APPENDIX D

TRANSPORTATION PLANNING FACTORS

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Subject:	Fresh Kills Park — Draft Generic Environmental Impact Statement Final Transportation Planning Factors Memo
Date:	March 18, 2008 (Revised March 6, 2009)
cc:	Robert White, James Seto, Judita Eisenberger – AKRF

A. INTRODUCTION

This memorandum provides a detailed discussion of the transportation planning assumptions used in conducting the traffic and transportation analyses for the Fresh Kills Park GEIS, and provides additional technical scope for the purposes of agency review (e.g., NYCDCP, NYCDOT, NYSDOT, and NYCDDC). This memorandum reflects the comments of the New York State Department of Transportation (NYSDOT) dated February 6, 2007 and the New York City Department of Transportation (NYCDOT) dated February 2, 2007, May 2, 2007, May 1, 2008 and September 24, 2008. In addition, comments raised at coordination meetings held with NYCDOT on March 15, 2007, July 8, 2007, August 22, 2007 and September 27, 2007 are also incorporated in this memorandum.

The methodologies discussed in this memorandum include, the analysis framework, travel demand estimates and trip assignments, and baseline data collection. In addition, this memorandum provides information on traffic study area, no-build projects and growth factors, and the proposed project's road improvements and traffic diversions.

Attached to this memo are the following:

- Table D-1 lists the park features based on the Draft Master Plan (DMP) reasonable worst case development scenario (RWCDS) developed for the GEIS final scope of work with the trip generation land use categories attributed to each park element;
- Tables D-2 and D-3 lists the trip generation factors for each of those land use categories;
- Tables D-4 and D-5 presents the total peak hour trips generated by various park components in the years 2016 and 2036;
- Figure D-1 which shows the Traffic Analysis Framework for the DGEIS traffic impact analysis;
- Figure D-2 which shows the Bus Routes in the study area;
- Figures D-3 through D-7 which show the 2016 Project Generated Traffic volumes;

- Figures D-8 through D-12 which show the 2036 Project Generated Traffic volumes;
- Figure D-13 which shows the Primary and Secondary Traffic Study Area intersections;
- Figures D-14 through D-18 which show the 2016 Traffic Diversions; and
- Figures D-19 through D-23 which show the 2036 Traffic Diversions.

B. ANALYSIS FRAMEWORK

The framework for the traffic and transportation analyses is based on the RWCDS contained in the Final Scope of Work RWCDS to prepare the DGEIS (August 2007), the Fresh Kills Park Draft Master Plan (March 2006) and park project assumptions that were developed for the FEIS. The RWCDS describes the various park design element categories and representative park features and activities within those element categories that represent a "worst-case" for DGEIS analysis. The proposed Fresh Kills Park is a long-term, multi-phased project that will be constructed over 30 years. For this reason, the GEIS has two analysis years, 2016 and 2036. The traffic and transportation analyses for the DGEIS were conducted for these two build years. In addition to analyzing the proposed project, the analyses also included the cumulative impacts of other No Build projects that could affect conditions in the study area. (A detailed discussion regarding the No Build projects and the growth factors for the study area is presented later in this memorandum.)

A step-by-step depiction of the process used to develop the Traffic Analysis Framework (in form of a flow chart) is presented in Figure D-1. As shown in Figure D-1, major milestones for the traffic impact analysis were finalized after detailed discussions and coordination with the review agencies (for e.g., NYCDOT and NYSDOT) and the design team.

C. TRAVEL DEMAND ESTIMATES AND TRIP ASSIGMENTS

Travel demand estimates are the foundation of a traffic impact analysis. They project the number of trips (by mode) expected to be generated by the proposed project and are the first step in the transportation assessment. The products of this task are to estimate incremental traffic transit and pedestrians trips that would be added to the existing network—e.g., intersections, pedestrian facilities, transit facilities, parking, etc. In combination with the available capacity of these systems, these factors are the basis for determining transportation impacts.

For the trip generation assessment, industry standards and other sources to prepare specific person and vehicle trip estimates for the various program elements proposed for the park were utilized. These estimates focused on the peak hours when the maximum levels of activity would occur, thereby examining the largest reasonable impact with respect to transportation conditions. These included the weekday morning, midday and evening, and weekend afternoon and evening peak hours, conservatively encompassing those times when future activity in terms of vehicular traffic and park use would be at its heaviest along the major roadways and highways in the study area.

The trip generation rates and mode choice factors used to estimate the travel demand generated by the proposed Fresh Kills Park were developed in consultation with NYCDOT. In addition, a variety of sources were consulted in preparing the trip generation estimates including standard references such as the *City Environmental Quality Review (CEQR) Technical Manual, Institute of Transportation Engineers (ITE) Trip Generation Manual* and Pushkarev and Zupan's *Urban Space for Pedestrians*. To further refine the estimates and to focus on the modal split (i.e., the various modes of transportation available to people accessing the site, including private autos, taxis, bus, subway, etc.), which varies by location (as it is a function of the transportation services available in a specific area), a number of environmental impact statements (EISs) and environmental assessment statements (EASs) were also consulted.

Vehicle distribution patterns for the proposed park were developed in consultation with the NYCDPR, NYCDOT and NYSDOT, and consist of two major elements:

- Traffic assignments for the trips generated by various park components (including the active and passive recreational space and cultural, retail, and entertainment uses);
- Traffic diversions resulting from the proposed park drives that would provide direct access to the parks as well as a vehicular connection between Richmond Avenue and West Shore Expressway.

The quantification of diverted traffic volumes due to the proposed park drives was determined based on the baseline traffic volumes (including both the manual turning movement counts and ATR counts) collected at the study area intersections. In addition, the *Fresh Kills Landfill Traffic Planning Study (FKLTPS)* (URS, December 2001) was consulted to determine the proportion of diverted traffic volumes to-and-from the Richmond Avenue corridor to WSE and vice-versa. Once the trip distribution patterns were finalized for both the project generated and diverted traffic volumes, the traffic was assigned to the roadway network on the basis of the most likely approach paths to and from the project site as well as the existing (and future) travel patterns in the study area (see Figure D-1).

D. RWCDS PARK USES FOR TRAVEL DEMAND ESTIMATES

INTRODUCTION

The proposed project would create substantial new parkland, along with supporting cultural amenities and retail uses that would provide a range of public spaces. Once completed, the proposed park is anticipated to be a major attraction for the City and region. In order to determine the travel demand estimates for the proposed park, the elements considered in the RWCDS were grouped into seven categories including City Destination Park, Regional Park, Active Recreation, Commercial/Retail, Commercial/Restaurant and Banquet Space, Cultural/Educational Facilities, and Monument. The seven categories assumed for trip generation calculations for the years 2016 and 2036 are listed in Table D-1 for each park element and their trip generation characteristics are presented Tables D-2 and D-3, respectively. A description of each of these categories follows.

TRIP GENERATION BY LAND USE CATEGORY

1. City Destination Park

Trip generation factors used in estimating the number of trips generated by the City Destination Park were based on the information provided by NYCDOT during agency coordination meetings (September 26, 2007). As per this information, a weekday trip rate of 139 trips/acre and a weekend trip rate of 196 trips/acre were used to determine the number of trips expected to be generated by the City Destination park elements. For a conservative analysis, higher Sunday trip generation rates were used to calculate trips generated by the City Destination Park during the weekend conditions. Temporal and directional distributions for the City Destination Park were based on information from the *ITE Trip Generation Manual* (7th Edition) for Land Use - 417, Regional Park. The vehicle occupancy rate of 2.5 used in estimating the number of vehicular trips for the City Destination Park was also based on the information provided by NYCDOT.

2. Regional Park

Like City Destination Park, the trip generation factors used in estimating the number of trips generated by the Regional Park were based on the information provided by NYCDOT during the agency coordination meetings (September 26, 2007). As per this information, the weekday and weekend trip rates of 44.0 and 62.0 person trips per acre were used to calculate trips generated by the Regional Park elements. The vehicle occupancy rate of 2.5 used in estimating the number of vehicular trips for the Regional Park component was also based on the information provided by NYCDOT. The weekday and weekend temporal and directional distributions for the

Regional Park component were based on the *ITE Trip Generation Manual* (7th Edition) for Land Use - 417, Regional Park. Since the temporal distribution information is not available for the weekday midday conditions from the *ITE Trip Generation Manual* (7th Edition), it was calculated based on the average of weekday AM and PM rates. In line with the trip generation estimates for the City Destination Park, higher Sunday trip generation rates were used to calculate trips generated by the Regional Park during the Saturday conditions.

3. Active Recreation (Constructed Surface/Field Sports and Indoor Sports)

Because these uses are more intensive, active recreational space (e.g., a tennis center), trip generation rates were calculated separately for the constructed surface and field sports category. Indoor gym and the indoor track and field center were included in this category.

Trips expected to be generated by the proposed tennis center were estimated based on daily trip rates of 34.23 and 28.59 vehicles per acre as presented in the *ITE Trip Generation Manual* for Land Use – 490 Tennis Courts*.* The temporal and directional distributions were also taken from the *ITE Trip Generation Manual.*

Trips associated with the proposed indoor gym and track and field center were based on a weekday trip rate of 44.70 person-trips per 1,000 square feet as per the *CEQR Technical Manual* for a health club facility. The weekend trip rate of 28.16 person-trips per 1,000 square feet was developed based on the ratio between weekday and weekend trip rates as per the information presented in the *ITE Trip Generation Manual.* The weekday temporal distribution was based on the information provided in the *CEQR Technical manual;* whereas, the directional distributions were based on the *ITE Trip Generation Manual* (7th Edition)*.* Weekend temporal and directional distributions for Indoor Active Recreation were based on information presented in the No. 7 Subway Extension - Hudson Yards Rezoning and Development Program FGEIS (November 2004).

4. Commercial Restaurant/Banquet Facility

The elements considered in this category include café, market shade roof, restaurant space and the banquet facility. Restaurant weekday trip rates (assuming 25% linkage) and temporal distribution were obtained from the *CEQR Technical Manual.* Weekend trip rates (also assuming 25% linkage) were developed based on the ratio between weekday and weekend trip rates as per the information from *ITE Trip Generation Manual* (7th Edition) for Land Use - 932, High-Turnover (Sit-Down) Restaurant. Directional distribution for the restaurant use is also based on the information from *ITE Trip Generation Manual (7th Edition)* for Land Use - 932, High-Turnover (Sit-Down) Restaurant. Vehicle occupancy for the restaurant use is based on Brooklyn Bridge Park Project, FEIS (December 2005).

The event/banquet facility could host a variety of events including weddings and fund raisers. The total space contemplated for the banquet facility is approximately 32,700 sq.ft (this is a 2036 programmed space). Within this space, approximately 20 percent or 6,540 sf was assumed to be occupied by support facilities. Therefore, approximately 26,260 sf of space was used for trip generation calculations. Trip generation factors used in estimating the number of trips generated by the banquet facility were based on the information provided by NYCDOT during the agency coordination meeting (September 26, 2007). As per this information, an average rate of 17.5 square-foot/attendee was used to estimate the traffic activity levels generated by the banquet facility. Since a banquet facility is likely to host formal events, a modal split of 100 percent autos was assumed along with a vehicle occupancy of 1.8 (which was provided by NYCDOT). Temporal and directional distributions for the banquet facility were based on information presented in the *Farley Post Office/Moynihan Station Redevelopment FEIS (August 2006)*.

5. Commercial Retail

Commercial retail trips include trips associated with small shops and related park-associated retail uses (such as the market shade roof). The proposed project does not include any major regional or local shopping uses. For this park element, weekday trips were based on a daily trip rate of 153.75 trips per 1,000 square feet as presented in the *CEQR Technical Manual*. For the weekend conditions, a daily trip rate of 178.35 trips per 1,000 square was calculated based on the ratio between weekday and weekend trip rates as per the information from the *ITE Trip Generation Manual* (7th Edition) for Land Use - 820, Shopping Center. It is noted that since the retail component would be a part of the overall parkland, both the weekday and weekend trip rates assume 25 percent linked trips. Directional distribution for the commercial/retail use is based on the information from the *ITE Trip Generation Manual* (7th Edition) for Land Use - 820, Shopping Center and vehicle occupancy is based on Brooklyn Bridge Park Project, FEIS (December 2005).

6. Cultural/Educational

The elements considered in this category include the nature education center, outdoor classroom, eco-educational center, Discovery Center, exhibition hall and the 9/11 Interpretive Center. Trips expected to be generated by the proposed cultural/educational facilities were estimated based on a daily trip rate of 26.6 person-trips per 1,000 square feet. The source for this data was the *Hudson River Park FEIS*. Temporal and directional distributions were also taken from the *Hudson River Park FEIS.*

7. Monument

The single element considered in this category includes the proposed 12 acre September 11 monument proposed for West Park. As described in the DMP, the West Park would have an overall concept of landfill landscape enhancement with public access focused around a 9/11 monument hilltop feature on the upper elevations of the park (12 acres) providing a signature feature of the West Park. From this hilltop there would be vistas of the region and Lower Manhattan providing a large space open to the sky where visitors would find a quiet place for reflection. The trips expected to be generated by this passive recreation element were estimated based on the trip generation factors developed for land use category number two, Regional Park.

EVENT SPACE

The plan for Fresh Kills Park also includes an amphitheater that would be used for events as well as 4 acres of event lawn at Creek Landing and 10 acres of event lawn at the Point. At this time, DPR has not yet developed a formal events program for the park. While it is expected that by the 2016 analysis year there would be park events, there are no event facilities proposed for 2016. However, by 2036, with the completion of the Confluence and the Point there would be event facilities, including an amphitheater. DPR has not yet developed a program for the amphitheater, however, it is envisioned that the events would be similar to “Summerstage” in Central Park or “Celebrate Brooklyn” in Prospect Park. Since this is the longer-term (2036) component of the project, DPR would address transportation issues related to major events (e.g., traffic and transit access), with NYCDOT, NYCTA, and, as necessary, with NYSDOT once an events program is developed. DPR would work with these and other agencies as necessary to ensure that adequate public transit and traffic circulation is provided during events along with opportunities for other means of access, such as buses and biking.

NON-TRIP GENERATING ELEMENTS AND STAFF TRIPS

Certain park elements are not expected to generate trips. These include the large areas of natural habitats, the park’s ancillary facilities, as well as the park elements that would not generate visitor trips by themselves but would be served by the patrons visiting other park components, such as habitat without people. In addition, the park would be served by a number

of employees and support staff responsible for carrying out the day-to day operations. These employee trips are included in the trip generation estimates discussed above for various park elements.

EXISTING NEW YORK CITY DEPARTMENT OF SANITATION (DSNY) OPERATIONS

The New York City Department of Sanitation (DSNY) has existing operations on the project site associated with the closure and post-closure monitoring and maintenance of Fresh Kills Landfill. These include truck trips associated with the current closure operations, the DSNY facilities that would remain in operation (e.g., the borough repair shops and garages at the site), and the trips for monitoring and maintenance associated with landfill closure. As these activities currently exist at the site, they were counted in the baseline data gathering (2007). In addition, these trips would decline over time as park closure operations are completed through 2016 and 2036. However, it is anticipated that in the future conditions, with the proposed park fully developed, DSNY would maintain operations at the site or on lands adjacent to the site (e.g., the Staten Island Waste Transfer Station).

E. MODAL SPLIT ASSUMPTIONS

VEHICLES

Since the proposed park is located on Staten Island and is not directly served by transit (e.g., subway or bus service), an auto share (modal split) of approximately 90 percent was assumed for the trip generation calculations. The only exception to this assumption is the banquet facility which would hold events, and therefore, a 100 percent auto share was assumed for its trip generation calculations.

MASS TRANSIT

As stated above, transportation trips for the park are largely assumed to be vehicular trips. Currently, the site itself is not served by the New York City Transit (NYCT) existing bus routes. However, there are several existing NYCT bus routes which serve the periphery, e.g., along Richmond Avenue and Arthur Kill Road (see the attached Figure D-2). Based on field surveys, the closest bus stops located near the project site are on Marsh Avenue (at the Staten Island Mall) which serves the S17, S31, S55, S56, S641, and S79 bus routes, and an express bus stop located on Arthur Kill Road and Arden Avenue intersection serving the X17 and X23 bus routes.

It is expected that in the future with the proposed park, NYCT would either create new bus routes to accommodate the park generated transit demand (especially during the summer months) or would amend the existing bus routes to include new stops within the park boundaries. It is noted that the availability of bus transit could reduce the number of project generated auto trips by shifting the patrons to mass transit. However, for the purposes of providing a conservative traffic analysis for both the 2016 and 2036 analysis years, only a 5 percent transit share was used.

NON-MOTORIZED TRAVEL OPTIONS

In addition to the auto and bus trips, the proposed park is also anticipated to generate trips by non-motorized modes of transportation, such as the bicycle and walk trips especially by the residents of the local neighborhoods (e.g., Travis and Arden Heights). It is anticipated that the non-motorized trips would be greatest during the summer months coinciding with the high park usage during that time of the year. For this analysis, a 3 percent walk share and a 2 percent bicycle share were assumed through 2016 and 2036.

2016 PARK GENERATED TRAFFIC VOLUMES

In the year 2016, a number of the first phases of the 2,163-acre Fresh Kills Park would be completed. These elements would provide a mix of passive and active recreational facilities in the North and South parks as well as habitat restoration both with and without public access. The specific components of the park expected to be complete by 2016 include the North and

South neighborhood parks, multi-use paths, wetland and North and South mound habitat restoration, loop trails and overlooks. As presented in Table D-4, for weekday traffic in the 2016 analysis year, these park elements are expected to generate a total of 83 inbound and 78 outbound vehicle trips in the AM peak hour, 200 inbound and 225 outbound vehicle trips in the midday, and 149 inbound and 169 outbound vehicle trips in the PM peak hour. For the weekend, the higher Sunday trip generation factors were applied to the project's Saturday peak hour analysis. These weekend trip generation rates total 201 inbound and 218 outbound vehicle trips in the Saturday midday and evening peak hours. The 2016 Park Generated Traffic Volumes are shown in Figures D-3 through D-7.

2036 PARK GENERATED TRAFFIC VOLUMES

For the 2036 analysis year, the entire 2,163-acre Fresh Kills Park is assumed to be completed. Proposed in the long term are the recreational fields; landscaped areas and restored ecological habitats; water access for motorized and non-motorized craft; cultural, entertainment and commercial facilities (e.g., restaurants and banquet space); and the supporting park operations and maintenance facilities. In addition, the park drives that would connect the park with Richmond Avenue and the West Short Expressway as well as the necessary service roads and parking facilities would also be completed by the year 2036 (see the discussion below). As presented in Table D-5, the proposed park is expected to generate a total of 234 inbound and 147 outbound vehicle trips in the AM peak hour, 691 inbound and 717 outbound vehicle trips in the midday, and 1,101 inbound and 484 outbound vehicle trips in the PM peak hour. For the weekend analysis, there would be a total of 1,374 inbound and 631 outbound vehicle trips in the Saturday midday peak hour, and 1,367 inbound and 624 outbound vehicle trips in the Saturday evening peak hour. The 2036 Park Generated Traffic Volumes are shown in Figures D-8 through D-12.

F. TRAFFIC STUDY AREA

The traffic study area for the DGEIS considers key access locations, major travel corridors, and the proposed new roadway elements that are part of the project. Major corridors of access include the West Shore Expressway (regional access) as well as Victory Boulevard, Richmond Avenue, Richmond Hill Road, Forest Hill Road, Arthur Kill Road, Woodrow Road, and Arden Avenue. A total of 25 intersections were selected for analysis in the primary study area. Since the number of peak hour trips and potential diversions attributed to the proposed project are substantial, a secondary study area of key intersections along major travel corridors, connections to the highway including several critical highway segments and ramps, were also selected for detailed analysis. A total of 10 intersections were analyzed in the secondary study area. In total, thirty-five (35) intersections were selected for the Final GEIS (FGEIS) traffic analysis. These include the four (4) additional intersections incorporated for the FGEIS traffic analysis as per the directive from NYCDOT. In addition, since the intersection of Yukon Avenue and Forest Hill Road will be analyzed as part of the Staten Island Borough President (SIBP) Alternative as presented in Chapter 22, "Alternatives," this intersection was also incorporated for detailed traffic analysis in the secondary study area. Intersections selected for analysis in both the primary and secondary study areas are shown in Figure D-13.

The primary study area consists of the following intersections:

- Woodrow Road and Arden Avenue;
- Arthur Kill Road and Arden Avenue;
- West Shore Expressway Service Road and Arden Avenue;
- West Shore Expressway Ramp and Muldoon Avenue;
- Arthur Kill Road and Woodrow Road;
- Arthur Kill Road and Richmond Avenue;

- Richmond Avenue and Forest Hill Road/Park Drive;
- Richmond Avenue and Yukon Avenue;
- Richmond Avenue and Richmond Hill Road;
- Richmond Avenue and Travis Avenue;
- Richmond Avenue and Signs Road;
- West Shore Expressway Off-Ramps (Northbound and Southbound) and Victory Boulevard;
- West Shore Expressway On-Ramps (Northbound and Southbound) and Victory Boulevard;
- Victory Boulevard and Wild Avenue;
- Victory Boulevard and Travis Avenue;
- Travis Avenue and South Avenue;
- Arthur Kill Road and Drumgoole Road;
- Richmond Avenue and Drumgoole Road;
- West Shore Expressway Southbound Service Road and Arthur Kill Road
- West Shore Expressway Northbound Service Road and Arthur Kill Road; and
- Huguenot Avenue and Arthur Kill Road;
- Wild Avenue and Glen Street / West Shore Expressway Northbound Service Road;
- Wild Avenue and Roswell Avenue;
- Victory Boulevard and Melvin Avenue; and
- Wild Avenue and Melvin Avenue.

The intersections in the secondary study area are as follows:

- Travis Avenue and Forest Hill Road;
- Forest Hill Road and Richmond Hill Road;
- Bloomingdale Road and Arthur Kill Road;
- Bloomingdale Road and Woodrow Road;
- Woodrow Road and Foster Avenue;
- Amboy Road and Huguenot Avenue;
- Amboy Road and Arden Avenue;
- Amboy Avenue and Richmond Avenue;
- Huguenot Avenue and Woodrow Road; and
- Yukon Avenue and Forest Hill Road.

All the intersections in the primary and secondary study areas were analyzed using the Highway Capacity Software (HCS) — Version 4.1f based on the methodologies presented in the 2000 Highway Capacity Manual.

G. BASELINE DATA COLLECTION AND DETERMINATION OF ANALYSIS PERIODS

TRAFFIC DATA COLLECTION (WEEKEND DAY SELECTION)

Baseline traffic conditions for the study area were developed as per the criteria established in the *CEQR Technical Manual*, and the capacity analysis of the study area intersections was performed using the *Highway Capacity Manual* methodology. The baseline traffic data collection at both the primary and secondary study area intersections was conducted in May 2007. The traffic data collection for four (4) additional primary study area and one (1) additional secondary study area intersections incorporated in the FGEIS traffic analysis was performed in June and October 2008. Prior to performing these traffic counts, a comprehensive field check of the study area intersections was conducted to identify any construction activities planned for the area roadways and highways. The traffic data collection task began with the installation of Automatic Traffic Recorders (ATRs) along the major corridors to identify the day of heaviest traffic activity for the weekend period. The weekend data obtained from the ATR counts was summarized and submitted to NYCDOT for their approval of the appropriate weekend day for traffic data collection. Based on the review of the ATR data, NYCDOT selected Saturday as the heaviest traffic activity day for the weekend conditions. The traffic data collection was conducted for the weekday and weekend conditions at both the primary and secondary study area intersections. To record the peak activity hours associated with the park usage, the weekday traffic data collection was conducted from 7-10 AM (for the morning period), 12-3 PM (for midday period) and 4-7 PM (for the evening period); whereas the weekend data collection was then conducted from 11AM-3PM (for the midday/afternoon period) and 4-7 PM (for the evening period). In addition, to the traffic counts, the traffic data collection program included conducting physical inventories of both the primary and secondary study area intersections to gather information on the number of lanes, lane widths, parking regulations, signal timing information, bus stop locations and other general roadway characteristics.

As stated above, in addition to the manual counts, continuous automatic traffic recorder (ATR) counts were recorded for an entire week at major roadways in the study area, including:

- Richmond Avenue,
- Victory Boulevard,
- Travis Avenue,
- Arthur Kill Road,
- Richmond Hill Road;
- Forest Hill Road;
- West Shore Expressway Mainline;
- West Shore Expressway NB off-ramp for the Arthur Kill Road exit;
- West Shore Expressway SB off-ramp for the Muldoon Avenue/Arden Avenue exit; and,
- West Shore Expressway NB and SB (on and off ramp) for the Victory Boulevard exit.

The ATR count locations are also shown in Figure D-13.

TRAFFIC DATA COLLECTION (SUMMER COUNTS)

In addition to the count program discussed above, ATR counts were conducted at key locations during July 2007 to identify traffic patterns in the study area during the summer season. Based on a comparison of the May and July 2007 ATR counts, the baseline 24-hour traffic volumes collected in May 2007 were consistently higher than the volumes obtained from July 2007 ATR counts at the majority of the locations during all the five peak analysis periods. The exceptions were two locations in the weekday midday period (Richmond Avenue northbound, south of Richmond Hill Road and Victory Boulevard eastbound east of Canon Avenue) and one location in the Saturday midday period (Route 440 southbound, south of Victory Boulevard ramp) where

the summer volumes are marginally higher. Based on these results, it was concluded that the baseline traffic volumes established for the study area intersections as per the May 2007 count program were used to develop a conservative traffic volume network for existing traffic conditions.

VEHICLE MIX

To determine the vehicle mix at the study area intersections, vehicle classification counts were performed during representative weekday and weekend peak periods at major intersections in the study area including:

- Victory Boulevard and Travis Avenue;
- Arthur Kill Road and Richmond Avenue;
- West Shore Expressway Ramps and Victory Boulevard;
- Woodrow Road and Arden Avenue; and
- Richmond Hill Road and Forest Hill Road.

H. PROPOSED PARK DRIVES, TRAFFIC ASSIGNMENTS AND TRAFFIC DIVERSIONS

PROPOSED PARK DRIVES

The proposed park includes park drives, new Northbound and Southbound Service Roads along the West Shore Expressway, and new ramp connections to the map line of the Expressway, that, in addition to providing park access, would provide a direct connection between Richmond Avenue on the east and the West Shore Expressway (northbound and southbound lanes) on the west. Since there is currently no such direct connection, the new park roads would result in traffic diversions. It is expected that with the new park drives, traffic headed to the West Shore Expressway and traveling north- and southbound along Richmond Avenue is assumed to use these roadways to more directly access the West Shore Expressway, (the reverse travel pattern is also assumed). For the traffic analysis, this diverted traffic was incorporated into the analysis in addition to the park-generated traffic trips.

PROPOSED INTERSECTIONS WITH CITY STREETS

As part of the proposed park, approximately seven miles of new park drives/roadways will be constructed in segments with the majority of the park drives proposed to be completed by 2016 and the balance of the park drives completed by 2036. These roadways would create two new intersections on Richmond Avenue as well as new ramp connections with the West Shore Expressway. The two new entrances to the park drives from City streets, are:

- North Park Drive (intersecting at Richmond Avenue and Richmond Hill Road)
- South Park Drive (intersecting at Richmond Avenue and Forest Hill Road)

The first park road connection with Richmond Avenue—the Forest Hill Road (FHR) Extension—is proposed to be completed in 2016. The FHR Extension would connect the park roadway system with Richmond Avenue at Forest Hill Road by adding a new road connection from the park side of the intersection. This modified intersection would be a principal gateway into the park. By the year 2036, the second park road connection with Richmond Avenue is proposed to be completed. This connection, the Richmond Hill Road (RHR) Extension, would connect the park roadway system with Richmond Avenue at Richmond Hill Road and would become the northern gateway into the park.

The construction of the FHR and RHR Extensions in 2016 and 2036, respectively, would modify the existing lane configurations and signal operations at the intersections of Richmond Avenue at Richmond Hill Road and Forest Hill Road. To accommodate the additional traffic volumes,

additional turning lanes and exclusive phasing plans would be provided for traffic traveling on Richmond Avenue as well as for the traffic on traveling on Richmond Hill and Forest Hill Roads.

PROPOSED CONNECTIONS WITH WEST SHORE EXPRESSWAY

In addition to the intersections with City Streets, proposed as part of the park development a number of new connections with the West Shore Expressway are proposed, primarily in the Confluence area of the proposed park, as follows:

- North Loop Park Drive connection with the West Shore Expressway Northbound Service Road allowing connection to the northbound Expressway main line north of Wild Avenue;
- West Shore Expressway Southbound Service Road connection continuing south from Victory Boulevard and intersecting with West Loop Park Drive;
- South Loop Park Drive connection with the West Shore Expressway Southbound Service Road which would provide access to the mainline via a new entrance ramp proposed south of Arden Avenue; and
- West Shore Expressway Northbound Service Road (service road to be constructed by the proposed project between Arden Avenue and the entrance to the park) connecting with the South Loop Park Drive.

NYSDOT is proposing to construct the West Shore Expressway Northbound Service Road from Arthur Kill Road to Arden Avenue.

