BaseTern FAQs

Q. What is a BaseTern?

A. The City of Milwaukee is exploring cost effective and innovative approaches for managing stormwater to help neighborhoods be more resilient to extreme storm events. One approach that is being studied is the so-called BaseTern, an underground stormwater management or rainwater harvesting structure created from the former basement of an abandoned home that has been slated for demolition. By using this existing basement cavity, the City saves on demolition costs of the old structure and the construction of the new one. The structure would be underground and covered with turf and possibly urban gardens to fit safely within the neighborhood. The preliminary prototypes can hold as much water as 600 hundred rain barrels!

Q. Why is the City looking at this?

A. After extreme rain events in 2008, 2009, and 2010, the City experienced millions of dollars in property damage from flooding. That worst flooding occurred in the same parts of the city that have the highest rates of foreclosures and abandoned properties. The size and severity of recent severe storms are more than the existing sewer systems were designed to handle. Therefore, the BaseTern joins other city initiatives for stormwater management including lateral repairs, home foundation disconnections, rain barrels, bio swales, and other methods for reducing the amount and rate of stormwater entering the sewer system. By reducing pressure on the sewer system, BaseTerns present an opportunity to reduce the risk of basement backups during severe weather. By using abandoned basements, the City saves the cost of demolition on these structures (filing the basement and grading the surface) and on excavation for the new structure. In addition, BaseTerns provide significant stormwater storage capacity on a single site, the equivalent of up to 600 rain barrels.

Q. Where is the water coming from that will go into the BaseTern?

A. Baseterns can be designed to store water either from the roofs of nearby properties or from nearby streets. Clean water from nearby roofs can be stored to later irrigate community gardens.

Q. What will happen to the water in the BaseTern?

A. The BaseTern is designed to temporarily store rainwater or stormwater. Some of the designs have holes drilled into the floor to slowly infiltrate the water into the ground. Some of the designs hold the water and slowly discharge it back to the sewer after the primary flows in the sewer have receded. All designs will have an overflow point to safely release water back to the surface or to the sewer if it reaches capacity

Q. Where will the City construct the first BaseTern?

A. The City is continuing to study the idea and has not yet selected a site for construction. However, if one is constructed, it would be located in a neighborhood that has a history of flooding and at least one house that is scheduled for demolition.

Q. Will children fall into the structure?
A. The structure is not an open pit. Rather a BastTern is a covered structure, which is covered with topsoil and grass, and will appear the same as conventional vacant lot. It can also support landscaping and community gardens.

Q. Will the structure cause odors?
A. The structures are designed to manage rainwater and stormwater, not sanitary sewage. No odors are anticipated.

Q. Will the structure breed mosquitoes?
A. BaseTerns are underground stormwater management structures. The City does not anticipate any additional issues with mosquitoes than other underground stormwater management structures.

Q. Won't the BaseTern cave in?
A. To address this concern, the City of Milwaukee hired the engineering firm HNTB to study the strength of the structure. They conclude, "We do not anticipate hazards to the community from these structures, but rather view them as a feasible approach for effectively managing stormwater in the community." The study examined three types of fill to preserve the structures strength. The report notes, "For the stone fill conversion alternative, once the stone is in place it would resist any further wall movement and the wall would be effectively braced along its height. Similarly, the stormwater harvesting cell system has lateral strength and could resist wall movement. These two options would effectively bury the basement and render it nonstructural. There is no wall movement anticipated under the green roof conversion option."

Q. What can go on top of the BaseTern?
A. The BaseTern's basic design is to support a layer of turf grass. However, the sites can also provide water to irrigate community gardens on top.

Q. Basements with cement block walls are porous. Won't water leak out of the sides of the structure?
A. The Feasibility Study recognizes that that cement block walls are porous. The cost estimate for the conversion includes spraying the walls with a waterproofing substance.

Q. The BaseTern seems expensive to build. Why should the City spend tax money on these rather than paving streets or more police?
A. The cost of the BaseTern should be evaluated compared to other methods for managing stormwater volume. When viewed on a per gallon basis, the cost ranges from $0.77 per gallon to $2.91 per gallon depending on the design. This is less than other methods of green infrastructure such as green roofs and building new deep underground storage. The City has lots of competing demands for its limited budgets, including street infrastructure and public safety. However, the public expects City government to be involved in protecting property from floods, and can be upset with government when flooding occurs. Therefore, the City needs to consider cost effective approaches for managing stormwater.

Q. How many of these is the City going to build?

A. For new technologies, the City might construct a single structure, and evaluate its effectiveness before constructing more.

Q. Won't they take up valuable land that could generate revenue or jobs instead?

A. The BaseTerns would be constructed on small parcels of property that had been the site of a blighted house. Through its Strong Neighborhoods Plan, the City is working with the community to restore and save as many houses as it can. However, the City's HOME GR/OWN program is in place to encourage urban gardens on vacant lots that are hard to sell. The BaseTern further maximizes the value of these lots by using them for both stormwater management and food production.