



Watsessing Center  
TRANSIT ORIENTED DESIGN  
PLAN  
COMMUNITY PROFILE

DRAFT: January 20, 2012

Prepared by:



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## INTRODUCTION

In 2008, the Township of Bloomfield received a Smart Futures Grant to develop a Transit Oriented Development/Design (TOD) Plan for the area around the Watsessing Train Station. A four-phased approach was created to produce a viable Transit-Oriented Design Plan for the Watsessing Station study area. The first phase includes the creation of a Community Profile. The second phase entails visioning and crafting goals and objectives. The third phase is a draft plan and the fourth phase is a final plan.

This Community Profile contains five sections. The first section defines the study area. Then there is a land use analysis and a review of the existing zoning. Next, demographic data is examined. Finally, pedestrian and vehicular traffic data for the study area is presented.

## STUDY AREA

The Watsessing Train Station is one of three train stations in the Township of Bloomfield. It is located in the south-central portion of the municipality, just east of the Garden State Parkway. (See Figure 1: Township Context.) The Bloomfield Avenue Station is also located on the Montclair Branch of the Morris and Essex Line and is north of the Watsessing Station. The commuter ridership on that line has increased dramatically (from 200 to 450 riders) with the completion of the Montclair Connection that links it to the Midtown Direct line.

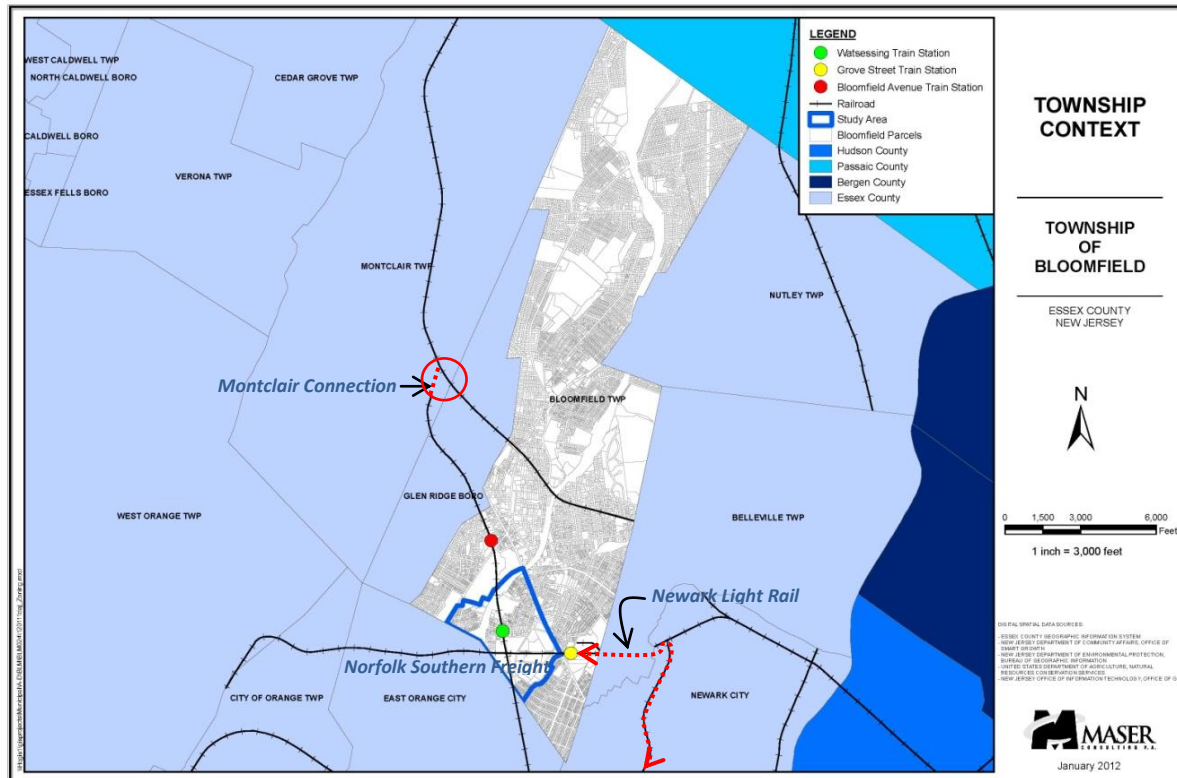


Figure 1: Regional Location Map showing Township context.



Lastly, there is the Grove Street Station, which is located at the end of the Newark City Light Rail (Subway) line (Figure 2). The light rail line was extended along a freight rail right-of-way owned by Norfolk Southern in 2002 and the Grove Street station includes a loop and maintenance yard for light rail vehicles. The Norfolk Southern freight rail line continues across Grove Street and Bloomfield Avenue through the study area and on into the City of East Orange.



Figure 2: Grove Street Station - Newark Light Rail System

Hartz Mountain was the sole remaining user of the freight rail line at the eastern end, but has recently ceased operation of its facility located at the corner of Watsessing Avenue and Main Street. The property, currently situated in the M1 zone, is currently under contract for purchase and redevelopment as a retail center, subject to adoption of a redevelopment plan. That redevelopment plan is being coordinated with this TOD Plan to ensure that the retail services being proposed for the site are designed to support the redevelopment of the TOD District. The potential redeveloper of the Hartz site has advised the Township that Norfolk Southern has expressed interest in selling the portion of the freight ROW within the TOD Study Area, which would provide an opportunity to use it to establish a multimodal link between redevelopment parcels within the Watsessing TOD and Bloomfield Avenue.

The Smart Futures Grant requires a plan to be developed for the area around the Watsessing Station, but, the study area was not defined by the grant. The first step in defining a study area was the analysis of a 1/4 mile and 1/2 mile walking distance from the station, at the juncture of Watsessing Avenue, Dodd Street, Willow Street and Orange Street. It is typically accepted that a 1/4 mile walking distance equates to a five minute walk for the average adult and a 1/2 mile walking distance equates to a ten minute walk. As shown in Figure 3, the 1/4 mile walking circle stretches north encompassing most of the Home Depot building off of Hill Street, west across the Garden State Parkway almost to Prospect Street, south to Federal Plaza and east beyond the intersection of Watsessing and Arlington Avenue. The 1/2 mile walking circle encompasses the majority of Watsessing Park to the north and to the west it stretches to Cleveland Terrace. A section of the City of East Orange also falls into the 1/2 mile walking circle. Finally, the 1/2 mile walking circle stretches across Bloomfield Avenue and includes portions of Berkeley Place, Willard Avenue and Berkeley Avenue.



Figure 3: The current Watsessing Avenue Station was constructed in 1912 as part of a grade separation project by the Delaware, Lackawanna and Western Railroad which included the construction of Bloomfield Station. It was renovated by NJ Transit in 2007 after the completion of the Montclair Connection.



