

**Jackson Square / Hyde Square  
Sustainable Development Project**

**Existing Conditions Report**

**for**

**Jamaica Plain Neighborhood Development Corporation**

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## **Introduction**

The Jackson Square neighborhood is located in Southwest Boston, on the border of Jamaica Plain and Roxbury, approximately three miles from downtown Boston. The residents of this neighborhood are vibrant, ethnically-diverse and actively engaged in community issues. The community has been involved in an on-going process to plan the redevelopment of several parcels of contaminated land located near the intersection of Columbus Avenue and Centre Street. The contamination of these “brownfields” is a legacy of the past industrial and commercial uses of the property. These parcels present a significant opportunity for Jamaica Plain and Roxbury residents to revitalize a historically neglected portion of their neighborhood. The community-driven process, guided by the Jackson Coordinating Group (JCG), has culminated in a Development Priorities document, outlining the desires and needs of local residents. These priorities include a community center for local youth, small-scale commercial development, transit-oriented development, remediation of the parcels, and affordable housing.

### **Scope of Work**

The Jamaica Plain Neighborhood Development Corporation (JPNDC) is a neighborhood-based community development corporation that has been actively involved in the revitalization of Jamaica Plain through affordable housing development, economic development, and community action. JPNDC has been an active member of the JCG, comprised of over 30 community-based organizations.

JPNDC has commissioned this study to investigate sustainable development options for the parcels. This study has been conducted by a team of graduate students from the Department of Urban Studies and Planning at the Massachusetts Institute of Technology as part of a practicum in sustainable development.

### **Project Goals**

This study is guided by the goals identified by JPNDC for this project.

These goals include:

- Restoring contaminated parcels to vital use
- Creating economically viable commercial uses for new development
- Developing affordable housing that meets the needs of area residents
- Addressing issues of mobility, community health, and overall environmental impact through sustainable approaches to redevelopment
- Building community capacity for an understanding of sustainable development
- Ensuring that redeveloped land will not become a “brownfield” of tomorrow

This study proposes a sustainability framework to plan for the development of Jackson Square.

## **Framework for Sustainable Development**

The concept of sustainability is not easily defined, as it means different things to different people in different situations and places. The most commonly used, and perhaps most universally applicable definition was presented in the Brundtland Report of the World Commission on Environment and Development in 1987:

“Meeting the needs of the present generation without compromising the ability of future generations to meet their own needs.”

Sustainable Development is a similarly elusive concept. Most definitions are based on a combination of economic, environmental, and social goals. Sustainable development happens where these three interests “overlap” and do not significantly compromise one another.

In developing a customized framework for sustainability and sustainable development in Jackson Square, we have identified three fundamental *principles* that closely parallel the classic definition. Redevelopment planning and implementation should:

- Respond to community needs and desires
- Be economically viable
- Maintain or improve environmental conditions and public health

Moving from the conceptual toward the concrete, these principles are translated into overall goals that set the *context* for redevelopment planning and implementation:

- Effective remediation of pollution hazards on redevelopment parcels
- Appropriate re-use of redevelopment parcels
- Integrate with and reconnect surrounding neighborhoods

This framework for sustainable development will be expanded and extended in forthcoming sections of this report. Building on the principles and context, specific opportunities for enhancing the sustainability of development – *what* we should do - will be identified, and specific proposals – *how* we should do it – will be presented.

The following sections are organized according to the three fundamental principles presented above. An existing conditions analysis of important community, economic, and environmental issues is offered, along with identified sustainability challenges and opportunities related to each issue. We must remember that, despite the sequential treatment of these issues in the document, the sustainability framework requires that they not be considered separately from one another. What is most important to consider is the overlap and interrelationship between issues and their associated challenges and opportunities.

## JP and Roxbury Demographic Overview

Census tracts considered: JPNDC target area (811, 812, 813, 1101, 1202, 1203, 1204, 1205, 1206, 1207) and BRA definition of Roxbury (801, 803, 804, 806, 814, 815, 817, 818, 819, 820, 821, 901, 902, 903)

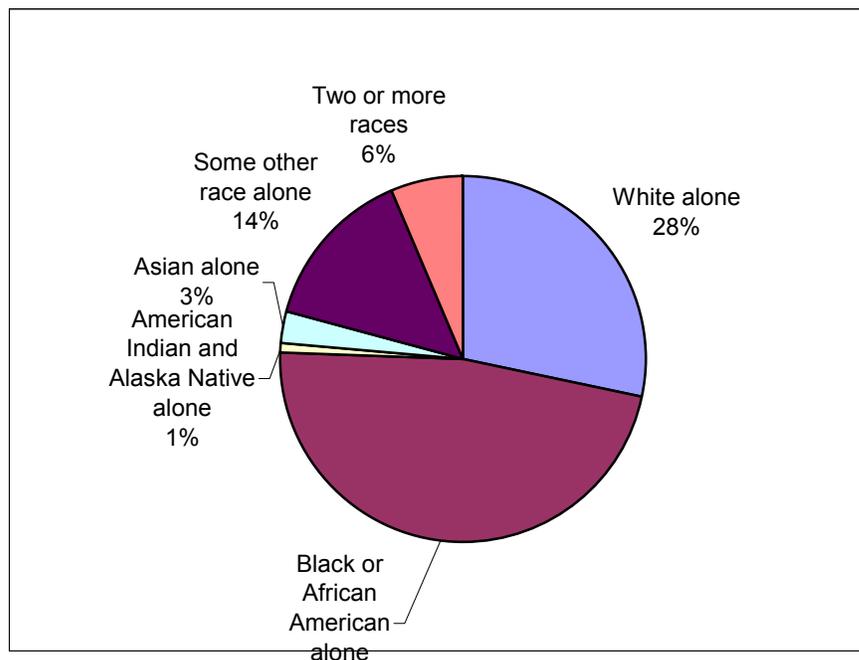
According to the 2000 U.S. Census, the population of JP and Roxbury was 77,090. This is a **10 percent increase since 1990**, when the population was 70,166. The male to female ratio remained fairly stable, with males representing 47 percent of the population and females representing 53 percent of the population in 2000. In 1990, the ratio was 46 percent male and 54 percent female.

While the average household size of the JPNDC target area is 2.5, the average household in the combined JP/Roxbury area has 2.6 persons. Of these households, 71 percent are family households and 29 percent are non-family households.

### **Ethnicity/Race**

According to the US Census of 2000, 26 percent of individuals are of Hispanic/Latino origin. This is a **31 percent increase since 1990**, at which time 22 percent of the population was of Hispanic or Latino origin. However, Black or African American residents constitute 48 percent of the population.

*Figure 1. Jamaica Plain and Roxbury, racial and ethnic breakdown*



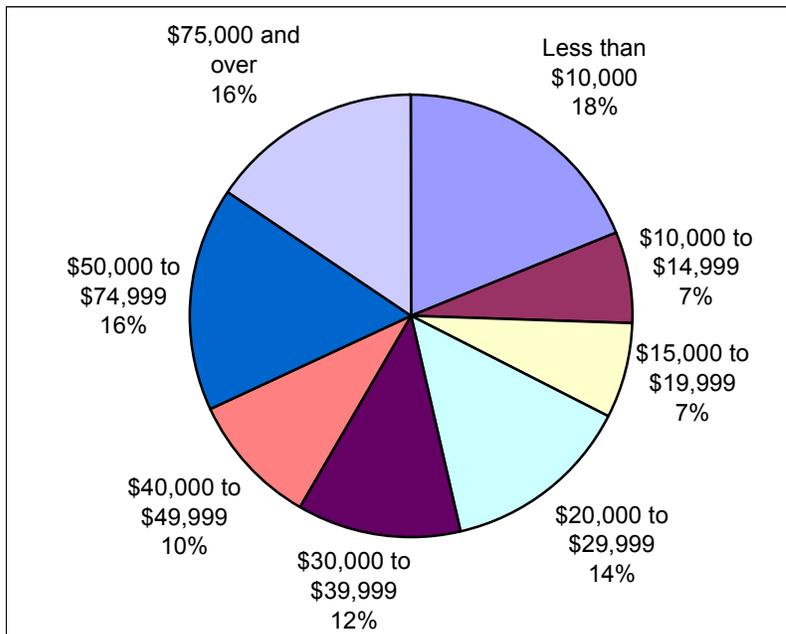
## Household Income

JP/Roxbury has lower-income households than Boston or Massachusetts

The median household income in the JPNDC Target Area is \$38,744 but in the JP/Roxbury combined area there is a lower median household income of \$32,078. This is also much lower than the median household income in Boston and Massachusetts, which are \$39,629 and \$50,502 respectively.

Furthermore, approximately 59 percent of the households in JP and Roxbury earn less than \$40,000 annually

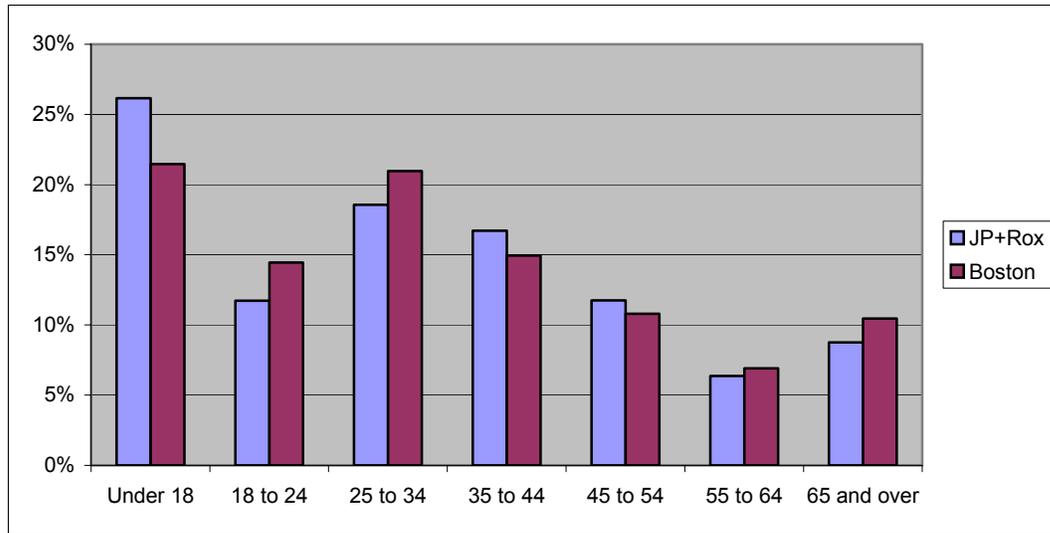
*Figure 2. Household income*



## Age Distribution

According to the 2000 census, more than one third (thirty-eight percent) of the population is less than 24 years old. This is higher than the JPNDC target area or Boston, where this age group accounts for 33 percent and 36 percent of the population, respectively.

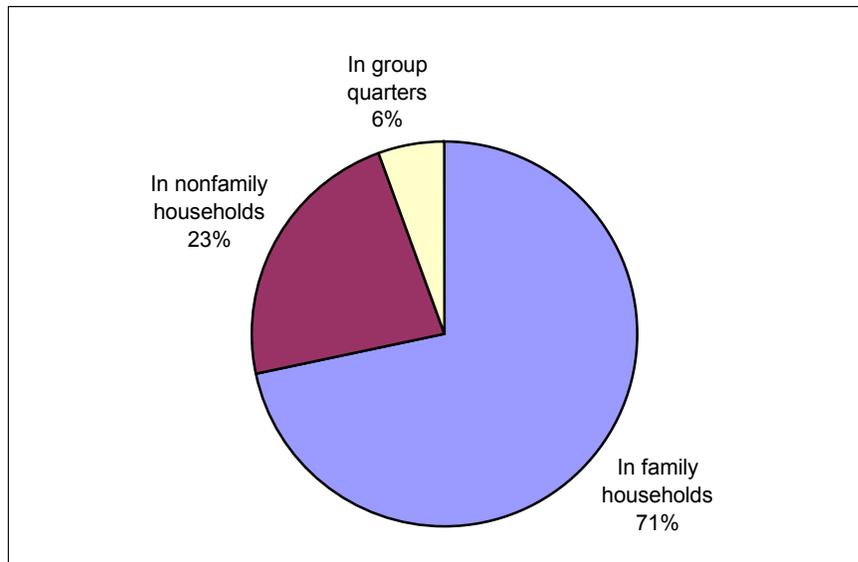
*Figure 3. Age distribution in Jamaica Plain and Roxbury, compared to Boston*



### Family Household Distribution

Fully 71 percent of the population in JP/Roxbury resided in family households in 1999.

