

## **Allentown Environmental Advisory Council**

### **2015 Annual Report**

- **Input to City Decisions**

- Established liaisons with the following City departments and organizations: Allentown Parks and Recreation (Joseph Hoffman and Scott Burnet); Friends of the Allentown Parks (Scott Burnet);
- Worked with City to ensure appointment of EAC members to the following Boards and Commissions: Allentown Planning Commission (Richard Niesenbaum); Water and Sewer Compliance Review Board (Tinku Khanwalkar); Shade Tree Commission (Randy Fey – note Randy was already in this position prior to 2015);
- Established quarterly meetings between EAC chairperson and Mayor Pawlowski;
- Provided regular status reports to City Council

**EAC input was particularly valuable in reducing the environmental impacts of the Color Run. There was no fish kill in 2015 and clean-up was much more effective.**

**Scott Burnet worked with Boy Scouts to replace all nest boxes at the Rose Garden with nest boxes for chickadees or house wrens.**

**EAC input to the Parks Department is on-going with continued focus on no-mow zones.**

- **Research**

- Supported research by Kylie Bosky on energy benchmarking (Attachment 1)
- Research paper by Scott Burnet regarding Styrofoam and plastic bag litter
- Research paper by Scott Burnet regarding bird strikes (Attachment 2)
- Research paper by Randy Fey on stormwater management (Attachment 3)
- Reviewed native plant ordinance of Lower Makefield Township as possible model for Allentown

- **Education**

- Established posting of Pennsylvania Audubon newsletter on EAC page of City website
- Worked with City to ensure that native plants are displayed on EAC page of City website
- Participated in tours of Allentown's water treatment plant and sewage treatment plant

- **Community Involvement**

- EAC letter of support for Growing Greener grant for assessment of Little Cedar Creek watershed (Attachment 4)
- Support for community gardens
- Support for Local Food production

## Attachment 1



# BENCHMARKING OUTCOMES

## BRIDGEWORKS BUILDING:

BUILT: 1919 WITH PARTIAL INTERIOR REBUILD IN 2001

SQUARE FOOTAGE: 111,000

BUILDING TYPE: DISTRIBUTION WAREHOUSE - 68% DISTRIBUTION  
WAREHOUSE 32% OFFICE

BASELINE ENERGY STAR SCORE: 70

CURRENT ENERGY STAR SCORE: 66

Metrics Summary		Change Time Period	
Metric	Baseline (Apr 2015)	Current (May 2015)	Change
ENERGY STAR score (1-100)	70	66	-4(-5.7%)
Source EUI (kBtu/ft <sup>2</sup> )	59.6	63.7	4.1(6.9%)
Site EUI (kBtu/ft <sup>2</sup> )	19.0	20.3	1.3(6.8%)
Energy Cost (\$)	64,878.88	68,848.67	3969.79(6.1%)
Total GHG Emissions (Metric Tons CO <sub>2</sub> e)	282.4	301.5	19.1(6.8%)

- Since the majority of the building is considered a Distribution Warehouse, it gets treated as such
- Very good score, although not passing, it is performing rather well

## CITY HALL & PUBLIC SAFETY:

BUILT: 1962 & 1963

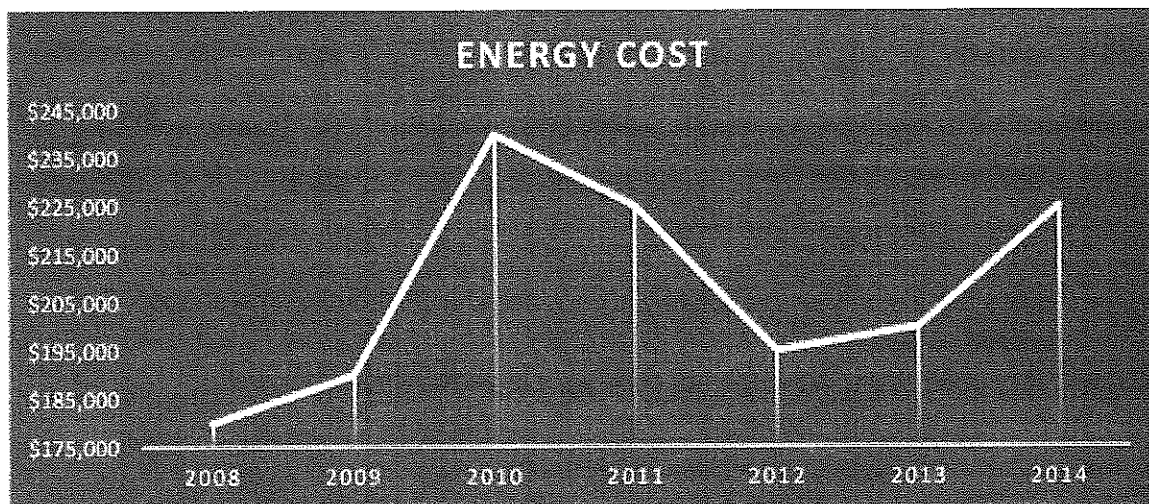
SQUARE FOOTAGE:

BUILDING TYPE: OFFICE

BASELINE ENERGY STAR SCORE: 43

CURRENT SCORE: 47

Metrics Summary		Change Time Period	
Metric	Baseline (Apr 2015)	Current (Jun 2015)	Change
ENERGY STAR score (1-100)	43	47	4(9.3%)
Source EUI (kBtu/ft <sup>2</sup> )	231.5	223.8	-7.7(-3.3%)
Site EUI (kBtu/ft <sup>2</sup> )	73.7	71.3	-2.4(-3.3%)
Energy Cost (\$)	208,870.18	211,648.17	2777.99(1.3%)
Total GHG Emissions (Metric Tons CO <sub>2</sub> e)	1,116.6	1,079.3	-37.3(-3.3%)



- Since the two buildings share a meter, the spaces technically cannot receive an ENERGY STAR SCORE.
- For the purpose of this research, I set them up as 1 building to get a score
- More research should be done on this building.
- The two buildings underwent a complete lighting update, installing vacancy and occupancy sensors in 2011.
- We can see the energy usage went down from 2010-2011, when the lighting retrofit was done, but the energy is climbing back up.

**CENTRAL FIRE STATION:**

BUILT: 1925

SQUARE FOOTAGE: 27,000

BUILDING TYPE: FIREHOUSE

BASELINE WEATHER-NORMALIZED EUI: 83.1 kBtu/ft<sup>2</sup>CURRENT WEATHER-NORMALIZED EUI: 85 kBtu/ft<sup>2</sup>

Metrics Summary		Change Time Period	
Metric	Baseline (Apr 2015)	Current (Jun 2015)	Change
ENERGY STAR score (1-100)	Not Available	Not Available	N/A
Source EUI (kBtu/ft <sup>2</sup> )	83.5	85.6	2.1(2.5%)
Site EUI (kBtu/ft <sup>2</sup> )	26.6	27.3	0.7(2.6%)
Energy Cost (\$)	19,385.52	19,983.70	598.18(3.1%)
Total GHG Emissions (Metric Tons CO <sub>2</sub> e)	98.4	101.0	2.6(2.6%)

- Best results of the buildings benchmarked
- Firehouses cannot receive an ENERGY STAR score, but it will show EUI
- The Central Fire Station is performing 44.5-45.9% better than the national average.

## IRVING PARK AND EAST SIDE FIRE STATION

BUILT: 2014

SQUARE FOOTAGE: 2,900

BASELINE WEATHER-NORMALIZED EUI: 325.1 kBtu/ft<sup>2</sup>

CURRENT WEATHER-NORMALIZED EUI: 324 kBtu/ft<sup>2</sup>

Metrics Summary		Change Time Period	
Metric	Baseline (Apr 2015)	Current (May 2015)	Change
ENERGY STAR score (1-100)	Not Available	Not Available	N/A
Source EUI (kBtu/ft <sup>2</sup> )	325.1	324.0	-1.1 (-0.3%)
Site EUI (kBtu/ft <sup>2</sup> )	103.5	103.2	-0.3 (-0.3%)
Energy Cost (\$)	10,835.12	10,584.89	-250.23 (-2.3%)
Total GHG Emissions (Metric Tons CO <sub>2</sub> e)	40.2	40.1	-0.1 (-0.2%)

- Will not benefit from energy benchmarking with ENERGY STAR PORTFOLIO MANAGER
- Too small of a space
- Information gets skewed due to the threshold of the software



