene (TCE). At the onset of the investigation, the Hendrick Street Well Field and the adjacent Pines Well supplied drinking water to the City of Easthampton. This public water supply provided more than fifty percent of the City's drinking water needs.

The Massachusetts Department of Environmental Protection (DEP) sampled and inventoried nearly 400 private wells in Easthampton, Southampton, Holyoke and Westfield. Numerous public and private wells in Easthampton, Holyoke and Southampton had to be treated or shut down. In addition, DEP installed

hundreds of microwells, enabling the sampling and analysis of groundwater, sampled surface water, and performed soil gas surveys and obtained soil samples to define the extent and pathway, as well as determine the source(s) of the TCE contamination that extended 4.5 miles within the aquifer. Hampton Ponds was also sampled and found not to be contaminated. The TCE contamination within groundwater is found at depth. DEP's investigation identified Southampton Sanitary Engineering (SSE) and General Electric (GE) as potential responsible parties. GE has denied responsibility for dumping TCE and contaminating the aquifer, but has performed voluntary cleanup activities at the release site on Dupuis Road. SSE claimed they did not have the financial resources to perform further investigation and remediation. Much site assessment and some cleanup activities have been performed at this site by MA DEP.

The City of Holyoke closed two municipal wells in West Holyoke due to the TCE contamination. The City of Easthampton had to construct a water treatment plant for the same reason, costing approximately $800,000. MA DEP estimates it has expended in excess of $2 million in private well sampling, assisting in costs for the Easthampton water treatment plant, and risk reduction measures such as supplying bottled water and treatment filters. Approximately 30 homes in Southampton and West Holyoke had TCE at levels of concern. DEP assisted Southampton with more than twenty of the thirty affected residences within their community by applying funding intended for filters to purchasing a pipeline for delivery of municipal water at a cost of approximately $200,000. Because of the unavailability of public water in most areas of West Holyoke (Rock Valley Road, Labrie Lane, Keyes Road and Mueller Road), DEP arranged for bottled water for the short term and installed and maintained (for two years) whole house granular activated carbon filters in the eight remaining affected residences. Residents were provided with written sampling and maintenance recommendations and are sent annual reminders from DEP. DEP and the City of Holyoke estimate that it will cost approximately $800,000 to $1 million to install public water lines on Labrie Lane, Rock Valley Road, Keyes Road and Mueller Road. The City of Holyoke has stated it is unable to finance such a project at this time.

The activated carbon filters cost approximately $2,000 per year to maintain and it is unclear how many homeowners are in fact maintaining their filters. It remains unclear whether homes built or purchased after filters were offered by DEP have measures in place to reduce their risk of exposure to harmful levels of TCE. Although public water is available in Southampton and Westfield, some

property owners have chosen not to hook up and are still using TCE contaminated wells. At a public meeting in 2006 held by the Clean Water Coalition at the Hampton Ponds Association's building on Apremont Way numerous residents of the Hampton Ponds area of Westfield, Southampton and Holyoke stated that they were unaware that there was a contamination issue and that they were utilizing private wells. It is unknown how many people are in this situation. It is likely that these people took ownership of their homes after DEP had performed their outreach and were never contacted directly.

Development and Abandoned Monitoring Wells

Development pressures within the Barnes Aquifer Zone II are significant. Although each of the four communities enacted aquifer protection district zoning and participate in a regional aquifer oversight committee called the Barnes Aquifer Protection Advisory Committee (BAPAC), commercial, industrial and residential development continues to consume important recharge land, bringing with it new threats and opportunities for aquifer contamination.

One of the greatest threats to the aquifer associated with past contamination and on-going development is the installation of hundreds of monitoring wells within the Zone II. Sites where monitoring wells have been installed include commercial and industrial facilities, 21E sites, and sites pertinent to the active TCE investigation of the Barnes Aquifer being conducted by DEP. In recent years, BAPAC has become increasingly aware of abandoned monitoring wells that are either not known to the current property owner or long since forgotten by them, yet not decommissioned. Abandoned wells that have not been decommissioned are a direct conduit to the aquifer and serve as a potential avenue for contamination.

In each of the four Barnes Aquifer communities, as well as many statewide, there are no local regulations requiring the decommissioning of monitoring wells once they are no longer of use. Likewise, M.G.L. c. 21E also does not require monitoring wells to be decommissioned once a site is beyond the five year audit period. According to the Office of Water Resources at MA Department of Conservation and Recreation, statewide 10,000 wells (both productive and monitoring) were installed in 2005 and only 750 wells decommissioned.

Examples of this threat to the aquifer are as follows. Beavers dammed Pond Brook near Westfield municipal Well #8. The dammed water came within feet of covering a monitoring well installed during construction of Well #8. It is unknown if monitoring wells exist on other properties inundated by beaver

activity. Also, at Westfield municipal Well #3 in 2008, bacteria counts at the well prompted an investigation of monitoring wells in the area which found one monitoring well where the lock had been broken off by vandals and the cap left off. Well #3 and the monitoring well were both disinfected and the monitoring well re-secured. Last, MEPA Environmental Impact Reports from the early 1990s for Summit Lock Industrial Park in Westfield, the site of C&S Wholesale, identify the installation of 17 monitoring wells on a 139 acre parcel and an additional 12 on an adjacent parcel. Under MEPA, these wells were to be monitored annually and data submitted to DEP and the Westfield Water Department. Records indicate that the last round of sampling occurred in 1999. After several recent attempts to communicate with C&S about the status of their wells, the operations manager acknowledged that their monitoring program had been discontinued and he wasn't even sure where the wells are located.

Road Salt Contamination of Domestic Wells

BAPAC and Smith College are involved in an on-going investigation of the impacts of road salt on domestic wells in an area of Southampton and Westfield along Routes 10 and 202. Route 10 is maintained by MassHighway; Route 202 is maintained by the City of Westfield. Approximately 35 private wells were sampled in three sampling rounds between December 2004, September 2005, and March 2006. More than 25 of these wells were determined to be salt impacted with sodium concentrations above the 20 mg/l limit set by the Massachusetts Office of Research Standards and Guidelines (ORSG) and chloride levels above the 250 mg/l Secondary Maximum Contaminant Level (SMCL).

In April 2008, 90 wells in Southampton, Westfield and Holyoke were sampled for sodium, chloride, nitrate nitrogen, calcium, magnesium, potassium, lithium, sulfate, nitrate, dissolved silica, arsenic, lead, barium, and hardness. Of those samples, 38 were salt impacted from road salt and 17 other wells had naturally high sodium levels. Ten (10) wells, all in the Round Hill area had arsenic levels above 5 ppb which is considered high but not above the MCL. Also noteworthy, road salt is causing the groundwater to become hard by exchanging sodium for calcium and moving calcium into solution.

As a result of this study, two residential well owners have filed road salt contamination complaints with MassHighway. As a result of these filings, MassHighway has instituted monthly sampling of these wells as part of an investigation to determine if road salting on their behalf is the cause of the contamination. This investigation is currently on-going.

A fifth round of private well sampling was performed on June 3, 2009 at 16 residences and 1 business on Jaeger Drive, North Road, Southampton Road, and Old Stage Road in Westfield. The sites were selected to gather further information about long term trending of sodium chloride levels in the aquifer.

Expansion of the Northampton Landfill

The City of Northampton currently operates a regional landfill on Glendale Road in Northampton. The landfill is located within the Zone II of Easthampton's Maloney Well. The City of Northampton is planning to expand the operation to increase the lifetime of the facility and allow for the disposal of more municipal waste. The project has received MEPA approval and a local Zoning change allowing the landfill expansion by Special Permit. The Special Permit granting authority will be the Northampton City Council. As a result, the Mayor issued a gag order prohibiting Councilors to discuss issues pertaining to the Special Permit outside of a Public Hearing to be convened at a later date.

The proposed expansion will be lined and include a leachate collection and treatment system. While recognizing advances in technology and landfill engineering are safer than those used on the original cells, landfill liners eventually fail and leachate systems notoriously clog. While the landfill may have an extended lifetime of 30 or more years, the aquifer provides an important water source for current and future generations that must be protected. Therefore, BAPAC does not support the expansion of the Glendale Road landfill.

Meetings

BAPAC met monthly from September 2008 to June 2009. Following is a brief summary of BAPAC meeting dates and key agenda items. Full minutes from BAPAC meetings are contained in Appendix A.

Monthly Meeting Summary

DATE	KEY AGENDA ITEMS
September 9, 2008	6 DRIs
October 7, 2008	5 DRIs; BMPs for groundwater protection; Road Salt Study
November 6, 2008	BMPs for groundwater protection; Road Salt Study; MET Well Project; Northampton Landfill Expansion; Green Awards; FY09 Workplan; support letter for Holyoke's EPA Brownfield Grant application
December 2, 2008	2 DRIs; Green Awards; BMPs for groundwater Protection
January 6, 2009	3 DRIs; Road Salt Study Presentation
February 3, 2009	3 DRIs; Road Salt Study; Green Awards; BMPs for groundwater protection.
March 3, 2009	1 DRI; Road Salt Study; Green Awards; BMPs for groundwater protection
April 7, 2009	1 DRI; BMPs for aquifer protection; other business
May 5, 2009	1 DRI; Green Award Presentation
June 2, 2009	3 DRIs; Road Salt Study; BMPs for groundwater protection; Standardized DRI comments

BAPAC ACCOMPLISHMENTS JULY 2008 TO JUNE 2009

The following section summarizes the key issues BAPAC addressed and the accomplishments during Fiscal Year 2009.

Well Mapping in the Barnes Aquifer

BAPAC received a grant from the Massachusetts Environmental Trust (MET) to identify and map monitoring and domestic wells within the Zone II. Monitoring wells were identified through performing file review at MA DEP of all reportable releases of petroleum or hazardous materials (21E files). Well logs were copied for all wells and/or soil borings collected at each of the sites and entered into a geodatabase developed by Smith College.

The well log data was used to input information about the structure of the aquifer throughout the Zone II into a model developed by Professor Robert Newton at Smith College and Hampshire College student Nicholas Newcomb. Using this model, contamination from the Northampton Landfill on Glendale Road was predicted to reach the Maloney Well in Easthampton due to depleted dissolved oxygen levels which impact geochemistry and transport of certain metals. This study is discussed below under discussion of the expansion of the Northampton Landfill.

The final report was submitted to MET in October 2008. Due to the amount of time needed to identify and map the monitoring wells and well logs, we were unable to engage in the public outreach component of the project. It remains a priority of BAPAC's to identify all private wells within the TCE contaminated area and work with municipal officials to provide public water to these areas.

Road Salt Impact Study on Domestic Wells

Five rounds of private well sampling have been conducted to measure the impacts of road salt on groundwater in the vicinity of Routes 10 and 202 in Westfield and Southampton. The sampling, performed under the supervision of Robert Newton at Smith College, occurred in December 2004, September 2005, March 2006, May 2008, and June 2009.

Study Background

The study's purpose is to survey the impact of road salt on domestic wells along Route 10 and North Road (Route 202) in Westfield, Southampton and west Holyoke. The project was initiated by the Barnes Aquifer Protection Advisory Committee (BAPAC) in partnership with the Center for Aqueous Geochemistry

at Smith College in December 2004. Project partners also include the Westfield Water Resources Department, Westfield Health Department, Southampton Highway and Water Departments and the Southampton Health Department.

Study Results

The number of wells sampled in each round has varied ranging from as few as 19 in June 2009 to 90 in the May 2008 sampling round. Table 1 provides concentrations for sodium and chloride in the salt impacted wells, i.e. wells that are contaminated from road salt during the first three rounds of the study.

Table 1 Concentrations for Salt Impacted Wells in all Three Sampling Rounds

	Average (mg/L)*	**Maximum (mg/L)***
Phase I – collected 12/15/04	Westfield = 26 sites, Holyoke=1 site	
Sodium	75.12	212.45
Chloride	138.92	429.68
41% of wells salt impacted		
Phase II – collected 9/21/05	Westfield=16 sites, Southampton=7 sites, Holyoke=1 site	
Sodium	108.89	346.06
Chloride	234.38	772.67
58% of wells salt impacted		
Phase III – collected 3/30/06	Westfield=22 sites, Southampton=8 sites, Holyoke=4 sites	
Sodium	66.18	244.52
Chloride	210.49	878.83
47% of wells salt impacted		

* This data is for salt impacted wells only and does not include those wells that were not determined to be above the 20 mg/L sodium or 250 mg/L chloride levels used to determine if a well has been impacted by road salt.

The study sampled 90 private drinking water wells on May 7, 2008 in the area of Routes 10 and 202 in Westfield and Southampton. Over 40 percent of the samples (38 of 90) were found to be impacted by road salt as they had sodium concentrations above the 20 mg/L guideline set by the Massachusetts Office of Research and Standards Guideline (ORSG). Sodium levels below this level are unlikely to result in adverse health effects. Dissolved sodium can potentially be a

health hazard especially for people suffering from high blood pressure and heart disease.

Ten percent of the samples (9 out of 90) had chloride concentrations above the 250 mg/L secondary maximum contaminant level (SMCL) set by the Environmental Protection Agency. Chloride is a component of salt, also called sodium chloride. This standard was developed to protect the aesthetic quality of drinking water meaning above the 250 mg/L level of chloride, water tastes salty. This standard is not health based and not legally enforceable. However, high concentrations of sodium are associated with the high chloride concentrations.

Another 15 % or 17 of the 90 wells sampled were found to have naturally high sodium levels due to the background geology of the area. Most of these wells were located in the Scenic and Pheasant Drive neighborhoods of Westfield.

The results of the June 2009 sampling round have not been analyzed as of the publishing of this Annual Report.

How do you know if the salt is from road salting practices or naturally occurring?
Not all sodium found in groundwater comes from road salt. Minerals containing sodium are common in the rocks of the local area. Natural weathering of these rocks will also release sodium into groundwater.

Therefore, to determine if wells were impacted by sodium chloride (NaCl), salt impacted, the concentration of chloride in the sample also had to exceed a critical value of 30.8 mg/L. This critical value is based on the concentration of chloride that would result if enough sodium chloride were dissolved to increase the sodium concentration by 20 mg/L. The Massachusetts Office of Research and Standards Guidelines (ORSG) has set the guideline for dissolved sodium at 20 mg/L. (There is no federal standard for sodium.) It is best to use chloride for the critical value to assess salt because, unlike sodium, there are no natural sources of chloride from local rocks. This means that all sources of chloride in groundwater can be associated with road salt.

What does this mean?
People suffering from high blood pressure or heart disease should not consume water from the wells found to be salt impacted. These people should consult their physicians. All of the well owners that participated in the sampling rounds were notified of the results.

Corrective Actions
BAPAC notified the Westfield Health Department, Westfield Highway Department, Westfield City Council, Southampton Board of Health and the Southampton Highway and Water Departments with the results of each sampling round. Route 10 is maintained by MassHighway for snow and ice, North Road is maintained by the City of Westfield.

On December 21, 2006, Professor Robert Newton from the Geology Department at Smith College presented the results of the study to the Westfield City Council. Thereafter, the City Council instructed the Department of Public Works to look into the City's snow and ice practices and evaluate alternatives to reduce the threat of contamination to private wells along North Road. Representatives from the Westfield Board of Public Works and Department of Public Works attended BAPAC's November 13, 2007 meeting and informed the committee that they had researched the issue and would be switching to a product called Cryotech NACC, an anhydrous grade sodium acetate approved by the FAA for airport runways and used at the airport in Westfield. This product would be applied along North Road and costs $900/ton (as opposed to $56/ton for sodium chloride).

Copies of MassHighway's Road Salt Complaint Policy were distributed to those affected well owners along Route 10. Mass Highway has a policy by which they potentially remediate wells that they have contaminated with road salt. The process takes up to one year of monthly sampling for MassHighway to determine if they are responsible. To date, 2 of the 6 severely impacted wells along Route 10 have filed Road Salt Complaints with MassHighway. Both of these property owners are on salt restricted diets as prescribed by their physicians.

On February 15, 2008, representatives from MassHighway's Environmental Division met with representatives from BAPAC, the City of Westfield, Town of Southampton and some of the affected well owners to discuss BAPAC's study, MassHighway's Road Salt Policy and potential remediation options for the affected wells upon completion of MassHighway's investigation into the complaints.

Developments of Regional Impact (DRI)
DRIs are defined as any development project which requires: a) state approval under the MEPA process, or b) local approval for a Special Permit, Site Plan Approval, Subdivision Approval, zoning amendment, or withdrawal of property

from M.G.L. Chapters 61, 61A, or 61B. In its reviews, BAPAC assesses the potential for water pollution or other adverse impacts to the aquifer from the proposed project and recommends mitigating measures to prevent such impacts.

Municipal representatives in member communities are obligated to submit DRIs to BAPAC for review. This obligation is defined in the Memorandum of Agreement for Barnes Aquifer Protection signed by the chief elected official in each member community. During Fiscal Year 2009, BAPAC reviewed and commented on eleven (11) DRIs, several of them more than once: Westfield, 6; Southampton, 3 (one of these spanned the Easthampton city line); and, Easthampton, 3. Appendix B contains copies of submitted DRI comment letters.

Literature Review of Best Management Practices for Aquifer Protection
During the Spring 2009 semester, BAPAC worked with Antioch graduate student Julie Thomason to perform a literature review of current research pertaining to pollutant load removal efficiency rates, as well as aquifer recharge rates, for structural devices, including Low Impact Development (LID) systems. Primary considerations for the literature review were adequate groundwater recharge, removal of total suspended solids (TSS), removal of nitrogen, phosphorus, heavy metals, and harmful bacteria, removal of road salt, and removal of volatile organic carbons (VOCs) and petrochemicals.

The following is a summary of the best performers within each category. A more in-depth discussion of the information contained herein can be found in the following report in Appendix D: *Stormwater Best Management Practices and Low Impact Development Strategies: A Comparative Literature Review*, Thomason, Julie for the Barnes Aquifer Protection Advisory Committee; May 2009

The BMPs were grouped into conventional BMPs: dry wells, infiltration basins, infiltration trenches, leaching catch basins, and subsurface structures; and, LID techniques: porous pavement and bioretention areas/rain gardens.

<u>TSS Removal</u>
Conventional BMP – Stormceptor STC 900 has overall best performance of proprietary separators, wet basins and gravel wetlands will remove 80+% when combined with sediment forebay
LID – porous pavement 80-98%, bioretention/rain garden 90-94%

<u>Nitrogen, Phosphorus, Heavy Metals, Bacteria</u>

Conventional BMP – constructed stormwater and gravel wetlands, extended dry detention basins, wet basins, infiltration basins, and infiltration trenches give the best consistent performance for all four pollutants
LID – bioretention areas/rain gardens remove nitrogen, phosphorus, and heavy metals, but there is no data on bacteria removal for any LID methods

VOC, Petrochemical, Road Salt
Conventional BMP – deep sump catch basins and separators can be used to manage runoff with a higher potential for oil or grease contamination, but there is no removal data for VOCs, petrochemicals, or road salt for any BMPs
LID – bioretention areas/rain gardens can be used in lieu of separators to manage oil/grease in runoff, but there is no removal data for VOCs, petrochemicals, or road salt for any LID methods.

It is worth noting that there is a significant lack of removal data for both conventional BMPs and LID methods. The fact that none have any measured capacity for removing VOCs, petrochemicals, or road salt is concerning and represents a serious gap in the research performed on these systems.
Some research within the literature review focused on the construction cost differences between conventional BMPs and LID methods. While there are several case studies showing a significant reduction in cost for using LID, none of these studies specifies the BMP method that would have cost more. Case studies relative to cost savings appear to be strongly dependent on site constraints, attributes, and local zoning and permitting considerations.

The LID concept of reducing impervious coverage to encourage natural infiltration and groundwater recharge continues to be an important consideration in site design. Shallow and deep infiltration of precipitation on natural areas are both 25%. 10-20% impervious surface reduces that to 21% infiltration for both, but 35-50% impervious surface reduces it to 20% shallow and 15% deep infiltration. 75-100% impervious surface shrinks infiltration further to 10% shallow infiltration and 5% deep infiltration.

Northampton Landfill Expansion
BAPAC continues to monitor the proposed expansion of the Northampton Landfill and advocate for the long-term protection of the Barnes Aquifer. On March 11, 2008, Professor Newton presented the results of a study entitled *Modeling the Effect of Landfill Leachate on Groundwater Chemistry in Easthampton*, by Hampshire College Student Nicholas Newcomb, Spring 2008. The study analyzed the effect of landfill leachate on regional concentrations of dissolved

oxygen and potential metal mobility. Three municipal landfills exist over the primary recharge area of the Barnes Aquifer.

Existing water chemistry data from wells in the vicinity of the Northampton landfill provide preliminary evidence suggesting that landfill leachate may produce reducing conditions capable of mobilizing iron, manganese, and arsenic constituents from aquifer sediments. The purpose of this study was to construct a groundwater flow model using MODFLOW in order to quantify the extent and concentration of dissolved organic carbon present in leachate plumes generated from three landfills and assess the potential effects on municipal water sources. The study relied on leachate production results yielded from an EPA Hydrologic Evaluation of Landfill Performance (HELP) model coupled with 3-dimensional reactive transport package (RT3DV2.5). The model was able to accurately predict groundwater head under steady state conditions. Contaminant transport results indicate that contaminant plume containing high biological demand (BOD) produces a plume depleted of dissolved oxygen (DO) which is transported to a high yield municipal well (Maloney Well). Low background DO concentrations at this site suggest that small changes in geochemistry could have large impacts on iron, arsenic, and manganese concentrations.