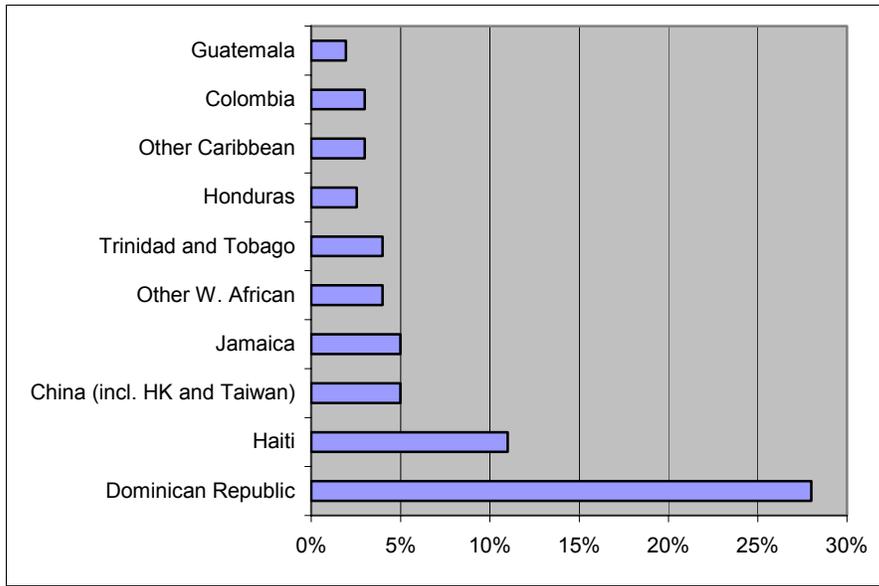
*Figure 4. Jamaica Plain and Roxbury household types*



### Foreign-Born Population

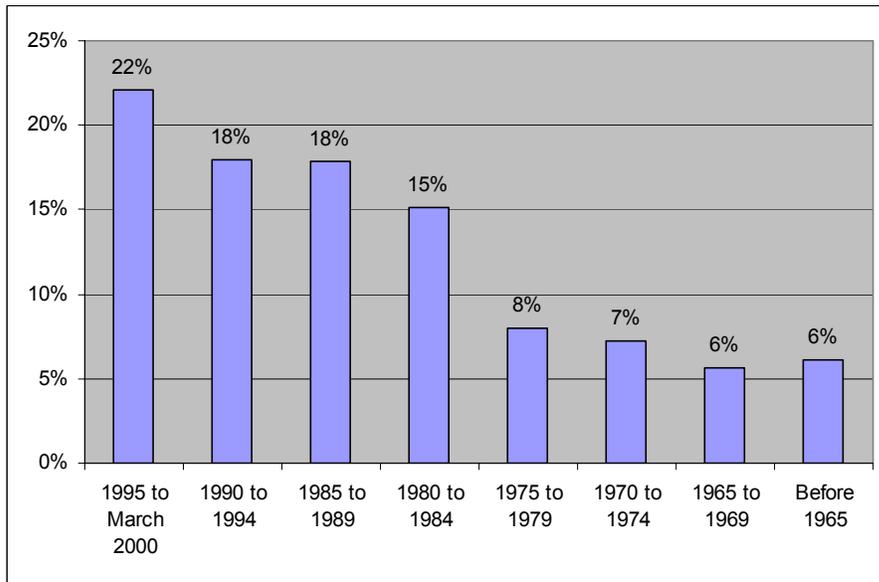
20 percent of the JP/Roxbury population was foreign-born, with Dominican, Haitian, Chinese, Jamaican, and West African immigrants accounting for almost 50 percent of all immigrants.

**Figure 5. Place of birth for foreign born**



As of the 2000 census, 40 percent of the foreign-born population in JP/Roxbury had been in the US for 10 years or less.

**Figure 6. Year of entry for foreign born**



## Transportation

A good indicator of transportation behavior is the mode share, that is, the percent of trips made by auto, transit, bicycling and walking. If the automobile mode share is high, it often leads to problems such as congestion and air pollution. In Jamaica Plain and Roxbury, the mode share breakdown is relatively good; 63% and 68% of trips within the neighborhoods are by bike; and 57% and 63% of trips to the core area are by transit. But when we look at the auto mode share, why are 30% driving to destinations within a relatively small and walkable neighborhood; and with a transit system oriented toward downtown Boston, why are 43% and 37% using their cars to get there? In the table below, the orange and red text denotes figures that development should focus on enhancing, and limiting (respectively).

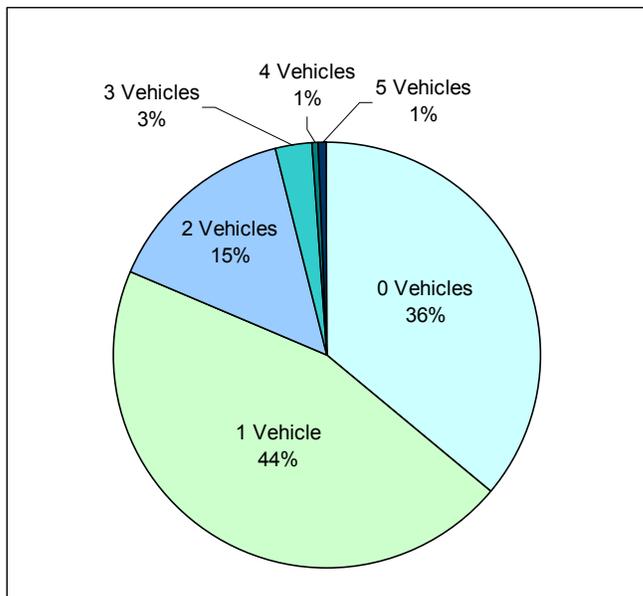
**Table 1. Jamaica Plain and Roxbury Mode Share, 2002**

Origin or Destination	Roxbury				Jamaica Plain/Mission Hill			
	% of Trips	Auto	Transit	Walk/Bike	% of Trips	Auto	Transit	Walk/Bike
Within neighborhood	34%	30%	7%	63%	30%	30%	3%	68%
Core area	8%	43%	57%	0%	8%	37%	63%	0%
Rest of Boston	33%	69%	23%	8%	32%	63%	29%	8%
Inner communities	17%	85%	15%	0%	19%	81%	18%	1%
Outer communities	8%	95%	5%	0%	11%	92%	8%	0%

Source: Central Transportation Planning Staff (CTPS) data as reported in *Boston Transportation Fact Book and Neighborhood Profiles* (Boston Transportation Department, 2002). The “core area” includes Downtown and Back Bay. “Rest of Boston” is the city limits, not including the neighborhood itself and the core area.

According to 2000 Census data, 36% of households within a half mile of Jackson Square do not have access to a vehicle. An additional 44% have only one vehicle available. In light of this, the non-auto portion of trips could be improved.

**Figure 7. Number of vehicles available by percentage of households**



Census 2000 tracts within 1/2 mile of Jackson Square.

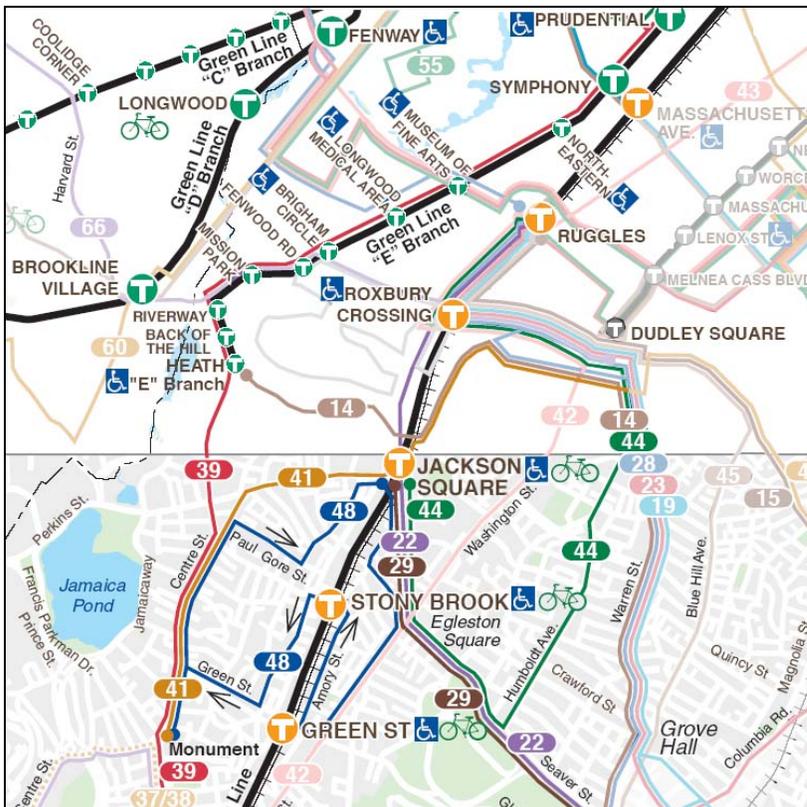
## Road Transportation

Of the key concerns identified by the JDC, Columbus Ave arose time and again. This road is a major route dividing the Jamaica Plain and Roxbury neighborhoods, and has served as a barrier by its heavy and fast moving traffic and poor pedestrian environment. It consists of three lanes and carries 30,000 to 45,000 vehicles per day, much of which can be assumed to be through traffic. There have been proposals to remove one lane of traffic and add parking and left turn lanes to reduce the road's impact, as well as to serve as a source of parking for the new development. While these are options to consider, Columbus Ave in this area is part of Massachusetts Route 28, so alterations may require an extended process.

Centre Street is two lanes in each direction at Jackson Square but merges to one lane with parking on each side beyond the MBTA Station. It carries approximately 16,000 vehicles per day. Due to the traffic volume and frequent congestion on Columbus Ave and Centre St, as well as high parking turnover in the Centre St area, there is anecdotal evidence of cut through traffic on the smaller neighborhood streets.

## Public Transit

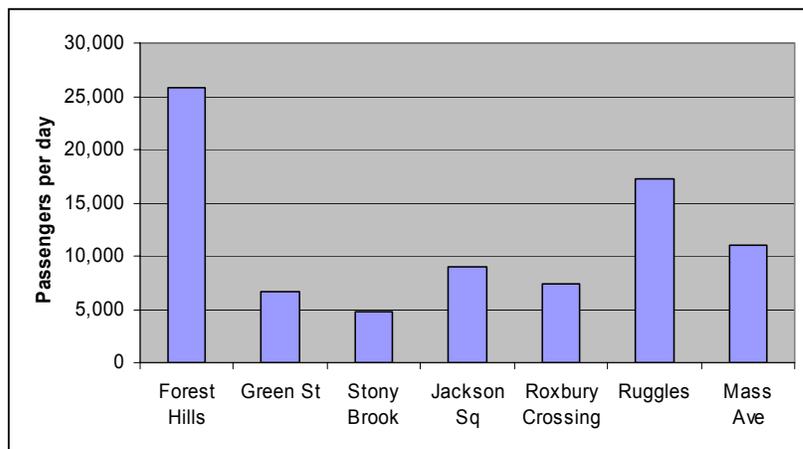
*Figure 8. MBTA bus and rail routes in the Jackson Square area*



The Jackson Square area is well served with both bus and subway service. Between the Orange Line and the five bus routes (22, 29, 41, 44, 48), approximately 13,000 person-trips pass in and out of Jackson Square Station everyday, not including bus Route 14 which stops nearby at Heath Street and Columbus. The Orange Line alone carries 9000 passengers in and

out of Jackson Square everyday. There is further data on Jackson Square Orange Line users in Appendix A. Compared to nearby stations, Jackson Square serves more passengers than those Stony Brook and Roxbury Crossing, but considerably fewer than Forest Hills, which captures riders from further suburbs, and Ruggles and Mass Ave, which are closer to the core area and are major employment attractors. Appendix A contains more detailed comparison data.

**Figure 9. Daily Orange Line passengers at Jackson Sq and adjacent stations**



Temporal and spatial holes in bus service prevent further growth of the transit mode share. The most significant of these include long intervals between buses on Routes 14 and 41 (poor on-time performance has also been an issue on Route 41); as well as inadequate access to Dudley Square and Longwood Medical Center, two major destinations for Jackson Square residents. JCG proposals for transit improvements include extending Route 14 to Brookline Village to provide quicker access to Longwood via the Green Line D Branch. This would also allow an easy transfer to bus Route 66, which goes through Coolidge Corner and Allston, to Harvard Square.

Transit amenities are also lacking in the Jackson Square area, with no shelters, schedules, maps, or even signs indicating the route. Personal safety and security is a major barrier to attracting new transit users. Additionally, pedestrian and bicycle access to Jackson Square station could be greatly improved, this will be discussed in the next section.

### **Pedestrians and Bicycles**

The Southwest Corridor, which runs along the MBTA Orange Line right of way is one of Boston’s best pedestrian and bicycle resources. This corridor, with separate bicycle and pedestrian paths, connects Jackson Square with the stations between Forest Hills and Back Bay (Copley Square) and to the variety of parks along it. However, Columbus Aven impedes the quality of the park adjacent to Jackson Square and the pedestrian environment. Security and safety issues have also been a problem along the corridor.

Beyond the Southwest Corridor, the bicycle network is non-existent. A lack of secure bike parking at major destinations including the Stop and Shop, and the T Station further prevents bicycling. The pedestrian network is well connected, but of poor quality. Immediately surrounding the Jackson Square Station, the sidewalk is in disrepair, a dirt path serves as a connection to Amory St, crosswalks are faded, and pedestrians must contend

with fast-moving traffic and Columbus Avenue's wide intersection and short pedestrian signal.

