



New England Biosolids Case Studies*

Putting Biosolids To Use: Spectacle Island, Boston Harbor

***biosolid** n. (1990): solid organic matter recovered from a sewage treatment process and used esp. as fertilizer.

--Merriam-Webster's Collegiate Dictionary

Background

Spectacle Island is located in Boston Harbor, 4 miles southeast of Logan Airport. Its name is derived from its shape - two drumlin hills connected by a sandbar - which resembled the shape of a pair of spectacles to British settlers. The island has served many purposes since the late 1600s: as a source of timber, as pastureland, as an early 18th century quarantine area, as the site of mid-19th century tourist hotels, as a glue factory, and as a solid waste landfill. After the Spectacle Island landfill closed in 1959, it remained uncapped. Before the Central Artery/Tunnel Project/Spectacle Island capping activities began in 1993, the open mountain of decaying garbage was leaking thousands of gallons of eroding materials into Boston Harbor.

During the summer of 1992 archaeologists excavated a shell heap or midden on Spectacle Island. From studying these remains it appears that Native Americans came to the island by canoe as early as 500 AD to spear fish, dig for clams and mussels, and gather other food. Photo and caption courtesy of the Central Artery/Tunnel project.



Covering the Landfill with Big Dig Dirt

In the late 1980s, the Massachusetts Bay Transit Authority began the construction of the Central Artery/Third Harbor Tunnel Project (CA/T) in downtown Boston, part of the Big Dig project. This construction coincided with the cleanup of Boston Harbor. As described by the Big Dig website: "These mutual interests led to the choice of Spectacle as the site for about a third of the project's excavated dirt, gravel, and clay. A dike was built to contain the new dirt that covers the island's mountain of trash. Dirt and gravel were used to reshape the island, over which a two-foot clay cap was laid."

Creating a Park on Biosolids Compost Soil

The clay cap provided an impervious layer to keep precipitation from entering the landfill waste and transporting pollutants into the harbor or to groundwater. Healthy topsoil and vegetation to prevent the topsoil from eroding were then added to keep the clay cap in place.

While the sandy soil from the Big Dig provided minerals and texture, it lacked the organic matter and nutrients necessary to sustain long-term plant growth. Instead of stripping topsoil from a nearby farm or natural ecosystem, project engineers opted to create new topsoil by blending the poor-quality sandy waste soil with biosolids compost from several New England facilities to enhance the organic matter content and nutrient qualities. The biosolid-amended soils were placed on the site in layers. The bottom layer - a mix of four parts sandy soil to one part biosolids compost - was three feet deep. The top layer - two parts sandy soil to one part biosolids compost - was half a foot deep.

The Spectacle Island restoration project recycled over 65,000 cubic yards of biosolids compost in creating 200,000 cubic yards of finished topsoil - enough topsoil to cover over 120 acres of land 12 inches thick. This beneficial use of biosolids preserved other local ecosystems, saved the project money, and recycled a byproduct of wastewater treatment: biosolids. As renewed ecosystems develop on the new biosolids-amended soil, trees, shrubs, and grassy areas will provide habitat for wildlife, as well as a great place for New England families to enjoy a hike and picnic with spectacular views of Boston.



Photo : New England Organics, Inc.

The Future of Spectacle Island

According to the Central Artery/Tunnel project:

... Spectacle Island now looks forward to 2002, when the 100-acre public park is expected to be open. The new park will have docking access for public ferry and recreational boats, beaches, picnic areas, a trail system, recreation areas, and a visitors' center.



*NEBRA Biosolids Case Study #1: Spectacle Island, Boston Harbor, MA
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