Green Award

The 2009 Green Award was presented to Professor Robert Newton and the Center for Aqueous Biogeochemistry Research at Smith College during National Drinking Water Week May 3-9, 2009 at Smith College. Professor Newton has been an active member of the Barnes Aquifer Protection Advisory Committee for 15 years. His expertise as a hydrogeologist has been invaluable to BAPAC in evaluating plans and proposals for developments of regional impact over the Barnes Aquifer. Some of his many contributions to the protection of the Barnes Aquifer include:

- Road Salt Impact Study
  A study to determine the effect of winter road salting practices on private wells along Routes 10 and 202 in Westfield and Southampton. This study has resulted in four rounds of sampling and water quality analysis on up to 90 drinking water wells. Professor Newton's analysis led to filing road salt complaints with MassHighway for several well owners on physician prescribed low salt diets. As a result of these complaints, MassHighway has begun an investigation to determine the cause of the contamination and possible mitigation measures. MassHighway is providing bottled water to the at risk well owners during the investigation. It is likely that

Professor Newton's research will result in several other well owners also receiving mitigation for salt contaminated wells.

- Barnes Aquifer Model
  Professor Newton has developed a GIS-based model of the Barnes Aquifer using data inputted from well logs derived from monitoring wells installed throughout the Zone II. This model is based on actual hydrogeologic data versus theoretical modeling and is being used to inform the City of Northampton and the Massachusetts Department of Environmental Protection's permitting for the expansion of the Northampton Landfill. Professor Newton is working with the City, abutters and concerned citizens to determine the nature and extent of groundwater contamination around the landfill and the potential impact of future hazardous releases from the landfill on the Maloney Well in Easthampton.

- Perchlorate Treatment in Groundwater at Williston Northampton Academy
  Professor Newton worked with officials at Williston Northampton Academy and the Easthampton Board of Health to design a stormwater treatment system to capture runoff from new athletic fields that would also treat perchlorate found in groundwater at the site. This process resulted in the design of a constructed wetland treatment system that offers remediation of perchlorate through oxidation created within the wetland. Professor Newton continues to work with the teaching staff at the Academy to involve students in the long-term monitoring of the wetland. Results thus far indicate that the wetland system is effective at treating perchlorate.

Professor Newton's work has lead to important decisions and designs that resulted in not only protecting the Barnes Aquifer but the lives of those people that rely on it as their source of drinking water. BAPAC was pleased to honor Professor Newton for his tremendous contribution to better understanding this important resource through science.

Fiscal Year 2009 DRI Reviews				
DRI / Date	**Location of Project**	**Owner/ Developer**	**Project Representative**	**Issues / Requested Info / Actions**
WESTFIELD				
Russian Evangelical Baptist Church, September 11, 2008	866 North Road	Russian Evangelical Baptist Church	D.L. Bean, inc.	1. Detention basin wall acts as a dam. Need to evaluate stability of wall and potential for lateral movement of water through wall causing slide.
Russian Evangelical Baptist Church, January 11, 2009	866 North Road	Russian Evangelical Baptist Church	D.L. Bean, inc.	1. BAPAC cedes jurisdiction to MA DEP under Wetland Regulations.
Commonwealth Guardrail, September 14, 2008	132 Apremont Way	Commonwealth Guardrail	Lemelin Environmental Services, Inc.	1. Special Permit requires tertiary containment capable of storing 110% of fuel volume. 2. Custom tank appears to meet tertiary containment requirement. 3. Existing catchbasin appears to be sited adjacent to tank and fueling area. Need to submit plan of stormwater drainage system on site and all necessary pretreatment, treatment, and infiltration requirements will apply.
Commonwealth Guardrail, October 8, 2008	132 Apremont Way	Commonwealth Guardrail	Lemelin Environmental Services, Inc.	1. Site plans including stormwater drainage system need to be submitted for review and comment.
Commonwealth Guardrail, January 11, 2009	132 Apremont Way	Commonwealth Guardrail	Lemelin Environmental Services, Inc.	1. A stormwater drainage system needs to be installed for the capture an dtreatment of all runoff from paved surfaces for roads, parking areas, fueling areas, etc.
J. Dirats & Co., Inc., October 8, 2008	41 Airport Road	J. Dirats & Co., Inc.	Forish Construction	1. Dry wells are Class V injection wells and need to be registered with DEP. 2. Pretreatment for oil and grease needs to be

				included prior to treatment and infiltration devices. 3. Drywell in retention basins should be removed. 4. Drywells need to be 50′ from septic tank and 100′from leach field – violation of Title V and UIC regs. 5. O&M Plan for stormwater management system needs to be submitted and annual maintenance logs to Water Resources Department. 6. Unclear if use will generate hazardous waste.
J. Dirats & Co., Inc., May 11, 2009	41 Airport Road	J. Dirats & Co., Inc.	Forish Construction	1. Dry wells are Class V injection wells and need to be registered with DEP. Investigate requirements for capped wells. 2. No treatment device prior to infiltration. 3. O&M Plan for stormwater management system needs to be submitted and annual maintenance logs to Water Resources Department. 4. Unclear if use will generate hazardous waste.
J. Dirats & Co., Inc., July 17, 2009	41 Airport Road	J. Dirats & Co., Inc.	Forish Construction	1. Dry wells are Class V injection wells and need to be registered with DEP. 2. Pretreatment for oil and grease needs to be included prior to treatment and infiltration devices. 3. Drywell in retention basins should be removed. 4. Drywells need to be 50′ from septic tank and 100′from leach field – violation of Title V and UIC regs. 5. O&M Plan for stormwater management system needs to be submitted and annual maintenance logs to Water Resources Department. 6. Unclear if use will generate hazardous waste.
Home Depot Distribution Center and	Servistar Industrial Way	Campanelli Companies	Kelly Engineering	1. Gate valve needed prior to infiltration device. 2. Submit soil boring logs. Long-term groundwater

Warehouse, June 9, 2009				monitoring system requested. 3. Prefer vegetative systems draining within 72 hours. 4. Building floor drains need to be plumbed to municipal sewer. 5. Submit MSDS sheets for hazardous materials to be stored on site. 6. Backup diesel generators require tertiary containment.
Lawry Realty, February 4, 2009	Apremont Way and Airport Road	Lawry Realty	Heritage Survey	1. Gravel parking lots should be paved and all runoff draining to treatment system. 2. Gate valve prior to infiltration. 3. Remove leaching catchbasin in detention basin. 4. IF kept, needs registration as ClassV injection well with DEP. 5. O&M Plan needed. 6. Special Permit should prohibit on-site fueling of trucks and storage of hazardous materials.
DEIR Pioneer Valley Energy Center, September 16, 2008	Ampad Road	Pioneer Valley Energy Center	Tighe and Bond	1. All runoff from entire site needs treatment. 2. Model for ULSD fuel dispersion to municipal wells. 3. Need more info on effect on air quality and particle deposition.
FEIR Pioneer Valley Energy Center, February 10, 2009	Ampad Road	Pioneer Valley Energy Center	Tighe and Bond	1. All runoff from entire site needs treatment. 2. Describe inspection of containment areas and provide coverage to prevent rainwater mixing. 3. Need more info on why single-walled tank being chosen besides cost.
SOUTHAMPTON				
Bobcat Hollow, October 8, 2008	Bissonette Circle	Joseph Sampson	Sherman and Frydrk	No further comments on Definitive Subdivision Plan
Bobcat Hollow, February 5, 2009	Bissonette Circle	Joseph Sampson	Sherman and Frydrk	1. Support expansion of runoff volumes to be captured and treated.

				2. Designated "no disturbance" areas should be recorded on deeds in perpetuity.
Pump Station Propane UST, June 10, 2009	Cook Road	Town of Southampton	Borgese Construction	Need plans for propane UST for sewer pump station in order to comment. BAPAC differed comment to Easthampton City Engineer who had reviewed plans.
Gilbert Road As-Built Easement, September 11, 2008	Gilbert Road	Edward H. Gwinner	Heritage Survey	1. BMPs needed for proper capture, treatment and infiltration of road runoff. 2. Gate valve prior to infiltration device. 3. Berm roadways to direct all runoff to treatment devices. 4. Use alternative to sodium chloride for snow and ice removal/prevention. 5. O&M Plan needed and annual maintenance logs submitted to highway Department.
EASTHAMPTON				
Drury Lane Bottling Plant, January 11, 2009	Drury Lane	Maurice Cahillane	N/A	Insufficient information submitted for BAPAC to comment. Submit a copy of your application for a Water Withdrawal Permit under the Water Management Act and /or any other permit applications detailing specifications that may be commented on.
Nashawannuck Pond EIR Waiver, October 9, 2008	Nashawannuck Pond	City of Easthampton	Unknown	1. No concerns about disposal of spoils in Zone II. 2. Flag existing monitoring well at spoils disposal site to protect it. 3. Locate well sin Broad Brook and cap during draw down.

RECOMMENDATIONS FOR FISCAL YEAR 2010

1. Public Outreach and Education

Task	Strategy
Inform public about the results of the MET Well Mapping Project	Perform outreach about study results to the public including well owners within the affected areas and municipal officials.
Host a workshop for municipal officials	Seek funding and coordinate workshop to inform officials about aquifer, existing tools, and discuss strategies for better oversight of BMPs.
Maintain an updated BAPAC Website	Post current meeting minutes, press releases, and BMP information
Issue press releases about issues concerning the Barnes Aquifer	Continue to use the local newspapers as a means to inform the public about issues concerning the Barnes Aquifer and actions they can take to ensure its protection.
Perform education and outreach to homeowners along Routes 10 and 202 about salt contamination in private wells.	In coordination with Westfield Health Department and Southampton Board of Health, perform direct mailing with information about the health effects of high sodium levels in drinking water and precautions to be taken for high risk populations.
Continue BAPAC Green Award during national Drinking Water Week in May	Community representatives will nominate individuals or businesses that have made a significant contribution to the protection of or improvements to the aquifer. This award is an opportunity for publicity and a means to educate the public on ways in which they can protect the aquifer. Awards are contingent upon receipt of qualified nominees.

2. Identification and Reduction of Threats to the Aquifer

Task	Strategy
Continue to conduct reviews of Developments of Regional Impact (DRIs)	Seek timely DRI submittals from local communities for BAPAC review and comment.
Identify appropriate BMPs for aquifer recharge	Continue literature review on current stormwater treatment technologies and identify those that offer the greatest protection of the aquifer for each type of contaminant and site conditions.
Identify and address existing sources of contamination in the aquifer	Work with DEP and EPA Brownfields to address existing sources of aquifer contamination. Closely monitor activities at the Barnes ANG Base and the Northampton Landfill.
Develop a plan for decommissioning the abandoned monitoring wells.	Identify and prioritize monitoring wells for proper decommissioning.
Reduce threat of road salt contamination to domestic wells along Route 10 and North Road	Work with Local Boards of Health and Highway Departments and MassHighway to develop strategies for reducing road salt contamination of domestic wells along Routes 10 and 202.
Identify all private wells within the TCE contaminated area and work with municipal officials to provide public water to these areas.	Work with local officials and MA DEP to ensure all private well users in TCE contaminated areas have safe potable water sources.

3. Establish Additional Funding Sources

Task	Strategy
Seek corporate sponsorship for BAPAC initiatives	Identify and contact businesses in the Barnes Aquifer region about sponsoring projects.
Seek grant funding for projects identified in goals	Utilize known state and federal grant programs. Use PVPC 501(c)(3) status to apply to foundations for funding. Seek EPA support based on the aquifer's Sole Source designation.

BAPAC Long-Term Work Plan

- Sponsor public educational forums or presentations regarding aquifer protection.

- Identify, prioritize, and map key recharge parcels in the Zone II of the Barnes Aquifer.

- Continue to support Smith College's effort to develop and maintain a GIS database with groundwater well locations and associated analytical data.

- Update and strengthen all municipal aquifer protection zoning

- Support the City of Westfield's long-term aquifer monitoring program.

- Research and collect scientific data in support of Developments of Regional Impact (DRIs) comments.

- Determine the long-term capacity and yield of the aquifer.

- Continually update and improve the BAPAC website and library.

- Perform a second round of surface water monitoring and analysis.

PROPOSED BUDGET FOR FY 2010

	Hours	Cost*	% Total
Task 1 Administration/Report			
1a. Advisory Committee Facilitation (10 meetings)	40	2,640	
1b. Annual Report	4	264	
1c. Postage, copies, travel, printing		200	
Subtotal	*42*	*3,104*	***40%***
Task 2 Public Education and Outreach	24	1,632	***20%***
Task 3 Water Quality Assessment and ID of Threats to the Aquifer (including DRIs)	24	1,632	***20%***
Task 4 Establish Additional Funding Sources	*24*	*1,632*	***20%***
TOTAL	**114**	**$8,000**	**100%**

*Cost estimates based on PVPC rate of $66/hour (includes fringe and overhead at 118%)

APPENDICES

APPENDIX A: MEETING MINUTES

MINUTES OF
BARNES AQUIFER PROTECTION ADVISORY COMMITTEE

DATE: 9/9/08 LOCATION: Easthampton Municipal Office Building, Easthampton

MEMBERS AND DESIGNEES PRESENT:

	J. Barrett, Holyoke		A. Zoeller, Holyoke		J. Burkott, Holyoke
	J. Boardman, Westfield		K. Taylor, Westfield	X	W. Darling, Westfield
	T. Newton, Easthampton	X	R. Newton, Easthampton	X	S. Beckley, Easthampton
X	M. Czerwiec, Easthampton		J. Slattery, Southampton	X	A. Capra, PVPC
X	Mark Girard, Southampton		C. Seklecki, Easthampton		

Others Present: Darleen Buttrick, Easthampton Aquifer Protection Committee; Matt Palmer, Pioneer Valley Energy Center; Tracy Adamski, Tighe and Bond; Kelly, Lemelin Environmental Services; Dave Bean, Heritage Survey.

TIME OF CALL TO ORDER: 3:30
TIME OF ADJOURNMENT: 5:05

1. Upon recommendation from Anne Capra, the committee voted to table all agenda items except the DRI reviews till the next meeting due to the number of DRIs to be presented.

2. Adoption of June 3, 2008 Minutes
Minutes adopted unanimously.

3. Review of Developments of Regional Impact
Commonwealth Guardrail, 132 Apremont Way, Westfield
Kelly from Lemelin Environmental Services, Inc. of Chicopee presented the specifications for the proposed new10,000 AST for diesel fuel.. Lemelin Environmental provided specifications for the Highland Fireguard Triple Wall Above Ground Storage Tank. Lemelin Environmental commissioned a custom triple wall tank from Highland Tank through Wildco Petroleum Equipment. A plan of the custom triple-wall tank is provided in the specification package provided by Lemelin however all other documentation in the packet is for a double wall tank. The tank system will also include the Gasboy Fuel Management System and Veeder Root overfill alarm to prevent overflows at during delivery and pumping and leak detection. The tank will be surrounded by bollards and located on a concrete pad. Given these specifications, the tank appears to meet the tertiary containment requirements of the City of Westfield's Water Resource Protection Ordinance, however, Anne will contact the company to confirm that the tank provides tertiary containment for fuel.

Although the tank itself meets the highest standards for water protection, it is important the site design also supports protection of the aquifer in the event of a catastrophic failure of the tank. In the specification package provided by Lemelin Environmental, one of the pictures of an installed tank appears to be only feet away from an open catchbasin which is of great concern. BAPAC strongly encourages the Board to evaluate the location of the tank in relation to existing stormwater management structures such as catchbasins, leaching cells, swales, infiltration trenches, etc. to ensure that any failure of the tank is not going to drain directly into one of these structures. Site design plans for the fuel dispensing and receiving areas should indicate how drips and spills will be prevented from entering the ground. Likewise, as with other sites in the overlay district, BAPAC requests that pretreatment for oil and grease and an emergency gate valve exist

prior to all infiltration structures. An Emergency Spill Response Plan should also be provided to the Planning Board.

Pioneer Valley Energy Center, Ampad Road, Westfield

Matthew Palmer, Pioneer Valley Energy Center, and Tracy Adamski, Tighe and Bond, reviewed the project with BAPAC in response to our comments on the ENF. The stormwater management system on the site appears to be contained, draining to a Stormceptor, preceded by an emergency shut off gate valve, prior to infiltration.

This land use is a high potential threat to the aquifer. As such, runoff from the entire site, including all equipment, parking and que areas for fuel trucks, storage and fueling areas, should be contained in a stormwater treatment system to prevent direct infiltration of untreated stormwater. The site plans include portions of the proposed site to be pervious, allowing for infiltration of rainfall including proposed equipment areas, which will consist of ¾ inch clear crushed stone placed to a depth of 6 inches. BAPAC strongly discourages this practice on industrially developed sites.

The Draft Environmental Impact Report does not provide a dispersion model for a catastrophic release of the ULSD fuel from the site in the event of a failure of the 1 million gallon storage tank at full capacity. BAPAC is interested in the amount of time the public water supplies surrounding the site would have before they would need to shut down their distribution systems. Additionally, what additives will be mixed with the ULSD fuel for stabilization and what effects do these additives have on drinking water? Last, BAPAC requires tertiary containment for fuel storage. We recommend evaluating options for tertiary containment for the fuel and ammonia storage.

Russian Evangelical Baptist Church, 866 North Road, Westfield

Plans for the proposed project were presented by Dave Bean of D.L. Bean Inc. The stormwater management plan appears to meet all of BAPAC's requirements for pretreatment and infiltration of stormwater. The "Emergency Shut Off" sign at the gate valve should be in English and Russian.

Last, the detention basin essentially creates a ridge adjacent to Long Pond. Soils in this area are typically sandy and well-drained. BAPAC is concerned that these well-draining conditions could create groundwater piping through the wall of the detention basin, transporting water in the direction of the pond. Such a condition would make the basin less effective for groundwater infiltration and, under extreme storm events, could cause failure of the detention basin wall and a land slide. Therefore, BAPAC recommends that the project engineer evaluate the potential for these conditions and makes changes as needed.

Gilbert Road As-built Plans, Southampton

BAPAC reviewed the plans dated July 18, 2008. It appears that five small detention basins have been constructed along the north side of the approximately 1,300' road. Road drainage appears to sheet flow generally to the north side of the road. Based on the plan presented, the detention basins appear to capture some but not all of the sheet flow. Additionally, the detention basins do not offer any pre-treatment for oil and grease prior to infiltration. Given this, the detention basins as constructed do not adequately meet BAPAC's standards for stormwater treatment and infiltration within the Zone II.

Therefore, the following general recommendations will be made to the Planning Board for consideration:

- Best Management Practices (BMPs) should be constructed to capture all runoff from the road, remove contaminants such as petroleum, salts, and heavy metals, and infiltrate clean recharge to the ground.
- A gate valve should be installed prior to the recharging BMP so that in the event of a release of a hazardous material, the recharge BMP can be separated from the system to prevent the hazardous material from contaminating groundwater.
- Roadways should be bermed so that all road runoff is directed to the treatment BMPs and does not sheet flow onto open areas where it can infiltrate untreated.
- Alternatives to sodium chloride should be used for ice and snow removal to prevent salt contamination of the aquifer.
- An Operation and Maintenance Plan should be developed and adopted by the homeowner's association for the BMPs. Annual reporting should be submitted to the Southampton Highway Department for review.

Dirats Laboratory, 41 Airport Road, Westfield

Forish Construction provided a very basic site map to Woody which did not include any information about stormwater management. Therefore, the committee was unable to comment on the plan and will request through Woody that they submit detailed plans to BAPAC for their October meeting.

East Meadow Estates, Southampton

Mark Girard reported that DEP's intervention on the project has resulted in the detention basin on the site to be raised and redesigned above groundwater. Town Boards are to be notified if basin fails. A Stormceptor will be installed. A stormwater management plan will be refilled as part of the Definitive Subdivision Approval process.

Next Meeting:

Tuesday, October 7, 2008 @ 3:30 PM
Easthampton Municipal Offices, 50 Payson Avenue, Easthampton

MINUTES OF
BARNES AQUIFER PROTECTION ADVISORY COMMITTEE

DATE: 10/7/08 LOCATION: Easthampton Municipal Office Building, Easthampton

MEMBERS AND DESIGNEES PRESENT:

	J. Barrett, Holyoke		A. Zoeller, Holyoke	X	J. Burkott, Holyoke
	J. Boardman, Westfield		K. Taylor, Westfield	X	W. Darling, Westfield
	T. Newton, Easthampton	X	R. Newton, Easthampton	X	S. Beckley, Easthampton
X	M. Czerwiec, Easthampton		J. Slattery, Southampton	X	A. Capra, PVPC
	Mark Girard, Southampton		C. Seklecki, Easthampton		

Others Present: Darleen Buttrick, Easthampton Aquifer Protection Committee; Eric Forish, Forish construction; Kelly Egan and Dan Lemelin, Lemelin Environmental Services; Dave Bean, Heritage Survey.