*Figure 10. The intersection of Columbus Ave and Centre St is wide and difficult for pedestrians to cross*



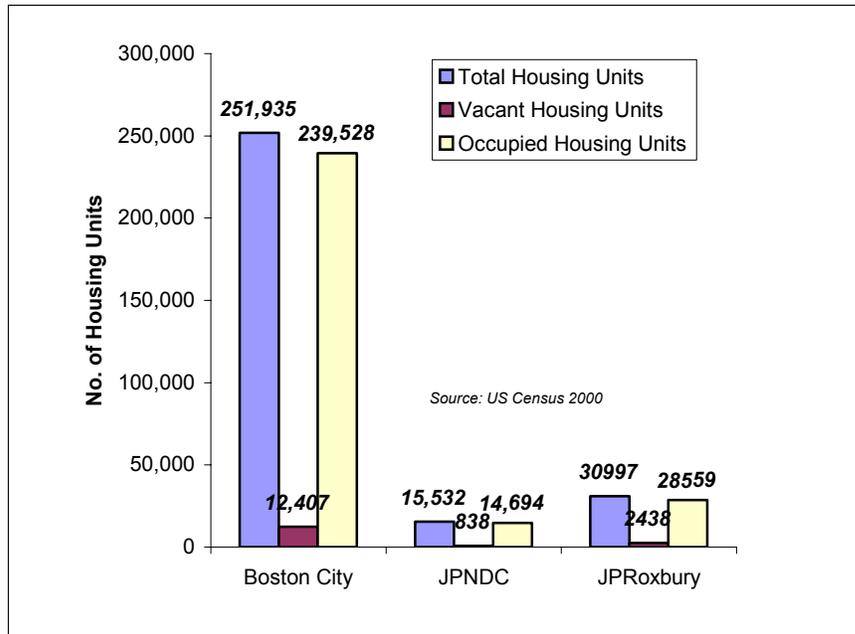
## **Transportation Sustainability Challenges**

The most significant challenge lies in shifting the mode share from automobiles to alternative forms of transportation. This can be achieved by adjusting transit routes to provide better access to and from Jackson Square, improving amenities and facilities for transit users, pedestrians and bicyclists, and enhancing safety in Jackson Square and along the Southwest Corridor. A shift to more sustainable modes will reduce air pollution and traffic congestion, as well as improve public health through physical activity. While improving the existing transportation conditions is essential, absorbing the trips created by the new development in Jackson Square will to be an even greater challenge.

## Housing Demand

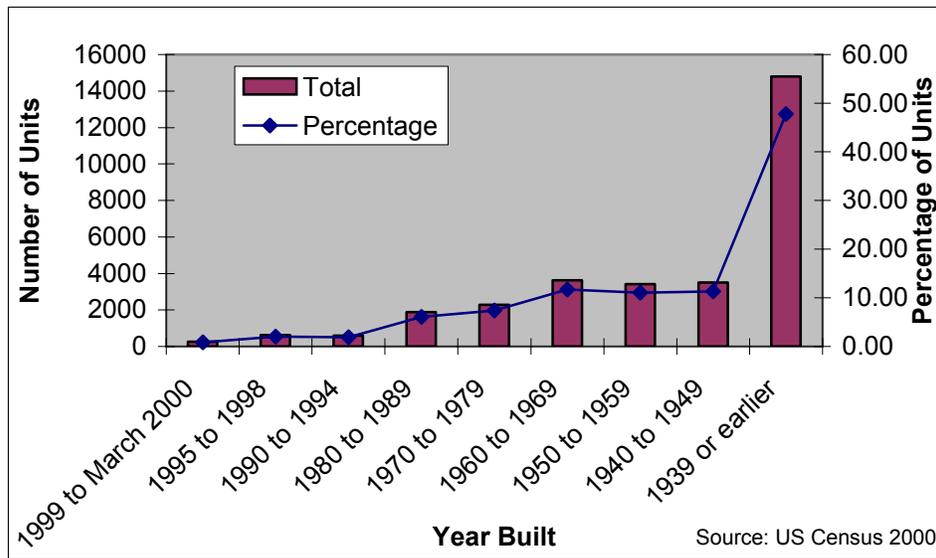
Housing vacancy rates are generally low in Boston, as well as in the JP/Roxbury area. Vacancy rates are 5 percent in Boston and the JPNDC target area. While vacancy rates in 2000 are slightly higher at 8 percent in JP/Roxbury, this is a decrease since 1990 when vacancy rates were 12 percent in this neighborhood.

*Figure 11. Status of housing units: Boston, Jamaica Plain, and aggregated Jamaica Plain and Roxbury*



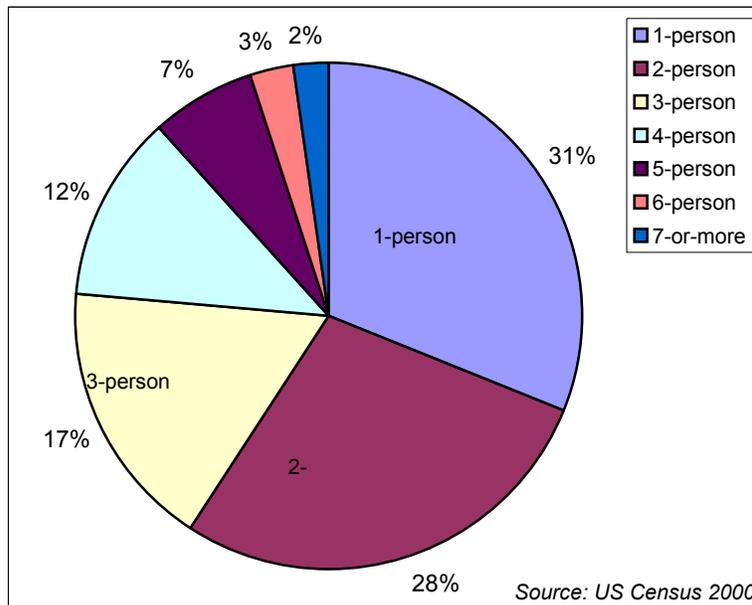
48 percent of housing units in Jamaica Plain and Roxbury were built in 1939 or earlier, which might indicate potentially poor indoor air quality.

Figure 12. Age of housing units in Jamaica Plain and Roxbury (number and percent, 2000)



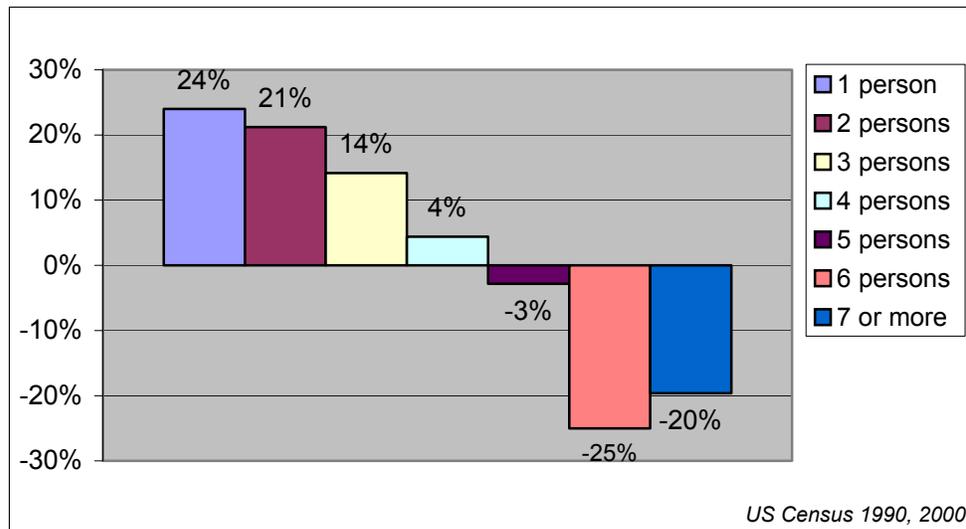
Household sizes are generally small in Jamaica Plain and Roxbury. 76 percent of households consist of 1, 2, and 3 persons. Additionally, 1 and 2 person households account for 59 percent of all households.

Figure 13. Household size in Jamaica Plain and Roxbury



Since 1990, there has been an overall 14 percent increase in total households, but a steady-state decline in households with 5, 6, and 7 persons.

*Figure 14. Percent change in household size from 1990 to 2000*



We will be looking at housing demand from those who make 60 percent to 70 percent of Median Income. According to the Boston Housing Authority, in 2003 public housing waiting lists, this income group is classified as Tier 5 out of 6 possible income tiers. Those who make 60 percent-70 percent of median income comprise merely 0.9 percent of current HOPE VI residents. As a percentage of all families on waiting lists, this income group accounts for 2.9 percent on public housing waiting lists, 4.5 percent on HOPE VI housing waiting lists, and just 0.32 percent on Section 8 housing waiting lists.

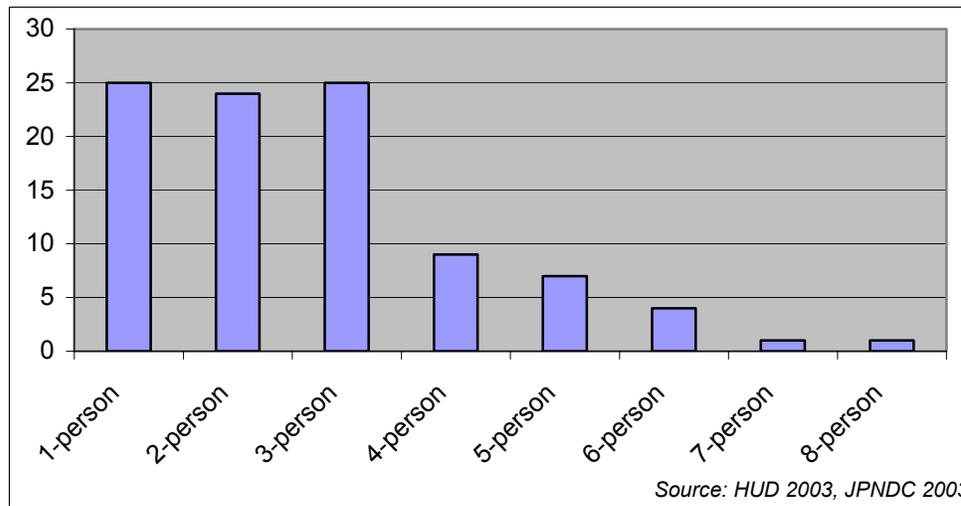
*Table 2. Population by household size and income*

HH Size	60% of med income	70% of med income
1	33,960	na
2	38,760	45,255
3	43,620	50,890
4	48,480	56,560
5	52,380	61,075
6	56,220	65,625
7	60,120	70,140
8	64,020	74,655

Source: HUD February 2003; JPNDC November 2003

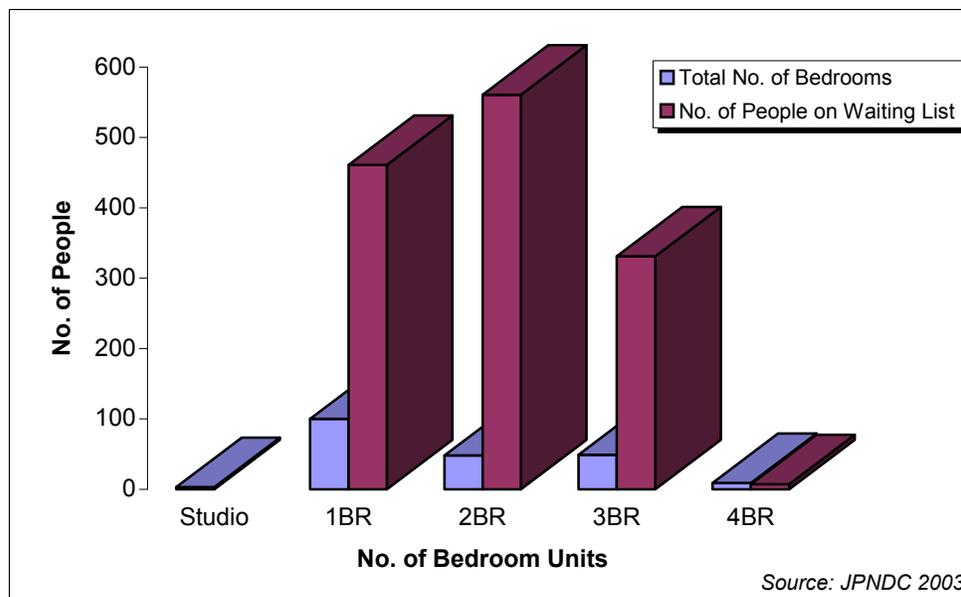
While there has been some anecdotal indication that the community would like more 5-bedroom units in the neighborhood, most homebuyers in JP and Roxbury are from smaller households. In fact, **77 percent of all homebuyer applications are generated by 1, 2, and 3 person households.**

**Figure 15. Homebuyer applications in Jamaica Plain and Roxbury, per household size**



The JPNDC Waiting List indicates that the most demand is for 2 Bedroom units. While 51 percent of all units provided are 1 Bedroom and 25 percent of units are 2 Bedroom, the waiting list demonstrates that **37 percent of demand is for 1 Bedroom units and 41 percent of demand is for 2 Bedroom units.**

**Figure 16. JPNDC total number of units and waiting list information**



### Housing Sustainability Challenges

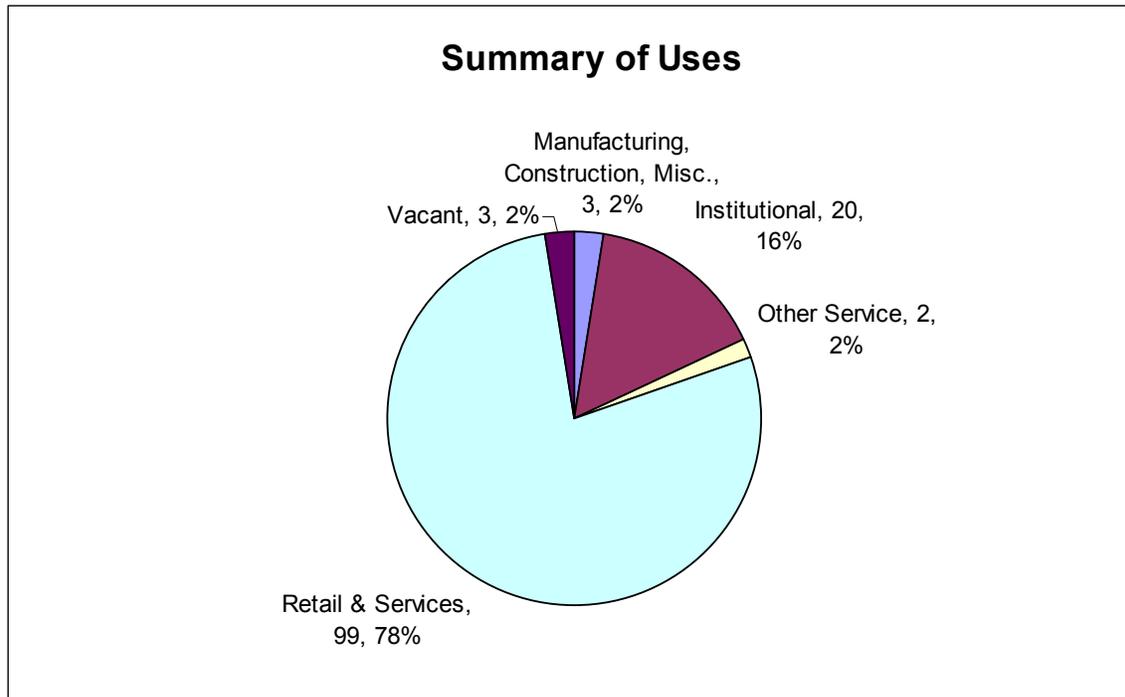
In conclusion, it appears that there is a disconnect between the number of 1, 2, and 3 bedroom units available and the demand for 1, 2, and 3 bedroom units. According to the statistics there has been a slow decline in 4, 5, and 6 –person households over the last 10 years along with a concurrent increase in smaller households.