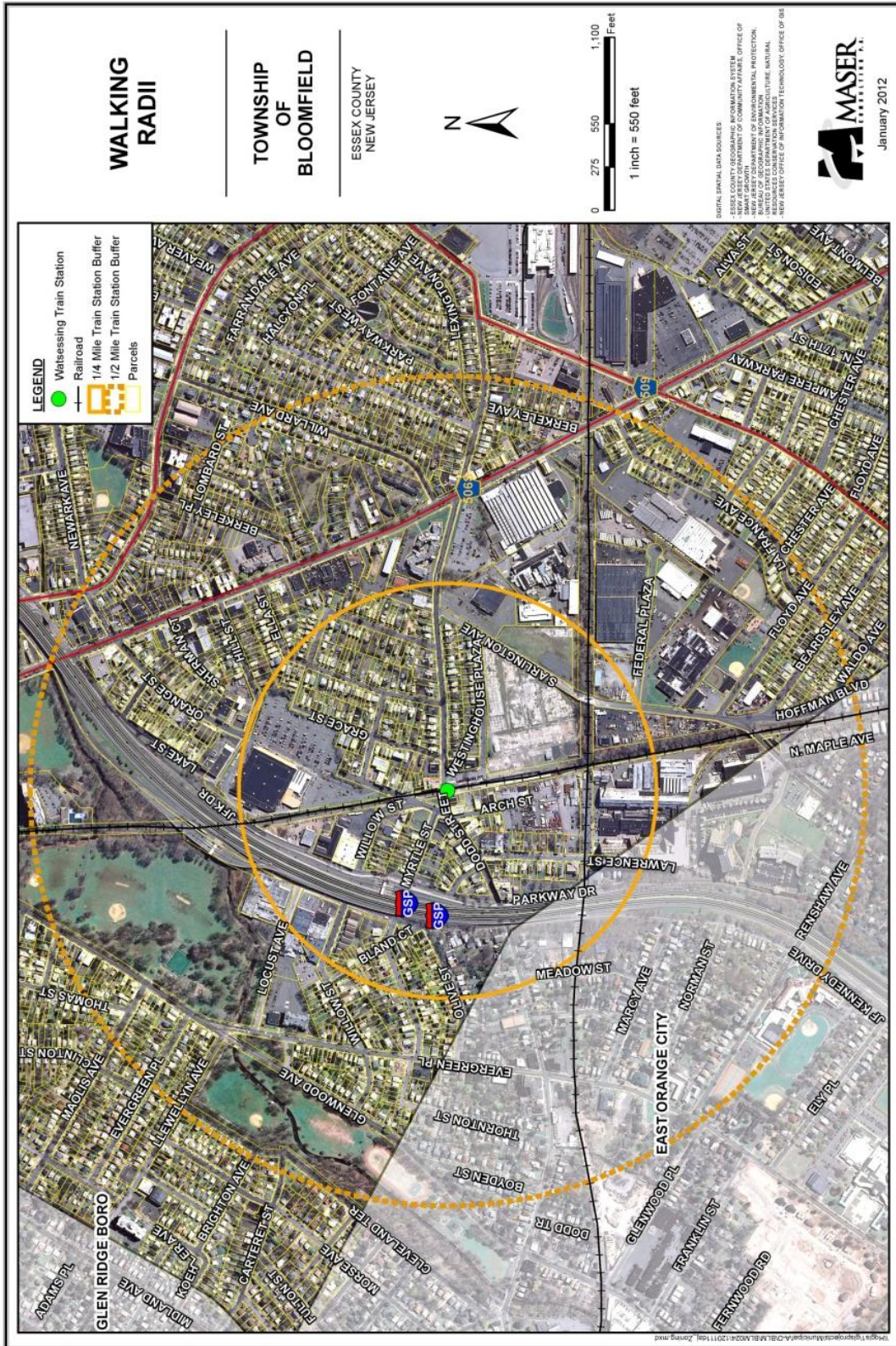


Figure 4: Quarter and half mile radii from Watsessing Station



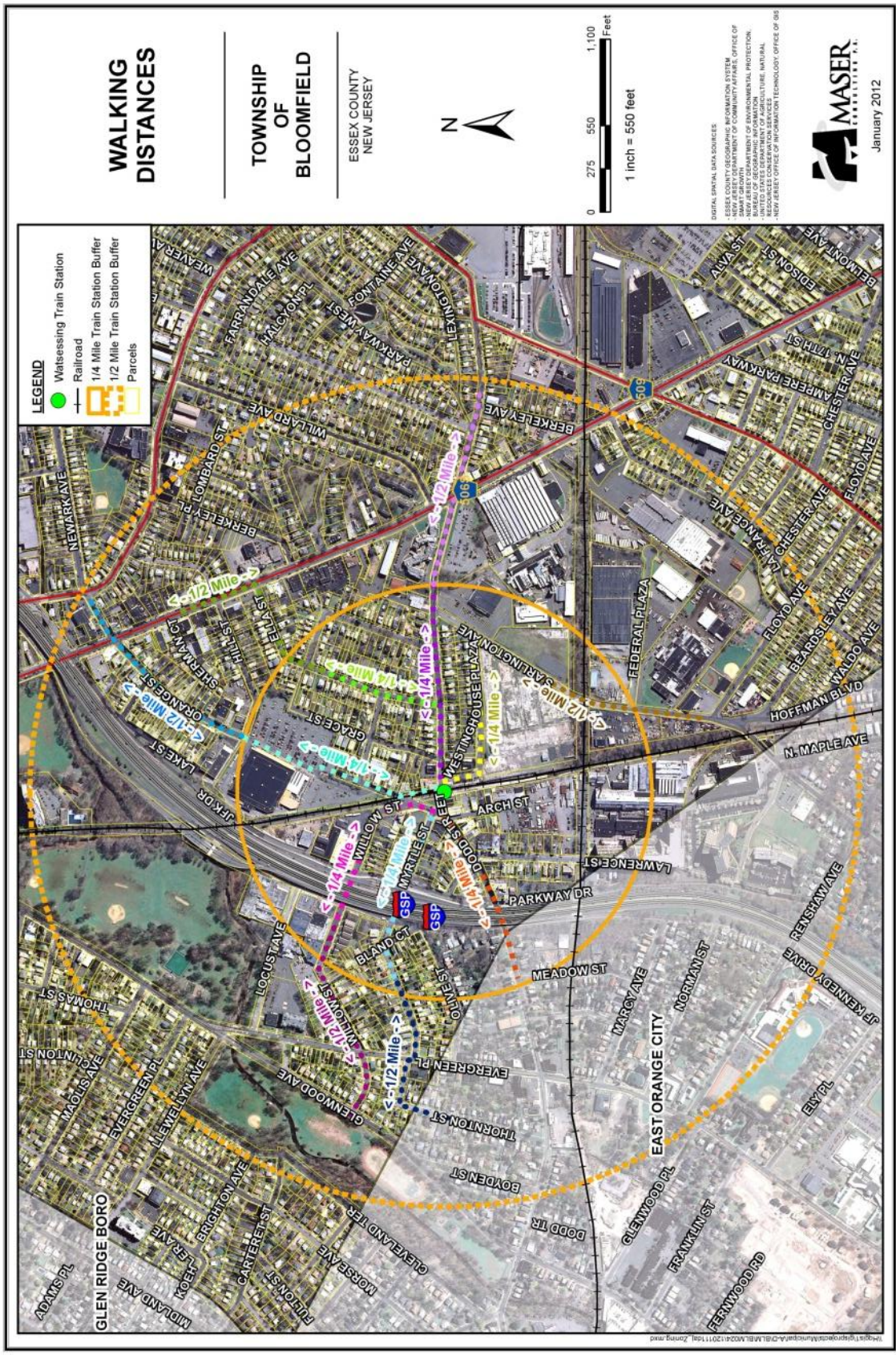


Figure 5: Selected quarter and half mile walking routes.



Next, actual walking paths were depicted using the existing street network and the 1/4 mile and 1/2 mile distances. As shown in Figure 4, there are various paths that pedestrians might take to get to the train station. It should be noted that the map only shows seven routes, but there are likely dozens that exist within the study area.

Combining these two exercises and excluding the City of East Orange formulated the study area boundaries. The blue lines in Figure 5 outline the Watsessing Station TOD study area. At the intersection of the Garden State Parkway and Bloomfield Avenue is the northern tip of the study area, which then follows the western edge of the Parkway southward. The study area bears west on Locust Avenue, moves south on Prospect Street and Glenwood Avenue to the municipal border with the City of East Orange. The study area boundary then follows the municipal boundary line east, across the Parkway and the New Jersey Transit railroad tracks to its intersection with La France Avenue. At this point the study area boundary turns north, up La France Avenue to Bloomfield Avenue. The boundary continues northwest along Bloomfield Avenue back to the northern tip.

The study area encompasses approximately 256 acres.

## **SUSTAINABLE NEIGHBORHOOD DEVELOPMENT & LEED-ND**

LEED for Neighborhood Development (LEED-ND) is a rating system for measuring the sustainable design of entire neighborhoods that was developed collaboratively by the U.S. Green Building Council (USGBC), the Congress for the New Urbanism (CNU) and the Natural Resources Defense Council (NRDC) and released from the pilot stage in 2009. The LEED-ND rating system defines a neighborhood based on a comfortable distance for walking from the center of the neighborhood to its edge. Based on research that shows that people will walk as far as a half mile to reach heavy rail transit systems or more specialized shops or civic uses, the LEED-ND rating system uses half of a square mile (320 acres) as the upper limit of a project area that would be considered for certification as a sustainable neighborhood.

Based on this measure and the presence of a mix of residential, neighborhood retail services and significant available parcels for infill rehabilitation and redevelopment, the proposed Watsessing Station TOD Study Area of 256 acres fits within the LEED-ND parameters for creating walkable, sustainable neighborhood development.



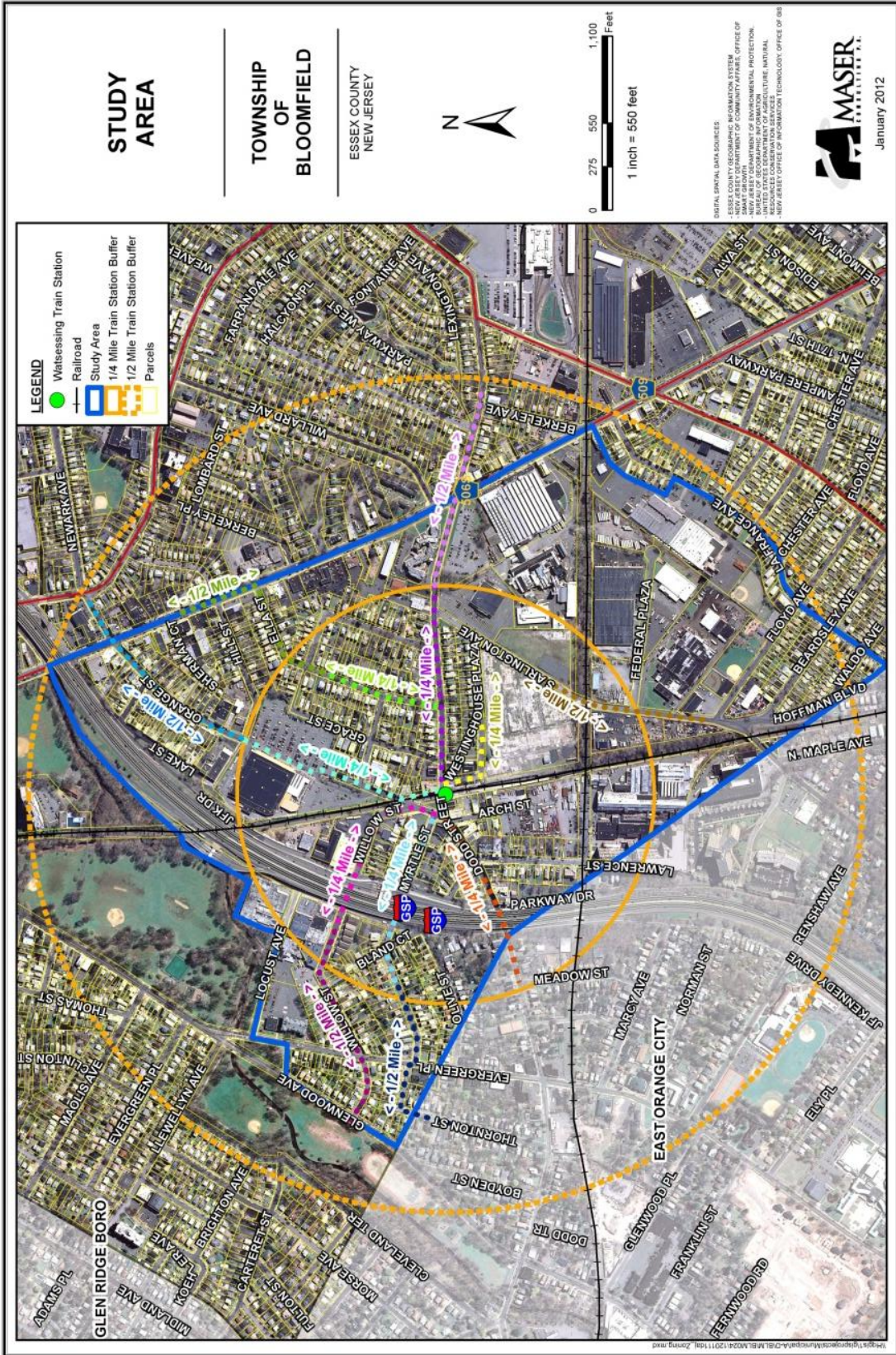


Figure 6: Watnessing TOD Study Area.





## HISTORICAL BACKGROUND & LAND USE ANALYSIS

### Historical Background

Watsessing had grown into a distinct settlement by the time that the Township of Bloomfield was incorporated in 1868. At that time it had two churches, a post office and the original train station, which was at grade and part of a rail line that connected Montclair, Glen Ridge and Bloomfield. It also had two manufacturing operations, one for organs and the other for hardware<sup>1</sup>.

By World War II Bloomfield boasted industrial plants such as General Electric, Lehn and Fink, Schering, Scientific Glass and Westinghouse that were rated among the upper 10% of those in the eastern part of the nation engaged in the production of vital war materials. The Westinghouse plant was located along the freight rail line adjacent to Watsessing Station. By 1950, the Township's population had grown to 49,313 people. In the second half of the 20th Century, Bloomfield retained its dual residential and industrial character. The completion of the Garden State Parkway in 1952 brought better automobile access, but divided the Watsessing neighborhood, leaving only two roads (Arlington Avenue and Dodd Avenue) to connect the east and west side of the Parkway. New housing within the Township in the 1950s included garden apartments and high-rise buildings.

