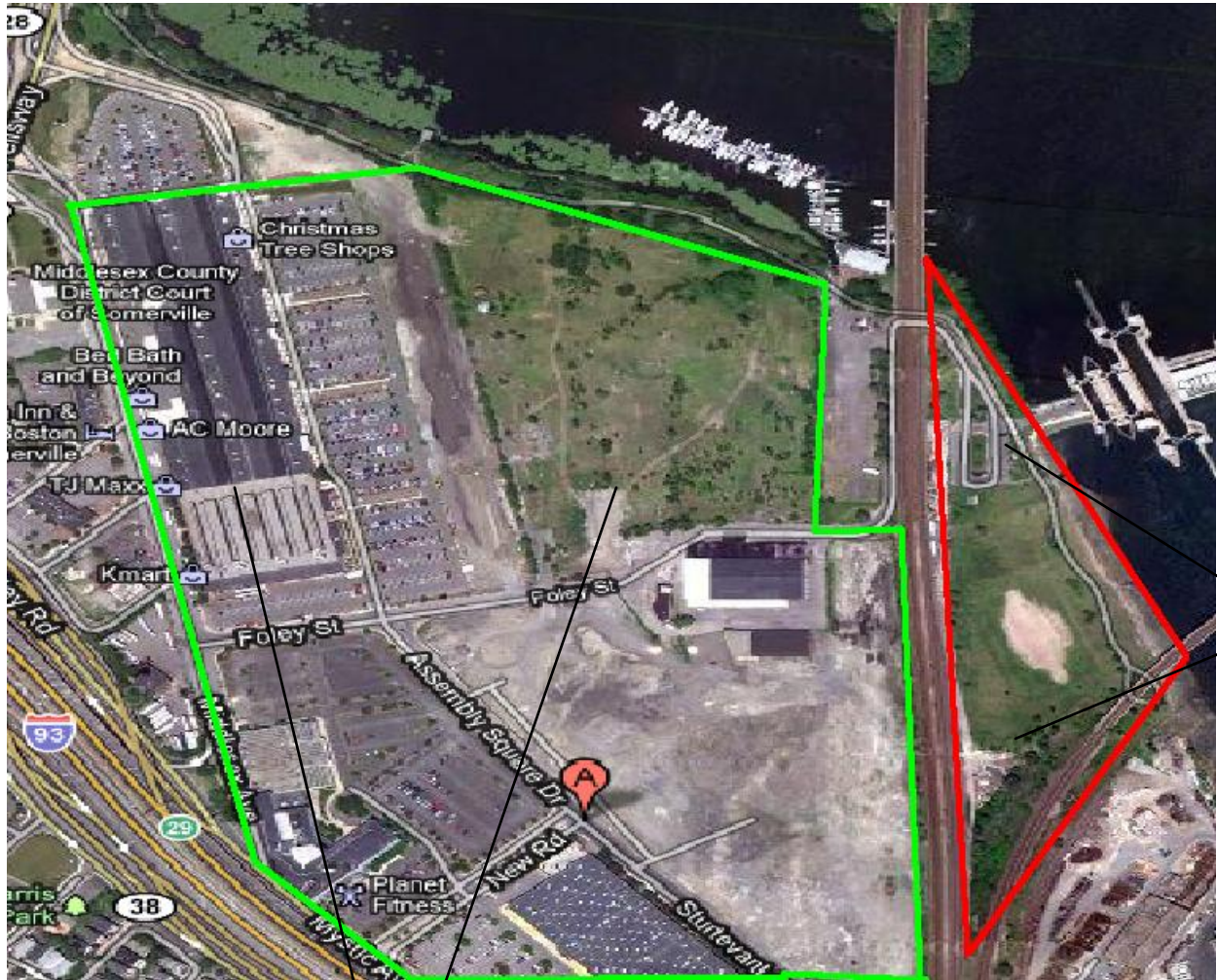


Assembly Square/ Draw Seven Park: Updating the Recreational Site



Draw 7
Park

Assembly
Square Mall

Image: Google Map

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Introduction

Geography: Site Location

The Draw Number Seven Railroad Bridge, which once crossed the Mystic River, gave this park its name (Draw Seven Park). The park is part of a larger project, the redevelopment of Assembly Square. Assembly Square is located in Somerville within the heart of a shopping plaza. Its precise location is alongside the train tracks of the Orange Line and Haverhill branch of the Commuter Rail (the area bordered in green, fig. 1). On the other side of the tracks is a narrow triangular strip of land that is Draw Seven Park (the area bordered in red, fig. 1). This park is bounded by the Orange Line and Haverhill Commuter Rail tracks on the west side, the Mystic River on the northeast side, and the Newburyport/Rockport Commuter Rail tracks on the southeast side.