## **Commercial Mix**

The Hyde Square/Jackson Square commercial center in Jamaica Plain covers roughly 1 mile. It includes Columbus Avenue from Amory Street to Centre Street. At the Columbus Avenue/Centre Street intersection, the district continues up Centre Street to the intersection with South Huntington Avenue. The Urban Land Institute would consider this district to be a community shopping center, defined as a commercial area which supplies convenience goods and some comparison goods, including apparel, appliances, and hardware. Community shopping centers, like this district, have a supermarket and a strong mix of specialty stores. Most community shopping centers have gross leasable areas between 100,000-500,000 square feet.

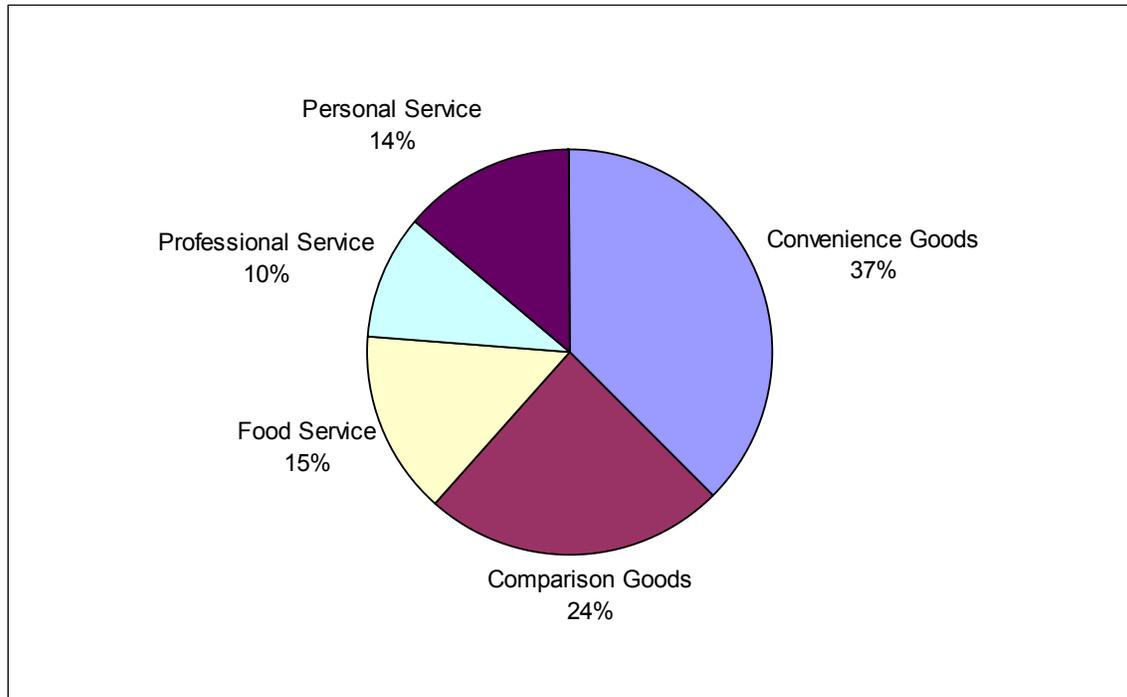
Hyde/Jackson Square has approximately 444,000 square feet of commercial and institutional space and the district is 98% occupied. Of the approximately 124 retail establishments, 78% are retail. The following graph summarizes the use of space in the district. See Appendix B to see a full business inventory of the district.

*Figure 17. Summary of uses*



There is a large concentration of convenience good stores in the district. Approximately 37% of stores fall into this category. The following graph summarizes the share of retail and service gross leasable area for Hyde/Jackson Square.

**Figure 18. Retail and service gross leasable area**



This district has a few strong business clusters and industries that should be mentioned. Food and food service businesses, including restaurants, caterers, and bodegas comprise 35% of the retail and service gross leasable area (GLA). Personal care stores, including hair salons, beauty supply, and nail salons, constitute 11% of retail/service space. Financial, insurance, and real estate (FIRE) businesses are also a strong business cluster, with approximately 13% of retail space. Finally, businesses that serve the Latino customer base, including restaurants, bodegas, FIRE firms, clothing stores, and travel agencies are a strong presence in the district and draw customers from a wide region.

When comparing Hyde/Jackson Square to overall community shopping centers, this district has most of the stores that are ranked as the top twenty tenants of these centers. However, the district has few options in terms of apparel, furniture, and general merchandise stores. The only businesses completely missing from this mix in Hyde/Jackson Square are a jewelry store and a discount department store. The following table provides more detail regarding the comparison to community shopping centers.

**Table 3. Business mix in Hyde/Jackson Square, compared to typical community shopping center**

Rank	Business Type	Hyde/Jackson Square
1	Restaurant with liquor	7 full-service restaurants; 1 > 5000 sq. ft.
2	Women's ready-to-wear	Yes, 1 large includes men's wear
3	Family wear	2 children's and 2 men's clothing
4	Supermarket	Yes, full-scale

5	Family shoes	Yes, 2
6	Medical and dental	Yes, health center, medical and dental offices
7	Discount department store	No, 1 small 99 cent store
8	Unisex hair salon	Yes, 2
9	Bank	Yes, 2
10	Furniture	Yes, 1 rental
11	Cards and gifts	Yes, 1 party goods store
12	Restaurant without liquor	Yes, several limited service/take-out
13	Women's specialty	Yes, 1 bridal
14	Jewelry	No, 1 repair
15	Dry cleaner	Yes, 1
16	Women's hair salon	Yes, several
17	Cosmetics/beauty supplies	Yes, 1
18	Drugstore/pharmacy	Yes, available at supermarket
19	Nail salon	Yes, 1
20	Sandwich shop	Yes, 3

Reflecting the demographics of the area, the current shopper profile in Hyde/Jackson Square is someone who is price and quality conscious, has a Hispanic or Latino origin, and has a low-to-moderate income. According to the Hyde/Jackson/Egleston Square Area Shopper Survey by Mt. Auburn Associates, approximately 65% of shoppers in the district live in the 02130 and 02119 zip codes, Jamaica Plain and Roxbury, respectively. Since this district has relatively few options for comparison shopping for clothes, furniture, and appliances, most shoppers shop outside the district for comparison goods (see Hyde/Jackson Square Business District Profile by OKM Associates).

## **Economic Development of the New Parcels**

### **Business Development Values and Priorities**

When the Hyde/Jackson Main Streets developed their Business Development/Recruitment Priorities in November 2003, they identified a few major values when considering new development in the district. These values are that the commercial district shall:

- Support locally-owned independent businesses (i.e. no chain or big-box retailers)
- Support businesses that serve the diversity of Jamaica Plain, in terms of ethnicity, race, income, and language
- Create quality jobs for local residents
- Strengthen and support Latino businesses in the area
- Support businesses that have a strong history, reputation, and involvement in Jamaica Plain

The Main Street organization also identified priorities for new development, which included:

- Encouraging more comparison goods stores and discouraging more convenience goods stores.
- Strengthening existing business industries and clusters
- Recruiting more businesses which provide entertainment, recreation, and evening options
- Encouraging destination draw businesses
- Recruiting businesses that are financially viable

Jamaica Plain NDC also encouraged recruitment of an “economic engine” for the new development, which they identified as a business which had high revenues and profits, enabling the rest of the new development to become economically viable.

The Main Street organization also identified a target shopper profile, which differs to a certain extent from the current shopper profile. Target customers are identified as Latinos from the New England region, “mixed income, urban, educated, alternative, arts-oriented” residents of Greater Boston, and Caribbean, African-American, and senior citizens from surrounding neighborhoods.

In analyzing the potential for new development, JPNDC should keep these values, priorities, and ideal shoppers in mind. Focusing on these ideas will guide the recommendations and ultimate decisions that are made for business development and recruitment in the community.

The following section will describe two different methodologies for analyzing the potential for new development on the parcels. One method is more qualitative in nature and will explore the results from the community process. The other method is quantitative and will describe the development potential in terms of sales surplus or leakage in the area.

### **Qualitative Method for Business Development**

JPNDC and the JCG have completed a tremendous amount of community organizing, consultation, and research around the question of “What new businesses would you like to see in the neighborhood?” We reviewed several documents to determine the types of uses that were most often mentioned or suggested by community residents and researchers. These documents include:

- Jackson Square Development Priorities report. Primary product of the JCG.
- Putting the Pieces Together
- Commercial Market Study report prepared by Byrne McKinney & Assoc.
- Hyde Square/Jackson Square Market Study report prepared by Cambridge Systematics
- Hyde/Jackson Square Main Street Commercial District “Business Development/Recruitment Priorities”
- Hyde/Jackson Square Business District Profile and Analysis of Commercial Mix report prepared by Main Streets committee and OKM Associates
- “Egleston Square Inside and Out: Vision and Strategies for Neighborhood Revitalization” produced for Egleston Square Main Streets by MIT/DUSP.

By analyzing these documents, seven top uses were identified:

- Entertainment, including a cinema, family-oriented, and Latin dance
- Restaurant, including Latin and/or family-oriented
- Art supply/craft/hobby store
- Health club/fitness
- Ice cream parlor
- Photocopier/printer
- Department store/furniture store/home décor

**The top priorities identified are the entertainment and restaurant uses.**

When comparing Hyde/Jackson Square to a typical community shopping center as defined by ULI, potential opportunities for new uses are:

- Entertainment, fitness centers, function, social
- Hobby/special interest/sporting goods
- General merchandise stores
- Building materials/hardware
- Drugs, health & beauty
- Jewelry

When this ULI information is compared to the top uses requested by the community and research, both lists contain entertainment, fitness centers, function, social and hobby/special interest. All seven top uses identified by the community and six top uses identified by the ULI will be analyzed in more detail in the next phase of this project.

### **Quantitative Method for Business Development**

Another method for investigating the most feasible new uses for development is by creating a sales surplus and leakage analysis. This analysis provides the amount of sales dollars that are either leaving the district (leakage) or the number of sales dollars that are being attracted to the district (sales surplus). If a particular store type is exhibiting a leakage, the community has a demand for that store type that is not being met by the businesses in the district. If a particular store type is exhibiting a surplus, the residents from outside of the community are coming to shop in the district.

The first step in creating this analysis is to determine the total purchasing power in this district to determine the sales demand. Aggregate purchasing power is determined by multiplying the number of households in an area by the median household income.

The following data is obtained from the 2000 US Census. Within one-half mile of the Jackson Square MBTA station, there are approximately 6,299 households, with a median household income of \$29,955. Thus, the total purchasing power is \$188,686,545. This purchasing power is relatively low due to the fact that there is little housing within one-half mile of the T-stop other than the Bromley-Heath public housing development. When the

target area is widened to a one-mile radius around the Jackson Square MBTA station, the number of households jumps to 33,875 and the median household income increases to \$32,845. Thus, the purchasing power quintuples to \$1,112,624,375.

In determining the actual sales demand for the district, one must estimate the capture rate for the area and determine estimated expenditures in the area on different types of goods. Using the 2002 Consumer Expenditures Survey average annual expenditure characteristics for the Northeast, we have created the following expenditure estimates and capture rate scenarios:

**Table 4. Expenditure estimates and capture rate scenarios**

	<b>Estimated Expenditures by JP</b>	<b>5 % Capture Rate</b>	<b>25% Capture Rate</b>	<b>50% Capture Rate</b>	<b>75% Capture Rate</b>
Food at home	\$22,008,706	\$1,100,435	\$5,502,177	\$11,004,353	<b>\$16,506,530</b>
Food away from home	\$15,923,872	\$796,194	\$3,980,968	<b>\$7,961,936</b>	\$11,942,904
Apparel & services	\$13,687,727	\$684,386	<b>\$3,421,931</b>	\$6,843,864	\$10,265,795
Entertainment	\$3,892,782	<b>\$194,639</b>	\$973,196	\$1,946,391	\$2,919,587
Personal care products & services	\$3,306,975	\$165,349	\$826,744	<b>\$1,653,488</b>	\$2,480,231
Household furnishings & equipment	\$9,813,842	\$490,692	<b>\$2,453,461</b>	\$4,906,921	\$7,360,382

For each expenditure category (food at home, food away from home, etc.), we have computed the aggregate estimated expenditures by residents. The subsequent columns estimate the capture rate, or the percentage of sales for each category that are spent within the commercial district. Considering the existence of a large supermarket and several bodegas in the area, we estimated a capture rate of 75%, or \$16,506,530 spent on food at home in the district. For food away from home, we estimated that the local businesses only captured 50% of the expenditures at restaurants or \$7,961,936. Considering the high number of nail salons, hair salons, and beauty supply stores in the area, we also estimated a 50% capture rate for these services. Apparel and household furnishings are at 25% capture, considering the relatively few shopping options for clothing and furniture in the district. Finally, entertainment is at the lowest capture rate, at 5%, considering the virtual lack of entertainment options in Hyde/Jackson Square.

