

Appendix B. North Campus Civil Analysis

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Introduction

The site assessment for the existing GLA Campus north campus summarizes the existing available record data information for the surrounding areas. This includes the following:

- Parcel Data
- Zoning
- Land Use
- Sensitive Species
- Bus Lines and Bikeways
- Aircraft Flight Patterns
- Topography
- Rainfall
- FEMA
- Earthquake Faults
- Liquefaction Zones
- Soil Types

The information provided for the site is based on record data provided by GLA Medical Center, local agency records, and public GIS data base for the GLA region.

Site Definition

The existing north campus is located within the 388 acres of the GLA Medical Center. The north campus is located west of the Interstate 405 freeway (I-405) and north of Wilshire Boulevard. The northern and westerly property borders Brentwood and West Los Angeles. The east is bordered by Westwood and Century City, directly east of the I-405.

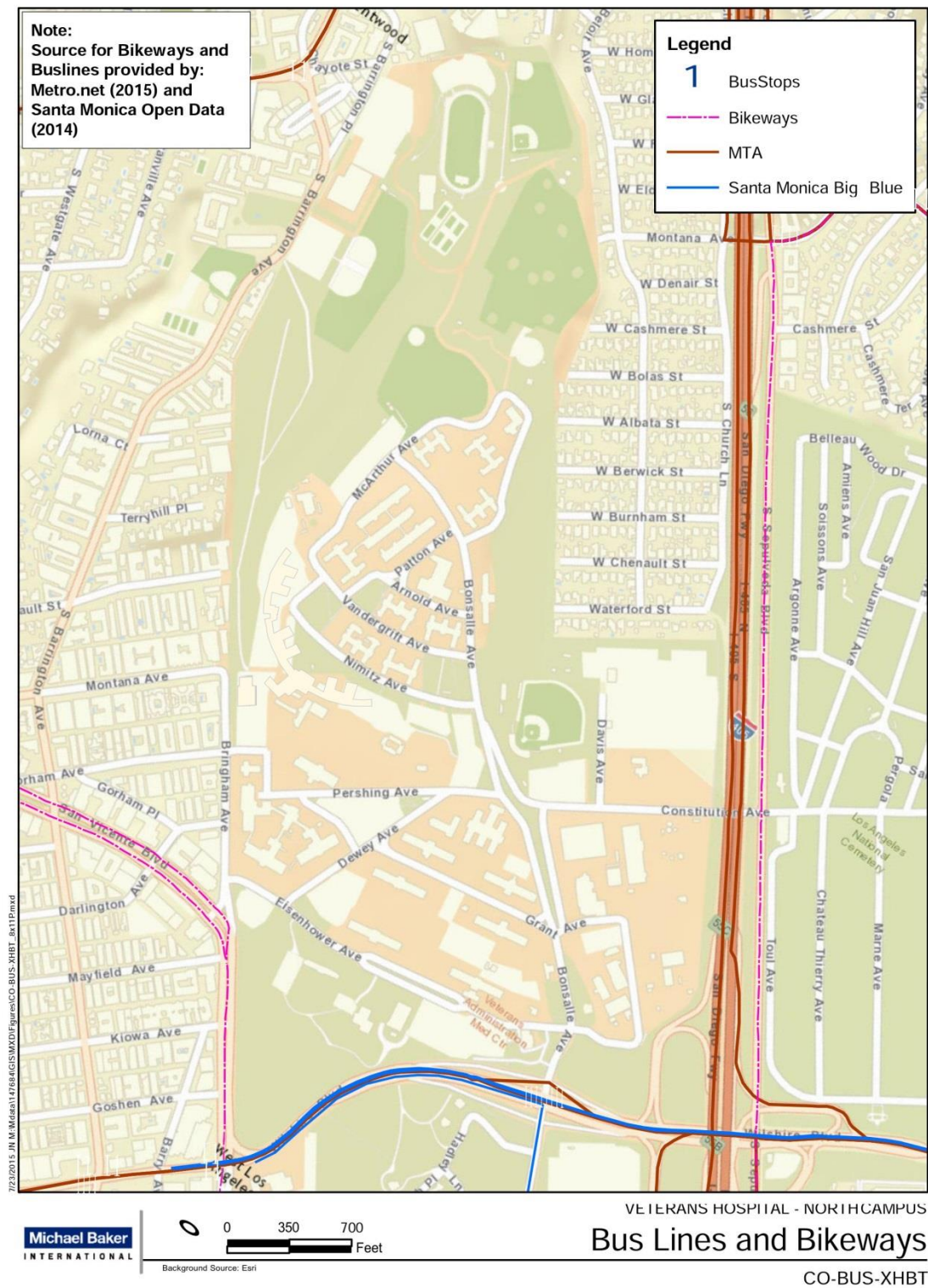
Figure B-1: North Campus Parcels



Mass Transit Routes

The north campus is currently served by two bus systems: The “MTA” along Wilshire Boulevard, and the “Santa Monica Big Blue”, which travels through the south campus from Wilshire Boulevard to Ohio Avenue. A future Metro Rail Station, including a parking structure, is conceptually planned near the intersection of Wilshire Boulevard and Bonsall Avenue.

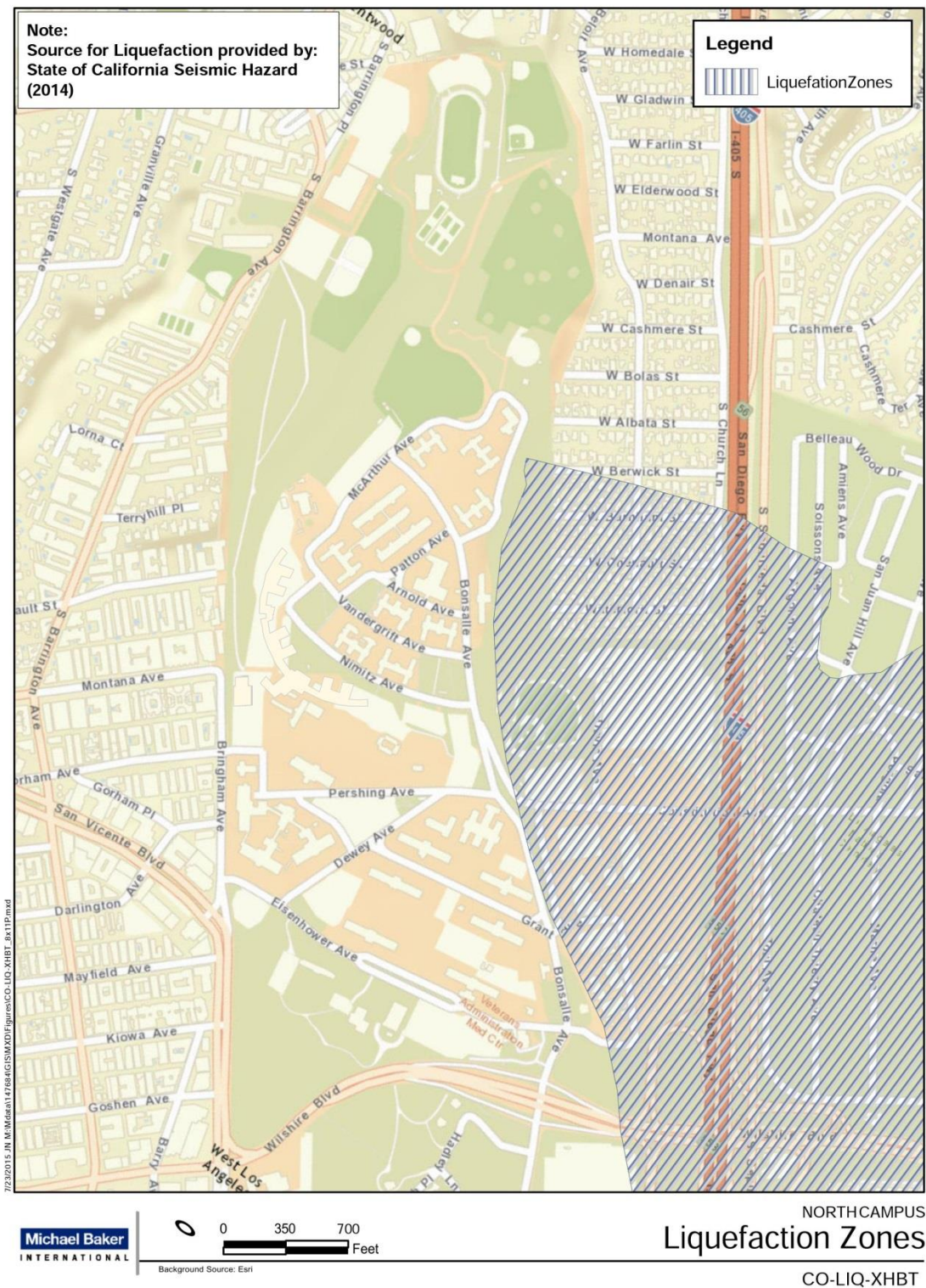
Figure B-2: North Campus Bus Lines and Bikeways



Liquefaction Zones

The Liquefaction Zone is primarily located in the southeastern portion of the north campus and east of Bonsall Avenue.