The Westinghouse plant on Arlington Avenue, constructed in 1920, once had eleven buildings on its eleven acres, of which only two remain. Until 1983, Westinghouse's Bloomfield plant was devoted to lamp manufacturing. In 1983, the manufacturing operation was sold to Phillips Lighting Company (Phillips), but Westinghouse retained title to the property. Phillips continued manufacturing at the site until 1986, when all operations ceased, which triggered the clean-up of low level radioactive waste contamination at the site under standards imposed by federal and State law.<sup>2</sup>

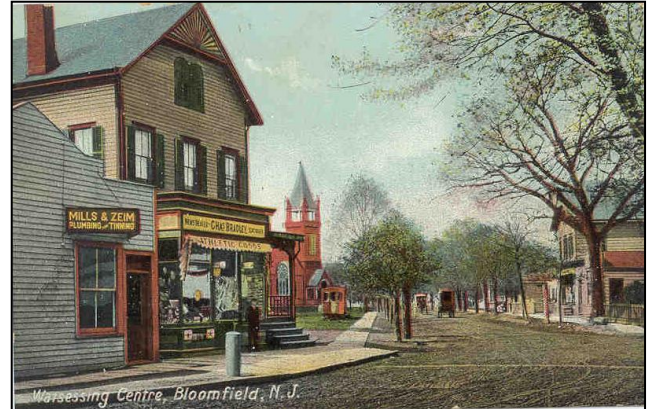


Figure 7: Watsessing Center circa 1900  
(source: [www.firstbaptistbloomfield.org](http://www.firstbaptistbloomfield.org))



Figure 8: Westinghouse Lamp Company plant, circa 1925.

<sup>1</sup> History Of Essex And Hudson Counties, New Jersey, Chapter LXVIII, Bloomfield Township, by Rev. Charles E. Knox, Everts & Peck, Philadelphia, 1884.

<sup>2</sup> Court decision in the matter of Westinghouse Electric Corporation-Bloomfield Generator No: NJ080100916; Generator No: NJR990041071. Decided August 31, 1999.



## Land Use Analysis

Figure 9 below shows the diversity of the existing land uses within the Watsessing Station TOD Plan Study Area. Industrial uses dot the Study Area, but most manufacturing uses are either vacant (Hartz Site), being converted to high density residential (5 Lawrence Street/Prism) or cleared and undergoing remediation (Westinghouse Site). These three major industrial sites were identified in the 2008 Master Plan Update as being appropriate for redevelopment or rehabilitation, either via rezoning or redevelopment plan, into residential, mixed use or retail uses to build up the neighborhood around the Watsessing Station. Figure 9 also illustrates the fragmented distribution of the various land uses within the Study Area. Residential neighborhoods are in pockets of several blocks or, in some cases, only one block or one side of a block. Community retail uses, such as the Home Depot, are isolated and somewhat out of place. However, with the redevelopment of the Westinghouse and 5 Lawrence sites, the opportunity to build up the residential density around Watsessing Center will go a long way towards solidifying Watsessing as a TOD District.

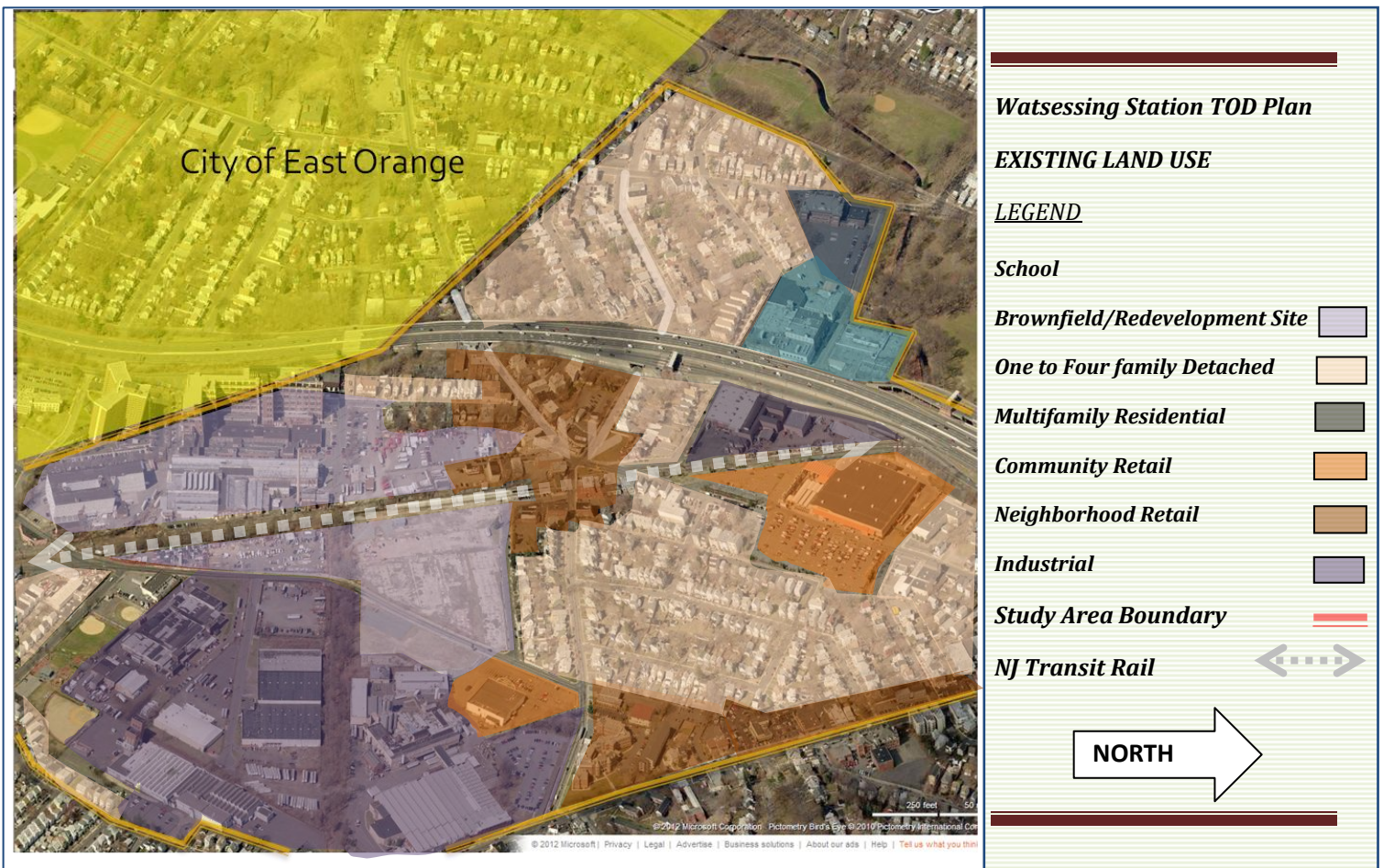


Figure 9: Overhead view of Study Area neighborhood showing medium density single family detached and attached dwellings, high density multifamily, neighborhood retail and commercial/industrial uses. White arrows show connections to portion of neighborhood west of the Garden State Parkway.



## EXISTING ZONING

The study area encompasses nine of the Township's zoning districts (see Figure 10). The train station itself is in the B-2 Zone, known as the Neighborhood Business Zone, which includes roughly 6 acres. This zone permits the following principal uses:

- Restaurants, without drive-through service.
- Fast food restaurants, without drive-through service.
- Bars.
- Offices.
- Personal services on the ground floor only.
- Retail sales and services.
- Service clubs.
- Banks.
- Public parking areas.
- Public uses.
- Public utilities.
- Educational institutions.
- Public parks.
- Shopping centers.

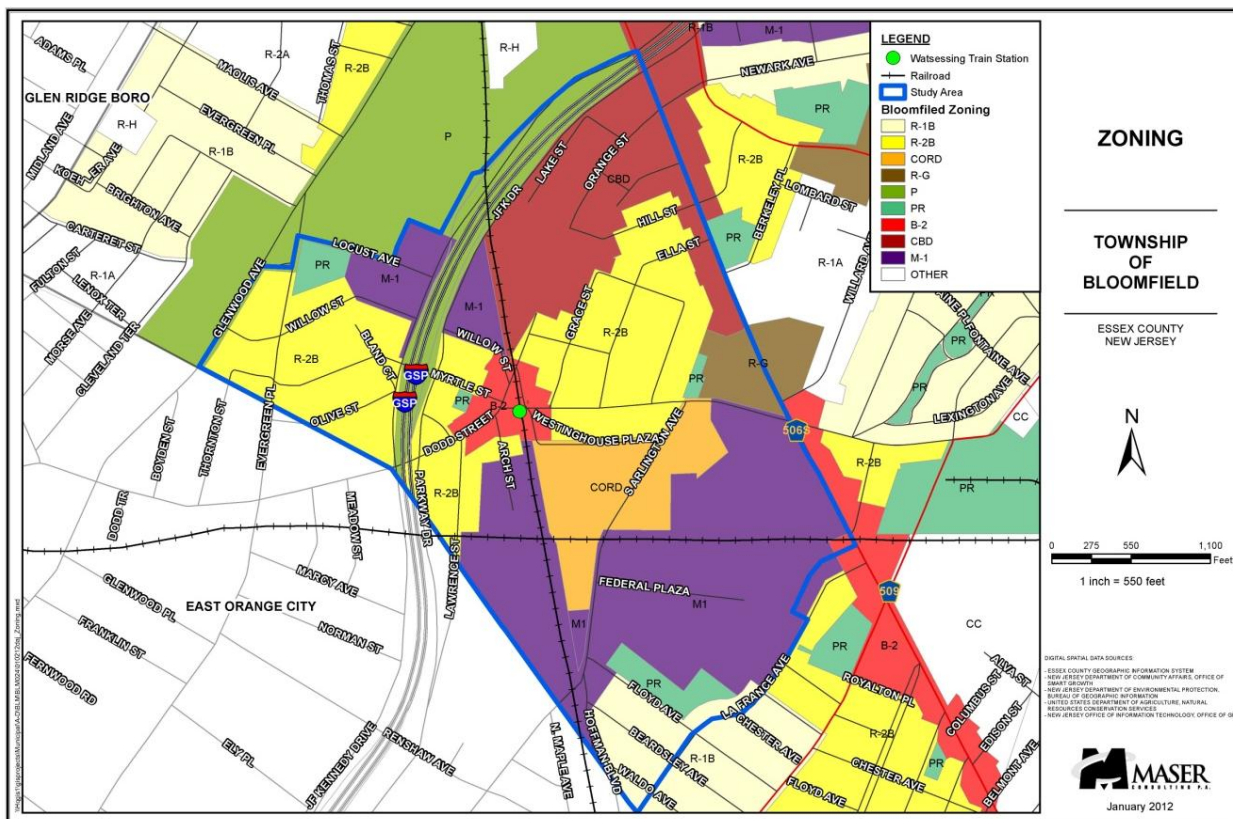


Figure 10: Existing Zoning for Watsessing Center TOD Study Area



Immediately to the north of the B-2 Zone is the M-1 Zone and CBD Zone – separated from one another by the railroad. The CBD (Central Business District) Zone stretches to the northern tip of the study area to Bloomfield Avenue. The CBD Zone permits a variety of uses, including:

- Eating and drinking establishments.
- Residential dwelling units on the second floor or above.
- Multilevel garages and parking decks above or below ground.
- Offices.
- Personal service establishments (excluding massage parlors) on the ground floor only.
- Retail stores on the ground floor only.
- Service club.
- Theater.
- Places of worship, including parish house and Sunday school buildings.
- Educational institutions.
- Public parks.
- Banks.
- Commercial parking facilities.
- Commercial recreational facilities.
- Automobile sales.
- Car washes.

There are three M-1 (general industrial) zoning districts within the study area, the largest of which lies south of Watsessing Avenue and includes approximately 72 acres. The M-1 Zone permits a number of uses:

- Offices.
- Manufacturing.
- Automobile sales.
- Research laboratories.
- Public buildings.
- Public utilities.
- Educational institutions.
- Public parks.
- Warehousing and self storage.
- Parking facilities.
- Outdoor storage.