TIME OF CALL TO ORDER: 3:30
TIME OF ADJOURNMENT: 5:05

1. Adoption of September 3, 2008 Minutes
Minutes adopted unanimously.

2. Review of Developments of Regional Impact
Commonwealth Guardrail, 132 Apremont Way, Westfield
Dan Lemelin and Kelly Egan from Lemelin Environmental Services, Inc. of Chicopee reported that they had met with the Fire Chief regarding the tank and that it meets fire codes. Mr. Lemelin gave an explanation of how the Positive Limited Barrier, grooves, in the concrete pad surrounding the tank operate to contain a spill. The pad needs maintenance to be kept clean otherwise a storm event will flush whatever "drips" are in it into the surrounding landscape. This is precisely BAPAC's concerns. BAPAC has requested a detailed site plan for the entire property to better understand how stormwater is managed on the site overall and what opportunities exist for ground water contamination if this tank were to fail.

Dirats Laboratory, 41 Airport Road, Westfield
Eric Forish of Forish Construction presented plans for a building expansion and related stormwater system changes. The stormwater management system at the site currently consists of a series of drywells for infiltrating roof runoff, a retention basin with a drywell preceded by a grassed swale between the driveway and a neighboring lot occupied by Jarvis Surgical, and two drywells in a small depressed area on the north side of the building. Roof runoff will continue to be drained to a series of drywells around the property and the retention basin with the drywell and grassed swale on the southeast side of the property will remain. Driveway runoff will be directed via sheet flow to a new retention basin constructed with a forebay and three drywells.

Drywells are considered Class V Injection Wells by the Massachusetts Department of Environmental Protection (MA DEP). MA DEP requires all drywells, pre-existing and new, to be registered with them.
Pre-treatment for oil and grease, heavy metals, particulates, and road salt are recommended prior to infiltration. It has been the City of Westfield's policy to require the proprietary hydrodynamic separator Stormceptor for this practice although such devices are not effective at treating road salt. The proposed forebay does not function as an oil and grease trap and may allow direct

infiltration during smaller storm events. A gate valve after the Stormceptor and before the infiltration device should be installed to allow for isolation of contaminants in the event of a spill.

As a metallurgic testing facility, it is unclear to BAPAC whether or not solvents are used and if Dirats is a generator of hazardous waste as defined by MA DEP. According to Mr. Forish, one of the reasons for the building expansion is to store waste products generated at the facility which are currently stored in trailers at the site. The site also has a septic system which makes it critically important that no floor drains are included in the planned expansion. Alternatively, any floor drains deemed necessary to operations must be plumbed to a permitted tight tank. Mr Forish will be presenting to the Roundtable on Thursday.

Russian Evangelical Baptist Church, 866 North Road, Westfield

Dave Bean of D.L. Bean Inc. submitted a letter to BAPAC stating that they had evaluated groundwater flows on the site relative to our concerns about the detention wall failing. MR. Bean's letter stated that groundwater infiltrates downward and does not move laterally on the site. Furthermore, he stated that the lack of lateral or horizontal movement of flows would not jeopardize the detention basin wall.

Bobcat Hollow, Definitive Subdivision Plans, Southampton

The project incorporated a reduced road width to reduce impervious surfaces. BAPAC has no further comments on the project.

Nashawannuck Pond EIR

BAPAC reviewed the proposed dredging of Nashawannuck Pond and the MEPA Final Record of Decision dated September 17, 2008 on the EIR. The dredge spoils are proposed to be deposited on a city-owned site categorized a s GW-1 groundwater area because it is within the Zone II. Although the sediment samples collected from the pond in 2002 contained metals, polynuclear aromatic hydrocarbons (PAHs), pesticides and extractable petroleum hydrocarbons (EPH), all concentrations were below the Massachusetts Contingency Plan (MCP) standards for GW-1 areas. This area is also underlain with clay which offers the aquifer greater protection from contaminants. Therefore, BAPAC does not have any concerns relative to disposal of the spoils.

A monitoring well located at the edge of the field where the spoils will be deposited. BAPAC recommends that the monitoring well be flagged and protected so that it is not damaged during disposal site activities. Two wells were supposedly drilled in Broad Brook a number of years ago to introduce cold water to the brook. BAPAC recommends that during the pond drawdown, the two wells in Broad Brook are located and possibly capped. BAPAC has recently identified abandoned wells as a potential source of contamination to the aquifer and is developing a plan for prioritizing abandoned wells for decommissioning. The pond drawdown is an excellent opportunity for such activities.

3. Best Management Practices for Groundwater Protection

Patty Gambarini from PVPC presented her follow up literature review research regarding structural BMPs for treating stormwater. Most important was that the independent reviews of hydrodynamic separators were indicating low TSS removal rates compared with other more naturalized systems. Due to the amount of DRIs on the agenda, the committee decided to schedule a separate meeting to discuss this issue. Anne is still trying to schedule a Stormceptor site visit.

4. Road Salt Study

Bob Newton presented a brief summary of the results of the well water analysis. 38 of the wells are impacted by road salt, a determination based on the amount of sodium relative to chloride present. Bob needs to add the results of the metals analysis to the letters to the property owners. Bob will get letters to Anne and she will handle the mailing.

Next Meeting:

THURSDAY, November 6, 2008 @ 3:30 PM
Easthampton Municipal Offices, 50 Payson Avenue, Easthampton

MINUTES OF
BARNES AQUIFER PROTECTION ADVISORY COMMITTEE

DATE: 11/6/08 LOCATION: Easthampton Municipal Office Building, Easthampton

MEMBERS AND DESIGNEES PRESENT:

	J. Barrett, Holyoke		A. Zoeller, Holyoke	X	J. Burkott, Holyoke
	J. Boardman, Westfield		K. Taylor, Westfield	X	W. Darling, Westfield
	T. Newton, Easthampton	X	R. Newton, Easthampton		S. Beckley, Easthampton
X	M. Czerwiec, Easthampton		J. Slattery, Southampton	X	A. Capra, PVPC
X	Mark Girard, Southampton		C. Seklecki, Easthampton		

Others Present: Darleen Buttrick, Easthampton Aquifer Protection Committee

TIME OF CALL TO ORDER: 3:30
TIME OF ADJOURNMENT: 5:05

1. Adoption of October 7, 2008 Minutes
Minutes adopted unanimously.

5. Review of Developments of Regional Impact
There were no DRIs for review. Mark Girard reported that Mr. Gwinner has filed a stormwater plan for the Gilbert Road common driveway to stop the clock on a $300/day fine for not having one.

6. Best Management Practices for Groundwater Protection
Anne, Woody, Jeff and Stuart went on a Stormceptor site visit with a representative from Stormceptor. We viewed two Stormceptors at the Westfield Waste Water Treatment Plant and one on Root Road. The rep claimed that the two chambered system captures particles down to 20 microns, does not scour, and traps oil. Maintenance is critical to the continued performance of the system – removal of sediments from the lower quiet chamber, pumping off oil, and cleaning the trash trap for those older models with one. The rep was not able to comment on the study from the National Pollutant Removal Database Winter 2000 study that showed very low TSS removal rates (25%) under winter conditions with sodium chloride present.

Anne distributed an article about a study of permeable pavement on parking lots at URI over a sole source aquifer. The parking lot utilized porous asphalt and bioinfiltration islands as BMPs. Water quality sampling measured via shallow groundwater wells showed elevated levels of chloride and electoconductivity in winter months, minor amounts of PAHs, and higher nutrient levels in summer months. Although this study suggests greater pretreatment is needed, it is not clear whether these BMPs perform better or worse at pollutant removal that the traditional BMPS being utilized over the Barnes Aquifer.

Although Patty has provided an excellent summary of data available on BMP performance, the committee is not comfortable endorsing one BMP over another. BAPAC will form a Stormwater BMP Subcommittee to more closely evaluate the available and make recommendations to the full committee regarding a stormwater BMP policy for the committee to adopt.

7. Road Salt Study

Bob will have all of the data processed and ready to send out to well owners by December 1st. Westfield is extending it s North Road water main to the Purple Onion. All homes along this extension are able to connect without a betterment fee. Costs are being covered by the new Target development. The main should be completed by December 2008.

Anne reported on the Baystate Roads workshop she attended on October 27, 2008 about winter snow and ice. The presenter was Paul Brown of MassHighway's Snow and Ice Division. MassHighway has gone to an all salt program based on a very detailed anti-icing protocol that prescribes pre-wetting roads with a salt brine as the most essential component of a winter program. This in addition to many other steps such as monitoring pavement temp and equipment calibration, is an extremely cost-effective way to reduce salt use and the environmental problems associated with it and eliminate sand use altogether.

8. MET Well Project

Anne submitted the final report to MET last week. Due to the amount of time it took to perform file review at DEP, we were not able to determine those private wells at risk of TCE contamination based on modeling. Therefore, BAPAC will discuss this at the January meeting including next steps. Making sure all residents with private wells at risk of contamination have access to clean water through the municipal water system is a high priority for BAPAC.

9. Northampton Landfill Expansion

The City of Northampton is installing a new monitoring well to investigate landfill leachate migration to the south/southwest. BAPAC is interested in reviewing the site plans for the landfill expansion. Currently a detention basin for stormwater management is proposed. BAPAC wants to comment on its location so that it doesn't encourage migration of the plume inadvertently.

10. Green Awards

In past years, BAPAC has given out Green Awards to those individuals and businesses that have taken measures to protect the aquifer in some way. BAPAC will now be accepting nominations for awards to be given out during Drinking Water Week in May. Williston Northampton Academy was nominated because of the innovative measures they decided to take by building a constructed wetland at the site of the Galbraith Filed to treat perchlorate in groundwater.

11. FY09 Workplan

The committee unanimously voted to approve the FY09 Workplan as written in the DRAFT FY08 Fiscal Year Report.

12. Other Business

Jeff Burkott asked BAPAC if they would support the City of Holyoke's EPA Brownfield Cleanup Grant application for the Former Mountain Road Fire Range cleanup project. The site is within the Zone II. BAPAC voted to support the application.

Next Meeting: NEW LOCATION

Tuesday, December 2, 2008 @ 2:30 PM Stormwater BMP Subcommittee
@ 3:30 BAPAC Meeting
Easthampton Public Safety Complex, 32 Payson Avenue, Easthampton

MINUTES OF
BARNES AQUIFER PROTECTION ADVISORY COMMITTEE

DATE: 12/2/08 LOCATION: Easthampton Public Safety Complex, Easthampton

MEMBERS AND DESIGNEES PRESENT:

	J. Barrett, Holyoke		A. Zoeller, Holyoke	X	J. Burkott, Holyoke
	J. Boardman, Westfield		K. Taylor, Westfield	X	W. Darling, Westfield
	T. Newton, Easthampton	X	R. Newton, Easthampton		S. Beckley, Easthampton
X	M. Czerwiec, Easthampton		J. Slattery, Southampton	X	A. Capra, PVPC
	Mark Girard, Southampton		C. Seklecki, Easthampton		

Others Present: Darleen Buttrick, Easthampton Aquifer Protection Committee

TIME OF CALL TO ORDER: 3:30
TIME OF ADJOURNMENT: 4:45

1. Adoption of November 6, 2008 Minutes
Minutes adopted unanimously.

13. Review of Developments of Regional Impact
Commonwealth Guardrail, 132 Apremont Way, Westfield
Fuss & O'Neill submitting a letter to the planning Board dated November 20, 2008 in response to BAPAC's letter dated September 14, 2008. The letter stated that one leaching catchbasin exists on the site associated with a former loading dock. The basin will be sealed with concrete prior to installation of the diesel tank and that no other systems or structures for stormwater management and infiltration exist on the site. The letter also stated that the perimeter limited barrier described by Mr. Lemelin at our previous meeting is the industry standard for capturing spills and will be in place at this site. Commonwealth Guardrail will also be preparing a Spill Prevention, Control and Countermeasure Plan before beginning operations.

Unfortunately none of these comments address any of BAPAC's comments. The proponent has not provided any information to the satisfaction of BAPAC about how drips and small spills will be rpevented from entering the ground during storm events. As is evident at any gas station, rain flushes the grooved concrete pad around at the filling station and washes that material onto the surrounding ground. The proponent has not provided any information about how stormwater will be kept off the concrete pad.

The proponent also has not provided any information about how they will address stormwater management on-site except to say that they are filling the one existing catchbasin. As with all projects in the Zone II that require a Special Permit due to change of use, provisions for capturing, treating and infiltrating clean stormwater must be provided. Such systems have not been presented to BAPAC for consideration.

Russian Evangelical Church, Apremont Way, Westfield
After review by the Conservation Commission and MA DEP, design plans for the project were changed by the addition of an infiltration galley in the detention basin. This generally contrary to BAPAC's comments, preferring slower infiltration through the detention basin flow for greater pollutant load attenuation. Anne will contact the Conservation Commission to see why this change was made.

3. Road Salt Study – Presentation by Bob Newton, Smith College
This presentation was tabled till the January 6, 2009 meeting.

4. Green Awards
No nominations were submitted. Anne recommended drafting a press release seeking nominations to be issued in January. Awards will be made the first week in May. Nominations can be for an individual, business or other organization that has engaged in activities to protect the Barnes Aquifer in some way.

5. Best Management Practices for Groundwater Protection – Subcommittee Report
A subcommittee has been tasked with evaluating BMPS for groundwater protection and to make an informed recommendation to the full committee about the best options for groundwater protection. The subcommittee would like to revisit checklists that were created a few years ago for different types of development: residential, commercial and industrial. The checklists identify concerns relative to groundwater protection inherent in each type of development. Second, we would like to identify preferred structural BMPS, whether as part of a treatment chain or functioning independently, to treat different types of pollutants prior to infiltration. Pollutants of concern: sodium chloride, nutrients, pesticides, metals, petroleum products / VOCs, sediment, hazardous materials, and automotive fluids. Third, we would like to identify performance standards, rather than specific BMPs, to guide project designs. An intern from Antioch College will be working at PVPC in January –May. Anne will develop a scope of work for the intern to assist BAPAC in answering these questions and developing a so called BMP policy.

6. Other Business
A recommendation was made to invite Mayor Higgins and Northampton to participate in BAPAC. BAPAC would like an opportunity to comment on the design plans for the landfill expansion if it is to occur.

Next Meeting:
Tuesday, January 6, 2009 @ 3:30 PM

MINUTES OF
BARNES AQUIFER PROTECTION ADVISORY COMMITTEE

DATE: 1/6/09 LOCATION: Easthampton Municipal Office Building, Easthampton

MEMBERS AND DESIGNEES PRESENT:

	J. Barrett, Holyoke		A. Zoeller, Holyoke		J. Burkott, Holyoke
	J. Boardman, Westfield		K. Taylor, Westfield	X	W. Darling, Westfield
	T. Newton, Easthampton	X	R. Newton, Easthampton		S. Beckley, Easthampton
X	M. Czerwiec, Easthampton		J. Slattery, Southampton	X	A. Capra, PVPC
X	Mark Girard, Southampton		C. Seklecki, Easthampton		

Others Present: Dave Bean, D.L. Bean Inc.; Joseph Timdkov and Andrey Korchevsky, Russian Evangelical Church; Maurice Cahillane and Sam Crescione, Drury Lane Bottling Plant.

TIME OF CALL TO ORDER: 3:30
TIME OF ADJOURNMENT: 5:15

1. Adoption of December 2, 2008 Minutes
Minutes adopted unanimously.

14. Review of Developments of Regional Impact
Russian Evangelical Church, Apremont Way, Westfield
Mr. Bean of D.L. Bean presented plans for the project that had been revised to meet DEP's comments and the Wetlands Protection Act. After review by the Conservation Commission and MA DEP, an infiltration galley was added in the detention basin. According to the revised Stormwater Handbook, detention basins are not infiltration systems but rather design for flow attenuation. To meet DEP's standards, an infiltration structure needed to be added for compliance. This is generally contrary to BAPAC's comments, preferring slower infiltration through the detention basin floor for greater pollutant load attenuation. However, BAPAC will defer to DEP and has not further comments on the project.

Commonwealth Guardrail, 132 Apremont Way, Westfield
Dan Lemelin of Lemelin Environmental presented the plans dated 12/31/08 for a proposed above ground storage tank installation at Commonwealth Guardrail, 132 Apremont Way, Westfield. Although the specifications for the Highland Fireguard Triple Wall tank including the alarm systems, canopy, and Perimeter Limited Barrier (PLD) are satisfactory and meet the requirements of Westfield's Water Resource Protection District, BAPAC cannot at this time support this project due to the potential for groundwater contamination at the site due to the absence of any site controls, other than the PLD, that would prevent direct infiltration of contaminated stormwater.

The proposed project involves locating a new 10,000 gallon above ground fuel tank and filling station on an existing non-conforming lot, in terms of the Water Resource Protection District's requirements for stormwater management. In order for BAPAC to be support the addition of this new high potential threat to the aquifer, a system for the capture and treatment of stormwater prior to infiltration would be needed. Such system would include paved surfaces for all roads, driveways, parking areas, truck queue and fuel filling areas that drain to devices for the capture and treatment of sediment and oil and grease prior to infiltration. These best management

practices have been standard recommendations from BAPAC for all commercial and industrial projects that have been reviewed by the committee in the past.

Certain uses by their very nature have higher potential pollutant loading such as fuel storage and filling areas, parking lots, and roads. Although Lemelin Environmental has specified a system for fuel storage and fueling that BAPAC has approved for a previous site, Complete Disposal, it is important to note that in this case, the tank will be an entirely new use and not an improvement in safety and storage conditions to an existing tank which was the case at Complete Disposal. These improvements at Complete Disposal ultimately led to increased protection of the aquifer.

Drury Lane Bottling Plant, Easthampton

Maurice Cahillane provided a narrative description on behalf of the property owner, Sam Crescione, of plans to withdraw water from the Manhan River at a reservoir created by a dam at the Clear Falls Recreation Area. Mr.Cahillane presented a multi-phased development plan that included bottling water into 275-gallon tanks, generating hydro power for the City of Easthampton and surrounding towns, and construction of windmills for further energy production. Mr. Cahillane circulated a thick report developed several years ago about the project and some water quality analyses. He also stated that there was enough flow to withdraw up to 8 million gallons per day in June and July. This was the only copy of the report so the committee was not able to keep it and actually read it.

Mr. Cahillane requested that BAPAC submit a letter to him permitting withdrawal of water from the Manhan River. Anne Capra stated that BAPAC does not issue permits and for withdrawals from surface or ground waters greater than 100,000 gallons per day, a Water Withdrawal Permit was needed under the Water Management Act from the Massachusetts Department of Environmental Protection. Anne provided Mr. Cahillane with a copy of the permit application that was downloaded from the DEP website. The committee agreed that they did not have enough information to support the project and would be interested in reviewing a Water Withdrawal Permit application if one was filed.

3. Road Salt Study – Presentation by Bob Newton, Smith College

Bob Newton presented a brief summary of the analyses that were performed on water samples from 90 wells. Analyses were run for sodium, chloride, nitrate nitrogen, calcium, magnesium, potassium, lithium, sulfate, nitrate, dissolved silica, arsenic, lead, barium, and hardness. Of those samples, 38 were salt impacted from road salt and 17 other wells had naturally high sodium levels. Ten (10) wells, all in the Round Hill area had arsenic levels above 5 ppb which is considered high but not above the MCL. Also noteworthy, road salt is causing the groundwater to become hard by exchanging sodium with calcium and moving the calcium into solution.

Bob has drafted letters to the well owners with their results. BAPAC should review the draft letters and send any comments to Bob. Bob will send the final drafts and mailing labels to Anne for mailing.

4. Green Awards

Tabled till next meeting.

5. Best Management Practices for Groundwater Protection – Subcommittee Report

Tabled till next meeting.

6. Other Business

There was no other business.

Next Meeting:

Tuesday, February 3, 2009 @ 3:30 PM

MINUTES OF
BARNES AQUIFER PROTECTION ADVISORY COMMITTEE

DATE: 2/3/09 LOCATION: Easthampton Municipal Office Building, Easthampton

MEMBERS AND DESIGNEES PRESENT:

	J. Barrett, Holyoke		A. Zoeller, Holyoke		J. Burkott, Holyoke
	J. Boardman, Westfield		K. Taylor, Westfield	X	W. Darling, Westfield
	T. Newton, Easthampton	X	R. Newton, Easthampton		S. Beckley, Easthampton
X	M. Czerwiec, Easthampton		J. Slattery, Southampton	X	A. Capra, PVPC
X	Mark Girard, Southampton		C. Seklecki, Easthampton		

Others Present: Mark Reed, Heritage Surveys; Bill Lawry, Lawry Freight; Keith Terry, Sherman and Frydryk

TIME OF CALL TO ORDER: 3:30
TIME OF ADJOURNMENT: 5:00

1. Adoption of January 6, 2009 Minutes
Minutes adopted unanimously.

15. Review of Developments of Regional Impact
Bobcat Hollow Subdivision, Southampton
Keith Terry of Sherman and Frydryk presented the revised definitive subdivision plans for Bissonette Circle Extension submitted by Joseph Sampson for a 34-lot subdivision between White loaf and County Roads. The Southampton Planning Board is requiring all runoff from and traveling through this site to be captured, treated and infiltrated on-site. We understand that this requirement is being met through expanding the previously design infiltration areas and will alleviate localized off-site flooding as well. BAPAC recommends that the designated "no disturbance" areas are recorded on the deeds for each lot so that it may be enforceable over time.