## **CASE STUDY OF SIMILAR CITY:**

### **CAMBRIDGE, MASSACHUSETTS**

SIZE: 6.26 SQUARE MILES

POPULATION: 107,000

### **ALLENTOWN, PENNSYLVANIA**

SIZE: 17.55 SQUARE MILES

POPULATION: 118,500

- Cambridge passed an ordinance in July of 2014 requiring the city's municipal buildings and nonresidential buildings to start reporting their energy usage.
- Energy use in buildings account for about 80% of GHG emissions in Cambridge, with two-thirds of the total related to commercial, institutional and large multifamily buildings.
- Municipality buildings were to disclose by December 2014.
- Their results were:
  - 8 below passing score of 75
  - 8 passing of 75 or more
  - 1 did not qualify
- Commercial buildings 50,000 square feet or more and multifamily buildings with 50 or more units are to disclose their energy usage by May 2015
- The remaining buildings that are 25,000 square feet or more must disclose by May 2016
- Must also report water use and all energy use which includes electricity, natural gas, steam, hot or chilled water, heating oil, and renewable energy

## **GOALS FOR ALLENTOWN:**

- Municipality 25,000 square feet or more- December 2016
- Commercial and Institutional 50,000 square feet or more - May 2017
- Commercial and Institutional 25,000 square feet or more - May 2018
- Baseline to strive for: Every building have a score of 50 or higher by 2020
- 75% of the buildings benchmarking to receive a passing score of 75 or better by 2025
- Do a study to see how much energy usage our commercial and institutional building contribute to our GHG emissions.
- Strive to lower GHG emissions by 30% by 2022
- Work with an ESCo's (Energy Service Company or Energy Savings Company), and see what they can do to help finance the projects in the city.



## Attachment 2



# Allentown Environmental Advisory Council

## Bird window kill mitigation techniques proposal

1/12/2015

presented by: Scott Burnet

First, in order to properly discuss this proposal, I'll outline the problem. According to the studies of Dr. Daniel Klem, jr. of Muhlenberg College (PhD. Ornithologist, recognized worldwide as the leading researcher in this field), more than one billion birds are killed annually in the U.S. alone due to striking glass windows. This estimate (by his admission) is probably grossly underestimating the actual number of window kills, as he bases his estimate on residential structures alone, and only assumes one bird kill per household per year. It does not include commercial or municipal structures. It has been widely studied, and known for a long time that some structures by themselves kill hundreds of birds annually. Adding in the number of birds killed by commercial structures (which often contain vast amounts of glass as compared to residences) and consider extrapolating this estimate into worldwide numbers, and the number of birds killed by glass annually is truly staggering.

What causes this to happen?

Briefly, without getting too technical, birds fly into glass because they cannot see it. It sounds elementary, but it is not. There are two basic scenarios that cause birds to be unable to see glass. First, is when glass has such a reflective value, that birds see the reflection of a habitat in a glass window, and attempt to fly into it. The second scenario involves corridors with glass on both sides, where the hapless birds think they can fly through the building because there is the so-called see-through effect, or no reflection of habitat. Both of these scenarios are found in many buildings in Allentown and throughout the world. It is interesting to note here that over 100,000 humans annually go to the emergency room due to window strikes. We can't see glass either.

How can we, as concerned stewards, prevent window kills of birds? Two ways:

The first concerns existing windows, where for whatever reason, replacing these windows is not a viable option. The solution here is to provide visual cues to the birds to alert them to the presence of the glass. This must be done on the **outside** of the window. There are several commercially available ways to do this; being as simple as installing conventional screens over windows, or more applying more tactical approaches directly to the windows, such as products like: BirdSavers or Collidescape. I've include links that describe and offer both products at the end of this proposal.

The second (and more long-term solution to this problem) involves using only "bird safe" glass in new construction. Bird safe glass is a specifically engineered glass window that purposely incorporates a pattern in the glass that allows birds the visual cue they need to see, and avoid it.