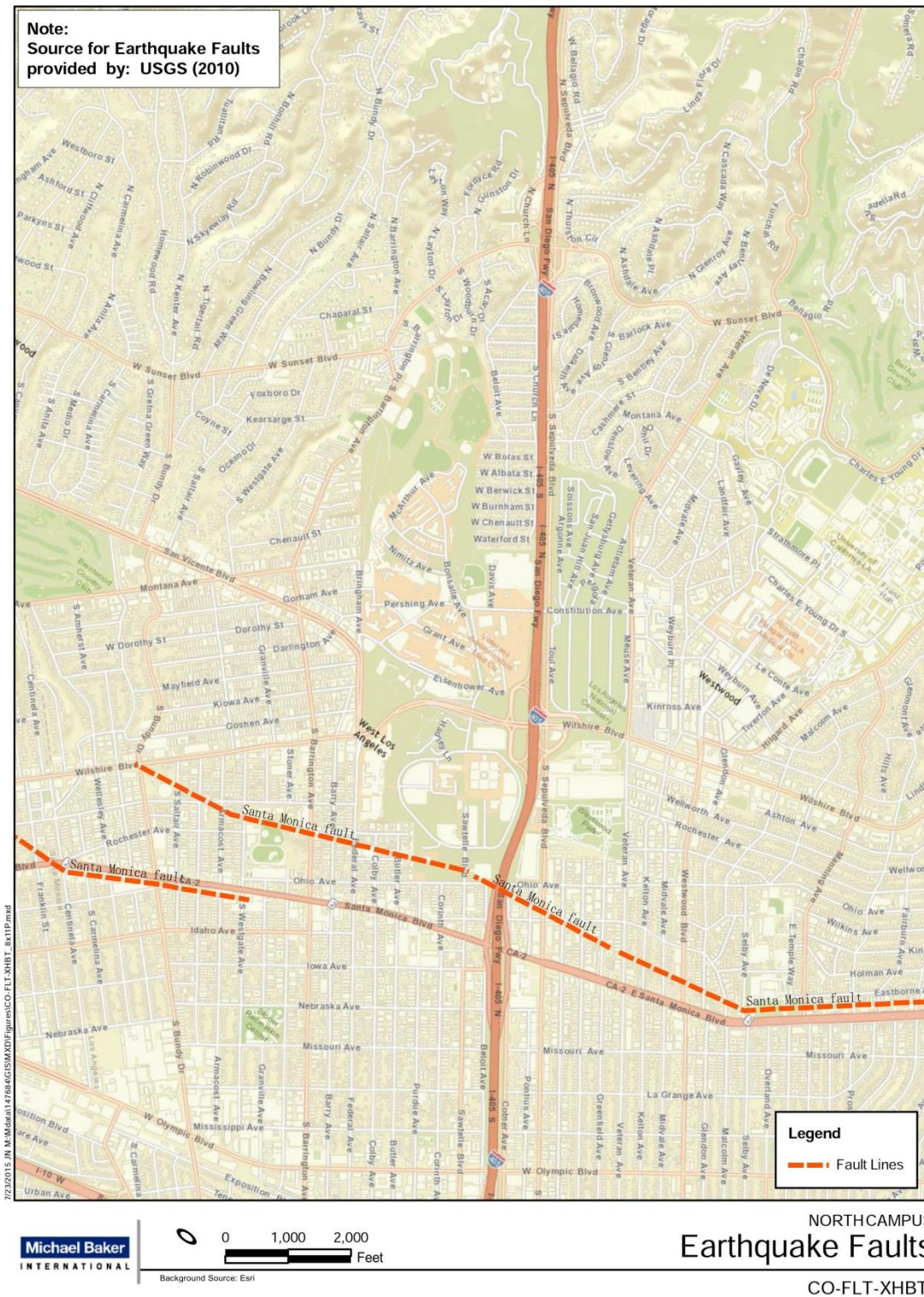
Figure B-3: North Campus Liquefaction Zones



Earthquake Faults

The site is north of the Santa Monica fault. The Santa Monica fault runs through the southernmost portion of the south campus.

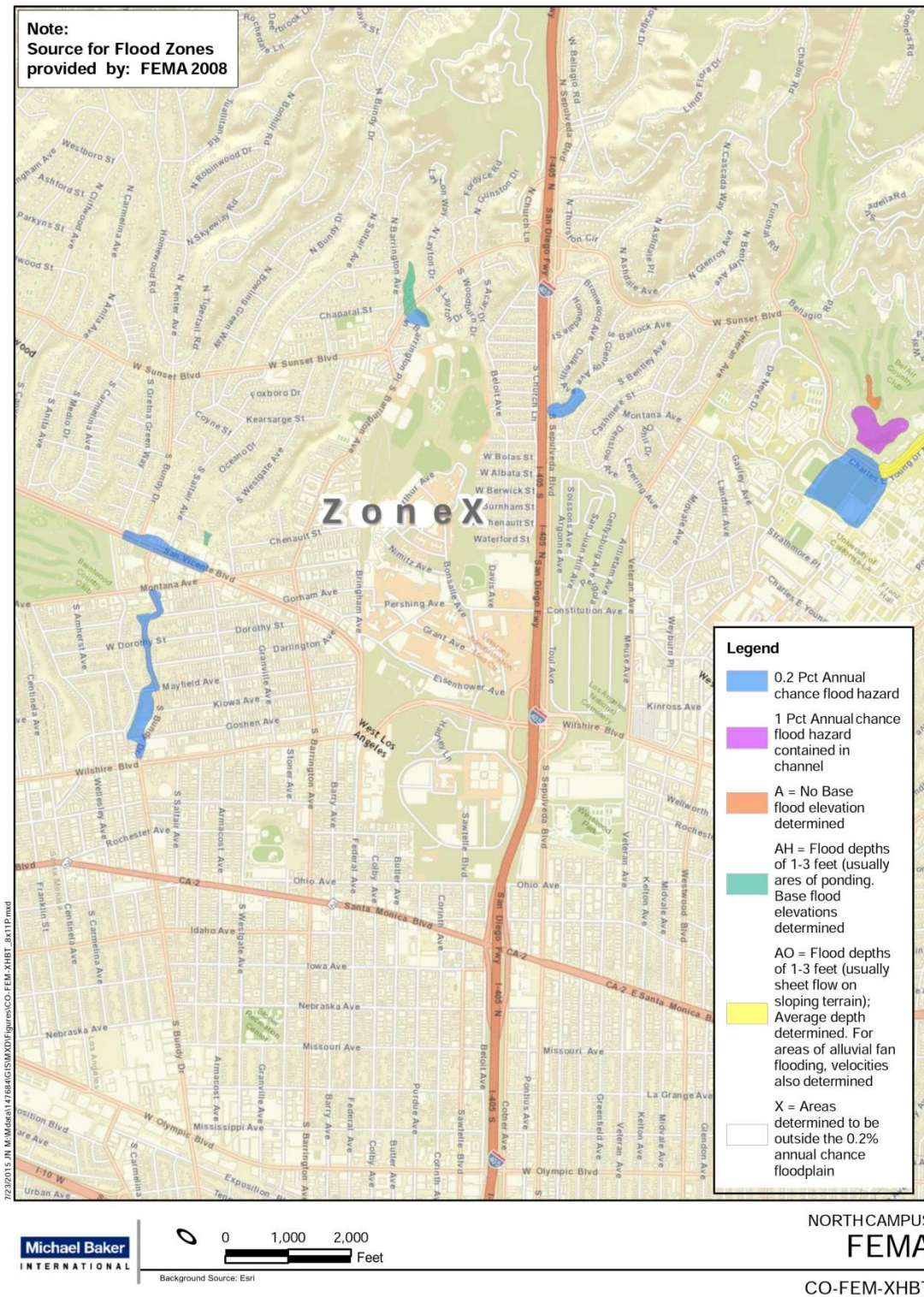
Figure B-4: North Campus Earthquake Faults



Flood Hazards and FEMA

According to FEMA floodplain maps, the north campus is outside of the flood hazard 100-year floodplain. The rainfall amount within a 24-hours period for a 50-year storm event is approximately 6.8 inches.

Figure B-5: North Campus FEMA



Rainfall

The rainfall amount within a 24-hour period for a 50- year storm event is approximately 6.8 inches.

Figure B-6: North Campus Rainfall

Soil Type

Two types of soil have been identified on the site. Ramona Loam along the west, and Yolo Loam along the east. Both soil types continue north and south of the GLA VA campus.