Figure 1 Project Area

Image: Google Map

Assembly Square Mall

Draw 7 Park

Background

History of the Mystic River

The Mystic River Watershed, which covers about 76 square miles (200 km²) of land flows from the Lower Mystic Lake and travels through the Boston-area communities of Arlington, Medford, Somerville, Everett, Charlestown, Chelsea, and East Boston. The river joins the Charles River to form inner Boston Harbor. Its watershed contains 44 lakes and ponds, the largest of which is Spot Pond in the Middlesex Fells, with an area of 307 acres.

For hundreds of years, Native Americans lived and fished along the Mystic. One of the Mystic area's first European settlers was Massachusetts Bay Colony Governor John Winthrop. He built his summer retreat, the Ten Hills Farm, on the banks of the Mystic. The weirs at the river allowed both Native Americans, and later Colonists to catch alewives and fertilize their crops. However, during the 1800s the factories replaced many farms, and the region attracted many new residents. By 1865, the population of the area had tripled, and overfishing and pollution had eliminated commercial fishing.¹

In the 1840s, the shipbuilding on the Mystic had increased since the landing of the earliest colonists. The Mystic by this time had become a major transportation route. Timber, molasses for rum distilleries, and other products, were being transported via schooners and sloops along the trade route between Medford and the West Indies. Later, railroads and then a system of roadways replaced the River as a transportation route. Mills, brickyards and tanneries along the river brought wealth, but some industries also polluted the Mystic watershed. Today, a mix of houses, businesses, parks and abandoned factories border the River.

Until 1909 when the first dam (Craddock Locks) was built across the Mystic River extensive salt marshes lined the banks of the Mystic. The dam converted salt marshes to freshwater marshes and enabled development. The dam that currently lies east of Draw Seven Park, Amelia Earhart, was built in 1966. It has three locks to allow the passage of boats, and is equipped with pumps to push fresh water out to the harbor. There is also fish ladder, however, it has never been functional.²

¹ <http://mysticriver.org/history-of-the-mystic/>

² <http://www.answers.com/topic/mystic-river-1>

History of the Assembly Square

Assembly Square is a mixed-use, smart growth development planned for 66.5 acres (269,000 m²) along the Mystic River in Somerville, Massachusetts. The site is approximately two miles (3 km) from downtown Boston and accessible via I-93 and Route 28/Middlesex Fells Parkway. Consumers can also commute to the mall via Orange Line and Bus Route 90. The history of the site revolves around these eight buildings:

- Ford Motor Plant
- East Somerville Locomotive Shop at 99 Foley Street
- Sears Roebuck & Company Warehouse at 30-34 Sturtevant Street
- Spaulding Brick Company Warehouse at 123 Foley Street
- Spaulding Brick Company storage structure at 147 Foley Street
- A two-story commercial building at 85 Foley Street
- Three additional warehouses at 100 Sturtevant Street
- Loews AMC Theater

The Assembly Square Mall has gone through lots of phases. The mall that currently exists was originally the Ford Plant, which transformed into a supermarket distribution center before being converted into the mall. The Ford plant was built in 1926, at roughly the same time as McGrath Highway and the First National plant, on filled wetlands. The initiative for the development of the Ford and First National sites came from the Boston & Maine Railroad, which owned the land and built rail spurs to the plants. The arrival of the Ford plant was a major event, commemorated by a special supplement to the Somerville Journal. The building was notable for its use of natural daylight and was apparently also of interest from the outside. The building was a long line of windows along the Middlesex Avenue, which allowed passersby to watch the progress of cars moving along the assembly line. The plant was expanded in 1937 but was shut down in 1958, after having been converted to production of the ill-fated Edsel.³

The East Somerville Locomotive Shop at 99 Foley Street was constructed ca. 1925 by the Boston & Maine Railroad to service train engines. From 1933 to the present, the building has been used for steel manufacturing by the L.E. Zurbach Steel Company and the Central Steel

³ http://mysticview.org/walking_tour_middlesex_ave2.php

Company. The two-story, brick building has pier and spandrel construction and a shallowly-pitched gable roof. A two-story, brick addition was constructed along the west elevation in the mid 20th-century and a second, single-story addition was constructed on the east elevation sometime after 1990. Since construction, the building has been substantially altered through the sealing of the original door and window openings and the application of continuous, vertical, standing-seam metal siding.