A portion of the P Zone is included in the study area, which delineates the portions of Essex County Park and Watsessing Park, as well as the Garden State Parkway, which are in the Study Area. However, there are no regulations associated with this zoning district and the zoning map will likely be changed to indicate PR (Public/Recreational) Zoning when housekeeping map amendments are done sometime in 2012.



Four areas within the study area are depicted as the PR (Public/Recreational) Zone, which permits public uses, public parks and open space, public and private recreation facilities, municipal parking facilities, schools, senior citizen centers, libraries and post offices.

Finally, there are four residential zones in the study area. The first is the R-1B Zone in the southern tip of the study area. This zone is a single-family home zone with a minimum 40 foot frontage. It permits single-family detached homes and public parks and playgrounds. There are three areas of the R-2B Zone within the study area, which permit single-family detached homes, public parks and playgrounds and two-family dwellings. The R-G Zone, which stands for Garden Apartment, is located along Bloomfield Avenue and includes the Job Haines Home for the Aged at the corner of Watsessing and Bloomfield Avenues (250 Bloomfield Avenue) and the 32 unit multifamily development at 270 Bloomfield Avenue. The RG Zone permits garden apartments, mid-rise multifamily apartment buildings, public parks and playgrounds, institutional uses and houses of worship.

The CORD (Commuter Oriented Residential District) Zone encompasses almost 20 acres and lies along Westinghouse Plaza. Two of the four properties in this zone are presently vacant. The purpose of the CORD Zone is to implement the mixed-use concept recommended in the Township's 2002 Master Plan. Principal permitted uses include:

- Single-family and two-family stacked townhouses and mid-rise multifamily residential buildings;
- Conversions of existing buildings in excess of 55 feet in height to multifamily dwellings;
- Professional offices, but only on a floor other than the ground floor of a mixed-use residential and commercial building;
- The following commercial uses are permitted, but only on the ground floor of a mixed-use residential and commercial building:
  - Retail sales and services;
  - Restaurants and bars, without drive-through services; and
  - Banks and savings-and-loan institutions, which may offer drive-through services.
- Health clubs, but only on a floor other than the ground floor of a mixed-use residential and commercial building;
- Public uses, but excluding facilities such as a public works garage, water treatment plant, public electric generating station and uses of a similar nature; and
- Open space, such as parks and plazas, consistent with NJDEP rules and regulations and environmental engineering controls.

## Potential Redevelopment Sites

### *5 Lawrence Street*

The property known as 5 Lawrence Street is divided by the East Orange City Line, which runs through a vacant multistory industrial building that has been approved by the East Orange Zoning Board of



Figure 11: Existing conditions at 5 Lawrence Street site.



Adjustment for a Use Variance to convert it to residential apartment units. The Township Of Bloomfield, as recommended in its 2008 Master Plan Update, added this property to the Commuter Oriented Residential District and amended the CORD regulations to permit existing buildings over 55 feet in height to be converted to multifamily use. The Bloomfield Planning Board subsequently approved the site plan for the project. As shown in Figure 12, most of the newly constructed residential units will be on the Bloomfield side of the property, while most of the units created in the converted industrial building will be on the East Orange side of the property.

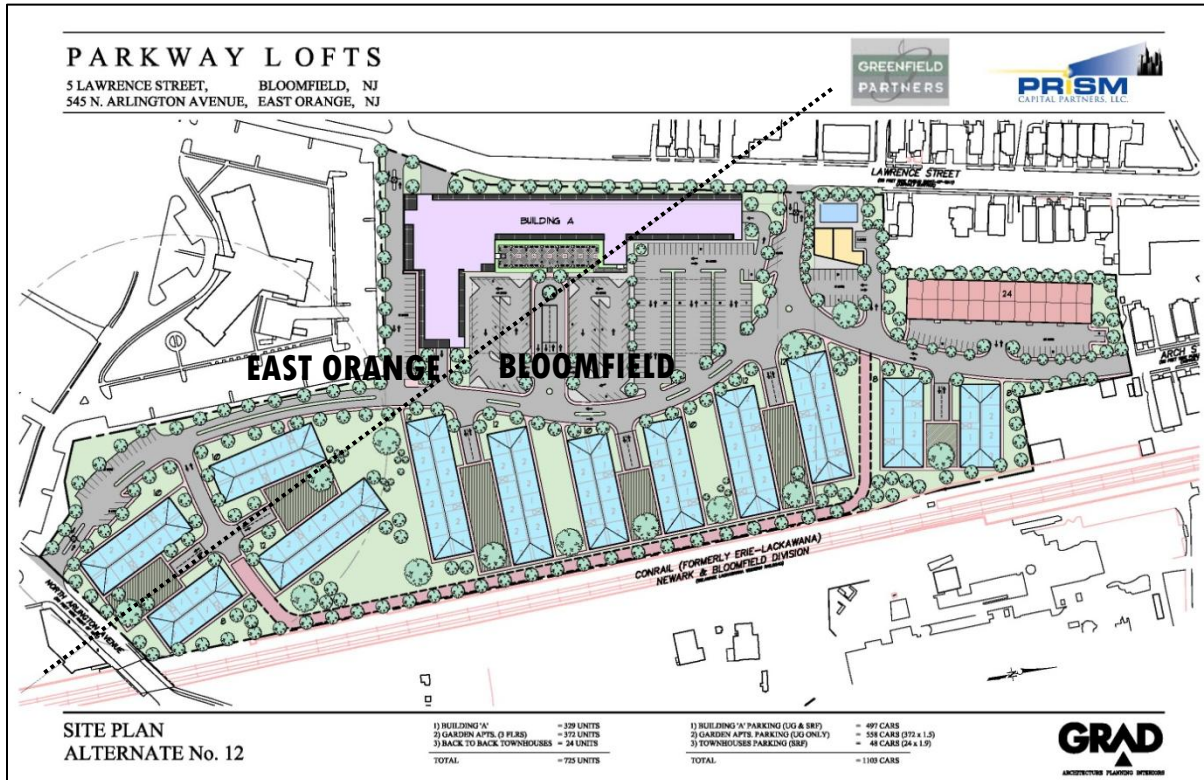


Figure 12: The project for 5 Lawrence Street will provide for the existing former industrial building (Building A) to be rehabilitated into 329 residential units, the construction of 372 garden apartment units in 12 buildings, ten of which would be in Bloomfield, and 24 back-to-back townhouses, also in Bloomfield. The entire site is within a ¼ mile walking distance from Watsessing Center and Watsessing Station.

### Westinghouse

The Commuter Oriented Residential District was initially created for the former Westinghouse factory site, which has been undergoing remediation for a number of years and is now controlled by Viacom/CBS Corporation. Westinghouse Electric Company acquired CBS Corporation and took its name. CBS Corporation



Figure 13: Current conditions at Westinghouse site.



was then acquired by Viacom in 1999, which then split off CBS Corporation several years later. Despite the fuzzy trail of corporate ownership, the property remains listed on the tax records under “Westinghouse”. Viacom/CBS continues to control and remediate the property, although it is also trying to sell the property.

The Westinghouse site was previously zoned Major Commercial, which was a district specifically designated for big box development similar to the nearby Home Depot. However, the Township’s Planning Board determined that such automobile and truck intensive uses were not appropriate near existing residential neighborhoods adjacent to a transit rail station, especially given the sudden importance of the Watsessing Train Station when the Montclair Connection was completed.

## DEMOGRAPHIC DATA

2010 Census data is steadily being released by the Census Bureau, however, Census tract and Census block data have yet to be finalized for the State of New Jersey. Therefore, 2010 Township-wide Census data is included in this document.

### Population

Between 2000 and 2010 the Township of Bloomfield lost 368 residents, decreasing from 47,683 to 47,315 residents. In 2000, 75.7% of the Township’s population was 21 years and older. This decreased slightly to 75.1% in 2010.

The 2000 Census provides data on persons per square mile, at both the tract-level and block group-level. The study area is within portions of three Census tracts – 157 (which includes the train station itself), 156 (west of the Garden State Parkway) and 159 (southern portion of the study area). Tract 157 had a total of 9,737 persons per square mile, while tract 156 had

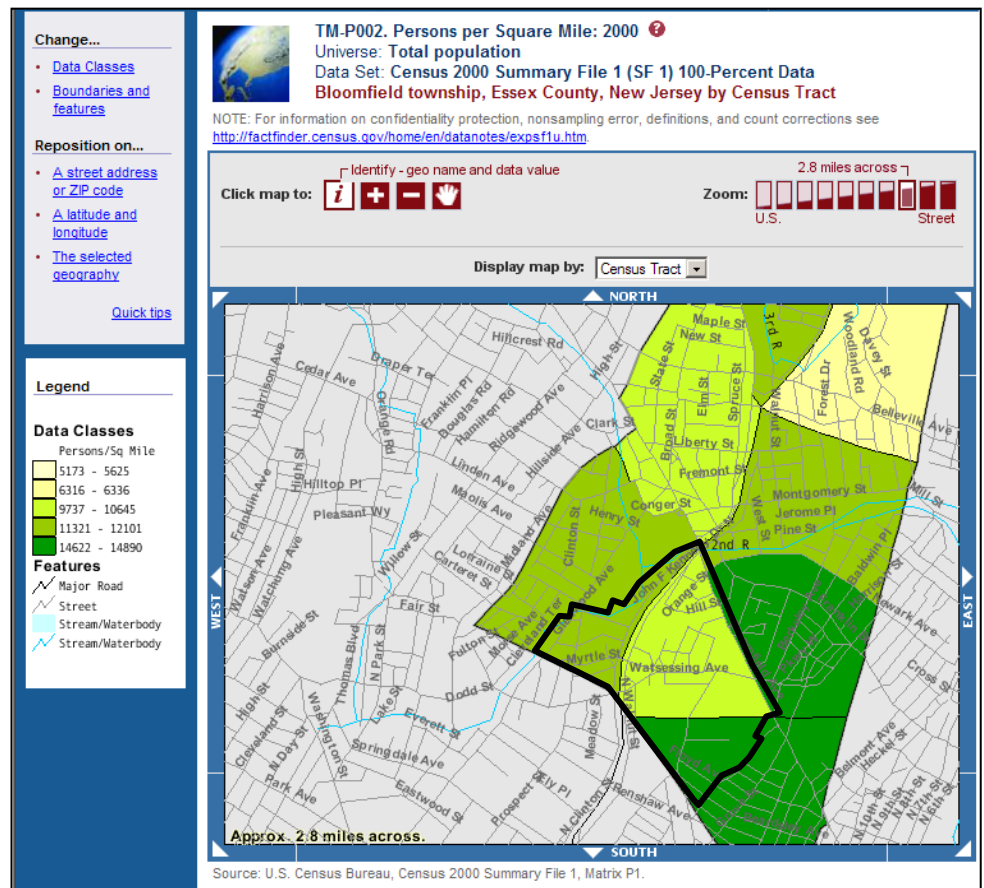


Figure 14: Population Density - Persons per square mile.