Lawry Freight, Westfield
Mark Reed of Heritage Surveys presented plans dated January 8, 2009 including a gravel parking lot draining in the general direction of a detention basin with a leaching catchbasin preceded by a Stormceptor. The site will be used as a parking lot for trailer truck boxes. As such, the applicant is also seeking a Trucking Terminal Zoning Permit from the City as well. This use is identified by the Massachusetts Department of Environmental Protection as a high potential pollutant load. Therefore, BAPAC requests that the applicant be held to the highest treatment standards for stormwater infiltration and consider alternative treatment systems appropriate for high potential pollutant loading land uses and Zone IIs.

Given the site contours identified on the plan, it appears that only a portion of the site will actually drain to the Stormceptor for treatment prior to infiltration. The remaining flows appear to either sheet flow directly to the detention basin, sheet flow to grassed areas around the perimeter of the property, or infiltrate directly through the gravel parking lot. BAPAC recommends that the gravel parking lot be paved and graded, draining all stormwater to a Stormceptor or the like, prior to infiltration. The parking lot should include a small berm along its edge to prevent overflow of stormwater onto natural areas with no treatment capacity. This recommendation is a standard best management practice for sites with higher potential pollutant loads.

A gate valve should be installed after the Stormceptor and prior to the detention basin so that the recharge BMP and the aquifer can be isolated from contamination in the event of a hazardous spill.

Greater pollutant load attenuation can be achieved through soils in the detention basin floor. Therefore, BAPAC does not recommend leaching catchbasins to expedite infiltration.If the leaching catchbasin is kept, it is considered a Class 5 shallow Injection Well under MA Department of Environmental Protection's Drinking Water Program Underground Injection Control (UIC) Program. This well must be registered with DEP and adhere to DEP's Standard Design Requirements for Shallow Injection Wells. The proponent should develop a Stormwater Operation and Maintenance Plan. Provisions should be included in the Special Permit prohibiting on-site fueling of trucks and the storage of hazardous materials.

Pioneer Valley Energy Center FEIR, Westfield

Although the proposed project is outside of the City of Westfield's Aquifer Protection Overlay District, the site is within a high yielding aquifer. It was omitted for inclusion in the City's overlay district because there are no municipal wells with Zone IIs for that portion of the aquifer. However, as a potentially high-yielding productive aquifer, great care should be taken to evaluate the potential impacts of the proposed project on the aquifer. This land use is a high potential threat to the aquifer. As such, runoff from the entire site, including all equipment, parking areas for fuel trucks, storage and fueling areas, should be contained in a stormwater treatment system to prevent direct infiltration of untreated stormwater. The site plans include portions of the proposed site to be pervious, allowing for infiltration of rainfall including proposed equipment areas, which will consist of ¾ inch clear crushed stone placed to a depth of 6 inches. BAPAC strongly discourages this practice on industrially developed sites.

The FEIR states that ULSD fuel, aqueous ammonia storage tanks and, transformer containment area will be located in 110 percent containment areas. Rainwater captured inside the containment area will be "inspected" for contamination prior to discharge to the oil/water separator and extended dry detention basin. The FEIR offers no further explanation as to what level of inspection will take place. A visual assessment along has the potential to overlook dissolved contaminants which could be released to the environment. BAPAC also recommends that these areas be covered to prevent rainwater from entering the containment areas and therefore eliminate the potential for stormwater contamination.

The FEIR also states that the areas surrounding these storage sites will remain unpaved and covered in crushed stone. However, during the FEIR's evaluation of the use of LID techniques for the site, the proponent rejects the use of LID techniques stating that the nature of the project, which includes oil and chemical transport and storage, require a more controlled conveyance system. BAPAC contends that a more controlled conveyance and treatment system should be in place for the areas surrounding the containment systems as well. Such system should include paving these areas so that they drain to the proposed oil/water separators and detention basins.

The FEIR analysis of tertiary storage tank containment seems to recommend a single-walled stainless steel tank over the previously proposed industry standard single-wall carbon steel tank. The discussion presented in Section 11.4 covers the pros and cons of double versus single-walled tanks however no strong argument is made either way. The tank design needs to be given further consideration and offer a more substantive reason for disregarding the many safety provisions offered by double-walled tanks rather than the higher cost of such a system.

3. Road Salt Study – Presentation by Bob Newton, Smith College
Anne mailed the water analyses to the well owners involved in the study. Westfield and Southampton have not received any calls yet regarding the results.

4. Green Awards
Anne nominated Bob Newton and Smith College for a Green Award for their performance of water quality testing in the Road Salt Study and their continued support for the protection of the Barnes Aquifer. the Committee voted in favor of this nomination, Bob voted opposed.

5. Best Management Practices for Groundwater Protection – Subcommittee Report
Julie Thomason, an Antioch College graduate student, introduced herself to the committee and briefly discussed the research approach she will undertake to perform a literature review of stormwater BMPs relative to aquifer recharge and pollutant load treatment.

6. Other Business
There was no other business.

Next Meeting:
Tuesday, March 3, 2009 @ 3:30 PM

MINUTES OF
BARNES AQUIFER PROTECTION ADVISORY COMMITTEE

DATE: 3/3/09 LOCATION: Easthampton Municipal Office Building, Easthampton

MEMBERS AND DESIGNEES PRESENT:

	J. Barrett, Holyoke		A. Zoeller, Holyoke	X	J. Burkott, Holyoke
	J. Boardman, Westfield		K. Taylor, Westfield	X	W. Darling, Westfield
	T. Newton, Easthampton	X	R. Newton, Easthampton		S. Beckley, Easthampton
X	M. Czerwiec, Easthampton		J. Slattery, Southampton	X	A. Capra, PVPC
X	Mark Girard, Southampton		C. Seklecki, Easthampton		

Others Present: Julie Thomason, Antioch Graduate Student and BAPAC Intern

TIME OF CALL TO ORDER: 3:34
TIME OF ADJOURNMENT: 4:45

1. Adoption of February 3, 2009 Minutes
Minutes adopted unanimously with change noted: Jeff Burkott present.

16. Review of Developments of Regional Impact
North Road Plaza Beauty Salon, Westfield
A concerned citizen called the Water Resources Department to inquiry about chemicals used in beauty parlors and nail salons and their potential harmful affect on the aquifer via their introduction through a septic system. The North Road Plaza is approximately 3,000 to 4,000 feet upstream of Wells #7 and #8. There are houses on private wells between the plaza and the city's wells that may also be affected by these chemicals. Due to budget limitations and the set scope of work for the current fiscal year, PVPC is not able to research this topic at this time however, this issue could be prioritized for the next fiscal year beginning July 1st. Bob Newton volunteered to research the types of chemicals used in these facilities, their treatment within a septic system, and their potential affect on the aquifer. IT is also recommended that this issue be reported to the Westfield Board of Health to follow up on.

3. Road Salt Study – Presentation by Bob Newton, Smith College
Once Bob submits a summary report of the private well sampling analysis, Anne will draft a press release and letters to the Boards of Health, chief elected official, and DPW/Highway Department in Westfield and Southampton as well as MassHighway. BAPAC is not clear as to the winter snow and ice protocols utilized by Westfield this winter. Woody will contact the DPW. Bob plans to publish a paper this summer in *Environmental Science and Technology* on the study and its findings.

4. Green Awards
The Committee reaffirmed the nomination for Smith College and Bob Newton for a Green Award. Anne will draft a letter to Carol Christ, Smith College President informing her of this nomination and request to schedule a presentation of the award during National Drinking Water Week in May.

Woody mentioned that the Westfield River Watershed Association has received fine money from MA DEP to support a storm drain stenciling project in Westfield.

5. Best Management Practices for Groundwater Protection
Julie Thomason, an Antioch College graduate student, shared the spreadsheet has developed to track information collected a s part of a literature review about structural best management practices for treating and infiltrating stormwater. BAPAC is especially interested in BMP effectiveness at pollutant load removal prior to infiltration within Zone IIs. The committee would like Julie's research to result in recommendations for the types of BMPs that are most effective. BAPAC will then use that information to develop information perhaps in the form of case studies for engineers and developers to encourage better project designs. BAPAC consistently sees the same traditional end of pipe systems. We are interested in working with developers to promote more naturalized, decentralized systems that are better integrated into the landscape aesthetically. However, our first concern is aquifer protection and recharge so it is important that the effectiveness of the systems are well documented. This information could be used as part of a workshop for municipal officials and designers in the area. Educating officials in the area has been a project idea of BAPAC's for several years now but we have been unable to get funding for this.

6. Other Business
BAPAC will send letters to the chief elected officials seeking confirmation or re-appointment of community designees to the committee.

Next Meeting:
Tuesday, April 7, 2009 @ 3:30 PM

MINUTES OF
BARNES AQUIFER PROTECTION ADVISORY COMMITTEE

DATE: 4/7/09 LOCATION: Easthampton Municipal Office Building, Easthampton

MEMBERS AND DESIGNEES PRESENT:

	J. Barrett, Holyoke		A. Zoeller, Holyoke	X	J. Burkott, Holyoke
	J. Boardman, Westfield		K. Taylor, Westfield		W. Darling, Westfield
	T. Newton, Easthampton		R. Newton, Easthampton		S. Beckley, Easthampton
X	M. Czerwiec, Easthampton		J. Slattery, Southampton	X	A. Capra, PVPC
X	Mark Girard, Southampton		C. Seklecki, Easthampton		

Others Present: Julie Thomason, Antioch Graduate Student and BAPAC Intern

TIME OF CALL TO ORDER: 3:34
TIME OF ADJOURNMENT: 4:00

1. Adoption of March 3, 2009 Minutes
Minutes adopted unanimously with change noted: Jeff Burkott present.

17. Review of Developments of Regional Impact
Bobcat Hollow Definitive Subdivision, Southampton Mark Girard reported that the Planning Board approved the plans and included a provision for no more than 50% lawn coverage on any lot. The intention was to seek retention of wooded areas and buffers.

3. Road Salt Study
Bob Newton is presenting the study at the Water Resources Conference at UMASS today.

4. Green Awards
BAPAC will present a Green Award to Bob Newton at our next meeting on May 5th at Smith College.

5. Best Management Practices for Groundwater Protection
Julie Thomason presented a memo summarizing information on Stormceptor technologies from a 2004 NJCAT study and a NJ TARP Interim Certificate. In 2004 the New Jersey Corporation for Advanced Technology (NJCAT) finished a study on the Stormceptor proprietary oil/grit stormwater separator. This study had been conducted, at the request of the Stormceptor Group of Companies and Rinker Materials Hydro Conduit Division, to initiate the Technology Acceptance and Reciprocity Partnership (TARP) three-tier approval process. TARP rated Stormceptor STC 900 the best performer out of seven tested systems in a group evaluation which included the NJCAT study. Following this evaluation Stormceptor received TARP Tier 1 interim certification from the New Jersey Department of Environmental Protection (NJDEP). The Tier 1 evaluates systems for TSS removal and scouring under several different operating rates and sediment loadings. The evaluation demonstrated Stormceptor's ability to perform "beyond normal operation capacity during extreme rainfall." The Stormceptor was tested using the NJCAT standardized mixture of particles ranging from 1 to 1000 microns in diameter. The Stormceptor removed 75% of all TSS, including fine silt and clay. The Stormceptor was also shown not to scour or re-suspend particles during periods of increased flow rate when pre-loaded to 50 or 100% sediment capacity. The other systems in this study were the High Efficiency CDS,

Downstream Defender, VortSentry, Vortechs, Aquaswirl, and BaySaver. All systems but the Stormceptor and BaySaver used different sediment mixtures composed of coarser particles.

The Interim certification associated with this NJCAT/TARP study expired in June of 2007, and there is no indication within the NJDEP website that efforts are being made to achieve full certification. A conditional interim certification was also issued to the Stormceptor OSR in October of 2007, certifying the Stormceptor OSR 250 at 50% TSS removal while operating at a flow of 1,120 gpm or less. There was no resuspension or scouring test performed for this certification, limiting use of Stormceptor OSR to offline systems. Other OSR models were included in the interim certification, each with restrictive flow limit relative to size. This certification will expire in September 2009.

An extensive study was conducted, at the request of Rinker Materials, on the Stormceptor 450i at the University of Florida, Department of Environmental Engineering Sciences, with a report issued in December 2008. The study tested hydraulic loading over a range of 2-125% for both and inlet configuration and an inline configuration at influent concentrations of 11, 200, and 300 mg/L. The study used the NJCAT standardized sediment mixture, and showed there was no significant difference in removal between configurations: 53.6-87.3% removal for the inlet system and 56.7%-85.9% removal for the inline system. Performance evaluations demonstrated an improved removal rate with a decrease in flow rate for the same influent concentration.

6. Other Business

A new owner of a house in a subdivision on Helen Drive in Southampton called Anne Capra inquiring about language in his deed that prohibited "commercially applied fertilizers and pesticides". The property owner wanted to understand the intention of the language. Anne discussed with him the relevance of the site over the aquifer and the desire to prohibit pesticides, herbicides and fertilizers that could be harmful to the aquifer and public health if applied incorrectly. Anne referred him to the Greenscapes website (www.Greenscapes.org) for more information about organic landscaping and for a list of NOFA Certified Land Care Professionals in the area that could provide organic land care services.

This inquiry, although fortunate that the property owner was interested enough to investigate this clause in his deed, reminds us of all of the other lots where such restrictions may or may not be adhered to. The language of the clause was also confusing and doesn't express the intention of specifically what is being restricted.

Next Meeting: **NEW LOCATION**

Tuesday, May 5, 2009 @ 3:30 PM

Smith College, Northampton
Sabin Reed, Room 101A

MINUTES OF
BARNES AQUIFER PROTECTION ADVISORY COMMITTEE

DATE: 5/5/09 **LOCATION: Smith College, Northampton**

MEMBERS AND DESIGNEES PRESENT:

	J. Barrett, Holyoke		A. Zoeller, Holyoke	X	J. Burkott, Holyoke
	J. Boardman, Westfield		K. Taylor, Westfield	X	W. Darling, Westfield
	T. Newton, Easthampton	X	R. Newton, Easthampton		S. Beckley, Easthampton
X	M. Czerwiec, Easthampton		J. Slattery, Southampton	X	A. Capra, PVPC
	Mark Girard, Southampton		C. Seklecki, Easthampton		

Others Present: Susan Bourque, Smith College Provost; Eric Forish, Forish Construction

TIME OF CALL TO ORDER: 3:30
TIME OF ADJOURNMENT: 4:45

1. Adoption of April 7, 2009 Minutes
Minutes adopted unanimously.

18. Presentation of Green Award
Woody Darling presented Robert Newton and the Center for Aqueous Biogeochemistry Research at Smith College with BAPAC's 2009 Green Award for his outstanding commitment to the protection and research of the Barnes Aquifer. On behalf of the City of Easthampton and Mayor Tautznik, Mike Czerwiec presented Bob with a Certificate of Recognition for his long-term commitment to protection of the Barnes Aquifer and service to the City of Easthampton. Susan Bourque, Smith College Provost, stated her pleasure on behalf of Smith College for receiving this award. She noted that Bob's use of his research in his civic engagement serves as a wonderful model for all faculty at Smith.

19. Review of Developments of Regional Impact
Dirats Laboratory, 41 Airport Road, Westfield - Eric Forish of Forish Construction presented revised plans to the committee. Revisions to the plan include downsizing the proposed addition and reconfiguration of the parking lot and storm drainage system. Some existing drywells are planned for removal while others are planned to "capped". BAPAC is unsure as to whether "capping" the existing drywells that will remain in place is sufficient such that they do not need to be registered as Class V Injection Wells by the Massachusetts Department of Environmental Protection (MA DEP). BAPAC requests that the capping is permanent.

The proposed stormwater treatment system has been changed from a proposed retention basin with a leaching cell/drywell in the bottom to a Stormceptor followed by an infiltration trench. Although the Stormceptor offers pretreatment for oil, grease and sediment prior to the infiltration trench, there is no intermediary treatment device to address road salt, heavy metals and nutrients prior to the infiltration trench. BAPAC requests that the proponent investigate treatment options for removal of these pollutants prior to discharge to an infiltration system. For other projects within the Zone II, BAPAC has been comfortable with vegetated swales, biofiltration areas, or vegetated retention basins prior to infiltration structures, for the additional pollutant load removal BAPAC seeks.

An Operation and Maintenance Plan for the stormwater management system should be submitted to the Planning Board and annual maintenance logs submitted to the Water Resources Department to ensure maintenance of the system is occurring.

As a metallurgic testing facility, it is unclear to BAPAC whether or not solvents are used and if Dirats is a generator of hazardous waste as defined by MA DEP. According to the City of Westfield's SWAP Report completed by MA DEP (April 15, 2003), Dirats is a small quantity generator of hazardous material. Dirats began operations at this location in the 1970s, according to Mr. Forish, which predates the City of Westfield's adoption of the Water Resource Protection District Zoning Ordinance. BAPAC recommends that the Board determine the extent to which this facility may be a non-conforming use given Section 1823 Prohibited Uses of the zoning ordinance. According to Mr. Forish, one of the reasons for the building expansion is to store waste products generated at the facility which are currently stored in trailers at the site. The site also has a septic system which makes it critically important that no floor drains are included in the planned expansion. Alternatively, any floor drains deemed necessary to operations must be plumbed to a permitted tight tank.

4. Road Salt Study
Bob gave a Powerpoint presentation about the results of the salt study that he also presented at eh Water Resources Conference at UMASS in April. In summary, 57.8% of samples wells not salt impacted, 32.2% high salt, and 10% high chloride. Of particular concern is an increasing trend in chloride levels (10 mg/year) in a shallow well that is also in the same area as Westfield's municipal wells. Bob wants to look at Na and Cl levels in the municipal wells over time to see if they are trending upward.

Bob would like to perform a follow up sampling round in June of some of the wells in Westfield. Anne will send letters out and Bob and Woody will coordinate drop off and pick up for June 2nd and 3rd.

5. Other Business
None

Next Meeting:

Tuesday, June 2, 2009 @ 3:30 PM
Easthampton Municipal Office Building
50 Payson Avenue, Easthampton

MINUTES OF
BARNES AQUIFER PROTECTION ADVISORY COMMITTEE

DATE: 6/2/09 **LOCATION: Easthampton Municipal Offices, Easthampton**

MEMBERS AND DESIGNEES PRESENT:

J. Barrett, Holyoke	A. Zoeller, Holyoke	X J. Burkott, Holyoke
K. Taylor, Westfield	X W. Darling, Westfield	C. Seklecki, Easthampton
T. Newton, Easthampton	X R. Newton, Easthampton	S. Beckley, Easthampton
X M. Czerwiec, Easthampton	J. Slattery, Southampton	X A. Capra, PVPC
X Mark Girard, Southampton		

Others Present: David Mackwell, Kelly Engineering; Ralph Perelis, Campanelli Companies; Darleen Buttrick, Easthampton Aquifer Committee; Larry Smith, Westfield Planning Department.

TIME OF CALL TO ORDER: 3:30
TIME OF ADJOURNMENT: 5:00

1. Adoption of May 5, 2009 Minutes
Minutes adopted unanimously.

20. Review of Developments of Regional Impact
Home Depot Distribution Center and Warehouse, Servistar Industrial Way, Westfield
David Mackwell of Kelly Engineering and Ralph Perelis of Campanelli Companies presented plans for the 657,000 square foot distribution center. Set on a 69-acre parcel in the Campanelli Industrial Park, the project also includes 444 trailer parking spots and approximately 237 loading docks, and an employee parking lot with 268 parking spaces. The stormwater management plan involves a series of deep sump catchbasins draining to Stormceptors and then discharging to detention basins that overflow to recharge ponds. Roof runoff will also be directed to the detention basins. Mr. Mackwell said the detention basins are currently designed to support wetland vegetation.

A gate valve will need to be added before the detention basins to isolate the recharging systems in the event of a hazardous spill in the parking lot or around the building. Mr. Mackwell noted that due to the large size of the pipe draining to the basins (48-60") they will need to customize some sort of sluice gate set within a concrete box rather than a traditional gate valve which would be not be manually operable for that size pipe.

Bob Newton noted that the site is mounded in the middle with glacial till and expressed concern about the sites ability to recharge the amount of runoff that will be shed from the large building and parking lots. Mr. Mackwell stated that soil tests around the site indicate glacial till in the center of the lot where the building is and Group C soils throughout the rest of the site. The recharge rate for the basins and recharge ponds were calculated using the Static Method prescribed in the MA Stormwater Regulations for Group C soils and felt comfortable that there was ample storage for that rate of recharge so as not to cause overflows during a 1" storm event, at a minimum. The basins will be constructed by removing the gravel up to the B horizon and then backfilling with sand and loam mix for the basin floors.

