Devan Morris
GEOG 342 Remote Sensing
Jennings
5-14-10

**Project Summary**

This project utilizes the Feature Analyst extension of ArcGIS to identify large surface parking lots within a quarter-mile radius of Sacramento Regional Transit District (RT) light rail stations within the City of Sacramento.

**Purpose**

The purpose of this project is to analyze how much land is currently being dedicated for automobile parking around light rail stops. Given their proximity to public transit, these parking lots may have a high potential to be redevelopment into mixed-use transit oriented development projects. Transit oriented development (TOD) is defined as:

> Moderate to higher density development, located within an easy walk of a major transit stop, generally with a mix of residential, employment, and shopping opportunities designed for pedestrians without excluding the auto. TOD can be new construction or redevelopment of one or more buildings whose design and orientation facilitate transit use.[1]

In addition, large continuous surface parking lots create an inhospitable place for walking, reduce pedestrian connections to surrounding businesses and neighborhoods, and create an aesthetically unattractive urban environment. In areas with high levels of transit access, walking and bicycling should be encouraged through better site design and land use. Light rail stations in Sacramento should be seen as an opportunity by the city and developers to take advantage of the benefits transit has to offer including reduced parking requirements, diversifying land uses, and the increased efficiency of mass-transit at higher population densities.

Sacramento General Plan:

> LU.5.5.2 Transit-Oriented Development. The City shall actively support and facilitate mixed-use retail, employment, and residential development around existing and future transit stations.[2]

I hope this project will get people to start thinking about how we can make Sacramento more sustainable through infill development on underutilized parking lots near light rail stops. RT's light rail line could serve as a transportation backbone to meet the city's future growth while mitigating additional sprawl and traffic congestion. TODs could also create a new real estate market outside of the traditional single family home and garden apartment, catering to millennials looking for a more exciting urban environment and aging baby boomers who can no longer safely operate an automoble.

[1] *Statewide Transit-Oriented Development Study: Factors for Success in California*, 2002
[2] *Sacramento General Plan: Citywide Goals and Policys- Land Use and Urban Design Element,* 2009

**Data Sources**

| File Name | Source | Date | Type | Description |
|---|---|---|---|---|
| cities.shp | Sacramento County | 10/2/2008 | vector polygon | polygon areas of all cities within Sacramento County |
| LIGHT_RAIL.shp | Sacramento County | 4/29/2010 | vector polyline | polyline of RT light rail lines in Sacramento County |
| LIGHT_RAIL_STOPS.shp | Sacramento County | 4/29/2010 | vector points | points for light rail stops in Sacramento County |
| parcels_without_owners.shp | Sacramento County | 2/23/2010 | vector polygon | polygon areas of parcels in Sacramento County |
| RAIL_WAYS.shp | Sacramento County | 11/3/2005 | vector polyine | poly line of railroads in Sacramento County |
| 2009_Sac_Index.shp | Sacramento City | 2/1/2010 | vector polygon | index of 2009 Sacramento aerial imagery |
| Parks.shp | Sacramento City | 9/10/2008 | vector polygon | polygon areas of parks in the City of Sacramento |
| SAC_21.sid | Sacramento City | 2009 | MrSID raster image | 6 inch resolution- 3 color band aerial photograph of Sacramento |
| SAC_26.sid | Sacramento City | 2009 | MrSID raster image | 6 inch resolution- 3 color band aerial photograph of Sacramento |
| SAC_27.sid | Sacramento City | 2009 | MrSID raster image | 6 inch resolution- 3 color band |

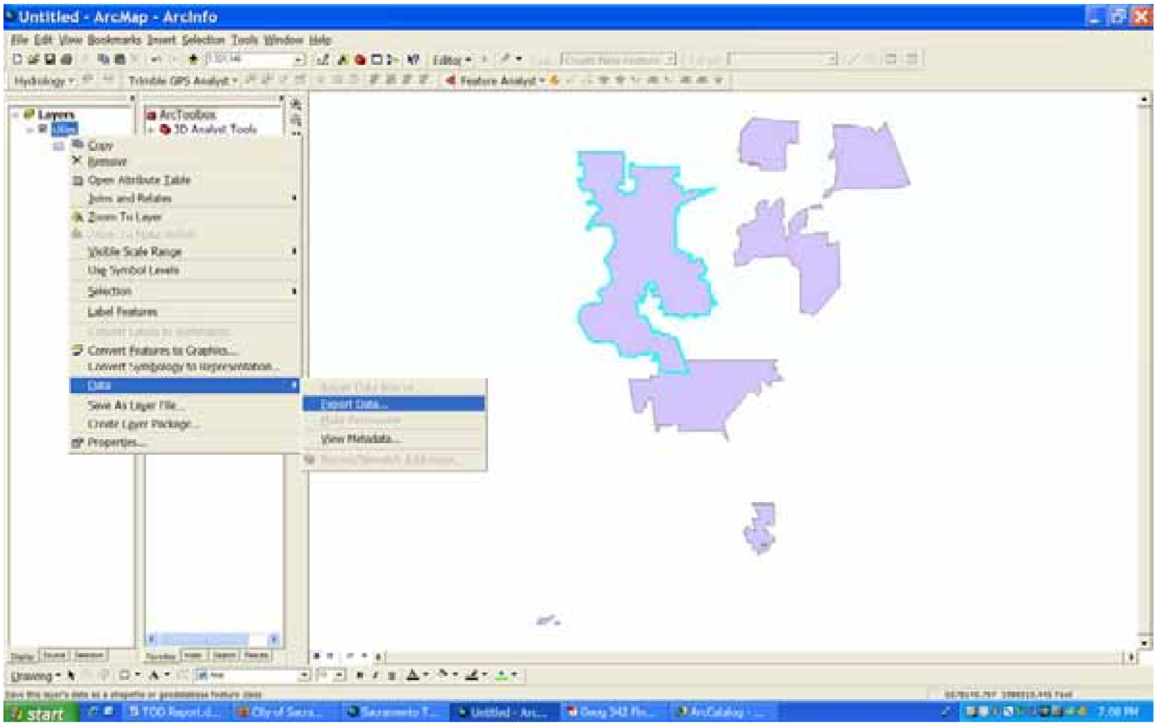
| File Name | Source | Date | Type | Description |
|---|---|---|---|---|
| | | | | aerial photograph of Sacramento |
| SAC_29.sid | Sacramento City | 2009 | MrSID raster image | 6 inch resolution- 3 color band aerial photograph of Sacramento |
| SAC_30.sid | Sacramento City | 2009 | MrSID raster image | 6 inch resolution- 3 color band aerial photograph of Sacramento |
| SAC_31.sid | Sacramento City | 2009 | MrSID raster image | 6 inch resolution- 3 color band aerial photograph of Sacramento |
| SAC_35.sid | Sacramento City | 2009 | MrSID raster image | 6 inch resolution- 3 color band aerial photograph of Sacramento |
| SAC_36.sid | Sacramento City | 2009 | MrSID raster image | 6 inch resolution- 3 color band aerial photograph of Sacramento |
| SAC_37.sid | Sacramento City | 2009 | MrSID raster image | 6 inch resolution- 3 color band aerial photograph of Sacramento |
| SAC_40.sid | Sacramento City | 2009 | MrSID raster image | 6 inch resolution- 3 color band aerial photograph of Sacramento |

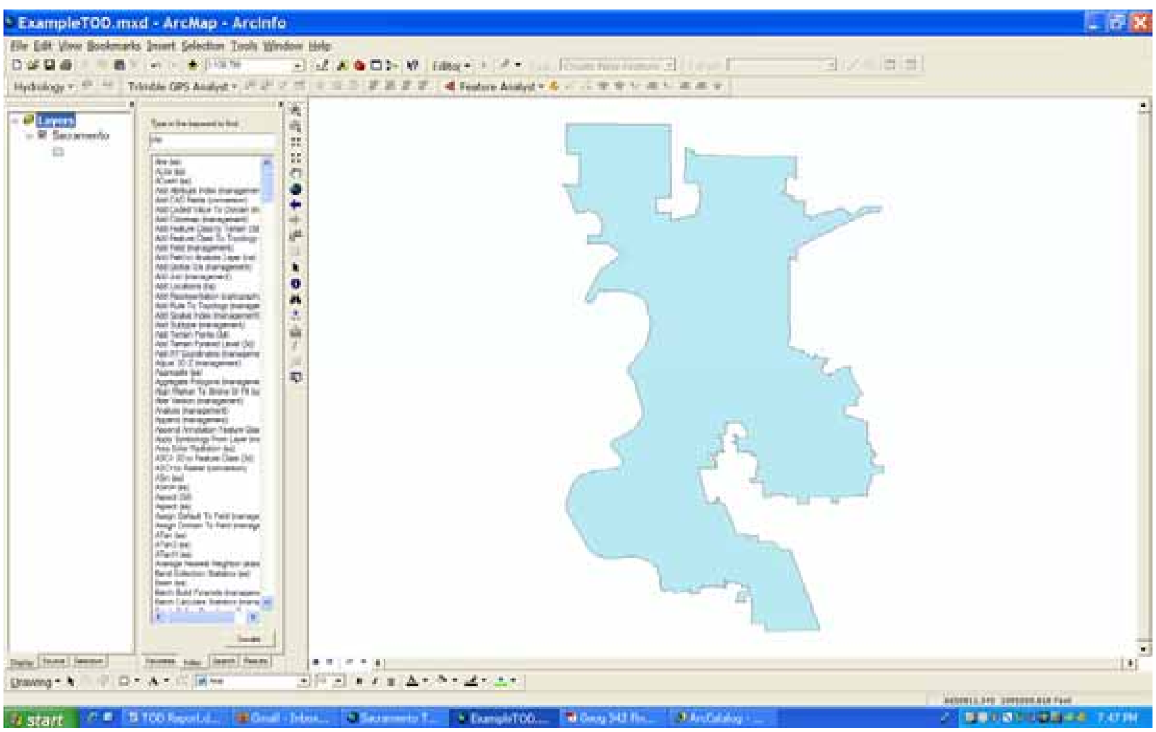
| File Name | Source | Date | Type | Description |
|---|---|---|---|---|
| SAC_41.sid | Sacramento City | 2009 | MrSID raster image | 6 inch resolution- 3 color band aerial photograph of Sacramento |
| SAC_46.sid | Sacramento City | 2009 | MrSID raster image | 6 inch resolution- 3 color band aerial photograph of Sacramento |
| SAC_51.sid | Sacramento City | 2009 | MrSID raster image | 6 inch resolution- 3 color band aerial photograph of Sacramento |

**Methods Used**

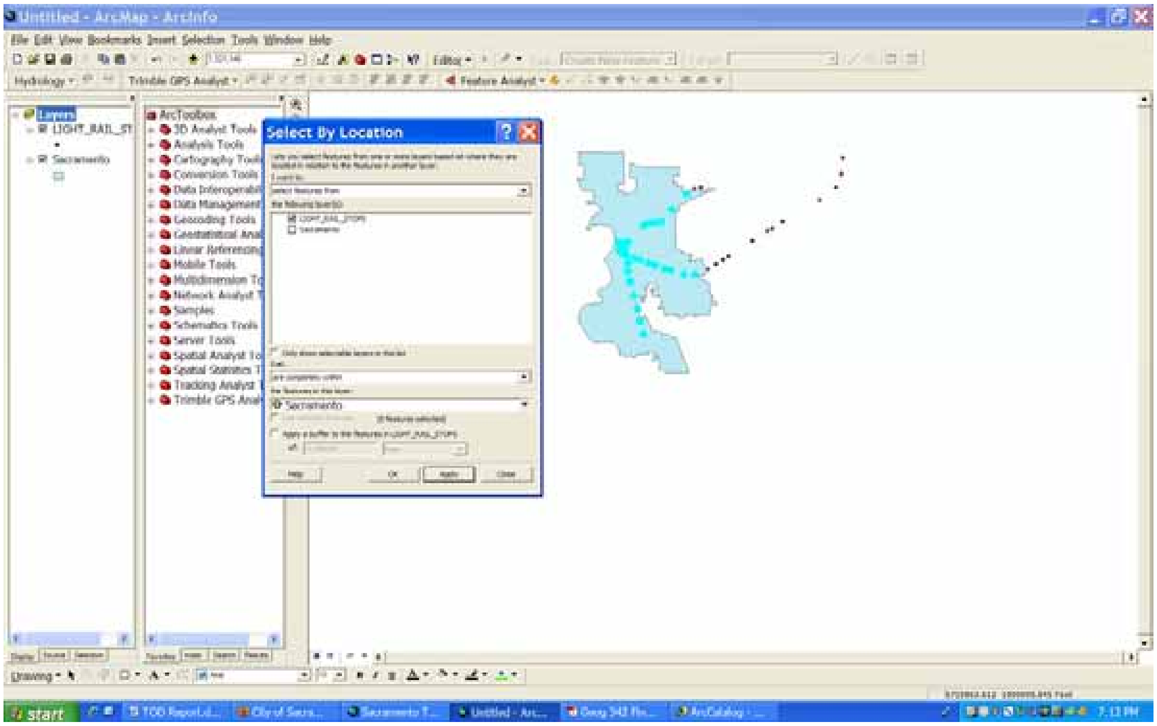
The following section describes the process used to create the final parking lot summary. It outlines the best and most direct method for completing the task after many trials and errors, cursing, frustration and epiphanies. For more information on where the author encountered problems and discovered solutions to those problems please refer to the section. That section will explain how and why certain decisions were made and the different methods that were tried.