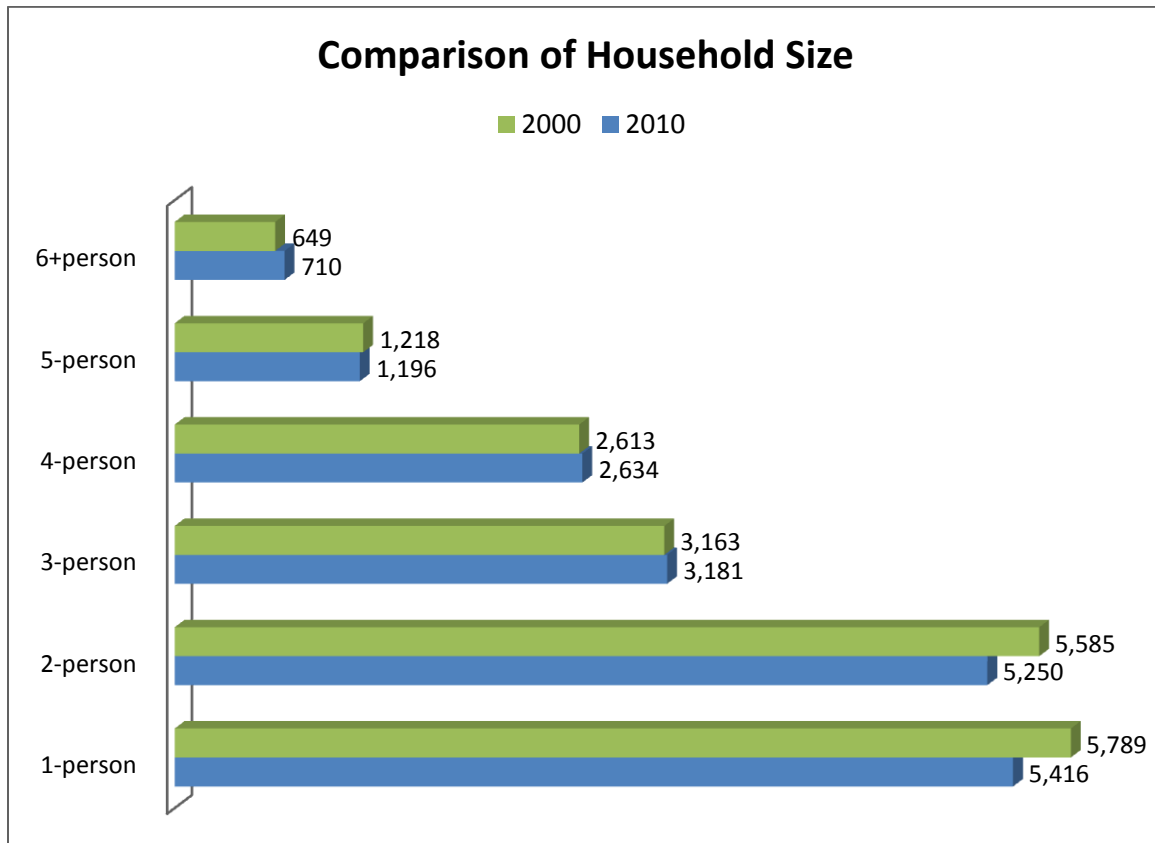


11,344 persons per square mile. Tract 159 was the highest of the three, with 14,890 persons per square mile. The figure below shows the three tracts.

Figure 14 shows the area immediately around the Watsessing Train Station has less population density than neighborhood areas, which is the reverse of the intent of a Transit Oriented District where population density increases with proximity to transit.

From 2000 to 2010 Bloomfield lost 630 households. In 2010, the Township had 18,387 households, of which 64% were families and 36% were non-family households. The average household size increased slightly in the ten years between 2000 and 2010 from 2.49 persons to 2.54 persons. The same trend can be seen with the average family size. It increased from 3.16 persons to 3.20 persons in 2010.

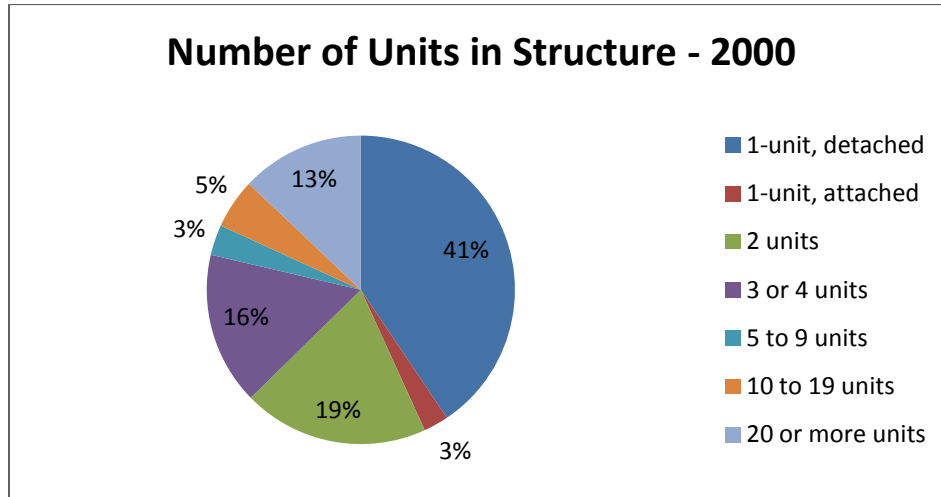
The chart below shows a detailed comparison of household size in 2000 and 2010. One-person and two-person households decreased during the decade, while three-person and four-person households remained relatively stable. Households with six or more persons had the largest increase, 61 households.





## Housing

In 2000, Bloomfield had 19,508 housing units. Of these units, 97.5% or 19,019 were occupied. A total of 491 units were vacant. Of the 19,508 housing units, the majority (41%) were single-family detached homes. Two-family homes were second with 19% of the total housing stock. In 2000 the homeowner vacancy rate was only 0.7%, while the rental vacancy rate was 2.5%.



The 2000 Census provides data on housing units at the Census tract and block group-level. Block group 2 in tract 157 contained 157 housing units, while block group 1 in tract 157 contained 548 units.

Block group 4 in tract 159 had 407 units and block group 1 in tract 156 had 563 housing units. See the figure below for more information.

In 2010, the number of housing units decreased to 19,470. A total of 94.4% were occupied and 5.6% or 1,083 were vacant. "Number of units in structure" data was not available from the 2010 Census, therefore, ACS three

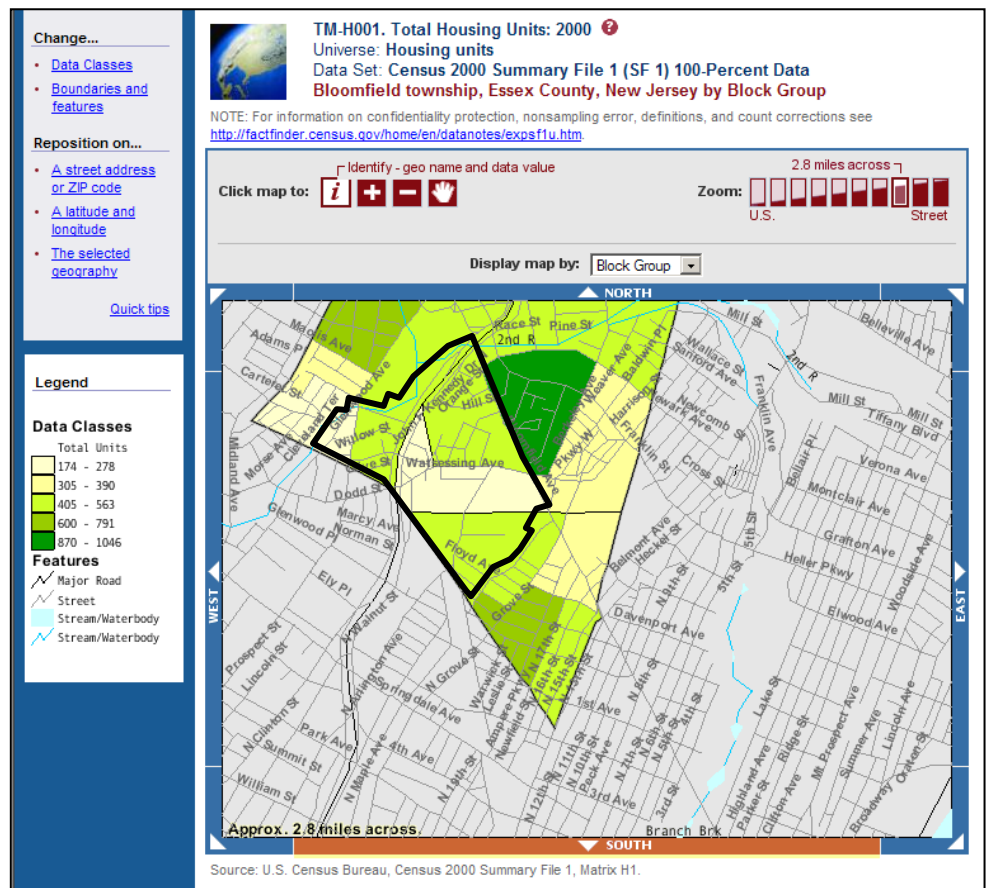
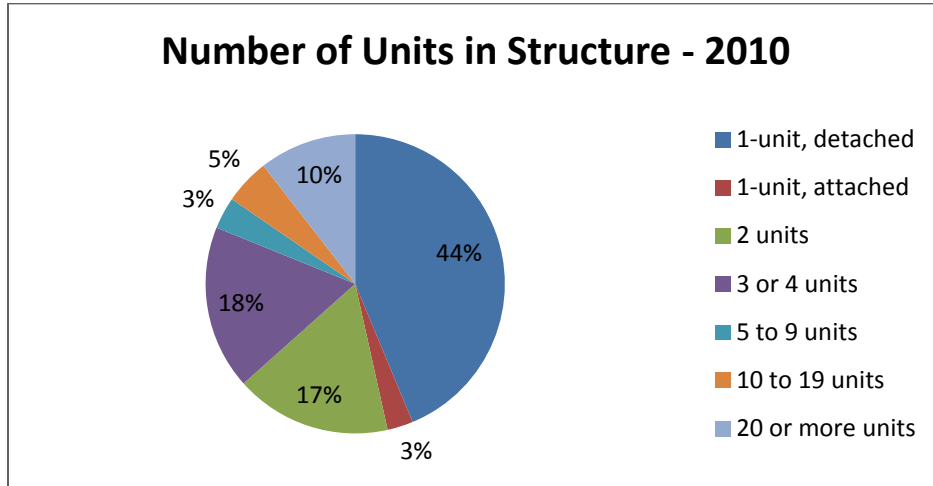


Figure 15: The impact of the vacant redevelopment sites and the industrial uses on the low density of housing near the Watessing Station is evident in this graphic.



year estimates had to be relied upon. Of the 19,470 units, the majority (44%) were single-family detached homes. The percentage of 10 to 19 unit buildings remained at 5%, while the percentage of 3 to 4 unit buildings increased to from 16% to 18% (see the figure below). In 2010, the homeowner vacancy rate increased to 1.7% and the rental vacancy rate more than doubled to 6.5%.