The next step in determining the sales surplus/leakage is to estimate the sales supply in the area. This is determined by multiplying the gross leasable area for each business type in the district by the median sales per square foot for a community shopping center, as determined by the ULI. The last step is to subtract the estimated expenditures by district residents from the estimated sales by district businesses. This number provides the sales leakage or the sales surplus in the district.

*Table 5. Sales surplus (leakage)*

<b>Retail Type</b>	<b>Estimated Expenditures by JP Residents</b>	<b>Estimated Sales in JP</b>	<b>Estimated Sales Surplus/(Leakage)</b>
Food at home (supermarkets)	\$22,008,706	\$29,991,599	\$7,982,893
Food away from home (restaurant w liquor)	\$15,923,872	\$9,883,505	(\$6,040,367)
Apparel & Services	\$13,687,727	\$5,764,377	(\$7,923,350)
Entertainment fees & admissions	\$3,892,782	\$0	(\$3,892,782)
Personal care products & services	\$3,306,975	\$2,156,865	(\$1,150,109)
Household furnishings & equipment	\$9,813,842	\$1,849,767	(\$7,964,075)

The total estimated sales leakage is equal to \$26,970,684. This chart shows that there is almost an \$8 million annual surplus, or money coming from outside the neighborhood, on food at home. This may be attributable to Latino residents of surrounding communities coming to the district to buy Latino foods. There is a \$6 million annual sales leakage, or money leaving the neighborhood, on food away from home (specifically restaurants with liquor). This may be attributable to the fact that out of the 25 restaurants and food service businesses, only seven are full-service, sit-down restaurants. There also seems to be an \$8 million sales leakage for apparel & services, likely attributable to the few apparel stores in the district. The estimated \$4 million leakage in entertainment fees & admissions is due to the lack of entertainment options in the district. Finally, the data shows that household furnishings and equipment may also be experiencing a sales leakage of approximately \$8 million annually, possibly due to the low number of furniture retail stores in the area. Thus, after analyzing the sales leakage/surplus data, it seems that business development opportunities may exist in Hyde/Jackson Square for full-service restaurants, entertainment venues, personal care, and household furnishings & equipment.

## **Business Trends**

The chart below describes the changes occurring in the Hyde/Jackson Square commercial district in the past ten years. Overall, the number of retail and consumer businesses have increased by 17%, from 87 to 102 businesses. The largest increases by type of business include restaurants and bars, auto and auto-related businesses, personal services (hair, nail, and beauty), FIRE, legal & accounting, and specialty retail (gifts, cellular/paging, and 99 cent stores). The largest decreases by type of business include home furnishings & hardware and apparel & services (including drycleaning, tailoring, and repair).

*Table 6. Number and percent of businesses by type*

	<b>Number of Businesses</b>	<b>Percentage of Businesses</b>	<b>Number of Businesses</b>	<b>Percentage of Businesses</b>	<b>Percent Change</b>
	<b>1994</b>	<b>1994</b>	<b>2004</b>	<b>2004</b>	
Food, grocery, & liquor	12	14%	15	15%	1%
Restaurants & Bars	16	18%	24	24%	5%
Entertainment	1	1%	0	0%	-1%
Home furnishing & hardware	5	6%	2	2%	-4%
Drugstore/Pharmacy	1	1%	0	0%	-1%
Apparel & Services	21	24%	13	13%	-11%
Auto & auto-related	2	2%	5	5%	3%
Personal Services	9	10%	13	13%	2%
FIRE, Legal, Accounting	8	9%	12	12%	3%
Other Services	7	8%	9	9%	1%
Specialty Retail	1	1%	5	5%	4%
Electronics/Audio/Music	4	5%	4	4%	-1%
<b>Total Businesses/Units</b>	<b>87</b>	<b>100%</b>	<b>102</b>	<b>100%</b>	

## **Business Development Sustainability Challenges**

There are several sustainability challenges that are evident with regards to economic development of the new parcels. When considering the nature of the development, finding the balance between strengthening existing clusters and diversifying the commercial district becomes a concern. While Hyde/Jackson has strong sectors in food, personal care, FIRE, and Latino-based businesses, it is missing some businesses that should exist in a healthy, growing community shopping center. Another challenge is determining how to meet the needs of the current customer profile while still being able to appeal to the target customer profile. This balance is particularly important for the JPNDC, which is trying to prevent the negative effects of gentrification in the community. A related concern is determining how to stay true to the business development values while still creating economically sustainable uses. There may be a contradiction between the types of businesses that the community has requested, such as a movie theater, and the desire for independent, locally-owned businesses that provide high-quality jobs. Another major challenge is creating the compromise between the requested uses for the new development and economically viable uses. For example, further analysis may show that an ice cream parlor will not be economically sustainable in this community, but a hardware store will be successful. Finally, the new development must ensure that the new uses are environmentally sustainable. A challenge for this project will be identifying industrial ecology practices and green building techniques that are affordable yet still effective at remediating the negative environmental impacts that arise from new development.

## **Brownfields Analysis**

*A brownfield is a property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. (US Environmental Protection Agency)*

All of the potential development parcels in question can be classified as brownfields properties. This investigation focuses on four properties: the MBTA “Grassy Knoll” parcel, MBTA parcels 69, 70, 71, and A, 1540/1542 Columbus Avenue, and the NSTAR parcel (Columbus Ave. and Centre St. intersection). The primary sources of concern are known or potential contaminants either 1) contained in urban fill or 2) due to previous industrial and commercial uses, including leaks from underground storage tanks.

Urban fill: Environmental investigations on the MBTA 69-71 and A parcels and nearby parcels on Amory Street and Columbus Avenue have all revealed a layer of urban fill at depths ranging from near surface to 25 feet. Constituents noted in the fill include: metal, glass, crushed stone, coal, coal cinders, wood, wood ash, bricks, concrete, tires and auto parts. Sources of the fill are generally unknown, but may include refuse from local operations and fill from Boston-area excavation projects. Urban fill of this type is likely to contain heavy metals and petroleum products. These substances, in some locations at concentrations requiring remediation, have been found in the fill of the Jackson Square area parcels. To the best of our knowledge, environmental assessments have not been conducted on the Grassy Knoll, NSTAR or 1540/1542 Columbus Avenue parcels. Given their proximity to parcels containing urban fill, it is expected that site conditions may be similar to the conditions described above. Soil and groundwater evaluation will likely be necessary for each of the properties in question.

Industrial or commercial use: All of the properties in question have a history of commercial or industrial uses often associated with environmental contamination. Uses have included a myriad of automobile-related businesses including junkyard, filling station, repair shop, used car sales and car storage. Other uses have included various manufacturing concerns associated with the use of petroleum products and solvents. MBTA parcel 69 has been impacted by leaking underground storage tanks (USTs). The 1540/1542 Columbus Avenue parcel is likely contaminated due to groundwater flow from an up gradient abutting parcel containing a former leaky UST. It is likely that MBTA parcels 69-71 and A are similarly being impacted from up gradient abutting parcels, due to former USTs and other spills related to commercial and industrial activity.

### **Parcel Summaries**

#### **MBTA parcels 69, 70, 71, A**

A Phase I assessment was conducted in November 1989. At that time the City of Boston Economic Development and Industrial Corporation (EDIC) contracted for the work as part of their interest in developing the property for light manufacturing. Upon learning of the environmental conditions, EDIC withdrew interest. The MBTA is in the process of putting

out an RFP for a Phase II analysis. They plan to have the Phase II results available to bidders in the late spring/early summer.

The Phase I assessment revealed soil and groundwater samples contained high levels of petroleum hydrocarbons. Groundwater samples contained tetrachloroethylene and trichloroethylene, which are solvents used with metals and dry cleaning. Eight underground tanks full of liquid remain on the property.

In August 1990, (in response to a request from EDIC) a remediation estimate was offered based on a proposal to construct 3 industrial/office buildings and roadways. Remediation costs were estimated at \$2.0 to 3.3 million. The estimate was reduced to \$1.1 to \$1.6 million with the deletion of a basement in a part of the property that would require extensive dewatering. Primary costs are for removal of the underground tanks, soil disposal/treatment and groundwater treatment/disposal.

The MBTA parcels may be impacted by contaminants on abutting properties. In particular, hazardous releases have been reported for the following properties:

Levin parcel, 59 Amory Street: A release of petroleum hydrocarbons and volatile petroleum hydrocarbons was detected during site investigations between 1997 and 2001. In June 2000 a 10,000-gallon UST containing #2 fuel oil was removed from the property. The UST was located at the northern boundary of the site towards the rear of the property. The source of volatile petroleum hydrocarbons has not been located. Petroleum hydrocarbons and volatile organic compounds above reportable levels are present in the groundwater. The Phase I report (6/02) indicates that a request has been made to install 5 monitoring wells on the adjacent MBTA property but had not yet been approved. Evaluations conducted on MBTA property in this area (well # JS7) indicated high levels of petroleum. High petroleum levels were found in soils in this area as well. Groundwater flow from this spill is a likely source of contamination found on MBTA parcel 69 at well # JS7. According to the site evaluation prepared by Green Environmental, Inc. for JPNDC, the current owner reports that an "Activity and Use Limitation" (AUL) has been prepared that does not restrict residential use, but requires that pavement be maintained. See Appendix C for site details.

Potential Concerns: Groundwater flows from this property to MBTA parcel 69.

Urban Edge parcel, 41 Amory Street: A Phase I analysis was submitted 1/03; the Phase II report is due 1/05. Site evaluations in 2001-2 revealed high levels of petroleum products, automobile fluids and heavy metals, in particular lead. Sources are believed to be historical fill materials and property use including manufacturing of railroad components and, since 1963, operation of an auto junkyard. Testing indicates that metals have not leached to groundwater (groundwater depth is approximately 15-16 feet, fill materials extend to approximately 12 feet). Petroleum products were, however, detected in reportable concentrations. This property abuts the MBTA parcels. Testing along the property line (on the MBTA side) at wells JS4 and JS5 indicated high levels of petroleum. The Phase I analysis predicts that groundwater migration is very slow. See Appendix C for site details.

Potential Concerns: Groundwater flow from this property toward MBTA parcels 70 and A.

Urban Edge parcels, multiple addresses along Amory Terrace and Street: A site evaluation in 2002 indicated the presence of hazardous materials. A Response Action Outcome and Risk Characterization report was submitted in 1/03. The site is classified as “No significant risk exists, no remedial work was necessary”. However, low levels of volatile organic compounds in groundwater are migrating toward MBTA Parcel 69. These include the aromatic Volatile Organic Compounds (VOC’s), toluene, ethyl benzene and xylene that are components of gasoline and other petroleum products likely resulting from tow yard use on the property. Also present are chlorinated VOC’s including PCE (tetrachloroethylene); its source is not considered to be site use, but historical manufacturing in the area. The highest levels of VOC’s are located at the southwest corner of the property. Groundwater velocity was estimated at 50 feet per year. The retardation factor for contaminants may reduce their migration rate to 1/100 to 1/1000 of the groundwater velocity. The report concluded that due to a slow rate of migration the contaminants will be subject to biodegradation and will not have off-site impacts. See Appendix C for site details.

Potential Concerns: The contaminants in the groundwater flow toward MBTA parcel 69 may not degrade.

See Appendix D for greater detail on the location and levels of contaminants on MBTA parcels 60-71 and A.

#### **MBTA parcel “Grassy Knoll”**

There is no record of environmental hazards.

Potential Concerns: This property likely contains urban fill, which may contain petroleum products and heavy metals. Previous uses include a machine shop, a filling station and an auto repair facility which may have released contaminants to the property.

#### **NSTAR parcel Columbus Avenue and Centre Street**

There was a reported spill of 150 gallons of oil in 2002. The current status is that remedial work has been completed and no significant risk has been identified.

Potential Concerns: This property likely contains urban fill, which may contain petroleum products and heavy metals. Previous uses include a filling station, which may have released contaminants to the property.

#### **City of Boston parcels 1540/1542 Columbus Avenue**

There was a report of a release of waste oil in 1995. The current status is that remedial work has been completed and no significant risk has been identified.

Potential Concerns: This property likely contains urban fill, which may contain petroleum products and heavy metals. Previous uses include an auto sales and service establishment, an auto body shop and a car storage and parts firm which may have released contaminants to the property.

The City of Boston parcels may be impacted by contaminants on abutting properties. In particular, hazardous releases have been reported for the following properties:

City of Boston, DPW yard, 282 Highland Street: On 4/15/92 three underground storage tanks were removed from the property. The tanks were located just outside the DPW Garage along the Highland Street side of the building. A 3,000-gallon tank contained #4 fuel oil, a 1,000-gallon tank contained diesel fuel, and a second 1,000-gallon tank contained gasoline. Soil excavated adjacent to the 1,000-gallon tanks contained 580 mg/kg petroleum hydrocarbons. Soil excavated adjacent to the 3,000-gallon tank contained 1,500 mg/kg petroleum hydrocarbons. Groundwater (at depth of 16') had an oil sheen. A spill was reported to the Commonwealth on 7/15/93. The City has failed to meet the Department of Environmental Protection timelines for response. Potential concerns: Groundwater flows in a westerly direction from this location; the City of Boston property at 1540 Columbus Avenue lies due west of the spill. Environmental exploration on the Urban Edge property at 1542 Columbus Avenue suggests that groundwater velocity is 100 feet/year. Contaminants would be expected to travel at a slower rate due to retardation effects. See Appendix C for site details.

