

## CASE STUDY

Chaes Food  
Wholesale Distributor

STORMWATER  
**PIONEERS**  
PHILADELPHIA WATER DEPARTMENT



With routine maintenance, Chaes Food keeps their *bioinfiltration basin* in great condition

## Stormwater Pioneers:

Recognizing private property owners for outstanding stormwater management projects. This award showcases innovation, excellence and the ability to overcome technical challenges.

### Focus on Superior Maintenance

After a project is built, long-term maintenance is critical to the functionality of stormwater management systems. Property owners are responsible for conducting regular inspection and maintenance of on-site practices. In 2019, PWD is recognizing Chaes Food for excellence in maintenance of the stormwater management system on their property.

### About the Project

Chaes Food is a North Philadelphia-based commercial distributor of fresh poultry, beef, pork, produce and frozen foods. Its 50,000 square foot facility at 2100 American Street was built in 2008 with the City's new stormwater management standards in mind. The busy, successful, family-owned company with just under 40 employees is led by father, Tony Chae and sons, Young and Jeff.



PHILADELPHIA  
**WATER**  
— DEPARTMENT —

# Stormwater Management Practice (SMP) Layout

Designed with long term maintenance in mind, Chaes Food's bioinfiltration SMP is conducive to their site and operations.

## Technical Summary

PWD promotes an integrated design approach to build stormwater management solutions that protect receiving waters in a cost-effective manner. There are many different SMPs that can be used to achieve the objectives of PWD's Stormwater Regulations, but some are better than others when considering long-term performance and maintenance costs. Chaes Food selected to use a bioinfiltration basin which allows for water from impervious surfaces to be filtered through vegetation and a soil medium and continuing the natural hydrologic cycle.

## Bioinfiltration SMPs

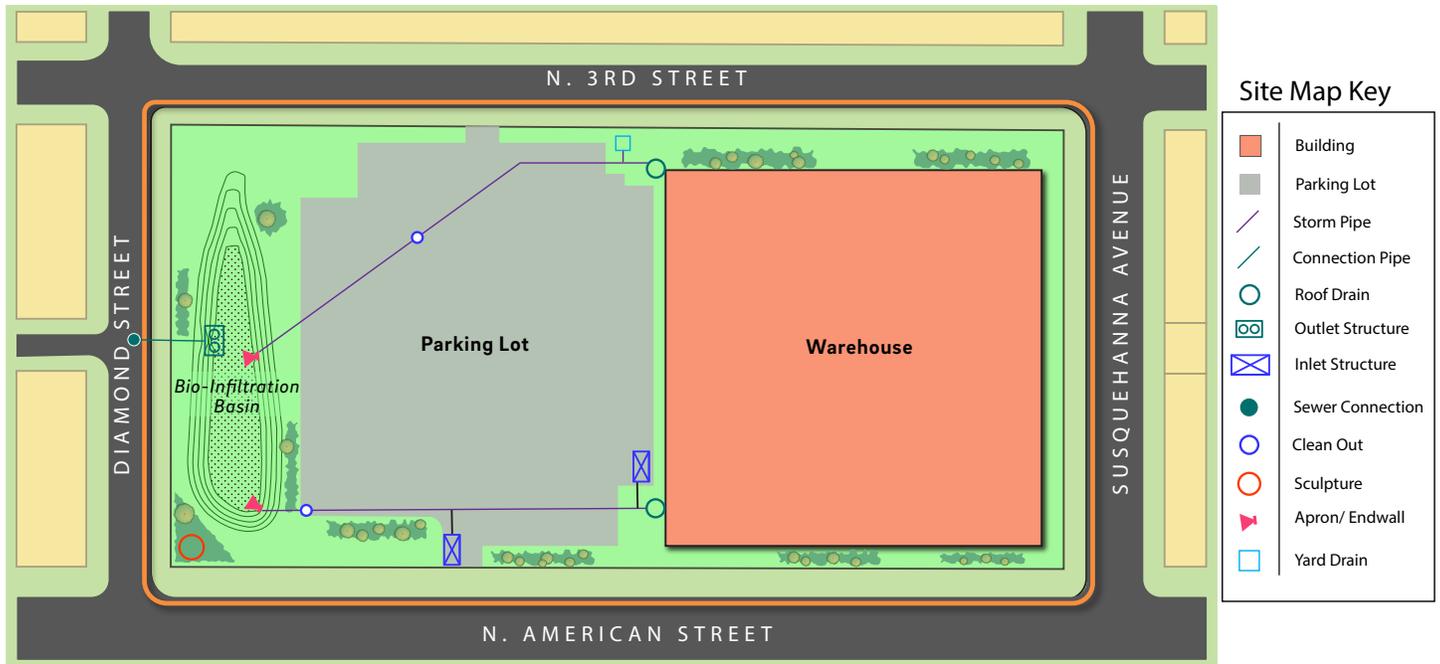
Bioinfiltration practices are highly preferred by PWD as these surface-based systems allow for ease of maintenance that can largely be done by property owners or general maintenance companies as opposed to more traditional subsurface systems that require a certified maintenance professional. Grass based bioinfiltration systems can be mowed, however, planted systems act more similar to gardens and require weeding. Bioinfiltration basins have the added benefit of promoting nature cycles of evapotranspiration, which accelerates the speed at which stormwater is eliminated as well as other advantages that come with increasing green space in an urban environment.