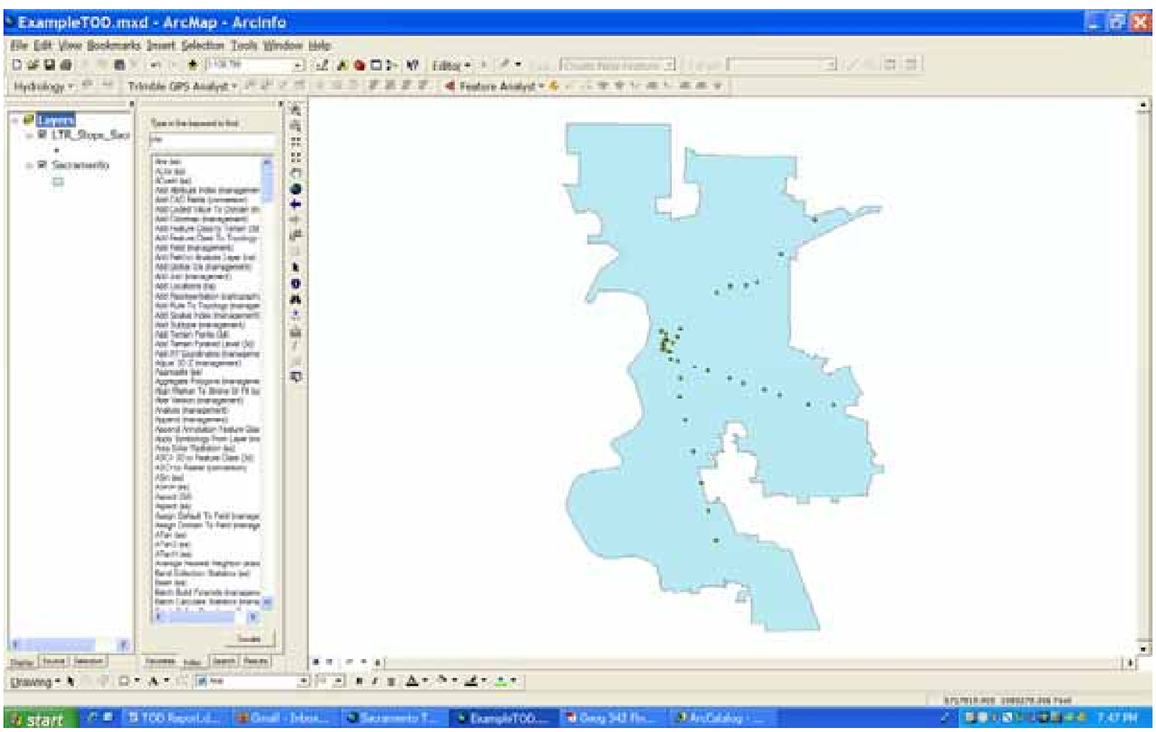
1) This project is focused on classifying parking lots around RT light rail stations within the City of Sacramento. The first step in this project was to extract the City of Sacramento area from the cities.shp provided by the County of Sacramento. This was done using the Selection tool and Export Data to create a new polygon of only the City of Sacramento (Sacramento.shp).



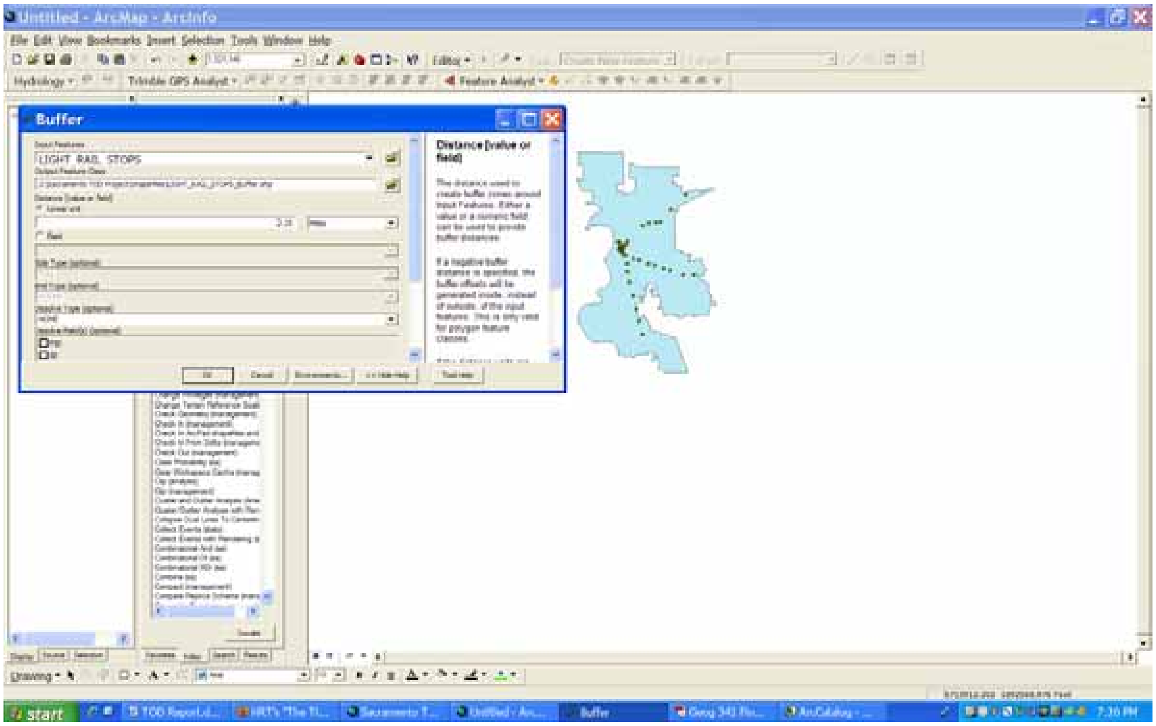



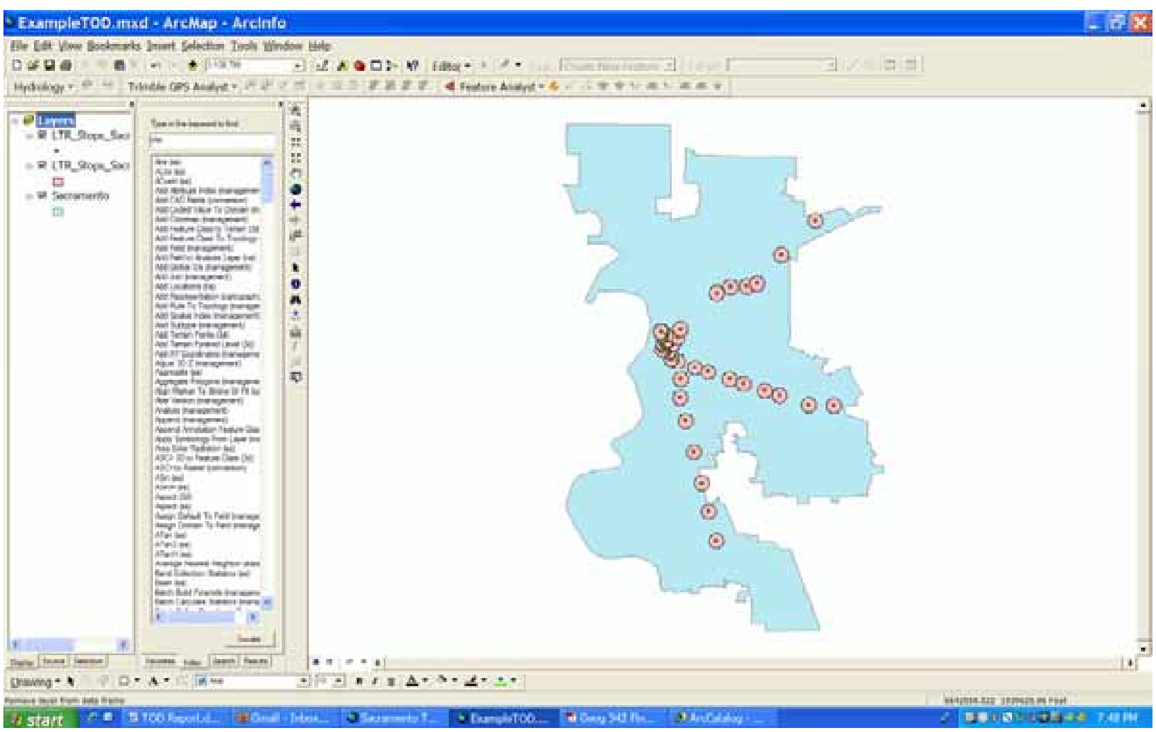
2) All light rail stations that are within the City of Sacramento were then identified using Select By Location tool.  Light rail stations that were completely within the City of Sacramento polygon were selected then exported to create a new shapefile of all the light rail station points within the City of Sacramento (LTR_Stops_Sacramento.shp).



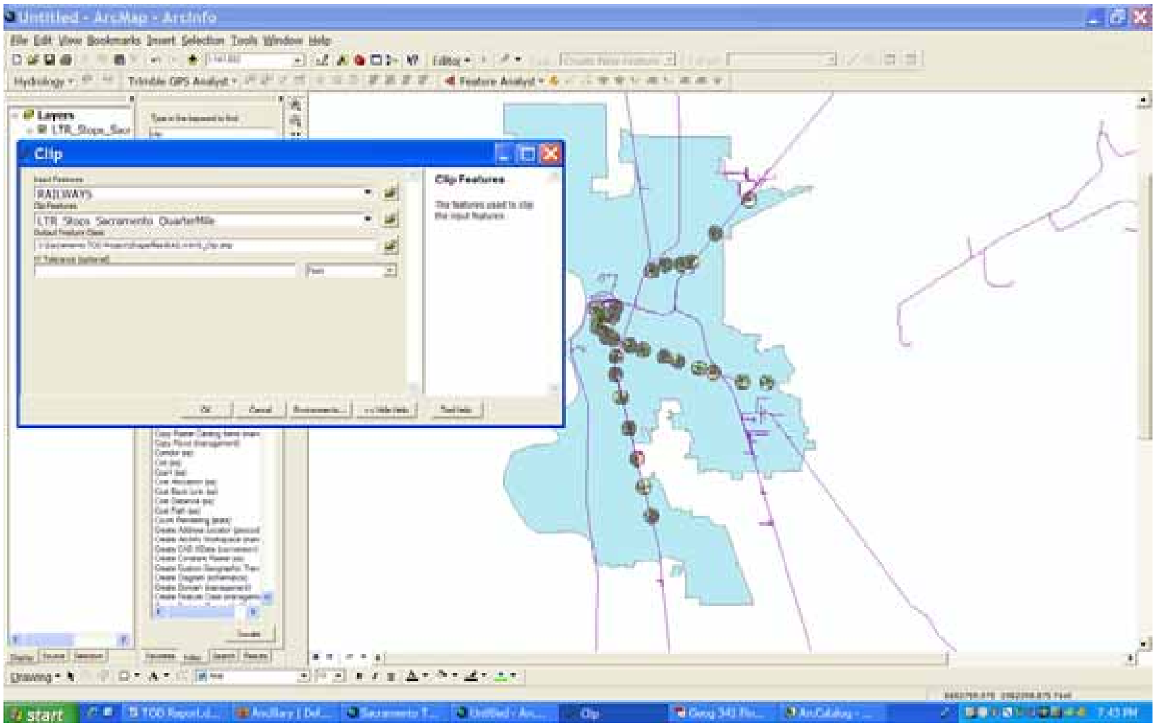



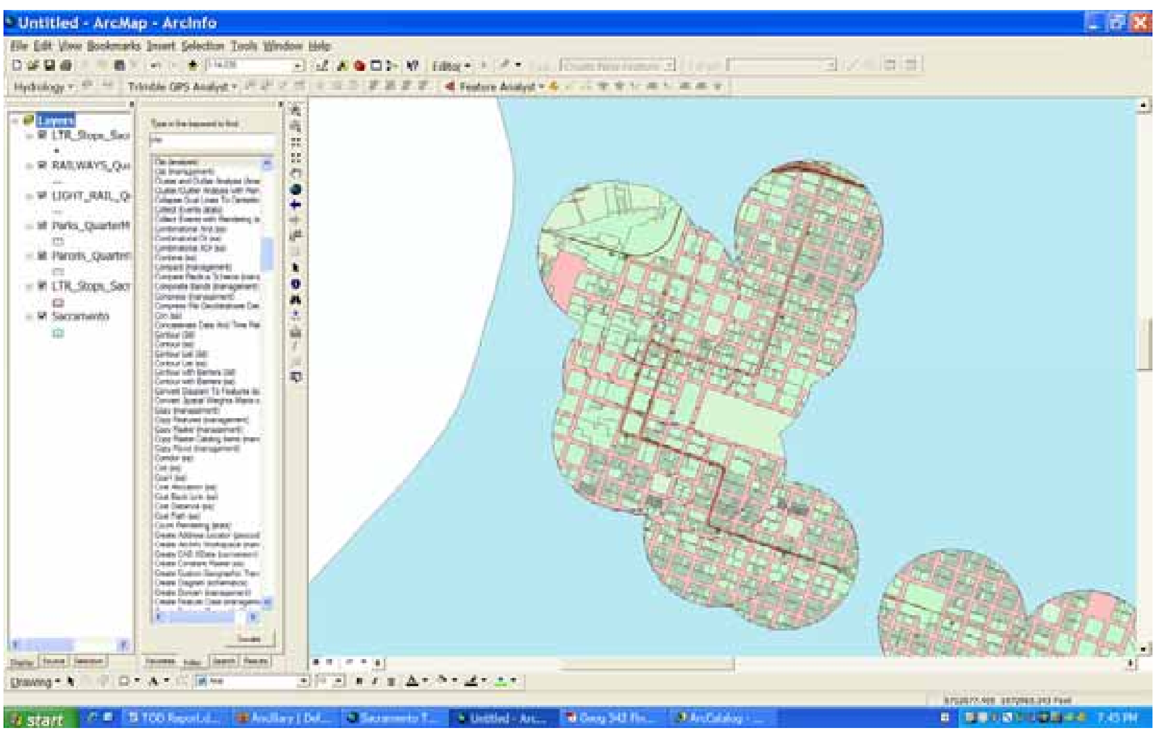
3) The study area was further defined by creating quarter mile zone around each light rail station. A quarter mile was chosen because it represents how far a pedestrian could walk in a given direction in 5 minutes. It is a widely acknowledged and understood rule of thumb in the urban planning and development fields. The Buffer tool was used to create quarter mile buffer zones around each light rail station in Sacramento. 0.25 miles was specified as the buffer radius (LTR_Stops_Sacramento_QuarterMile.shp).