## Income

In 2000, the median household income in Bloomfield was \$53,289 (in 1999 dollars). However, Census tract 157, where the train station is located, had a median household income of only \$41,685 in 2000. Census tract 156 (west of the Parkway) had a median income of \$45,299 and tract 159 (south of the train station) had a median household income of \$42,946. Therefore, all three Census tracts within the study area had a median household income below that of the Township-wide median income. See Figure 16 for a graphic representation.

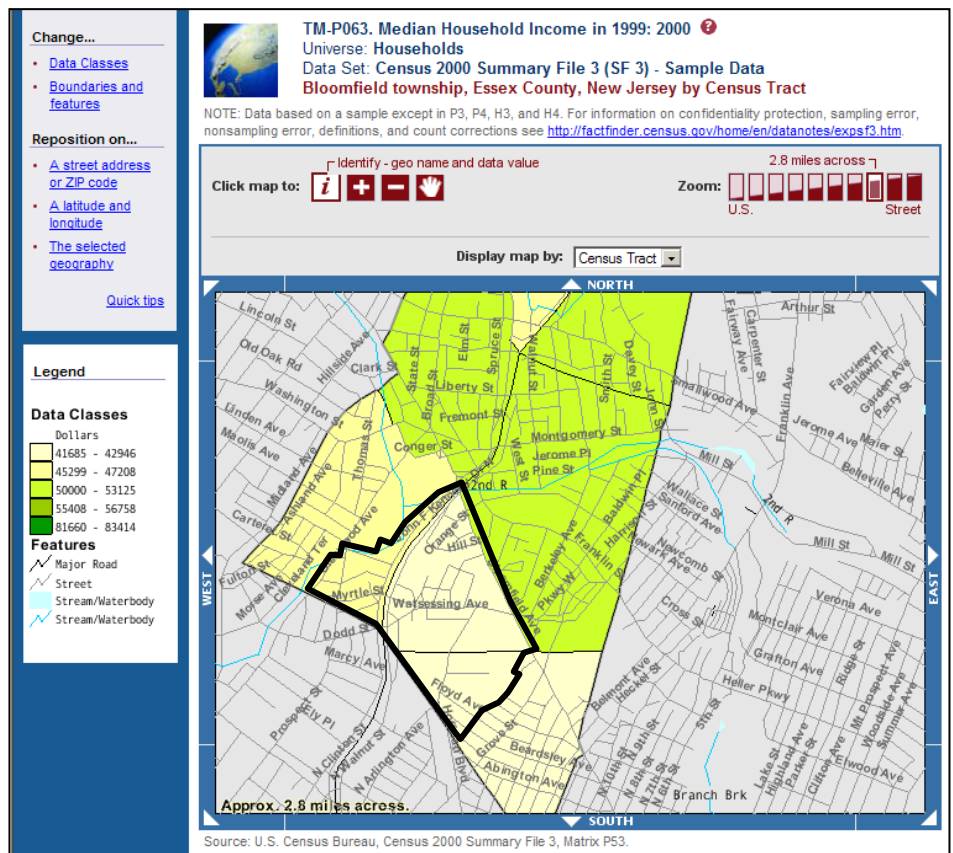
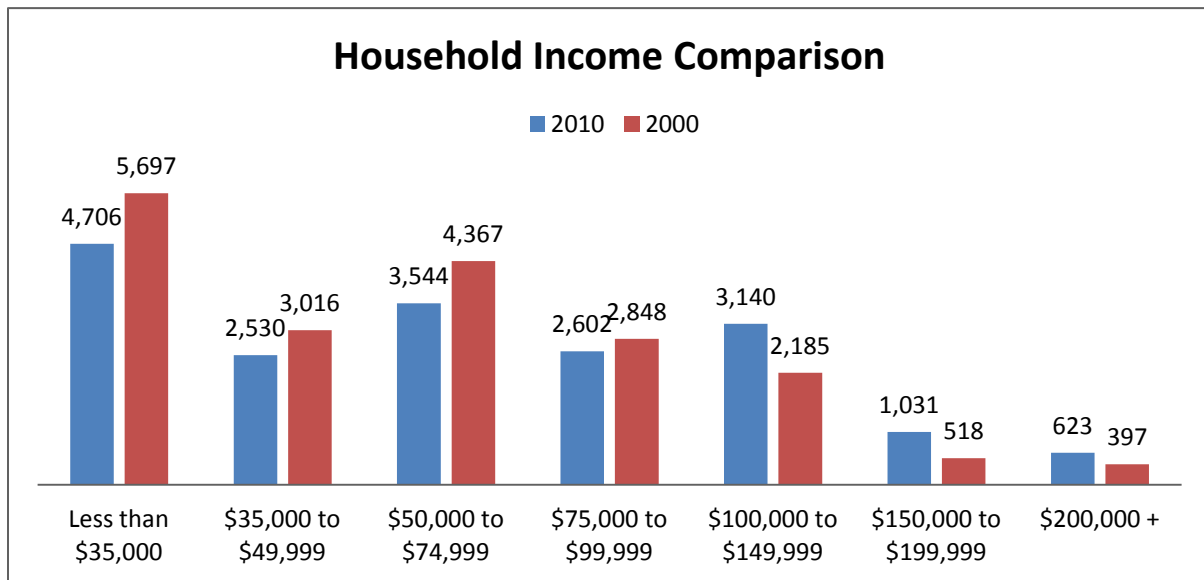


Figure 16: This graphic shows the relatively low income nature of the TOD Study Area, with the Garden State Parkway acting as a divider between the higher income neighborhood to the west and the lower income neighborhood around Watsessing Center.



The median household income increased to an estimated \$62,445 (inflation adjusted dollars) in 2010 according to the three year ACS estimates. The chart below shows a comparison of household income between 2000 and 2010. The bars represent the number of households. It is noteworthy that the number of households in the three highest income ranges increased over the ten year period. The income bracket of \$150,000 to \$199,999 almost doubled in number of households. This data suggests a shift towards higher income households moving into the Study Area over the past 10 years. Given the rising cost of living regionally and the rising demand for residential opportunities near transit and the relative affordability of homes in the Study Area, this increase in households in the upper income ranges is not surprising.



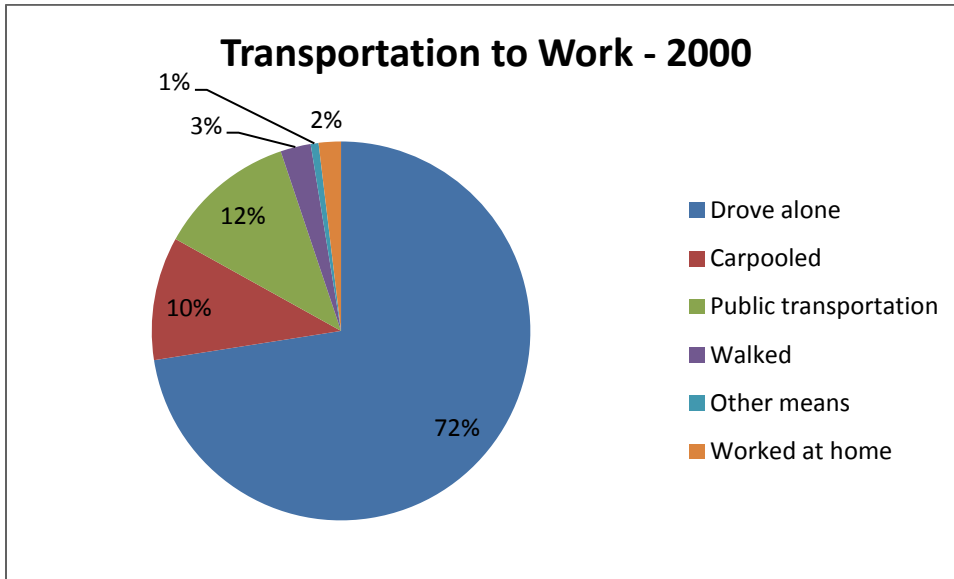
## Transportation

In 2000, a total of 2,377 households had **no** vehicle available. This was 12.9% of the households within the Township. Just over 42% of the households had only one car available. A total of 33.8% of households had two cars available. The average for the Township in 2000 was 1.5 vehicles per household.

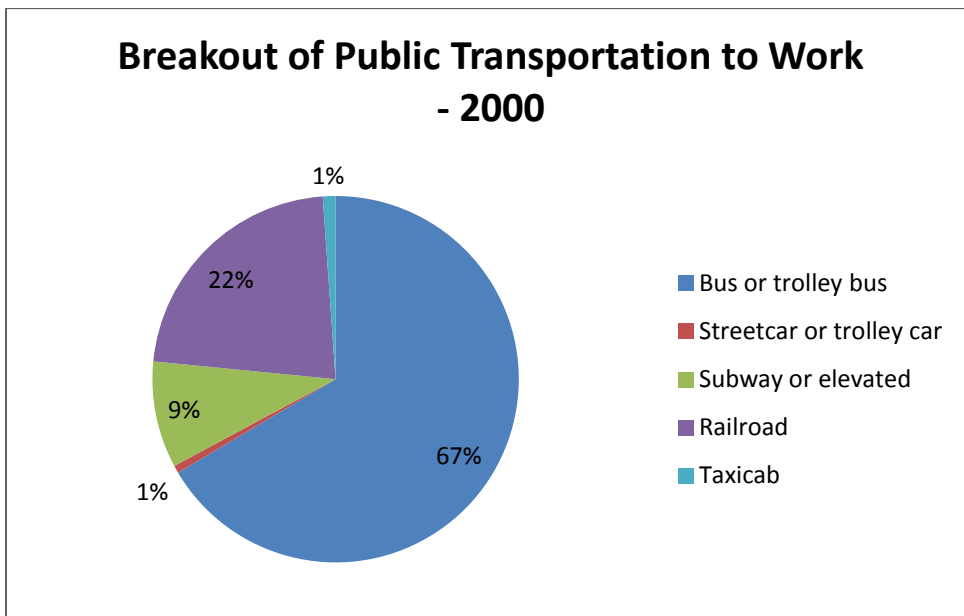
The 2010 Census has not yet released vehicle per household data, however, the American Community Survey (ACS) has published three year estimates for 2010. An estimated 2,298 households (12.6%) had no vehicle available. Approximately 49.8% of households had one vehicle available. It is estimated that 28.6% of households had two cars available in 2010. No average was provided by ACS.

The 2000 Census provided data on modes of transportation to and from work. As the chart below shows, 72% of workers drove to work alone. A total of 2,849 workers or 12% relied on public transportation to get to and from their place of work.