The Sears Roebuck and Company Warehouse at 34 Sturtevant Street was constructed in 1941 to handle company cargo shipped via the adjacent Boston & Maine Railroad. The single-story building is constructed of reinforced concrete with a brick surface and has a flat roof. The west elevation has been refitted with modern doors, metal siding, windows, and entry canopies to accommodate retail and office uses. One loading bay remains intact at the center of the elevation. The former track-side (east) elevation retains thirteen bay openings and a concrete loading platform, sheltered by a metal-clad wood canopy.

In 1980, the City of Somerville declared the Assembly Square District to be blighted, substandard, and decadent and adopted a 20-year urban renewal plan. The cornerstone of the urban renewal plan was the rehabilitation of the former auto assembly plant into a retail mall known as the "Assembly Square Mall". Other development included a new Home Depot. In 1999, the internationally known Swedish home furnishings store, IKEA, purchased two former industrial sites on the Mystic River waterfront. IKEA obtained permits for its proposed retail store; however, the permits were challenged in court by community members opposed to a "big box" use on the waterfront, with the result that redevelopment of the site was stalled for a number of years.⁴

Assembly Square Redevelopment

The plan for redeveloping of the Assembly Square originated in the office of Mayor of Somerville, Joe Curtatone: "Since first taking office seven years ago, Mayor Joe Curtatone has kept a focus on redeveloping Assembly Square."⁵ Between the time the plan was laid out on the table till now the plan has gone through few phases. In 2000, the Somerville Redevelopment Authority (SRA) gained title to the 9.3 acre of former railroad parcel in Assembly Square and

⁴ <http://www.somervillema.gov/departments/ospcd/squares-and-neighborhoods/assembly-square>

⁵ <http://www.wickedlocal.com/somerville/features/x1700918738/Somerville-officials-discuss-details-of-Assembly-Square-redevelopment#ixzz1MNHJRjOK>

filed a Request for Proposal for the developers. At the same time, the City initiated an extensive public planning process, producing the "2000 Planning Study" which set out a new vision for Assembly Square as a 24-hour, mixed use district with residential, retail, office, cinema, restaurant, hotel, and recreational open space uses. In 2002, the SRA and the City adopted a 20-year extension of the urban renewal plan with the goal of transforming Assembly Square into the lively, mixed-use district described in the 2000 Planning Study. Assembly Square was rezoned to promote the mixed-use concept, and design guidelines and a design review committee were created to provide additional assistance in helping foster the new vision.

In 2005, the Federal Realty Investment (FRIT) purchased the Assembly Square Mall and other properties adjacent to the mall; 220,000-square-foot retail/industrial complex. In 2006, FRIT redeveloped the mall and opened the newly refurbished mall as Assembly Square Marketplace. Later that year, Mayor Curtatone decided to bring together FRIT and IKEA to work together and come up with a reasonable redevelopment plan with a brand new vision. FRIT and IKEA agreed to trade parcels, moving IKEA inland from its initial site and leaving the waterfront open for FRIT to create pedestrian friendly, mixed-use development. This new plan was welcomed by those who had previously opposed the IKEA development. The land swap was executed in October 2009 solidifying the vision of the district.

The other part of the redevelopment plan includes an addition of a station to the Orange Line (train line). The new station will give the Orange Line a grand total of 20 stops, along side this, the station will serve as an attraction to residents/consumers, making living/shopping in the newly redeveloped area commute friendly. The MBTA board just recently approved this agreement with developer Federal Realty Investment Trust which enables construction of the new station at Somerville's Assembly Square, roughly halfway between existing stops at Sullivan Square in Charlestown and Wellington in Medford. The agreement also gives the state the real estate rights to build the station and entrances and realign tracks.