Drainage Fields and Water Table Elevation

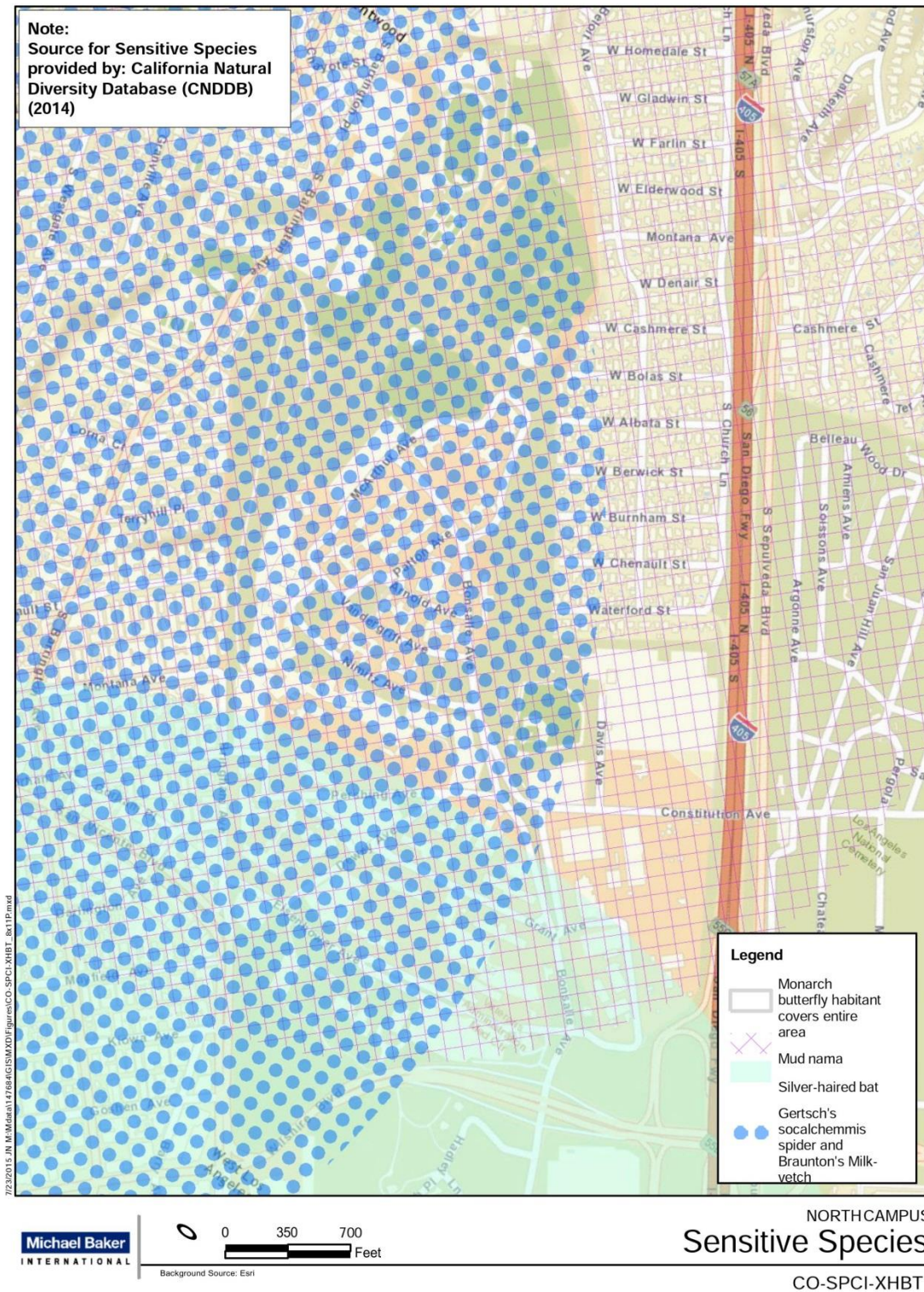
Groundwater was not encountered at depths up to 70 feet. Storm water and general drainage from the northern portion of the site and surrounding neighborhoods is accommodated in the zone nearest South Barrington Avenue.

Figure B-7: North Campus Soils



Ecological Considerations

The north campus is within the sensitive species area for the Monarch Butterfly, Silver Haired Bat, Gertsch's Socalchemmis Spider, Mud Nama (plant), and Braunton's milk-vetch (plant).

Figure B-8: North Campus Sensitive Species

Topography

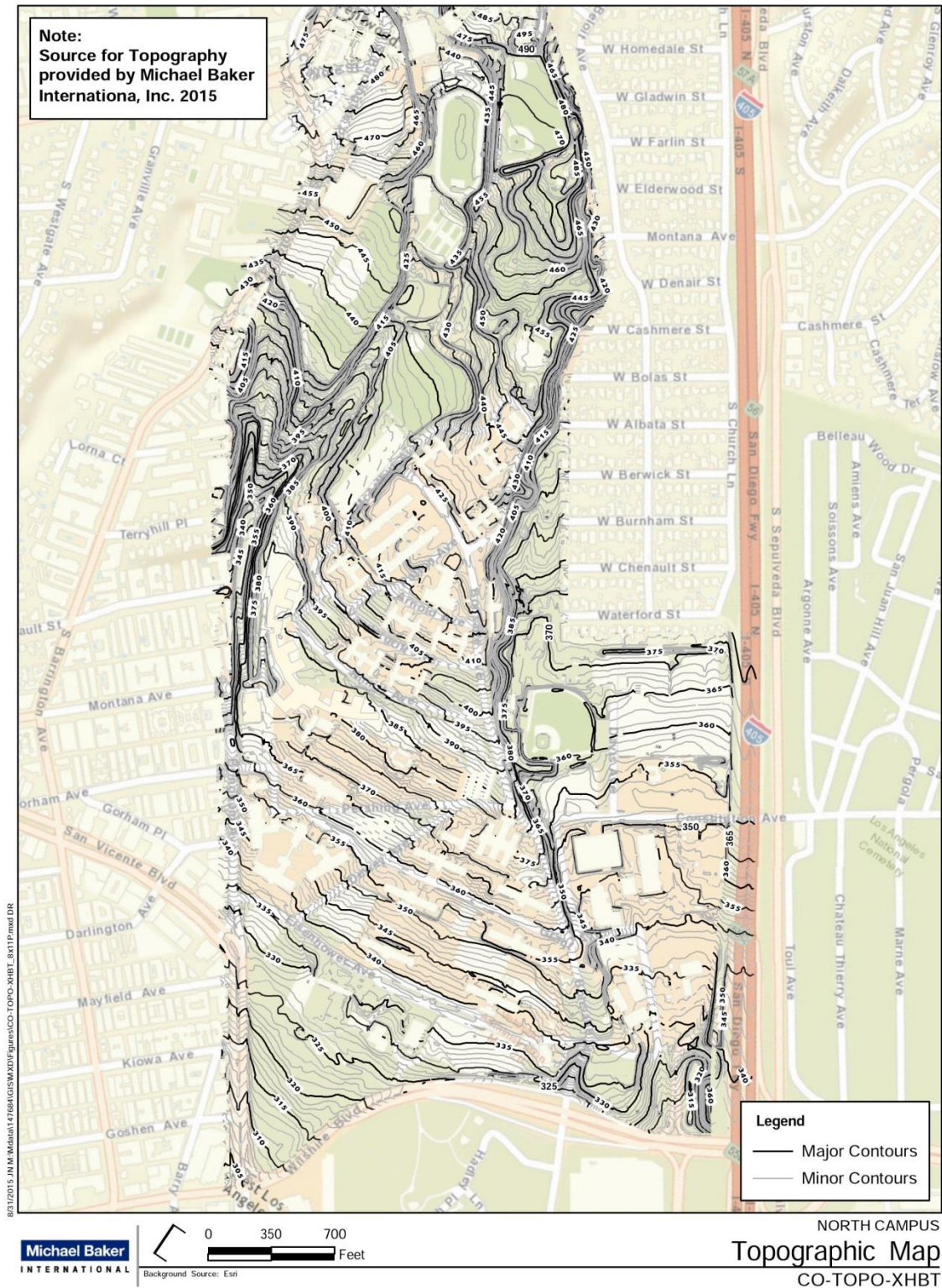
The site topography generally slopes primarily from the north to south as well as westerly from Bonsall Avenue to San Vicente Boulevard/Bringham Avenue. Along the east side of Bonsall Avenue, the existing topography slopes south to Wilshire Boulevard. See also the storm drain section of this document for drainage patterns.

The northern portion of the property (approx. 22 acres) is currently being used by the Brentwood School and is at an elevation of approximately 480 feet. The southern portion of the site is at an elevation of approximately 310 feet. The change in elevation is approximately 170 vertical feet from the Brentwood School site to Wilshire Boulevard.

The northern half of the property has more variation in the topography with existing site improvements that include large flat pad areas and graded side slopes to fit the existing terrain. The area is mostly used for recreational purposes and includes the following site improvements: a football and track field, baseball fields, golf course, Veteran's Park, soccer field, tennis courts, gardens, and the Arroyo drainage area. With these amenities, the density and paved areas are less than the southern portion and primarily used for parking and access drives.

The southern half of the property is the majority of the campus infrastructure. The southeast portion of the site has the least amount of elevation change and is primarily industrial. A few of the uses for this area include: laundry facilities, engineering shops, oil and gas area, and a supply warehouse.