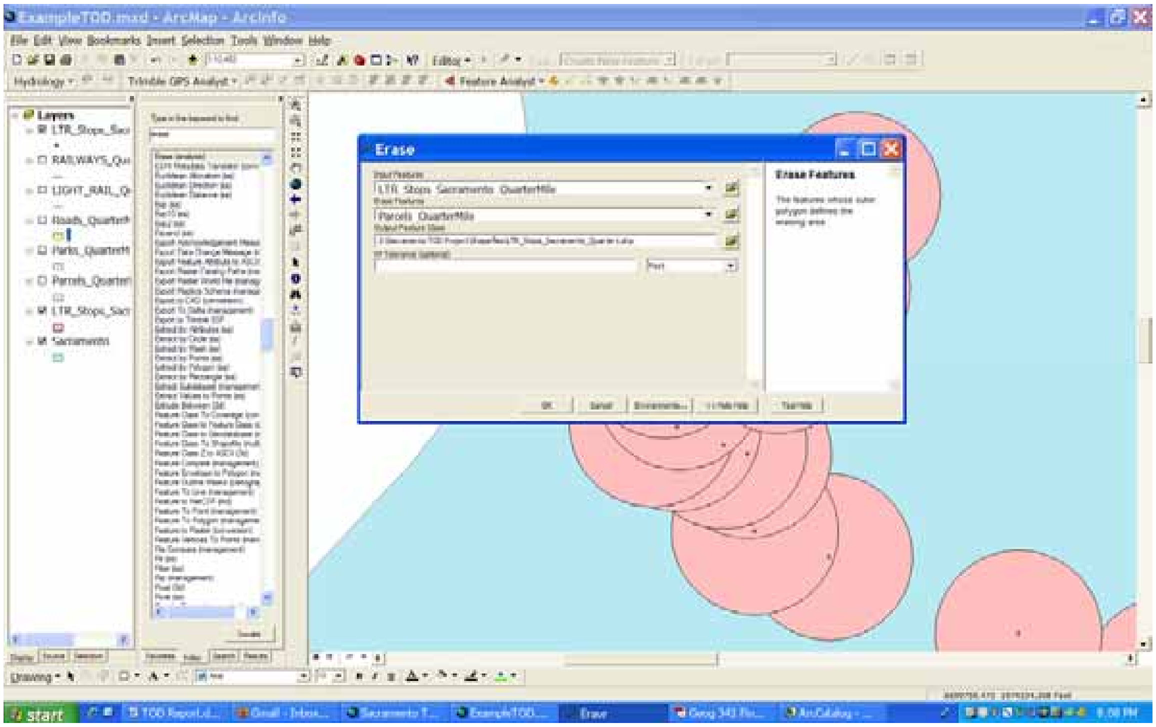



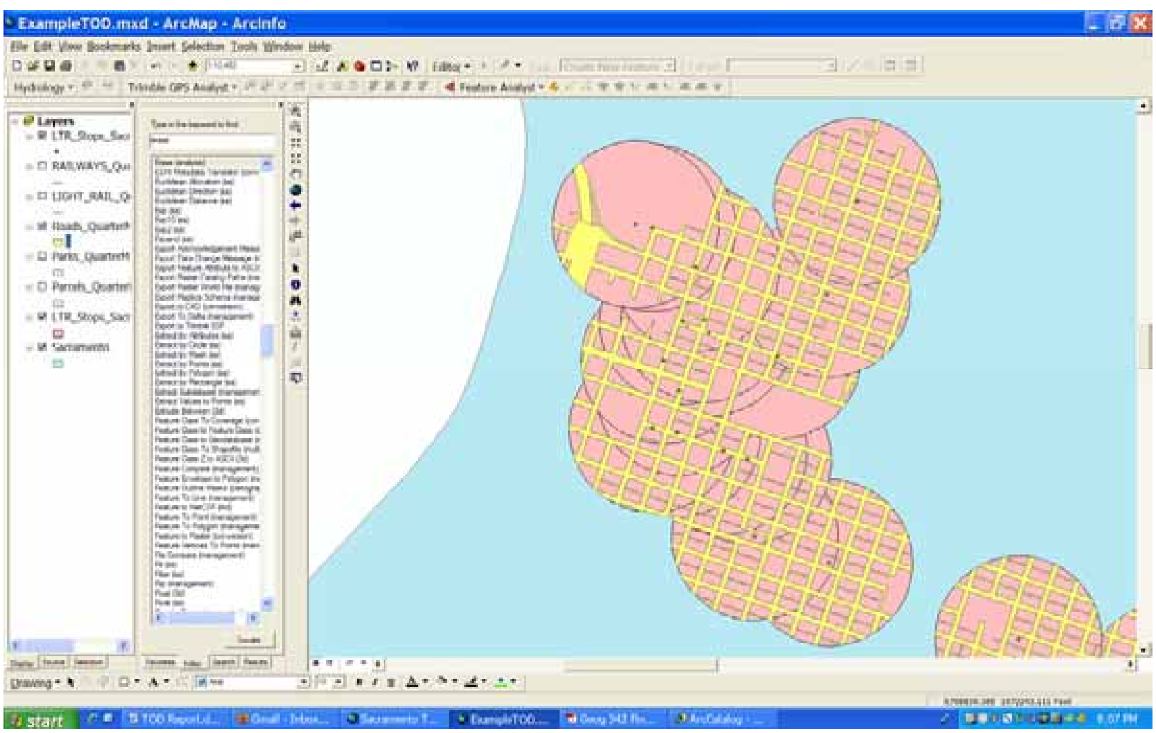
4) All ancillary information was then restricted to the quarter mile study area. This was done using the Clip tool to keep only those features that fell within LTR_Stops_Sacramento_QuarterMile.shp zones. Clipping was done to improve performance and eliminate unnecessary data. The Clip tool was used on LIGHT_RAIL.shp, RAIL_WAYS.shp, parcels_without_owners.shp, and parks.shp.



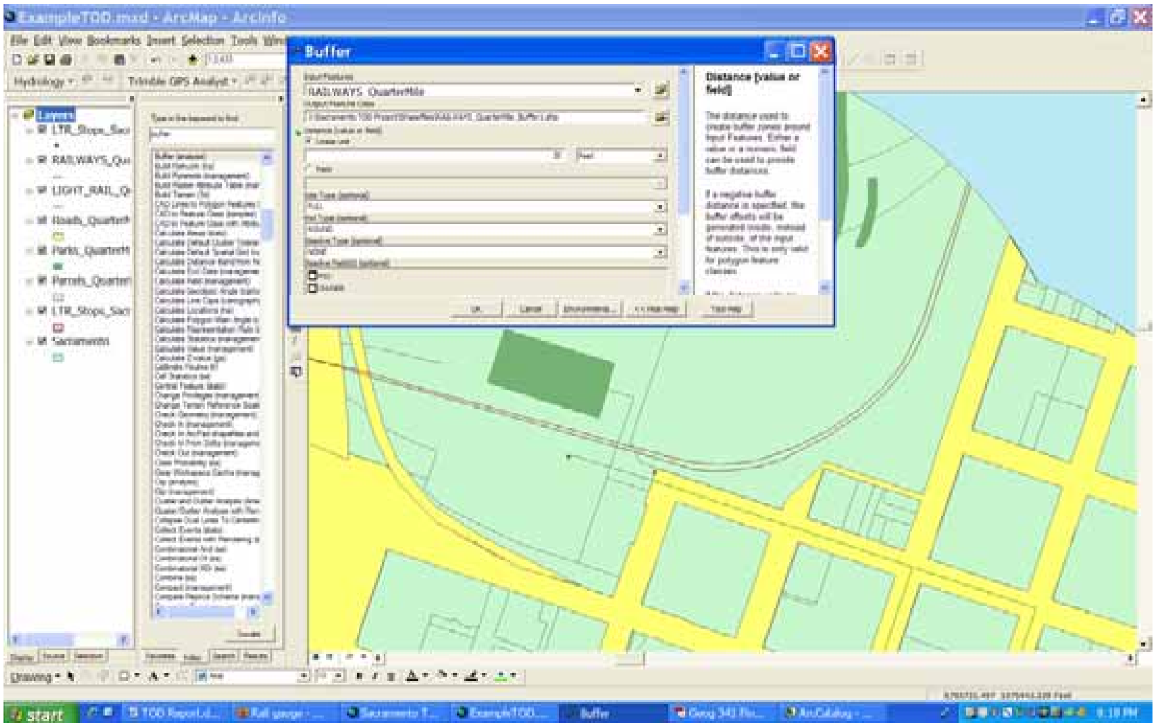



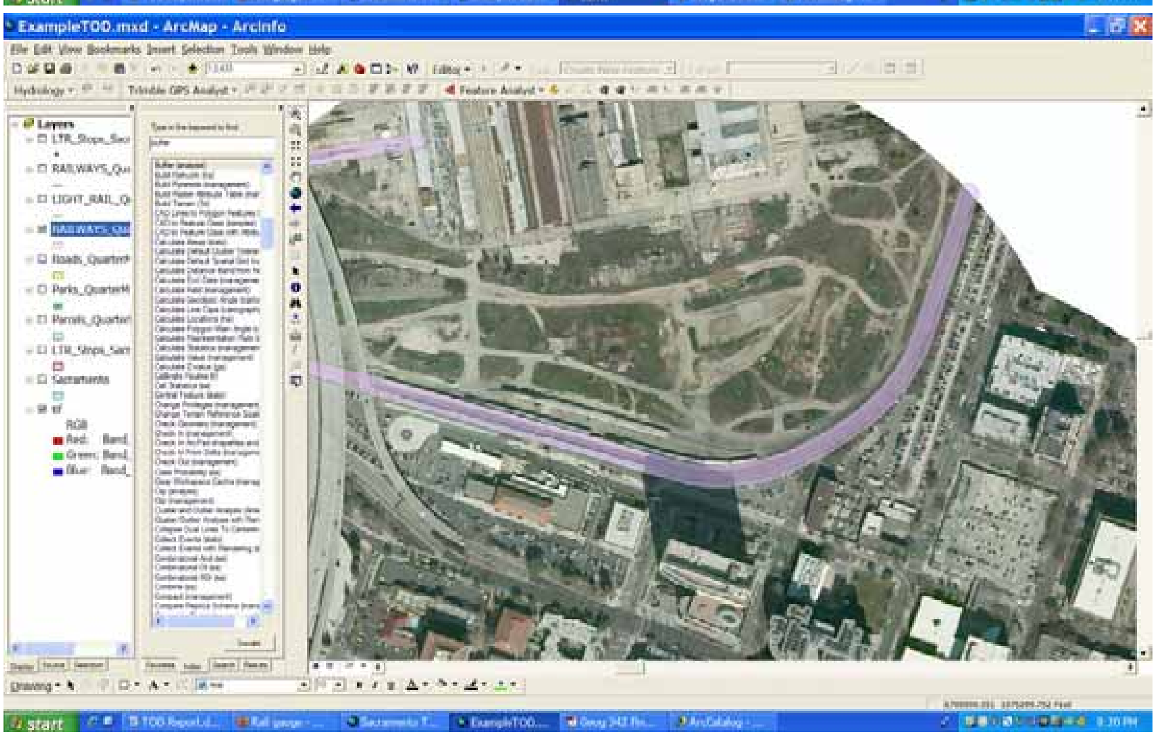
5) Unfortunately the street data provided by Sacramento County was unhelpful. It lacked information on street width necessary to create a street polygon. The street polygon will be used later to create a mask to prevent Feature Analyst from classifying roads as parking lots. In order to get around this one can use the parcel layer to create a new polygon of public right of ways. To do this the Erase tool was utilized. LTR_Stops_Sacramento_QuarterMile.shp had all Parcels_QuarterMile.shp erased leaving only a street polygon.