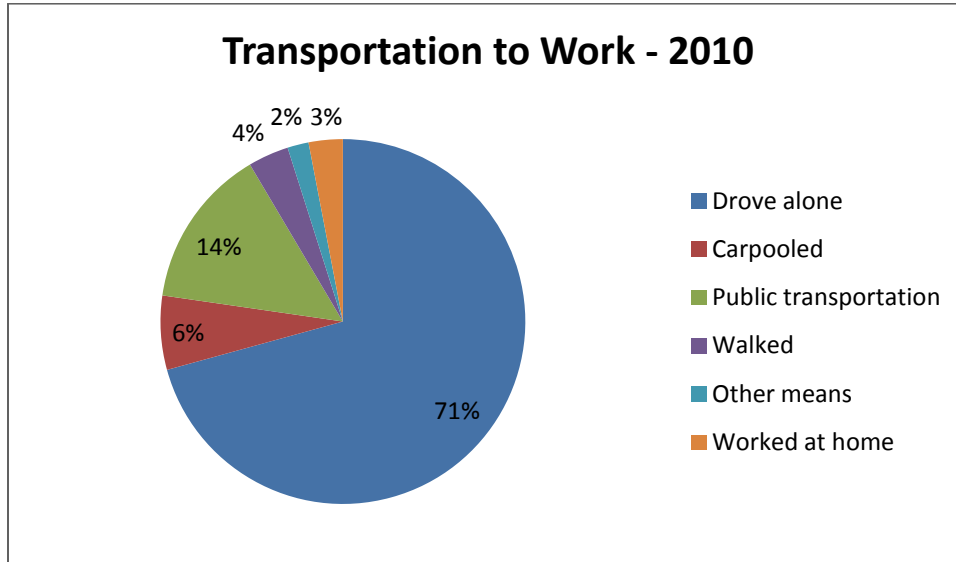




As the chart below shows, the 2000 Census provides data on various types of public transportation. A total of 1,894 workers utilized bus service. Meanwhile, 268 workers commuted via subway, which likely translates to the Newark City Subway line at the Grove Street Station and 636 workers traveled via railroad. It is possible that these workers utilized either the Bloomfield Station or the Watsessing Station.



The 2010 Census has not released data on modes of transportation to work yet. Therefore, five year ACS estimates had to be relied upon. As the chart below shows, the number of workers driving alone remained almost constant from 2000 – decreasing marginally from 72% to 71%. However, public transportation increased from 12% to 14%, with a total estimated 3,393 workers utilizing public transportation in 2010. Unfortunately, the five year ACS estimates do not provide a breakout of the various types of public transportation; therefore this data cannot be included.



According to Alan Tillotson of New Jersey Transit, the Watsessing Station had an average weekday boarding of 240 persons in 2009. This decreased to 192 in 2010. In 2011, the station had 218 average weekday boardings. This is substantially less than the Bloomfield Avenue Station, which had 990 average weekday boardings in 2009, 950 in 2010 and 1,077 in 2011. However, the Bloomfield Avenue Station is located in the Central Business District, where the Bloomfield Parking Authority provides surface parking for commuters using the station. There is no organized public parking dedicated for use by commuters within Watsessing Center.

## PUBLIC TRANSPORTATION OPTIONS

In addition to the train service, there are also a number of New Jersey Transit bus lines that run through the study area. There are eight bus routes, five of which travel Bloomfield Avenue and one (94) that travels Watsessing Avenue via Myrtle Street and Dodd Street (see Figure 17). The 34 and 92 lines run along Evergreen and past the Federal Plaza industrial park. There are twelve bus stops within the study area as shown in Figure 18. Six of these are along Bloomfield Avenue and the other six are dispersed throughout the Study Area, with three of them being along the 94 line in Watsessing Center within a block of Watsessing Train Station.



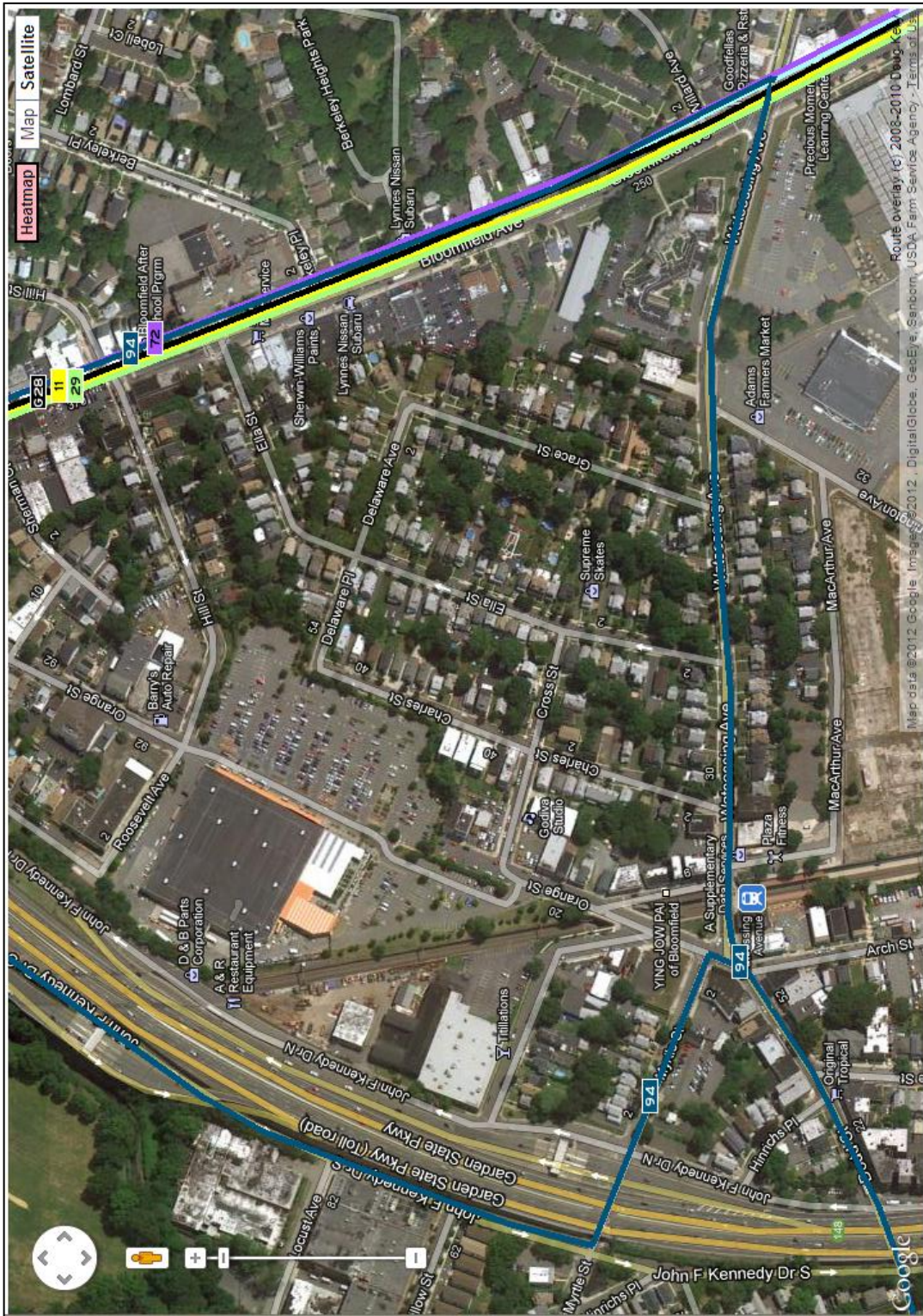


Figure 17: This graphic illustrates the bus routes within the Study Area, five of which that run up Bloomfield Avenue and one that runs down Watsessing Avenue.



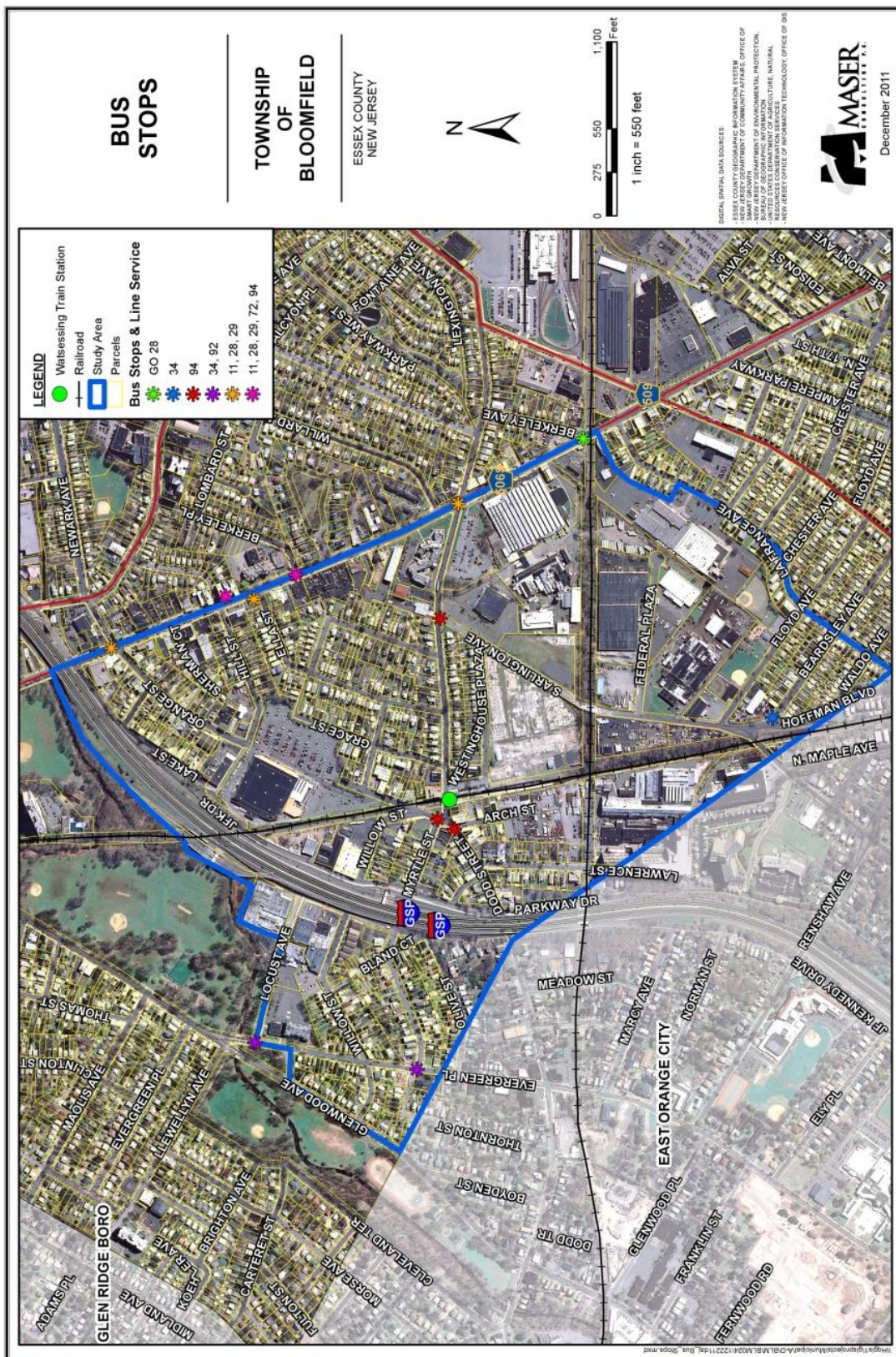


Figure 18: This map shows six bus stops along Bloomfield Avenue between Orange Street and the freight rail crossing, several of which handle two or more routes. The 94 bus running past Westsensing Train Station on Westsensing Avenue via Dodd and Myrtle Streets has two stops across from the train station and also stops at Arlington Avenue, only a few hundred feet from the Westinghouse brownfield site.