TRAFFIC DIVERSIONS

The quantification of diverted traffic volumes due to the new park drives was determined based on the baseline traffic volumes (including both the manual turning movement counts and ATR counts) collected at the study area intersections. In addition, the December 2001 *Fresh Kills Landfill Traffic Planning Study (FKLTPS)* was consulted to determine the proportion of diverted traffic volumes to-and-from the Richmond Avenue corridor to WSE and vice-versa. The FKLTPS developed and evaluated various roadway segments (links) and analyzed them using regional travel demand models—including TRANPLAN and VIPER.

The methodology used in developing the traffic diversions for the traffic analysis was as follows:

- Identifying the critical intersections in the study area that would experience an increase or decrease in the baseline traffic volumes due to the proposed park drives;
- Identifying potential travel routes for the diverted traffic on both WSE and Richmond Avenue;
- Reassigning the traffic volumes to-and-from the critical intersections to the park drives;
- Redistributing traffic volumes at critical intersections by developing positive or negative traffic volume increments for the specific turning movements and/or lane-groups.

The 2016 and 2036 diverted traffic volumes in the primary and secondary study areas—resulting from the proposed park roads construction—are shown in Figures D-14 through D-18 and Figures D-19 through D-23, respectively.

TRAFFIC ASSIGNMENTS

Trips generated by various park elements were assigned to the study area based on the existing travel patterns, likely routes to and from the project site, the configuration of the street network, and the location of the site's proposed access and egress points. Within the park, the project generated trips were assigned to the proposed parking areas (depending on their capacities) and the location of various park elements. In terms of trip distribution, the project generated trips would access the site in the following way: approximately 32 percent would use the WSE, 46 percent would use Richmond Avenue, 10 percent would use Arthur Kill Road, 7 percent would use Forest Hill Road, 3 percent would use Victory Boulevard and the remaining 2 percent would use other local roads to access the project site.

I. NO BUILD PROJECTS AND GROWTH FACTORS (2016 and 2036)

The future conditions without the proposed project were analyzed for two analysis years—2016 and 2036. Future conditions without the proposed project were established in order to provide the level of service projected for future conditions on which trips generated by the Proposed Project are added. The impact of the proposed project on local traffic conditions is assessed based on the changes in local traffic between this future without the proposed project ("no build") condition and the future with the proposed project.

Future No Build traffic volumes were developed in two ways: 1) applying a background traffic growth rate; and 2) adding traffic to be generated by other future potential development projects that are expected to occur in the future without the proposed project. The growth factors used to increase the 2007 existing traffic volumes for the 2016 and 2036 future analysis years were provided by NYCDOT during the agency coordination meeting (September 26, 2007).

2016 NO BUILD ANALYSIS

As per the *CEQR Technical Manual*, an annual background growth of 1.5 percent is recommended for Staten Island. However, based on NYCDOT's recommendation, a 2 percent annual background growth rate was used to project the traffic levels for the 2016 analysis year. The additional 0.5 percent of growth was used to address growth in the area from small and moderate sized projects. This growth factor resulted in a total of 18 percent background growth by 2016 over the 2007 existing conditions. In addition, potential no build projects in the study area which included projects with 100 dwelling units or more and 10,000 square feet of commercial development or more yielded approximately 16 No Build projects and include the following:

- **NYCT/MTA Charleston Bus Annex**. The Charleston Bus Annex project is being undertaken by the New York City Transit (NYCT) and the New York Metropolitan Transportation Authority (MTA) at 4700 Arthur Kill Road. The project will consist of a new bus annex to be used for the storage and servicing of NYCT buses.
- **Costco**. The proposed expansion of the existing Costco retail store located across Richmond Avenue from the project site at 2975 Richmond Avenue would increase the size of the existing store to 143,082 gross square feet from approximately 121,216 gross square feet.
- **Holiday Inn Express**. Development of a 90-room Holiday Inn Express in the Travis neighborhood.
- **YMCA, South Shore-Staten Island**. An expansion of the existing facility by 26,000 gross square feet.
- **Victory Estates**. A modest-sized residential development consisting of 100 dwelling units.
- **The Tides at Charleston**. A residential development currently under construction between Arthur Kill Road and the Arthur Kill, just north of Veterans Road West consisting of 190 residential units.
- **Kreischer Houses.** A residential development consisting of 130 residential units for seniors located at 4502 Arthur Kill Road.
- **Rockland, Beard Monahan Residential Project**. A modest-sized residential project proposed to contain 122 dwelling units.
- **Seaview Housing.** Construction of 515 residential units for seniors, including 144 units of assisted living, 371 units of independent living, 6 units of staff housing, and 234 parking spaces.
- **AME Zion Senior Housing Development**. A residential development consisting of 119 senior dwelling units.

- **The Veterans Road West Retail Center**. A retail development consisting of 136,000 gross square feet of retail and office space, as well as 454 parking spaces.
- **3035 Arthur Kill Road.** A mixed-use office and retail project slated for construction at 3035 Arthur Kill Road.
- **Page Avenue Retail.** A retail development consisting of 28,000 gross square feet of retail located at Page Avenue.
- **Lowe's.** Home improvement retail store planned for construction on a 16-acre site in the Rossville, section of Staten Island.
- **The Hampton Inn**. A new hotel containing 106 rooms currently under construction in the Staten Island Corporate Park at 1120 South Avenue.
- **West Shore Expressway/Arthur Kill Road Park-and-Ride Facility.** The park-and-ride project is being undertaken by NYSDOT. This facility will provide parking for the patrons commuting to New York City via the New York City Transit buses.

The higher background growth rate along with the traffic volumes generated by above no build projects resulted in a conservative traffic network for the 2016 No Build conditions against which the potential impacts of the proposed project were assessed.

2036 NO BUILD ANALYSIS

For the 2036 no build analysis, an annual background growth rate of 1 percent from 2017 to 2036 was used to address the general growth in traffic on Staten Island based on NYCDOT's recommendation. Because the 2017 to 2036 time frame is one to three decades in the future, there are no known development projects in the study area for this time period. Therefore, no individual development projects beyond 2016 were added to the 2036 No Build analysis. Overall, the 1 percent annual background growth rate resulted in a total of 20 percent growth over the 2016 future traffic levels. (Thus, the total cumulative growth between existing and 2036 conditions is 38 percent plus the No Build projects discussed above.)

ROADWAY IMPROVEMENT PROJECTS

In addition to the development projects discussed above, there are a number of capital improvement projects identified for the study area through 2016. These include NYSDOT and NYCDOT sponsored capital projects, such as improvements to the West Shore Expressway and Korean War Veterans Memorial Parkway and improvements to Arthur Kill Road, for example. Although the planning and design for these projects is currently underway, the final design and funding, and the expected time of completion has not yet been determined. Therefore, these roadway improvement projects were not included in the future No Build analysis. In addition to the roadway improvement projects, expansion to the Huguenot and Eltingville Park-and-Ride Facilities are planned for the study area through 2016. The expansion at the Huguenot Park-and-Ride Facility would result in over 100 additional parking spaces at the existing lot. The expansion at the Eltingville Park-and-Ride Facility would increase the capacity of the lot by 117 parking spaces. The planning and design for these projects is currently underway, and the expected time of completion has not been determined. Therefore, these expansion projects were not included in the future No Build analysis. It should be noted that in assuming that these roadway improvement projects do not occur, the future 2016 and 2036 No Build traffic networks present a conservative condition, as no credit is taken for the improved traffic conditions that would otherwise result, assuming the proposed roadway improvement projects are in place. However, roadway improvements proposed as part of the Owl Hollow Park development, Victory Boulevard and Travis Avenue Intersection Improvement Project, Lowe's Home Improvement Store project and the South Shore YMCA project were included in the 2016 and 2036 No Build analysis.

J. PARKING

The proposed Fresh Kills Park would provide a total of 1,873 parking spaces by its full build out in 2036. Out of these 1,873 spaces, 1,199 spaces would be available in 2016, while the remaining 674 spaces will be available by 2036. These parking spaces would be distributed throughout the park in a concept of tree-shaded "bosque parking" facilities and would be located near the many park entrances, and sized appropriately for the park uses that would be directly accessed from that parking site. In addition to the permanent parking spaces, the proposed project would provide an additional 1,544 overflow parking spaces throughout the park. A detailed projection of parking accumulation for the proposed Fresh Kills Park was conducted for both the weekday and weekend conditions for the 2016 and 2036 build years. The parking accumulation estimates indicate that in 2016, there would be a maximum parking demand of 404 and 745 spaces during the weekday and weekend conditions, respectively. The parking demand in 2016 would be fully accommodated by the 1,199 permanent parking spaces. For the 2036 conditions, the parking accumulation estimates indicate that there would be a maximum demand of 1,732 and 2,740 spaces during the weekday and weekend conditions, respectively. This parking demand would both be fully accommodated by the combination of permanent and overflow parking spaces (total of 3,417 spaces) in the year 2036.

K. PEDESTRIAN ANALYSES

In addition to the vehicular trips, the proposed project is expected to generate a number of pedestrian trips—specifically during the summer months. It should be noted that the proposed project would provide new pedestrian access points to the park on Richmond Avenue, Arthur Kill Road and Wild Avenue, Pearson Street, and Melvin Avenue. These pedestrian connections would provide new pedestrian facilities (sidewalks, crosswalks and corners) along major streets where these facilities do not currently exist, and would also improve the existing pedestrian facilities on Richmond Avenue intersections with Forest Hill Road, Yukon Avenue, and Richmond Hill Road by providing wider high-visibility crosswalks and sidewalks along the park periphery. Providing sidewalks on the park side of Arthur Kill Road is a project that would need to be coordinated with NYCDOT as part of the NYCDOT Arthur Kill Road improvement project. Improving local pedestrian options along Arthur Kill Road would be a positive enhancement to the proposed park and would improve walk trip connections between the park and the local Arden Heights neighborhood. These measures would enhance pedestrian safety at all the major access and egress points to-and-from the park along Arthur Kill Road. Based on the vehicle-pedestrian accident data obtained from NYSDOT, currently there are no high vehicle-pedestrian accident locations in the study area, and the proposed project is not expected to adversely impact the pedestrian safety in the study area.

L. BIBLIOGRAPHY

In the preparation of this Technical Memorandum and for the preparation of the GEIS traffic analysis, the following sources of technical information were consulted:

1. 100 Percent Schematic Report and the Fresh Kills Road Alternatives Report, Prepared by ARUP et al for NYCDPR (January 2008).
2. City Environmental Quality Review. (CEQR) Technical Manual, 2001.
3. Conceptual Road Report — Fresh Kills Park, Phase 3A, Task 8.3, prepared by ARUP et al, for NYCDPR (September 6, 2007).
4. Draft Design Approval Document (Appendices 1, 2, 3A, 3B and 4 of the Project Report) for the West Shore Expressway Access and Safety Improvements, Richmond County NY, August 2005 (DO15174, P.I.N. X096.18).
5. Draft Expanded Project Proposal/DAD for the Korean War Veterans Ramp Terminus Project, Staten Island—Richmond County NY, February 2004 (P.I.N. X349.13).
6. Fairview Park—Modified Environmental Assessment Statement (EAS), CEQR # 04DPR005R, February 2005.
7. Fresh Kills Landfill Traffic Planning Study. URS (December 2001).

8. Fresh Kills Park Bridge Alternatives Report, Phase 3A Task 8.4.3 and 8.4.5, prepared by ARUP for NYCDPR (November 2007).
9. Fresh Kills Park: Final Scope of Work to prepare a GEIS, August 31, 2006.
10. Fresh Kills Park: Lifescape—Draft Master Plan (DMP), March 2006.
11. Hudson River Park—Final Environmental Impact Statement (FEIS), May 1998.
12. Institute of Transportation Engineers (ITE) Trip Generation Manual, 7th Edition.
13. New York City Transit (NYCT)—Staten Island Bus Map.
14. Richmondtown Roadway Improvement Project, NYCDOT CEQR #03DOT014R, Final Scoping Memorandum, July, 2004.
15. Staten Island Transportation Task Force Update Presentation, January 23, 2007.
16. Urban Space for Pedestrians. Pushkarev and Zupan. ✷

Table D-1

Summary of Park Elements by Analysis Year (2016 and 2036)

Project Element for Trip Generation (2016)	Active Recreation-Constructed surface	Active Recreation--indoor	Commercial/Restaurant	Commercial/Retail	Cultural	City Destination Park (based on ITE Standards)	Acres of City Destination Park	CEQR Regional Park Element (DMP and RWCDS Descriptions)	Acres of Regional Park	Pedestrian Access from Park Perimeter
Schmul Park Entrance --park entrance and bosque parking (4 acres) (see DMP page 43 of DMP)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	Melvin Avenue
Travis Neighborhood Park –parade grounds, baseball field and picnic area (7 acres) (see DMP page 43 of DMP)	N.A.	N.A.	N.A.	N.A.	N.A.	Arc path to Mill Basin, overlook deck, bird observation tower, baseball fields, picnic area, playground (active recreation constructed and field sports)	5 acres			N.A.
						Expanded park lawn and picnic area (active recreation field sports)	7 acres			
North Park multi-use path and wetland restoration --freshwater wetland/stormwater basin restoration (about 4 acres), freshwater stream restoration (about 6 acres), recreational loop path (about two miles) around landfill mound ¾), various footpaths to Main Creek waterfront, educational facility, possible tidal wetland restoration along Main Creek (DMP page 43)	N.A.	N.A.	Café (600 square feet) (2)	N.A.	Eco-Educational Facility (600 square feet)			Multi-use recreational loop trail (linear recreation-paved surfaces)	4.8 acres (2 linear miles)	Wild Avenue
						Footpaths (linear recreation on landfill section, unpaved surface)	2.34 acres (about 17,000 linear feet)			
						Rock basin picnic area (passive recreation)	1 acre			
						Canoe/Fishing Docks overlooks (water recreation and access)	0.04 acres (two docks, total of 1,800 square feet)			
						Deck overlooks (water recreation and access)	0.06 acres (three overlooks, 2,800 square feet)			
Arden Heights Neighborhood Park and wetland restoration—entrance and parking, picnic area, information center, restoration of freshwater wetland basin (about 2 acres) (DMP page 45)	N.A.	N.A.	N.A.	N.A.	Information/ education center (600 square feet)	Playground/picnic area (passive recreation)	4 acres			Arthur Kill Road (3) locations
						Berm footpaths (linear recreation, unpaved trails)	1.42 acres (about 10,000 linear feet)			
						Berm overlooks (passive recreation)	0.20 acres (assume 10 at 900 square feet each)			
South Mound loop trail and overlooks—trail system around base of landfill mound 2/8 and across mound (DMP page 45)	N.A.	N.A.	N.A.	N.A.	N.A.			Multi-use recreational loop trail (linear recreation-paved surfaces)	19.4 acres (about 8 miles)	N.A.
						Berm overlooks (passive recreation)	0.20 acres (assume 10 at 900 square feet)			
Confluence--the Marsh, Terrace, and Sunken Forest)—freshwater wetland improvements and possible tidal wetland restoration at the Marsh (about 20 acres), parking, freshwater wetland restoration, and possible tidal edge restoration at the Terrace (about 10 acres), and freshwater wetlands restoration at the Sunken Forest (about 4 acres) (DMP page 37)	N.A.	N.A.	N.A.	N.A.	N.A.	Marsh Boardwalk (linear recreation)	0.20 acres			N.A.
Confluence--Creek Landing—activities on existing built surfaces and reuse of existing bulkhead with some possible tidal wetland creation in areas of bulkhead deterioration (about 1 acres of restoration) (DMP page 37)	N.A.	N.A.	Restaurant / Café (1,500 square feet) (2)	Market Roof (13,750 square feet)	Eco-Educational Facility (600 square feet)	Kayak, canoe rental	0.04 acres (two docks, total of 1,800 square feet)	N.A.	N.A.	N.A.
North and South Park mound restorations—enhancements of existing landfill cover for habitat restoration and public access at mounds 3/4 and 2/8	N.A.	N.A.	N.A.	N.A.	N.A.			North Park hilltop field and deck overlook (passive recreation)	10 acres	N.A.
						North Park on-mound footpaths (linear recreation, unpaved surfaces)	1.08 acres (about 7,817 linear feet)			
								South Park hilltop meadow and deck overlook (passive recreation)	7 acres	
						South Park mound footpaths (linear recreation, unpaved trails	2.76 acres (about 20,000 linear feet)			
South Park Tennis and Equestrian Center—new recreational spaces and facilities on the west portion of the south park with natural areas and habitat	Tennis Center-12 acres (1)	Sports barn and Gym-29,500 square feet	Café (600 square feet) (2)	N.A.	N.A.			Open meadow (active recreation, field sports) acres	15 acres	Arthur Kill Road (Entrance at Muldoon Avenue)
						Equestrian Center	5 acres			
								Mountain Bike Trails (linear recreation, unpaved)	19.3 acres (16 miles)	
						Footpaths (linear recreation, unpaved surfaces)	0.22 acres (about 1,566 linear feet)			
Segments one and two of the park drive and landscape ribbon—southern segment of the park drive and the connections to the West Shore Expressway (DMP page 47)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	Forest Hill Road entrance (no pedestrian bridge)
Wind energy systems—concrete pads on landfill mounds (locations to be determined)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
DPR Facilities—TBD	N.A.	N.A.	N.A.	N.A.	N.A.			N.A.	N.A.	N.A.
SUBTOTAL-2016	**Tennis Center (12 acres)**	**29,500 sq.ft**	**2,700 square feet (2)**	**13,750 sq.ft**	**1,800 square feet**	**----------**	**30.56 acres**	**----------**	**75.5 acres**	**7 entrances**

Table D-1 (cont'd)
Summary of Park Elements by Analysis Year (2016 and 2036)

Project Element for Trip Generation (2036)	Active Recreation-Constructed surface	Active Recreation—indoor	Commercial/Restaurant	Commercial/Retail	Cultural	City Destination Park (based on ITE Standards)	Acres of City Destination Park	CEQR Regional Park Element (DMP and RWCDS Descriptions)	Acres of Regional Park	Pedestrian Access from Park Perimeter
East Park —new recreational spaces and facilities on the west portion of the south park with natural area restoration and habitats	N.A.	N.A.	N.A.	N.A.	Outdoor classroom and nature education center (4,600 square feet)			Hilltop field (passive recreation)	23 acres	
						Picnic fields and lawn (passive recreation)	11 acres			
								Wetland boardwalk (linear recreation)	2 acres	
						Mound footpaths (linear recreation, unpaved surfaces)	1.16 acres (8,456 linear feet)			
						Berm footpaths (linear recreation, unpaved surfaces)	2.06 acres (15,000 linear feet)			
						Berm overlooks (passive recreation)	0.20 acres (assume 10 at 900 square feet)			
								Recreational multi-purpose loop trail (linear recreation, paved surfaces)	29 acres (about 12 miles)	
West Park—habitat restoration, WTC memorial and trails	N.A.	N.A.	N.A.	N.A.	September 11 Interpretive center (3,000 square feet)			Hilltop field and meadow (passive recreation)	12 acres	N.A.
								Recreational multi-purpose loop trail (linear recreation, paved surfaces)	7.3 acres (about 3 miles)	
						Footpaths (linear recreation, unpaved surfaces)	4.02 acres (29,553 linear feet)			
								Earthwork and Meadow	7 acres	
								Overlooks (passive recreation)	0.02 acres (two overlooks at 450 sq.ft)	
The Confluence-The Point--center for recreational and cultural activities supported by limited commercial activities	N.A.	N.A.	Commercial Restaurants (50,000 square feet) Banquet hall facilities (32,700 square feet)	Market Roof (19,250 square feet)	Discovery Center (32,700 square feet) Community Center (24,700 square feet)			Marina (water recreation and access)	2 acres	N.A.
								Multi use sports field (active recreation, constructed surfaces)	14 acres	
								Waterfront promenade (active recreation)	0.90 acres	
								Fishing piers, boat docks, overlooks, etc. (water recreation and access)	0.5 acres (20,000 sq.ft.)	
								Event lawn	10 acres	
The Confluence-Creek Landing--center for recreational and cultural activities supported by limited commercial activities	N.A.	N.A.	Restaurants (3,500 square feet)		N.A.			Boating lawn and beach terrace (water recreation and access)	2 acres	N.A.
								Waterfront promenade (passive recreation)	0.50 acres	
								Boat docks, fishing piers, water overlooks (water recreation and access)	0.2 acres	
North Park Drive, Signature Bridge and West Shore Expressway Connections-northern segments of the park drive and the connections to the West Shore Expressway (DMP page 47)	N.A.	N.A.	N.A.	N.A.	N.A.			N.A.	N.A.	Pedestrian Bridge over Richmond Avenue at Forest Hill Road Richmond Hill Road entrance
DPR Facilities -TBD	N.A.	N.A.	N.A.	N.A.	N.A.			N.A.		N.A.
SUBTOTAL-2016	**Tennis Center (12 acres)**	**29,500 sq.ft**	**2,700 square feet (2)**	**13,750 sq.ft**	**1,800 square feet**	**----------**	**30.56 acres**	**----------**	**75.5 acres**	**7 entrances**
SUBTOTAL-2036 Program only	**N.A.**	**N.A.**	**86,200 sq. ft**	**19,250 sq. ft**	**65,000 sq. ft.**	**----------**	**18.44 acres**	**----------**	**110.42 acres**	**4 pedestrian entrances**
TOTAL PROJECT (2016 AND 2036)	**Tennis Center (12 acres)**	**29,500 sq. ft**	**88,900 sq. ft**	**33,000 sq. ft**	**66,800 sq.ft**	**----------**	**49.00 acres**	**----------**	**185.92 acres**	**11 pedestrian entrances**

Notes:
Recreational multi-purpose paved loop trails are 20 feet wide. Foot trails and mountain bike trails (unpaved) are 10 feet wide.
(1) Tennis Center rates based on ITE manual.
(2) Linked Trips (Ancillary café spaces are not expected to generate new person and/or vehicle trips).

Table D-2
Trip Generation Factors - 2016

Component	RWCDS Development Program (Cumulative)		Daily Trip Rate			Temporal Distribution					Directional Distribution (In/Out)										Modal Split				Vehicle Occupancy
						Weekday Peak Hours			Saturday Peak Hours		Weekday Peak Hours						Saturday Peak Hours								
											AM		Midday		PM		Midday		PM						
			Weekday	Saturday	Unit	AM	Midday	PM	Midday	PM	In	Out	In	Out	In	Out	In	Out	In	Out	Auto	Transit	Bicycle	Walk	
Active Recreation-Constructed Surface[1] Tennis Center is one of the representative elements for Active Recreation. See also the information on Soccer Fields in Table 2a.	12	Acres	34.23	28.59	per acre	2.6%	2.6%	5.2%	5.1%	5.1%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	90%	5%	2%	3%	1.0
Active Recreation-Indoor[2,3,4] Indoor Gym	29,500	Sq Ft.	44.70	28.16	per 1,000 s.f.	4.0%	9.0%	5.0%	10.0%	10.0%	42.0%	58.0%	42.0%	58.0%	51.0%	49.0%	42.0%	58.0%	42.0%	58.0%	90.0%	5%	2%	3%	1.0
Commercial/Restaurant Café/Restaurants [5,6,7,8,+]	0	Sq Ft.	129.75	162.18	per 1,000 s.f.	1.0%	17.2%	7.7%	12.6%	12.6%	52.0%	48.0%	52.0%	48.0%	55.0%	45.0%	63.0%	37.0%	63.0%	37.0%	90.0%	5%	2%	3%	2.2
Commercial/Retail Market Roof [9,10,11,12]	13,750	Sq Ft.	153.75	178.35	per 1,000 s.f.	1.0%	21.6%	9.6%	9.9%	9.9%	54.0%	46.0%	48.0%	52.0%	48.0%	52.0%	52.0%	48.0%	52.0%	48.0%	90.0%	5%	2%	3%	2.3
Cultural/Educational [13]	1,800	Sq Ft.	26.60	26.60	per 1,000 s.f.	8.0%	11.0%	13.0%	11.0%	11.0%	94.0%	6.0%	45.0%	55.0%	42.0%	58.0%	45.0%	55.0%	45.0%	55.0%	90.0%	5%	2%	3%	1.65
Regional Park [14,15,16,17,*]	75.50	Acres	44.00	62.00	per acre	3.28%	4.48%	5.68%	6.0%	6.0%	57.0%	43.0%	50.0%	50.0%	44.0%	56.0%	48.0%	52.0%	48.0%	52.0%	90%	5%	2%	3%	2.5
City Destination Park[18, 19, 20,21,22,23,*]	30.56	Acres	139.00	196.00	per acre	3.28%	4.48%	5.68%	6.0%	6.0%	57.0%	43.0%	50.0%	50.0%	44.0%	56.0%	48.0%	52.0%	48.0%	52.0%	90%	5%	2%	3%	2.5

Sources and Notes:

(1) ITE Trip Generation, 7th Edition - Land Use 490, Tennis Courts
(2) Weekday trip rate and temporal distribution obtained from CEQR Technical Manual for the Health Club facility; weekday directional distribution based on ITE Trip Generation Manual (7th Edition)
(3) weekend trip rates developed by AKRF based on the ratio between weekday and weekend trip rates as per the information from ITE Trip Generation Manual (7th Edition)
(4) weekend temporal and directional distributions for Indoor Active Recreation based on information presented in the No. 7 Subway Extension - Hudson Yards Rezoning and Development Program FGEIS (November 2004)
(5) Restaurant weekday trip rate (assuming 25% linkage) and temporal distribution obtained from CEQR Technical Manual
(6) Restaurant weekend trip rates (assuming 25% linkage) developed by AKRF based on the ratio between weekday and weekend trip rates as per the information from ITE Trip Generation Manual (7th Edition) for Land Use - 932, High-Turnover (Sit-Down) Restaurant
(7) Directional distribution for the restaurant use is based on the information from ITE Trip Generation Manual (7th Edition) for Land Use - 932, High-Turnover (Sit-Down) Restaurant
(8) Vehicle occupancy for restaurant use based on Brooklyn Bridge Park Project, FEIS (December 2005) --- CEQR Technical Manual does not provide vehicle occupancy for restaurant use
(9) Commercial/retail weekday trip rate (assuming 25% linkage) and temporal distribution obtained from CEQR Technical Manual
(10) Commercial/retail weekend trip rates (assuming 25% linkage) developed by AKRF based on the ratio between weekday and weekend trip rates as per the information from ITE Trip Generation Manual (7th Edition) for Land Use - 820, Shopping Center
(11) Directional distribution for the commercial/retail use is based on the information from ITE Trip Generation Manual (7th Edition) for Land Use - 820, Shopping Center
(12) Vehicle occupancy for commercial/retail use based on Brooklyn Bridge Park Project, FEIS (December 2005) --- CEQR Technical Manual does not provide vehicle occupancy for retail use
(13) All trip generation factors for cultural/educational use are based on data presented in Hudson River Park FEIS (May 1998)
(14) Regional Park weekday and weekend trip rates and vehicle occupancy are based on attendance estimates for Liberty State Park, NJ as provided by NYCDOT
(15) Regional park weekday and weekend temporal distribution based on ITE Trip Generation Manual (7th Edition) for Land Use - 417, Regional Park
(16) Regional park weekday midday temporal distribution is based on the average of weekday AM and PM rates obtained from ITE Trip Generation Manual (7th Edition) for Land Use - 417, Regional Park
(17) Regional park weekday and weekend directional distribution based on ITE Trip Generation Manual (7th Edition) for Land Use - 417, Regional Park
(18) City Destination Park weekday trip rate obtained from CEQR Techincal Manual.
(19) City Destination Park weekend trip rate developed by AKRF based on the ratio between weekday and weekend rates from ITE Trip Generation Manual (7th Edition) for Land Use - 417, Regional Park
(20) City Destination Park temporal distribution based on information from the ITE Trip Generation Manual (7th Edition) for Land Use - 417, Regional Park
(21) City Destination Park weekday midday temporal distribution is based on the average of weekday AM and PM rates obtained from ITE Trip Generation Manual (7th Edition) for Land Use - 417, Regional Park
(22) City Destination Park vehicle occupancy based on information provided by NYCDOT for Liberty State Park, NJ.
(23) City Destination Park directional distribution based on information from the ITE Trip Generation Manual (7th Edition) for Land Use - 417, Regional Park
(*) For a conservative analysis, higher Sunday trip generation rates were used to calculate trips generated by the Regional and City Destination Parks during Saturday conditions
(+) Ancillary café spaces are not expected to generate new person and/or vehicle trips. Therefore, the café square footages were not included for trip generation purposes.