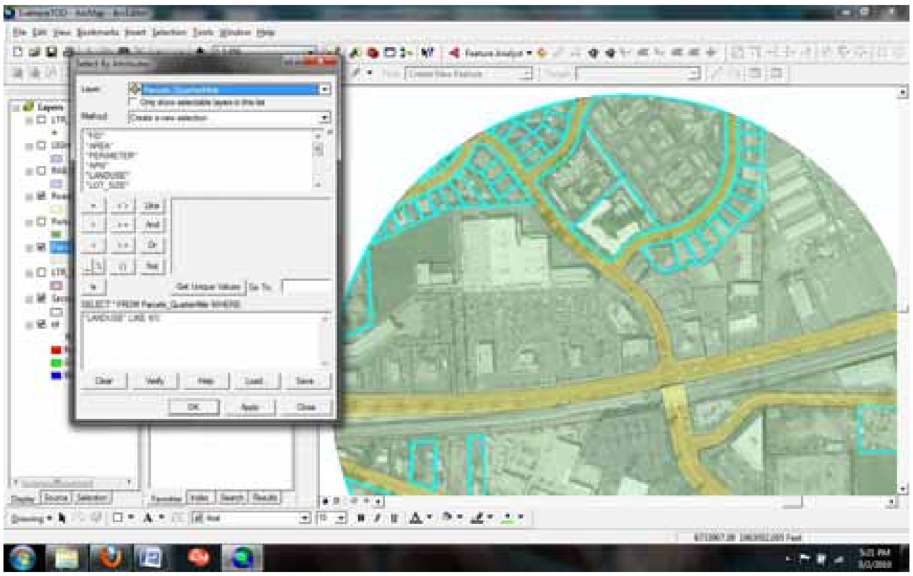



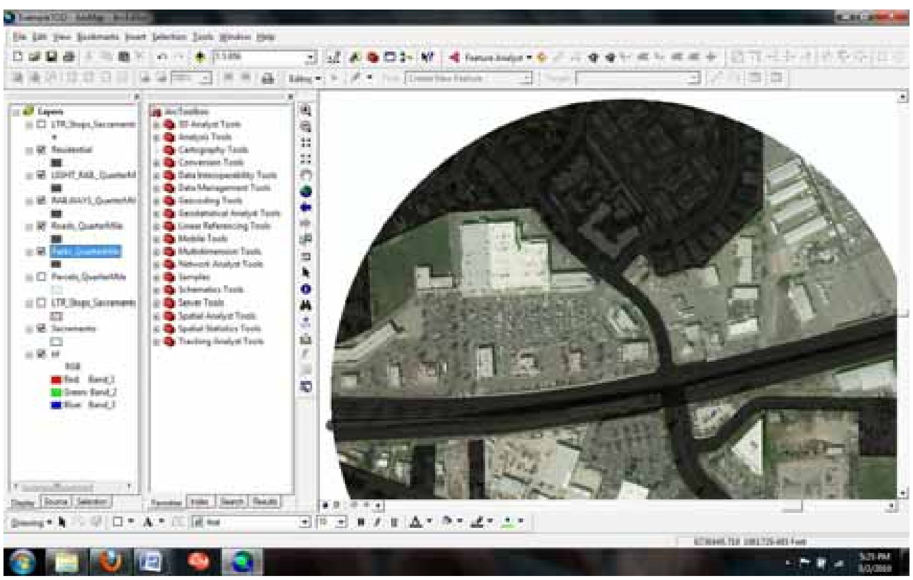
6) A buffer was added to the light rail and railroad lines in order to use them as masks as well. Using the Buffer tool, a 30 foot buffer was created around the light rail and railroad lines so that the entire track was encompassed by a polygon. The 30 foot buffer was determined to be the best fit through a series of trial and error using an aerial image (RAIL_WAYS_QuarterMile_Buffer.shp, LIGHT_RAIL_QuarterMile_Buffer.shp).



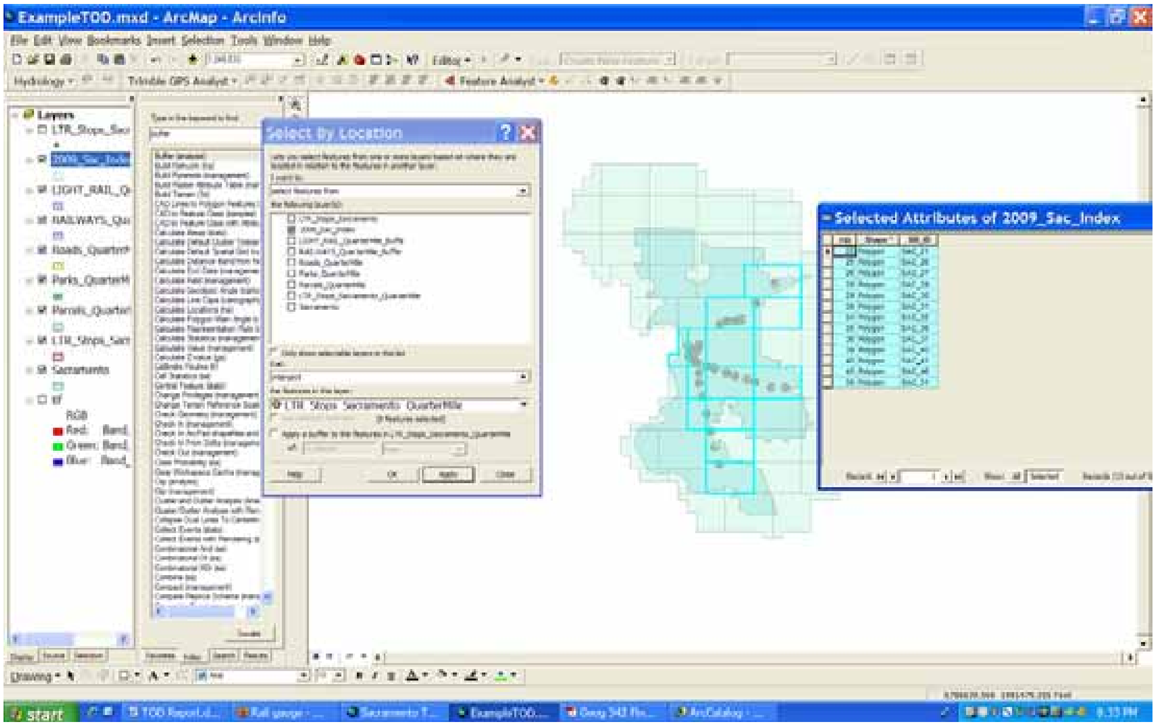


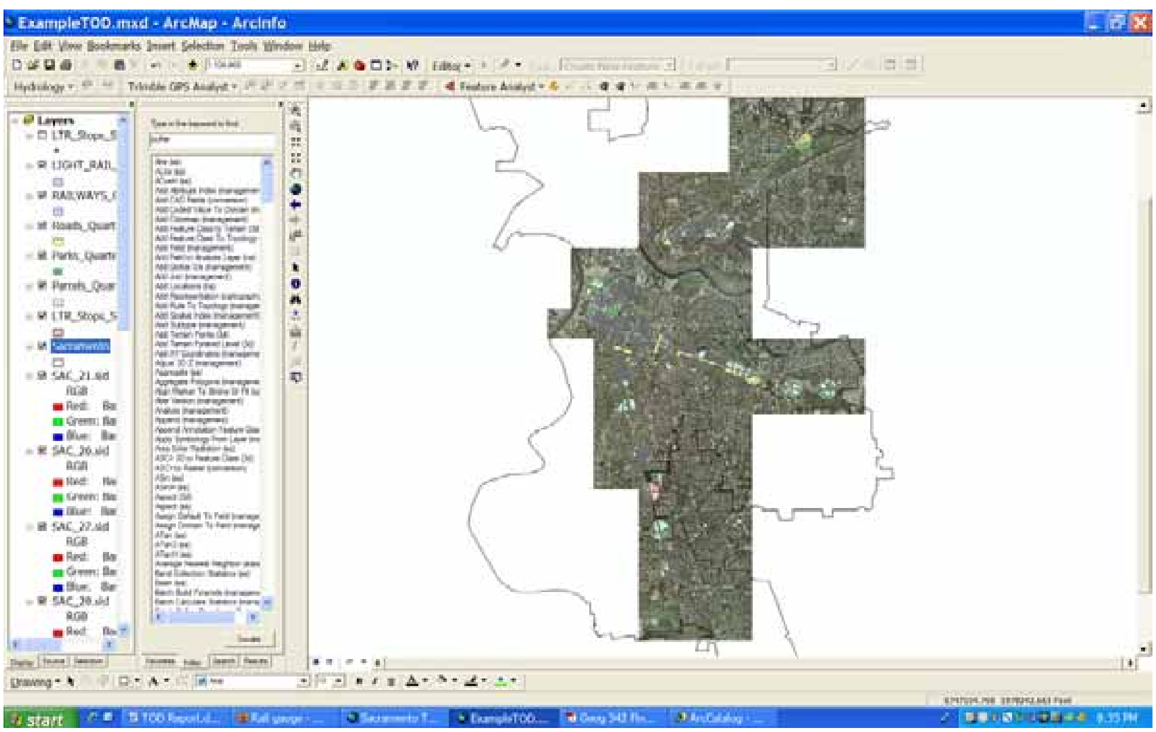
7) Typically commercial and industrial land uses are required to maintain a high level of parking to square footage ratio per the city's zoning ordinance. The code creates large parking lots around these types of uses. In order to eliminate smaller parking lots such as residential driveways and apartment lots which are impractical for redevelopment purposes, all parcels containing residential uses were exported as their own individual shapefile to be used as a mask in the Feature Analyst classification process. The parcel shapefile contained a coded land use field which was decoded with a key provided by the City of Sacramento. It was determined that all land uses starting with the code "A" were residential uses. To select all the residential uses the Select by Attributes tool was used with a wildcard: SELECT FROM Parcels_QuarterMile WHERE "LANDUSE" LIKE 'A%'. This allowed for the selection and export of all codes that started with the residential identifier code 'A'.



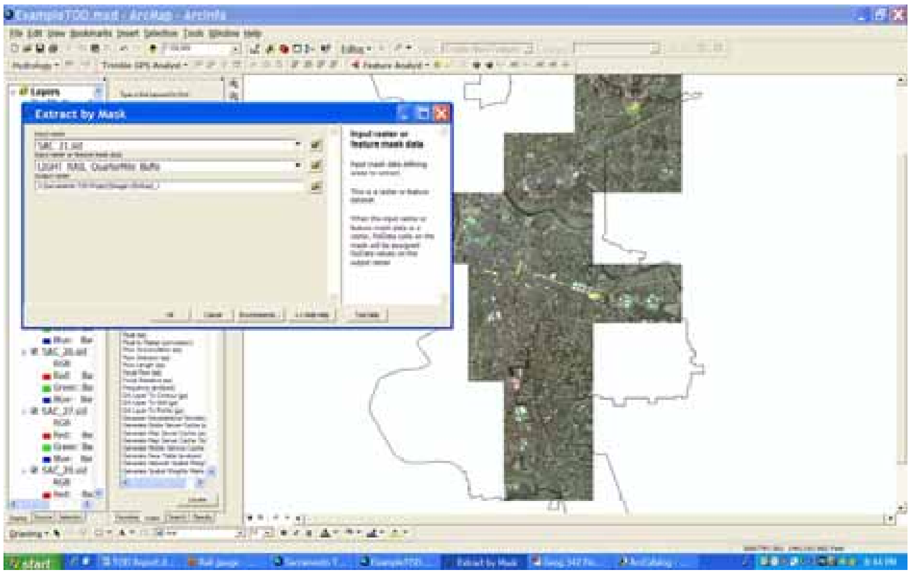


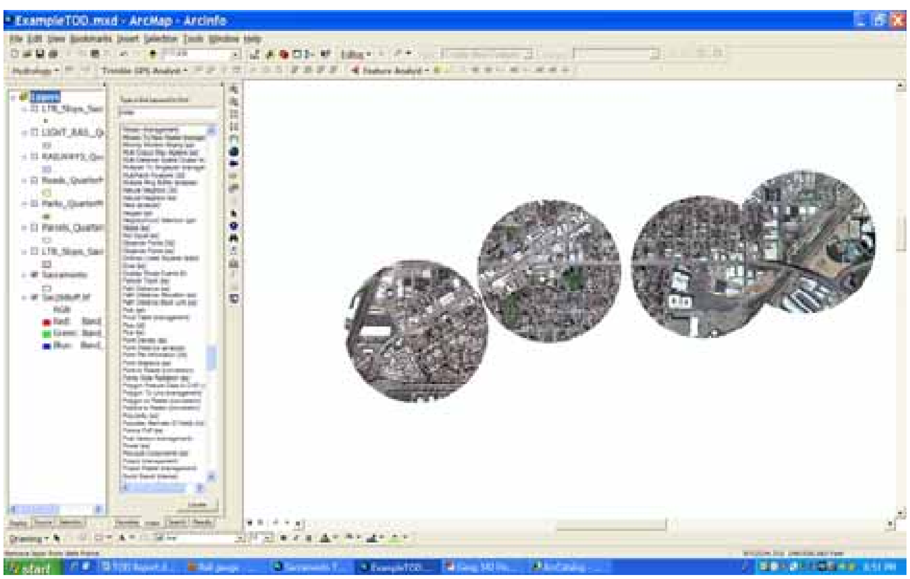
8) The 2009_Sac_Index.shp was loaded to determine which MrSID files contained the quarter mile light rail study areas. Select By Location was used to select those index polygons that intersected LTR_Stops_Sacramento_QuarterMile.shp. The attribute table was then opened to see which corresponding MrSID file needed to be loaded.