The 11 and the 28 line run almost the same route, but have different stops. The 11 serves Newark, Bloomfield, Montclair Center, Cedar Grove, Little Falls and Wayne, while the 28 serves Newark, Bloomfield, Montclair Center and Montclair State University. Depending on the line, one can connect to the Montclair Boonton Line and the Morris and Essex Line.

Go Bus 28, established in 2009, links residential areas in Bloomfield and Newark with major employment centers in downtown Newark and at Newark Liberty International Airport, providing direct service to the airport for employees and travelers, with stops at every terminal and nearby work locations. According to the NJ Transit website, Go Bus 28 provides frequent service nearly 24 hours a day along the 12.1-mile corridor between Bloomfield Station and Newark Liberty International Airport. Buses depart every 10 minutes during peak hours and 15 minutes off-peak from 3:30 a.m. to 2 a.m. daily.

According to NJ Transit, Go Bus 28 provides a faster trip compared to the Nos. 11, 28, 29 and 72 along Bloomfield Avenue and the No. 62 to Newark Liberty International Airport. By eliminating the need to transfer between routes, Go Bus 28 service will provide a one-seat ride to the airport, as well as a connection to existing bus service to the port areas of Elizabeth and Newark.

The 29 line is dubbed “Bloomfield Avenue” and provides service to Parsippany-Troy Hills, Montville, Fairfield, West Caldwell, Caldwell, Verona, Montclair, Glen Ridge, Bloomfield and Newark. There is connecting service to the Boonton Line, Morris and Essex Line and Newark Subway. The 29 line also stops at Penn Station, which provides connections to the Northeast Corridor Line, North Jersey Coast Line, Raritan Valley Line, PATH and Newark Subway.

The 34 line is named “Market Street” and provides service between Montclair, Orange, Bloomfield, East Orange and Newark. It provides connections to the Boonton Line, and stops at Penn Station (Northeast Corridor Line, North Jersey Coast Line, Raritan Valley Line, PATH and Newark Subway).

The 72 line provides service between Paterson, Bloomfield and Newark. There is connecting service to Bloomfield Avenue Station, Board Street Station (Morris & Essex Line and Newark Subway), Military Park Station (Newark Subway) and Penn Station (Northeast Corridor Line, North Jersey Coast Line, Raritan Valley Line, PATH and Newark Subway).

The 92 line is dubbed “Orange Crosstown” and serves South Orange, Orange, East Orange, Bloomfield, Belleville and Newark. The line connects to the Montclair Boonton Line and the Morris and Essex Line.

The 94 line is named “Stuyvesant Crosstown” and provides service between Bloomfield, East Orange, Newark, Irvington, Union, Roselle Park, Roselle and Linden. There is connecting service to the Brick Church Station on the Morris and Essex Line, the Roselle Park Station on the Raritan Valley Line and the Linden Station to the Northeast corridor Line and North Jersey Coast Line.

## **TRAFFIC STUDY**

In association with the TOD Study, an existing conditions traffic assessment was conducted for the following intersections:





- Orange Street / Dodd Street & Myrtle Street / Watsessing Avenue & Arch Street (Five Points)
- Watsessing Avenue & Westinghouse Plaza / Molter Place
- Orange Street & Willow Street / Molter Place

Roadway Name	Orientation	Jurisdiction	Functional Class	Number of Lanes	Roadway Width	On-Street Parking	Speed Limit	Posted/ Statutory
Arch Street	NWB/SEB	Bloomfield Twp	Urban Local	2	30'	Yes	25 MPH	Statutory
Dodd Street	NB/SB	Bloomfield Twp	Urban Minor Arterial	2	33'	Yes	25 MPH	Posted
Molter Place	NB	Bloomfield Twp	Urban Local	1	18'	Yes	25 MPH	Statutory
Myrtle Street	EB/WB	Bloomfield Twp	Urban Local	2	33'	Yes	25 MPH	Statutory
Orange Street	NB/SB	Bloomfield Twp	Urban Local	2	36'	Yes	25 MPH	Statutory
Watsessing Avenue	EB/WB	Bloomfield Twp	Urban Minor Arterial	2	29'	Yes	25 MPH	Posted
Westinghouse Plaza	NB/SB	Bloomfield Twp	Urban Local	2	42'	Yes	25 MPH	Statutory
Willow Street	NB/SB	Bloomfield Twp	Urban Local	2	44'	Yes	25 MPH	Statutory

### Intersection Geometry

**Dodd Street / Orange Street & Myrtle Street / Watsessing Avenue & Arch Street (Five Points)** is a signalized five-leg intersection. Dodd Street represents the northbound approach; Orange Street represents the southbound approach; Myrtle Place represents the eastbound approach; Watsessing Avenue represents the westbound approach; and, Arch Street represents the northwest bound approach. The westbound approach provides a shared hard-left / soft-left-turn lane and shared thru / right-turn lane. All other approaches provide one lane that allows all movements. There are no turns on red at all approaches. Crosswalks, pedestrian signal heads and push buttons are provided at all corners of the intersection. The intersection operates on four-phase 90 second cycle. The first phase is Dodd Street / Orange Street NB/SB ROW, the second phase is Arch Street NWB ROW, the third phase in Myrtle Street EB ROW, and the fourth phase in Watsessing Avenue WB ROW.



**Watsessing Avenue & Westinghouse Plaza / Molter Place** is an unsignalized four-leg intersection. Westinghouse Plaza represents the northbound approach and Watsessing Avenue represents the eastbound and westbound approaches. The north leg is one-way out of the intersection. The northbound and southbound approaches are slightly misaligned. The northbound and eastbound approaches each provide one lane that allows all movements. The westbound approach provides a shared left-thru lane and a shared thru-right lane. Crosswalks are present to cross Westinghouse Plaza and Molter Place.

**Orange Street & Willow Street / Molter Place** is an unsignalized four-leg intersection. Orange Street represents the northbound and southbound approaches; Willow Street represents the eastbound approach; and, Molter Place represents the westbound approach. Vehicles are prohibited from entering Molter Place. The eastbound and westbound approaches are slightly misaligned. The northbound approach provides a shared left-thru lane; the southbound approach provides a shared thru-right lane; the eastbound approach provides a shared left-right lane; and, the westbound approach provides one lane that allows all movements. Crosswalks are present to cross Willow Street and Molter Place.

## Existing Operations

Manual Turning Movement Counts (MTMC) were conducted at the three study intersections on Thursday, December 22, 2011. The MTMCs were conducted between the hours of 7:00AM & 9:00AM and 4:00PM & 6:00PM. These hours were selected to capture the peak hours of adjacent street traffic. The counted vehicular and pedestrian traffic volumes were processed then balanced and are illustrated in the enclosed traffic flow diagram.

Orange Street predominately services a small number of residences and Home Depot located north of the study area. The traffic volumes originating from Orange Street appear to be higher than would be expected for the number of uses that it serves. Therefore, it is believed that the parking lot for Home Depot is being utilized as a cut-thru between Bloomfield Avenue and Dodd Street.

Arch Street experiences a relatively small amount of traffic, however it demands a significant amount of the traffic signals available cycle time, reducing the levels of service to other, more utilized approaches.

As described above, the existing 5-points intersection operates as a four phase intersection. The geometry along the Dodd Street and Orange Street approaches, coupled with the available sight distance along the Watsessing Avenue / Dodd Street Link, require this phasing. It is apparent that improvements can be made to improve the signal phasing, and consolidate green time at the signal.

There is significant pedestrian demand within the area due to Watsessing Train Station. The pedestrian volumes are depicted within the traffic flow diagram. However, based on these volumes it is clear that any improvement scheme must include a design for improved pedestrian safety and mobility, particularly at the area in front of Westinghouse Plaza. For example, many pedestrians were observed crossing Watsessing Avenue outside of a crosswalk directly in front of the train station from Molter Place.



## Capacity Analysis

Detailed capacity analyses were conducted to evaluate the existing operational characteristics of three study intersections. The methodology used in the capacity analyses is described in the 2000 Highway Capacity Manual (HCM), published by the Transportation Research Board.

The analysis was performed using *Synchro, Version 8.0*, a traffic analysis program that applies the standards and methodologies found in the HCM data. The results of the analysis provide LOS and average seconds of delay for the intersection movements.

Maser identified that the Myrtle Street EB approach of the 5-points intersection fails during the AM & PM Peak Hours of operation. The Arch Street NWB approach nearly fails during the AM Peak Hour. The two unsignalized intersections operate with LOS “C”, or better, during both peak hours. The following tables detail the operational results.

### Capacity Results for Five Points Intersection

Peak Hour	Dodd Street Northbound	Orange Street Southbound	Myrtle Street Eastbound	Watsessing Avenue Westbound	Arch Street Northwest bound	OVERALL INT.
AM	C/24.3	B/19.2	F/103.4	D/50.7	E/74.0	D/44.0
PM	C/26.7	C/21.7	F/80.6	D/50.2	D/39.4	D/39.0

### Capacity Results for Orange Street & Willow Street / Molter Place

Peak Hour	Orange Street Northbound	Orange Street Southbound	Willow Street Eastbound	Molter Place Westbound	OVERALL INT.
AM	A/0.4	No Delay	A/9.6	A/9.2	A/9.6
PM	A/0.8	No Delay	B/10.1	A/9.6	B/10.1

### Capacity Results for Orange Street & Willow Street / Molter Place

Peak Hour	Westinghouse Plaza Northbound	Watsessing Avenue Eastbound	Watsessing Avenue Westbound	OVERALL INT.
AM	B/12.4	A/0.2	A/0.2	B/12.4
PM	C/15.7	A/0.2	A/0.3	C/15.7



## Roadway Improvement Review

Preliminary improvements have been evaluated that would improve the existing operation based on the existing traffic volumes. Additional detailed capacity analysis will be necessary to evaluate the area based on full-build traffic volumes.

### Convert Arch Street to Right-in / Right-Out

To realize the improved phasing that this would provide, Arch Street should be converted to a right-in / right-out driveway. To replace access to Arch Street from Watsessing Avenue, Orange Street and Myrtle Avenue, it would be necessary to work with the developers of Parkway Lofts connect Arch Street with Lawrence Street.

### Intersection Realignment & Widening

Dodd Street and Orange Street should be widened to permit two lane approaches, and realigned to provide a satisfactory curve through the intersection. Due to sight distance, and geometric requirements, there will have a significant right-of-way impact.

### Roundabout

Preliminary analysis shows that a roundabout at this location would operate satisfactorily. Furthermore, a roundabout would be ideal at this location to provide a gateway into a TOD village and to function as a traffic calming measure reducing speeds through this pedestrian sensitive area.

Negatively, a roundabout would require significant right-of-way. However, to provide a proper assessment, the right-of-way necessary to realign the intersection and improve sight distance versus the right-of-way necessary for a roundabout should be explored.



**Figure 19: Sketch of roundabout at "5-Point" intersection to regulate traffic flow and provide safety islands for pedestrian crossings, as well as a landscaped foreground for the historic train station.**