Table D-3a
Trip Generation Factors - 2036

Component	RWCDS Development Program (Cumulative)		Daily Trip Rate			Temporal Distribution					Directional Distribution (In/Out)										Modal Split				Vehicle Occupancy
						Weekday Peak Hours			Saturday Peak Hours		Weekday Peak Hours						Saturday Peak Hours								
											AM		Midday		PM		Midday		PM						
			Weekday	Saturday	Unit	AM	Midday	PM	Midday	PM	In	Out	In	Out	In	Out	In	Out	In	Out	Auto	Transit	Bicycle	Walk	
Active Recreation-Constructed Surface [1] Tennis Center is one of the representative elements for Active Recreation. See also the information on Soccer Fields in Table 2a.	12	Acres	34.23	28.59	per acre	2.6%	2.6%	5.2%	5.1%	5.1%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	90%	5%	2%	3%	1.0
Active Recreation-Indoor [2,3,4] Indoor Gym	29,500	Sq Ft.	44.70	28.16	per 1,000 s.f.	4.0%	9.0%	5.0%	10.0%	10.0%	42.0%	58.0%	42.0%	58.0%	51.0%	49.0%	42.0%	58.0%	42.0%	58.0%	90.0%	5%	2%	3%	1.0
Commercial/Restaurant Café/Restaurants [5,6,7,8,+]	53,500	Sq Ft.	129.75	162.18	per 1,000 s.f.	1.0%	17.2%	7.7%	12.6%	12.6%	52.0%	48.0%	52.0%	48.0%	55.0%	45.0%	63.0%	37.0%	63.0%	37.0%	90.0%	5%	2%	3%	2.2
Commercial/Retail Market Roof [9,10,11,12]	33,000	Sq Ft.	153.75	178.35	per 1,000 s.f.	1.0%	21.6%	9.6%	9.9%	9.9%	54.0%	46.0%	48.0%	52.0%	48.0%	52.0%	52.0%	48.0%	52.0%	48.0%	90.0%	5%	2%	3%	2.3
Cultural/Educational [13]	66,800	Sq Ft.	26.60	26.60	per 1,000 s.f.	8.0%	11.0%	13.0%	11.0%	11.0%	94.0%	6.0%	45.0%	55.0%	42.0%	58.0%	45.0%	55.0%	45.0%	55.0%	90.0%	5%	2%	3%	1.65
Regional Park [14,15,16,17,*]	185.92	Acres	44.00	62.00	per acre	3.28%	4.48%	5.68%	6.0%	6.0%	57.0%	43.0%	50.0%	50.0%	44.0%	56.0%	48.0%	52.0%	48.0%	52.0%	90%	5%	2%	3%	2.5
City Destination Park [18, 19, 20,21,22,23,*]	49.00	Acres	139.00	196.00	per acre	3.28%	4.48%	5.68%	6.0%	6.0%	57.0%	43.0%	50.0%	50.0%	44.0%	56.0%	48.0%	52.0%	48.0%	52.0%	90%	5%	2%	3%	2.5

Sources and Notes:

(1) ITE Trip Generation, 7th Edition - Land Use 490, Tennis Courts
(2) Weekday trip rate and temporal distribution obtained from CEQR Technical Manual for the Health Club facility; weekday directional distribution based on ITE Trip Generation Manual (7th Edition)
(3) weekend trip rates developed by AKRF based on the ratio between weekday and weekend trip rates as per the information from ITE Trip Generation Manual (7th Edition)
(4) weekend temporal and directional distributions for Indoor Active Recreation based on information presented in the No. 7 Subway Extension - Hudson Yards Rezoning and Development Program FGEIS (November 2004)
(5) Restaurant weekday trip rate (assuming 25% linkage) and temporal distribution obtained from CEQR Technical Manual
(6) Restaurant weekend trip rates (assuming 25% linkage) developed by AKRF based on the ratio between weekday and weekend trip rates as per the information from ITE Trip Generation Manual (7th Edition) for Land Use - 932, High-Turnover (Sit-Down) Restaurant
(7) Directional distribution for the restaurant use is based on the information from ITE Trip Generation Manual (7th Edition) for Land Use - 932, High-Turnover (Sit-Down) Restaurant
(8) Vehicle occupancy for restaurant use based on Brooklyn Bridge Park Project, FEIS (December 2005) --- CEQR Technical Manual does not provide vehicle occupancy for restaurant use
(9) Commercial/retail weekday trip rate (assuming 25% linkage) and temporal distribution obtained from CEQR Technical Manual
(10) Commercial/retail weekend trip rates (assuming 25% linkage) developed by AKRF based on the ratio between weekday and weekend trip rates as per the information from ITE Trip Generation Manual (7th Edition) for Land Use - 820, Shopping Center
(11) Directional distribution for the commercial/retail use is based on the information from ITE Trip Generation Manual (7th Edition) for Land Use - 820, Shopping Center
(12) Vehicle occupancy for commercial/retail use based on Brooklyn Bridge Park Project, FEIS (December 2005) --- CEQR Technical Manual does not provide vehicle occupancy for retail use
(13) All trip generation factors for cultural/educational use are based on data presented in Hudson River Park FEIS (May 1998)
(14) Regional Park weekday and weekend trip rates and vehicle occupancy are based on attendance estimates for Liberty State Park, NJ as provided by NYCDOT
(15) Regional park weekday and weekend temporal distribution based on ITE Trip Generation Manual (7th Edition) for Land Use - 417, Regional Park
(16) Regional park weekday midday temporal distribution is based on the average of weekday AM and PM rates obtained from ITE Trip Generation Manual (7th Edition) for Land Use - 417, Regional Park
(17) Regional park weekday and weekend directional distribution based on ITE Trip Generation Manual (7th Edition) for Land Use - 417, Regional Park
(18) City Destination Park weekday trip rate obtained from CEQR Techincal Manual.
(19) City Destination Park weekend trip rate developed by AKRF based on the ratio between weekday and weekend rates from ITE Trip Generation Manual (7th Edition) for Land Use - 417, Regional Park
(20) City Destination Park temporal distribution based on information from the ITE Trip Generation Manual (7th Edition) for Land Use - 417, Regional Park
(21) City Destination Park weekday midday temporal distribution is based on the average of weekday AM and PM rates obtained from ITE Trip Generation Manual (7th Edition) for Land Use - 417, Regional Park
(22) City Destination Park vehicle occupancy based on information provided by NYCDOT for Liberty State Park, NJ.
(23) City Destination Park directional distribution based on information from the ITE Trip Generation Manual (7th Edition) for Land Use - 417, Regional Park
(*) For a conservative analysis, higher Sunday trip generation rates were used to calculate trips generated by the Regional and City Destination Parks during Saturday conditions
(+) Ancillary café spaces are not expected to generate new person and/or vehicle trips. Therefore, the café square footages were not included for trip generation purposes.

Table D-3b
Commercial / Banquet Hall - 2036 (1)

Size of Facility: 32,700 s.f. (assuming 26,260 s.f. of banquet and 6,540 s.f. of ancillary space)

Peak Hours	Space per Attendee (s.f.)	Banquet Capacity	Peak Hour Temporal Distribution	Mode Split	Vehicle Occupancy	Directional Distribution		Vehicle Trips	
				Auto		In	Out	In	Out
Pre- Event	17.5	1500	79%	100%	1.8	100%	0%	658	0
Post-Event	17.5	1500	79%	100%	1.8	0%	100%	0	658

Notes:
(1) Based on information presented in the Farley Post Office/Moynihan Station Redevelopment FEIS (August 2006)

Table D-4
Total Project-Generated Vehicle Trips - 2016

Component	Weekday Peak Hours									Saturday Peak Hours					
	AM			Midday			PM			Midday			PM		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
Active Recreation-Constructed Surface															
Tennis Center	5	5	**10**	5	5	**10**	10	10	**20**	8	8	**16**	8	8	**16**
Active Recreation-Indoor															
Indoor Gym	20	28	**48**	45	62	**107**	31	29	**60**	32	43	**75**	32	43	**75**
Commercial/Restaurant															
Café/Restaurants	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
Commercial/Retail															
Market Roof	4	4	**8**	86	93	**179**	38	41	**79**	49	46	**95**	49	46	**95**
Cultural/Educational	2	0	**2**	1	2	**3**	2	2	**4**	1	2	**3**	1	2	**3**
Regional Park	22	17	**39**	27	27	**54**	30	38	**68**	49	52	**101**	49	52	**101**
City Destination Park	28	22	**50**	34	34	**68**	38	49	**87**	62	67	**129**	62	67	**129**
Delivery Trips	2	2	**4**	2	2	**4**	0	0	**0**	0	0	**0**	0	0	**0**
TOTAL	83	78	**161**	200	225	**425**	149	169	**318**	201	218	**419**	201	218	**419**

Table D-5
Total Project-Generated Vehicle Trips - 2036

Component	Weekday Peak Hours									Saturday Peak Hours					
	AM			Midday			PM			Midday			PM		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
Active Recreation-Constructed Surface															
Tennis Center	5	5	**10**	5	5	**10**	10	10	**20**	8	8	**16**	8	8	**16**
Active Recreation-Indoor															
Indoor Gym	20	28	**48**	45	62	**107**	31	29	**60**	32	43	**75**	32	43	**75**
Commercial/Restaurant															
Café/Restaurants	15	14	**29**	254	235	**489**	120	99	**219**	282	166	**448**	282	166	**448**
Commercial/Retail															
Market Roof	10	9	**19**	206	223	**429**	92	99	**191**	119	110	**229**	119	110	**229**
Cultural/Educational	73	5	**78**	48	59	**107**	53	73	**126**	48	59	**107**	48	59	**107**
Regional Park*	55	42	**97**	66	66	**132**	74	94	**168**	120	130	**250**	120	130	**250**
City Destination Park	46	34	**80**	55	55	**110**	61	78	**139**	100	108	**208**	100	108	**208**
Banquet Hall	No Trips Anticipated During the Weekday AM and Midday Peak Hours						658	0	**658**	658	0	**658**	658	0	**658**
Delivery Trips	10	10	**20**	12	12	**24**	2	2	**4**	7	7	**14**	0	0	**0**
TOTAL	234	147	**381**	691	717	**1,408**	1,101	484	**1,585**	1,374	631	**2,005**	1,367	624	**1,991**

* Trips generated by the Regional Park component also includes Monument trips.

FRESH KILLS PARK GEIS
TRAFFIC ANALYSIS FRAMEWORK

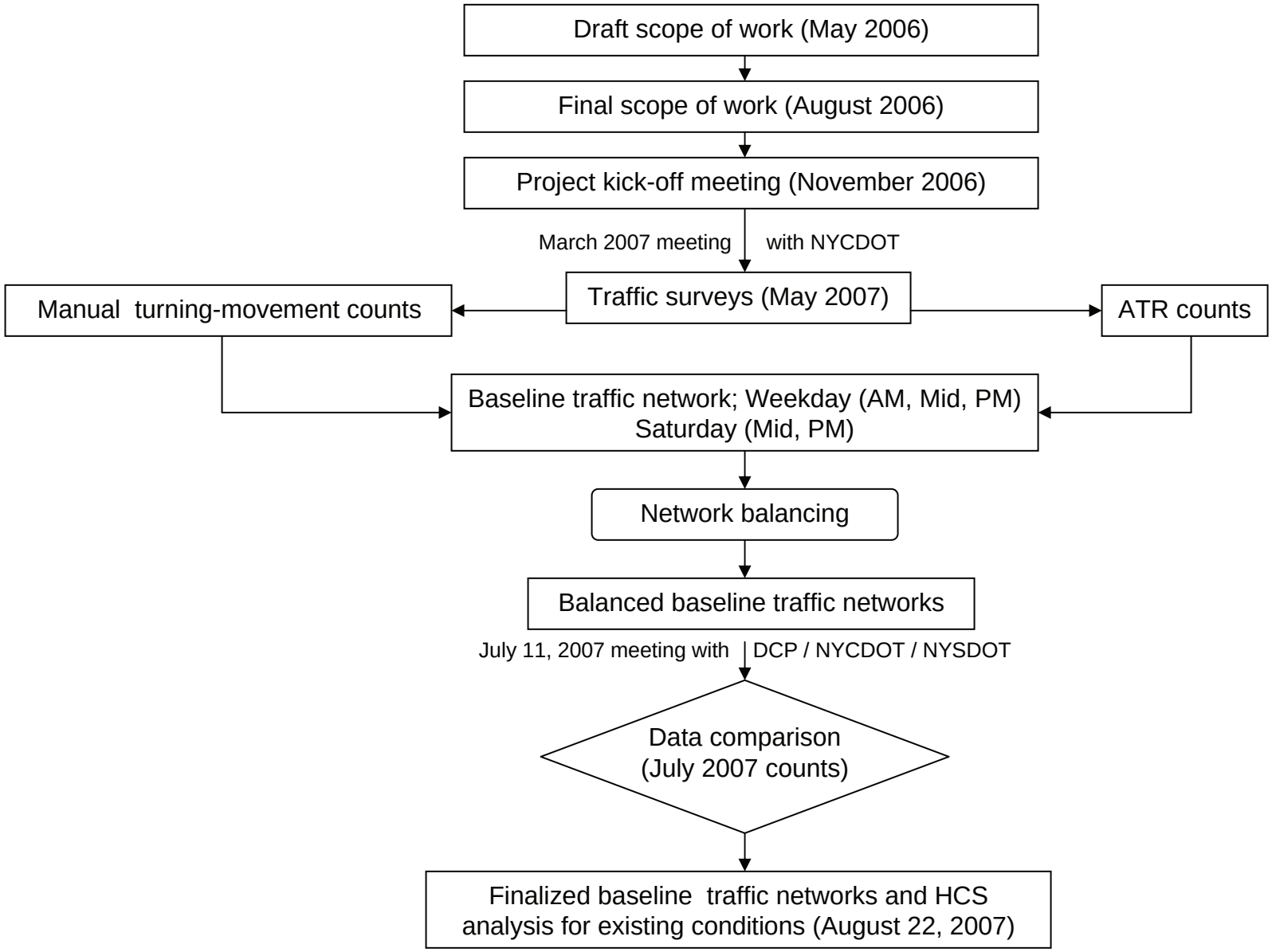


Figure D-1

FRESH KILLS PARK GEIS
TRAFFIC ANALYSIS FRAMEWORK

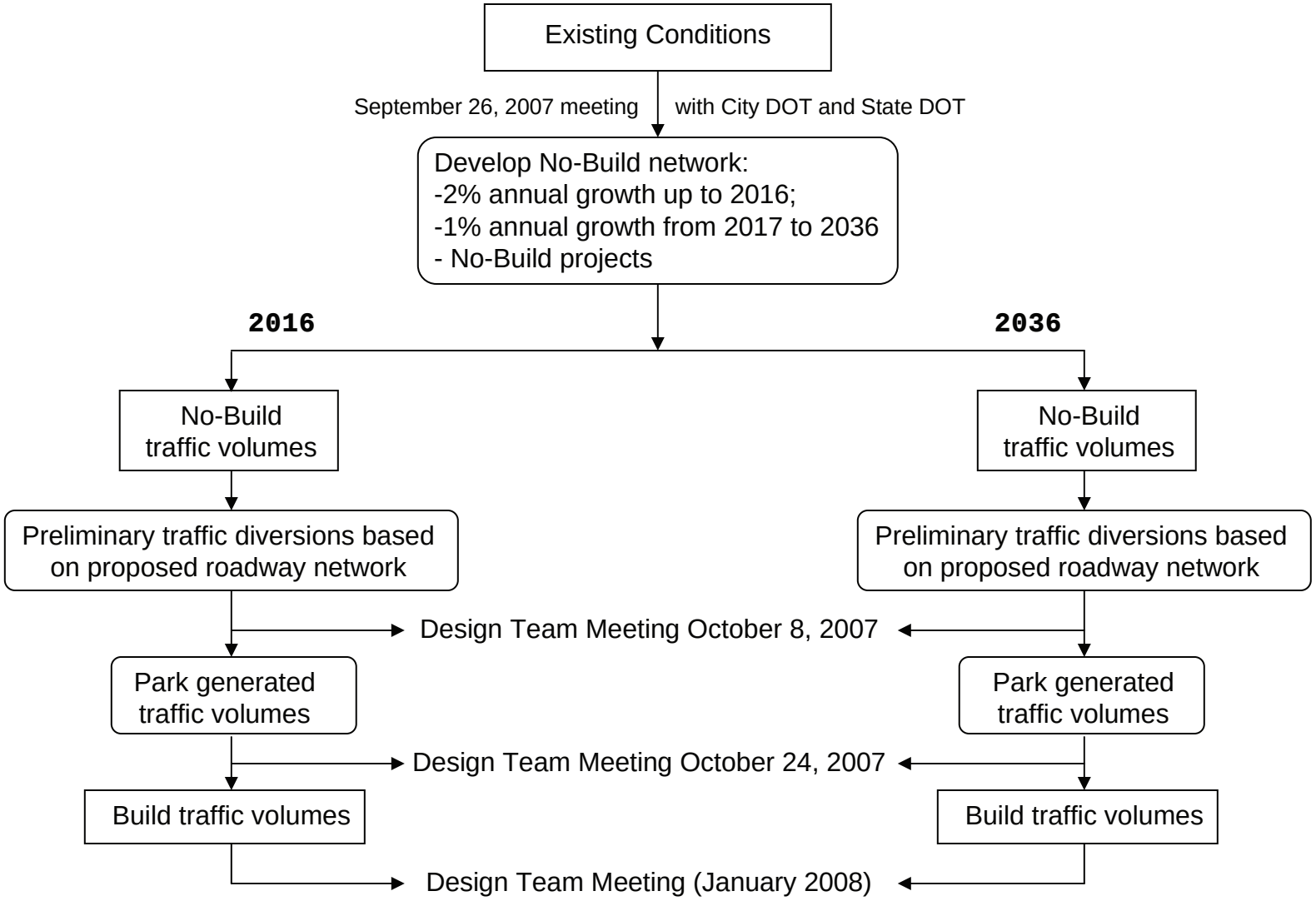


Figure D-1 (Continued)



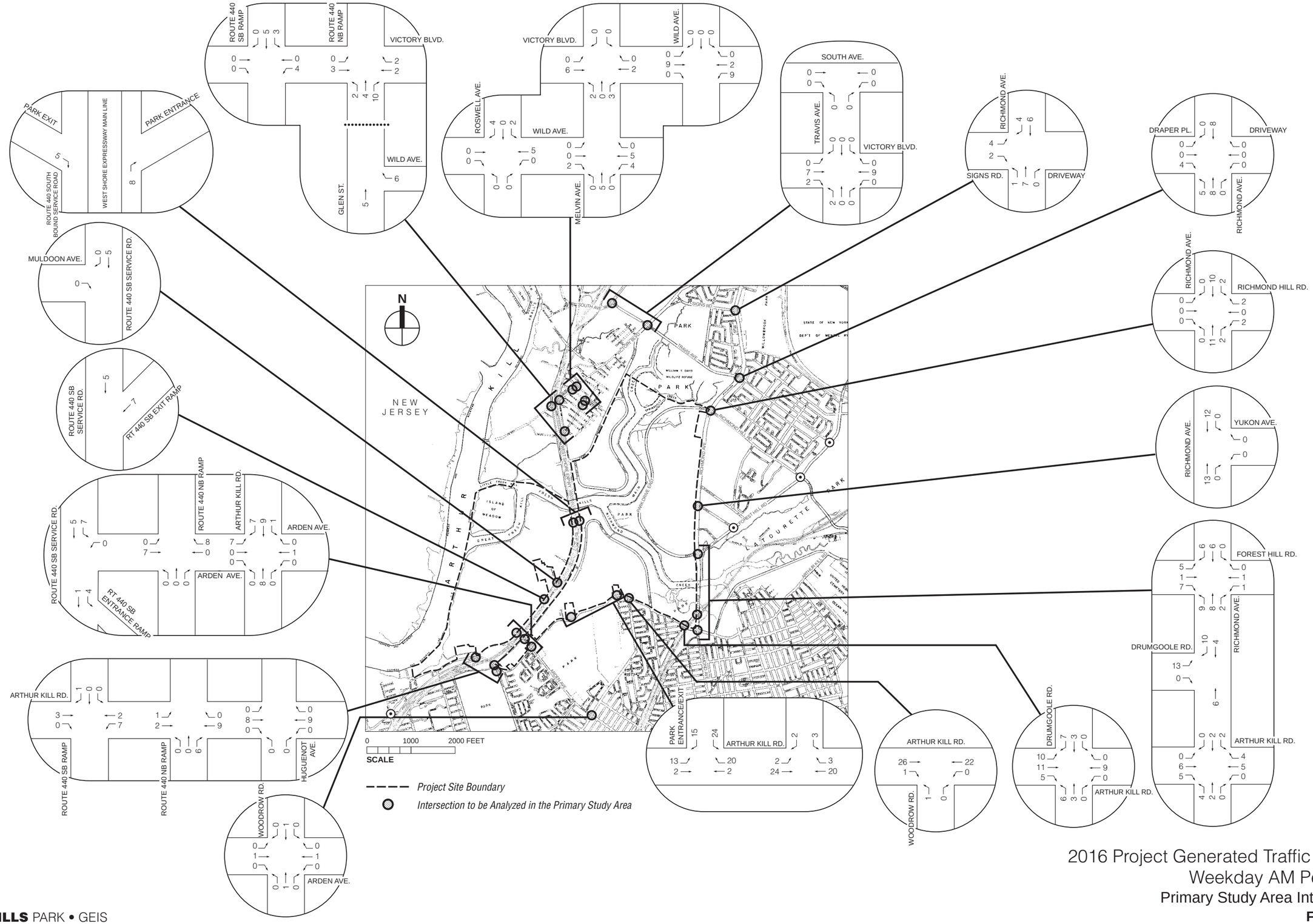
Source: New York City Transit Authority

Fresh Kills Project Site Boundary

59 *Bus Route*

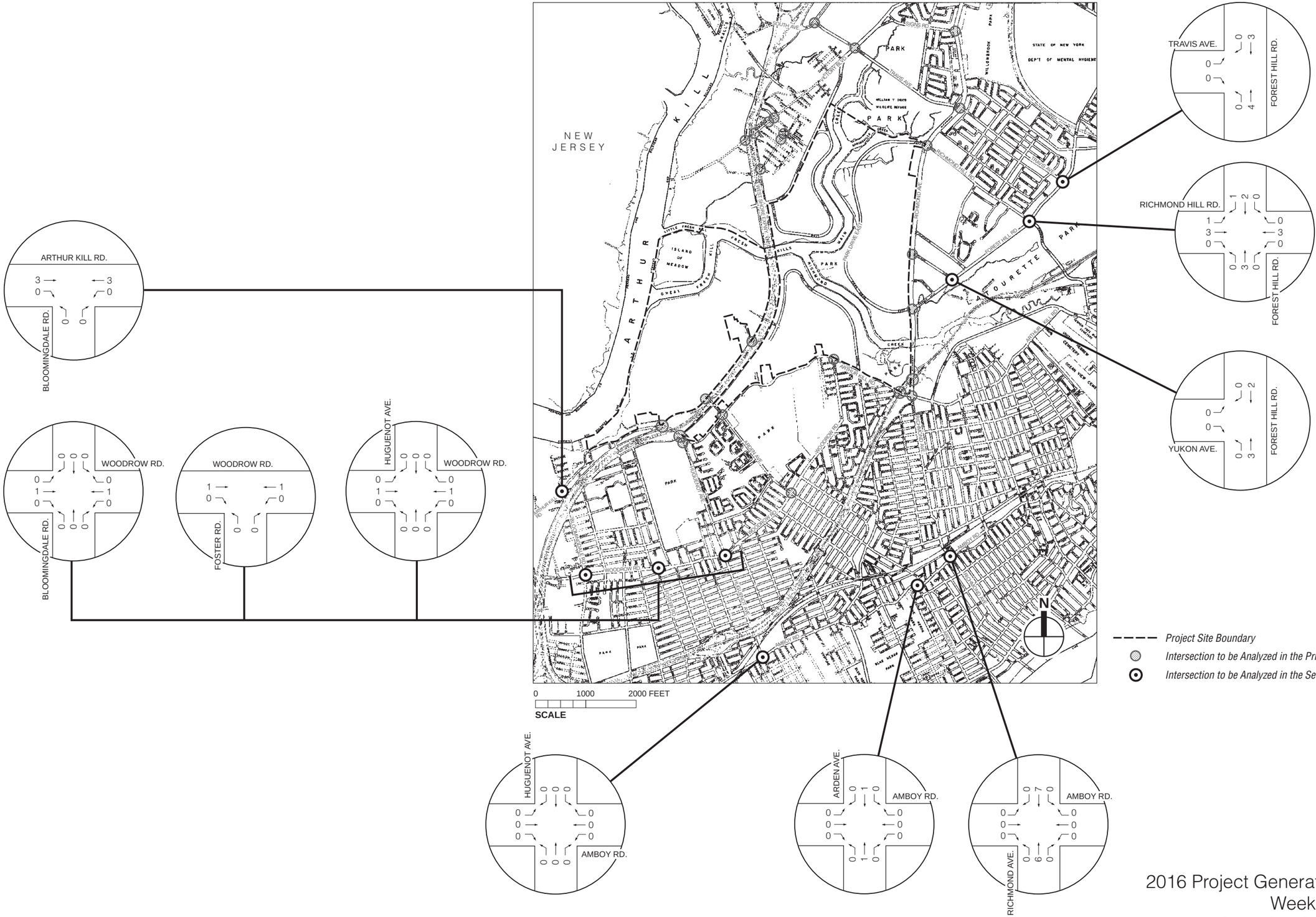
Bus Routes
Figure D-2

2.10.09



2016 Project Generated Traffic Volumes
Weekday AM Peak Hour
Primary Study Area Intersections
Figure D-3a

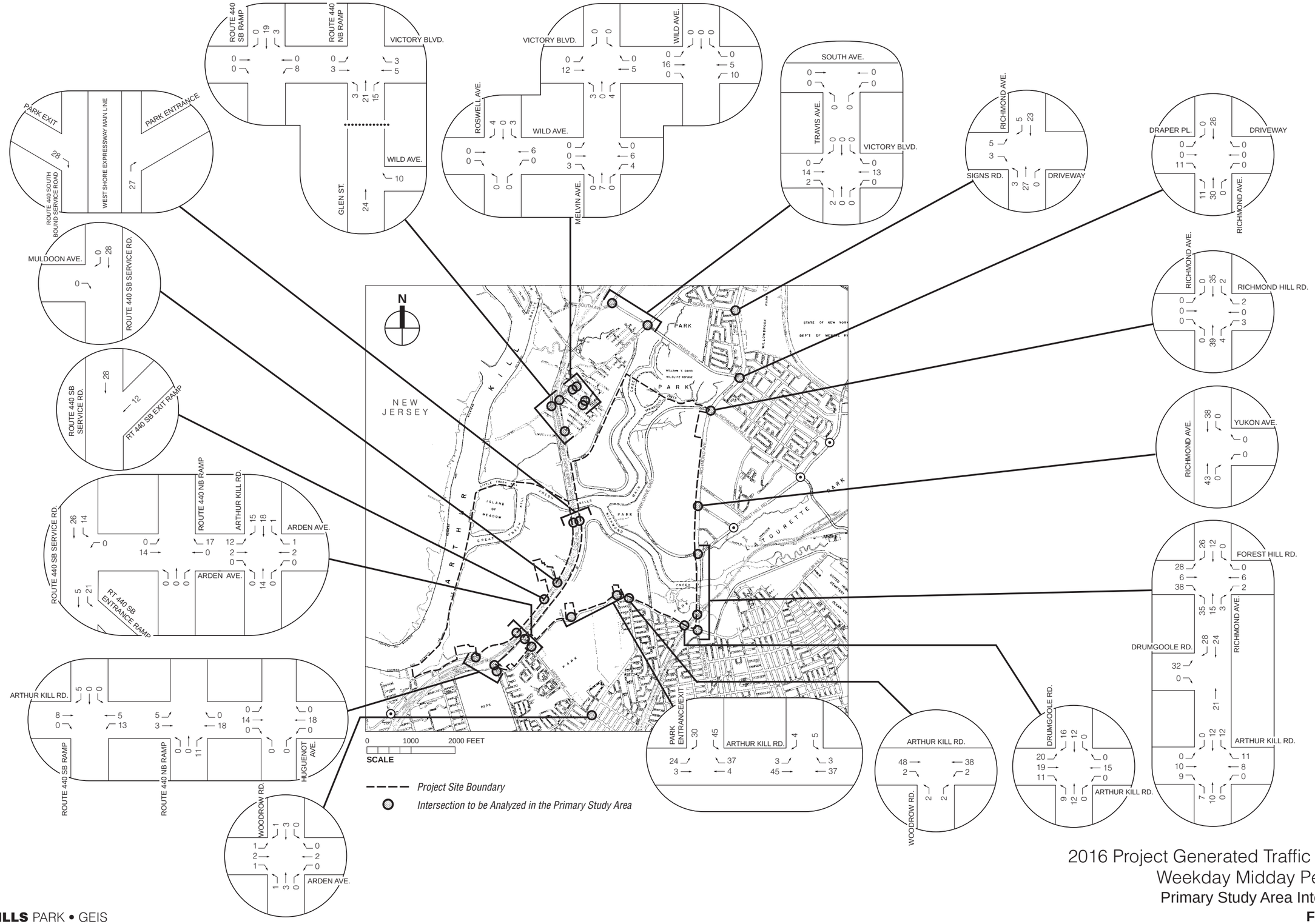
2.10.09



Project Site Boundary
Intersection to be Analyzed in the Primary Study Area
Intersection to be Analyzed in the Secondary Study Area