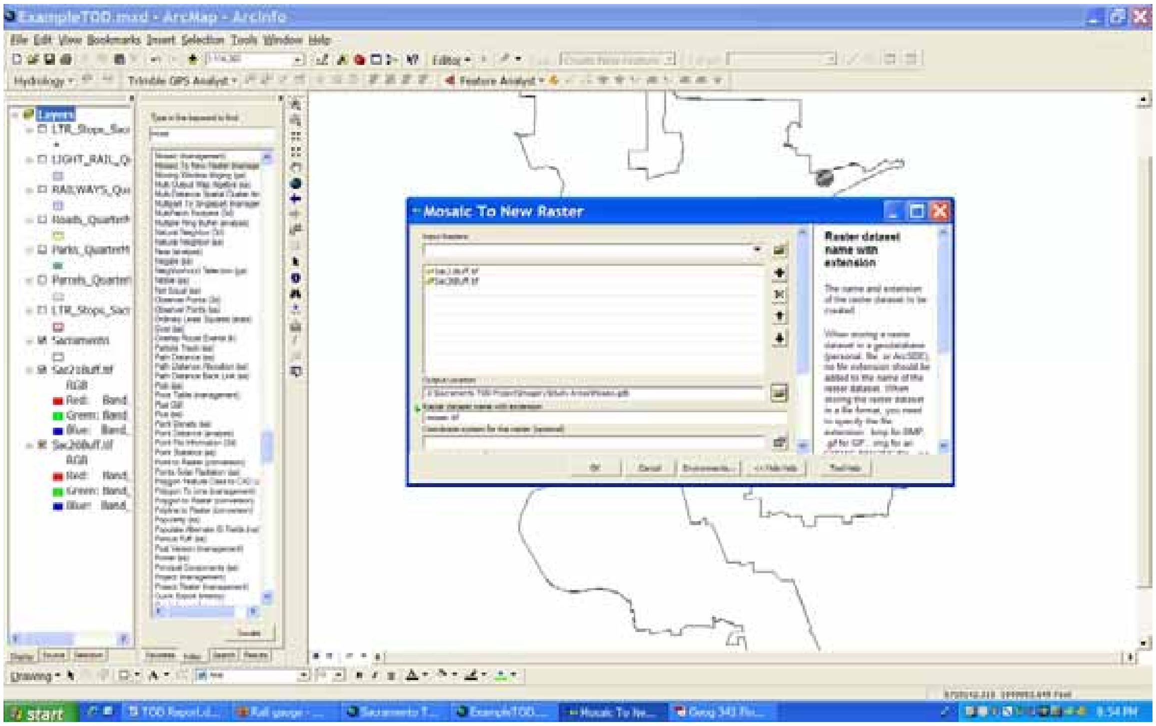



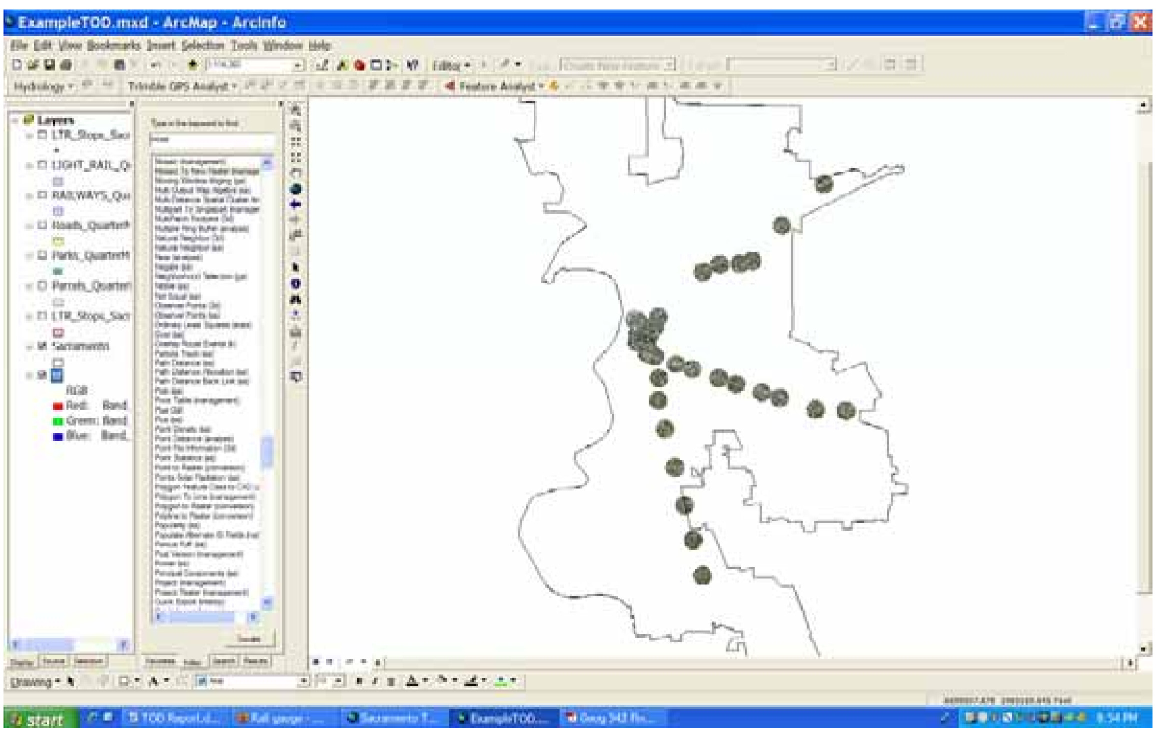
9) Only the areas within the quarter mile buffer of the rail station need to be considered. The Extract By Mask tool was used to extract raster data within the quarter mile buffer just like the Clip Tool was used earlier to extract vector data. This process created new raster images only of the study area. During this process the MrSID files were uncompressed and saved in the TIF format by adding the file extension .tif to the output raster file name. TIF was chosen because it is typically the standard used for raster imagery and is a file format Feature Analyst can read, unlike MrSID. Each MrSID file had to be extracted individually making for a very long process.



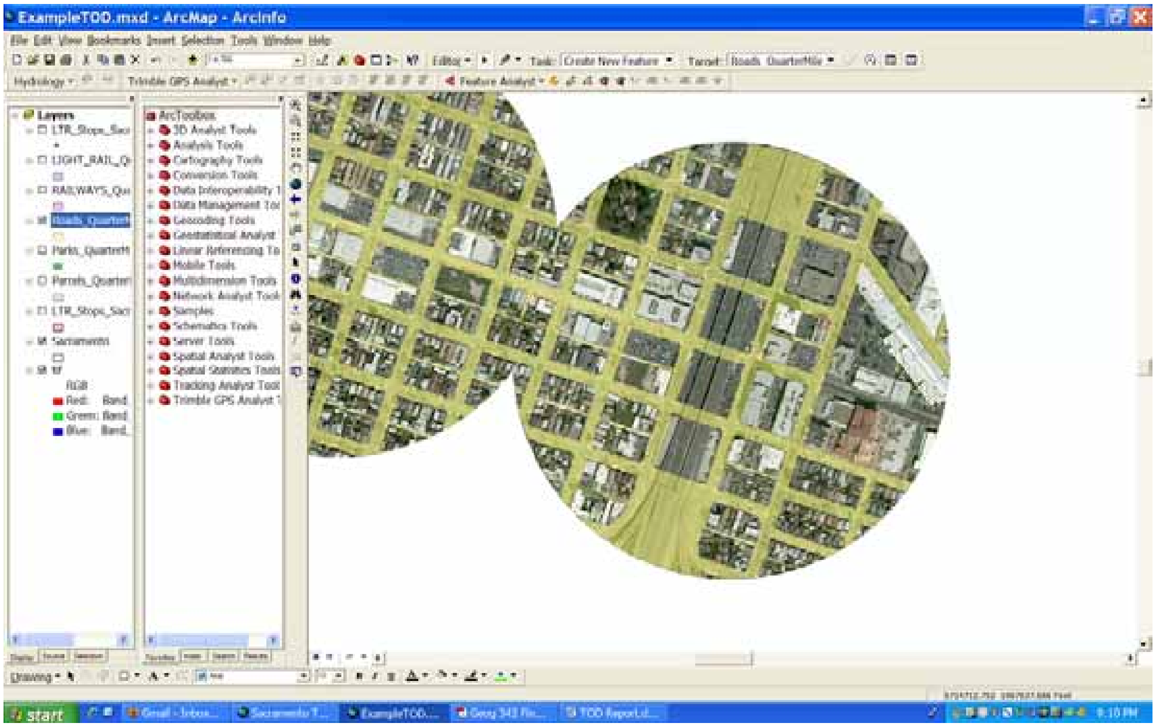



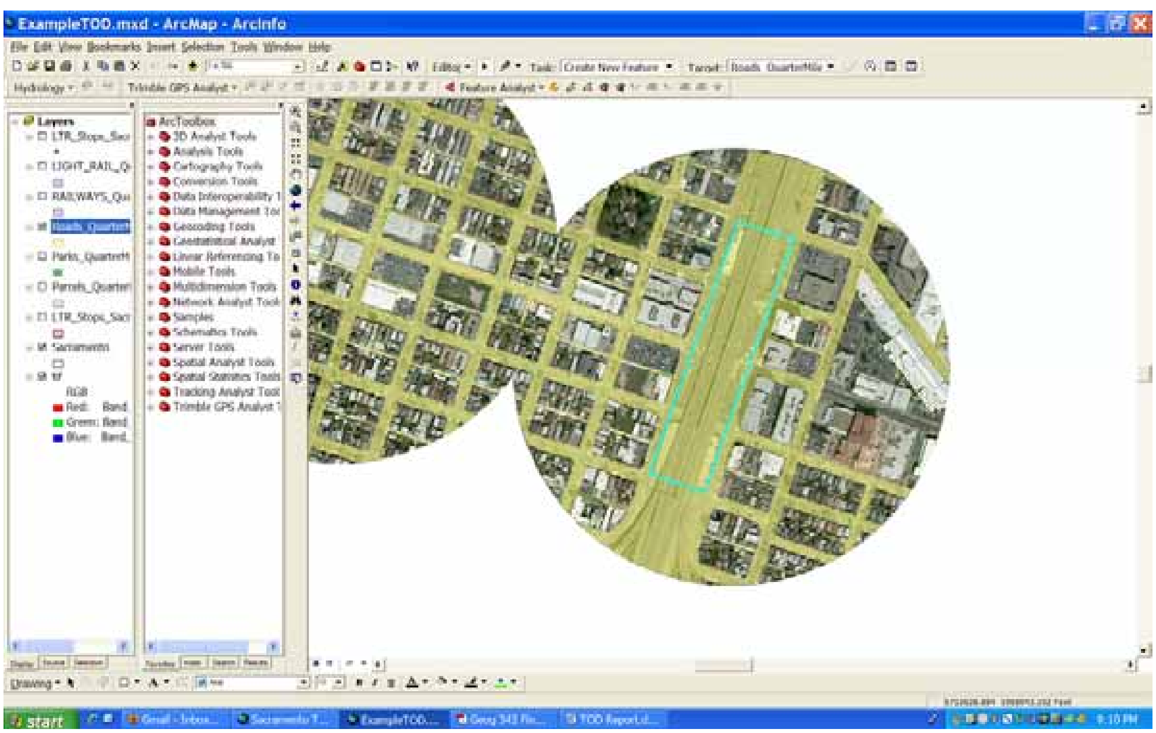
10) All the TIF files were then combined into one image using the Mosaic to New Raster tool. This was done so Feature Analyst would classify the entire image in one run after training sites had been tested on the individual TIFs. In order to create a mosaic image, a Personal Geodatebase had to be created along with a new empty raster with the correct coordinate system (in this case NAD_1983_StatePlane_California_II_FIPS_0402_Feet).