BAPAC would be interested in seeing the soil boring reports. To ensure that the system is recharging as designed, BAPAC also recommends a long-term gauge monitoring system at the detention basins and recharge ponds. Data from the gauging stations should be submitted to the Westfield Water Resources Department.

BAPAC prefers detention basins and recharge ponds to be vegetated. However, a concern about standing water and the potential for mosquito breeding was expressed. It was also noted that due to the proximity of the airport, standing water is not preferable. BAPAC recommends seeking some compromise amongst these differing interests by designing the basin so that it drains within 72 hours and is able to support facultative species rather than obligate species. Facultative species are adaptable to both wetland and non-wetland conditions and thus are more tolerant of periodic flooding from storm flows. The Massachusetts Best Management Practices and Guidance for Freshwater Mosquito Control (2008) recommends that stormwater detention/retention systems drain within 72 hours to prevent mosquito breeding.

Any floor drains within the building should be plumbed to the municipal sewer. Absolutely no floor drains should be allowed to drain to the stormwater treatment system or infiltrate directly in to the ground.
Mark Girard requested a list of all materials to be stored at the site. Anne Capra requested that instead of a list, MSDS sheets for all hazardous products that will be warehoused and/or distributed from the site be provided.

Two backup diesel generators are planned for the site. In accordance with Westfield's Water Resources Protection District, on-site fuel storage must have tertiary containment. Mr. Mackwell noted that at this time, only secondary containment is included in the design. Consistent with BAPAC's comments on other projects where on-site fuel storage was planned, BAPAC recommends an overfill alarm to prevent overflows during delivery and pumping and, leak detection system incorporated between the multiple layers of the tank. The areas where the tanks will be located must be paved, have no floor drains, and drain to a catchment system that is separate from the stormwater management system as described above to prevent infiltration of diesel fuel into the aquifer.

Dirats Laboratory, Westfield

Larry Smith and Woody Darling stated that Eric Forish presented the plans to the Planning Board the evening of May 5th, immediately after our BAPAC meeting at which we provided comments regarding the revised plans. Mr. Forish apparently told the Planning Board that BAPAC did not have any comments and were satisfied with the design as presented on May 5th which was completely inaccurate. Mr. Forish failed to relay comments given by BAPAC only a few hours earlier to the Planning Board. The proposed stormwater treatment system had been changed from a proposed retention basin with a leaching cell/drywell in the bottom to a Stormceptor followed by an infiltration trench. Although the Stormceptor offers pretreatment for oil, grease and sediment prior to the infiltration trench, there is no intermediary treatment device to address road salt, heavy metals and nutrients prior to the infiltration trench. BAPAC requested that the proponent investigate treatment options for removal of these pollutants prior to discharge to an infiltration system. Because Mr. Forish did not relay these comments, and BAPAC's letter was not submitted until 5/11/09, the Planning Board closed the hearing that night and issued the Special Permit. Woody Darling contacted Mr. Forish and expressed that the City will seek adherence to the treatment chain recommended by BAPAC.

Cook Road Propane Tank, Southampton

Mark Girard inquired if anyone had been contacted about an underground propane tank and generator for a sewer pump station that is being installed on Cook Road in Southampton just over the Easthampton city line. None of the committee members present were aware of the project or had been contacted about it. Mark was contacted by a nearby property owner. Mark will get more information.

Road Salt Study
Another round of private well sampling was conducted on June 3, 2009 at 16 residences and 1 business on Jaeger Drive, North Road, Southampton Road and Old Stage Road in Westfield. The sites were selected by Bob Newton to gather further information about long term trending of sodium chloride levels in the aquifer. Analysis will be performed at Smith College.

Best Management Practices for Groundwater Protection
Julie Thomason, BAPAC intern and Antioch graduate student, presented her report titled "Stormwater Best Management Practices and Low Impact Development Strategies: A Comparative Literature Review". A memo summarizing her findings is attached.

Other Business
Standardized Comments
Larry Smith stated that it is very important for BAPAC to provide the same comments to the project developers at the meeting as are submitted in the letter to the Planning Board or City Council. This way, the developer is prepared to respond to BAPAC's comments before their meeting with the permitting board thus moving the project forward rather than causing unnecessary delays.

BAPAC has always attempted to provide consistent comments. Sometimes discussion about a proposed project will continue after a developer has left the meeting or, plans are submitted for review after the meeting and new issues come to light because details on the plan were not presented at the meeting. BAPAC will develop a standardized list of comments and concerns and make this available to the local boards and on our website.

Airport Best Management Practices Regarding Fuel Disposal
Woody Darling was notified by a concerned citizen about fuel disposal at the airport in Westfield. Aircraft operators check their fuel before each flight for water in the fuel by draining a small amount into a cup, checking the water level and then dumping it on the tarmac. Although the fuel can evaporate, this practice generates VOC emissions that pollute the air as well as possible runoff issues contaminating surface and ground waters and the soil. Woody recommended contacting the airport to see of they have a receptacle for this fuel or special jars that allow clean fuels to be returned to the aircraft fuel. BAPAC will take this up in September.

Next Meeting:

Tuesday, September 1, 2009 @ 3:30 PM
Easthampton Municipal Office Building
50 Payson Avenue, Easthampton

APPENDIX B: DEVELOPMENTS OF REGIONAL IMPACT (DRI)

October 8, 2008

Mark Girard, Chair
Planning Board
Town of Southampton
P.O. Box 276
Southampton, MA 01073

Reference: Bobcat Hollow, Bissonette Circle, Southampton

Dear Mr. Girard:

I am writing you on behalf of the Barnes Aquifer Protection Advisory Committee (BAPAC) to provide our comments regarding the Definitive Subdivision Plan submitted by Joseph Sampson for a 34-lot subdivision between White loaf and County Roads. BAPAC is composed of representatives from the four jurisdictions in which the Barnes Aquifer is located. The committee was created in 1989 to address developments of regional impact that are proposed within the aquifer to ensure that drinking water resources remain safe for the more-than 60,000 people that is serves.

BAPAC has no further comments on this project at this time. Thank you for the opportunity to comment.

Sincerely,

Charles Darling, Chair

cc: Sherman and Frydrk, 3 Converse Street, Suite 203, Palmer, MA 01069
Joseph Sampson, 419 Springfield Road, Westfield, MA 01085

February 5, 2009

Mark Girard, Chair
Planning Board
Town of Southampton
P.O. Box 276
Southampton, MA 01073

Reference: Bobcat Hollow, Bissonette Circle, Southampton

Dear Mr. Girard:

I am writing you on behalf of the Barnes Aquifer Protection Advisory Committee (BAPAC) to provide our comments regarding the revised Definitive Subdivision Plan submitted by Joseph Sampson for a 34-lot subdivision between White loaf and County Roads. The project was presented to BAPAC by Keith Terry of Sherman and Frydrk at our February 4, 2009 meeting. BAPAC is composed of representatives from the four jurisdictions in which the Barnes Aquifer is located. The committee was created in 1989 to address developments of regional impact that are proposed within the aquifer to ensure that drinking water resources remain safe for the more-than 60,000 people that is serves.

We are pleased that the Board is requiring all runoff from and traveling through this site to be captured, treated and infiltrated on-site. We understand that this requirement is being met through expanding the previously design infiltration areas and will alleviate localized off-site flooding as well.

BAPAC recommends that the designated “no disturbance” areas are recorded on the deeds for each lot so that it may be enforceable over time. Thank you for the opportunity to comment.

Sincerely,

Charles Darling, Chair

cc: Sherman and Frydrk, 3 Converse Street, Suite 203, Palmer, MA 01069
Joseph Sampson, 419 Springfield Road, Westfield, MA 01085

January 11, 2009

Maurice Cahillane
19 Saab Court, Apt. 506
Springfield, MA 01104

Reference: Drury Lane Bottling Plant, Easthampton

Dear Mr. Cahillane:

Thank you for presenting your project to the Barnes Aquifer Protection Committee (BAPAC) at our January 6, 2009 meeting. BAPAC would be interested in reviewing and commenting on your application for a Water Withdrawal Permit under the Water Management Act if you decide to file one. Likewise, if you submit for any other permits with the Department of Environmental Protection or the Department of Public Health, BAPAC would be interested in receiving a copy for review and comment.

Sincerely,

Charles Darling, Chair

September 14, 2008

Anthony Petrucelli, Chair
Westfield Planning Board
City Hall
59 Court Street
Westfield, MA 01085

Reference: Commonwealth Guardrail, 132 Apremont Way, Westfield

Dear Mr. Petrucelli:

I am writing you on behalf of the Barnes Aquifer Protection Advisory Committee (BAPAC) to provide our comments regarding the Special Permit application for a 10,000 above ground storage tank for diesel fuel at Commonwealth Guardrail, 132 Apremont Way. Kelly from Lemelin Environmental Services, Inc. of Chicopee presented the specifications for the proposed new tank at BAPAC's September 9, 2008 meeting. BAPAC is composed of representatives from the four jurisdictions in which the Barnes Aquifer is located. The committee was created in 1989 to address developments of regional impact that are proposed within the aquifer to ensure that drinking water resources remain safe for the more-than 60,000 people that is serves.

BAPAC has reviewed the revised specifications for a Highland Fireguard Triple Wall Above Ground Storage Tank. BAPAC contacted Highland Tank at their Stoytown, PA location to clarify whether or not the tank specified was a double- or triple-wall tank. Highland Tank manufactures single and double-wall tanks. The double wall tank is typically designed with the Flameshield® outer wall which includes two walls of steel with a layer of insulation in between. This technically results in a triple-walled tank however it does not provide tertiary containment for fuel because of the insulation between the second and third layers of steel, therefore, not meeting the Special Permit requirements of the City of Westfield.

To overcome this, Lemelin Environmental commissioned a custom triple wall tank from Highland Tank through Wildco Petroleum Equipment. A plan of the custom triple-wall tank is provided in the specification package provided by Lemelin however all other documentation in the packet is for a double wall tank. The tank system will also include the Gasboy Fuel Management System and Veeder Root overfill alarm to prevent overflows at during delivery and pumping and leak detection. The tank will be surrounded by bollards and located on a concrete pad. Given these specifications, the tank appears to meet the tertiary containment requirements of the City of Westfield's Water Resource Protection Ordinance.

Although the tank itself meets the highest standards for water protection, it is important the site design also supports protection of the aquifer in the event of a catastrophic failure of the tank. In the specification package provided by Lemelin Environmental, one of the pictures of an installed tank appears to be only feet away from an open catchbasin which is of great concern. BAPAC strongly encourages the Board to evaluate the location of the tank in relation to existing stormwater management structures such as catchbasins, leaching cells, swales, infiltration trenches, etc. to ensure that any failure of the tank is not going to drain directly into one of these structures. Site design plans for the fuel dispensing and receiving areas should indicate how drips and spills will be prevented from entering the ground. Likewise, as with other sites in the overlay district, BAPAC requests that pretreatment for oil and grease and an emergency gate valve exist prior to all infiltration structures. An Emergency Spill Response Plan should also be provided to the Planning Board. Thank you for the opportunity to comment.

Sincerely,

Michael Czerwiec, Vice-Chair

CC: Lemelin Environmental Services, Inc. 70 North Street, Chicopee, MA 01020

October 8, 2008

Anthony Petrucelli, Chair
Westfield Planning Board
City Hall
59 Court Street
Westfield, MA 01085

Reference: Commonwealth Guardrail, 132 Apremont Way, Westfield

Dear Mr. Petrucelli:

I am writing you on behalf of the Barnes Aquifer Protection Advisory Committee (BAPAC) to provide our comments regarding the Special Permit application for a 10,000 above ground storage tank for diesel fuel at Commonwealth Guardrail, 132 Apremont Way. Kelly Egan and Dan Lemelin from Lemelin Environmental Services, Inc. of Chicopee attended BAPAC's October 7, 2008 meeting. BAPAC is composed of representatives from the four jurisdictions in which the Barnes Aquifer is located. The committee was created in 1989 to address developments of regional impact that are proposed within the aquifer to ensure that drinking water resources remain safe for the more-than 60,000 people that is serves.

Mr. Lemelin explained the concrete containment pad and positive limited barrier within it that is used industry wide for the containment of small spills. However, Mr. Lemelin did explain that maintenance of the concrete pad is absolutely critical to keeping the pad clean so that during storm events, any fuel "drips" do not get flushed off the pad and washed away with stormwater. It is important to note that the fueling pad is not proposed to be covered which increases its likelihood of being inundated by rain and snow. However, the overall site design relative to any existing or proposed stormwater infrastructure still remains unclear. Mr. Lemelin noted that most of the site is crushed stone except for some buildings and that there isn't any obviously apparent stormwater drains, etc.

Therefore, BAPAC reiterates its previous comment encouraging the Board to evaluate the location of the tank in relation to existing, or proposed, stormwater management structures such as catchbasins, leaching cells, swales, infiltration trenches, etc. to ensure that any failure of the tank or the flusing of the concrete pad, is not going to drain directly into one of these structures. In the absence of any stormwater treatment devices, it would appear that all stormwater, contaminated or otherwise, would directly infiltrate. Despite the fact that BAPAC is satisfied with the design of the above ground fuel storage tank, the remainder of the site does not appear to comply with other provisions for aquifer protection. Given the high threat for contamination that the site poses without a closed loop stormwater treatment system, BAPAC does not endorse locating a fuel storage tank at this facility. Thank you for the opportunity to comment.

Sincerely,

Michael Czerwiec, Vice-Chair

CC: Lemelin Environmental Services, Inc. 70 North Street, Chicopee, MA 01020

January 11, 2009
Anthony Petrucelli, Chair
Westfield Planning Board
City Hall
59 Court Street
Westfield, MA 01085

Reference: Commonwealth Guardrail, 132 Apremont Way, Westfield
Dear Mr. Petrucelli:
BAPAC has reviewed the plans dated 12/31/08 submitted by Lemelin Environmental Services Inc. for a proposed above ground storage tank installation at Commonwealth Guardrail, 132 Apremont Way, Westfield. Although the specifications for the Highland Fireguard Triple Wall tank including the alarm systems, canopy, and Perimeter Limited Barrier (PLD) are satisfactory and meet the requirements of Westfield's Water Resource Protection District, BAPAC cannot at this time support this project due to the potential for groundwater contamination at the site due to the absence of any site controls, other than the PLD, that would prevent direct infiltration of contaminated stormwater.
The proposed project involves locating a new 10,000 gallon above ground fuel tank and filling station on an existing non-conforming lot, in terms of the Water Resource Protection District's requirements for stormwater management. In order for BAPAC to be support the addition of this new high potential threat to the aquifer, a system for the capture and treatment of stormwater prior to infiltration would be needed. Such system would include paved surfaces for all roads, driveways, parking areas, truck queue and fuel filling areas that drain to devices for the capture and treatment of sediment and oil and grease prior to infiltration. These best management practices have been standard recommendations from BAPAC for all commercial and industrial projects that have been reviewed by the committee in the past.
Certain uses by their very nature have higher potential pollutant loading such as fuel storage and filling areas, parking lots, and roads. Although Lemelin Environmental has specified a system for fuel storage and fueling that BAPAC has approved for a previous site, Complete Disposal, it is important to note that in this case, the tank will be an entirely new use and not an improvement in safety and storage conditions to an existing tank which was the case at Complete Disposal. These improvements at Complete Disposal ultimately led to increased protection of the aquifer.
BAPAC is charged with oversight of the aquifer, ensuring its long term viability as a clean water supply. Fuel storage is a high potential threat to the aquifer and as such the highest standards for capture and treatment of stormwater runoff from the site must be required. Thank you for the opportunity to comment.
Sincerely,

Mike Czerwiec, Vice-Chair
Cc: Charles Darling, Westfield Water Resources Department
Dan Lemelin, Lemelin Environmental Services, Inc.

October 8, 2008

Anthony Petrucelli, Chair
Westfield Planning Board
City Hall
59 Court Street
Westfield, MA 01085

Reference: J. Dirats & Co., Inc., 41 Airport Road, Westfield

Dear Mr. Petrucelli:

I am writing you on behalf of the Barnes Aquifer Protection Advisory Committee (BAPAC) to provide our comments on the site plans for the proposed expansion at J.Dirats & Co., Inc. at 41 Airport Road presented at the October 7th meeting by Eric Forish of Forish Construction. The committee was created in 1989 to address developments of regional impact that are proposed within the aquifer to ensure that drinking water resources remain safe for the more-than 60,000 people that is serves.

The stormwater management system at the site currently consists of a series of drywells for infiltrating roof runoff, a retention basin with a drywell preceded by a grassed swale between the driveway and a neighboring lot occupied by Jarvis Surgical, and two drywells in a small depressed area on the north side of the building. BAPAC understands that roof runoff will continue to be drained to a series of drywells around the property and the retention basin with the drywell and grassed swale on the southeast side of the property will remain. Driveway runoff will be directed via sheet flow to a new retention basin constructed with a forebay and three drywells. Given these circumstances, BAPAC has the following comments.

1. Drywells are considered Class V Injection Wells by the Massachusetts Department of Environmental Protection (MA DEP). MA DEP requires all drywells, pre-existing and new, to be registered with them. For more information on registering a Class V Injection Well contact DEP's Underground Injection Control coordinator at (617) 348-4014.

2. Pre-treatment for oil and grease, heavy metals, particulates, and road salt are recommended prior to infiltration. It has been the City of Westfield's policy to require the proprietary hydrodynamic separator Stormceptor for this practice although such devices are not effective at treating road salt. The proposed forebay does not function as an oil and grease trap and may allow direct infiltration during smaller storm events. A gate valve after the Stormceptor and before the infiltration device should be installed to allow for isolation of contaminants in the event of a spill.

3. Although drywells in retention basins function to expedite infiltration of water to prevent ponding and freezing, this is not a preferred treatment practice for aquifer protection. Greater pollutant load attenuation can be achieved through direct infiltration of the soils on the floor of the retention basin. This offers an extended treatment time versus flushing water through a drywell for quick draining. BAPAC requests that the drywells be located outside of the retention basins and a manhole cover on the drywells instead of a grate to prevent water collected through sheet flow from entering the drywell.

4. It appears from the site plans provided that one of the drywells will be in violation of both Title V and the Underground Injection Control regulations both of which require drywells to be sited at least 50' from a septic tank and 100' from a septic leach field.

5. An Operation and Maintenance Plan for the stormwater management system should be submitted to the Planning Board and annual maintenance logs submitted to the Water Resources Department to ensure maintenance of the system is occurring.

6. As a metallurgic testing facility, it is unclear to BAPAC whether or not solvents are used and if Dirats is a generator of hazardous waste as defined by MA DEP. According to the City of Westfield's SWAP Report completed by MA DEP (April 15, 2003), Dirats is a small quantity generator of hazardous material. Dirats began operations at this location in the 1970s, according to Mr. Forish, which predates the City of Westfield's adoption of the Water Resource Protection District Zoning Ordinance. BAPAC recommends that the Board determine the extent to which this facility may be a non-conforming use given Section 1823 Prohibited Uses of the zoning ordinance. According to Mr. Forish, one of the reasons for the building expansion is to store waste products generated at the facility which are currently stored in trailers at the site. The site also has a septic system which makes it critically important that no floor drains are included in the planned expansion. Alternatively, any floor drains deemed necessary to operations must be plumbed to a permitted tight tank.

Thanks you for the opportunity to comment.

Sincerely,

Michael Czerwiec, Vice-Chair

CC: Eric J. Forish, Forish Construction, P.O. Box 358, Westfield, MA 01086

May 11, 2009

Anthony Petrucelli, Chair
Westfield Planning Board
City Hall
59 Court Street
Westfield, MA 01085

Reference: J. Dirats & Co., Inc., 41 Airport Road, Westfield

Dear Mr. Petrucelli:

I am writing you on behalf of the Barnes Aquifer Protection Advisory Committee (BAPAC) to provide our comments on the site plans for the proposed expansion at J.Dirats & Co., Inc. at 41 Airport Road and revised plans presented at the May 5, 2009 meeting by Eric Forish of Forish Construction. The committee was created in 1989 to address developments of regional impact that are proposed within the aquifer to ensure that drinking water resources remain safe for the more-than 60,000 people that is serves.

Revisions to the plan include downsizing the proposed addition and reconfiguration of the parking lot and storm drainage system. Some existing drywells are planned for removal while others are planned to "capped". BAPAC is unsure as to whether "capping" the existing drywells that will remain in place is sufficient such that they do not need to be registered as Class V Injection Wells by the Massachusetts Department of Environmental Protection (MA DEP).BPAC recommends that the proponent contact DEP's Underground Injection Control coordinator at (617) 348-4014 for clarification on this. BAPAC requests that the capping is permanent.

The proposed stormwater treatment system has been changed from a proposed retention basin with a leaching cell/drywell in the bottom to a Stormceptor followed by an infiltration trench. Although the Stormceptor offers pretreatment for oil, grease and sediment prior to the infiltration trench, there is no intermediary treatment device to address road salt, heavy metals and nutrients prior to the infiltration trench. BAPAC requests that the proponent investigate treatment options for removal of these pollutants prior to discharge to an infiltration system. For other projects within the Zone II, BAPAC has been comfortable with vegetated swales, biofiltration areas, or vegetated retention basins prior to infiltration structures, for the additional pollutant load removal BAPAC seeks.