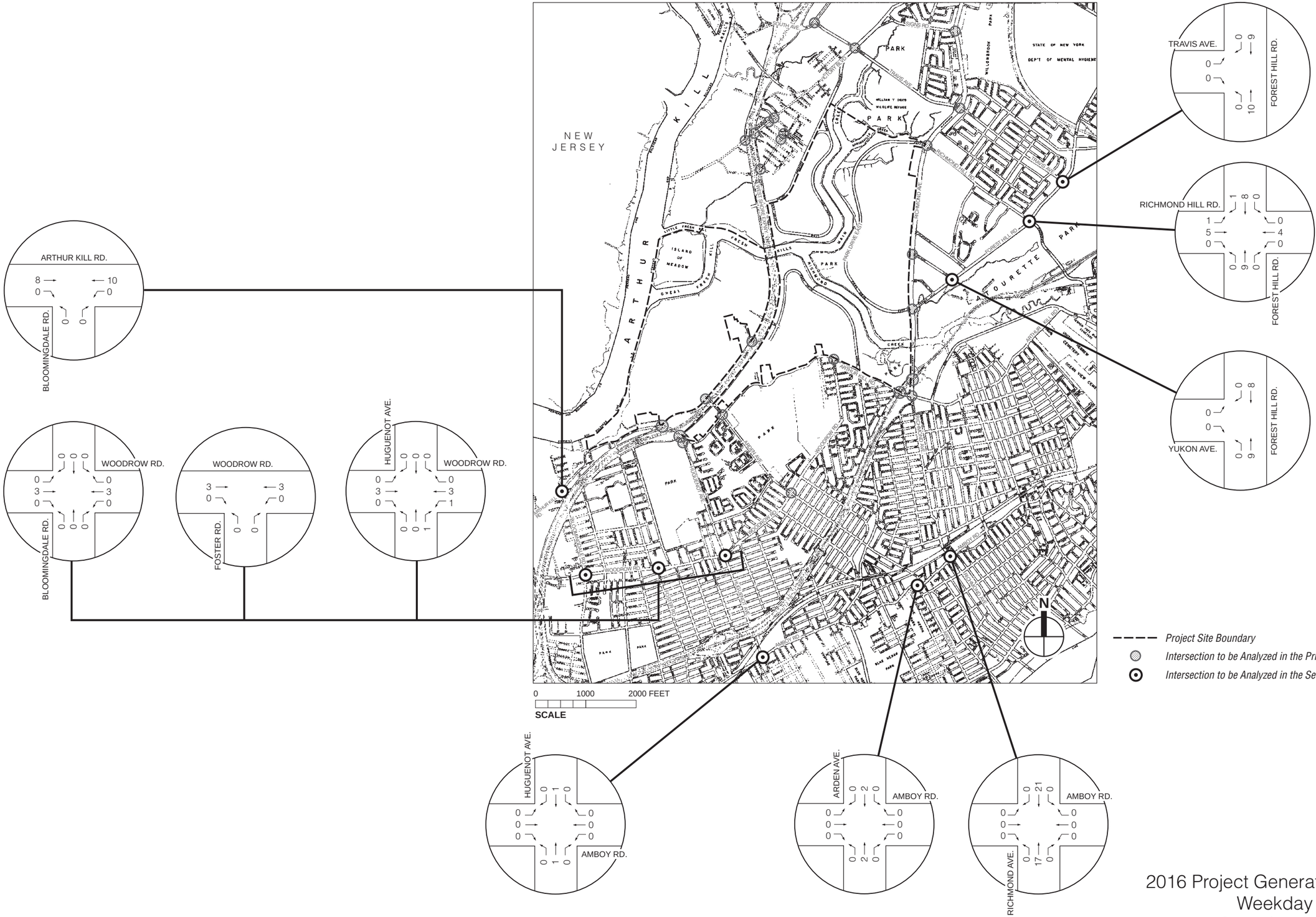
2016 Project Generated Traffic Volumes
Weekday AM Peak Hour
Secondary Study Area Intersections
Figure D-3b

2.10.09



2016 Project Generated Traffic Volumes
Weekday Midday Peak Hour
Primary Study Area Intersections
Figure D-4a

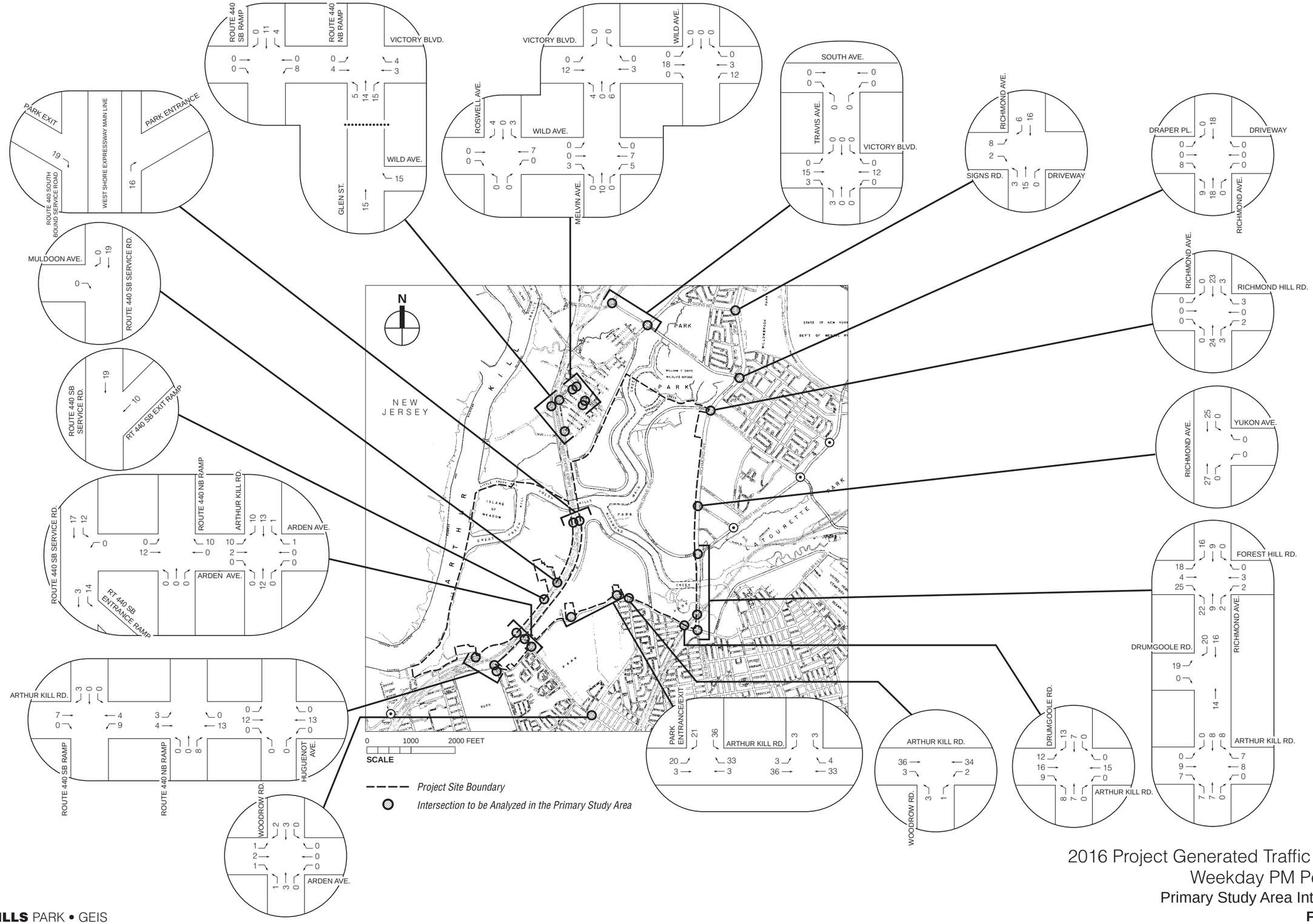
2.10.09



Project Site Boundary
Intersection to be Analyzed in the Primary Study Area
Intersection to be Analyzed in the Secondary Study Area

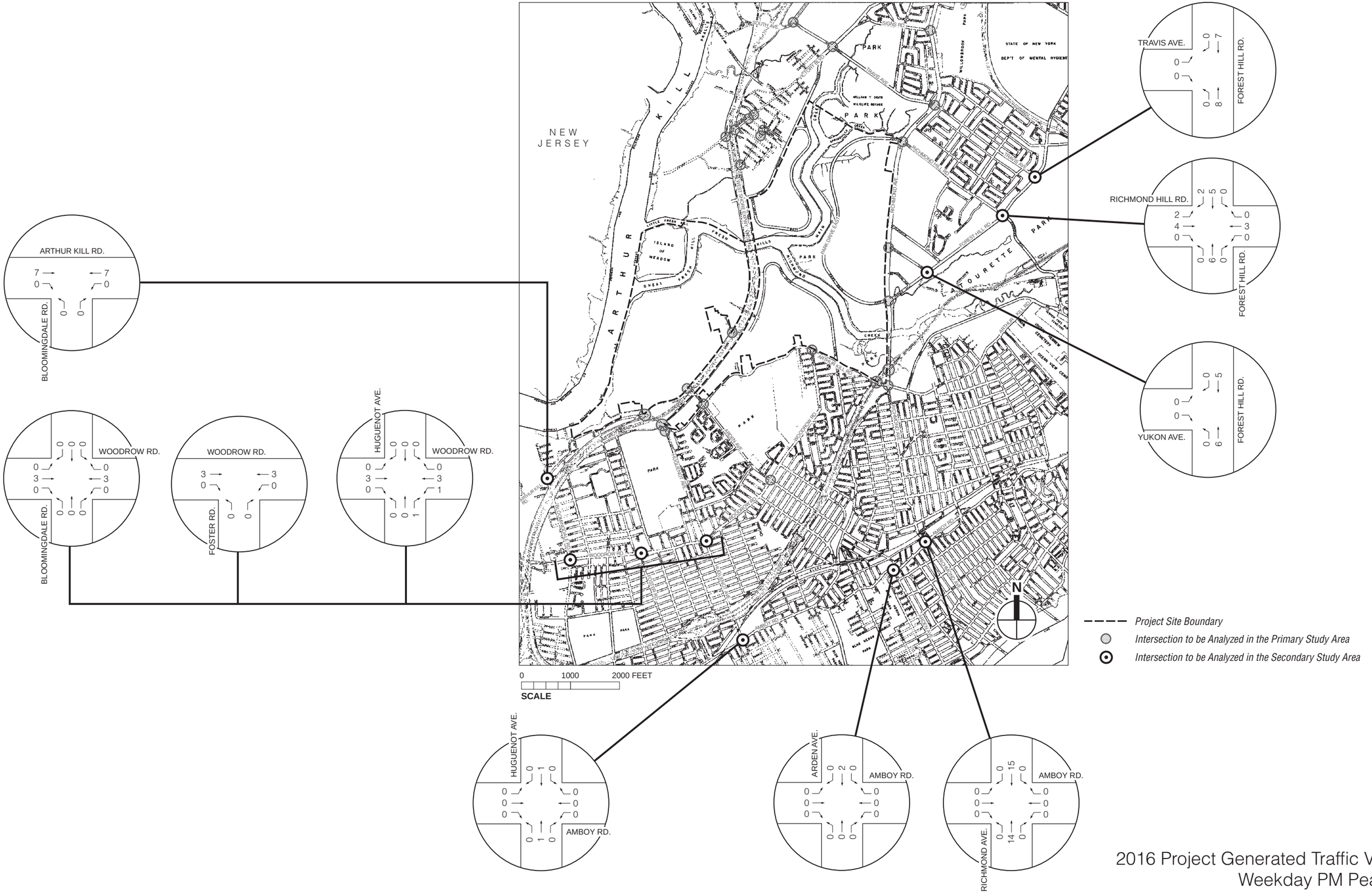
2016 Project Generated Traffic Volumes
Weekday Midday Peak Hour
Secondary Study Area Intersections
Figure D-4b

2.10.09



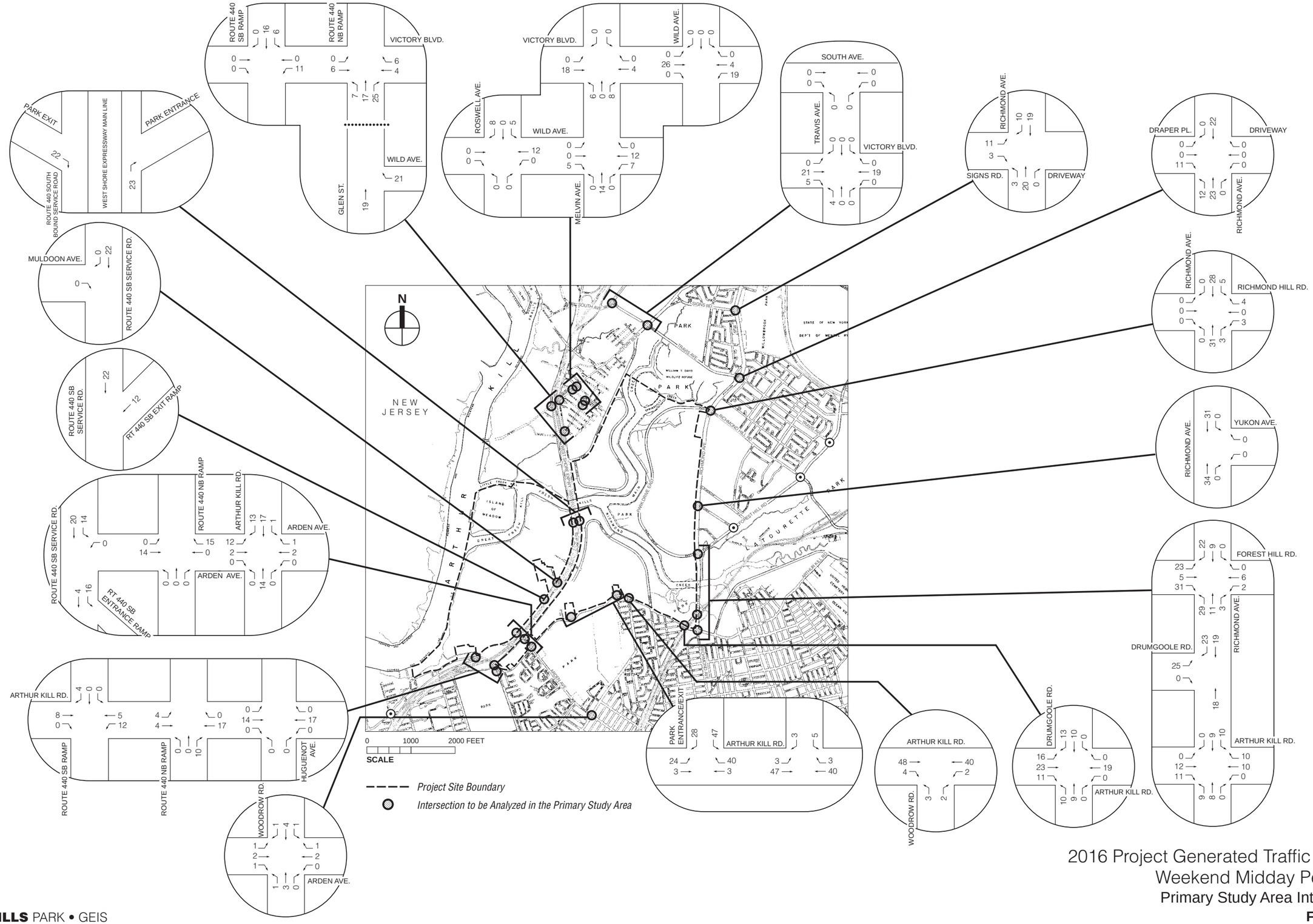
2016 Project Generated Traffic Volumes
Weekday PM Peak Hour
Primary Study Area Intersections
Figure D-5a

2.10.09



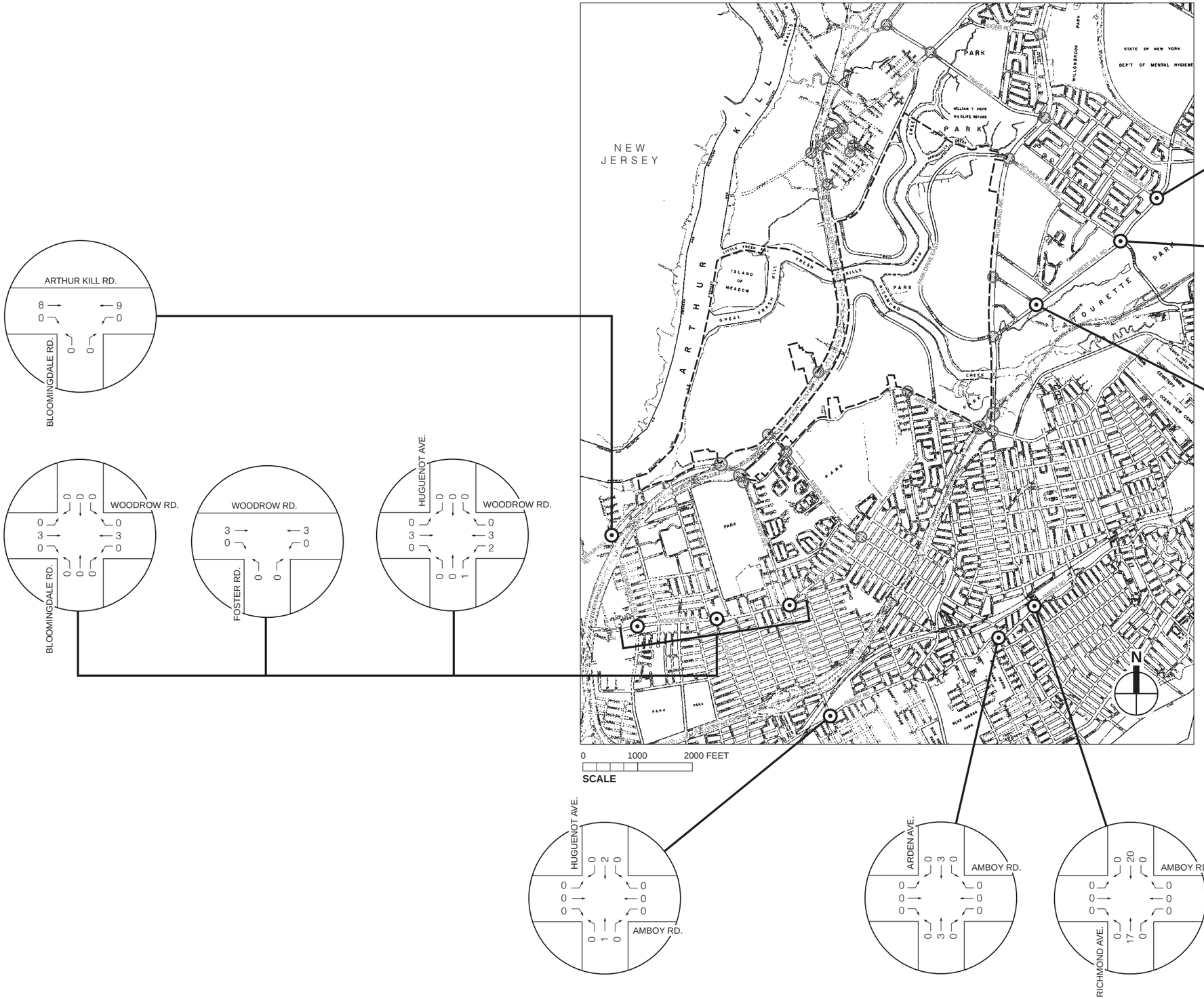
2016 Project Generated Traffic Volumes
Weekday PM Peak Hour
Secondary Study Area Intersections
Figure D-5b

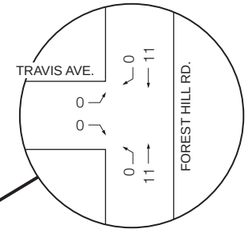
2.10.09

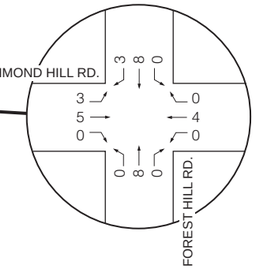


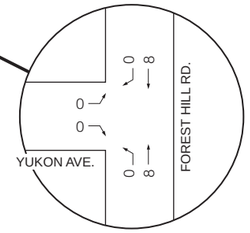
2016 Project Generated Traffic Volumes
Weekend Midday Peak Hour
Primary Study Area Intersections
Figure D-6a

2.10.09









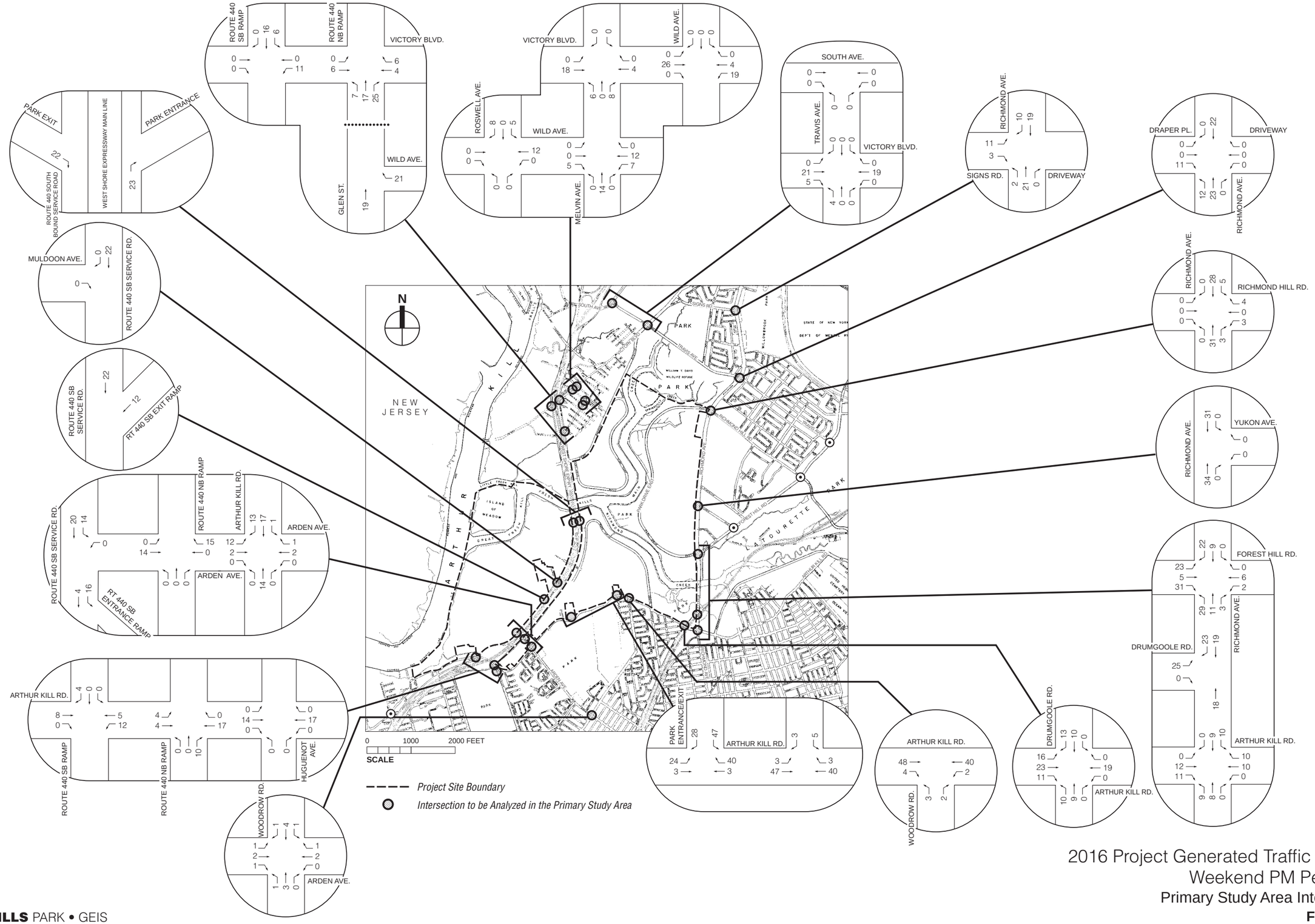
Project Site Boundary

Intersection to be Analyzed in the Primary Study Area

Intersection to be Analyzed in the Secondary Study Area

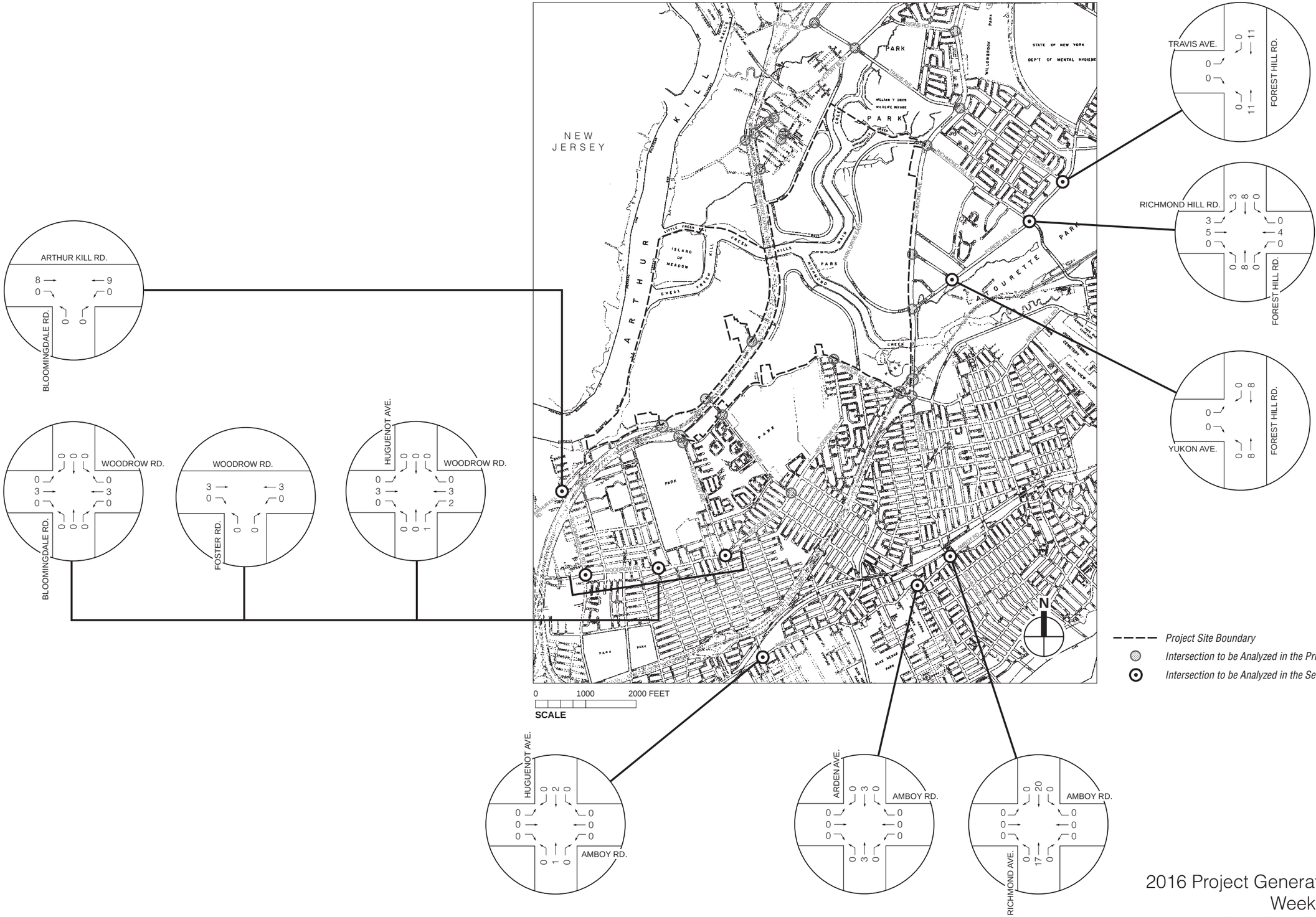
2016 Project Generated Traffic Volumes
Weekend Midday Peak Hour
Secondary Study Area Intersections
Figure D-6b

2.10.09



2016 Project Generated Traffic Volumes
Weekend PM Peak Hour
Primary Study Area Intersections
Figure D-7a

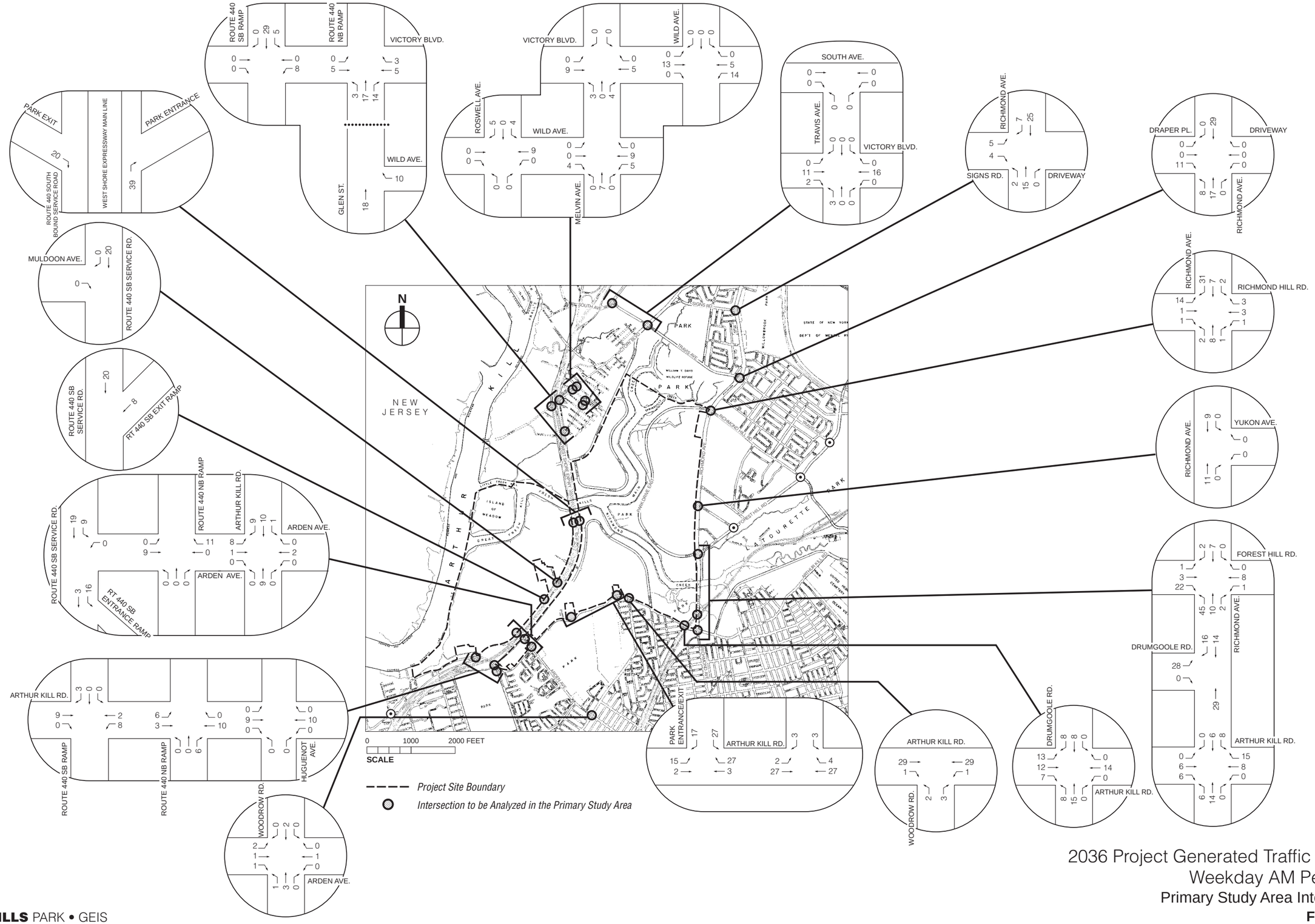
2.10.09



Project Site Boundary
Intersection to be Analyzed in the Primary Study Area
Intersection to be Analyzed in the Secondary Study Area