There are intrinsic problems for humans with most of these mitigation methods, i.e., by giving the birds

a visual cue of the glass, humans can see this as well. Dr. Klem has been working tirelessly for over forty years with glass manufacturers to try to engineer a type of glass that is visible to birds, but invisible to humans. The secret lies in something we take for granted – light. Birds are able to see in the ultraviolet spectrum, whereas humans are not. The “holy grail” in glass engineering is to incorporate a specific ultraviolet pattern on the outside surface of window glass that is visible to birds and makes them avoid collision, yet from the inside is invisible to humans. Dr. Klem has done extensive research on this and has identified the particular wavelengths of this type of light that birds can see, but is invisible to humans. To date, no glass manufacturer has produced an economically feasible product that accomplishes this. After his 40 years of toil to save billions of bird lives, he is fortunately, on the cusp of seeing his dream realized.

There are however glass products already on the market that have patterning that IS visible to birds, but also visible to humans. This type of glass is commonly referred to as “fritted” glass. What this means is that there are thin lines etched into the glass in a pattern (usually parallel lines) that the birds can see. This is only effective on the outer surface of the glass. Some cities in the U.S. And Canada have already passed building codes REQUIRING the use of bird safe glass (i.e., fritted glass). Examples are: San Francisco CA, Chicago IL, and Toronto Canada. Interestingly – the State of Minnesota recently passed legislation requiring the use of bird safe glass in all new construction throughout the ENTIRE State.

What does this mean to the City of Allentown, and what is being proposed here?

The City of Allentown owns many municipal structures that are historical killers of birds due to the glass facades that architects have designed into them. Without listing each building (which is not the scope of this paper), one perfect example is the Allentown Public Library. Multiple floors of this building are solid glass. It kills **many** birds annually. This is just one example. Multiply that by the number of City-owned buildings, and you have a devastating number of window kills. The idea of this proposal is first: retrofit windows on City-owned structures with a means of mitigating bird strikes. There are viable ways of doing this that would of minimal cost to the City. A device like BirdSavers (which are made in Bethlehem PA, or directions can be downloaded from their website for the City to easily construct their own) are inexpensive and effective. A more acceptable approach might be to apply a film (such as Collidescape) to the outside of windows on City-owned buildings. There are links to large companies or organizations (like Hawk Mt. Sanctuary, or Birkenstock Shoes) that have effectively used these products on their buildings to eliminate window kills. Second, and more difficult to do, would be to enact City building ordinances to require the use of bird safe glass in all new construction being done in the City. Cities like San Francisco legally require the use of bird safe glass in ALL new construction being done in their City – both municipal and private.

As a remark in closing -

As Allentown promotes itself as a “green-thinking” City, and especially since Allentown chose to become the first “Birdtown” (meaning bird-friendly municipality) in the entire nation, doesn't it seem obvious that Allentown should adopt measures to reduce or eliminate having untold numbers of birds killed by glass in the City? It does not come without some caveats, such as incurred costs to retrofit windows (which could be minimal) or increased cost of new constructions in the City, but if forward-thinking Cities such as San Francisco and Toronto find it economically feasible to do so, why can't Allentown?

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<http://www.flap.org/links.php>