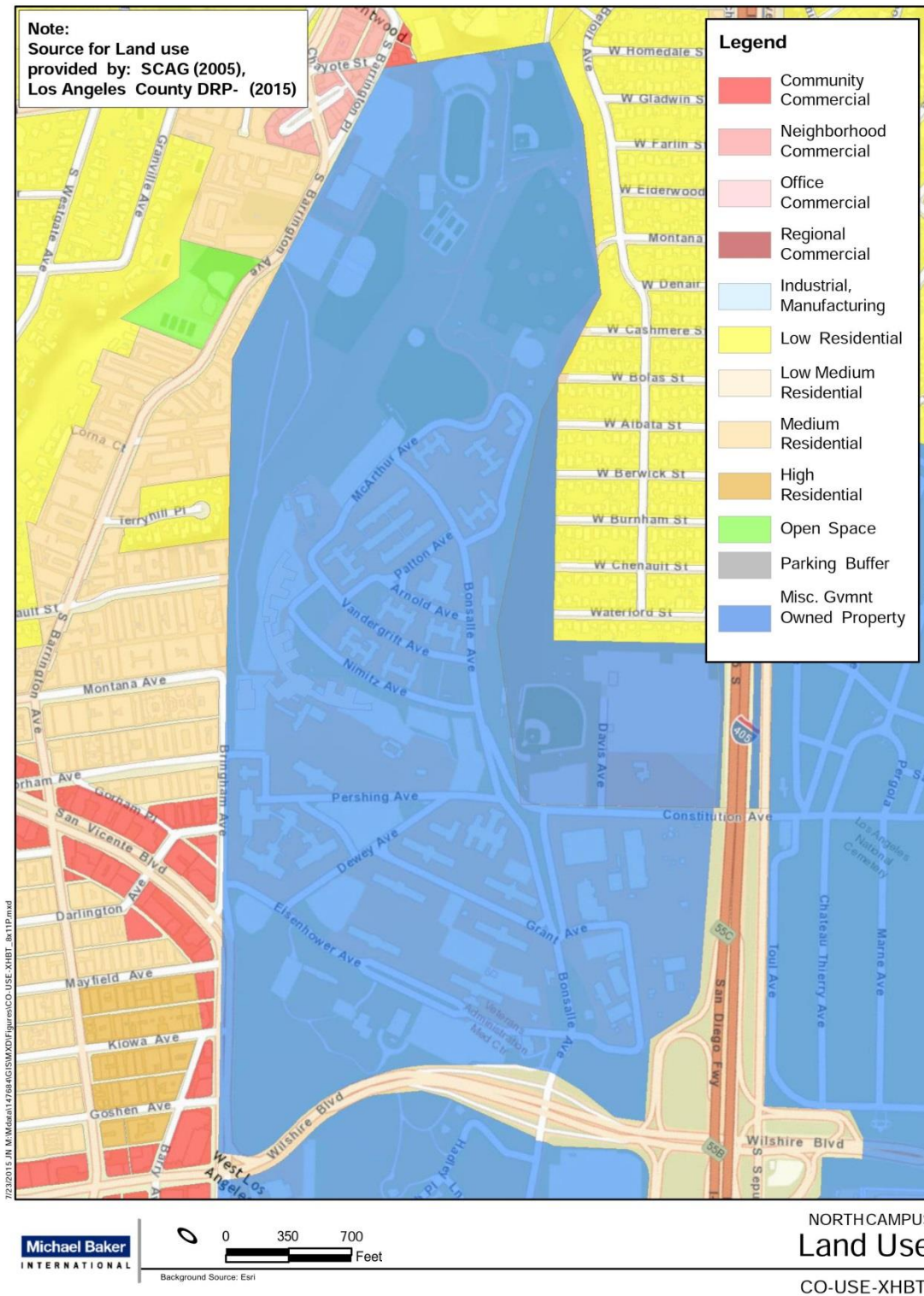
Figure B-9: North Campus Topographic Map



Surrounding Land Uses and Parcel Information

The north campus surrounding land use includes multi-unit residential, commercial, and retail buildings along the westerly and northern boundary. The southeast side of the property is bordered by the I-405, and the northeast is bordered by single-family homes (Brentwood Glen). The southern boundary is bordered by Wilshire Boulevard.

Figure B-10: North Campus Land Use



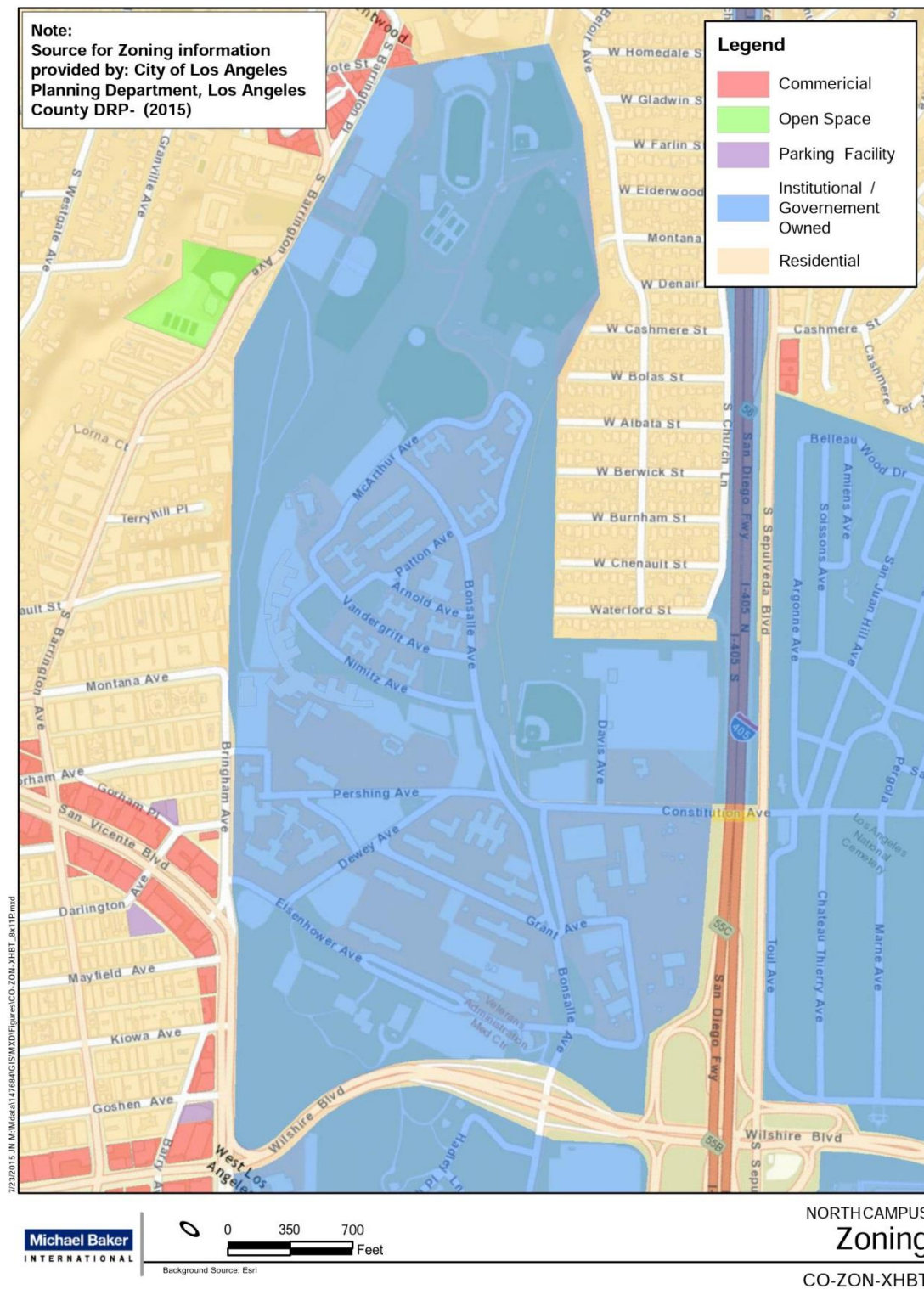
Surrounding Zoning

The north campus is zoned as Institutional/Government Owned.

Aircraft Flight Patterns

The Santa Monica Airport south of the Santa Monica (10) freeway is the closest airport to the north campus. The site is approximately 2 miles north of the Santa Monica Airport. The airport runway is from the east to west direction. Based on the airport runway layout and proximity to the GLA Campus, it does not appear that GLA Campus is in the flight path of the airports arrivals or departures.

Figure B-11: North Campus Zoning



Master Plan Assessment of Sewer, Water, and Storm Drain Systems

The common recommendation for the existing sewer, water and storm drain systems is to document the entire campus with an underground utility survey. Existing record information for the site is extremely limited given the age of each system. Portions of each system were constructed prior to 1930. A complete underground survey should include a report on the water, sewer and storm drain system for the north and south campus. Documentation will be necessary of abandoned buildings that are not in use and determining the domestic water demand for each of the buildings still in use. The report should also provide pipe depths at each access point both in and out of manholes, pipe age and condition, pipe size, material type and mapped horizontal location using the most current aerial topographic map. This information will assist VA over the next several years as it continues to consider site improvement opportunities to expand the services provided at the GLA Campus.