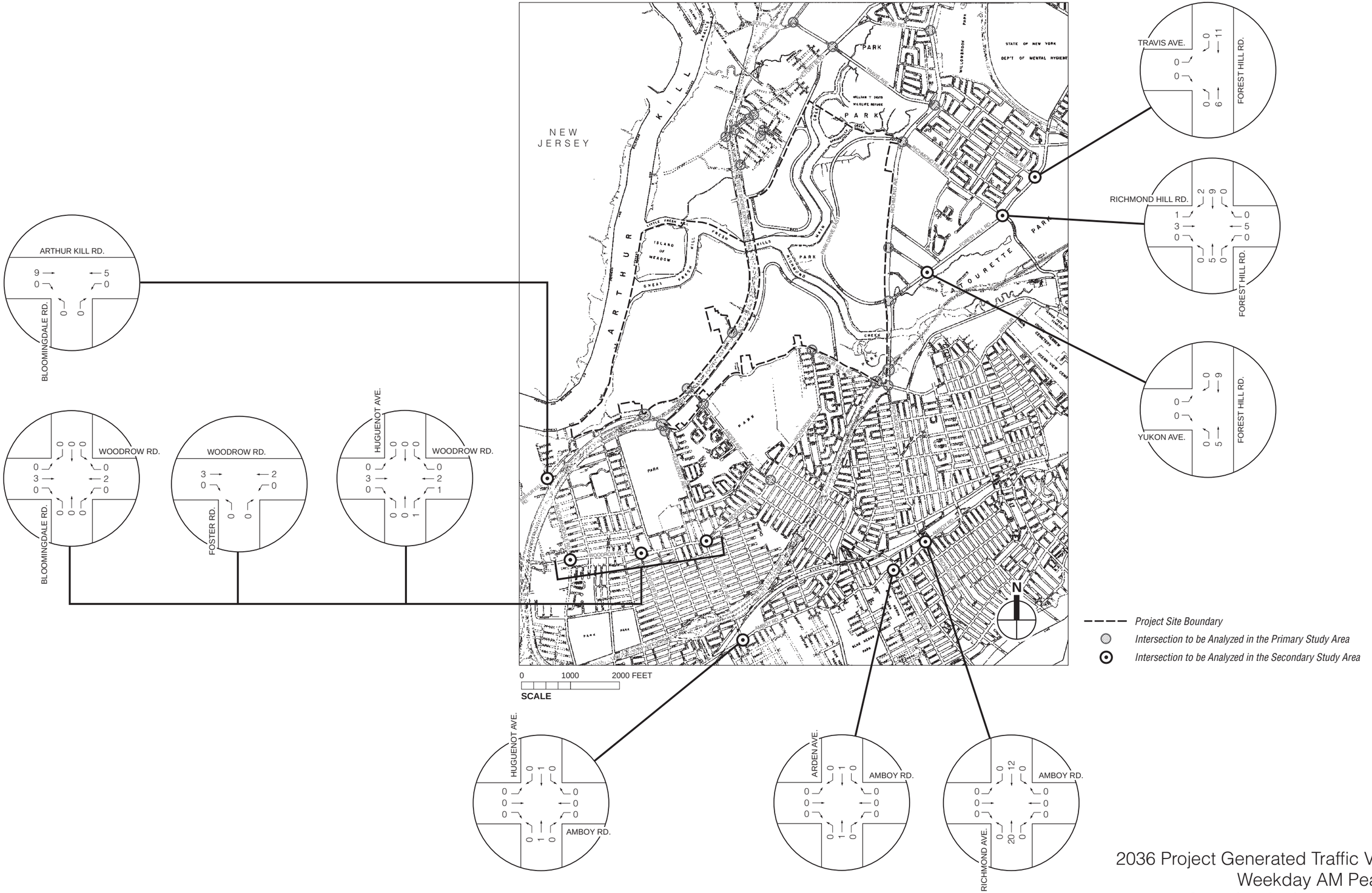
2016 Project Generated Traffic Volumes
Weekend PM Peak Hour
Secondary Study Area Intersections
Figure D-7b

2.10.09



2036 Project Generated Traffic Volumes
Weekday AM Peak Hour
Primary Study Area Intersections
Figure D-8a

2.10.09



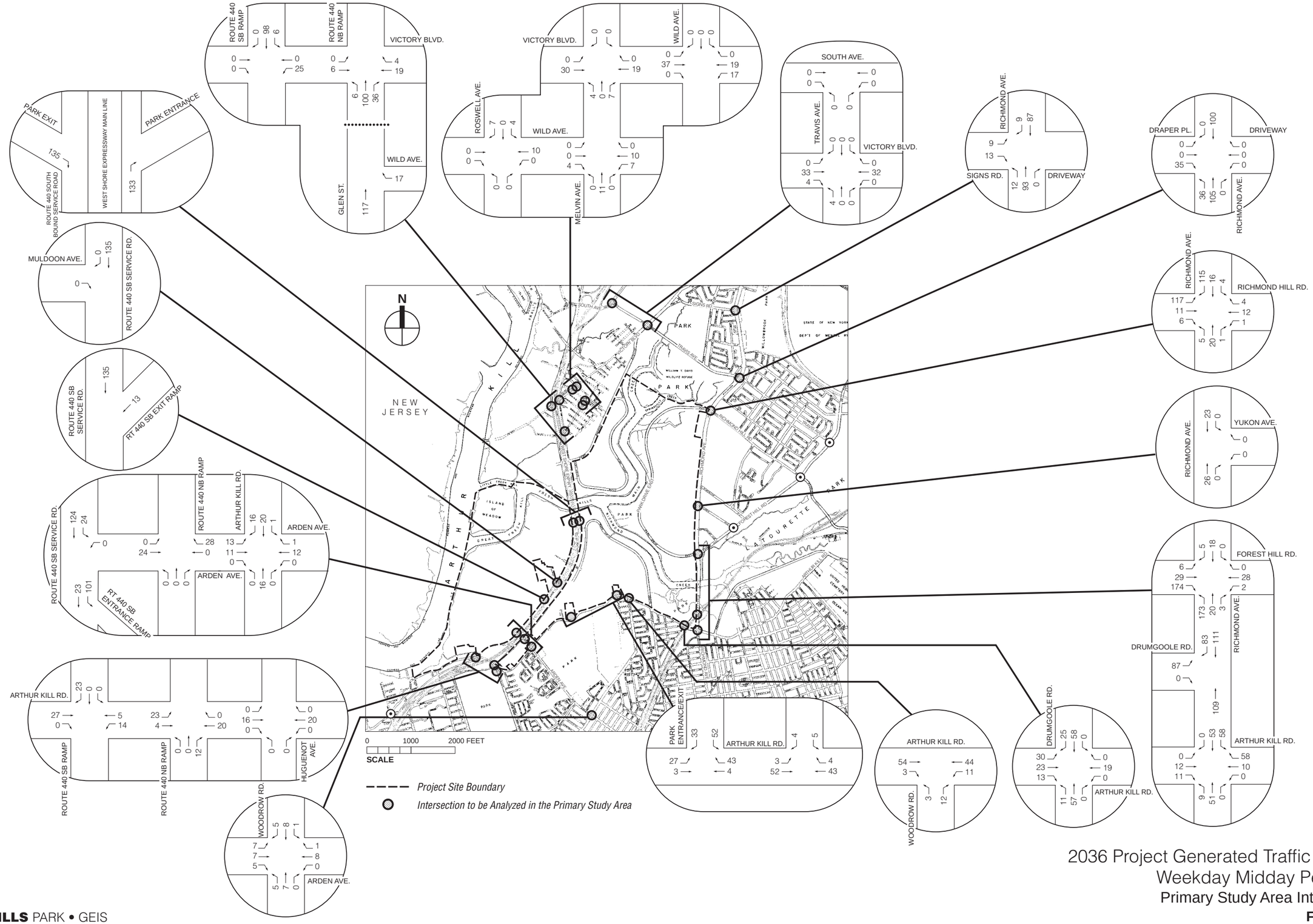
Project Site Boundary

Intersection to be Analyzed in the Primary Study Area

Intersection to be Analyzed in the Secondary Study Area

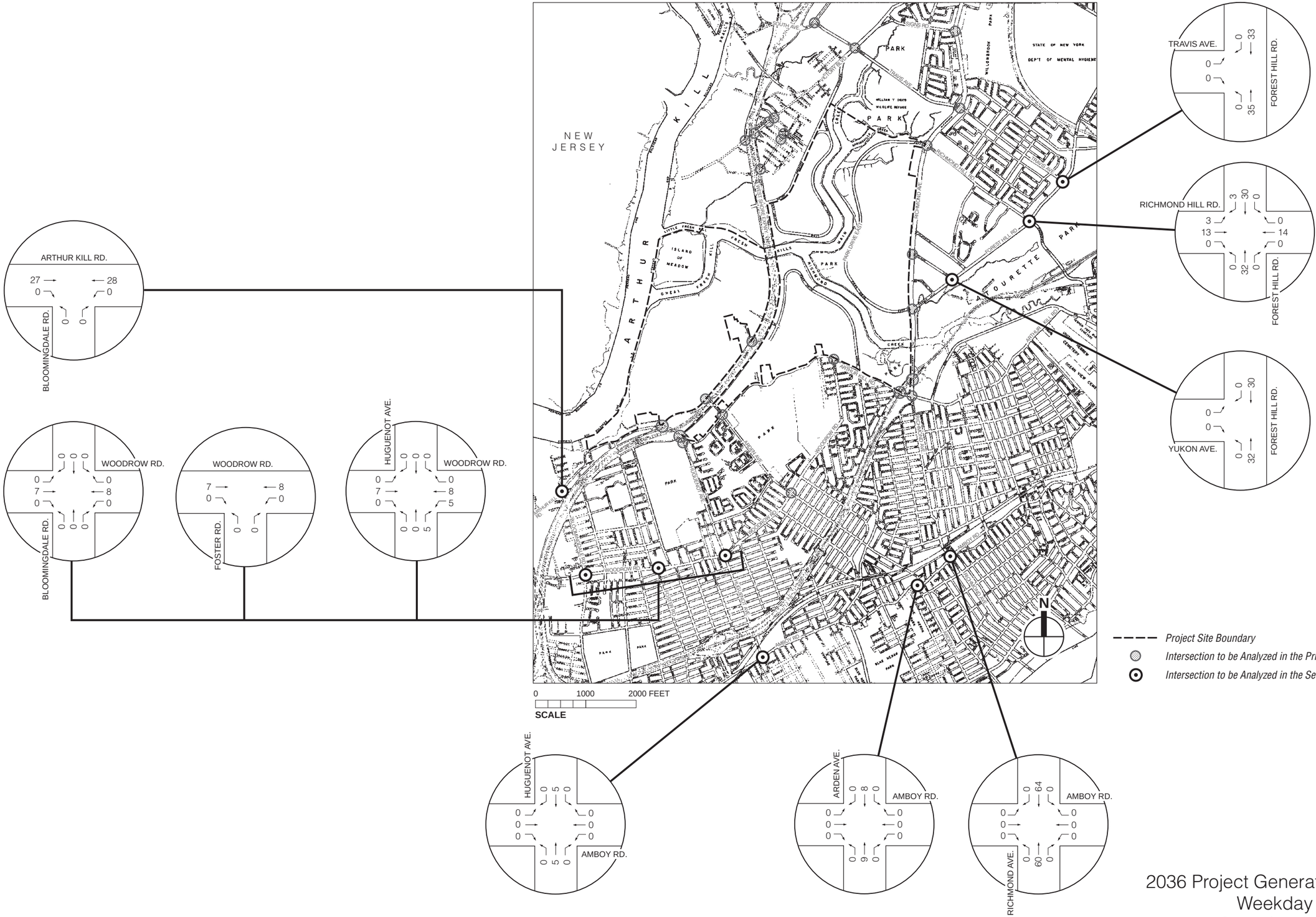
2036 Project Generated Traffic Volumes
Weekday AM Peak Hour
Secondary Study Area Intersections
Figure D-8b

2.10.09



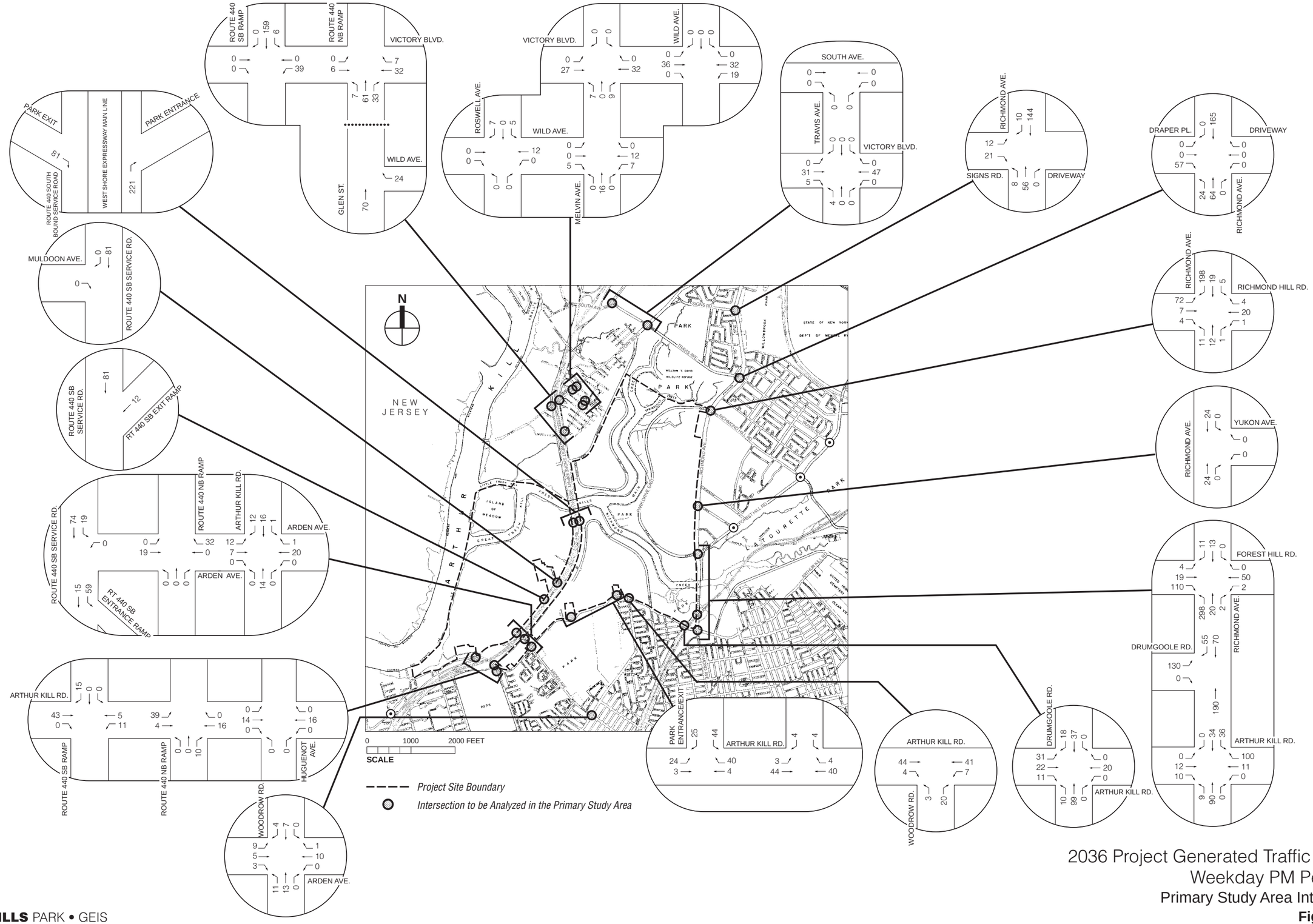
2036 Project Generated Traffic Volumes
Weekday Midday Peak Hour
Primary Study Area Intersections
Figure D-9a

2.10.09



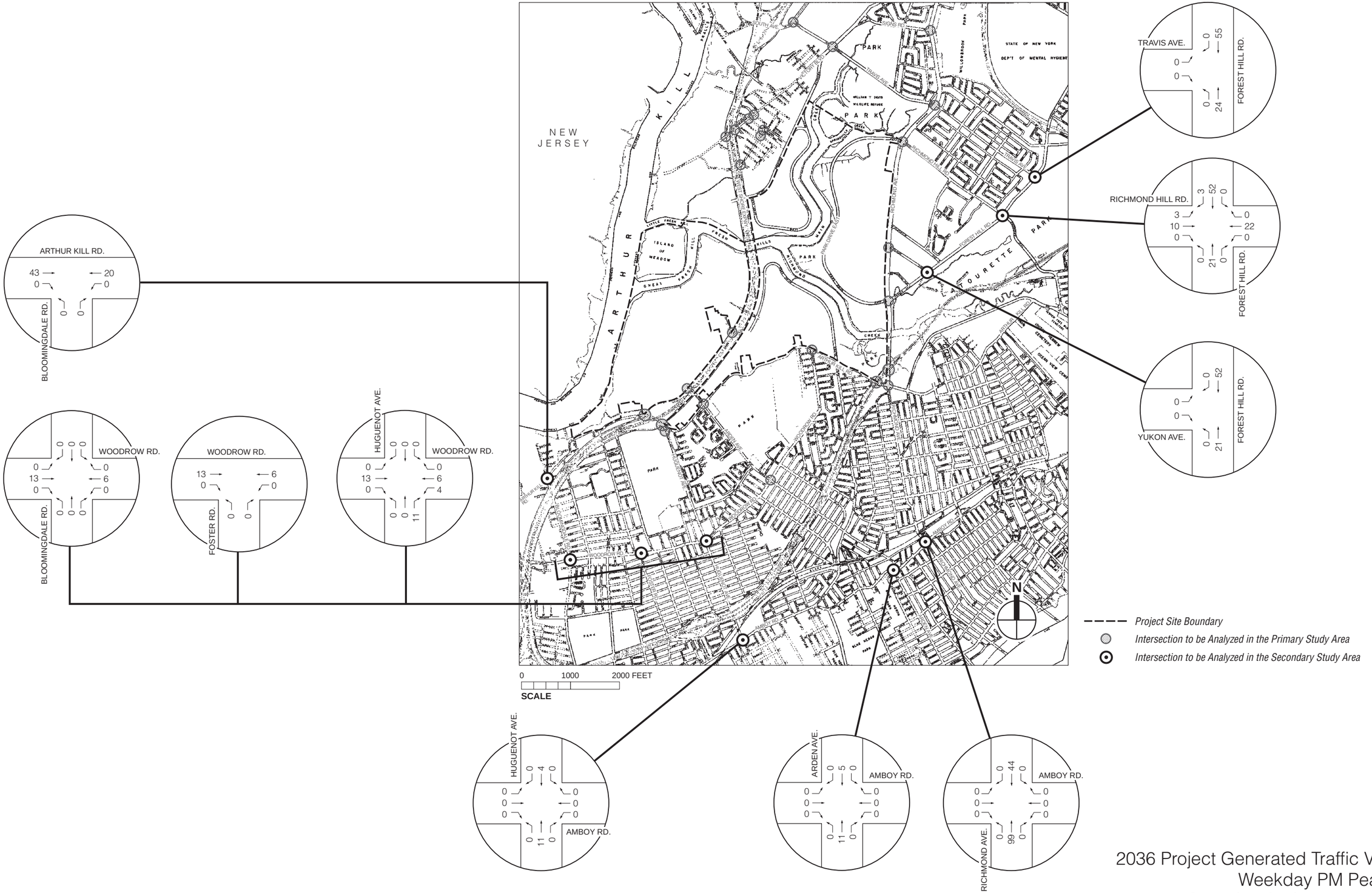
2036 Project Generated Traffic Volumes
Weekday Midday Peak Hour
Secondary Study Area Intersections
Figure D-9b

2.10.09



2036 Project Generated Traffic Volumes
Weekday PM Peak Hour
Primary Study Area Intersections
Figure D-10a

2.10.09



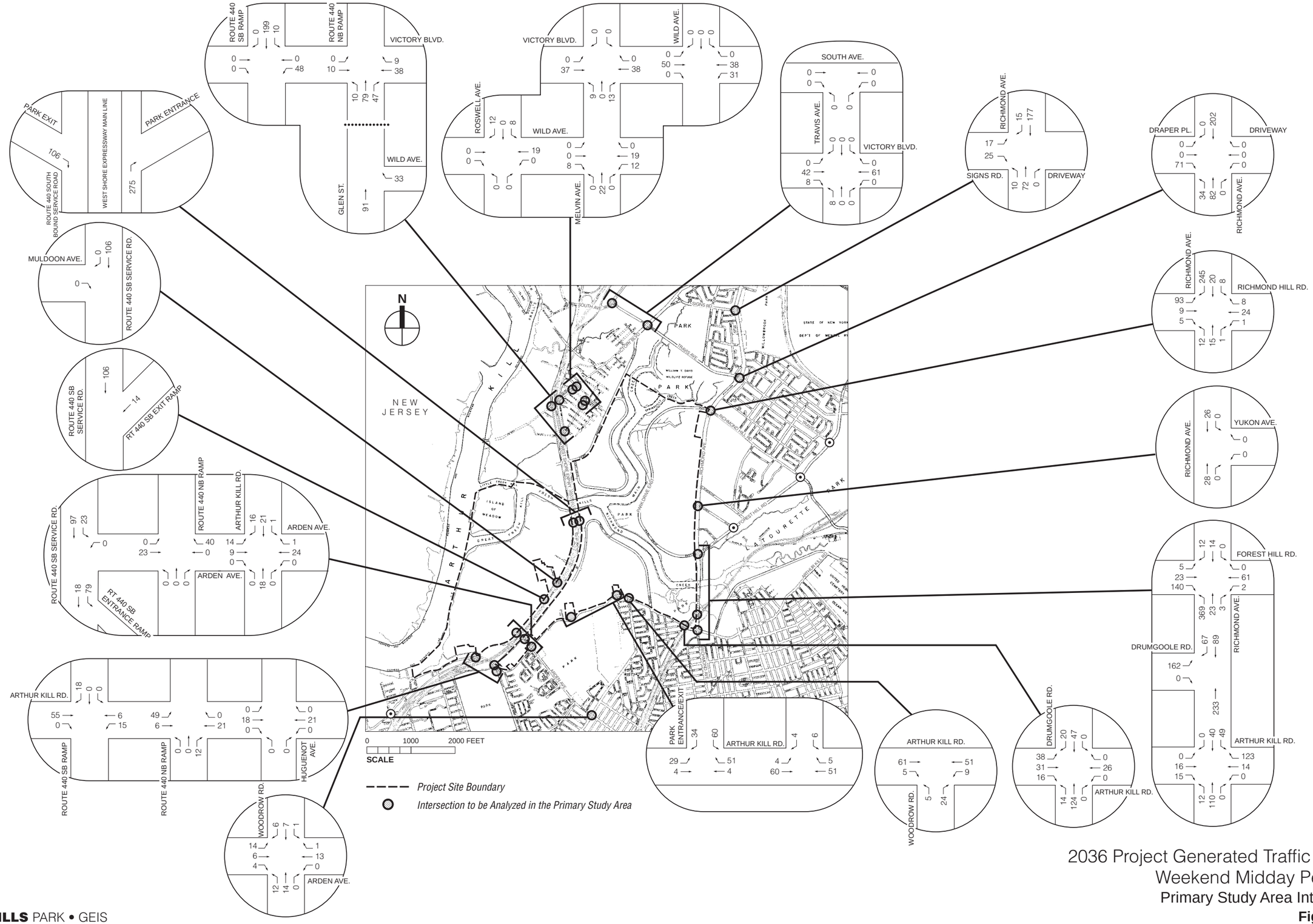
Project Site Boundary

Intersection to be Analyzed in the Primary Study Area

Intersection to be Analyzed in the Secondary Study Area

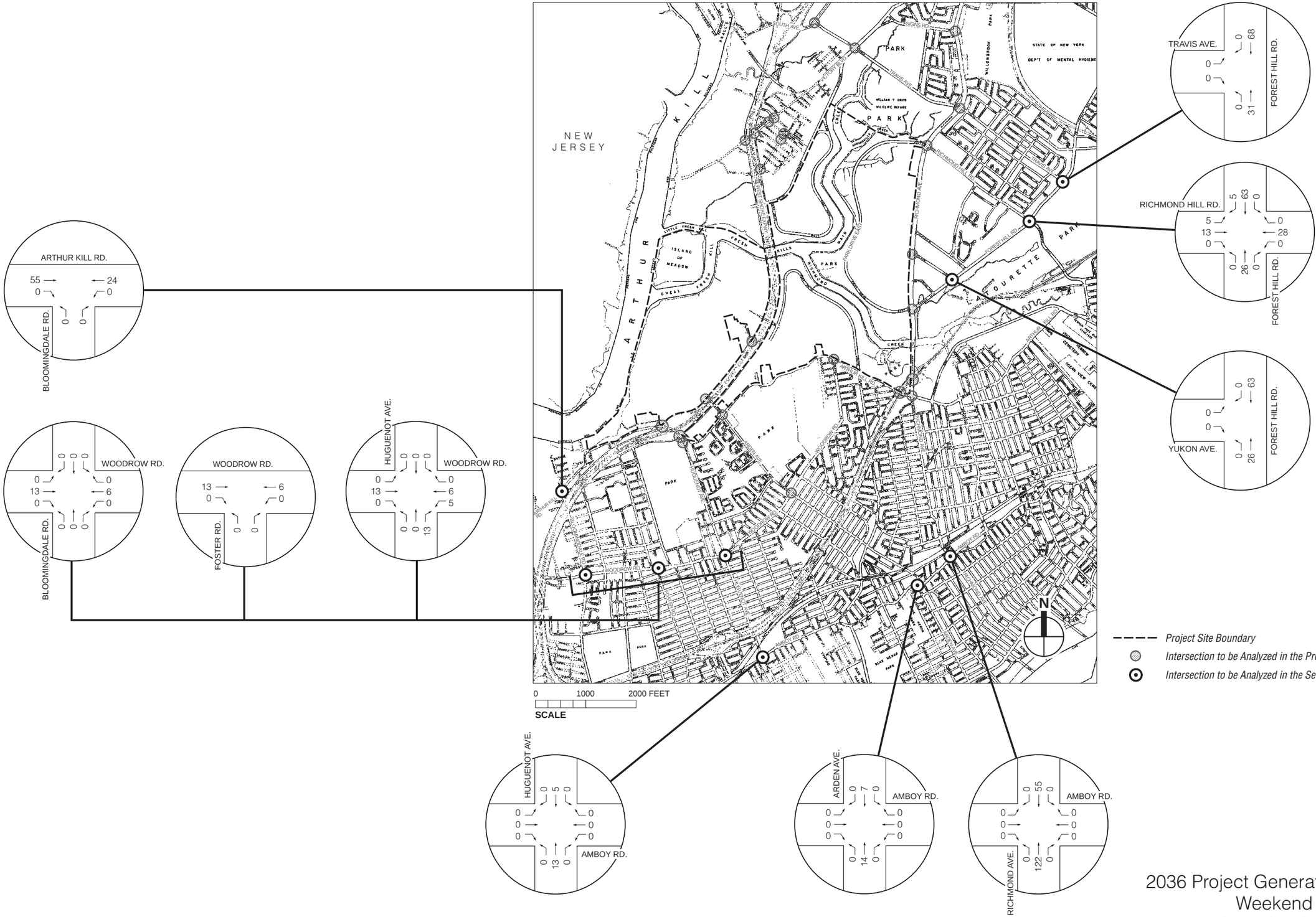
2036 Project Generated Traffic Volumes
Weekday PM Peak Hour
Secondary Study Area Intersections
Figure D-10b