Urban Edge parcel, 1542 Columbus Avenue: An environmental assessment in 3/02 revealed high levels of lead and arsenic in the soils. A Phase I assessment has been completed. A Phase II assessment is due 7/05. The source of the contamination is believed to be the fill material on the land. There may also be a presence of petroleum related to a former underground storage tank on site as well as from fill materials. The soils are located under concrete, so no dermal contact is possible. Groundwater migration is to the west/northwest, which may impact the southern end of the 1542 Columbus Avenue parcel owned by the City of Boston. However, groundwater levels for arsenic and lead were not above the reportable standard. The highest levels of arsenic and lead in soils are located primarily in the northern end of the parcel that abuts the City of Boston property. The sample at the northern edge of the building measured 100 ppm for arsenic (30 ppm is reportable standard). Samples to the south at the boundary of the original three-story building and the one story building measured 600 ppm for arsenic and 3200 ppm for lead (300 ppm is the reportable standard for lead). This may present a concern if the COB parcels contain similarly contaminated fill material. See Appendix C for site details.

See Appendix C for a summary of hazardous releases reported to the Commonwealth of Massachusetts. See Appendix E for a list of historic uses of the properties.

## **Brownfields Sustainability Challenges**

Health impacts and remediation costs: Little specific information is currently available about potential health impacts or remediation options for the parcels of concern. State regulations governing hazardous releases require a "Phase II" assessment of risks to assess public health, welfare and the environment. A Phase II assessment of MBTA parcels 69-71 and A should be completed by early spring or late summer. Phase II assessments for the abutting properties with hazardous releases are due in the summer of 2004 and in 2005.

In general, remediation requirements are related to the potential for human exposure to contaminated soils and groundwater. Exposure to contaminants in the soil may come from direct contact with contaminated soils or airborne soil particles. Typical remediation efforts may require excavating and treating or disposing of soil and/or limiting contact to soils,

generally by maintaining paved surfaces. As groundwater in this area is not a source of drinking water, a primary concern is that volatile compounds may seep from groundwater into buildings, negatively impacting indoor air quality. In addition, if construction requires dewatering (that is if groundwater is contacted) treatment of contaminants may be required. Contact with groundwater is likely given the low depths to groundwater due to the proximity of the sites to the location of the (now culverted) Stony Brook.

The promise of brownfields redevelopment is that abandoned and unsafe properties are restored for community use. The challenge is that brownfields regulations allow remediation to less than pristine conditions. Remediation requirements are based on the nature of anticipated re-use of the property. Forthcoming sections of this report will take up the challenge of safeguarding community health and restoring environmental health while considering the requirements of economic feasibility.

## **Environment & Public Health**

Perhaps more than any of the previously discussed issues, environmental and public health concerns are overlays – integrated and inseparable from the housing, economics, transportation and brownfields concerns. This fact, of course, goes to the heart of the theory and framework for sustainable development.

The following discussion summarizes the environmental and public health issues that are most relevant to the context of planning for redevelopment of Jackson Square. It is not intended to be a comprehensive survey of all the important environmental concerns facing the community, but covers only those issues that have the most potential to impact or be impacted by redevelopment. The analysis draws on the input of both “expertise” - scientists, government agencies and other technical experts, and “local knowledge” - the expressed sentiment of community members and community-based organizations.

Finally, it should be noted that many if not most of the critical environmental concerns in a highly urbanized place like Jamaica Plain/Roxbury are issues of public health. While we may not be dealing with the traditional “natural” environment of endangered species and old-growth forests, we are concerned with conditions related to human activity and urban development, the so-called “built” environment, and how these impact the health and well-being of the people who live there. The field of Environmental Health comprises those aspects of human health and disease that are determined by factors in the environment.

## **Brownfields & Potential Health Risks**

The nature and extent of the pollution on the redevelopment parcels, and the human health risks posed by that pollution or any residual contaminants left on the site after remediation, is the most critical environmental and public health issue at stake. Human health is at risk currently, and any vision of sustainable development of these parcels would include ensuring that health risks are minimized by remediation and reuse.

As discussed earlier, the environmental assessment process has not been completed, so a comprehensive analysis of potential risks is not possible at this time. However based on existing assessment data we can make the general conclusion that some of the potential health effects of the substances found on the site (Oil/petroleum, Tetracholoethylene, Trichloroethylene, Polycyclic Aromatic Hydrocarbons, Arsenic, Lead) include cancer, birth defects, nerve, liver and kidney damage, and auto-immune disorders.

*The opportunity for sustainable development here is obvious and can be summarized as “effective remediation and appropriate re-use.” Remediation standards and technology, and reuse plans must be determined so that future human use of these parcels does not pose a significant health risk. Redevelopment of Jackson Square must serve to decrease the overall environmental health risk in the neighborhood.*

## **Tree Cover and Urban Forestry**

Although the larger Jamaica Plain and Roxbury neighborhoods are well endowed with trees (between 25% and 35% tree cover), the area around Jackson Square and Columbus Avenue is a relative “island of bleakness.” Here, the transportation infrastructure and current and former land uses have created a barren landscape that serves as a barrier between two otherwise green neighborhoods.

Trees are important assets in the urban environment, providing numerous tangible and intangible benefits. By providing simple shade and other more complex processes of transpiration and radiation, urban trees serve as natural air conditioning in the summer, cooling the surrounding air up to 2 degrees. Trees planted near buildings can enhance their energy efficiency through shading in the summer and blocking winds in the winter. Tree cover also provides improved air quality, primarily through uptake through leaves of such pollutants as ozone, sulfur dioxide, carbon monoxide, nitrogen dioxide and particulate matter. Studies in New York City have shown that trees alone can improve air quality by up to 0.47%.

Urban trees are also important for providing a “sense of place.” The aesthetic and psychological benefits of a green neighborhood, where one can witness the changing seasons, are difficult to quantify, but few could deny that the tree-lined residential streets of Jamaica Plain and Roxbury are more welcoming and pleasing spaces than the bleak landscape around Jackson Square.

*Thoughtfully and functionally integrating tree planting and urban forestry values into the redevelopment design and into any improvements to the surrounding transportation infrastructure will provide the benefits outlined above, and will help re-establish the critical physical and psychological connection between Jackson Square and the surrounding Jamaica Plain and Roxbury neighborhoods.*

## **Open Space & Built Environment**

Jamaica Plain and Roxbury are blessed with a wealth of parks, recreation facilities, urban wilds, and other public open spaces. With 9.5 acres of open space per 1000 residents and Roxbury, and 10.83 acres per 1000 residents in Jamaica Plain, both neighborhoods are well over the citywide average of 7.9 acres per 1000 residents. These numbers are greatly influenced by the presence of several of the city’s largest open spaces – Franklin Park,

Arnold Arboretum, and the Jamaicaway/Jamaica Pond – assets to the greater community certainly, but none is within three quarters of a mile of Jackson Square. Open spaces within one half mile of Jackson Square are anchored by the Southwest Corridor Park, a space providing active and passive recreation facilities, local and regional bicycle/pedestrian transportation, community gardens, and community gathering space. Other local open spaces are primarily smaller parks and playgrounds of 3 acres or less.

Public open space provides numerous quality of life benefits such as recreational opportunities, gathering space, a place for trees to grow, and a sense of place and community. However, in the sustainability framework for Jackson Square, the most critical role of open space, and the surrounding built environment, is its role in promoting or limiting physical activity and exercise, for either recreation or transportation.

The connection between physical activity and public health is an emerging theme in environmental health. Nationally, the problem of obesity has literally reached epidemic proportions. The Boston Public Health Commission estimates that 57% of adults in Boston (50% in Jamaica Plain and 72% in Roxbury) are at risk for health problems due to lack of exercise as of 2001. Furthermore, physical inactivity is a significant risk factor for each of the three leading causes of death locally and citywide (cancer, heart disease and stroke), which together dwarf the rates of mortality due to all other causes.

*Jackson Square redevelopment presents an opportunity to encourage increased physical activity and public health. On-site open space, community center or commercial recreation/fitness facilities can provide recreation opportunities for adults and children. Planning can also recommend changes to off-site transportation infrastructure and open space networks to develop new resources and connect existing resources to enhance bicycle and pedestrian mobility.*

## **Air Quality and Asthma**

Asthma, particularly childhood asthma, is an environmental health problem of increasing severity that has been receiving increasing attention in terms of research and programming. Poor air quality, indoor and outdoor, is the primary risk factor for asthma, and Jamaica Plain and Roxbury both have higher than citywide average rates of hospitalization for childhood asthma. Aside from being a significant problem in its own right, asthma is also a useful indicator of more general air quality and environmental justice issues.

### **Outdoor Air Quality**

Vehicular emissions, particularly diesel exhaust, are the primary source of outdoor air quality concerns, and the primary outdoor asthma risk factor in the Jackson Square area.

According to the Massachusetts Department of Environmental Protection, levels of the “Criteria Pollutants” (Carbon Monoxide, Sulfur Dioxide, Nitrogen Dioxide, Lead, Ozone, and Particulates), rarely exceeded the National Ambient Air Quality Standards (NAAQS) thresholds at Boston monitoring sites in 2002, and the Air Quality Index only went into the official “unhealthful” range for one day in 2002. In addition, air quality monitoring and modeling for the Jackson Square area, a project of the Jackson Coordinating Group and

Harvard School of Public Health, has not raised any “red flags” for outdoor air quality, either presently or under any of several modeled redevelopment proposals.

Many of the MBTA bus routes in the area have been converted to Compressed Natural Gas (CNG) fueled vehicles, and a program is underway to retrofit all Boston public school buses with particulate traps and ultra-low sulfur fuel. One quarter of the 400 bus fleet has been retrofitted to date, with the remainder to be completed by the end of 2004.

Despite this relatively good news, Jackson Square remains a highly urbanized area, with plenty of vehicular traffic, and no amount of air pollution can be considered “good.”

*The opportunity for sustainability here is to think carefully about how much and what type of traffic is generated by new development. Development should be able to capitalize on transit resources and encourage other non-private-vehicle transportation.*

### **Indoor Air Quality**

Primary sources of indoor air quality concern in the neighborhood are related to housing stock.. As discussed previously, much of the existing housing stock in the project area is old (over 50% of units were built before 1940) and/or part of public housing projects. Air quality problems and specific asthma triggers commonly found in this type of housing include mold and moisture, pets and pests, large temperature swings, inadequate ventilation, toxic building materials and tobacco smoke. In addition, considering the length of time that employees spend in their workplaces, older commercial buildings probably pose similar health concerns.

There is a relatively high level of awareness of the indoor air quality/childhood asthma problem, and there are several notable existing programs in place to address it. In-home counseling to educate families about reducing exposure to hazards is offered by the Boston Public Health Commission and by the Jamaica Plain Environmental Asthma Initiative based locally in the Martha Eliot Health Center. The Boston Urban Asthma Coalition has developed Healthy Home Building Guidelines to minimize hazards in new construction.

*The fact that area residents, who are generally lower-income and of color, are exposed to these air quality hazards and suffer from asthma at a higher rate than surrounding communities is indicative of an environmental justice problem. Jackson Square redevelopment represents a unique opportunity to address this problem by building new housing and commercial development by leveraging existing resources and programming to incorporate healthy construction and maintenance practices.*

### **Lead Poisoning**

Childhood lead poisoning is another environmental health concern where, similar to asthma, children are at the greatest risk and risk factors are related to older, substandard housing stock (e.g. lead paint.) Jamaica Plain and Roxbury have a higher than citywide average rate of childhood lead poisoning, which indicates an environmental justice issue. Fortunately, over time, neighborhood and citywide rates of lead poisoning have been declining steadily. This suggests that community awareness of the problem and programs to reduce exposure to hazards have been effective in reducing, if not eliminating, the lead risk.

*Environmental assessments have revealed the presence of lead hazards on the redevelopment parcels. While development of new housing on the site will move residents out of older housing stock, it is critical that lead hazards on the project site be remediated to a level that will not pose a threat of lead poisoning, so that residents will not be "jumping out of the frying pan and into the fire."*

## **Local Business Waste Streams**

As detailed earlier, the commercial mix in the Hyde/Jackson area is dominated by retail and service sector businesses. Manufacturing and industrial sector uses typically associated with environmentally hazardous waste streams and emissions make up only 2% of the businesses. Although past industrial use of the redevelopment parcels has left a legacy of pollution and health hazards, current business activity has generally not raised many environmental "red flags" in the neighborhood.

While problems have not been reported relative to any of the specific businesses, the following *types* of businesses present in the neighborhood have the *potential* to create waste stream or occupational health problems:

- Auto-related businesses. Five exist currently. Solvents, petroleum products, paints, and other fluids and fumes.
- Dry Cleaner. One exists currently. Cleaning solvents.
- Nail/Beauty salons. 11 exist currently. Volatile compounds.
- Restaurants. 24 exist currently. Organic waste, pests, odors.