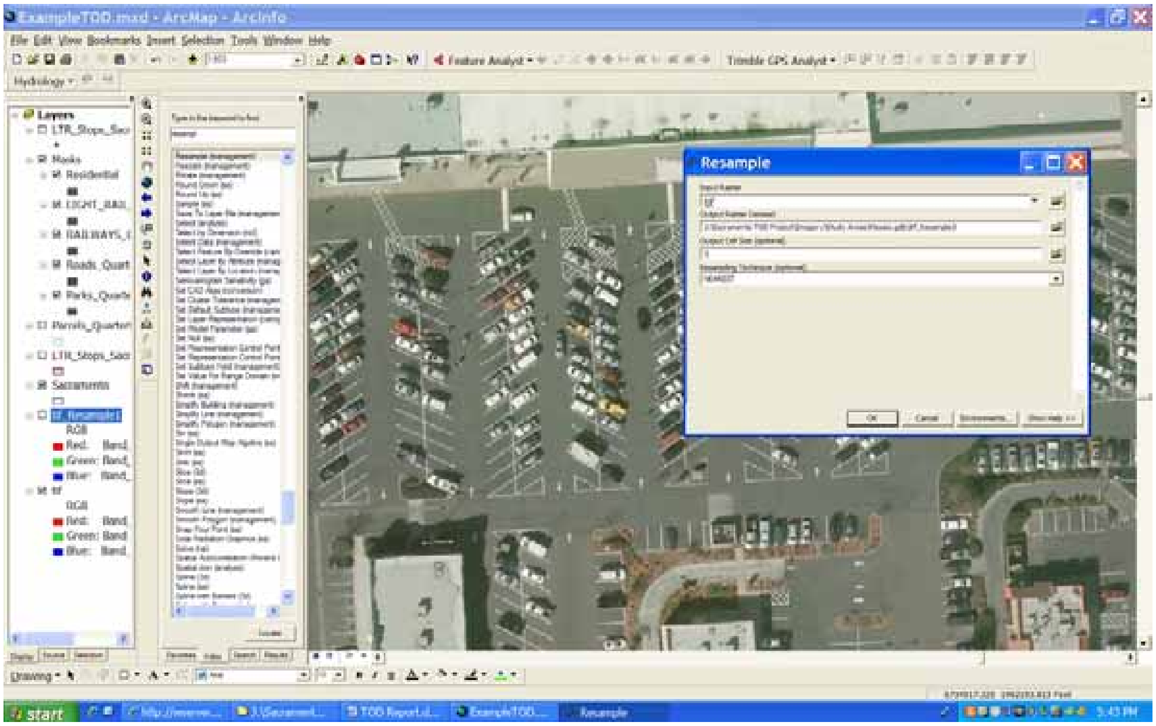



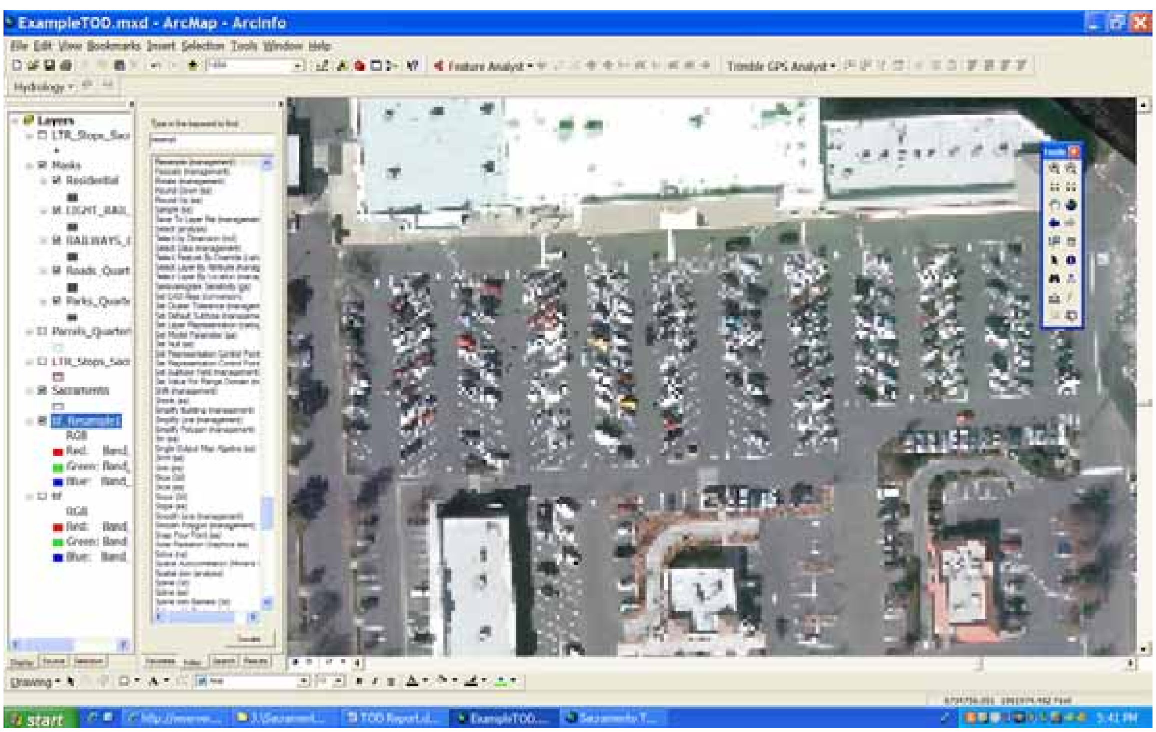
11) The completed aerial mosaic was then used to spot check all other polygon mask layers (i.e. roads, railroads, light rail lines, etc.) to makes sure they properly aligned with their corresponding features in the aerial photograph.  This was done to prevent Feature Analyst from classifying these features as parking lots, allowing for a more accurate classification with less passes.  The Editor tool was used to correct any polygons found to be in error or missing.  This process was repeated for light rail and railroad lines.



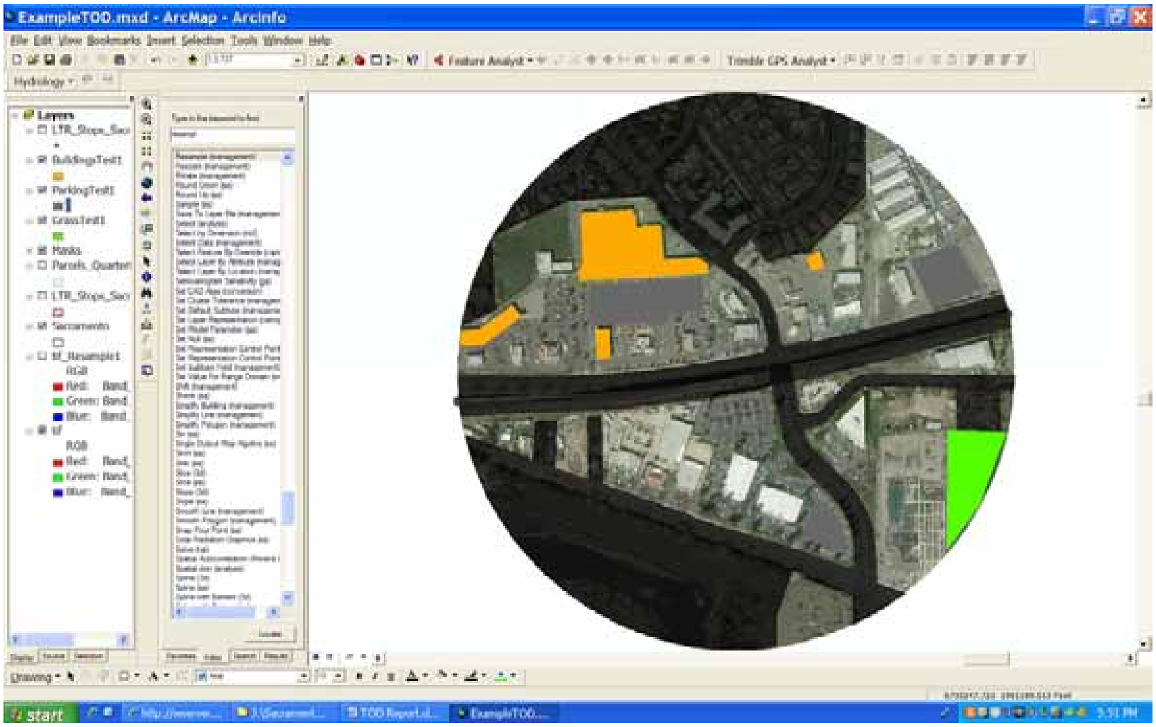



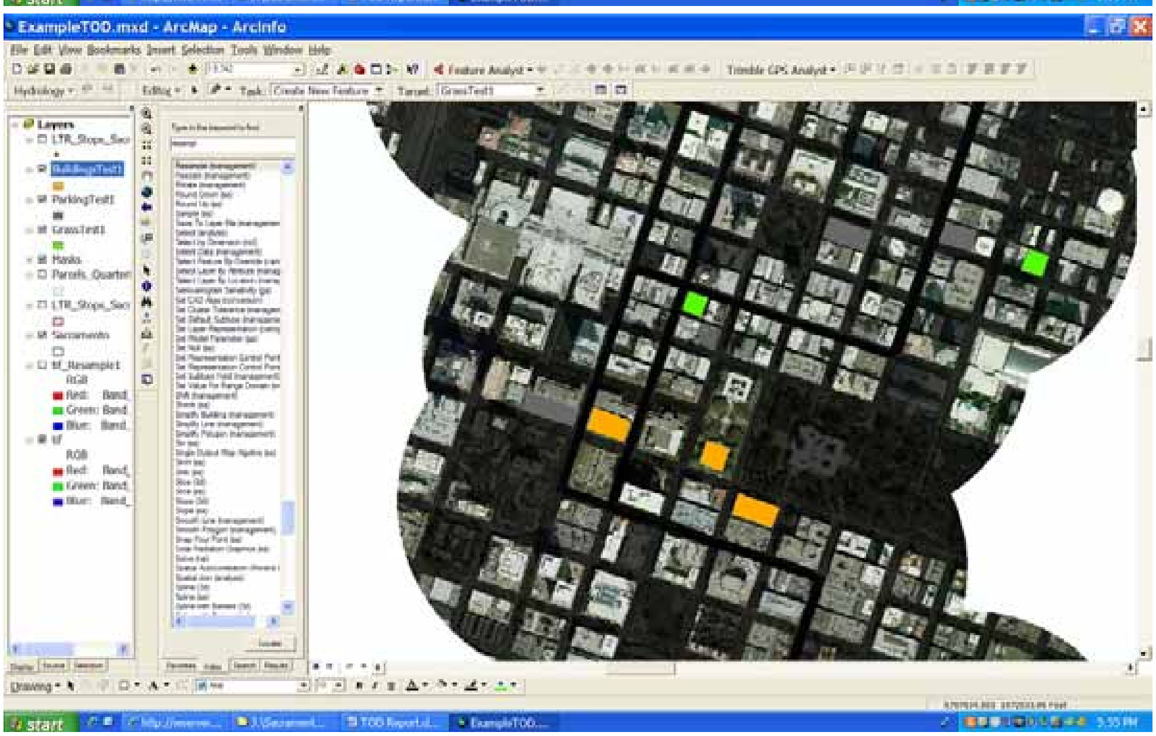
12) With all the masks created and the study area defined the Feature Analyst classification process was next. The first step was to resample the TIF mosaic study area down to a lower resolution (see **Issues Encountered**). Through trail and testing it was discovered that resampling the TIF from 6 inch pixels to 3 foot pixels allowed for the optimum compromise between quality of classification and processing time. The Resample tool was used with the output cell size specified as 3 feet.



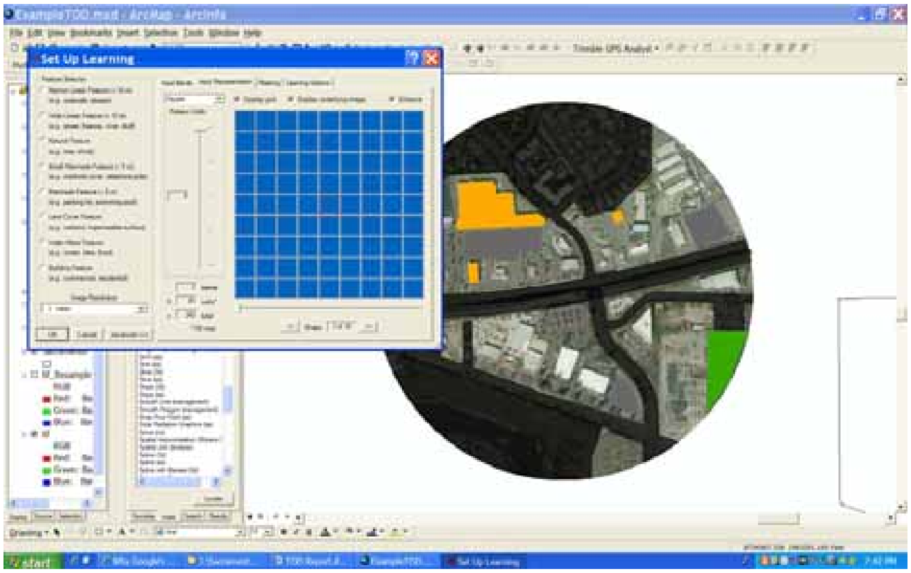



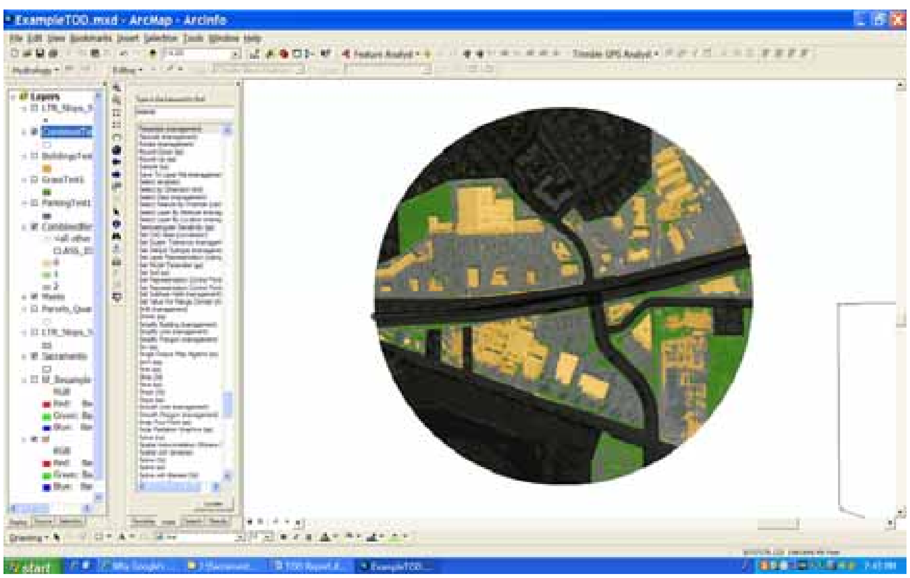
13) Feature Analyst requires test sites in order to start classifying an image. Through trial and error it was determined that three classes worked the best for identifying enough features in the image to identify parking areas well. Vacant grass areas, buildings and parking lots were sampled throughout the Sacramento study areas to get a good sample of the various types of features found throughout the city. After a series of test areas were defined for each class, the three classes were combined using the Combine Features tool into one shapefile, allowing for wall-to-wall classification with Feature Analyst.