2.10.09



2036 Project Generated Traffic Volumes
Weekend Midday Peak Hour
Primary Study Area Intersections
Figure D-11a

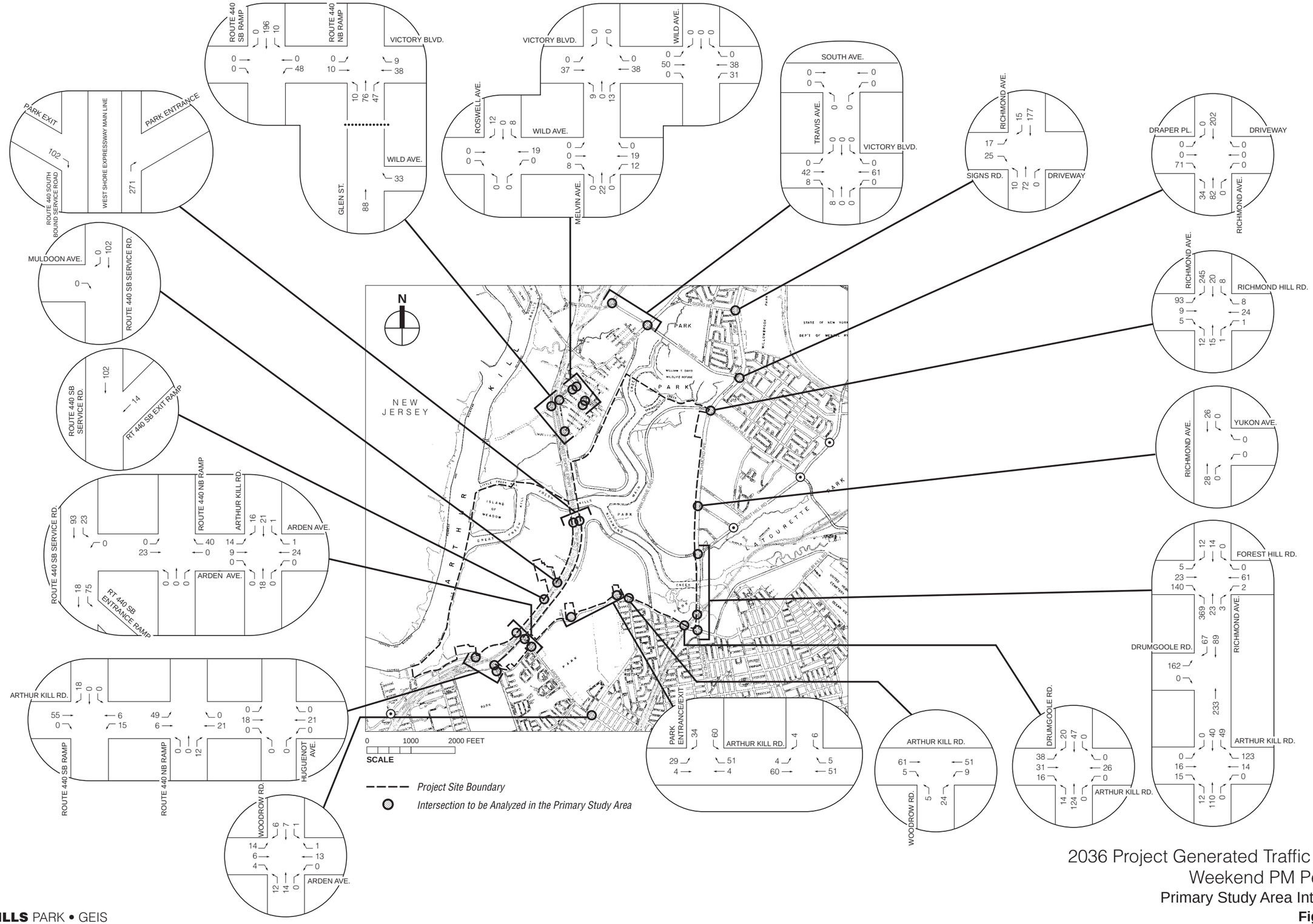
2.10.09



Project Site Boundary
Intersection to be Analyzed in the Primary Study Area
Intersection to be Analyzed in the Secondary Study Area

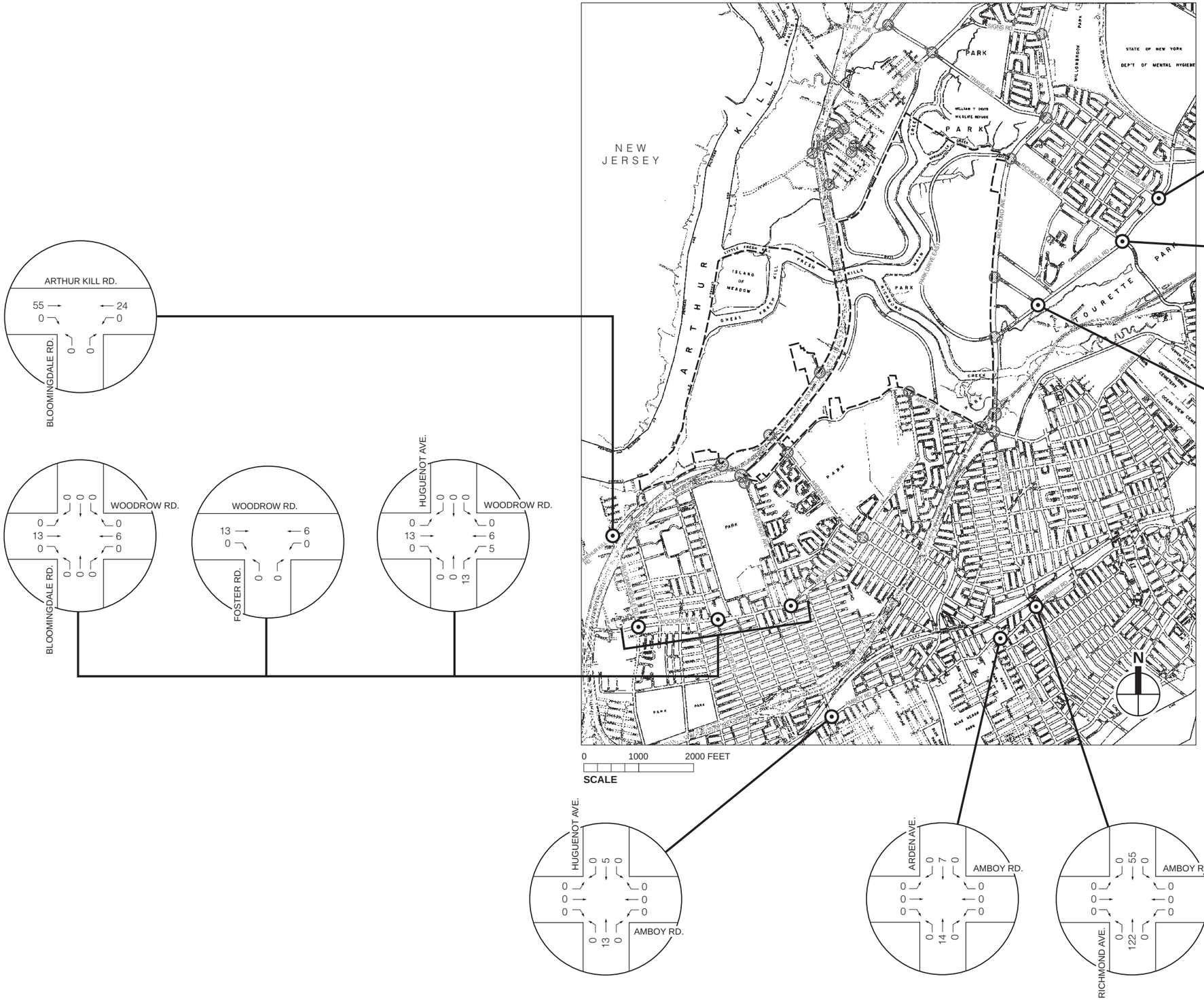
2036 Project Generated Traffic Volumes
Weekend Midday Peak Hour
Secondary Study Area Intersections
Figure D-11b

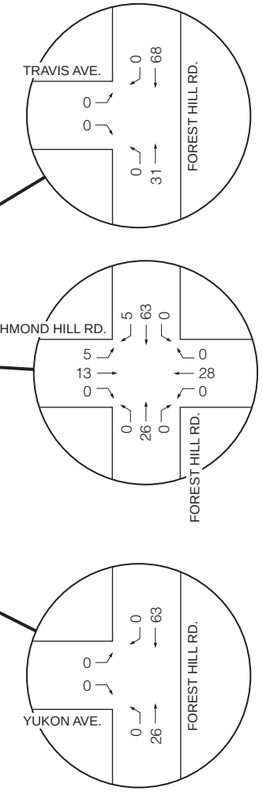
2.10.09



2036 Project Generated Traffic Volumes
Weekend PM Peak Hour
Primary Study Area Intersections
Figure D-12a

2.10.09





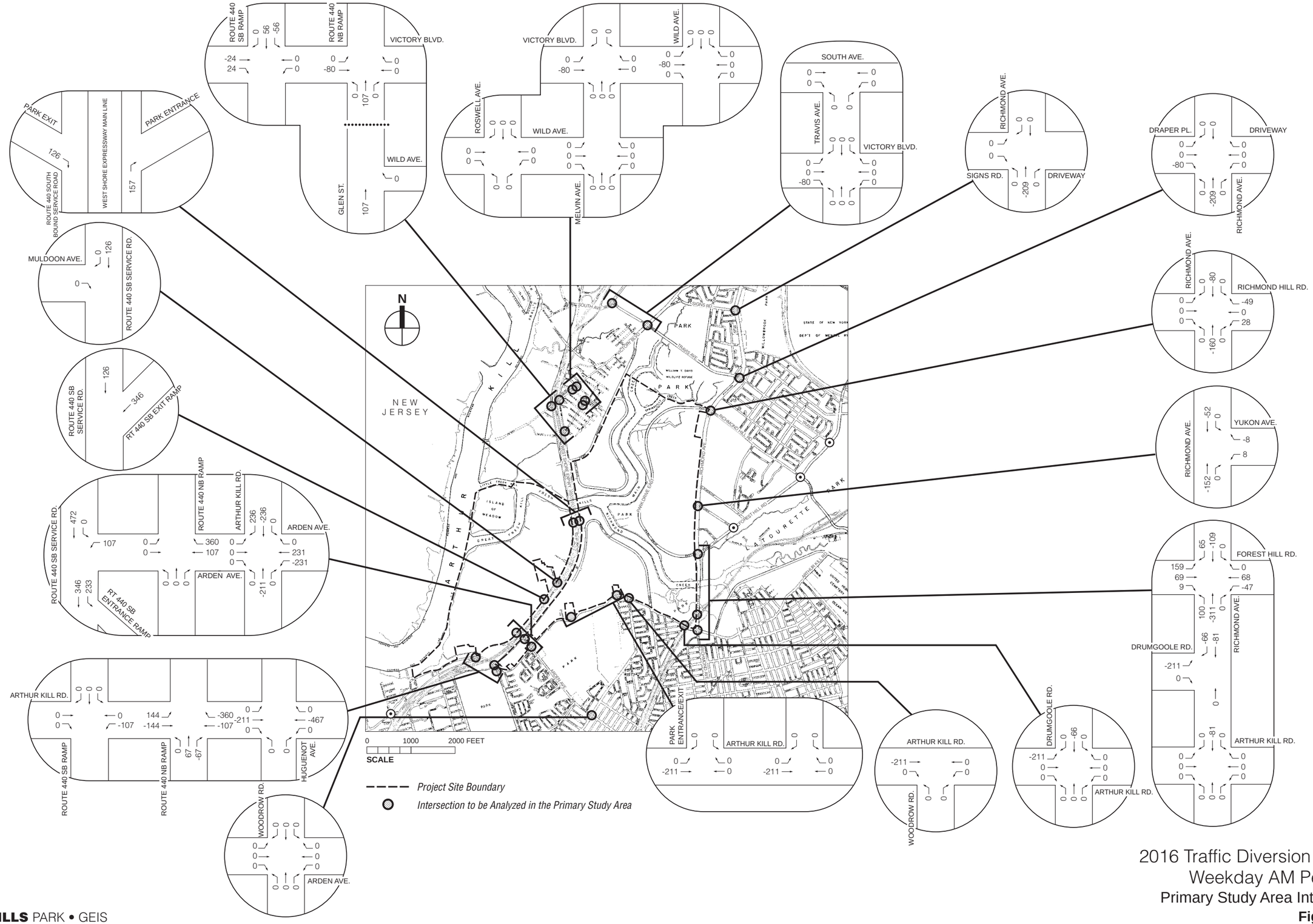
Project Site Boundary
Intersection to be Analyzed in the Primary Study Area
Intersection to be Analyzed in the Secondary Study Area

2036 Project Generated Traffic Volumes
Weekend PM Peak Hour
Secondary Study Area Intersections
Figure D-12b



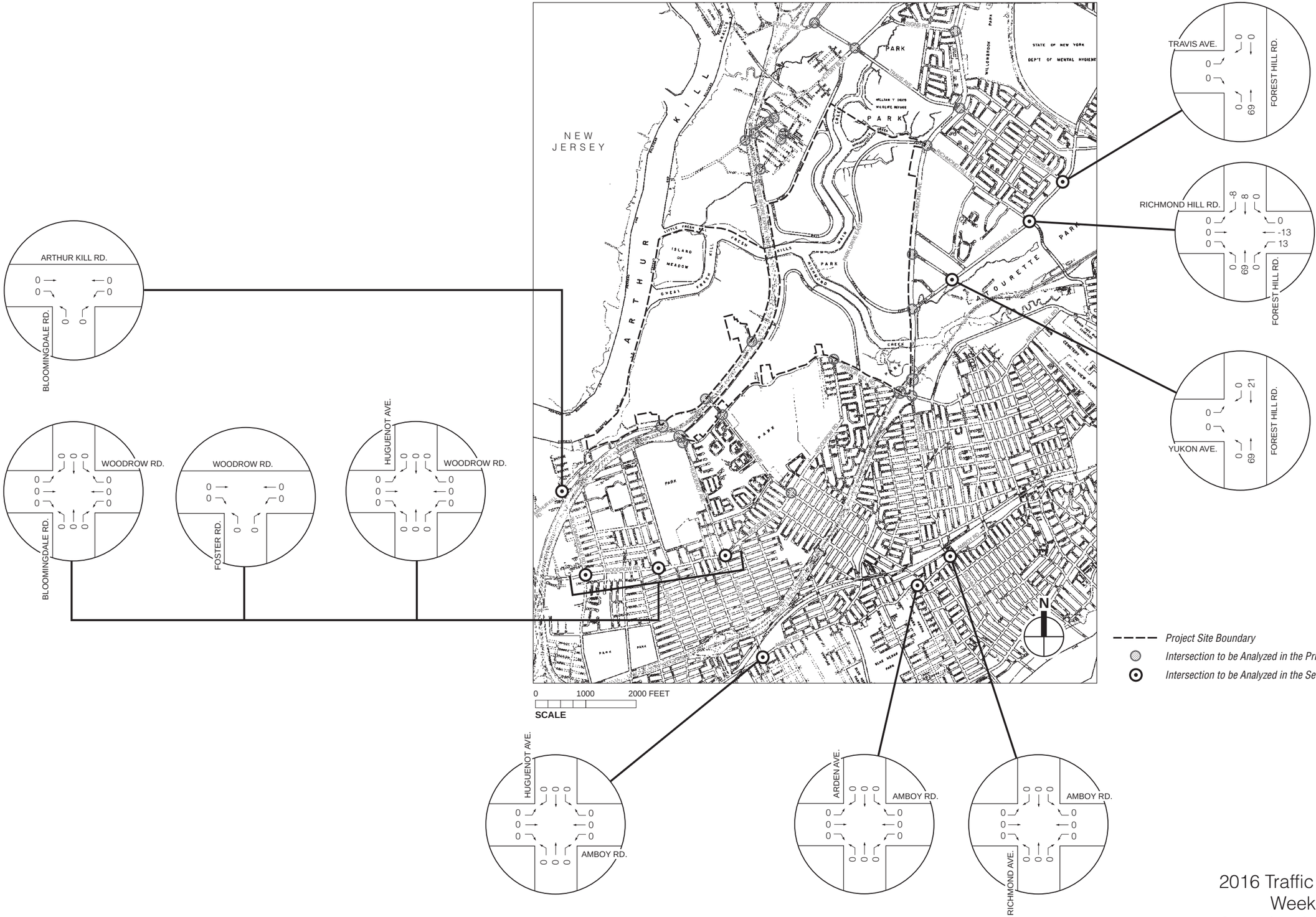
Traffic Study Area
Figure D-13

2.10.09



2016 Traffic Diversion Volumes
Weekday AM Peak Hour
Primary Study Area Intersections
Figure D-14a

2.10.09



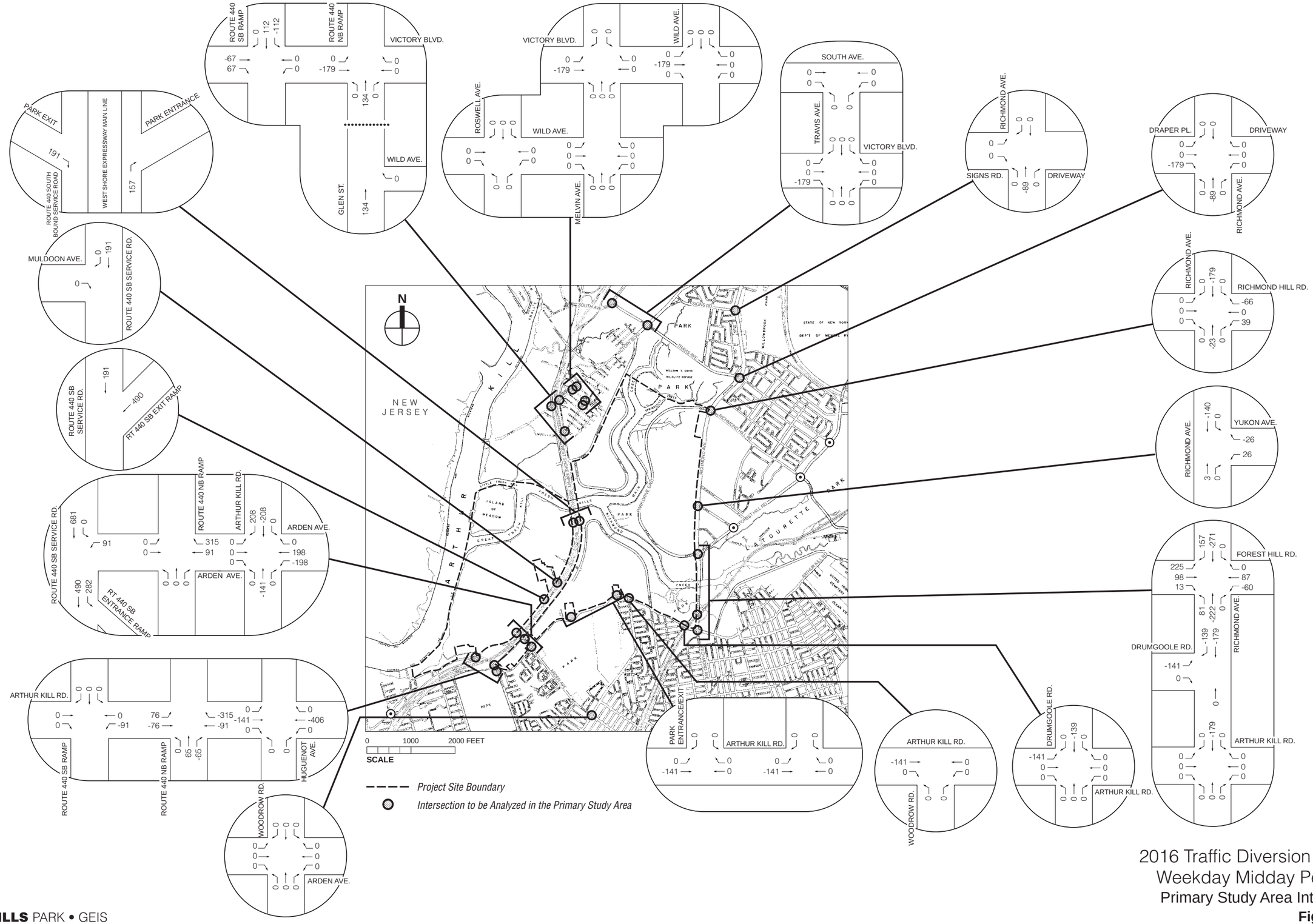
Project Site Boundary

Intersection to be Analyzed in the Primary Study Area

Intersection to be Analyzed in the Secondary Study Area

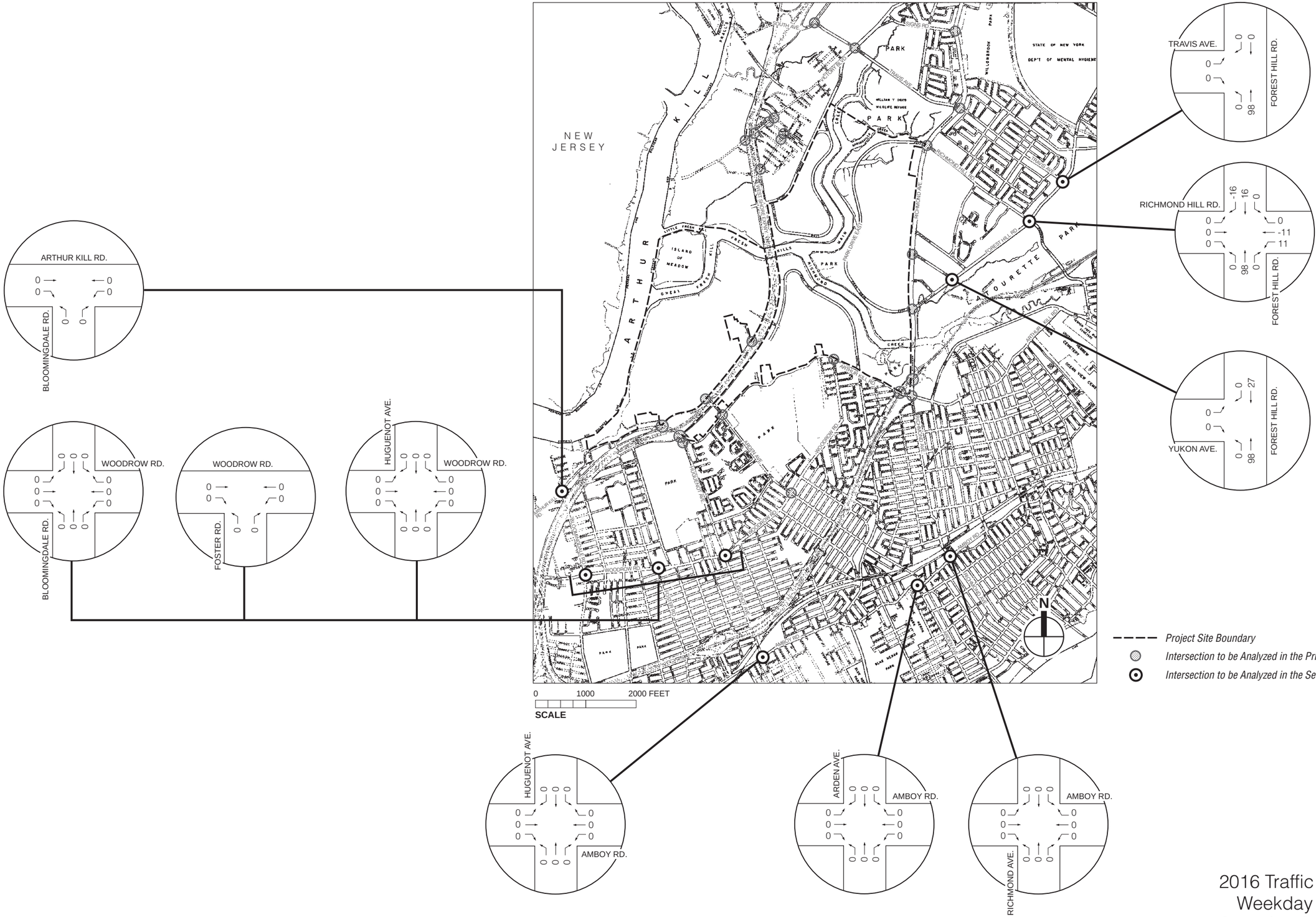
2016 Traffic Diversion Volumes
Weekday AM Peak Hour
Secondary Study Area Intersections
Figure D-14b

2.10.09



2016 Traffic Diversion Volumes
Weekday Midday Peak Hour
Primary Study Area Intersections
Figure D-15a

2.10.09



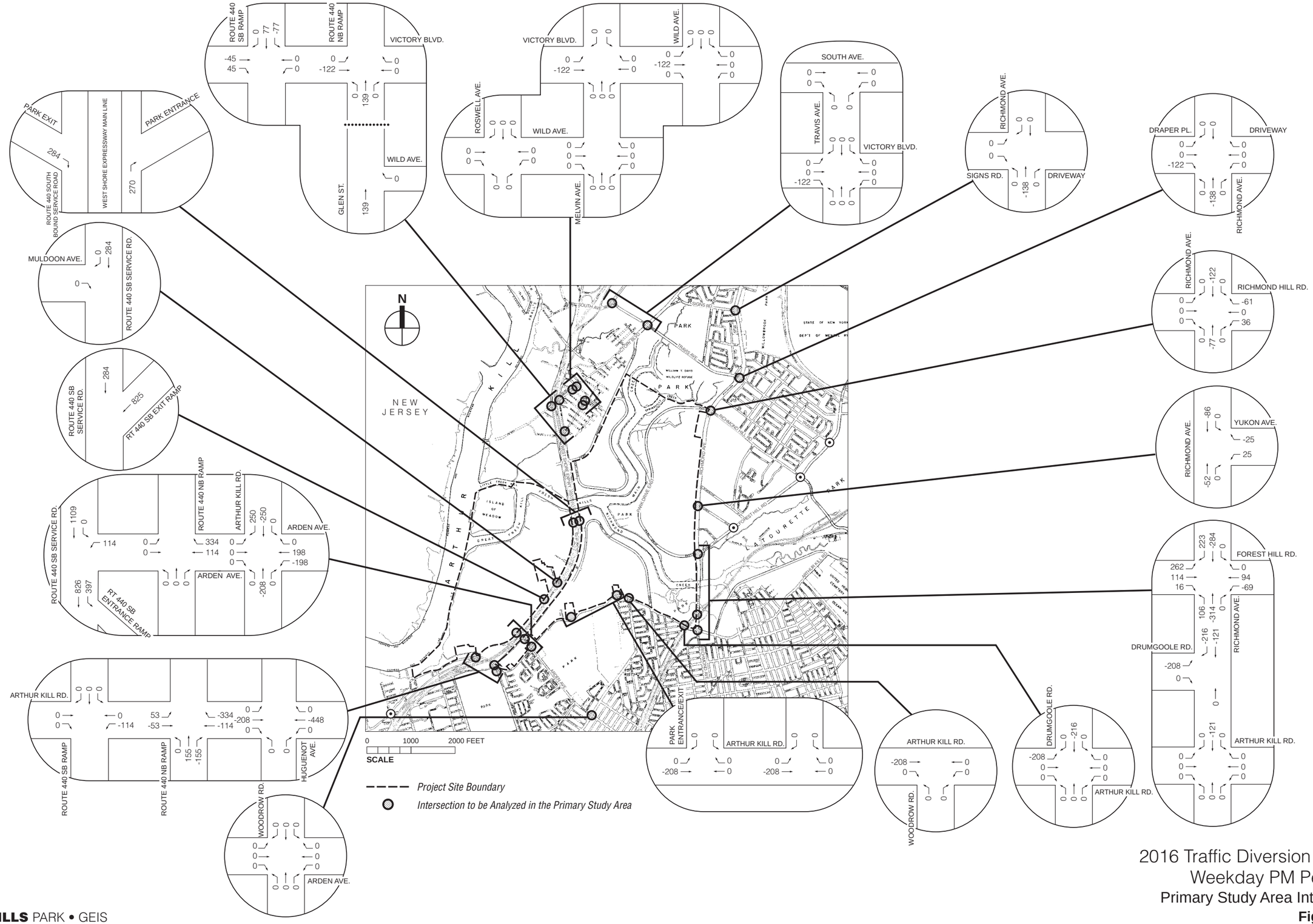
Project Site Boundary

Intersection to be Analyzed in the Primary Study Area

Intersection to be Analyzed in the Secondary Study Area

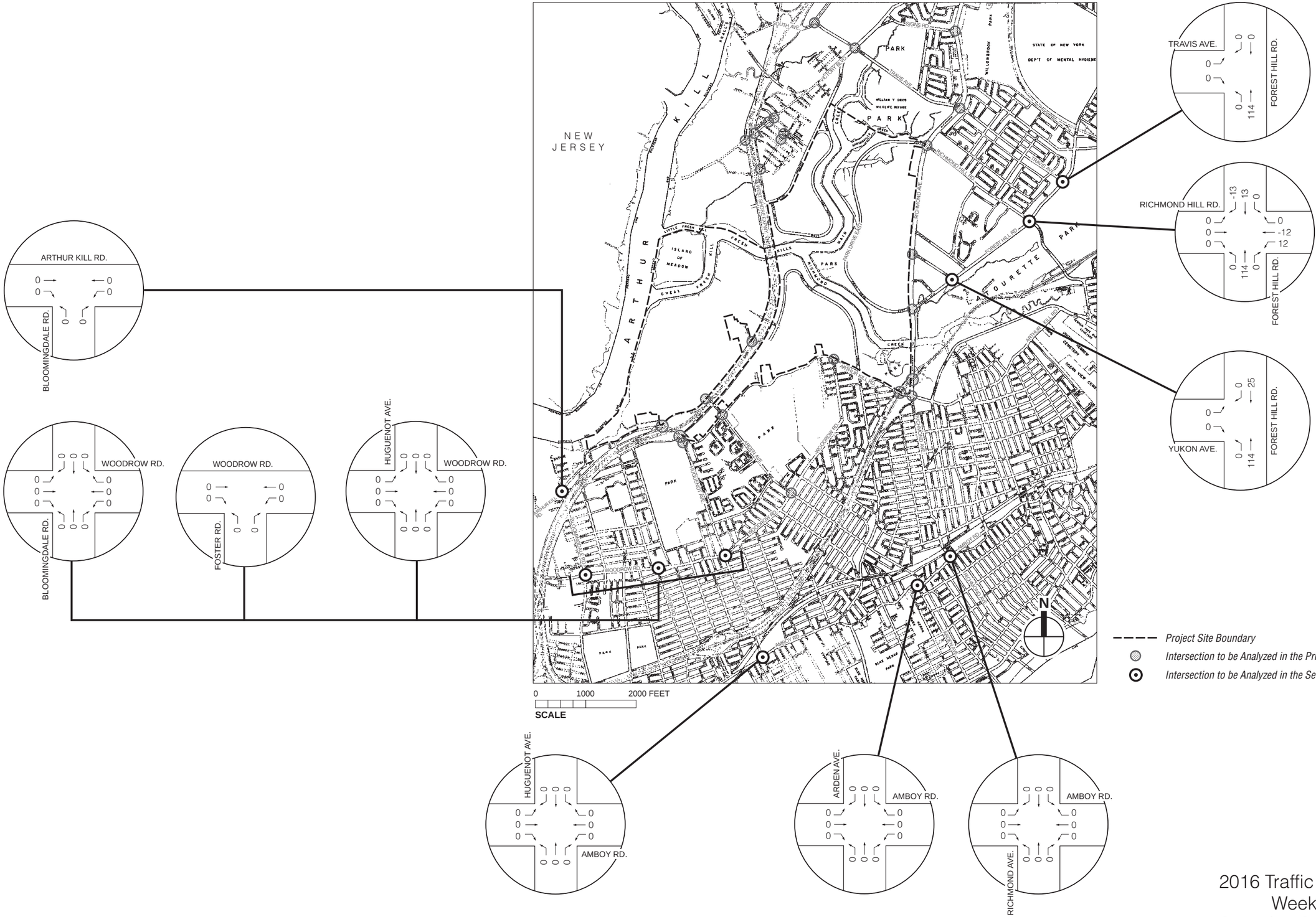
2016 Traffic Diversion Volumes
Weekday Midday Peak Hour
Secondary Study Area Intersections
Figure D-15b