*Despite the lack of significant waste stream problems, there is certainly an opportunity to support more environmentally sound business practices in developing new commercial space. Possibilities range from fully integrated industrial ecology, where waste products from one business become production inputs for another, to more modest economies and "ecologies of scale," where cooperative sourcing and waste management among clusters of similar businesses (restaurants for example) can lead to reduced environmental impacts and reduced costs to business.*

## **Environment & Public Health Summary and Challenges**

The environment and public health concerns outlined above are those that are most relevant to the process of redevelopment in Jackson Square and should *all* be considered in the planning process. To further define the framework for sustainable development and guide planning, however, we have refined the environment and public health concerns into a set of priority challenges that represent areas where sustainable development can add the most value to quality of life and quality of environment in Jackson Square, both in the short- and long-term.

### **Priority Challenges**

- Brownfields Risks
- Air Quality and Asthma
- Access to Open Space and Physical Activity
- Re-connecting the Jamaica Plain and Roxbury neighborhoods

## **Updated Framework for Sustainable Development**

The preceding analysis has, in addition to providing a snapshot of the current interrelated community, economic, and environmental conditions in the neighborhood, defined the priority challenges and opportunities for sustainable development in Jackson Square. Building on the initial principles and context of the framework for sustainable development, we have identified specific opportunities - *what* we should do to promote sustainability. These opportunities are summarized in the updated framework below. Note that the opportunities are not segregated into categories, as most will serve multiple, integrated purposes.

### **Principles**

- Respond to community needs and desires
- Be economically viable
- Maintain or improve environmental conditions and public health

### **Context**

- Effective remediation of pollution hazards on redevelopment parcels
- Appropriate re-use of redevelopment parcels
- Integrate with and reconnect surrounding neighborhoods

### **Opportunities for Sustainability**

#### **1. Green and healthy buildings**

Address an environmental justice issue by incorporating green building techniques in JPNDC housing designs and leveraging existing resources and programming to restore healthy indoor environments.

#### **2. Housing focus on 1/2/3 bedroom units**

Investigate the best combination of 1, 2, and 3 bedroom units that will satisfy the demand of the growing number of smaller households.

#### **3. Capitalize on transit, bicycle and pedestrian resources**

The Jackson Square area has excellent alternative transportation resources that can be leveraged to get people out of their cars: provide basic amenities, enhance securing and safety, adjust bus routes and schedules, and improve the pedestrian environment can improve accessibility.

#### **4. Improve transportation system to accommodate new development and decrease auto mode-share**

Parking and roadway requirements exist to reduce congestion, but often contribute to it by making driving easy, and using other modes more difficult. Think carefully about how much and what type of traffic is generated by the new development and look for ways to configure and limit automobile space that will provide adequate capacity, while encouraging transit users, pedestrians and bicyclists.

- 5. Identify business types that will succeed financially**

In order for the redevelopment of these parcels to contribute to the revitalization of the Jackson Square community, the new commercial uses must be able to achieve healthy sales volumes and profits. A balance must be found between commercially viable uses and community needs.
- 6. Identify economic engine(s) or economic draws**

A community center and affordable housing will not generate revenues or serve as an economic engine that will attract sales from the Greater Boston market. Thus, at least one of the commercial uses that are identified must serve as a destination for surrounding communities, drawing dollars into the community and creating spillover effects for other local businesses.
- 7. Target diverse markets**

A successful mix of commercial uses will appeal to both the existing customer profile and the target customer profile. Retaining the character of Hyde/Jackson Square while simultaneously attracting a wider market will be a challenge, but addressing this issue will ultimately enable the creation of a vibrant and healthy commercial district that is protected from the effects of gentrification.
- 8. Ensure creation of quality jobs for the community**

The community has identified quality employment as a priority for any new commercial development. Economic sustainability and health of the community is dependent upon the ability of local residents to obtain quality employment opportunities.
- 9. Support industrial ecology practice**

Support more environmentally sound business practices in developing new commercial space, such as cooperative sourcing and waste management among clusters of similar businesses to reduced environmental impacts and costs to business.
- 10. Re-connect J.P. and Roxbury with linked open space, bike/ pedestrian facilities and trees**

Planning may recommend changes to off-site transportation infrastructure and open space networks to develop new resources and connect existing resources to enhance bicycle and pedestrian mobility.
- 11. Provide quality open space and recreational facilities**

Jackson Square redevelopment presents an opportunity to encourage increased physical activity and public health. On-site open space, community center or commercial recreation/fitness facilities can provide recreation opportunities for adults and children.
- 12. Integrate urban forestry values into redevelopment**

Thoughtfully and functionally integrating tree planting and urban forestry values into the redevelopment design and into any improvements to the surrounding transportation infrastructure will provide the benefits outlined above, and will help

re-establish the critical physical and psychological connection between Jackson Square and the surrounding Jamaica Plain and Roxbury neighborhoods

**13. Remediation of contaminated parcels**

Redevelopment of the Jackson Square parcels provides an opportunity to improve environmental conditions in the area so that future human use of these parcels does not pose a significant health risk. The forthcoming report will focus on financing opportunities and best practices for “green” re-development.

Forthcoming sections of the plan will further develop the framework, focusing on specific proposals for *how* to capitalize on these opportunities to achieve sustainable development in Jackson Square.



## Appendix A: Transportation Data

*Appendix Table 1. Information from the 1994 CTPS passenger survey at Jackson Square*

Mode	Access %	Egress %	Walk Time	Access	Egress	
Walk	959	42.3%	59.4%	0-5 min	58%	55%
Bus		40.9%	33.4%	6-10 min	26%	31%
Park & Ride	246	10.8%	1.1%	11-15 min	10%	3%
Drop off/pick up	116	5.1%	6.3%	16-20 min	6%	12%
Bicycle	12	0.5%	0%	TOTAL	100%	100%
Taxi	9	0.4%	0%	Mean	7.2 min	8.1 min
TOTAL	1342	100%	100%			

Ann. Household Income	
< \$20,000	21%
\$20 to \$30	29%
\$30 to \$40	20%
\$40 to \$60	20%
\$60 to \$80	7%
> \$80,000	4%
Total	100%

Age	
17 and under	3%
18-24	17%
25-34	28%
35-44	27%
45-64	20%
65+	4%
Total	100%

Gender	
Male	30%
Female	70%
Total	100%

Auto Available for Trip	
Yes	36%
No	65%
Total	100%

*Appendix Table 2. Bus routes in Jackson Square*

Route Description			Service		Riders/day	Inbound		Outbound	
Route	Name	Via	Hours	Interval		On	Off	On	Off
14	Heath St-Roslindale Sq.*	Dudley, Warren, Amer. Legion Highway	M-S, 7 am to 7 pm	30 to 45 min	1450				
22	Ashmont-Ruggles	Columbus, Seaver, Blue Hill, Talbot	all	8 to 20 min	8300	125	1164	818	137
29	Jackson Sq-Mattapan	Columbus, Seaver, Blue Hill	M-F, limited Sat	16 to 60 min	2250				
41	Monument-UMass*	Centre, Dudley	all	20 to 40 min	1000	99	57	105	67
44	Jackson Sq-Ruggles	Columbus, Humboldt	all	11 to 45 min	4050	547	0	0	581
48	Jamaica Plain Loop	Centre, Paul Gore, Lamartine, Amory, Washington, Green	M-S 9 to 5PM	30 to 35 min	200	0	18	14	0

*Appendix Table 3. Orange Line boardings and alightings for stations between Forest Hills and Massachusetts Avenue (CTPS, MBTA 2002)*

				<b>Total Daily Passengers (2002)</b>	<b>Total Daily Passengers (2004)</b>
<b>Forest Hills (Terminal)</b>	<b>Northbound</b>	<b>Ons</b>	13,069		
		<b>Offs</b>	n/a		
	<b>Southbound</b>	<b>Ons</b>	n/a	24,557	25,785
		<b>Offs</b>	11,488		
<b>Green St</b>	<b>Northbound</b>	<b>Ons</b>	2,935		
		<b>Offs</b>	290		
	<b>Southbound</b>	<b>Ons</b>	319	6,410	6,731
		<b>Offs</b>	2,866		
<b>Stony Brook</b>	<b>Northbound</b>	<b>Ons</b>	2,142		
		<b>Offs</b>	300		
	<b>Southbound</b>	<b>Ons</b>	263	4,553	4,781
		<b>Offs</b>	1,848		
<b>Jackson Square</b>	<b>Northbound</b>	<b>Ons</b>	3,962		
		<b>Offs</b>	551		
	<b>Southbound</b>	<b>Ons</b>	689	8,553	8,981
		<b>Offs</b>	3,351		
<b>Roxbury Crossing</b>	<b>Northbound</b>	<b>Ons</b>	2,729		
		<b>Offs</b>	975		
	<b>Southbound</b>	<b>Ons</b>	1,293	7,070	7,424
		<b>Offs</b>	2,073		
<b>Ruggles</b>	<b>Northbound</b>	<b>Ons</b>	6,587		
		<b>Offs</b>	1,558		
	<b>Southbound</b>	<b>Ons</b>	1,565	16,357	17,175
		<b>Offs</b>	6,647		
<b>Mass Ave</b>	<b>Northbound</b>	<b>Ons</b>	3,611		
		<b>Offs</b>	1,562		
	<b>Southbound</b>	<b>Ons</b>	1,559	10,434	10,956
		<b>Offs</b>	3,702		

\*2004 is a 5% adjustment above 2002 data, which is consistent with 2004 counts on other portions of the line. On this portion of the Orange Line, 2004 counts are not yet available.

## **Appendix B: Hyde Jackson Business Inventory**

<b>General Merchandise</b>
99 Cents Stop Store
<b>Food</b>
Estrella Bakery
Evelyn's Market
Super Stop & Shop
Mozart Market
Pimentel Market
Gentileza's Market
Hi-Lo Supermarket
7-Eleven
Freddy's Market Bodega
Centre Street Meatland
Cristal Fruit
Jamaica Plain Market
<b>Food Service, Bars</b>
Brendan Behan Pub
Triple D's
Dunkin Donuts
Yely's Coffee Shop
Miami Restaurant
El Oriental de Cuba
Alex's Chimis
Food Wall Chinese Restaurant
Young Kong Restaurant
Latino Restaurant
La Pupusa Guanaca
Tacos El Charros
Prince Street Catering
Cappy's Pizza
Rizzo's Pizza
Captain Nemo's Pizza
Bella Luna/Milky Way Lounge and Lanes
Zon's Restaurant
Cristal Café
Sorella's Restaurant
Junebug Café
Zesto's Pizza
Pizza Oggi
Pizza Pizza

<b>Clothing and Accessories</b>
La Gran Via Men's Fashions
Tello's Clothing Store
Sonia's Bridal Boutique
Del Valles's Children Gift Shop
Vasallo's Men's Fashions
Centre Boutique Children's Clothing
<b>Laundry, Cleaning, Tailor, Shoe Repair</b>
Centre Tailor Shop
Jamaica Plain Laundromat
Clean-Brite Laundromat
Super One Hour Cleaners & Tailoring
<b>Other Personal Services</b>
Associated Family Child Care Services
Quisqueyana
Tony's Travel Envio de Valores
Atlantic Travel
Fernandez Travel Agency
Ducor Express Travel
The Video Underground
<b>Auto Related Services</b>
JP Auto Service
Muffler Mart of Boston
Economy Auto Supply
<b>FIRE, Legal, Accounting</b>
Fleet Bank
Greater Boston Mortgage
Western Union
Robert R. Amador - Electronic Tax Filer
All Checks Cashed
La Nacional Corp.
Boston Check Cashers
Boston Private Bank & Trust Co. Loan Center
Gaughen, Gaughen, Lane & Hernando Attorneys
Batista and Associates
JEM Real Estate
Thomas Amoroso Attorney

<b>Health Care</b>
Peter Hanley DMD
Barron Chiropractic
Day Street Physical Therapy
<b>Shoes</b>
Expressions
Payless Shoe Source
<b>Home Furnishings</b>
City Mart Furniture
Rent-A-Center
<b>Electronics, Music</b>
Boston Electronics
Franklin's CDs
Skippy White's Records
JP Record Shop
<b>Automotive Retail</b>
Mr. V's Auto
Boston Auto Salvage
<b>Gifts, Specialty, Florist</b>
La Casa de los Regalos
<b>Jewelry</b>
A&M Jewelry Repair Shop
<b>Liquor</b>
Tropical Market & Liquors
Centre Liquor Store
<b>Drugs, Health, Beauty</b>
City Beauty Supply
Beauty International Supply
<b>Other Retail and Used Goods</b>
The House of Mother Nature
Castillo Beepers
Cellular & Paging of Boston

<b>Personal Care/Salon</b>
Fernandez Barber Shop
Rocky's Barber Shop
Alexandra Beauty Salon
Christopher Emery Salons
Ultra Beauty Shop
Magic Shears Unisex Hair Salon
Angela Unisex Beauty Salon I & II
Davis Beauty Salon
Fat Ram's Pumpkin Tattoo
Julie's Nail Salon
Lilly's Nails
<b>Community, Govt., Non-Profits, Institutions</b>
Bromley Heath Tenant Management Corporation
Family Service of Greater Boston Center
Bikes Not Bombs
Oficina Hispana de la Comunidad
JP APAC
Hyde/Jackson Square Main Street
JSPCA Boston Shelter/Angell Hospital
Hyde Square Task Force
Connolly Branch Library
Volunteers of America
Jamaica Plain Head Start
Martha Elliot Health Center
Iglesia de Dios Pentecostal
Fellowship Church of God
United Baptist Church
Blessed Sacrament Church
Blessed Sacrament Church School
River of Life Church and Offices
<b>Other Businesses</b>
El Mundo Newspaper
A.C. Fine Vinyl Windows & Siding
Re-Jan Electrical Co.