## Project Details

<b>Watershed</b>	<i>Delaware River Watershed</i>
<b>Sewer Type</b>	<i>Combined</i>
<b>Management Approach</b>	<i>Bioinfiltration Basin</i>
<b>Basin Area</b>	<i>3736 sq ft</i>
<b>Drainage Area</b>	<i>3.07 acres</i>

# Site Plan



## Maintenance of SMPs

Chaes Food understands that maintenance is essential to ensure long-term performance for privately-owned SMPs. Not only is routine maintenance important for the general functionality of the SMP, but it saves the property owner from future, more expensive costs associated with large repairs to SMPs and their components. Additionally, by maintaining SMPs, the property owner is putting less stress on the sewer systems, essentially paving the way for cleaner waters throughout our community and City.

The long-term success of an SMP relies greatly on maintenance. The owners at Chaes Food have taken this to heart with their generous displays of a variety of tree species, clean SMP components, and well-maintained vegetation.

Detailed maintenance information for bioinfiltration can be found at the back of this case study.



### A Variety of Tree Species

Chaes Food was smart in their selection of a landscape palette that was suitable for their business operations. This is evident by the well maintained and healthy vegetation in and around a surface bioinfiltration basin. A bonus is the variety of different tree species Chaes planted including dogwood, pine and magnolia trees. The trees attractively frame the bioinfiltration basin and other parts of the property. The Chaes family takes great pride in the plantings and their maintenance. "We really want to have a positive impact on our neighborhood," said owner Young Chae.

### Functioning Systems

As part of PWD's periodic inspection of the Chaes Food site, the bioinfiltration basins, inlets, outlet control structures, and system piping were all found to be very clean and free of sediment and trash build up. Regular maintenance of the SMPs is essential to ensuring that the stormwater runoff is able to filter through the soil media and infiltrate into the ground. Filtering of the water through a soil and plants helps to remove pollutants and improve the quality of stormwater runoff.



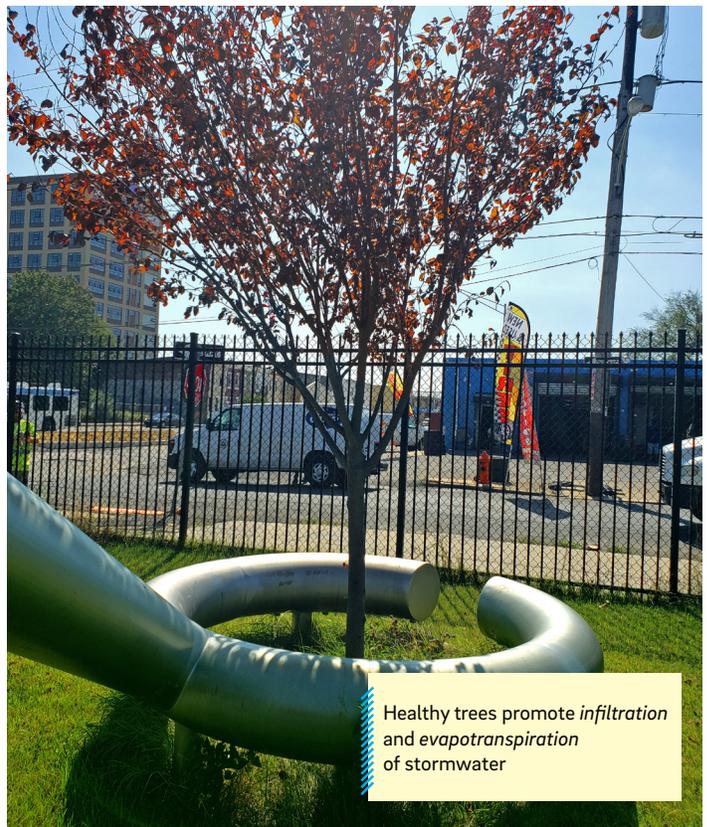
From left to right, brothers and co-owners Young and Jeff Chae of Chaes Food Wholesale Distributor

### Stabilizing Grass Growth

The sizeable bioretention basin has good, stabilizing grass growth and there is no visible sign of erosion on the sides of the basin. Stormwater enters the basin through a large endwall with a big stone apron that dissipates the stormwater runoff. The fact that the apron's stone is still firmly in place and hasn't migrated is another sign of good maintenance.



The well established bioinfiltration basin vegetation is mowed frequently as part of a routine maintenance schedule



Healthy trees promote infiltration and evapotranspiration of stormwater

## Bioinfiltration/ Bioretention Maintenance Guidance

Bioinfiltration/bioretention maintenance activities focus largely on maintaining infiltration capacity and the health of vegetation. During periods of extended drought, bioinfiltration/bioretention SMPs may require watering approximately every ten days.

General recommended maintenance activities for bioinfiltration/bioretention SMPs are summarized in the table.

	ACTIVITY	FREQUENCY
EARLY	Water vegetation at the end of each day for two weeks after planting is completed.	<i>Daily for two weeks after installation</i>
	Water vegetation regularly to ensure successful establishment.	<i>Every four days during periods of four or more days without rain, June through August for the first year after installation</i>
	Inspect vegetation for signs of disease or distress.	<i>Biweekly for the first year after installation</i>
	Inspect inlet controls, outlet structures, and storage areas for trash and sediment accumulation.	<i>Monthly for the first year after installation to determine ongoing maintenance frequency</i>
ONGOING	Remulch void areas. Treat diseased trees and shrubs. Keep overflow free and clear of leaves.	<i>As Needed</i>
	Inspect soil and repair eroded areas. Remove litter and debris. Clear leaves and debris from overflow.	<i>Monthly</i>
	Inspect trees and shrubs to evaluate health, replacing if necessary. Inspect underdrain cleanouts. Add additional mulch. Inspect for sediment build-up, erosion, and vegetative conditions	<i>Quarterly</i>
	Evaluate the drain down time of the SMP after a storm of at least one inch in no more than 24-hours to ensure an SMP drain down time of less than 72 hours. Maintain records of all inspections and maintenance activity.	<i>Ongoing</i>