2.10.09



2016 Traffic Diversion Volumes
Weekday PM Peak Hour
Primary Study Area Intersections
Figure D-16a

2.10.09



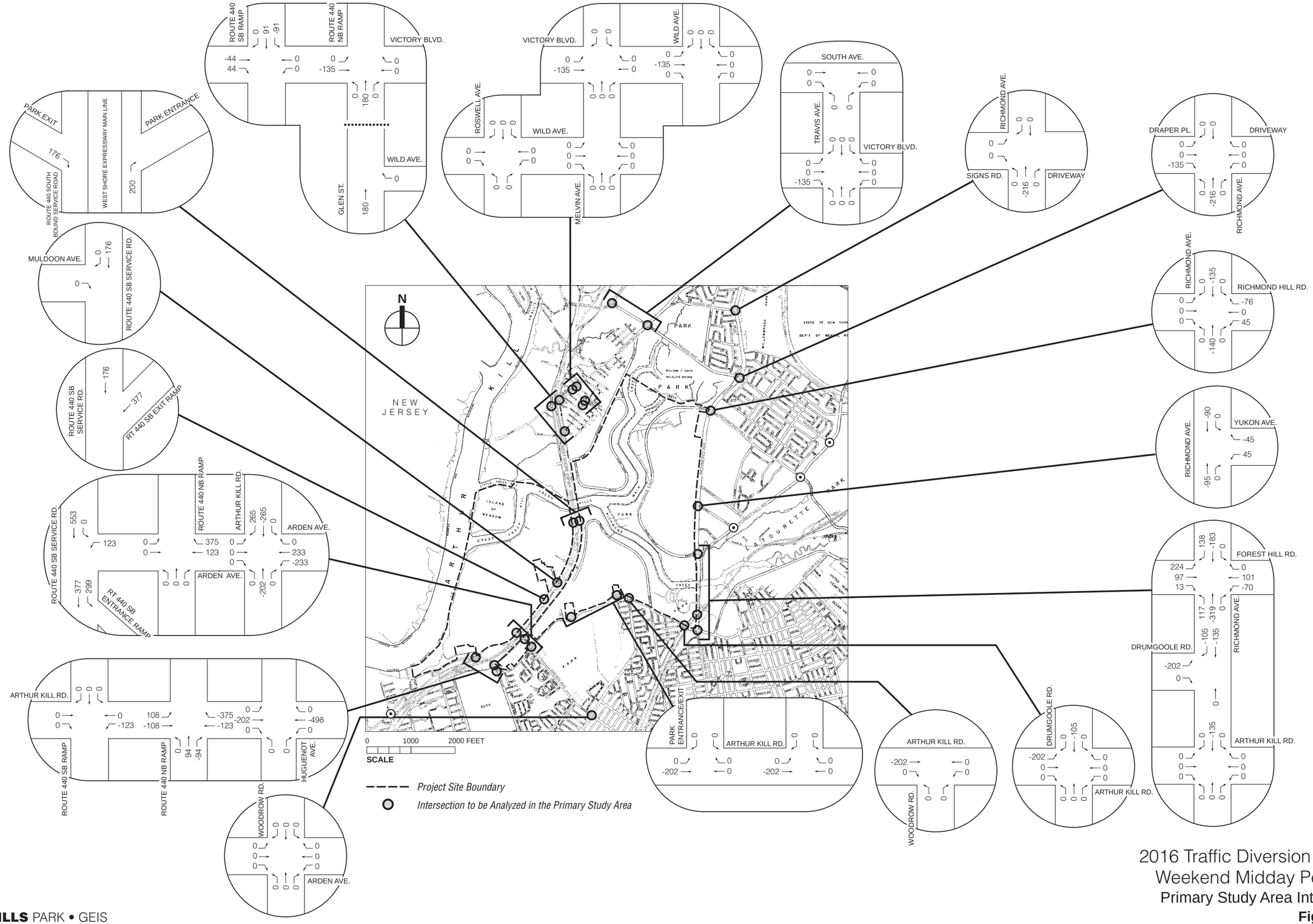
Project Site Boundary

Intersection to be Analyzed in the Primary Study Area

Intersection to be Analyzed in the Secondary Study Area

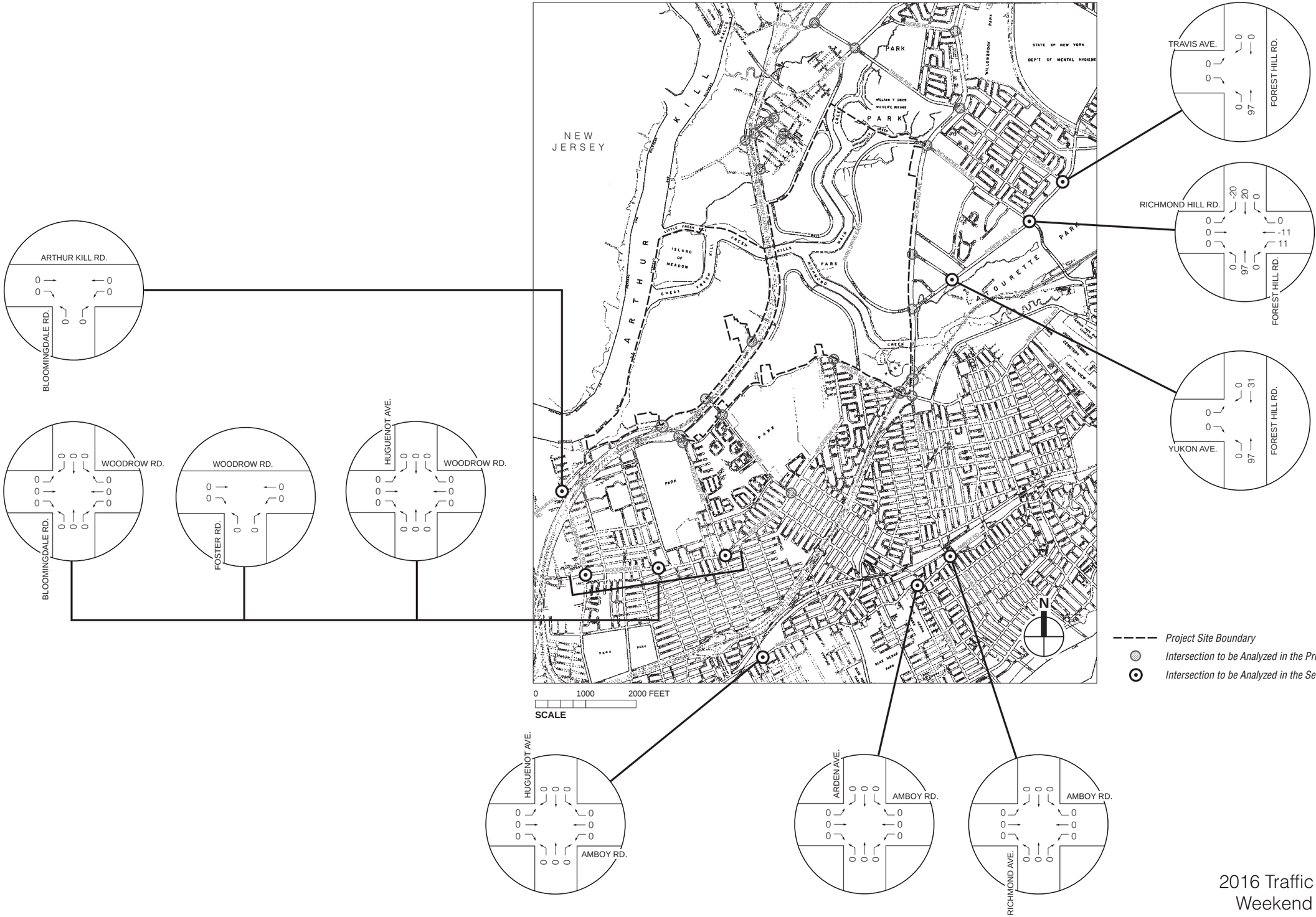
2016 Traffic Diversion Volumes
Weekday PM Peak Hour
Secondary Study Area Intersections
Figure D-16b

2.10.09



2016 Traffic Diversion Volumes
Weekend Midday Peak Hour
Primary Study Area Intersections
Figure D-17a

2.10.09



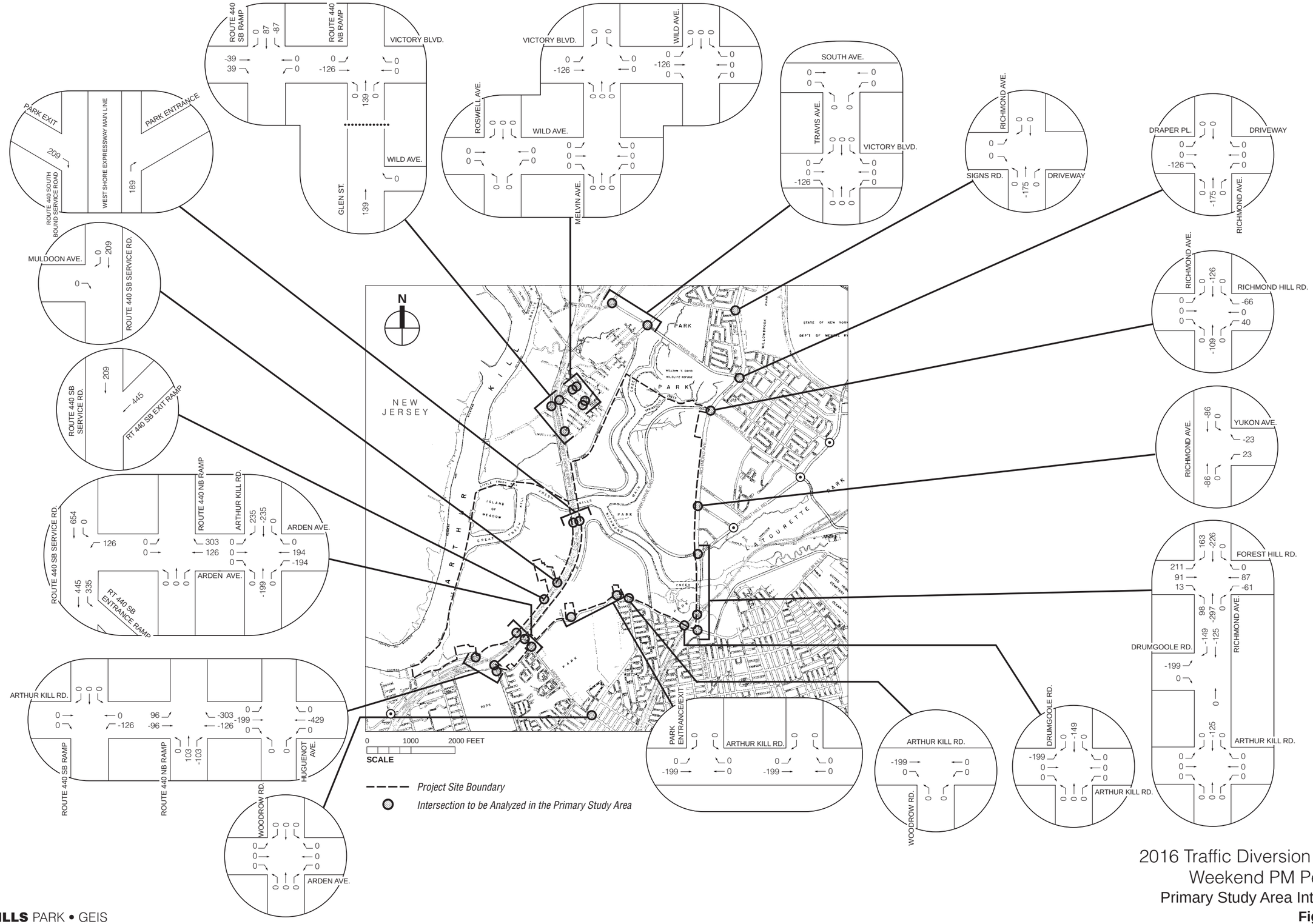
Project Site Boundary

Intersection to be Analyzed in the Primary Study Area

Intersection to be Analyzed in the Secondary Study Area

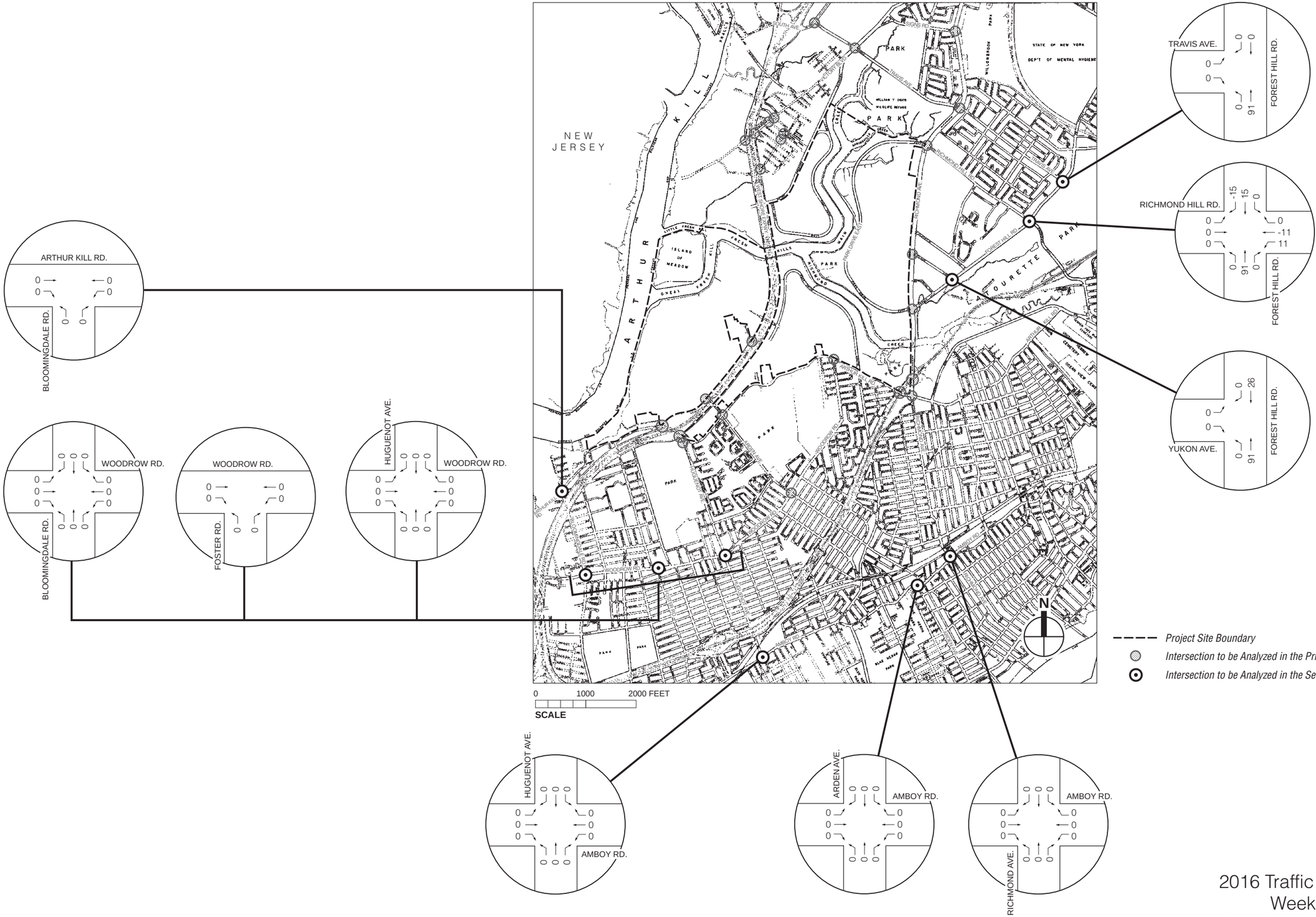
2016 Traffic Diversion Volumes
Weekend Midday Peak Hour
Secondary Study Area Intersections
Figure D-17b

2.10.09



2016 Traffic Diversion Volumes
Weekend PM Peak Hour
Primary Study Area Intersections
Figure D-18a

2.10.09



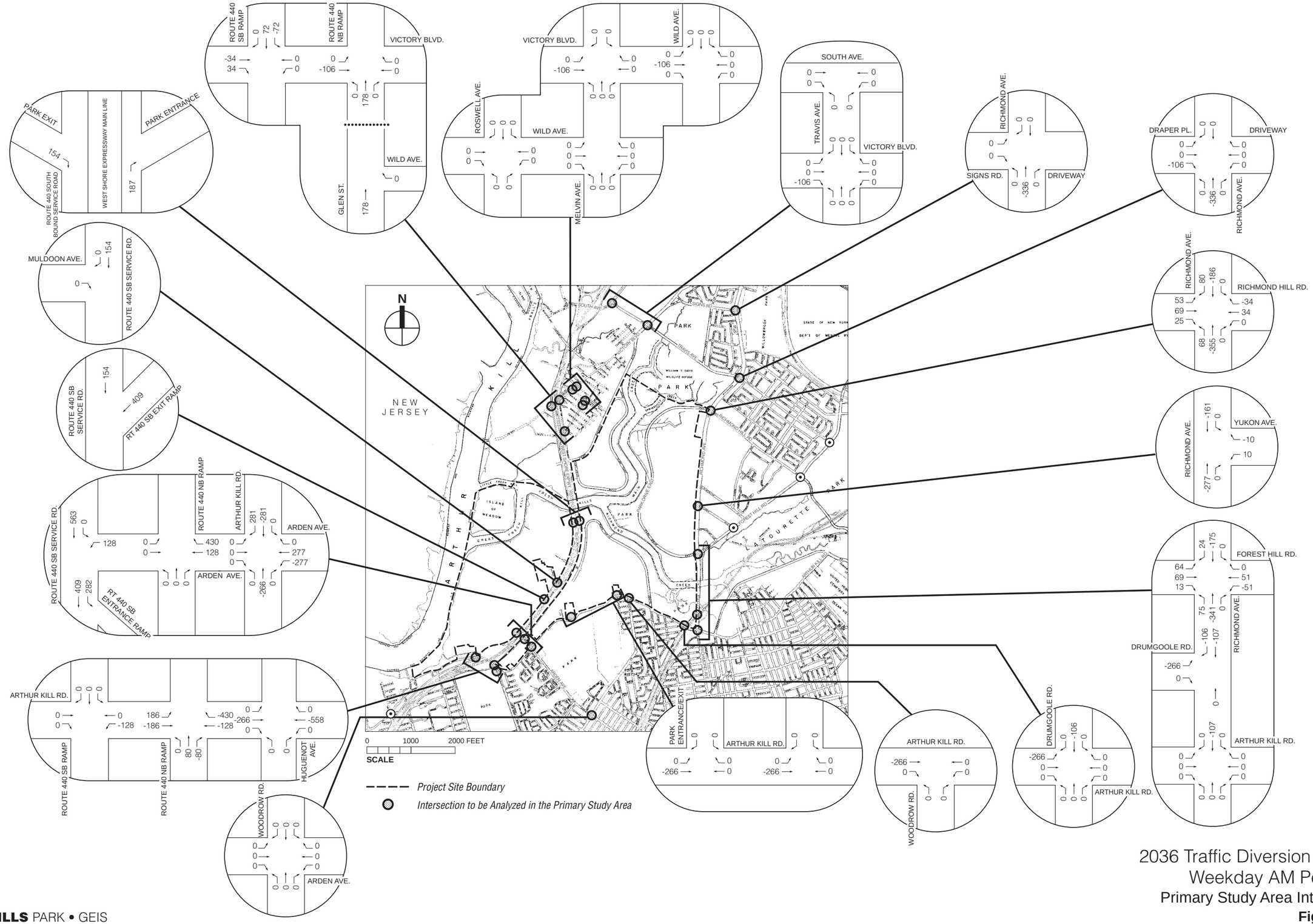
Project Site Boundary

Intersection to be Analyzed in the Primary Study Area

Intersection to be Analyzed in the Secondary Study Area

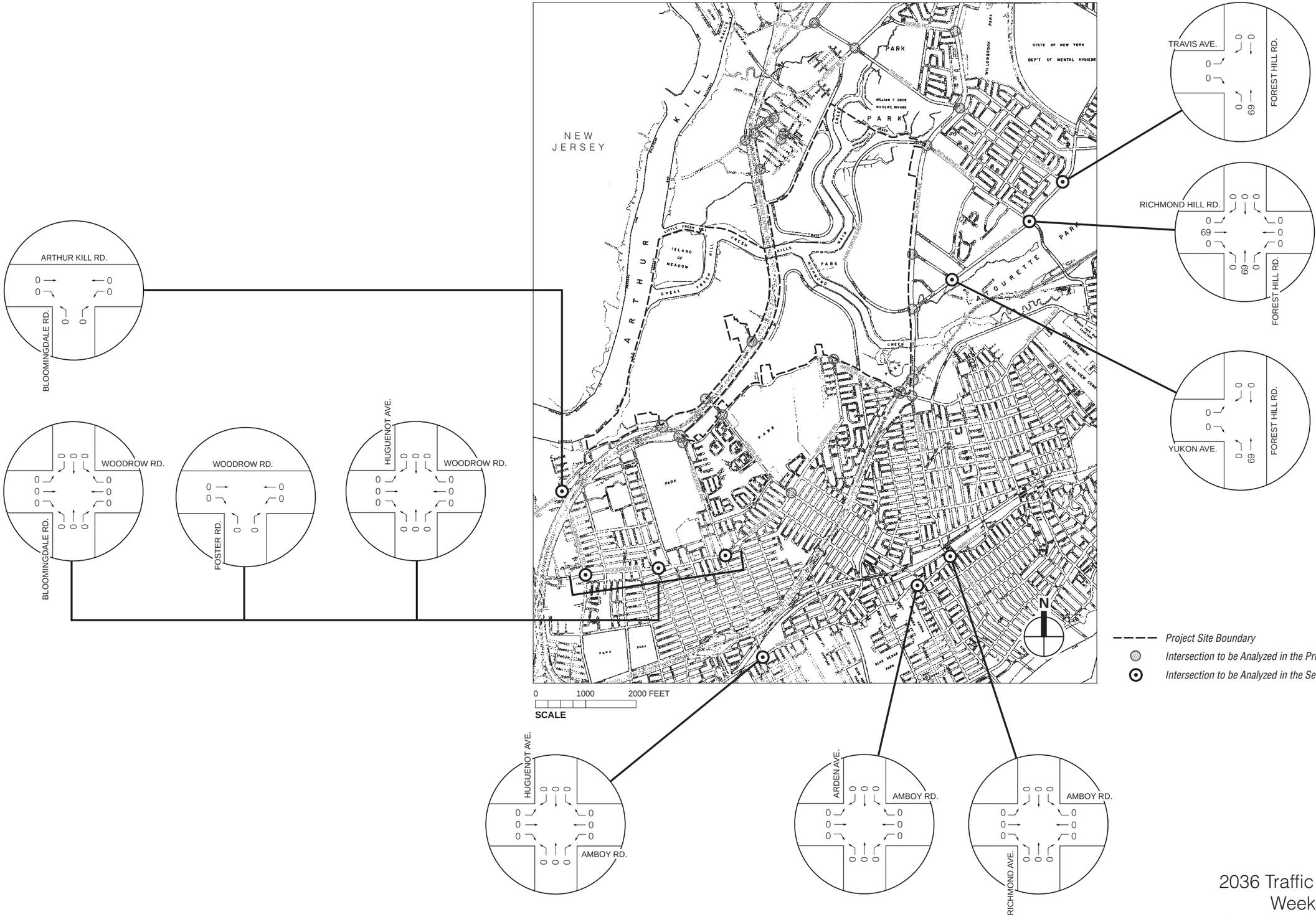
2016 Traffic Diversion Volumes
Weekend PM Peak Hour
Secondary Study Area Intersections
Figure D-18b

2.10.09



2036 Traffic Diversion Volumes
Weekday AM Peak Hour
Primary Study Area Intersections
Figure D-19a

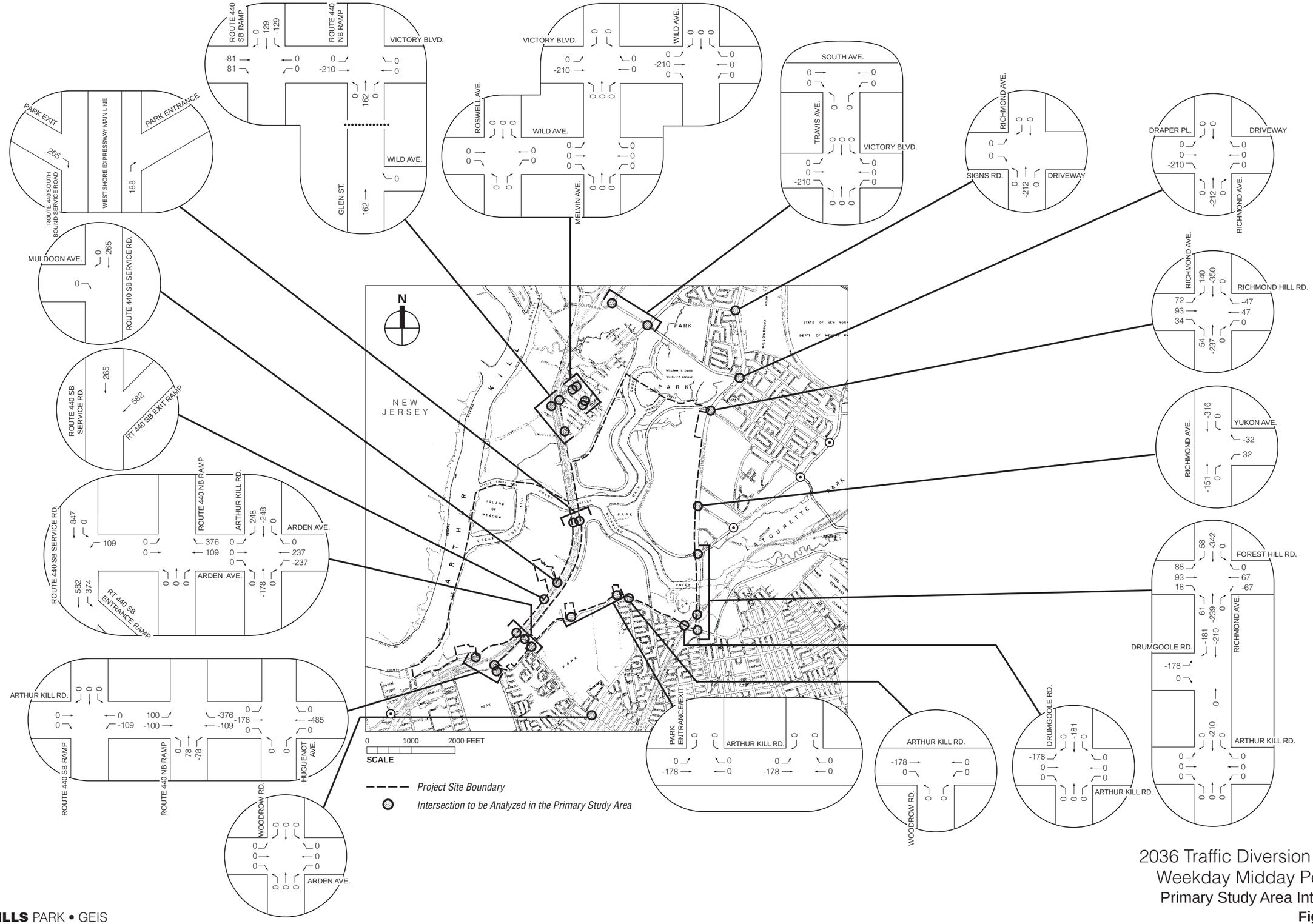
2.10.09



Project Site Boundary
Intersection to be Analyzed in the Primary Study Area
Intersection to be Analyzed in the Secondary Study Area