## Appendix C: Hazardous Releases in Jackson Square

*Appendix Table 4. Summary of hazardous releases reported to the Commonwealth of Massachusetts: Jackson Square Development Area*

RTN	Address	Current Owner	Report Date	Status	Date of Status	Phase	RAO Class	Chemical	Detail	Potential Impacts
3-0003573	MBTA A, 69, 70,71	MBTA	4/15/91	1D	8/11/97	In default		Oil	Petroleum based oil/ Phase I Assessment complete/Phase II RFP in process	Will impact development costs and options.
3-0021430	41 Amory St.	Cappadona/ Urban Edge	1/23/02	Tier 2	1/21/03	Phase II due 1/05		Hazardous Material	Petroleum products, automobile fluids, metals	Possible impact on MBTA parcels 69, 70,71 due to groundwater flow
3-0021463	85-95, 20-26, 3 Amory	Urban Edge	1/23/02	RAO	1/21/03		B1	Hazardous Material	Benz[A]Anthracene 6 mg/kg Benz[E] Acephenanthrylene 5.9 mg/kg Benzo[A] Pyrene 5.6 mg/kg	Unlikely impact on MBTA parcels from groundwater flow. Property study suggests material will biodegrade.
3-0019660	59 Amory St.	Mordy Levin	6/23/00	Tier 2	6/21/02	Phase II due 6/04		Oil	Petroleum	Likely source of MBTA contamination at well JS7.
3-0016908	71 Amory St.	Mordy Levin	6/11/98	RAO	10/26/98		A2	Oil	Petroleum	Contained. No likely impact. Sabotaged well suspected.
3-0023138	Amory & Columbus	NSTAR	9/1/03	RAO	9/15/03		A2	Oil	150 gallons	
3-0021935	1542 Columbus Ave	Urban Edge	7/12/02	Tier 2	7/14/03	Phase II due 7/05		Oil and Hazardous Material	Petroleum based oil 490 mg/kg Arsenic 620 mg/kg Lead 3,200 mg/kg	Groundwater flow (unlikely?). Possibility of similarly contaminated fill for City owned 1542 Columbus.
3-0012084	1540 Columbus Ave	City of Boston	1/20/95	RAO	1/26/96		A2	Oil	Waste oil	
3-0004345	282 Highland	City of Boston DPW Yard	7/15/93	1D	8/11/97	In default		Oil	Petroleum based oil. Release to groundwater and soil.	Could impact 1540/1542 Columbus Avenue due to groundwater flow.

**RTN:** Release Tracking Number

**RAO:** Response Action Outcome. Indicates an RAO statement was submitted asserting that response actions were sufficient to achieve a level of no significant risk, or at least ensure that all substantial hazards were eliminated.

**Tier 2:** Sites are classified using the Numerical Ranking System which scores sites based on factors including complexity, type of contamination and potential for human or environmental exposure. Tier 2 is the lower score category. Permits are unnecessary; a licensed site professional can complete response actions without prior DEP approval.

**Tier1D:** the responsible party has failed to DEP deadlines.

**Phase II:** Comprehensive Site Assessment. During Phase II, the risks posed to public health, welfare and the environment are determined. (In Phase I site analysis is done to determine types, amounts and locations of contaminants.)

**RAO Class:** Remedial Action Outcome. **Class A:** Remedial work was completed and a level of no significant risk has been achieved. **Class B:** Site assessment indicates that no significant risk exists. No remedial work was necessary.



## **Appendix D: Remediation Estimates for MBTA Parcels**

### **Summary of Haley and Aldrich 1990 Remediation Estimates for MBTA Parcels A, 69, 70, 71 and Haley and Aldrich 1989 Environmental Assessment**

#### **1990 Remediation Assessment**

The 1989 assessment revealed priority pollutant volatile organic compounds and petroleum products in soil and groundwater. The highest pollutant concentrations are in the location of underground storage tanks. The remediation assessment is based on the following proposed commercial/industrial uses.

- Proposed building (A) with basement near well JS1 (northernmost part of properties). Groundwater is 20 ft. below the surface, it is not expected to be a major factor. In-state landfill disposal and/or on-site reuse of soil is recommended due to urban fill.
- Proposed building (B) with basement near well JS3 (border of parcels 71 and 70 near Amory Street). Groundwater is 13 ft. below the surface and may be encountered. In-state landfill disposal and/or on-site reuse of soil is recommended due to urban fill. Excavation will encounter groundwater; treatment and disposal will be necessary.
- Proposed building (C) with basement near well JS7 (parcel 69, abutting 55-75 Amory Street). There are high levels of pollutants, and groundwater within 6 ft. of surface will be encountered. Off-site treatment of soils contaminated with petroleum is recommended. Excavation will encounter groundwater; treatment and disposal will be necessary. Additional treatment of phase-separated liquid hydrocarbons may be required. Due to shallow depths to groundwater, a permanent underdrain would likely be required, treatment of recovered groundwater would be required.
- Proposed roadway near wells JS4-6 and test pits TP3-5 (behind 55-75 and 41 Amory Street). There are high levels of pollutants. Groundwater levels are 7-15 ft. below surface. UST's will need to be removed. Groundwater remediation may be required on parcel 69.
- Proposed parking lot along the MBTA embankment. No subsurface explorations have been conducted in this area.

#### Remediation Cost Estimates

- |                            |                     |
|----------------------------|---------------------|
| • Tank removal             | \$60,000 to 85,000  |
| • Soil Disposal/Treatment  | \$1.7 – 3 million   |
| • Water Disposal/Treatment | \$205,000 to 240,00 |
| • Total                    | \$2.0 - 3.3 million |

Cost estimates are based on the following assumptions: no more UST's are identified, disposal of 15,000 gallons of liquid will be required, disposal of 50,000 tons of soil will be required, dewatering for buildings B and C will be required for 60 days.

The remediation estimate is reduced to \$1.1 to 1.6 million, if Building C does not have a basement.

The cost estimate for long-term remediation (6 years) of groundwater beneath parcel 69 is \$677,000 to \$850,000.

### **1989 Environmental Assessment**

The environmental assessment included

- 14 boring sites (denoted JS)
- 10 observation wells at the boring sites (denoted OW). Groundwater samples were taken from wells JS 1, 6 and 8 only
- 6 soil excavation sites (denoted TP)

Depth to groundwater (10/89) ranges from 6-15 ft. Groundwater flows northerly and westerly.

### **Results by parcel (north to south)**

#### **Parcel 71**

- Observations from JS/OW 1, 2, and 3. JS1 is located in the northern portion of the property. JS2 and 3 are located on the border of parcels 71 and 70.
- Depth to groundwater: JS1: 20 ft.; JS2: 16 ft.; JS3: 13 ft.

- 
- JS1: Oil and Grease: 1.2 mg/L, Total petr. hydrocarbons: .5 mg/L
  - JS1: Tetrachloroethylene: 2.6 ug/L
  - JS1: Trichloroethylene: 6.3 ug/L
  - JS1: Volatile Organic Compounds (VOC's) from soils 3-52 ppm
  - JS2: Petroleum odor, 2-4 and 14-18 ft. (fill)
  - JS2: VOC's 3-30 ppm
  - JS3: VOC's 1.6-30 ppm

#### **Parcel 70**

- Observations from JS/OW 4 and TP6. JS 4 is located adjacent to the northern boundary of 41 Amory St. TP6 is located at the rear corner of the northern boundary of 41 Amory St. at the site of a former oil house and coal storage.
- Depth to groundwater: JS4: 14.5 ft.

- 
- JS4: VOC's 4-100 ppm (among highest readings)

- TP6: VOC's 5-7 ppm

### Parcel A

- Observation from JS5. JS5 is located at the western boundary of 41 Amory Street.
- Depth to groundwater: 16 ft.

- 
- JS5: petroleum odor, 16-19 ft. (sand)
  - JS5: VOC's 3-36 ppm
  - Surface staining observed along chain-link fence separating Parcel A and auto junk yard.

### Parcel 69:

- Observations from JS6, and TP 3,4,5. These site are at the location of 8 UST's, at boundary of A, near southwest corner of 41 Amory St. JS7 is located at the western boundary of 55-75 Amory Street. JS8 and TP1, 2 are located at the southern edge of the property near Amory Avenue, at location of former 2 UST's-1,500-gallon crude oil and two-barrel naphtha.
- Depth to groundwater: JS6: 8.5 ft., JS7: 6 ft., JS8: 9 ft.

- 
- Heavy oil staining and water with an observable surface film noted in the concrete-lined boxes that provide access to underground storage tanks. Eight underground tanks excavated (currently still on site) at TP3 (7 id'd from historical search). Located in concrete bunker 40' by 25' by 7' deep. Most tank covers open and tanks are filled with liquid, observable film of phase-separated petroleum hydrocarbons on the water surface in tanks. Contents: 3, 2,000-gallon, 3, 2,500-gallon, 1, 1,800-gallon, 1, 3,000-gallon tanks.
  - JS6: Petroleum odor and sheen, 5-17 ft. (fill/sand)
  - JS6: 1,428 mg/kg Petroleum hydrocarbon (Weathered #2 Fuel Oil/Diesel Fuel)
  - JS6: (soil) Oil and Grease: 6,300 mg/kg, Total petr. hydrocarbons: 5,900 mg/kg
  - JS6: (GW) Oil and Grease: 505 mg/L, Total petr. hydrocarbons: 384 mg/L
  - JS6: VOC's 16-104 ppm (among highest readings)
  - TP3: petroleum odor/sheen, 1-7 ft. (fill)
  - TP4: petroleum odor/sheen, 10-11 ft. (sand)
  - TP5: petroleum odor/sheen, 9-10 ft. (sand)
  - JS7: petroleum odor, 5-16 ft. (sand/till)
  - JS7: phase-separated liquid hydrocarbon 1/8 inch thick on water table
  - JS7: Oil and Grease: 11,800 mg/kg, Total petroleum hydrocarbons: 11,100 mg/kg
  - JS7: VOC's 3-200 ppm (among highest readings)
  - JS8: Petroleum odor, 10-12 ft. (fill)

- JS8: (soil) Oil and Grease: 7,050 mg/kg, Total petr. hydrocarbons: 6,500 mg/kg
- JS8: (GW) Oil and Grease: 900 mg/L, Total petr. hydrocarbons: 890 mg/L
- JS8: (GW) Trichloroethylene 28 ug/L
- JS8: VOC's 6-280 ppm
- TP2: Petroleum odor and sheen, 10-11 ft. (fill)
- TP2: Oil and Grease: 7,050 mg/kg, Total petroleum hydrocarbons: 6,400 mg/kg

Trichloroethylene (TCE) is used in metal degreasing, solvent drying, dry cleaning etc.

The Massachusetts MCL (legal limit) for drinking and groundwater is 5.0 ppb.

Tetrachloroethylene (PCE) is a dry-cleaning solvent, drying agent, degreasing solvent.

The Massachusetts MCL (legal limit) for groundwater is 5.0 ppb.

## **Appendix E: Historic Use of Properties**

### **MBTA Parcel 69**

1890	Suffolk Iron Works, Peninsular Novelty Co., Rockland Brewery
1897-1950	Trimount Manufacturing (1,500-gallon UST crude oil, UST naphtha tank, forge shop)
1955	Tee Vee Toys, Inc. (plastic toy manufacturing)
1958-present	Vacant

### **MBTA Parcel A**

1897-1950	Trimount Manufacturing (above ground tank, crude oil #6 fuel; 7 UST's crude oil)
1906-1919	West End Street Railway Co., Boston Elevated Railway Co.
1958-present	Vacant

### **MBTA Parcel 70**

1890	Vacant
1897	West End Street Railway Co. (coil storage and oil house)
1906-1915	West End Street Railway Co., Boston Elevated Railway Co.
1919	Boston Elevated Railway Co., Armory Street Car Station
1930-1955	Vacant
1958-1965	Acme Industrial Equipment Co.
1970-present	Vacant

### **MBTA Parcel 71**

1890	Vacant
1897-1915	West End Street Railway Co.
1919	Boston Elevated Railway Co., Armory Street Car Station
1935-1958	Acme Industrial Equipment, Co. (Sheet metal works, oil house)
1960-1965	Wickberg B.G. Co. (ventilation systems)
1970-present	Vacant

### **MBTA Parcel "Grassy Knoll"**

1888	Residential use. Stony Brook abuts the property approximately where Columbus Avenue is now located. The property is bisected by Stony Brook Place and Weeks Place.
1897	Residential use. Columbus Avenue now developed; Stony Brook is culverted. The property is bisected only by Stony Brook Place.

1919 Residential use and a machine shop. Stony Brook Place renamed Echo Street.  
 1949\* Uses include residences, auto repair and filling station.  
 1962: No residential use. Uses include auto repair shop and used auto sales.  
 1974-present: Vacant

**NSTAR Parcel Columbus Avenue and Centre Street**

1888 Vacant  
 1897 Residential use  
 1919 Residential use  
 1949 Residential use and filling station.  
 1962 Filling station, meter house (current use)  
 1974-present Meter house

**City of Boston Parcels 1540/1542 Columbus Avenue**

1888 Vacant  
 1897 Residential use, primarily vacant.  
 1919 Auto garage and “wagon” manufacturing  
 1949:\* Used auto sales, auto body shop, pipe warehouse  
 1962-1995: Auto sales and service, auto body shop, auto storage and parts  
 Present: Vacant

\* Precise date unknown. Survey done between 1919-1949.

Information for MBTA Parcels 69, 70, 71, and A is from a 1989 evaluation of the property prepared by Haley & Aldrich, Inc. All other info