An Operation and Maintenance Plan for the stormwater management system should be submitted to the Planning Board and annual maintenance logs submitted to the Water Resources Department to ensure maintenance of the system is occurring.

As a metallurgic testing facility, it is unclear to BAPAC whether or not solvents are used and if Dirats is a generator of hazardous waste as defined by MA DEP. According to the City of Westfield's SWAP Report completed by MA DEP (April 15, 2003), Dirats is a small quantity generator of hazardous material. Dirats began operations at this location in the 1970s, according to Mr. Forish, which predates the City of Westfield's adoption of the Water Resource Protection District Zoning Ordinance. BAPAC recommends that the Board determine the extent to which this facility may be a non-conforming use given Section 1823 Prohibited Uses of the zoning ordinance. According to Mr. Forish, one of the reasons for the building expansion is to store waste products generated at the facility which are currently stored in trailers at the site. The site also has a septic system which makes it critically important that no floor drains are included in

the planned expansion. Alternatively, any floor drains deemed necessary to operations must be plumbed to a permitted tight tank.

Thanks you for the opportunity to comment.

Sincerely,

Michael Czerwiec, Vice-Chair

CC: Eric J. Forish, Forish Construction, P.O. Box 358, Westfield, MA 01086

July 17, 2009

Anthony Petrucelli, Chair
Westfield Planning Board
City Hall
59 Court Street
Westfield, MA 01085

Reference: J. Dirats & Co., Inc., 41 Airport Road, Westfield

Dear Mr. Petrucelli:

I am writing you on behalf of the Barnes Aquifer Protection Advisory Committee (BAPAC) to provide our comments on the revised site plans for the proposed expansion at J.Dirats & Co., Inc. at 41 Airport Road submitted to the Water Resources Department.

The revised plans show a detention basin with small sediment forebay. The bottom of the basin is at elevation 252.25 and the basin has an overflow to a catch basin with a rim elevation of 255'. The catch basin outlets to an infiltration structure installed underneath the basin. It looks like this change has addressed our concerns regarding additional pollutant removal prior to recharge.

BAPAC has the following additional comments regarding the revised plan:

- With the infiltrator installed under the basin will the basin be able to drain within 72 hours;
- Maintenance is critical to the proper operation of this system and a maintenance and operations plan should be submitted and recorded with the Registry of Deeds;
- There doesn't appear to be an isolation valve on the pipe from the Stormceptor. A gate valve or similar needs to be added so that the infiltration system can be sealed off in the event of a hazardous release in the parking lot;
- The infiltrator is considered a Class 5 Injection Well and must be permitted through DEP's UIC program;
- The existing drywells need to be addressed per our original comments which were some existing drywells are planned for removal while others are planned to "capped". BAPAC is unsure as to whether "capping" the existing drywells that will remain in place is sufficient such that they do not need to be registered as Class V Injection Wells by the Massachusetts Department of Environmental Protection (MA DEP). BAPAC recommends that the proponent contact DEP's Underground Injection Control coordinator at (617) 348-4014 for clarification on this. BAPAC requests that the capping is permanent; and,
- The City Engineer needs to approve drainage calculations submitted for this change.

Thank you for the opportunity to comment.

Sincerely,

Michael Czerwiec, Vice-Chair

cc: Eric J. Forish, Forish Construction, P.O. Box 358, Westfield, MA 01086
Charles Darling, Water Resources Department, Westfield

June 10, 2009
Stephen Hyde, Chief
Southampton Fire Department
P.O. Box 428
Southampton, MA 01073

Reference: Underground propane tank for back up generator at pump station

Dear Chief Hyde:

The construction manager Debbie Rice for Borgese Construction contacted Barnes Aquifer Protection Advisory Committee (BAPAC) facilitator Anne Capra based on your recommendation to seek approval for a proposed underground propane tank for a sewer pump station to be located on Cook Road in Southampton. BAPAC is unable to provide comments for this project as we have not received any plans or specifications other than a verbal description of where the tank is to be located provided by Ms. Rice. BAPAC requested a set of plans on June 5, 2009 from Ms. Rice but have not received any as of the writing of this letter.

However, BAPAC was contacted by Jim Gracia, City Engineer for the City of Easthampton who stated that he had reviewed the plans, along with the Easthampton Fire Chief, and they both were comfortable with the tank and that it did not pose a threat to the aquifer. Therefore, BAPAC is differing comment to the Easthampton Engineering and Fire Departments and has no further comment at this time.

Sincerely,

Anne M. Capra
BAPAC Facilitator

cc: Mark Girard, Southampton Planning Board
Stuart Beckley, Easthampton Planning Department
Tom Newton, Easthampton Water Department

September 11, 2008

Diana M. Schindler
Town of Southampton
P.O. Box 276
Southampton, MA 01073

Reference: Gilbert Road As-Built Easement

Dear Ms. Schindler:

I am writing you on behalf of the Barnes Aquifer Protection Advisory Committee (BAPAC) to provide our comments regarding the as-built plans for the driveway on Gilbert Road in Southampton on the property of Edward H. Gwinner Jr. BAPAC is composed of representatives from the four jurisdictions in which the Barnes Aquifer is located. The committee was created in 1989 to address developments of regional impact that are proposed within the aquifer to ensure that drinking water resources remain safe for the more-than 60,000 people that is serves.

BAPAC reviewed the plans dated July 18, 2008 at their September 11, 2008 meeting. It appears that five small detention basins have been constructed along the north side of the approximately 1,300' road. Road drainage appears to sheet flow generally to the north side of the road. Based on the plan presented, the detention basins appear to capture some but not all of the sheet flow. Additionally, the detention basins do not offer any pre-treatment for oil and grease prior to infiltration. Given this, the detention basins as constructed do not adequately meet BAPAC's standards for stormwater treatment and infiltration within the Zone II.

Therefore, BAPAC has the following general recommendations for consideration:

- Best Management Practices (BMPs) should be constructed to capture all runoff from the road, remove contaminants such as petroleum, salts, and heavy metals, and infiltrate clean recharge to the ground.
- A gate valve should be installed prior to the recharging BMP so that in the event of a release of a hazardous material, the recharge BMP can be separated from the system to prevent the hazardous material from contaminating groundwater.
- Roadways should be bermed so that all road runoff is directed to the treatment BMPs and does not sheet flow onto open areas where it can infiltrate untreated.
- Alternatives to sodium chloride should be used for ice and snow removal to prevent salt contamination of the aquifer.
- An Operation and Maintenance Plan should be developed and adopted by the homeowner's association for the BMPs. Annual reporting should be submitted to the Southampton Highway Department for review.

Additionally, the project should adhere to all applicable provisions of Southampton's Water Supply Protection District Bylaw and the recently adopted Erosion and Sediment Control Bylaw. Thank you for the opportunity to comment.

Sincerely,

Charles Darling, Chair

cc: Edward H. Gwinner, Jr.
Mark Reed, Heritage Survey
Mark Girard, Southampton Planning Board
Edward Cauley, Southampton Highway Department

June 9, 2009
Anthony Petrucelli, Chair
Westfield Planning Board
City Hall - 59 Court Street
Westfield, MA 01085

Reference: Home Depot Distribution Center and Warehouse, Servistar Industrial Way, Westfield

Dear Mr. Petrucelli:

I am writing you on behalf of the Barnes Aquifer Protection Advisory Committee (BAPAC) to provide our comments regarding the Special Permit submittal for Home Depot distribution center and warehouse on Servistar Industrial Way in Westfield. BAPAC is composed of representatives from the four jurisdictions in which the Barnes Aquifer is located. The committee was created in 1989 to address developments of regional impact that are proposed within the aquifer to ensure that drinking water resources remain safe for the more-than 60,000 people that is serves.
David Mackwell of Kelly Engineering and Ralph Perelis of Campanelli Companies presented plans for the 657,000 square foot distribution center at our June 2, 2009 meeting. Set on a 69-acre parcel in the Campanelli Industrial Park, the project also includes 444 trailer parking spots and approximately 237 loading docks, and an employee parking lot with 268 parking spaces.
The stormwater management plan involves a series of deep sump catchbasins draining to Stormceptors and then discharging to detention basins that overflow to recharge ponds. Roof runoff will also be directed to the detention basins. Mr. Mackwell said the detention basins are currently designed to support wetland vegetation.
Given BAPAC's understanding of the project as presented, we have the following comments:

1. A gate valve will need to be added before the detention basins to isolate the recharging systems in the event of a hazardous spill in the parking lot or around the building. Mr. Mackwell noted that due to the large size of the pipe draining to the basins (48-60") they will need to customize some sort of sluice gate set within a concrete box rather than a traditional gate valve which would be not be manually operable for that size pipe.

2. BAPAC noted that the site is mounded in the middle with glacial till and expressed concern about the sites ability to recharge the amount of runoff that will be shed from the large building and parking lots. Mr. Mackwell stated that soil tests around the site indicate glacial till in the center of the lot where the building is and Group C soils throughout the rest of the site. The recharge rate for the basins and recharge ponds were calculated using the Static Method prescribed in the MA Stormwater Regulations for Group C soils and felt comfortable that there was ample storage for that rate of recharge so as not to cause overflows during a 1" storm event, at a minimum. The basins will be constructed by removing the gravel up to the B horizon and then backfilling with sand and loam mixture for the basin floors.

   BAPAC would be interested in seeing the soil boring reports. To ensure that the system is recharging as designed, BAPAC also recommends a long-term gauge monitoring system at the detention basins and recharge ponds. Data from the gauging stations should be submitted to the Westfield Water Resources Department.
3. BAPAC prefers detention basins and recharge ponds to be vegetated. However, a concern about standing water and the potential for mosquito breeding was expressed. It was also noted that due to the proximity of the airport, standing water is not preferable.

BAPAC recommends seeking some compromise amongst these differing interests by designing the basin so that it drains within 72 hours and is able to support facultative species rather than obligate species. Facultative species are adaptable to both wetland and non-wetland conditions and thus are more tolerant of periodic flooding from storm flows. The Massachusetts Best Management Practices and Guidance for Freshwater Mosquito Control (2008) recommends that stormwater detention/retention systems drain within 72 hours to prevent mosquito breeding.

4. Any floor drains within the building should be plumbed to the municipal sewer. Absolutely no floor drains should be allowed to drain to the stormwater treatment system or infiltrate directly in to the ground.

5. Please submit MSDS sheets for all hazardous products that will be warehoused and/or distributed from the site.

6. Two backup diesel generators are planned for the site. In accordance with Westfield's Water Resources Protection District, on-site fuel storage must have tertiary containment. Mr. Mackwell noted that at this time, only secondary containment is included in the design. Consistent with BAPAC's comments on other projects where on-site fuel storage was planned, BAPAC recommends an overfill alarm to prevent overflows during delivery and pumping and, leak detection system incorporated between the multiple layers of the tank. The areas where the tanks will be located must be paved, have no floor drains, and drain to a catchment system that is separate from the stormwater management system as described above to prevent infiltration of diesel fuel into the aquifer.

Thank you for the opportunity to comment.

Sincerely,

Mike Czerwiec, Vice-Chair

cc: David Mackwell, Kelly Engineering, 0 Campanelli Drive, Braintree, MA 02184

February 4, 2009

Anthony Petrucelli, Chair
Westfield Planning Board
City Hall
59 Court Street
Westfield, MA 01085

Reference: Lawry Realty, Apremont Way and Airport Road, Westfield

Dear Mr. Petrucelli:

I am writing on behalf of the Barnes Aquifer Protection Advisory Committee (BAPAC) to provide our comments regarding the Special Permit application for the proposed parking lot and stormwater treatment design plans for Lawry Realty's at the corner of Apremont Way and Airport Road submitted by Heritage Surveys, Inc. at BAPAC's February 3, 2009 meeting. BAPAC is composed of representatives from the four jurisdictions in which the Barnes Aquifer is located. The committee was created in 1989 to address developments of regional impact that are proposed within the aquifer to ensure that drinking water resources remain safe for the more-than 60,000 people that is serves.

The plans dated January 8, 2009 include a gravel parking lot draining in the general direction of a detention basin with a leaching catchbasin preceded by a Stormceptor. The site will be used as a parking lot for trailer truck boxes. As such, the applicant is also seeking a Trucking Terminal ZoningPermit from the City as well. This use is identified by the Massachusetts Department of Environmental Protection as a high potential pollutant load. Therefore, BAPAC requests that the applicant be held to the highest treatment standards for stormwater infiltration and consider alternative treatment systems appropriate for high potential pollutant loading land uses and Zone IIs including the following:

1. Given the site contours identified on the plan, it appears that only a portion of the site will actually drain to the Stormceptor for treatment prior to infiltration. The remaining flows appear to either sheet flow directly to the detention basin, sheet flow to grassed areas around the perimeter of the property, or infiltrate directly through the gravel parking lot.

2. As such, BAPAC recommends that the gravel parking lot s be paved and graded, draining all stormwater to a Stormceptor or the like, prior to infiltration. The parking lot should include a small berm along its edge to prevent overflow of stormwater onto natural areas with no treatment capacity. This recommendation is a standard best management practice for sites with higher potential pollutant loads.

3. A gate valve should be installed after the Stormceptor and prior to the detention basin so that the recharge BMP and the aquifer can be isolated from contamination in the event of a hazardous spill.

4. Greater pollutant load attenuation can be achieved through soils in the detention basin floor. Therefore, BAPAC does not recommend leaching catchbasins to expedite infiltration.

5. If the leaching catchbasin is kept, it is considered a Class 5 shallow Injection Well under MA Department of Environmental Protection's Drinking Water Program Underground

Injection Control (UIC) Program. This well must be registered with DEP and adhere to DEP's Standard Design Requirements for Shallow Injection Wells.

6. The proponent should develop a Stormwater Operation and Maintenance Plan.

7. Provisions should be included in the Special Permit prohibiting on-site fueling of trucks and the storage of hazardous materials.

Thank for your consideration and the opportunity to comment.

Sincerely,

Michael Czerwiec
Vice-Chair

cc: Charles Darling, Westfield Water Department
Larry Smith, Westfield Planning Department
Mark P. Reed, Heritage Surveys

October 9, 2008

Kelly Richey, Chair
Conservation Commission
50 Payson Avenue
Easthampton, MA 01027

Reference: Nashawannuck Pond EIR Waiver, Easthampton

Dear Ms. Richey:

I am writing you on behalf of the Barnes Aquifer Protection Advisory Committee (BAPAC) to provide our comments regarding the proposed dredging of Nashawannuck Pond and the MEPA Final Record of Decision dated September 17, 2008. The committee was created in 1989 to address developments of regional impact that are proposed within the aquifer to ensure that drinking water resources remain safe for the more-than 60,000 people that is serves.

The dredge spoils are proposed to be deposited on a city-owned site categorized a s GW-1 groundwater area because it is within the Zone II. Although the sediment samples collected from the pond in 2002 contained metals, polynuclear aromatic hydrocarbons (PAHs), pesticides and extractable petroleum hydrocarbons (EPH), all concentrations were below the Massachusetts Contingency Plan (MCP) standards for GW-1 areas. This area is also underlain with clay which offers the aquifer greater protection from contaminants. Therefore, BAPAC does not have any concerns relative to disposal of the spoils.

A monitoring well located at the edge of the field where the spoils will be deposited. BAPAC recommends that the monitoring well be flagged and protected so that it is not damaged during disposal site activities.

Two wells were supposedly drilled in Broad Brook a number of years ago to introduce cold water to the brook. BAPAC recommends that during the pond drawdown, the two wells in Broad Brook are located and possibly capped. BAPAC has recently identified abandoned wells as a potential source of contamination to the aquifer and is developing a plan for prioritizing abandoned wells for decommissioning. The pond drawdown is an excellent opportunity for such activities.

Thank for your consideration and the opportunity to comment.

Sincerely,

Charles Darling, Chair

cc: Stuart Beckley, Easthampton Planning Department
Tom Newton, Easthampton Water Department

September 16, 2008

Secretary Ian Bowles
Executive Office of Environmental Affairs
MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

Reference: Review comments on Draft Environmental Impact Report for Pioneer Valley Energy Center, Westfield

Dear Secretary Bowles:

The Barnes Aquifer Protection Advisory Committee (BAPAC) has the following review comments on the above reference project proposed for Ampad Road in Westfield. Although the proposed project is outside of the City of Westfield's Aquifer Protection Overlay District, the site is within a high yielding aquifer. It was omitted for inclusion in the City's overlay district because there are no municipal wells with Zone IIs for that portion of the aquifer. However, as a potentially high-yielding productive aquifer, great care should be taken to evaluate the potential impacts of the proposed project on the aquifer. The Barnes Aquifer provides water to over 60,000 people in the communities of Westfield, Easthampton, Southampton and Holyoke.

Matthew Palmer, Pioneer Valley Energy Center, and Tracy Adamski, Tighe and Bond, reviewed the project with BAPAC in response to our comments on the ENF. The stormwater management system on the site appears to be contained, draining to a Stormceptor, preceded by an emergency shut off gate valve, prior to infiltration.

This land use is a high potential threat to the aquifer. As such, runoff from the entire site, including all equipment, parking and que areas for fuel trucks, storage and fueling areas, should be contained in a stormwater treatment system to prevent direct infiltration of untreated stormwater. The site plans include portions of the proposed site to be pervious, allowing for infiltration of rainfall including proposed equipment areas, which will consist of ¾ inch clear crushed stone placed to a depth of 6 inches. BAPAC strongly discourages this practice on industrially developed sites.

The Draft Environmental Impact Report does not provide a dispersion model for a catastrophic release of the ULSD fuel from the site in the event of a failure of the 1 million gallon storage tank at full capacity. BAPAC is interested in the amount of time the public water supplies surrounding the site would have before they would need to shut down their distribution systems. Additionally, what additives will be mixed with the ULSD fuel for stabilization and what effects do these additives have on drinking water? Last, BAPAC requires tertiary containment for fuel storage. We recommend evaluating options for tertiary containment for the fuel and ammonia storage.

While the airborne pollutant values have been stated for the burning of
ULSD fuel but the treatment, or lack of same, to the exhaust gases will ultimately produce particulates of a yet undetermined composition make-up.
Currently, under the 2009 regulations for diesel automobile and truck production, vehicles are not only are required to burn ULSDF, they must have catalytic converters, serviceable particulate traps, and uretha treatment prior to atmospheric release of exhaust gases. This is the only way a diesel engine can be sold in Massachusetts and the exhaust output of a turbine of the size being proposed will be many, many times greater.

The Pioneer Valley has been an area of poor air quality for years. It can only be assumed that the same standards need to be applied for post-treatment of ULSD fuel (engine) exhaust in industrial turbines as they are for vehicles. The FEIR provides a detailed analysis of air quality impacts and how the project intends to meet state and federal standards. Section 3.3 provides information from two different modeling runs: one indicated exceedance of EPA standards for ambient air quality, the second did not. BAPAC questions whether there has been sufficient analysis on this issue and encourages all agencies involved to seek more information to determine how this project will affect ambient air quality and public health in the communities and region affected by this project.

Thank you for considering our comments.

Sincerely,

Michael Czerwiec, Vice-Chair

cc: Mathew A. Palmer, Pioneer Valley Energy Center Project Manager
Charles Darling, Water Resources Department, Westfield

February 10, 2009

Secretary Ian Bowles
Executive Office of Environmental Affairs
MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

Reference: Review comments on Final Environmental Impact Report for Pioneer Valley Energy Center, Westfield

Dear Secretary Bowles:

The Barnes Aquifer Protection Advisory Committee (BAPAC) has the following review comments on the above reference project proposed for Ampad Road in Westfield. Although the proposed project is outside of the City of Westfield's Aquifer Protection Overlay District, the site is within a high yielding aquifer. It was omitted for inclusion in the City's overlay district because there are no municipal wells with Zone IIs for that portion of the aquifer. However, as a potentially high-yielding productive aquifer, great care should be taken to evaluate the potential impacts of the proposed project on the aquifer. The Barnes Aquifer provides water to over 60,000 people in the communities of Westfield, Easthampton, Southampton and Holyoke.

This land use is a high potential threat to the aquifer. As such, runoff from the entire site, including all equipment, parking and que areas for fuel trucks, storage and fueling areas, should be contained in a stormwater treatment system to prevent direct infiltration of untreated stormwater. The site plans include portions of the proposed site to be pervious, allowing for infiltration of rainfall including proposed equipment areas, which will consist of ¾ inch clear crushed stone placed to a depth of 6 inches. BAPAC strongly discourages this practice on industrially developed sites.

The FEIR states that ULSD fuel, aqueous ammonia storage tanks and, transformer containment area will be located in 110 percent containment areas. Rainwater captured inside the containment area will be "inspected" for contamination prior to discharge to the oil/water separator and extended dry detention basin. The FEIR offers no further explanation as to what level of inspection will take place. A visual assessment along has the potential to overlook dissolved contaminants which could be released to the environment. BAPAC also recommends that these areas be covered to prevent rainwater from entering the containment areas and therefore eliminate the potential for stormwater contamination.