<http://www.collidescape.org/>

<http://www.featherfriendly.org/>

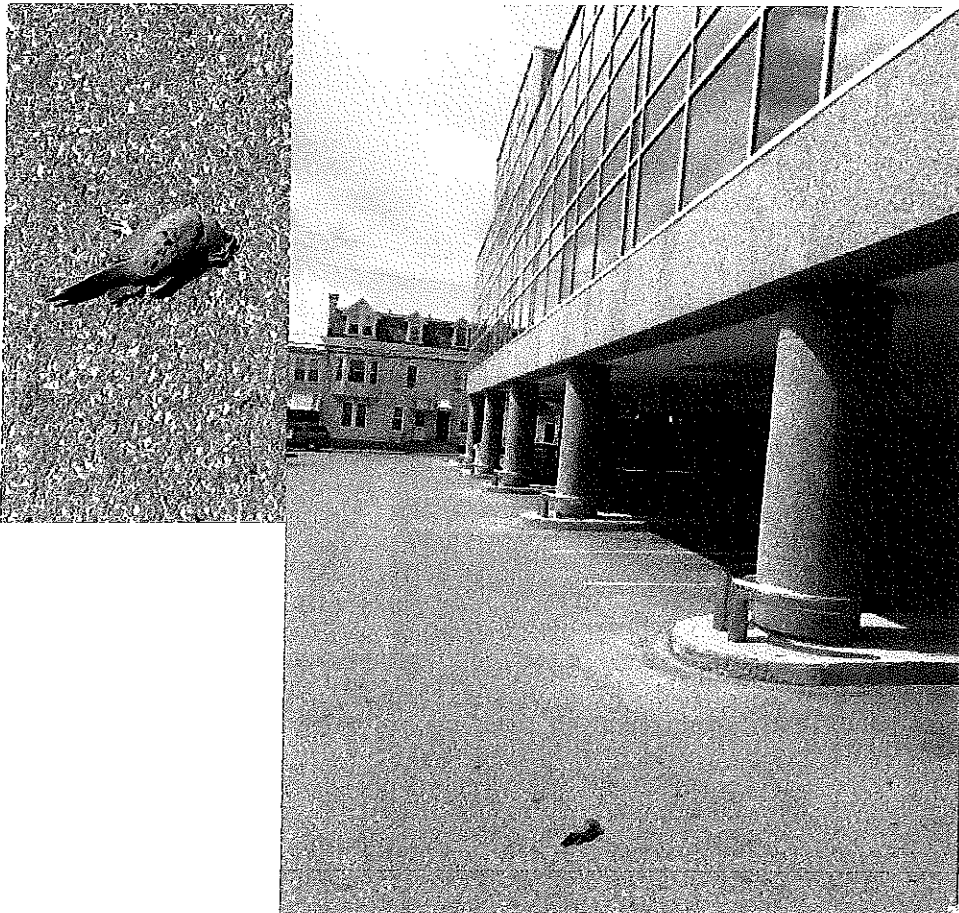
<http://www.birdsavers.com/>

<http://www.windowcollisions.info/>

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## Attachment 3



Penn State Master Watershed Steward

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# Water Protection for the Future

April 1, 2015

Randy Fey

Queenland Austrailia

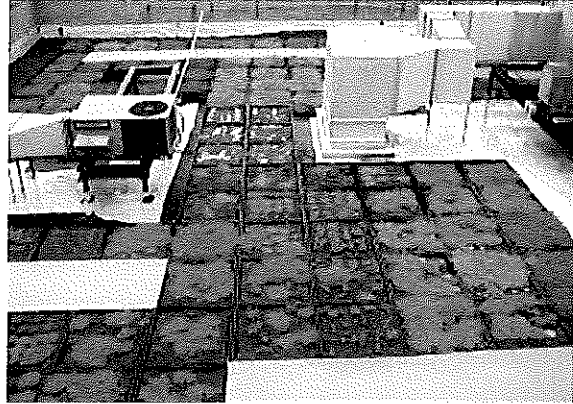
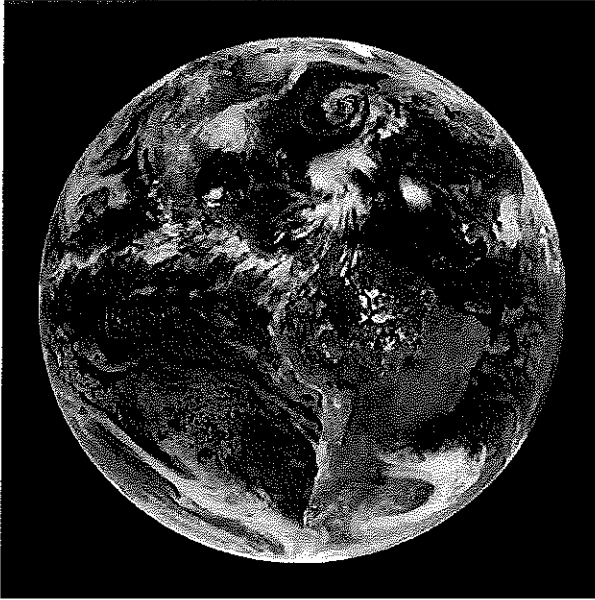




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## Introduction

Large and small cities should be aware of the impact of rain water run-off and the detriments from point source and non- point source pollution into watersheds. Awareness is needed to slow water run-off from entering storm sewers or prevent the water from entering the storm sewers by water garden construction, stream buffers and use of porous pavers and porous blacktop. Cities should understand the importance of planted shade trees and utilize locations for urban gardens for fresh food to the community to lower the heat island effects.