The existing north campus sewer, water and storm drain infrastructure are identified in this section. Exhibits have been prepared and are included for the following utilities based on digital information provided by VA facilities staff:

- Telecommunication
- Steam Lines
- Electrical
- Gas and Oil

This assessment includes high-level inventory and analysis of the campus systems and determining how the proposed north campus Master Plan would generally affect these systems.

Local agencies have been contacted and have provided as-built plans on the adjacent facilities surround VA north campus. These agencies include:

- LA City Public Works Department
- LA County Flood Control District
- Caltrans
- Metro
- LA Department of Water and Power
- Navigate LA GIS website.

Figure B-12: North Campus Steam Lines

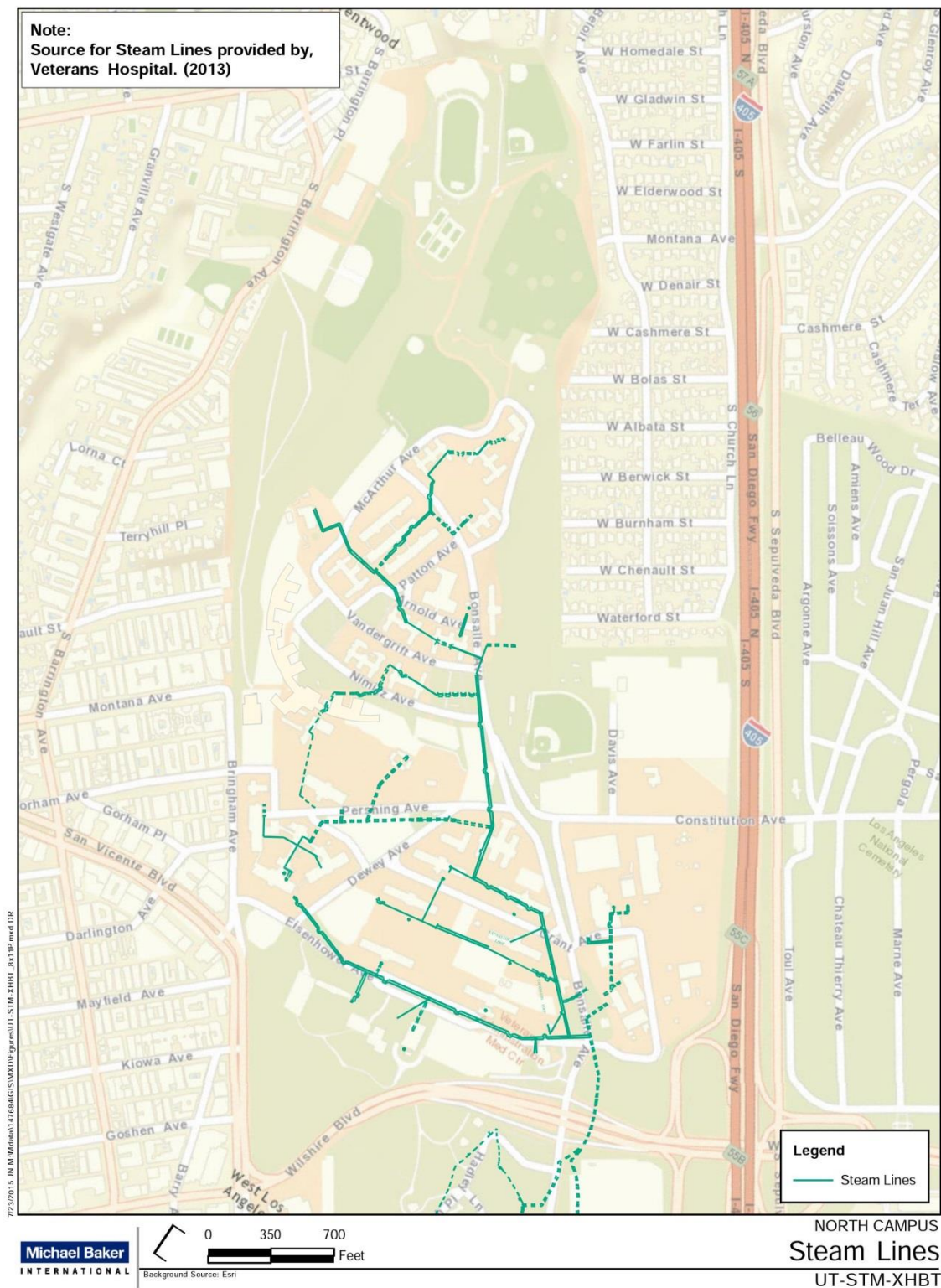


Figure B-13: North Campus Electrical

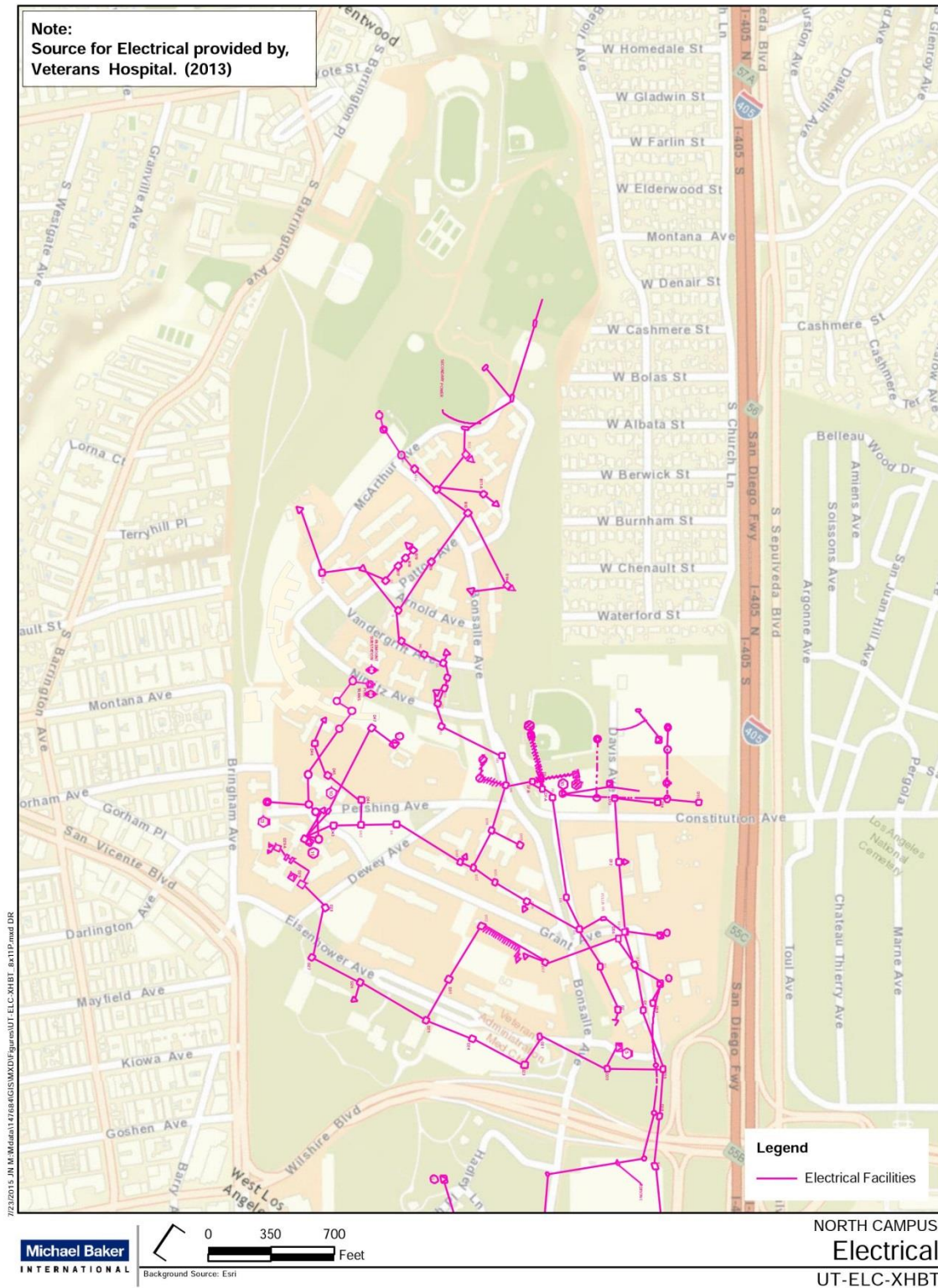


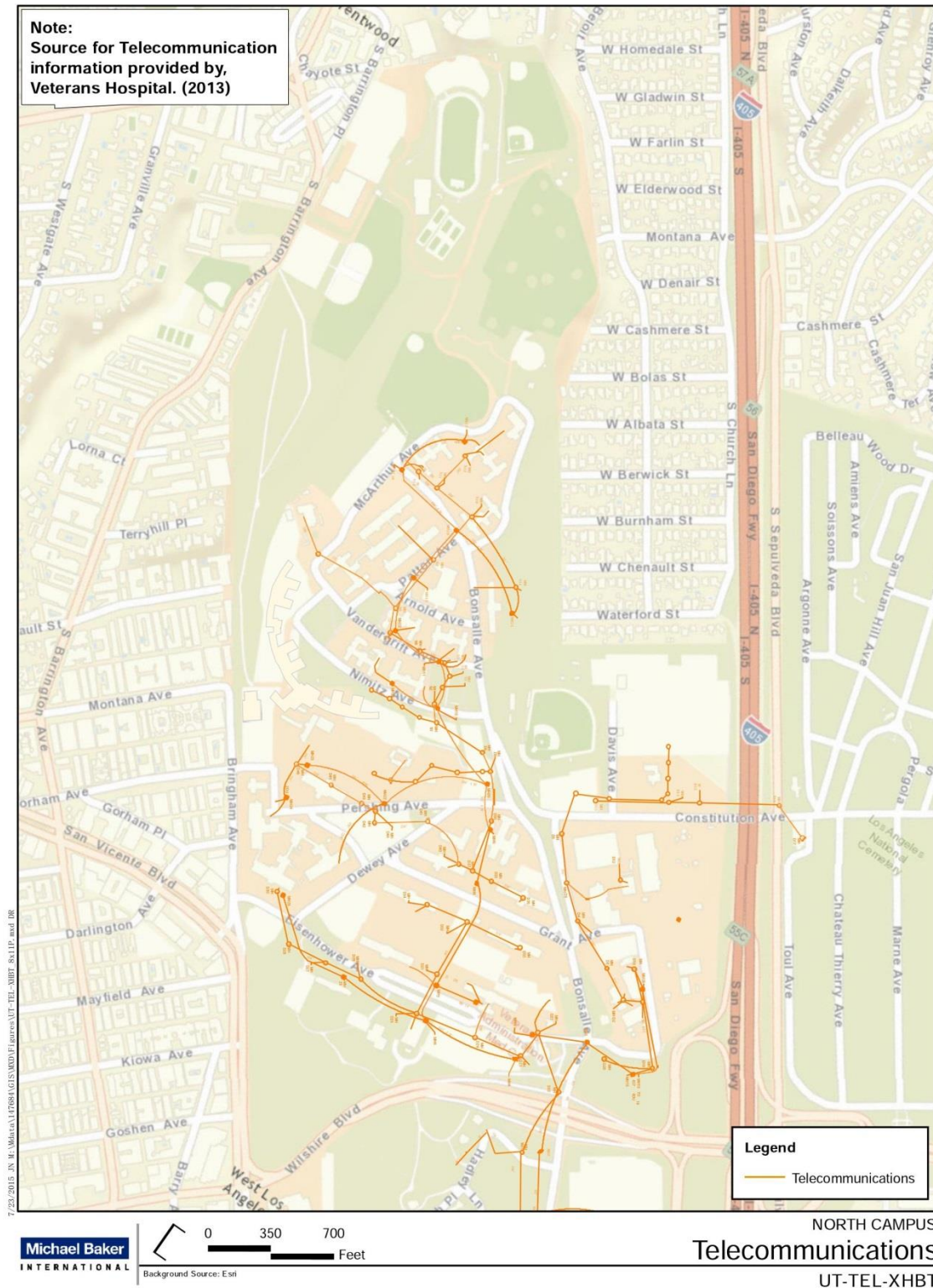
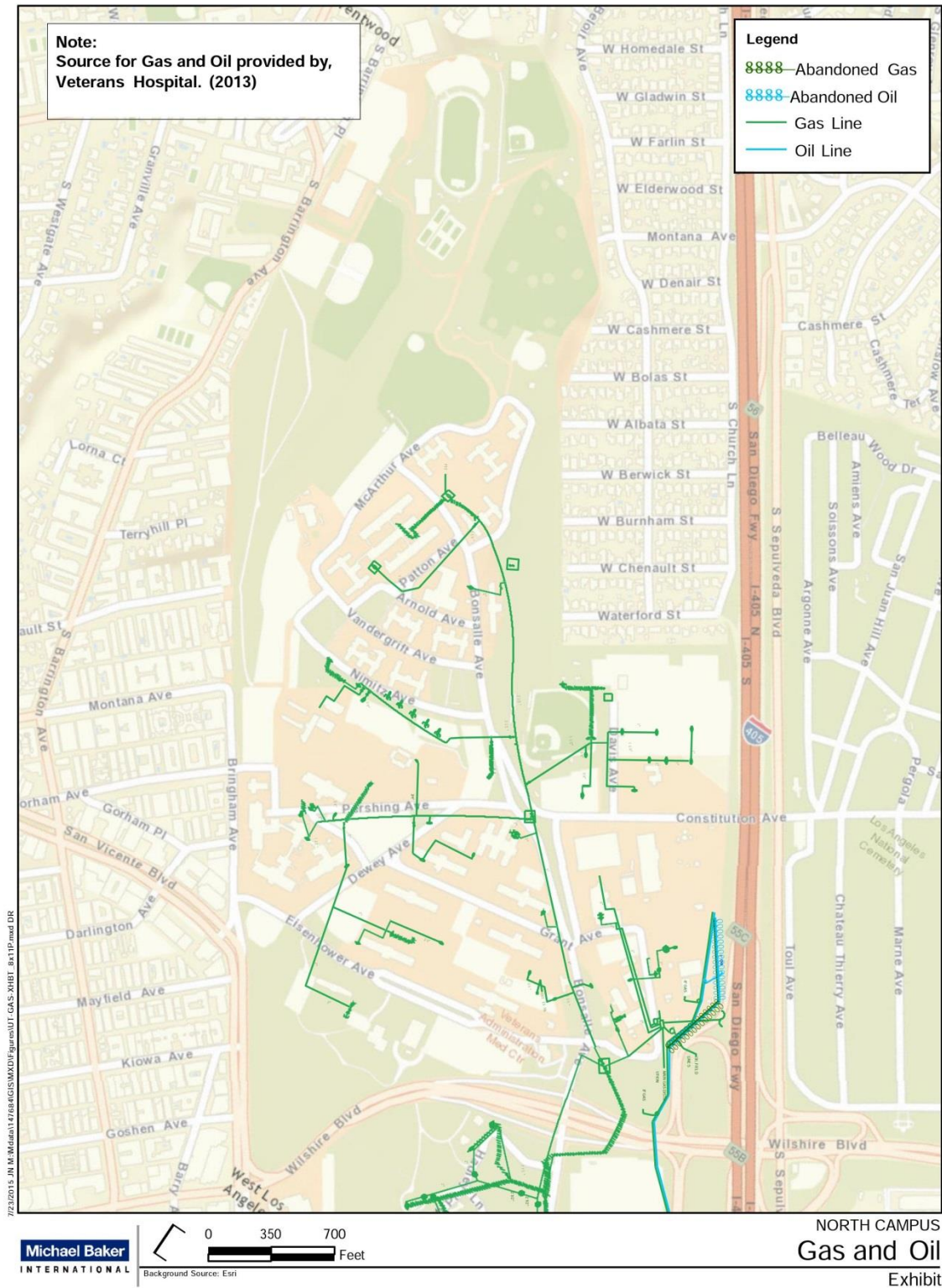
Figure B-14: North Campus Telecommunications

Figure B-15: North Campus Gas and Oil



Sanitary Sewer

Findings/Analysis

The existing sanitary sewer for the campus generally flows from north to south and from west to east. There are three main trunk collection sewers that gravity flow through the north campus, cross Wilshire Boulevard and continue to serve the south campus. Ultimately all three sewer main lines connect to the public sewer system at the intersection of Sawtelle Boulevard and Ohio Avenue. According to record drawings, one 8-inch sewer crosses Wilshire Boulevard in the southwest portion of the north campus. Additionally, separate 18-inch and 24-inch sewers cross Wilshire Boulevard at the southeast area near the I-405 freeway. These two sewer mains have recently been relocated to the west as part of the I-405 interchange improvements at Wilshire Boulevard. METRO has provided utility improvement plans for these two locations.

Most of the existing sewer main lines that serve the existing structures were built in the early 1900s. The existing 8" and 12" lines were constructed prior to 1937 (except for the recently relocated portion). Very limited record data is available for most of the existing pipe in the north campus. There are existing abandoned sewer lines in various locations throughout the site. More recent construction has provided some data on the State Facility Veterans Home (a.k.a. Cal Vet) property. This facility does not connect into the campus sewer system. It is served by the public sewer system along the west side of the north campus within Bingham Avenue.

In order to analyze the existing system to determine the capacity, additional record information is needed. This includes sewer depth and slope, pipe sizes and condition of pipe (including approximate age of pipe). In addition, receiving record information regarding what type of maintenance issues have been remedied, including recent clogging and blockages restricting flow in the pipe would be beneficial. It was noted in the 2012 sewer report that there were areas within the campus that had clogged and blockage in the pipe. Some areas were impacted by root intrusion. It is unknown if these issues were corrected and what the limits were of the sewer report.