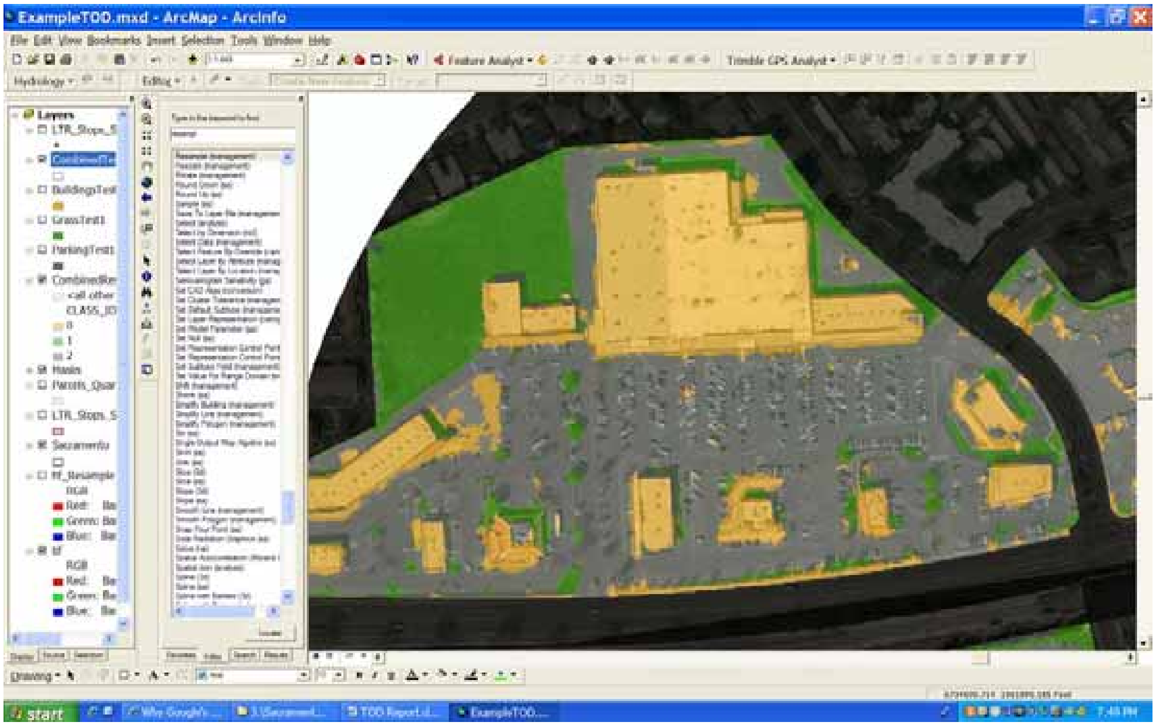



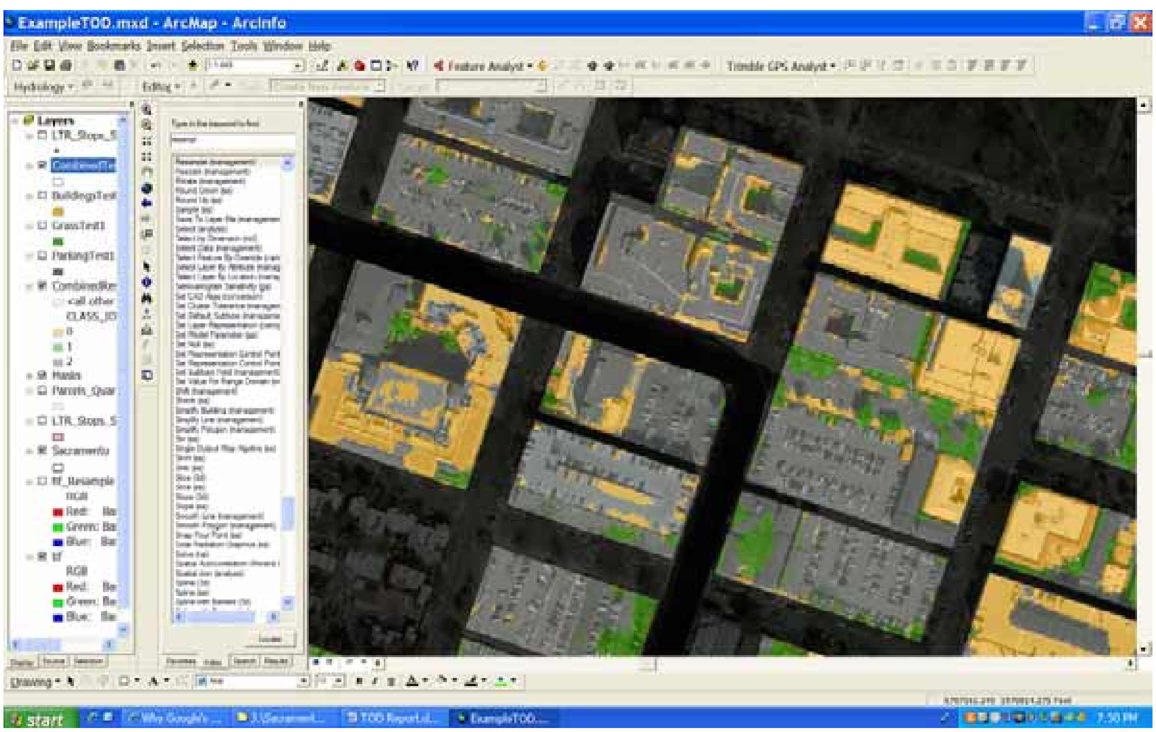
14) Next One Step Learning was set up. Through trial and error it was discovered that the best input representation was using a Square with a 9 pixel pattern width. I believe that this is the best classification method given that the features being searched for are in a square configuration boarded by straight streets (vacant lots, parking lots, buildings). In addition, all the mask layers were applied to filter out everything but sites with potential large parking lots. In the mask set up, Feature Analyst was told to exclude residential parcels, roads, railways, light rail lines, and parks. It was also told to focus on all parcels that were not residential as an extra precaution to exclude unwanted classification. A general approach learning method was used with areas smaller than 100 pixels being aggregated. This was used to avoid creating in holdings of different classifications such as trees in parking lots.



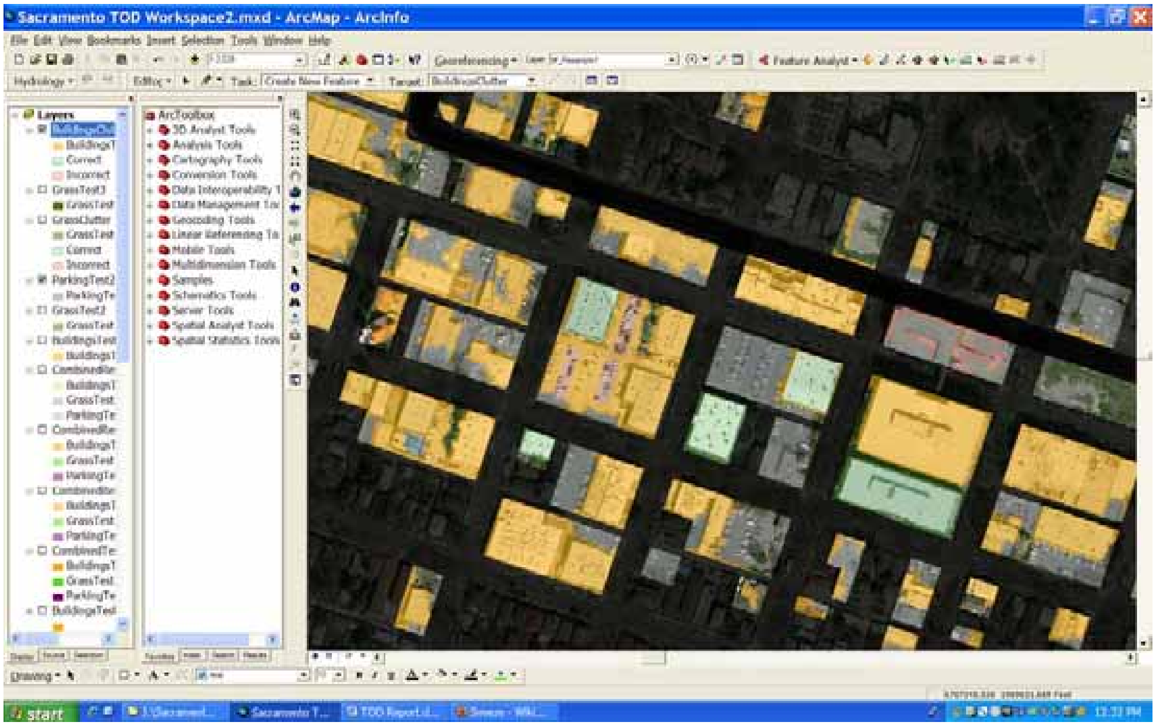


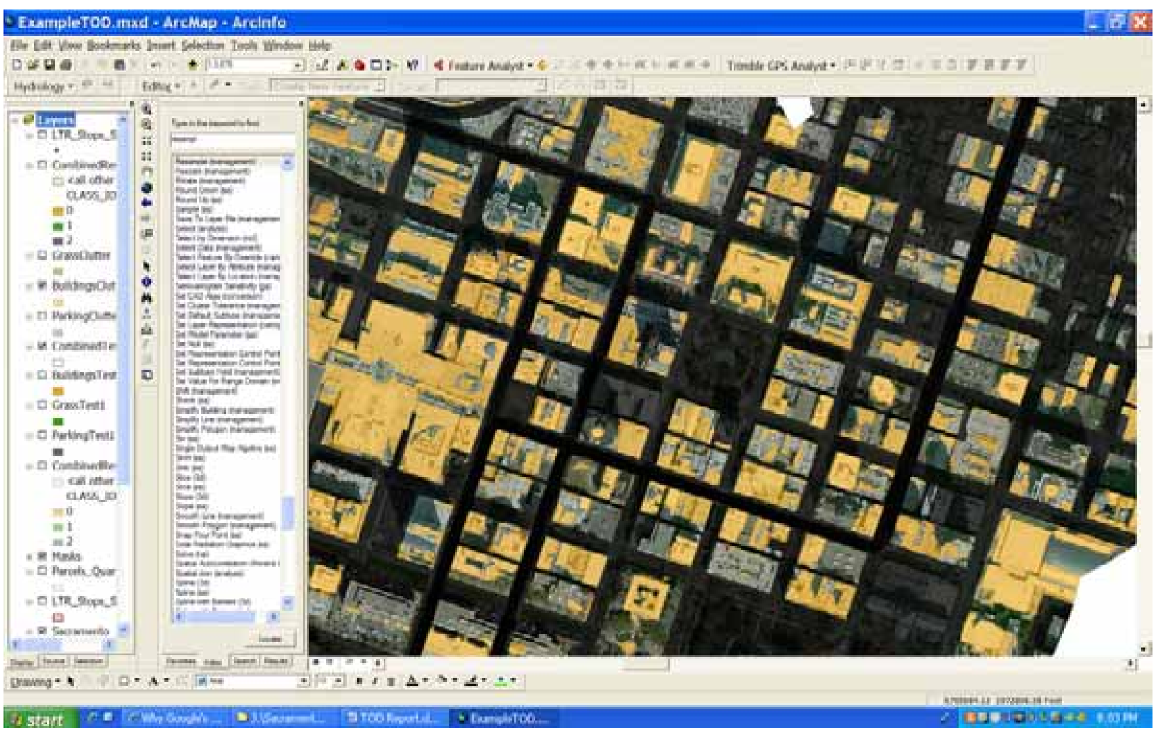
15) The first run of Feature Analyst was able to pick up vacant green spaces very well; however, there was some confusion between buildings and parking lots, especially in the downtown area where blog sizes are more standardized creating building footprints with the same size as parking lot blocks.  The first image below shows how much better Feature Analyst performed in a typical suburban shopping center compared to a denser downtown urban area.