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## Cooperation

Cities could utilize many departments to sustain water quality, Public Works, Community Development Planning, Zoning, Parks and Recreation, Health, Traffic, Fire Departments, Water Commissions, Sewer Departments and Administration, and Elected Officials.







Porous paving parking lot at fire company

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### Federal, State, County, and Municipal Support

Federal Grants	State Grants	County Support	Municipality Support	other
EPA/DEP	DCNR	Matching funds	Matching funds	Fund Raisers, Contributions
US Forest Service	Penn DOT	Lehigh, Northampton County Commissioner Support	EAC, Shade Tree Commission	volunteers

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### Public Support

Cities are creating a tax base for Storm Water Management and fees for the installations within the private sector. (Google: City of Lancaster, PA.)

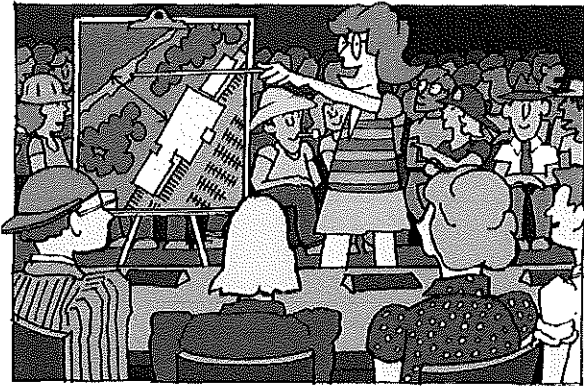
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### Education to the General Public

Educational programs given during the development process will make the public aware of the Storm Water Management BMPs and the importance to start and continue to protect fresh water. Instill the value of removing invasive plant species and plant native plants for insects, birds and animal survival. (> 90% bird species use native insects to feed their young). Acknowledge Wetlands and Vernal pools for reptile, plant and insect habitat and protect them from human development.





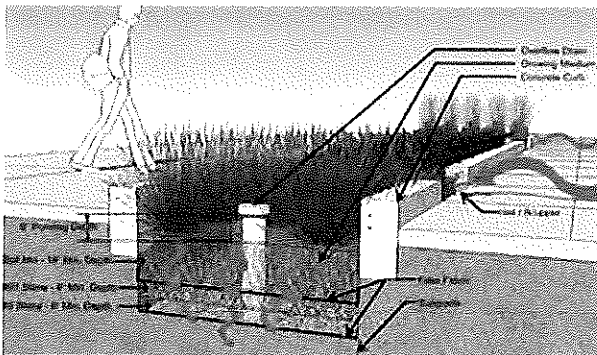


## TOWN MEETING

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### Planning of Public Areas

Total street renovation programs are in place for multiple years, and the additions for storm water retention could be incorporated to the original plans with the lower extra costs because the street was originally deemed to be reconstructed. Alley programs, parking lots, park development upgrades, Sewer Plant upgrades, Sewer Line Maintenance, and Health department programs for non-pollution education, Fire Department for water recycling from firehouses and Police to use recycled water at wash stations for their vehicles.



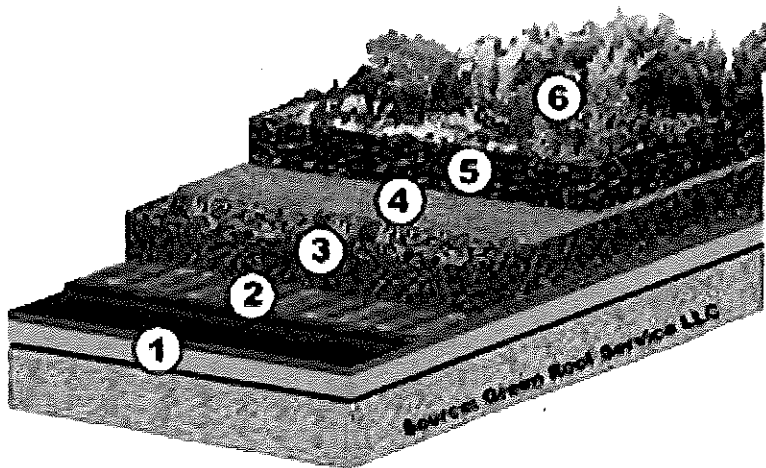

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### Planning of Private Areas

Environmental Rated Building would become more common, with Green Roofs, water retentions holding tanks, parking lots with porous pavers and porous blacktop, and utilize the retained water for non-human consumption, for landscape irrigation. Not to mention Green Buildings recognition.