Funding/Cost for the Site Redevelopment

The project is expected to result in an estimated \$1.36 billion construction investment in the City to include new public and private infrastructure, publically accessible open space, public facilities and public benefits. The project is forecasted to generate \$24 million in annual municipal tax revenue and \$16.7 million in annual state tax revenue (gross). It's expected to generate an estimated 9,700 permanent jobs, 10,300 construction jobs, while retaining 590 existing permanent jobs.⁶ In the late 2008, FRIT announced that due to downfall in the economy the value of the land had decreased so low that necessary financing for the project was very limited. On the July 20, 2009, some of the regional politicians including, Governor Deval Patrick along with Senator John Kerry, Congressman Michael E. Capuano, Mayor Joseph A. Curtatone, and a few other selected officials, along with FRIT came together to decide that the only way this project would be completed is with everyone's 100% cooperation.

The beginning of the funding process for the project was a bit shaky, in his interview for the Somerville Journal (city newspaper) Mayor Curtatone talked about the funding for the site: "mayor [Curtatone tried] to steer the city toward borrowing \$25 million to help redevelop Assembly Square, [however] aldermen reacted skeptically, worried that the city [was] underwriting the private developer."⁷ Mayor later also mentioned that "if the city doesn't put up its own money, FRIT could potentially walk away from the project." He referred to the investor's annual report in which the publicly traded company warned that it might have to forgo its plans for Assembly Square if it does not receive the \$25 million from the city. In the company's report FRIT stated, "If we do not receive adequate public funding... the project may not provide a justifiable risk-adjusted return resulting in a temporary or permanent hold on the project and a write-off of a portion of the project."⁸

The Board of Alderman viewed this \$25 million, which equaled to about 14% of the city's \$178 million budget and over the course of bonds 30 year period, the amount would

⁶ <http://www.somervillema.gov/departments/ospcd/squares-and-neighborhoods/assembly-square>

^{7 8} http://www.wickedlocal.com/somerville/town_info/government/x401816925/Money-needed-for-Somervilles-Assembly-Square-scrutinized#axzz1MXdwyhg4

actually come out to \$ 50 million, slightly over the yearly budget of the city’s public schools. In exchange for the city spending \$ 25 million on roadways and a better stormwater drainage system throughout the entire Assembly Square Site, FRIT has agreed to build three buildings and also help pay for the MBTA new station development. The city projects that the property tax for these three buildings would help pay off the bonds debts, “city officials have said that would easily be accomplished even under conservative estimates. If the rest of the lot is developed, the city would collect much more in its tax coffers.”⁹

In 2009, the Assembly on the Mystic River project received a \$2 million GDI (Growth District Initiative Grant for the City’s underground infrastructure; sewers, water, drainage, etc. The Project also received the final approval from the City of Somerville and received Infrastructure Investment Incentive bond funding of \$ 50 million. Federal Stimulus American Recovery & Reinvestment Act also gave \$ 15 million for the roadway construction and off site improvements.

• State’s Infrastructure Investment Initiative (I-Cubed) Bond Program	\$50 million
• Federal Stimulus (ARRA) Grant	\$15 million
• State’s Growth District Initiative (GDI) Grant	\$2 million
• Congressional Multi-Modal Earmark	\$6.29 million
 Total Public Funds identified in 2009:	 \$73 million

*Does not include public funds allocated for new MBTA Orange Line.¹⁰

The other part of redevelopment that by this time had not received much funding was the new station on the Orange Line. The MBTA project is expected to cost an estimate of \$53.7 million. The developer is expected to put in \$15 million. State Representative Michael Capuano, Democrat of Somerville, had previously already secured authorization for \$25 million in federal funds for the train stop, however the Congress itself has only provided \$1 million and

⁹ http://www.wickedlocal.com/somerville/town_info/government/x401816925/Money-needed-for-Somervilles-Assembly-Square-scrutinized#ixzz1Mq1wLCsB

¹⁰ <http://www.somervillema.gov/departments/ospcd/squares-and-neighborhoods/assembly-square>

does not seem to be in any rush to provide the remaining fund needed to start the project.¹¹ On the other hand, to keep the project from stalling any further, the state Department of Transportation and the Boston Region Metropolitan Planning Organization have put a hold on federal highway funds. The Executive Office of Housing and Economic Development, after seeing the potential for thousands of construction and long term jobs, have also decided to put in infrastructure money. So, the design of the MTBA Orange Line Station in Assembly Square is at 100% engineering design and is expected to be ready for bid by spring 2011. Currently, \$50 million is required to build the station including two head houses. To date, the funding sources include:

• Federal Transportation Earmark	\$1 million of the original \$25 million
• State (MPO)	\$10 million
• State (Other Grant Sources)	\$18 million
• Private Contribution	\$15 million
• Congressional Multi-modal Earmark	\$6.26 million
Total funding as of 2009	\$75.26 million ¹²

Draw Seven Park: Tour Guide

Draw Seven Park, which is also projected to go underdevelopment, is a strip of land no larger than size of baseball field. The only entrance to the site is located adjacent to the Winter Hill Yacht Club. The entrance is a two-way paved road allowing visitors, employees of Amelia Earhart Dam, and DCR faculties to visit the site while providing a parking space for about forty cars. As mentioned earlier, the park is bounded by the Orange Line and Haverhill Commuter Rail tracks on the west side, the Mystic River on the northeast side, and the Newburyport/Rockport Commuter Rail tracks on the southeast side.

What Currently Exists at Draw Seven Park?

The park at the moment consists of a few positive and a few negative things, positive things include: Amelia Earhart Dam, soccer goals, an open field, trees and bushes (a few), paved footpaths, benches, fire hydrant, drainage pipe, and pavilion with picnic tables. Negative things

¹¹ http://articles.boston.com/2011-02-13/news/29345290_1_construction-bids-economic-development-station

¹² <http://www.somervillema.gov/departments/ospcd/squares-and-neighborhoods/assembly-square>

include: fenced off area alongside the Orange Line train tracks which is used for MBTA storage or more like dump site, poorly functional dam, rotting dock over the Mystic River, rusted/poorly maintained fence that runs along the back part of the park, and the fact there are not as many trees there as a park should or normally has. The specific locations of the mentioned facilities are mapped below: highlighted in RED are the MBTA storage areas, in GREEN are the areas where trees/bushes exists, MAROON box by the waterfront is where the dock is, PURPLE BOX is the Amelia Earhart Dam, and the BROWN LINE is the paved footpath.



Figure: 2 Draw Seven Park. Image: Google

Maps

Project Goals/Objectives

The priority of site was to give provide the community of Assembly Square and surrounding areas, a recreational site, that will be environmental friendly, accessible, and safe. The site would be transformed into a waterfront park, consisting of park like feature; play fields, water fountains, benches, more trees along side the fences. Further details will be discussed in the later part of the paper.

Our Approach

Our methodology was straight forward, visit the site during different seasons (later winter, and early/mid spring) to check for environmental changes if any. Later visiting the site with Ivey St. John, a person well acquainted with the area and highly active in city meetings regarding the development of the site. However, most of our time was spent reviewing documents on the internet, and books looking for examples of waterfront parks, and also how to clean up rivers of their toxic wastes.

Possible solutions to the site

Draw Seven Park being a waterfront park, the first step to making the park fun, safe, and attractive is to help clean up the Mystic River. Mystic River has a long history of industrial use and continuing water quality problems. Some of the solutions for Mystic River include: salt marshes, seagrass beds, and oyster reefs. However, out the three solutions salt marshes, and seagrass beds are most ideal.

Salt Marshes

Salt marshes are coastal wetlands rich in marine life. They are also sometimes called tidal marshes, because they grow in between low and high tide zones (see fig. 4 for an example). Salt marsh plants cannot grow where waves are strong, but they thrive along low-energy coasts. They also occur in estuaries, where freshwater from the land mixes with sea water. Salt marshes generally consist of plants such as herbs, grasses, or low shrubs. They come in various colors like gray, brown, and green, which makes it easier to identify them.

Salt marshes are among the most productive habitats on earth in terms of the quantity of vegetation produced each year. They play a large role in the aquatic food web and the exporting of nutrients to coastal waters. They also provide support to terrestrial animals such as migrating birds as well as providing coastal protection. For example, *Spartina* is not a great source of food when living but when it dies the marsh plant becomes a great source of nourishment for many species. As *Spartina* slowly dies it breaks into small pieces called detritus which fuels the marsh and its animals. In spring and summer, marshes flourish, highly productive and grow in height. By late fall, the green *Spartina* begins to turn brown, slowly leaves start to die and decomposition begins. Forces of the nature (water, waves, wind and storms) remove and break up decaying leaves, and transport them to mud flats and other locations around the marsh. This dead plant matter, forms an attachment site for microscopic organisms such as bacteria, fungi and small algae. These organisms colonize the broken bits of plant material and break down portions of the detritus that are not digestible by animals.