Sanitary Sewer exhibit on the following page (UT-SWR- XHBT) includes on-site information provided by VA facilities staff. Adjacent information offsite depicted on the exhibit has been provided by the City of LA, Public Works, GIS database.

Conclusion

The existing sanitary sewer for the campus is over 80 years old and in some areas over 95 years old. With the future layout and expansion of the campus, sewer replacement, relocations and upsizing of pipe will be required to accommodate the added growth. Sewer flow monitoring will be needed to confirm existing additional capacity and if the system will need additional main lines or replacement of main lines to serve future growth on the campus.

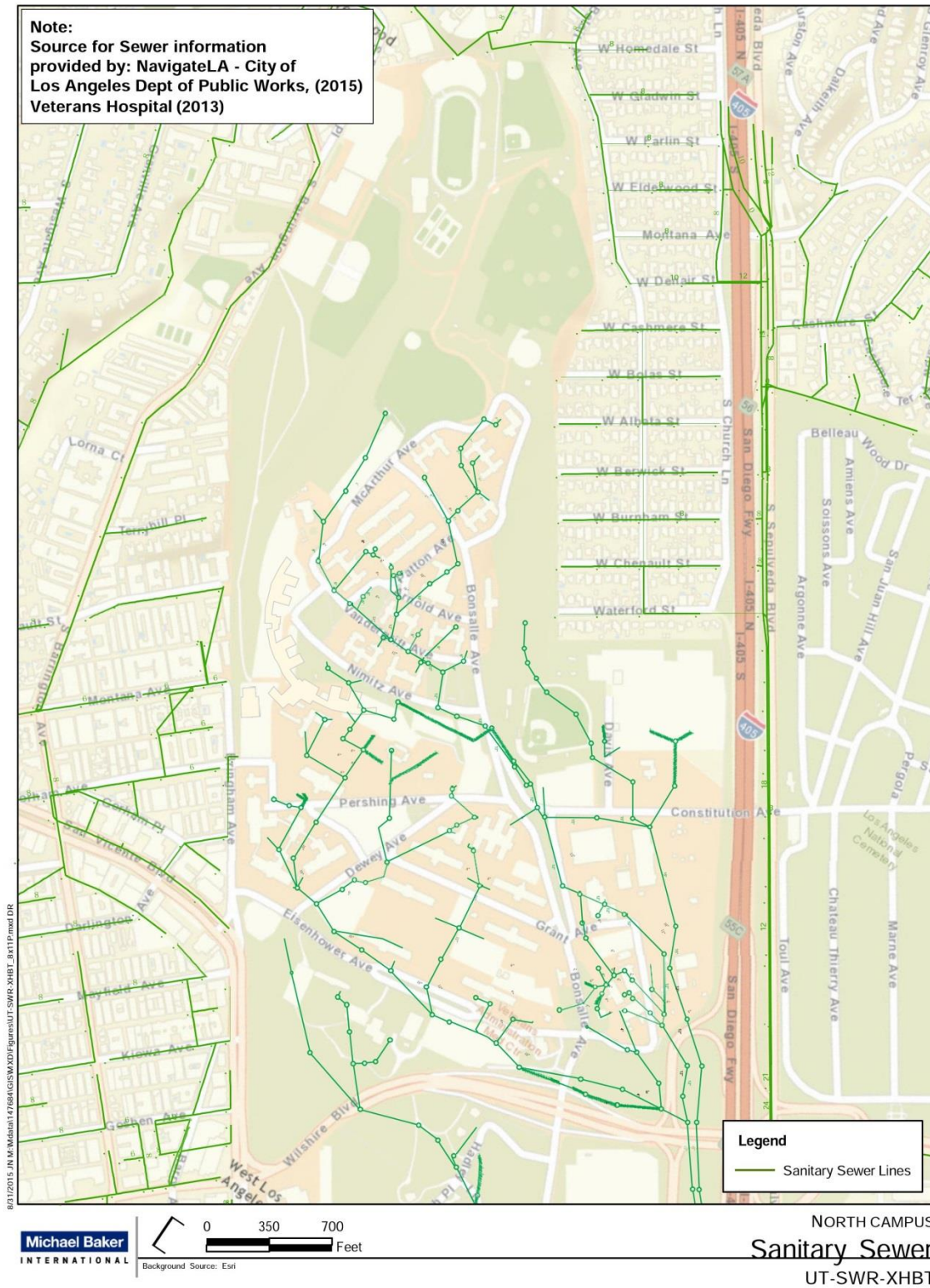
Recommendation

It is recommended that a full underground utility survey be completed for the existing sewer system to correlate existing and future sewer demands. It is recommended that sewer flow monitoring be completed in various locations throughout the site. A 14-day minimum monitoring is recommended at each location. Based on the age of the existing system, it is recommended that new construction in the beginning phases be placed near the south and west portions of the north campus to reduce replacement costs to the

older main lines. It may be feasible to add service connections to the west along Brigham Avenue/San Vicente Boulevard. Further study will need to be completed to determine the feasibility of these service connections to the public system. Existing public system capacity and potential additional demand will need to be determined. For the repurposing of existing buildings in early phases of the Draft Master Plan, the existing adjacent sewer system should be analyzed further (including video) to verify pipe condition.

The need for sewer infrastructure replacement will need to be determined based on future studies. Interim connections to the west into the public system may be possible and then later re-connected into the campus system once later phases are implemented.

Figure B-16: North Campus Sanitary Sewer



Water Service

Findings/Analysis

The existing water system serves GLA Campus via LADWP connections from the north and the south. There is a third connection from San Vicente Boulevard, near Wilshire Boulevard. This seems to indicate that a 'true' circulating system serves the campus demands. According to available record drawings, the north campus makes a service connection to an existing 36-inch LADWP aqueduct that runs in the east-west direction through the site along the northernmost portion of the site. The north service connection fills two VA owned and maintained water storage tanks, which then serve the entire GLA Campus. The water system provides domestic service, fire service to fire hydrants and building sprinkler systems for the existing structures and irrigation service for the north and south campus. As of the 1990s VA cemetery east of the I-405 is on a separate system. According to VA staff, the cemetery now gets its water from a separate service connection.

Further research is needed to determine the existing water demands of the site as well as to obtain recent fire flow tests for campus fire hydrants.

Water Service exhibit (UT-WTR-XHBT) includes on-site information provided by VA facilities staff. Adjacent information off site depicted on the exhibit has been provided by the Los Angeles Department of Water and Power (LADWP).