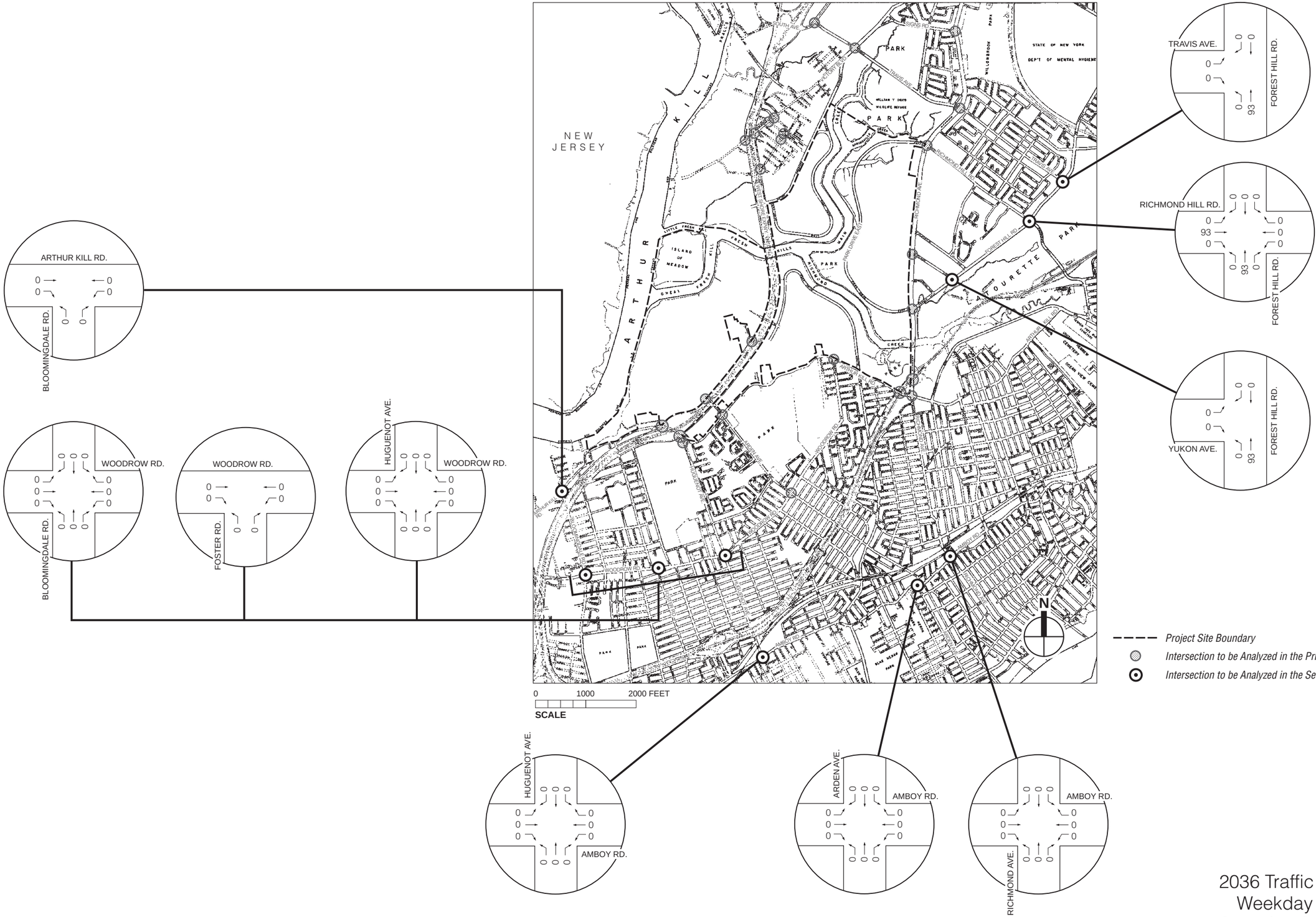
2036 Traffic Diversion Volumes
Weekday AM Peak Hour
Secondary Study Area Intersections
Figure D-19b

2.10.09



2036 Traffic Diversion Volumes
Weekday Midday Peak Hour
Primary Study Area Intersections
Figure D-20a

2.10.09



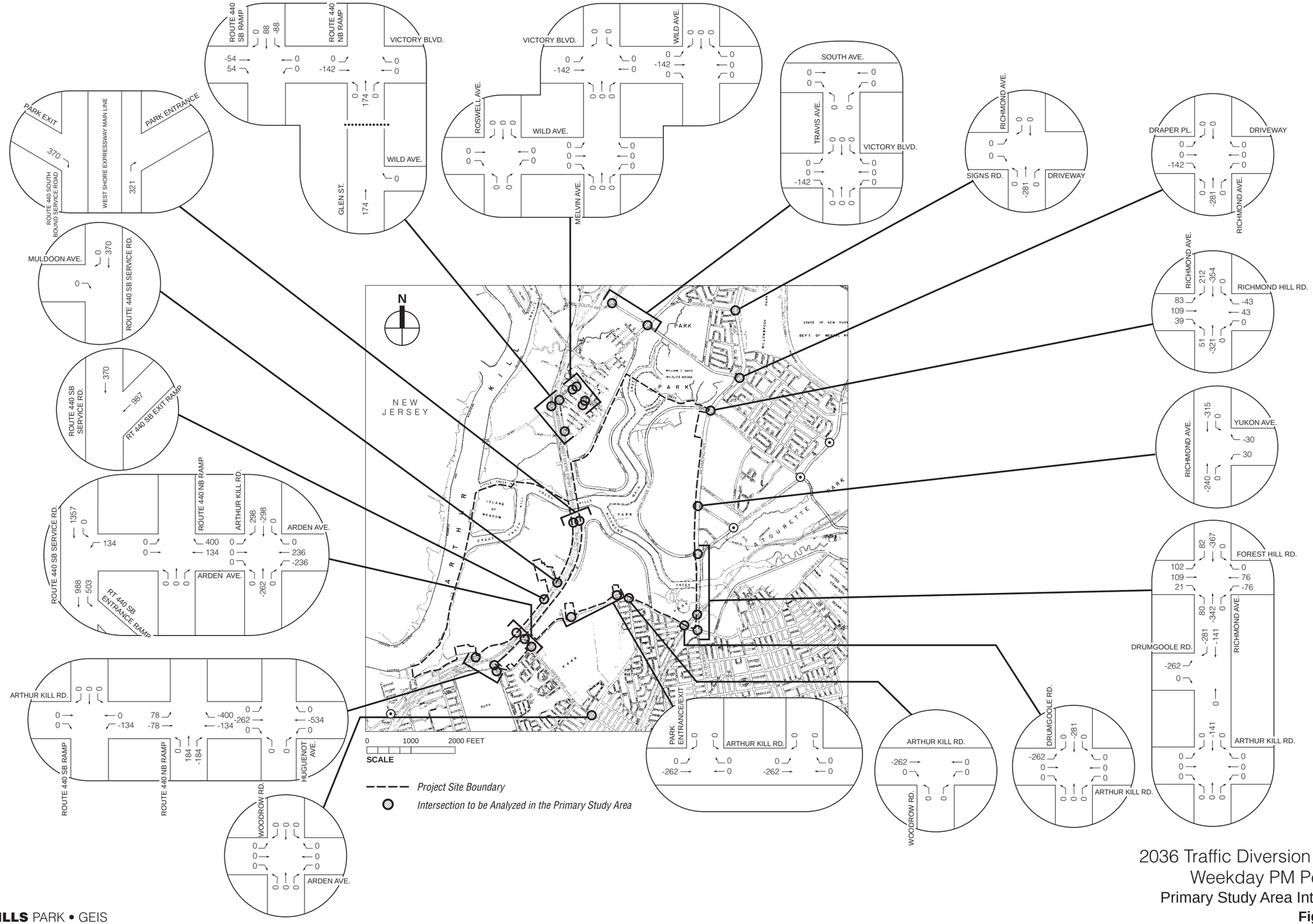
Project Site Boundary

Intersection to be Analyzed in the Primary Study Area

Intersection to be Analyzed in the Secondary Study Area

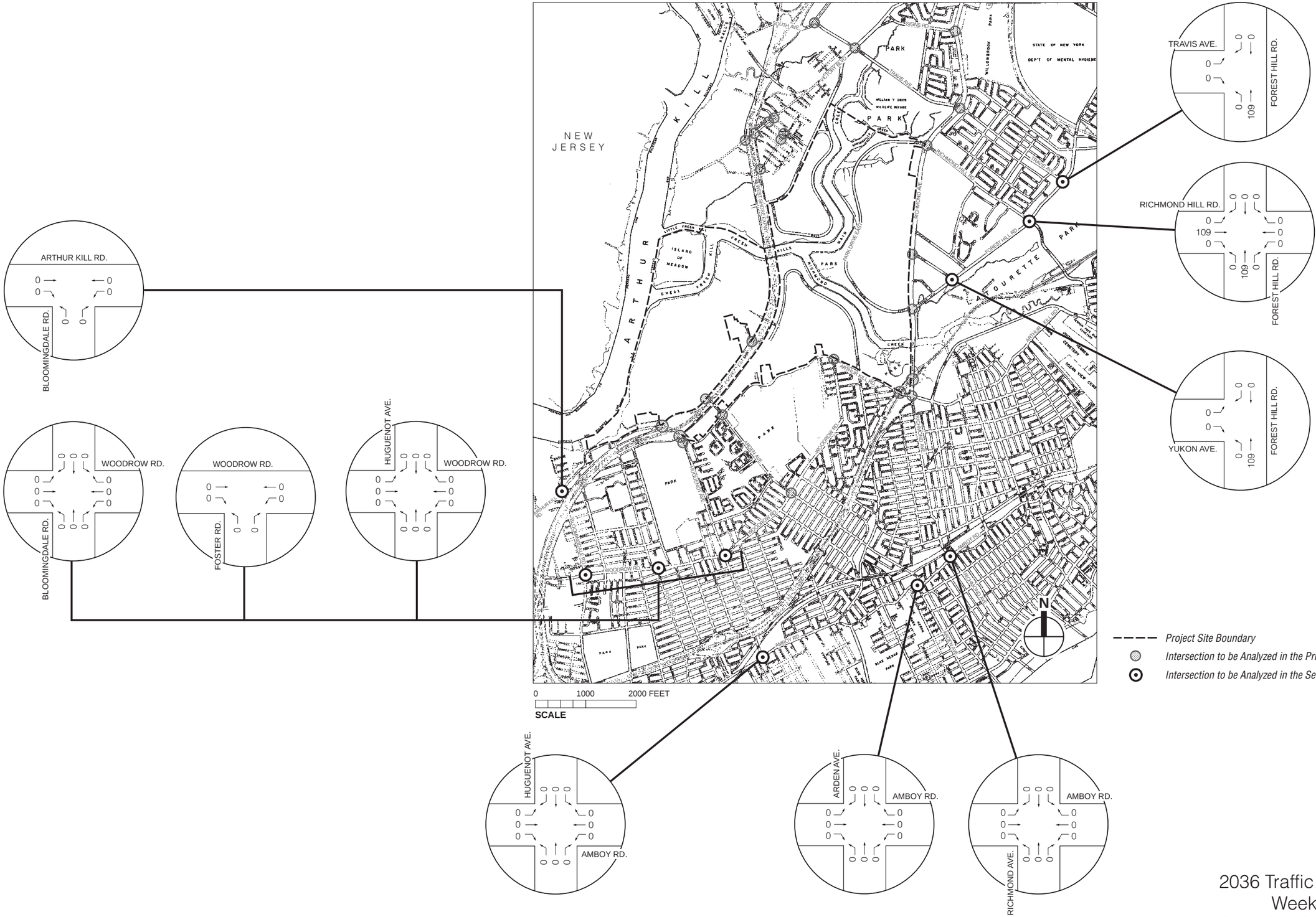
2036 Traffic Diversion Volumes
Weekday Midday Peak Hour
Secondary Study Area Intersections
Figure D-20b

2.10.09



2036 Traffic Diversion Volumes
Weekday PM Peak Hour
Primary Study Area Intersections
Figure D-21a

2.10.09



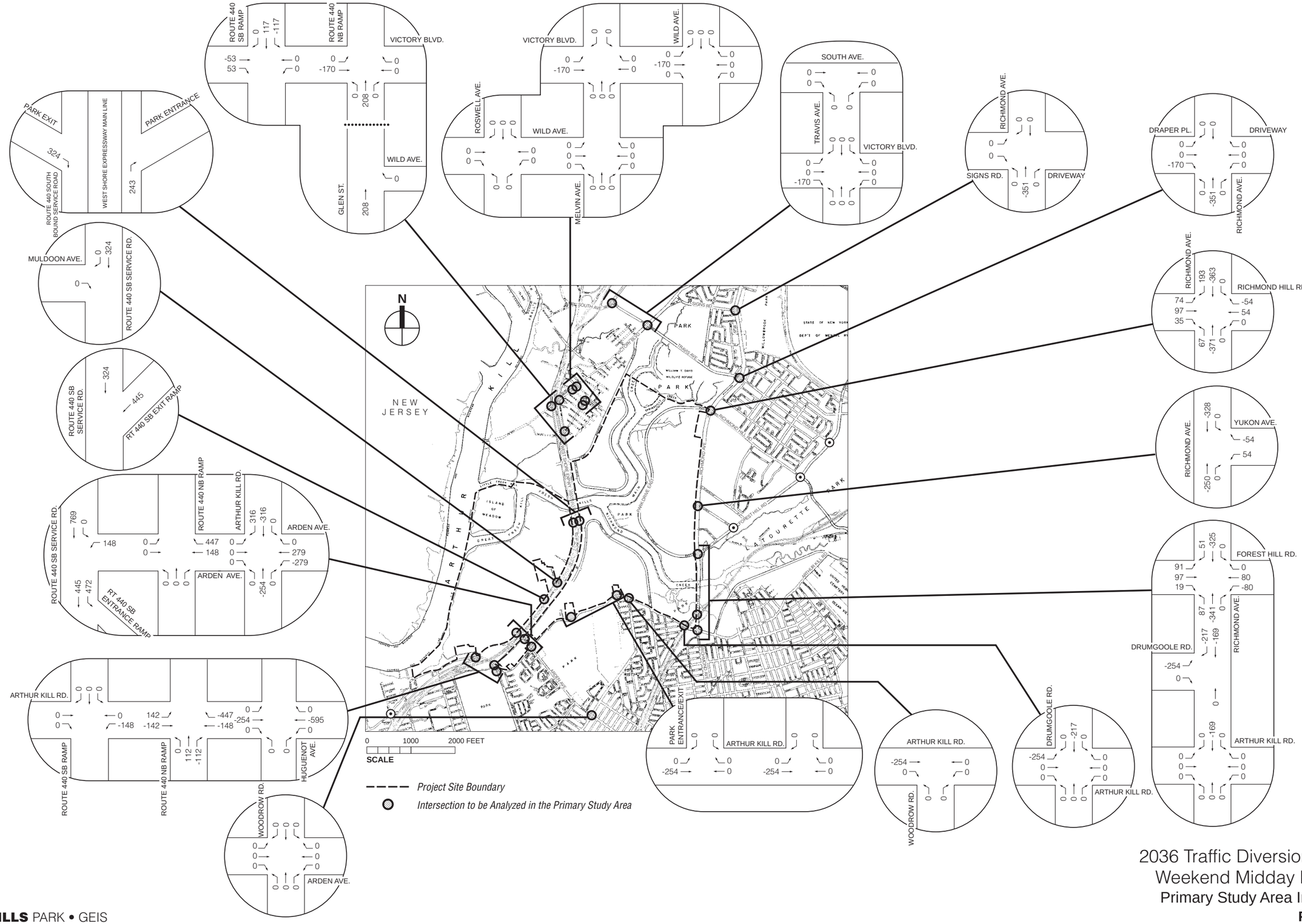
Project Site Boundary

Intersection to be Analyzed in the Primary Study Area

Intersection to be Analyzed in the Secondary Study Area

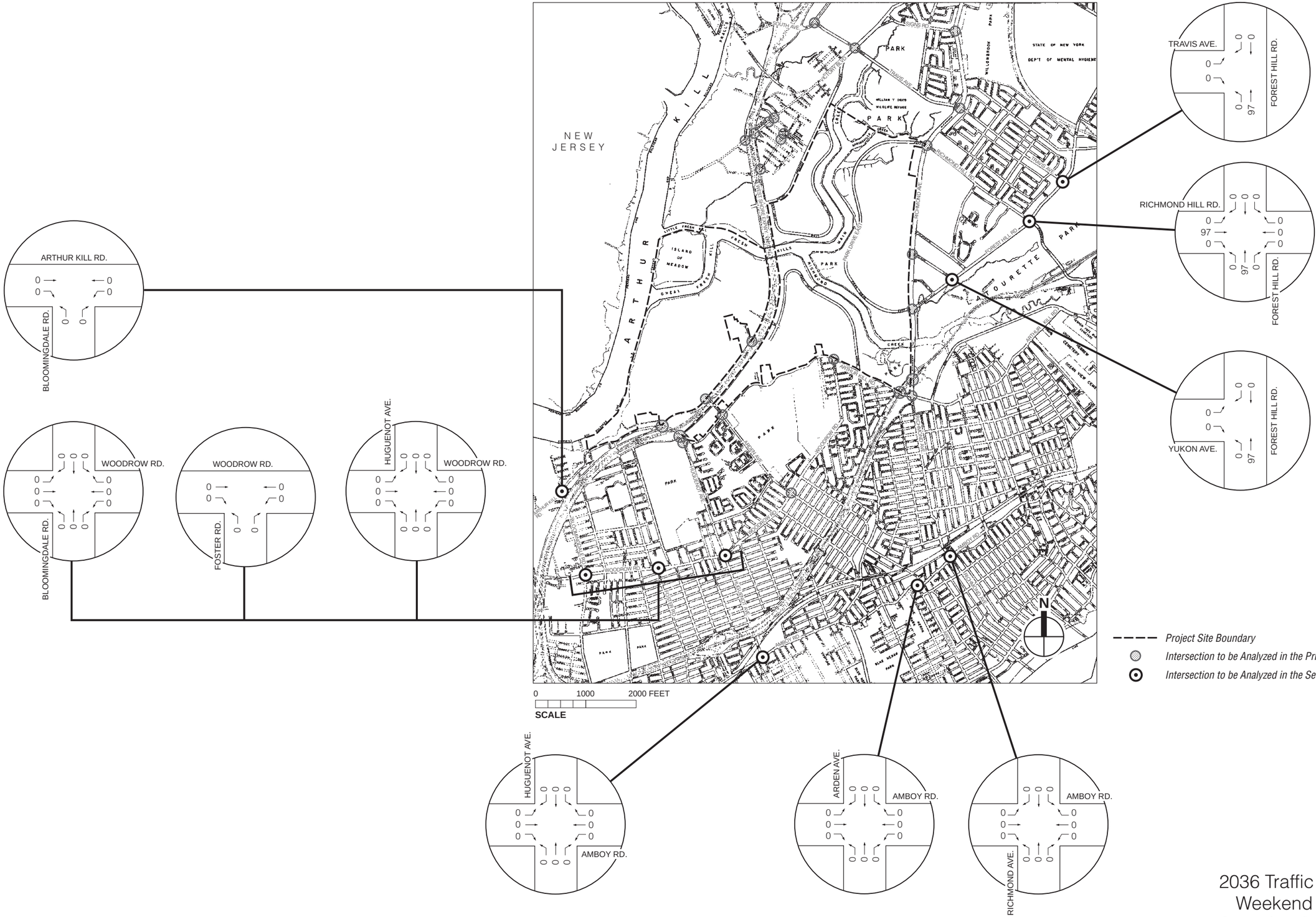
2036 Traffic Diversion Volumes
Weekday PM Peak Hour
Secondary Study Area Intersections
Figure D-21b

2.10.09



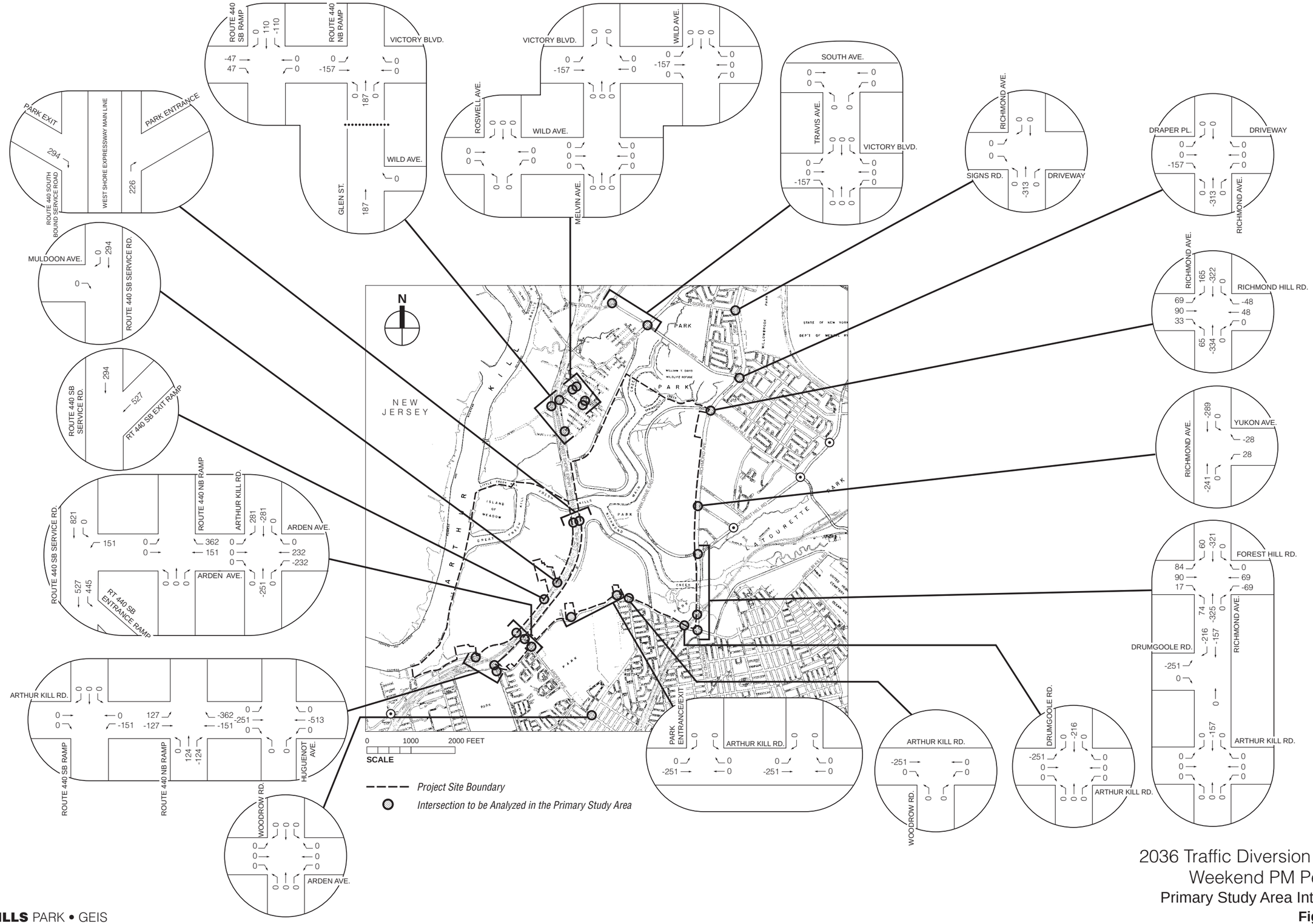
2036 Traffic Diversion Volumes
Weekend Midday Peak Hour
Primary Study Area Intersections
Figure D-22a

2.10.09



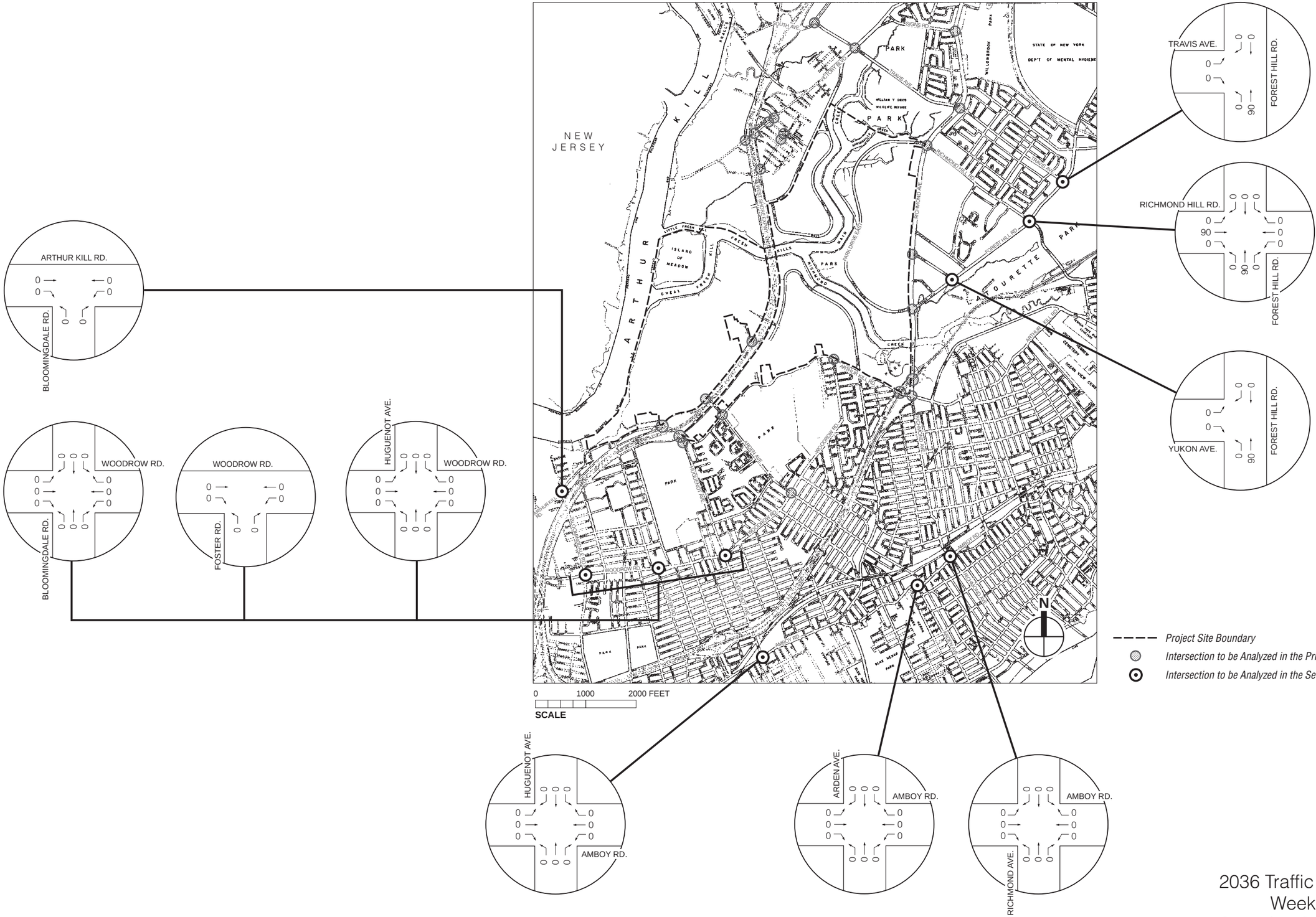
2036 Traffic Diversion Volumes
Weekend Midday Peak Hour
Secondary Study Area Intersections
Figure D-22b

2.10.09



2036 Traffic Diversion Volumes
Weekend PM Peak Hour
Primary Study Area Intersections
Figure D-23a

2.10.09



2036 Traffic Diversion Volumes
Weekend PM Peak Hour
Secondary Study Area Intersections
Figure D-23b