Figure: 4 Salt Marsh

Image: Google Search

For the most part, this decomposition occurs on or in the sediments where scavengers such as worms, fish, shrimps and crabs live. These animals eat the decaying plant material, along with the bacteria, fungi and attached organisms. They then digest the material and excrete the undigested plant remains in feces that can be colonized again by microorganisms. As the microorganisms utilize detritus and reduce it to smaller and smaller pieces, the remaining detritus becomes fertilizer for the next *Spartina* crop. In this way, the whole food web cycle is repeated.

Where and how salt marshes will be used at our site will be discussed in this paper.

Seagrass Beds

Seagrasses beds are a type of submerged aquatic vegetation that have evolved from terrestrial plants and have become specialized to live in the marine environment (see fig. 5). Like terrestrial plants they also have leaves, roots, flowers, and generate their food via photosynthesis. However, what makes them different from the terrestrial plants is that unlike terrestrial plants seagrass and other submerged aquatic vegetation does not have strong stems, or trunk which comes handy when fighting gravity. Instead, the seagrass has blades which allows to them to flow with the water.



Figure: 5 Seagrass bed

Image: Google Search

Seagrasses performs a variety of functions within our ecosystem, and have both economic and ecological value. The high level of productivity, structural complexity, and biodiversity in seagrass beds has led some researchers to describe seagrass communities as the marine equivalent of tropical rainforests. While nutrient cycling and primary production in seagrasses tends to be seasonal, annual production in seagrass communities exceeds that of terrestrially cultivated areas.

The importance of lies in the fact that within seagrass communities, a single acre of seagrass can produce over 10 tons of leaves per year. This vast biomass can provide food, habitat, and nursery areas for a countless number of adults and juveniles vertebrates and invertebrates. Further, a single acre of seagrass may support as many as 40,000 fish, and 50 million small invertebrates. Because seagrasses support such high biodiversity, and because they are so sensitive to changes in water quality, they are recognized as important indicator species that reflect the overall health of coastal ecosystems.

Where and how seagrass beds will be used at our site will be discussed later in the paper.

Oyster Reef

Oyster reefs, often referred to as oyster bars, are common submerged habitats in the southern United States (see fig. 6). Oyster reefs are generally found near shore areas and estuaries of both coasts, but grow especially vigorously near estuarine river mouths where waters are salty and less than 10 meters deep. Some of the benefits oysters reefs pose are environmental, economical, and social benefits.



Figure: 6 Oyster Reef

Image: Google Search

Environmental

Oyster reefs have the ability to improve water quality in areas where they occur. Oysters act like filter feeders which strain microalgae, suspended particulate organic matter, and possibly dissolved organic matter from the water column over their gills in order to feed. Under most suitable temperature and salinity conditions, a single oyster may filter as much as 15 liters of water per hour, up to 1500 times its body volume. Spread over an entire reef, for an entire day, the potential for oysters to improve water clarity is immense.

Economical

Oyster reefs provide essential habitats for many ecological and economically important fish as well as invertebrate species. Healthy oyster populations improve the quality of water, which in turn improves commercial and recreational fishing, recreational boating,

and ecotourism. The entire process is a cycle, if oyster reefs are restored the economy will gradually come up again.

Social

Improved water clarity and overall cleaner water greatly increases recreational fishing, boating and swimming. This allows locals and tourists to appreciate the environment around them. In our case, the cleaner water would encourage the community members to come out in the summer to go fishing or simply rent a boat at Boys & Girls Club and go boating with their kids.

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Images

Figure I: Google Maps (Assembly Square, Somerville, MA)

Figure II: Google Maps (Assembly Square, Somerville, MA)

Figure III: Google Maps (Assembly Square, Somerville, MA)

Figure IV:

http://www.google.com/imgres?imgurl=http://science.kennesaw.edu/~jdirnber/oceanography/LecturesOceanogr/LecSaltMarsh/salt_marsh.jpg

Figure V: http://www.sms.si.edu/irlspec/Seagrass_Habitat.htm

Figure VI: <http://www.google.com/imgres?imgurl=http://www.treehugger.com/oyster-reefs.jpg>