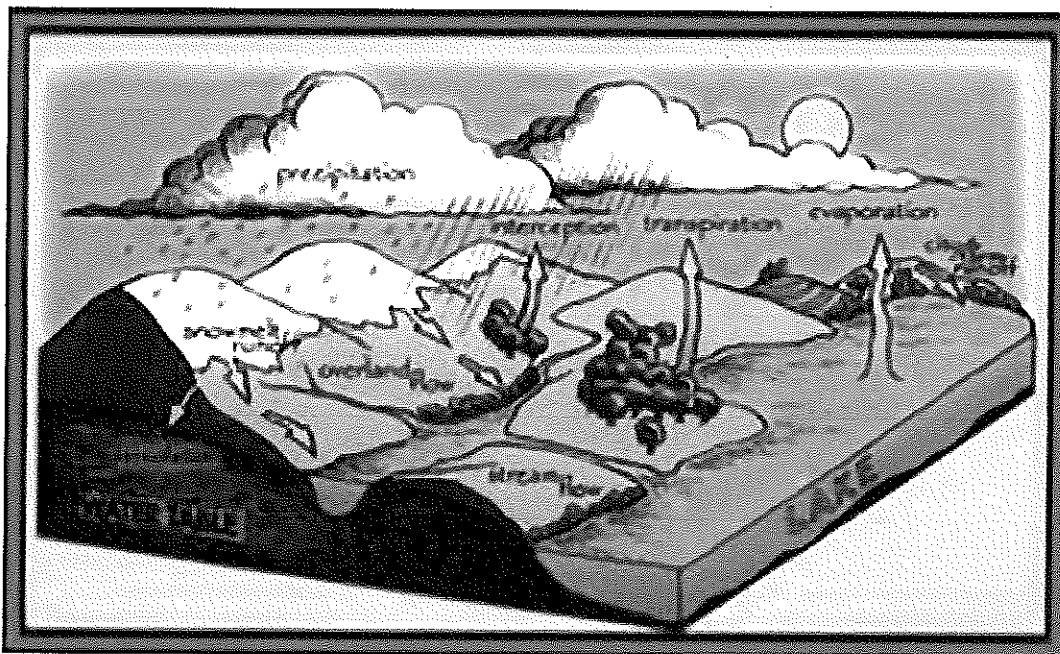
## Functional layers of a typical extensive Green Roof



- |  |                               |
|--|-------------------------------|
| ① Roof deck, Insulation, Waterproofing | ④ Root permeable Filter Layer |
| ② Protection- and Storage Layer        | ⑤ Extensive Growing Media     |
| ③ Drainage- and Capillary Layer        | ⑥ Plants, Vegetation          |

## Overview

Storm Water Management listed points are only a few starting areas for Municipalities, Townships, and Counties for awareness of the importance of the future needs of fresh water and the protection of this water for generations to come. Monies for projects will always be an issue, but how long can the human race survive without fresh drinking water? The water we take for granted!!





## Attachment 4



## Allentown Environmental Advisory Council

May 4, 2015

Laura Hopek, Watershed Specialist  
Lehigh County Conservation District  
4184 Dorney Park Road, Suite 105  
Allentown, PA 18104

**Re: Growing Greener Grant  
Little Cedar Creek Watershed Assessment**

Dear Ms. Hopek,

It is my understanding that the Lehigh County Conservation District, the City of Allentown, South Whitehall Township and Friends of the Allentown Parks are applying for funding from Growing Greener to conduct an assessment of the Little Cedar Creek watershed.

We believe that execution of the assessment will lead to the restoration of highly degraded reaches along Little Cedar Creek and improve the overall water quality of this impaired stream (as listed by the Pennsylvania Department of Environmental Protection (PA DEP) under Section 303(d) of the Clean Water Act due to excess siltation from urban runoff and storm sewers).

The Allentown Environmental Advisory Council strongly supports the project partner's efforts to secure funding to conduct an assessment of the Little Cedar Creek watershed that will overall protect, conserve, and enhance Lehigh County's natural resources, while improving the overall water quality in the Delaware River watershed.

Sincerely,



Arundhati Khanwalkar, Chairperson  
Allentown Environmental Advisory Council