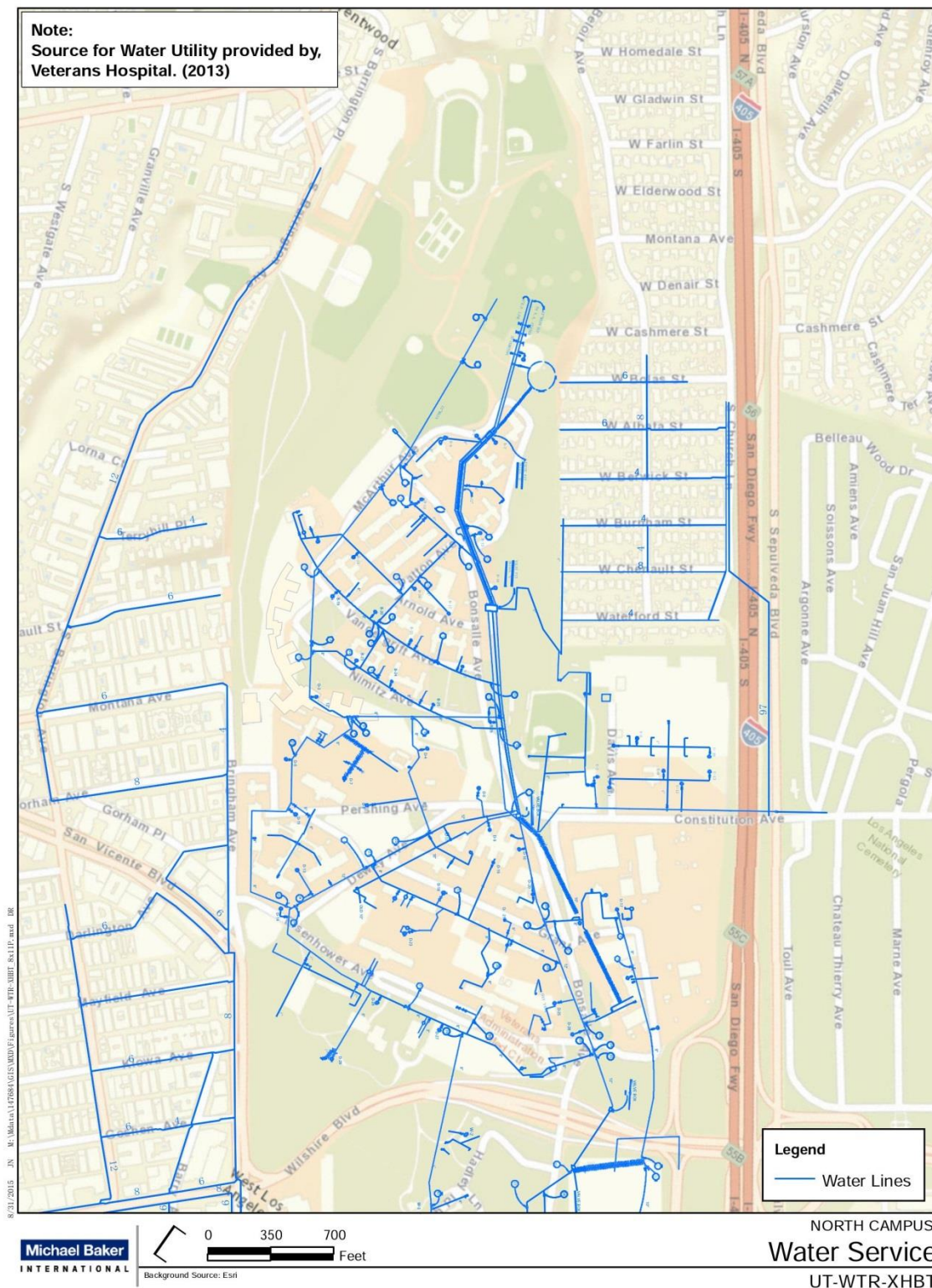
Conclusion

Future development within the north campus could require the relocation of main lines and upsizing pipe. It is unknown what the current age of the system is or where the system has been replaced, updated and abandoned. Recent fire flow test data will be required to confirm existing capacity of the system.

Recommendation

It is recommended that future construction be placed near the south and west end of the north campus to reduce replacement costs and to provide opportunities for service connections to the west along Bringham Avenue / San Vicente Boulevard. Further study will need to be completed to determine the feasibility of these connections to the public system. Existing public system capacity and potential additional demand will need to be determined. For the repurposing of existing buildings, the existing water system should be inspected to verify pipe condition. According to VA staff, the northern portion of the campus above Buildings 257 and 256 require booster pumps at buildings to increase water pressure. Modification to the existing connection to LADWP may be required or additional pumps/storage tanks may be needed to serve future buildings in this location.

Figure B-17: North Campus Water Service



Storm Drain System

Findings/Analysis

The existing storm drain system within the north campus consists of several separate drainage areas. The majority of the site slopes from north to south. The northern portion of the site drains into the existing Arroyo (open channel) and then into an existing 7' x 7' concrete box structure that continues south under Bringham Avenue. Upstream from the Arroyo is an existing 51" pipe that outlets into the Arroyo from the Brentwood school campus site. The middle and southwest portion of the north campus, west of Bonsall Avenue, surface flows toward the southwest corner of Wilshire Boulevard and San Vicente Boulevard. The storm water runoff is collected into various storm drain inlets on-site and conveyed in storm drain pipes across Wilshire Boulevard and continues through the south campus where it then drains into an open channel and into the LA County Flood Control system. The east side of the north campus, east of Bonsall Avenue, generally surface flows to the south east corner of the site near Wilshire and the I-405, it is not clear, based on available record data, where existing storm drain pipes are located. There are existing inlets along Bonsall Avenue and the I-405 south-bound off-ramp that continue south under Wilshire Boulevard and through the south campus. There are also two open channel concrete drainage structures that appear to collect the surface runoff for the east side of the campus. These channels are then also piped under Wilshire through the south campus.

In addition to the 51" outlet pipe from the Brentwood school site, existing storm water runoff comes on-site from the Brentwood Glen Residential Tract northeast of the north campus. There is an existing 21-inch storm drain pipe that collects drainage from the existing residential streets and outlets on-site near Waterford Street.

Storm Drain Exhibit (UT-SD-XHBT) includes on-site information provided by VA facilities staff. Adjacent information off site depicted on the exhibit has been provided by the City of LA, Public Works, GIS database.

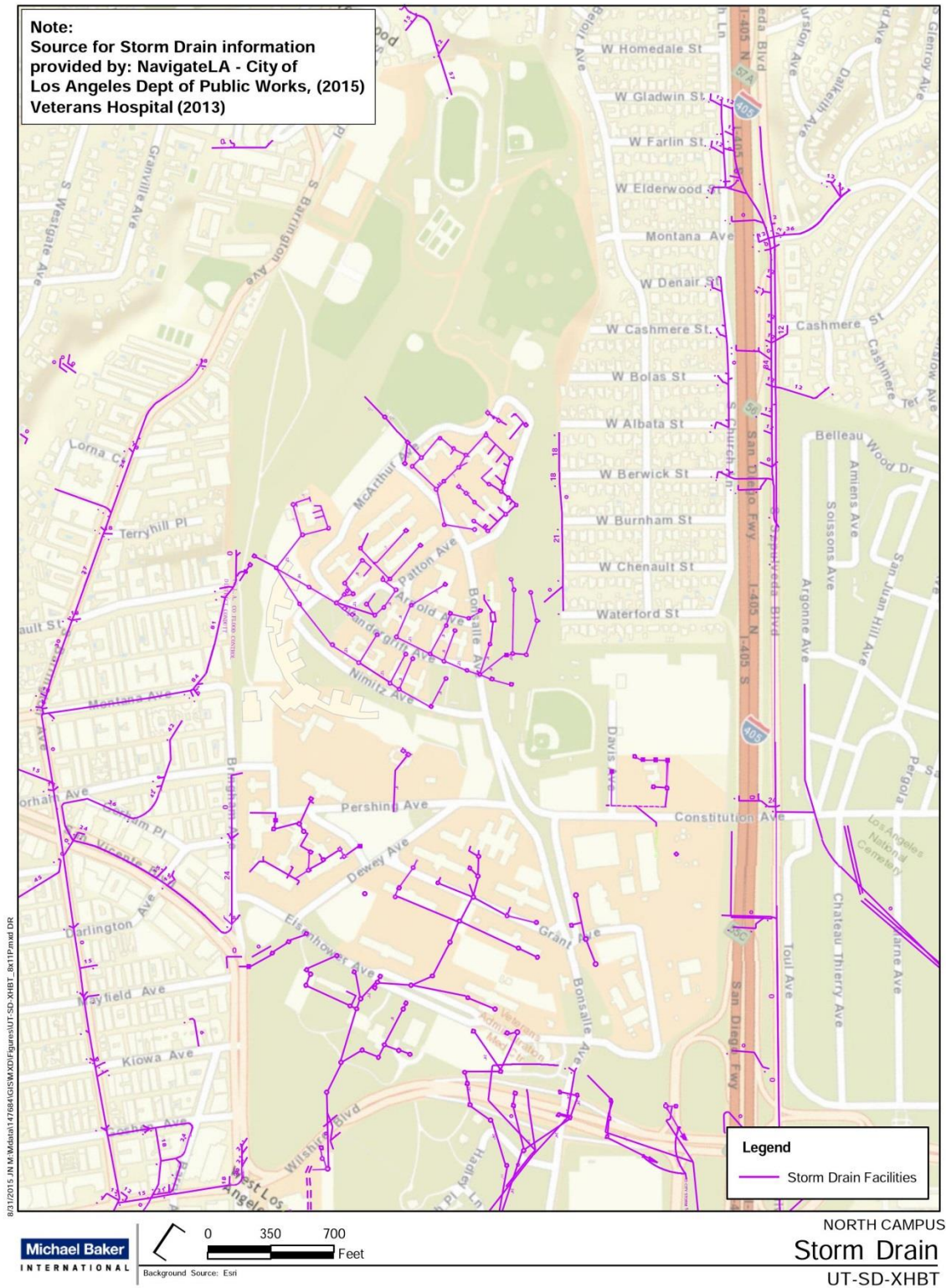
Conclusion

The existing storm drain system for the campus is over 80 years old and in some areas over 95 years old. With the future layout and expansion of the campus, storm drain system improvements (replacement, relocation and upsizing of pipe) will be required to accommodate the new expansion. With the increase in impervious surfaces to the overall site, storm water quality and storm water run-off will need to be studied where future improvements are planned. The age of the existing system is unknown. Conveyance of runoff in the earlier systems (1937 map) appears to have been a combination of sanitary sewer and storm drain but at some point they were separated into separate systems. It is likely that portions of existing storm drain will need to be replaced. It is unknown if there are any issues with the existing storm drain system, storm water run-off or ponding areas during storm events on-site. A preliminary assessment of Water Quality Best Management Practice Options has been included in this scope of work.

Recommendation

It is recommended that the existing storm drain system be surveyed in predetermined areas where drainage areas will potentially be changing, including impervious areas. Further study will need to be completed to determine the feasibility of future connections (or increase in flow) to the public system. Existing public system capacity and potential additional runoff will need to be determined. For the repurposing of existing buildings, the existing adjacent storm drain system should be inspected (including video) to verify pipe condition, size, depth and slope. It is anticipated that all storm water treatment will occur immediately adjacent to the proposed improvements prior to discharge into a storm drain system or open channel.

Figure B-18: North Campus Storm Drain



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