The FEIR also states that the areas surrounding these storage sites will remain unpaved and covered in crushed stone. However, during the FEIR's evaluation of the use of LID techniques for the site, the proponent rejects the use of LID techniques stating that the nature of the project, which includes oil and chemical transport and storage, require a more controlled conveyance system. BAPAC contends that a more controlled conveyance and treatment system should be in place for the areas surrounding the containment systems as well. Such system should include paving these areas so that they drain to the proposed oil/water separators and detention basins.

The FEIR analysis of tertiary storage tank containment seems to recommend a single-walled stainless steel tank over the previously proposed industry standard single-wall carbon steel tank. The discussion presented in Section 11.4 covers the pros and cons of double versus single-walled tanks however no strong argument is made either way. The tank design needs to be given further

consideration and offer a more substantive reason for disregarding the many safety provisions offered by double-walled tanks rather than the higher cost of such a system.

Thank you for considering our comments.

Sincerely,

Michael Czerwiec, Vice-Chair

cc: Charles Darling, Water Resources Department, Westfield

September 11, 2008

Anthony Petrucelli, Chair
Westfield Planning Board
City Hall
59 Court Street
Westfield, MA 01085

Reference: Russian Evangelical Baptist Church, 866 North Road, Westfield

Dear Mr. Petrucelli:

I am writing you on behalf of the Barnes Aquifer Protection Advisory Committee (BAPAC) to provide our comments regarding the Special Permit application for the 15,000 square foot addition and new parking lot for the Russian Evangelical Baptist Church at 866 North Road. BAPAC is composed of representatives from the four jurisdictions in which the Barnes Aquifer is located. The committee was created in 1989 to address developments of regional impact that are proposed within the aquifer to ensure that drinking water resources remain safe for the more-than 60,000 people that is serves.

Plans for the proposed project were presented to BAPAC at their September 11, 2008 meeting by Dave Bean of D.L. Bean Inc. The stormwater management plan appears to meet all of BAPAC's requirements for pretreatment and infiltration of stormwater. The "Emergency Shut Off" sign at the gate valve should be in English and Russian.

Last, the detention basin essentially creates a ridge adjacent to Long Pond. Soils in this area are typically sandy and well-drained. BAPAC is concerned that these well-draining conditions could create groundwater piping through the wall of the detention basin, transporting water in the direction of the pond. Such a condition would make the basin less effective for groundwater infiltration and, under extreme storm events, could cause failure of the detention basin wall and a land slide. Therefore, BAPAC recommends that the project engineer evaluate the potential for these conditions and makes changes as needed. Thank you for the opportunity to comment.

Sincerely,

Michael Czerwiec, Vice-Chair

cc: D.L. Bean, Inc. 40 School Street, Westfield, MA 01085

January 11, 2009
Anthony Petrucelli, Chair
Westfield Planning Board
City Hall - 59 Court Street
Westfield, MA 01085

Reference: Russian Evangelical Baptist Church, 866 North Road, Westfield

Dear Mr. Petrucelli:

The revised plans for a stormwater management system at the the above referenced project were presented by Mr. Dave Bean of D.L. Bean at our January 6, 2009 meeting. It is our understanding that since the plans were first submitted to BAPAC, the DEP under the Wetlands Protection Act has required an infiltration system prior to the proposed detention basin which DEP no longer considers an infiltration sturcture since the Stormwater Standards were revised on Janaury 2, 2008. BAPAC generally doesnot support the use of infiltration systems that do not offer further pollutant load removal, such as infiltration galleys. However, BAPAC understands that the project is obligated to adhere to the standards specified in the Stormwater Regulations under the Wetlands Protection Act. Therefore, BAPAC has no further comments on this project.

Sincerely,

Mike Czerwiec, Vice-Chair

cc: Karen Leigh, Westfield Conservation Commission
Woody Darling, Westfield Water Resources Department
Dave Bean, D.L. Bean

APPENDIX C Massachusetts Environmental Trust Well Mapping Project Final Report

AGM Common Report Form

Check One: ☐ Interim Report (Submit only this cover sheet)
X Final Report (Submit this cover sheet and complete page 2 using no more than three pages.)

Submitted to: Kathleen McDermott Date: October 30, 2008

Name of Organization: Pioneer Valley Planning Commission
Fiscal Agent (if different from your organization):
N/A
Address: 26 Central Street, West Springfield, MA 01089
Phone: (413) 781-6045 Fax: (413) 732-2593 Email: acapra@pvpc.org
Contact person: Anne Capra
Title: Principal Planner
Program Name (if applicable): Barnes Aquifer Monitoring Well Project
Grant Amount: $11,000
☐ General Operating X Project Support ☐ Challenge Grant ☐ Capital/Endowment
Period that this report covers: 9/07 to 9/08

Please provide a complete expense report indicating how the grant award was used. **If this is an Interim Report**, please indicate expenses to date. ATTACHED

Please respond to each of the following questions using up to 3 (three) pages in total, not including the cover page. Your responses should focus specifically on the funded project or program, if applicable, or in the case of general operating grants, on your entire organization.

1. **Referring to the goals and objectives described in your original grant request (or any revisions submitted subsequent to the grant award), please indicate the following:**
    a. **What were your major accomplishments?**

The first major accomplishment is the development of the Barnes Aquifer geodatabase using GIS. The geodatabase was developed by Professor Robert Newton in the Geology Department at Smith College. Dr. Newton is a member of the Barnes Aquifer Protection Advisory Committee (BAPAC). The geodatabase prior to this project included data regarding the distribution of the aquifer recharge area, public water supply wells, and some other geologic information collected by Dr. Newton. During this project, information collected and entered into the database included the following:

- Existing groundwater monitoring wells installed at 21E reportable release sites. These wells were identified through review of all 21E files for sites located within the Barnes Aquifer Zone II (21E site files reviewed: Easthampton, 71; Holyoke, 12; Southampton, 10; Westfield, 107). Core logs for each of these wells were downloaded into the database and linked to each well point.

- Data collected from each of the 21E wells including depth to groundwater and chemical properties were also entered into the geodatabase linked to each well point.
- Municipally owned public water supply mains were added as a datalayer including identifying municipal water customers by street address.
- Performed file review at the Massachusetts Department of Conservation Services Well Drillers Registry to identify drilled wells with in the Zone II that were registered and link core logs to each of those wells int eh geodatabase.
- A building datalayer was created from either orthophotos or from the municipalities if it existed.
- By cross referencing buildings and public water supply customers, we were able to identify those properties likely to be on private wells.

The second major accomplishment was the continued development and refinement of a groundwater flow model of the Barnes Aquifer using MODFLOW. The model was developed to evaluate the effect landfill leachate from the Northampton Landfill, a landfill slated for expansion and located within the Zone II. The data collection mentioned above was very useful in creating a much more accurate model of the Barnes Aquifer than had previously been constructed. The model was developed by Nicholas Newcomb of Hampshire College under the supervision of Dr. Newton. The Massachusetts Department of Environmental Protection has requested a copy Mr. Newcomb and Dr. Smith's model for their review. Dr. Smith has proposed that their model be evaluated along side DEP's model of the aquifer (more accurately, the private engineering firm Stantec that performed the modeling exercises that the landfill expansion are based on).by a group of independent, well-respected modelers from around the country. This proposal is still under consideration. However, the results of the Newcomb-Smith model have caused the DEP and the City of Northampton to perform more testing relative to the expansion and its potential impact on the Barnes Aquifer and the private wells adjacent to it before the expansion is approved.

The third major accomplishment is the data collected by DEP regarding the TCE contamination of the Barnes Aquifer has also been entered into the Barnes Aquifer geodatabase. Cross-referencing the TCE datalayer along with the private well datalayer allows us to identify wells that are at risk of TCE contamination. DEP has performed outreach to all wells identified to be contaminated by TCE as part of a DEP study performed several years ago when the contamination was first identified. Unfortunately, not all areas contaminated with TCE are serviced by public water. A continuation of this project, beyond MET funding, is to work with the City of Holyoke and the City of Westfield to develop strategies for extending the municipal water supply to those neighborhoods.

The fourth major accomplishment is recognition by MassHighway of private wells that are contaminated with road salt along Routes 10 and 202 in Southampton and Westfield. BAPAC, local officials and several of the affected well owners met with officials from MassHighway's Salt Remediation Program on February 11, 2008 to discuss the issue. To date, four of the salt impacted wells have filed complaints with MassHighway and an investigation is underway.

b. What steps or actions were used to meet your objectives and goals?

The steps undertaken are largely described above. In short, the project involved collecting data from municipal departments and state agencies, compiling the data into a

GIS geodatabase for analysis, and performing outreach to local and state officials in a position to stop the source of pollution.

c. **What measures were used to determine your progress**?

Our progress is being measured against the goals and objectives stated in our grant application.

d. What were the unexpected results or key learnings you would share with funders?

There have not been any unexpected results.

2. Describe any setbacks encountered during the period of this grant.

a. How did these setbacks impact your organization or project?

b. How were these setbacks addressed?

The biggest setback encountered was the 21E file review at DEP to identify groundwater monitoring wells took much longer than expected to the huge volume of files associated with each release site. Second, the proposed expansion of the Northampton landfill somewhat derailed our intention to focus on the TCE contamination. It became evident to BAPAC that the data being used to support the landfill expansion was both flawed and inadequate. This prompted our project partner, Dr. Newton, to focus his attention on the impact of both the Northmapton Landfill as well as the two closed landfills in Easthampton on the Zone II. As a result, we were unable to meet the following objectives: 1) develop strategies with local officials for extending the public water supply to TCE affected neighborhoods, and, 2) perform outreach to monitoring well owners about decommissioning wells no longer in use.

3. Who else has funded this project (or your organization), and at what level? If total proposed budget amount was not raised, indicate if program goals were altered in any way.

The greatest match to the project came from Smith College in the form of in-kind labor contributed by Dr. Newton and Mr. Newcomb as well as three interns. We also received a $1,000 cash donation from C&S Wholesale Grocers in Westfield to support copying fees for file review at DEP.

4. What steps are being made to ensure the sustainability of your project or organization beyond this grant period?

BAPAC's mission is the long-term protection of the aquifer. BAPAC remains committed to seeking the closure of all monitoring wells no longer in use to eliminate the threat of aquifer contamination through these direct conduits to the aquifer. Likewise, BAPAC will remain vigilant about ensuring high quality data for basing major projects on such as expansion of the Northampton Landfill. Additionally, BAPAC remains committed to ensuring that all residents have access to clean water and will continue to pursue communications with local officials about extending the public water supply to TCE affected areas.

5. If your program involved collaboration with other organizations, please comment on its effect upon the program.

Our collaboration with Smith College was invaluable to the project. Dr. Newton's GIS geodatabase is a fantastic resource and an important part of our decision making process.

BUDGET

PVPC Labor	$10,000
Copying Services	$579.90
Travel/mileage	$420.10

APPENDIX D

Stormwater Best Management Practices and Low Impact Development Strategies: A Comparative Literature Review, Thomason, Julie for the Barnes Aquifer Protection Advisory Committee; May 2009

APPENDIX E Media Coverage

Barnes Aquifer Protection Advisory Committee

Stormwater Best Management Practices and Low Impact Development Strategies

A Comparative Literature Review

Julie Thomason, Antioch University New England
5/10/2009

Table of Contents

I. Introduction

The Barnes Aquifer Protection Advisory Committee (BAPAC) oversees all development of the Zone 2 aquifer protection zone of the Barnes aquifer. The objective of this literature review is to provide BAPAC with more information about Stormwater Best Management Practices and Low Impact Development Scenarios that they can then use to advise developers on which methods will best protect and recharge the aquifer.

BAPAC's goal is to prevent contamination of the aquifer by nitrogen, phosphorus, heavy metals, harmful bacteria, volatile organic carbons, petrochemicals, and road salt. They are also concerned with the potential negative effects regarding stormwater peak flow and total suspended solids, as well as a stormwater management system's ability to recharge groundwater. These concerns were used as the defining parameters for all subsequent research on both conventional stormwater best management practices and low impact development scenarios.

The information in this report has been organized into two main sections: Stormwater Best Management Practices and Low Impact Development. A tabular summary of all Best Management Practices information can be found in the Appendix. A tabular summary of all Low Impact Development removal data and information can be found within the text of the section.

II. Stormwater Best Management Practices

Many Best Management Practices (BMPs) exist for the treatment of stormwater. BMPs can be used to treat water for a number of pollutants: total suspended solids (TSS), total nitrogen, total phosphorus, heavy metals, harmful bacteria, volatile organic carbons (VOCs), petrochemicals, and salts[1]. BMPs can also be used to lessen peak flow of runoff during storm events and to promote groundwater infiltration. In many cases, BMPs must be combined into a treatment chain to achieve full removal of all contaminants.

Peak Flow Attenuation

Many BMPs provide attenuation of peak flow from storm events. Constructed stormwater wetlands, extended dry detention basins, wet basins, water quality swales, and infiltration basins will all provide peak flow attenuation when designed for that purpose[1]. Rain Barrels and cisterns attached to individual roofs will provide attenuation during small storm events. Vegetated filter strips will provide a minimal amount of attenuation, but this is dependent on the actual area of the strip. Infiltration trenches and leaching catch basins can be designed to provide full peak flow attenuation during even large storm events, but their capability is controlled by the area available to devote to the BMP and the total area which will be treated by the BMP.

Groundwater Recharge

BMPs capable of recharging groundwater supplies are often grouped together as "infiltration" BMPs[1]. Dry wells, infiltration basins, infiltration trenches, leaching catch basins, and subsurface structures all provide an unspecified amount of groundwater recharge. It is important to note that use of an infiltration BMP should be preceded by use of an adequate treatment BMP so as to prevent contamination of existing groundwater.

TSS Removal

Many BMPs can be used to remove a varying amount of TSS from stormwater runoff[1]. Performance of these systems is often dependant on the size of the system and the amount of water entering for treatment. Vegetated filter strips remove 10% TSS when constructed at 25 to 50 feet wide, and will remove 45% if they are greater than 50 feet wide. Deep sump catch basins and generic oil/grit separators will remove 25%[1], but proprietary separators can remove much more. The Stormceptor STC 900, Baysaver 1K, Vortechs Model 2000, High Efficiency CDS PMSU20_20_6, VortSentry VS40, Downstream Defender 4-FT, and Aqua-Swirl AS-3 all remove 50-75% of total TSS[9,10,12,13,14,15,16,17]. A grassed channel or biofilter swale will remove 50-69%, as will a combined sediment forebay and extended dry detention basin[1,3]. A wet basin will remove 80% and a constructed stormwater or gravel wetland will remove 80-98% when each is combined with a sediment forebay[1,3]. Subsurface

structures will remove 80-98%, as will infiltration basins and trenches when combined with adequate pretreatment (the type of treatment necessary is not specified)[1,3].

Total Nitrogen

Nitrogen removal data is unavailable for many BMP systems. What data does exist is given in ranges of percent removal. Constructed stormwater or gravel wetlands remove 20-55% of total nitrogen, and extended dry detention basins remove 15-50%[1]. Sand and organic filters will remove 20-40%m and wet basins will remove 10-50%[1]. Water quality swales remove 10-90%, infiltration basins 50-60%, and infiltration trenches 40-70%[1]. Dry detention basins remove 5-50%[1].

Total Phosphorus

Many of the BMPs lacking nitrogen removal data are also lacking data for removal of all soluble contaminants, including phosphorus. As with nitrogen, data is represented as a range of percent removal. Constructed stormwater and gravel wetlands remove 40-63%, extended dry detention basins 10-30%, sand and organic filters 10-50%, and wet basins and ponds 20-70%[1,3]. Biofilter swales are listed as removing 29%[3]and also -121%[1]. There is no explanation given for this negative data point. Water quality swales remove 20-90%, infiltration basins 60-83%, infiltration trenches 40-83%, subsurface structures 83%, and dry detention basins 10-30%[1,3].

Heavy Metals

Some data measures total removal of heavy metals, and some data points are solely representative of the removal of zinc. Constructed stormwater and gravel wetlands remove 20-85% of all heavy metals and 91% of zinc[1,3]. Extended dry detention basins remove 30-50% of all heavy metals, and sand and organic filters remove 50-90%[1]. Wet basins and ponds remove 30-75% of all heavy metals and 96% of zinc[1,3]. Biofilter swales remove 83% of zinc, but there is no data available for the removal of all heavy metals[1,3]. Infiltration basins and trenches both remove 85-90% of all heavy metals and 98% of zinc[1,3]. Subsurface structures remove 98%of zinc but have no data available for all heavy metals[1,3], and dry detention basins remove 30-50% of all heavy metals.

Harmful Bacteria

Data is represented as a percent removal. Constructed stormwater wetlands remove ≤75% of harmful bacteria[1]. Extended dry detention basins remove <10%, wet basins remove 40-90%[1], infiltration basins remove 90%[1], infiltration trenches remove ≤90%[1], and dry detention basins remove <10%[1].

VOCs

There is no existing data on VOC removal for any stormwater BMP system[1,3,4].

Petrochemicals

There is no petrochemical removal data available for stormwater BMPs; however some BMPs will remove some petrochemical contamination from runoff. Deep sump catch basins will remove small amounts of oil or grease present in runoff, oil/grit separators are most appropriate for use in managing runoff with a higher potential for petrochemical contamination, and constructed stormwater wetlands will remove oil and grease from runoff[1].

Road Salt

There is no existing data on road salt removal for any stormwater BMP.

Proprietary Filters

Many proprietary filters exist and can be used to filter any of the above mentioned contaminants, depending on the media used. The Jellyfish filter manufactured by Imbrium Systems removes >85% of broad range TSS particles and adsorbed pollutants[20]. The Aqua-Filter, manufactured by Aqua-Shield, removes up to 80% TSS[21,22]. The Vortfilter, manufactured by Contech, will remove >80% TSS when used with a combined sump[23,24]. These removal claims are all made by the manufacturer and unsubstantiated by outside sources.

Maintenance and Disadvantages

Specific details regarding the maintenance and disadvantages of each BMP can be found in the Appendix.

III. Low Impact Development

Low Impact Development (LID) practices are designed to treat stormwater runoff problems at the generation site thereby reducing runoff impact on nearby water bodies and groundwater. LID approaches generally manage water and pollution by infiltration, evapotranspiration, reuse of rainwater, or a combination[5]. The statement is being made by proponents of LID that it offers both cost and ecological benefits, however there is still a lack of data available to support these claims.

LID Techniques

LID techniques can be used to treat runoff pollution and volume. There are many techniques which are characterized as LID[1,2,3,5]:

- Porous Pavement
- Green Roofs
- Bioretention Areas/Rain Gardens
- Cluster Development
- Open Space Preservation
- Reduced Pavement Width
- Shared Driveways
- Reduced Setbacks (shorter driveways)
- Infiltration Basins and Trenches
- Parking lot, Street, and Sidewalk storage
- Rain Barrels and Cisterns
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- Eliminating Curbs and Gutters
- Grassed/Vegetated Swales and Channels
- Roughened Surfaces
- Long Flow Paths
- Terraces/Check Dams
- Vegetated Filter Strips

- Plant Native Vegetation
- Convert Turf to Wildflower meadows, Shrubs, and/or Trees
- Reforestation
- Improve soil infiltration

Pollutant Removal

Pollutant removal data was available for three LID practices: Porous Pavement, Green Roofs, and Bioretention Areas/Rain Gardens. Table 1 lists the pollutant removal data available for these LID systems compared to the pollutants of interest to BAPAC[1,2,3,4].

Table 1: LID Pollutant Removal Data

	Porous Pavement	Green Roofs	Bioretention Areas/Rain Gardens
Peak Flow	Provides attenuation for small storms[1]	Provides attenuation for small storms[1]	Provides no attenuation[1]
Groundwater Recharge	Provides recharge[1]	Provides no recharge[1]	Will provide recharge only when constructed with an exfiltration sublayer[1]
TSS Removal	80 - 98% with proper storage bed construction[1,3]	No active removal, but may be subtracted from surrounding impervious surface area to determine water quality volume of other BMPs[1]	90 - 94% when used in combination with pretreatment[1,3]
Total N Removal	No data[1]	No removal/ increase[1]	30-50% with soil media depth of at least 30 inches[1]
Total P Removal	43%[3]	Increase[1]	30-90%[1,3]
Heavy Metal Removal	Zinc 92%[3]	Zinc 92%[3]	40-90%, Zinc 96%[1,3]
Bacteria Removal	No data[1]	No data[1]	No data[1]
VOC Removal	No data[1]	No data[1]	No data[1]
Petrochemical Removal	No data[1]	No data[1]	Can be used in lieu of an oil/grit separator or sand filter to manage runoff with higher concentrations of oil or grease[1]
Road Salt Removal	No data[1]	No data[1]	No data[1]
Maintenance	Aggressive maintenance with jet washing and vacuum street sweepers is necessary to prevent clogging[1]	Vegetation requires irrigation and support during establishment, and yearly maintenance thereafter[1]	Careful attention must be paid to vegetation during establishment of the cell, with seasonal maintenance necessary thereafter. Sustained public education is also necessary to prevent misuse of and encourage the health of the cell[1]
Disadvantages	Expensive installation, no winter sanding of road is allowed[1]	No groundwater recharge, additional structural strengthening may be required for a retrofit[1]	Not suitable for large drainage area[1]

Other Information	Use of coarse sand as a sediment base improves treatment and reduces clogging. Faster snow and ice melt on the pavement reduces the amount of road salt necessary for winter maintenance[4]	Vegetated roof cover provides additional benefits in terms of improved air quality, improved temperature regulation in the related building, and aesthetics[5]	N/A

LID Benefits and Costs

Site-specific LID treatment of stormwater yields a number of additional benefits to the environment[5,6]. While performance will vary depending on site conditions, LID practices have the potential to reduce the volume of runoff and reduce pollutant loading into receiving waters. LID practices such as settling, filtration, adsorption, and bioretention result in pollutant removal (variation in removal rates will occur due to site soil, vegetation, and % impervious surface). Reduction in pollutant loading from stormwater also helps to protect ground and surface drinking water sources. Infiltration LID practices also recharge groundwater supply and increase stream base flow. Also important in LID is the practice of reducing the amount of impervious surface within a development[25]. Together the practices of increased infiltration and decreased impervious surface improve an area's general water quality by keeping existing clean water supplies free from contamination, and can reduce water treatment costs by reducing the volume of water entering wastewater treatment facilities. This reduced volume of wastewater can also result in a reduced need for combined sewer overflows[5].

While there are additional supposed land value benefits from use of LID, there is, in some cases, very little to no supporting evidence behind the claims. Some of these claimed land value benefits include reduced incidence and risk of flooding and

property damage, increased real estate value and property tax revenue, increased lot yield within subdivisions, and increased aesthetic value[5,6].

Cost comparisons between conventional stormwater management an LID tend to show that LID is less expensive; however this is not always the case[5,6]. Many cost reductions stem from a reduced need for building materials or the deeming of a previously necessary traditional BMP structure to be unnecessary with use of LID techniques. LID may be initially more expensive to install than traditional methods but may be deemed worthwhile in light of projected future reductions in cost of maintenance or regulatory fees. Most cost comparison differences are site specific, and may or may not be applicable over a broad range of potential LID projects.

Several case studies exist comparing the cost of LID in a development to the cost of conventional stormwater management techniques[5]:

- Seattle, Washington Street Edge Alternative Program – A reduction in stormwater runoff was achieved through redesigning an entire 660-foot block using LID in the form of bioretention, reduction in impervious area, and vegetated swales. Total estimation of cost savings over use of traditional BMPs equaled $217,255 or 25%.
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- Pierce County, Washington Garden Valley Subdivision – Designers conducted a modeling study which employed LID over the existing conventional systems. The use of bioretention areas, cluster building, vegetated swales, permeable pavement, and constructed wetlands was shown to reduce cost by $63,700 or 20%. Part of this cost savings resulted from a 72% decrease in stormwater management cost.
- Pierce County, Washington Kensington Estates Subdivision – A modeling study was conducted which replaced conventional stormwater management entirely with LID. Cluster development, reduced impervious area, permeable pavement, vegetated landscaping, and constructed wetlands were all planned, and the assumption was made that each house within the subdivision would have a rooftop rainwater collection system. The LID plan reduced total impervious surface from 30% to 7% and was estimated to cost

an additional $737,200 or 96% more than the conventional site plan. Much of the additional cost was attributed to the use of "Grasscrete" pervious paving material. Developers also anticipated that environmental benefits such as reduced peak flows and reduced soil erosion would be derived from using the LID design.

- Jackson, Wisconsin Laurel Springs Subdivision – Total stormwater volume was reduced throughout the subdivision through use of bioretention, cluster building, reduced impervious surface and vegetated swales. The total cost savings for use of LID over conventional design was $504,469 or 30%. 60% of the cost savings came from reduced stormwater management cost.
- Grayslake, Illinois Prairie Crossing Subdivision – 59% of the total area in the subdivision is preserved as open green space. Stormwater on the site is managed through use of bioretention areas, cluster building, reduced impervious area, vegetated swales, vegetated landscaping, and constructed wetlands. Total cost savings for use of LID over conventional stormwater management practices was $405,312 or 40%. 25% of the cost reduction was due to reduced stormwater management costs.

IV. Conclusions

While there are many options available to manage existing and prevent future stormwater problems, there is a significant lack of data for both conventional BMP and LID systems. Many conventional BMP systems lack removal data for most pollutants of interest to BAPAC, as do most LID systems. Until there is actual numeric data regarding pollutant removal for all systems, developers and organizations such as BAPAC will never be able to make a truly informed decision regarding stormwater management.

While there is existing literature claiming that LID methods are less expensive than conventional BMPs, there is a lack of objective data to support these claims. Even the cost comparison case studies listed in this review lack information regarding which conventional BMP systems the LID was compared against for cost. Until these details are made transparent the existing data must be looked at with a critical eye.

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V. Appendix

Table 1. BMP Pollutant Removal

BMP Name	Peak Flow	Groundwater Recharge	TSS Removal	Total N Removal	Total P Removal	Heavy Metal Removal	Bacteria Removal	VOC Removal	Petrochemical Removal
Deep Sump Catch Basin[1]	Provides no peak flow attenuation	Provides no recharge	25% removal	No data	No data	No data	No data	No data	Will remove small amounts of oil or grease
Oil/Grit Seperator[1]	Provides no peak flow attenuation	Provides no recharge	25% removal	No data	No data	No data	No data	No data	Appropriate for use in managing runoff with a higher potential of oil or grease contamination
Proprietary Separator[1]	Provides no peak flow attenuation	Provides no recharge	pretreatment use, may earn TSS removal credit in accordance w/ Ch. 4	No data	No data	No data	No data	No data	No data
Sediment Forebay[1]	Provides no peak flow attenuation	Provides no recharge	pretreatment use with basin structure, 25-80% removal depending on what other structure it is combined with	No data	No data	No data	No data	No data	No data
Vegetated Filter Strip[1,2]	Minimal attenuation, not enough to comply with Standard 2	Provides no recharge	10% for ≥25 but <50 feet wide, 45% for ≥50 feet wide	No data	No data	No data	No data	No data	No data
Constructed Stormwater Wetland[1,2,3]	provides attenuation when properly designed	Provides no recharge	80% when combined with sediment forebay	20-55%	40-63%	20-85%, Zinc 91%	≤75%	No data	Removes oil and grease
Extended Dry Detention Basin[1]	provides attenuation when properly designed	Provides no recharge	50% when combined with sediment forebay	15-50%	10-30%	30-50%	<10%	No data	No data
Proprietary Media Filter[1]	N/A	N/A	Variable, depending on media	Variable, depending on media	Variable, depending on media	Variable, depending on media	Variable, depending on media	Variable, depending on media	Variable, depending on media
Sand and Organic Filter[1]	N/A	N/A	80% when combined with one or more pretreatment BMP(s)	20-40%	10-50%	50-90%	No data	No data	No data
Tree Box Filter[1]	N/A	N/A	Presumed 80%	No data	No data	No data	No data	No data	No data

Wet Basins/Wet Ponds[1,3]	provides attenuation when properly designed	Provides no recharge	80% when combined with sediment forebay	10-50%	20-70%	30-75%, Zinc 96%	40-90%	No data	No data
Drainage Channel[1]	Provides no peak flow attenuation	negligible	None	No data	No data	No data	No data	No data	No data
Grassed Channel (Biofilter swale)[1,3]	N/A	N/A	50% with pretreatment	No data	-121%, 29%	Zinc 83%	No data	No data	No data
Water Quality Swale[1]	provides attenuation when properly designed	N/A	70% with pretreatment	10-90%	20-90%	No data	No data	No data	No data
Dry Well[1]	N/A	provides recharge	80% for runoff from residential area	No data	No data	No data	No data	No data	No data
Infiltration Basin[1,3]	provides attenuation when properly designed	provides recharge	80-98% with pretreatment	50-60%	60-83%	85-90%, Zinc 98%	90%	No data	No data
Infiltration Trench[1,3]	May be designed for full peak rate attenuation	provides recharge	80-98% with pretreatment	40-70%	40-83%	85-90%, Zinc 98%	≤90%	No data	No data
Leaching Catch Basins[1]	May be designed for full peak rate attenuation	provides recharge	80% with pretreatment	No data	No data	No data	No data	No data	No data
Subsurface Structures[1,3]	N/A	provides recharge	80-98%	No data	83%	Zinc 98%	No data	No data	No data
Dry Detention Basin[1]	Provides no peak flow attenuation	Provides no recharge	None	5-50%	10-30%	30-50%	<10%	No data	No data
Rain Barrels and Cisterns[1]	provides attenuation for small storms	Provides no recharge	The related roof surface can be removed from impervious area used to size other BMPS	No data	No data	No data	No data	No data	No data

Table 2. BMP Maintenance and Disadvantages

BMP Name	Maintenance	Disadvantages
Deep Sump Catch Basin[1]	Basins should be inspected and cleaned at least 4 times per year, sediments must be removed whenever the depth of deposits has reached at least half the depth from the bottom of the invert to the lowest pipe in the basin	Expensive installation, trapped sediment must be disposed of properly
Oil/Grit Seperator[1]	Separators should be inspected monthly and cleaned and sediments removed at least twice per year.	Expensive installation, trapped sediment must be disposed of properly
Proprietary Separator[1]	Should be inspected and cleaned per manufacturer's requirements, but no less than twice per year.	Pretreatment use only
Sediment Forebay[1]	Forebays should be inspected monthly and cleaned at least four times per year or when the depth of accumulated sediment is between 3 and 6 feet.	Pretreatment use only
Vegetated Filter Strip[1,2]	Inspect for sediment buildup, erosion, and health of vegetation every six months during the first year and annually thereafter. Mow grass, remove accumulated sediment, and reseed bare spots as needed.	Effective only in area with slope <6%
Constructed Stormwater Wetland[1,2,3]	Inspect vegetation during growing and non-growing seasons twice a year for the first three years. Clean out forebays annually and clean out accumulated sediment in the basin/wetland every 10 years.	High installation cost, pollutant removal efficiencies may be low until vegetation is well established, can provide breeding ground for pests, can interrupt breeding of natural species by acting as a decoy habitat
Extended Dry Detention Basin[1]	Inspect basin at least twice a year and during and after major storm events. Examine outlet for clogging or too-large outflow release volumes, mow upper-stage, side slopes, embankment, and emergency spillway, and remove any trash and debris at least twice a year. Remove accumulated sediment from the basin at least every 5 years.	Requires large area, high maintenance requirements
Proprietary Media Filter[1]	Maintenance should be performed per manufacturer's recommendations. Filter should be inspected for standing water, sediment, trash, debris, and clogging at least twice per year. Accumulated debris should be removed every inspection. The filter should be inspected to determine if it drains within 72 hours every year during the wet season after a large storm. Filter media should be replaced per manufacturer's instructions.	Performance varies depending on media used
Sand and Organic Filter[1]	Filters should be inspected and debris removed after every major storm for the first few months and every 6 months thereafter.	Expensive, may not be effective in winter
Tree Box Filter[1]	Check tree annually, expected life is 5-10 years. Rake media surface twice a year and replace when tree is replaced.	Only able to treat small volumes of runoff
Wet Basins/Wet Ponds[1,3]	Inspect basins, mow upper-stage, side slopes, embankment and emergency spillway and remove accumulated sediment and debris in the forebay at least twice per year. Remove sediment from the basin as needed or at least every 10 years	Costly to install, must be lined to treat pollutants, invasive species control required
Drainage Channel[1]	Inspect vegetation for rilling and gullying and repair if necessary every few months initially and twice a year thereafter. Mow as necessary, grass height should now exceed 6 inches. Remove trash and debris annually and reseed as needed.	Easily damaged by traffic, road salt, may not perform in areas with flat grades

Grassed Channel (Biofilter swale)[1,3]	Remove accumulated sediment from forebay and grass channel annually. Mow once a month during the growing season. Reseed and repair areas of erosion as needed or at least once a year.	Full gravity separation not achieved due to short retention time
Water Quality Swale[1]	Inspect for erosion, rilling and gullying, repair, and reseed the first few months after construction and twice a year thereafter. Mow dry swales as needed and remove sediment and debris at least once a year.	Can erode during large storms, individual swales treat a relatively small area, wet swales can act as mosquito breeding area
Dry Well[1]	Inspect for stabilization after every major storm the first few months and annually thereafter. Measure water depth at 24 and 48 hour intervals after every storm and calculate clearance rate.	Will clog when used for runoff other than that from residential rooftops, clogging will cause failure, only applicable in drainage areas of ≤ 1 acre, can cause water to seep into basement when located near building
Infiltration Basin[1,3]	Inspect after every major storm during the first 3 months and twice a year thereafter. Mow and carry out preventative maintenance twice a year. Inspect and clean out pretreatment devices every other month.	Use restricted to small drainage areas, not suitable for treatment runoff containing large amounts of sediment and/or pollutants
Infiltration Trench[1,3]	Inspect and remove debris from unit and pretreatment devices every 6 months and after every major storm.	Errors in design and siting will cause failure, potential risk of groundwater contamination if used on highly polluted runoff, susceptible to clogging from sediment
Leaching Catch Basins[1]	Inspect and remove debris annually or more frequently as needed. Remove Sediment when basin is 50% filled. Rehabilitate basin if it fails due to clogging as needed.	Must not contain an outlet pipe! Improper maintenance can lead to redistribution of pollutants, entrapment hazard for small animals
Subsurface Structures[1,3]	Inspect inlets at least twice a year and remove any debris. Include mosquito controls in operation and maintenance plan.	Maintenance is difficult but necessary, mosquito controls must be implemented
Dry Detention Basin[1]	Inspect for proper operation at least once a year. Mow and remove accumulated sediment and debris at least twice a year. Remove sediment from the basin as needed and at least once every 10 years.	Frequently clogs at inlets and outlets, requires large land area
Rain Barrels and Cisterns[1]	Inspect twice a year, use larvicide for mosquito control, disconnect and drain the system prior to winter each year, replace parts as needed.	Mosquito breeding can become a problem unless measures are taken to control it

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Maintenance	Aggressive maintenance with jet washing and vacuum street sweepers is necessary to prevent clogging[1]	Vegetation requires irrigation and support during establishment, and yearly maintenance thereafter[1]	Careful attention must be paid to vegetation during establishment of the cell, with seasonal maintenance necessary thereafter. Sustained public education is also necessary to prevent misuse of and encourage the health of the cell[1]
Disadvantages	Expensive installation, no winter sanding of road is allowed[1]	No groundwater recharge, additional structural strengthening may be required for a retrofit[1]	Not suitable for large drainage area[1]
Other Information	Use of coarse sand as a sediment base improves treatment and reduces clogging. Faster snow and ice melt on the pavement reduces the amount of road salt necessary for winter maintenance[4]	Vegetated roof cover provides additional benefits in terms of improved air quality, improved temperature regulation in the related building, and aesthetics[5]	N/A

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- Sherwood, Arkansas Gap Creek Subdivision – Original subdivision plan revised to include LID, which increased the amount of open space from the original planned 1.5 acres to 23.5 acres. Reduced impervious surface and vegetated landscaping provided enough stormwater control to yield an additional 17 lots over what was initially planned for the subdivision. Each lot sold for $3,000 more and cost $4,800 less to develop than conventional lots, yielding a total cost savings of $678,500 or 15%.
- Pierce County, Washington Garden Valley Subdivision – Designers conducted a modeling study which employed LID over the existing conventional systems. The use of bioretention areas, cluster building, vegetated swales, permeable pavement, and constructed wetlands was shown to reduce cost by $63,700 or 20%. Part of this cost savings resulted from a 72% decrease in stormwater management cost.

- Pierce County, Washington Kensington Estates Subdivision – A modeling study was conducted which replaced conventional stormwater management entirely with LID. Cluster development, reduced impervious area, permeable pavement, vegetated landscaping, and constructed wetlands were all planned, and the assumption was made that each house within the subdivision would have a rooftop rainwater collection system. The LID plan reduced total impervious surface from 30% to 7% and was estimated to cost an additional $737,200 or 96% more than the conventional site plan. Much of the additional cost was attributed to the use of "Grasscrete" pervious paving material. Developers also anticipated that environmental benefits such as reduced peak flows and reduced soil erosion would be derived from using the LID design.
- Jackson, Wisconsin Laurel Springs Subdivision – Total stormwater volume was reduced throughout the subdivision through use of bioretention, cluster building, reduced impervious surface and vegetated swales. The total cost savings for use of LID over conventional design was $504,469 or 30%. 60% of the cost savings came from reduced stormwater management cost.
- Grayslake, Illinois Prairie Crossing Subdivision – 59% of the total area in the subdivision is preserved as open green space. Stormwater on the site is managed through use of bioretention ares, cluster building, reduced impervious area, vegetated swales, vegetated landscaping, and constructed wetlands. Total cost savings for use of LID over conventional stormwater management practices was $405,312 or 40%. 25% of the cost reduction was due to reduced stormwater management costs.

Board recommends truck lot paving

By DAN MORIARTY
Staff Writer

WESTFIELD — The Water Commission voted Tuesday to recommend that the City Council require a petitioner to pave a truck parking lot.

The commission voted 3-0 to make that recommendation to the City Council, which could resume consideration of the truck-terminal petition tonight.

The commission based that recommendation on the findings of the Barnes Aquifer Protection Advisory Committee report on the potential environmental impact of a truck terminal located over the city aquifer's primary recharge area.

Lawry Freight of Southampton Road has a petition pending in the City Council to establish a parking area for empty trailer trucks at its Southampton Road facility. The area that the company is seeking to use for parking its trailer boxes is currently a gravel surface that allows water to seep, or infiltrate, into the sandy soil of the aquifer recharge zone.

The trailers are used to haul mail for the U.S. Postal Service and are

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seasonally leased, meaning that for months they are not used and need to be stored.

The petitioner has said that the trailers would create little, if any, contamination because they do not have fluids such as those needed to operate the truck tractors.

However, the Water Commission, during its discussion of the BAPAC report, decided that once the truck-terminal permit is issued by the City Council, that usage could change to include tractors as well as the cargo boxes.

BAPAC reported that under the state Department of Environmental Protection guidelines, a truck terminal is defined as a "high potential pollutant load" and that the applicant "be held to the highest treatment standards for stormwater infiltration and consider alternative treatment systems appropriate for high potential pollutant loading land uses" within the recharge area.

The treatment process requires that all stormwater be drained to a system that will remove oil and other organic materials before the water is allowed to leach back into the aquifer.

Charles Darling, Water Division engineer, said that the DEP handbook and City Ordinance require pretreatment of stormwater in the recharge zone before it is allowed to infiltrate into the soil.

The current gravel surface would allow stormwater to immediately begin to infiltrate into the soil before it can be treated and organic pollutants removed," Darling said.

"Once it is approved as a truck terminal, the use could change from just parking trailers," he said. "Our recommendation is that this board vote to recommend that the (City Council) require paving of the lot."

Nov. 15-16, 2008

Southampton developer appeals stop-work order

By MATT PILON
Staff Writer

SOUTHAMPTON — A local developer hoping to resume work on a 12-house development on Gilbert Road has challenged a town ruling that stopped work on his project claiming it was draining improperly.

Richard Gwinner, Jr. filed an appeal Oct. 30 with the Planning Board and Zoning Board of Appeals of an Oct. 5 Planning Board decision that found him in violation of an erosion and stormwater bylaw and ordered him to stop all construction on a 1,300-foot private access road on the property.

He has also since applied to the board for a stormwater permit, said members, who will invite public comment on that request at their Dec. 3 meeting at 7 p.m.

Member John Furman said that he hopes the board could reach a "fair compromise" with Gwinner.

Members expressed concern Wednesday, following a Nov 1. site visit, that the road and drainage systems are not properly engineered to handle stormwater runoff from the road, which could compromise the Barnes Aquifer and the Manhan River, the latter of which is as close as 120 feet from the project and feeds into the Connecticut River.

The violation notice ordered that Gwinner stop all work on the access road, and according to his Springfield attorney, Thomas Miranda, he has.

Three of the 12 homes have already been constructed and one has been sold.

But at issue is the timeline of the project, Miranda wrote. Gwinner started the driveway in August of 2006. The Zoning Board of Appeals granted a variance for the driveway July 16 of 2007.

The erosion and stormwater bylaw, which requires projects greater than 40,000 square feet to seek a stormwater permit, was passed Aug. 30 of 2007.

Mark P. Reed of Heritage Surveys, a contractor on the project, stated in an Oct. 29 letter to the board that "the project had started before the institution of the Erosion and Sediment Control for Stormwater Management Bylaw."

Reed submitted to the board Wednesday a series of stormwater runoff calculations for the property that the board will review before considering the stormwater permit.

But board members Wednesday also said that Gwinner's should have filed a Notice of Intent with the Conservation Commission because of work near wetlands.

The board has also charged that Gwinner is not adhering to the conditions of the ZBA variance granted for the common driveway that ordered him to follow recommendations from the Barnes Aquifer Protection Advisory Committee.

Because BAPAC is an advisory board, Chairman Mark Girard said that his board must ensure that developers comply with its recommendations.

"We're BAPAC's last line of defense," said Chairman Mark Girard.

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