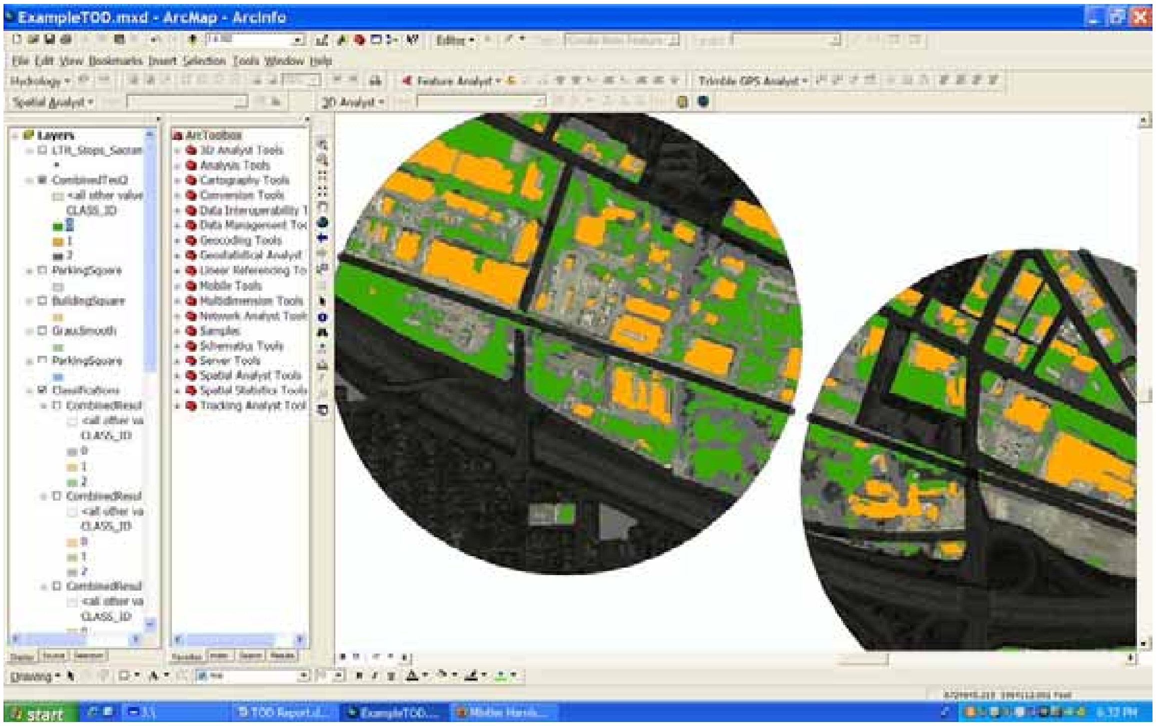



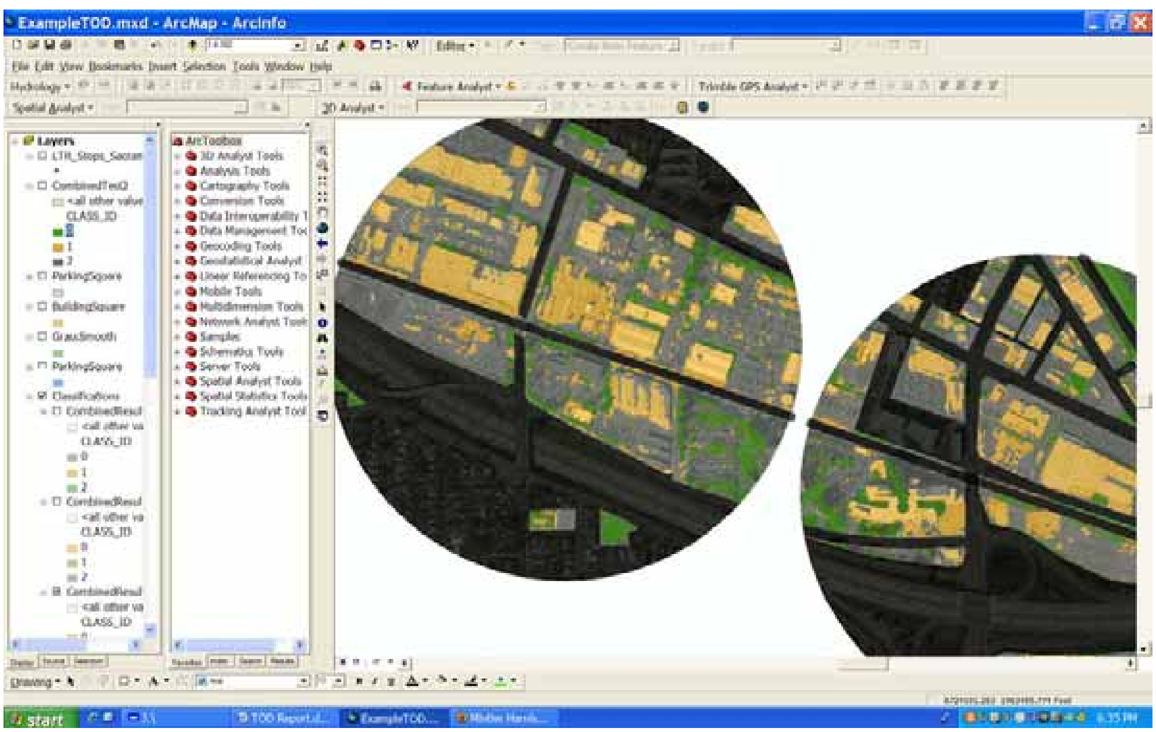
16) The next step was to use Hierarchical Learning to begin removing clutter from the image and tag areas that were classified incorrectly. Each classification was separated out with each class going through the clutter removal process. Approach 2 was utilized because it was recommend in the software manual for removing clutter. Again, a square input analyzer was used given the configuration of the features being classified. Below is the building classification after the clutter procedure.



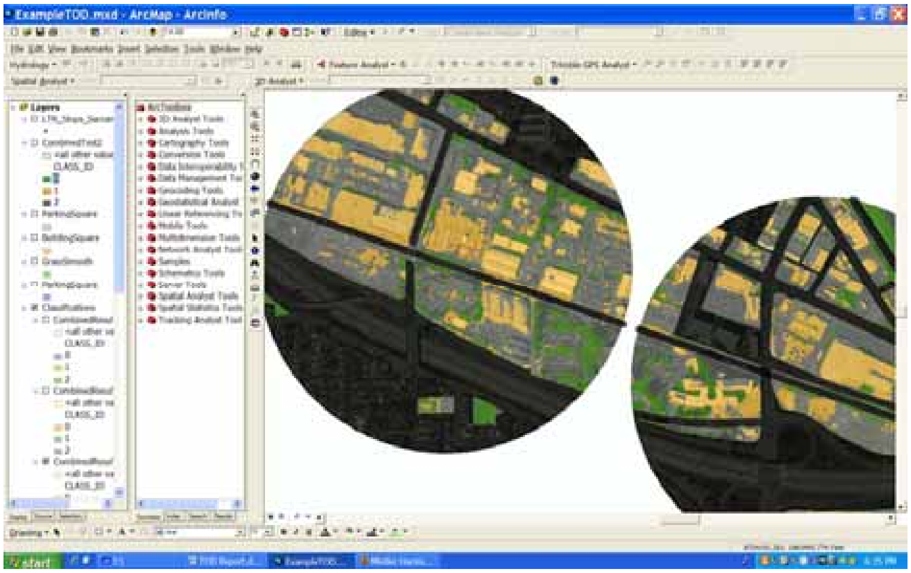



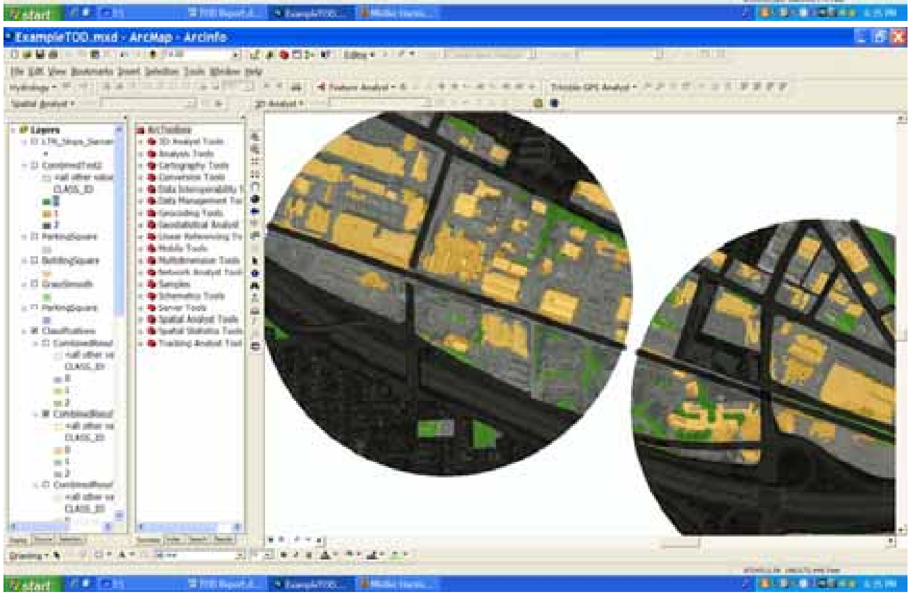
17) The clutter removal procedure essentially creates new test sites that, through the users input, should better classify the feature being searched for.  All three post clutter removal classifications were recombined in order to run another wall-to-wall classification using the removed clutter layer as a new set of test sites.

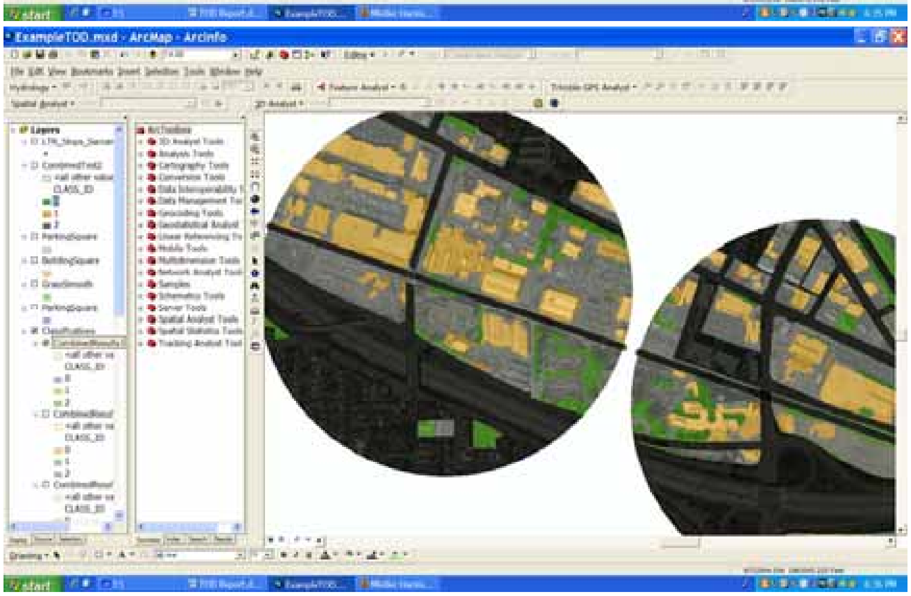


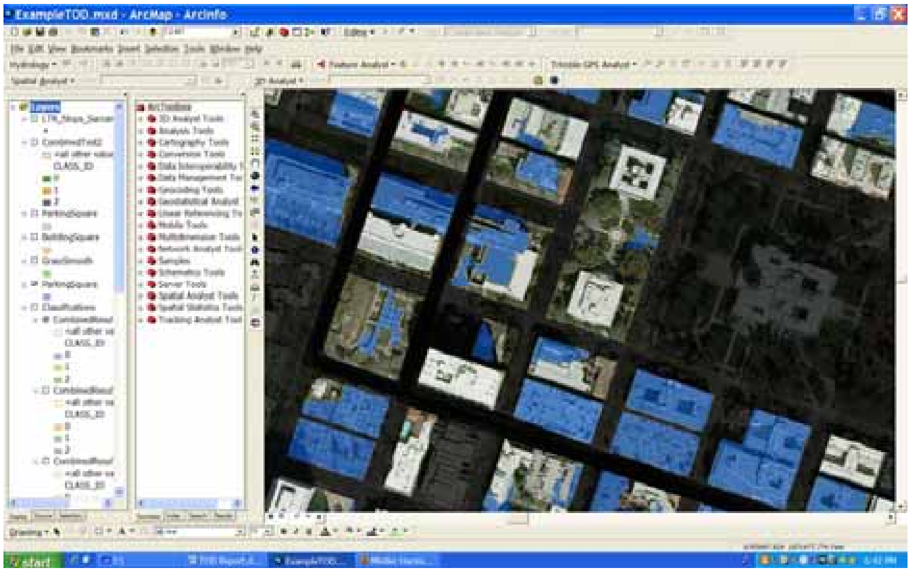
18) The above process was then repeated one additional time to further refine the classification test sites. The pictures below show the series of iterations and continued refining of the classification classes starting with the first attempt.

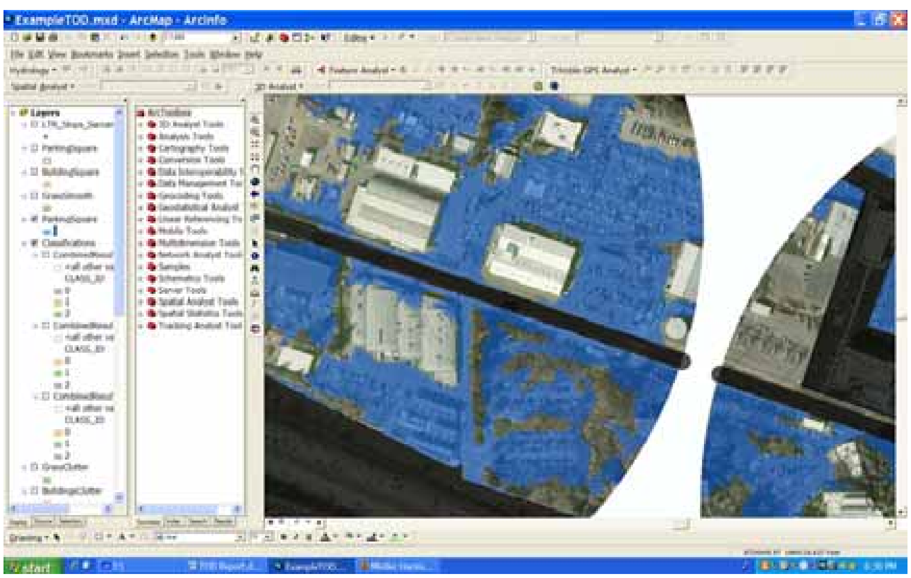


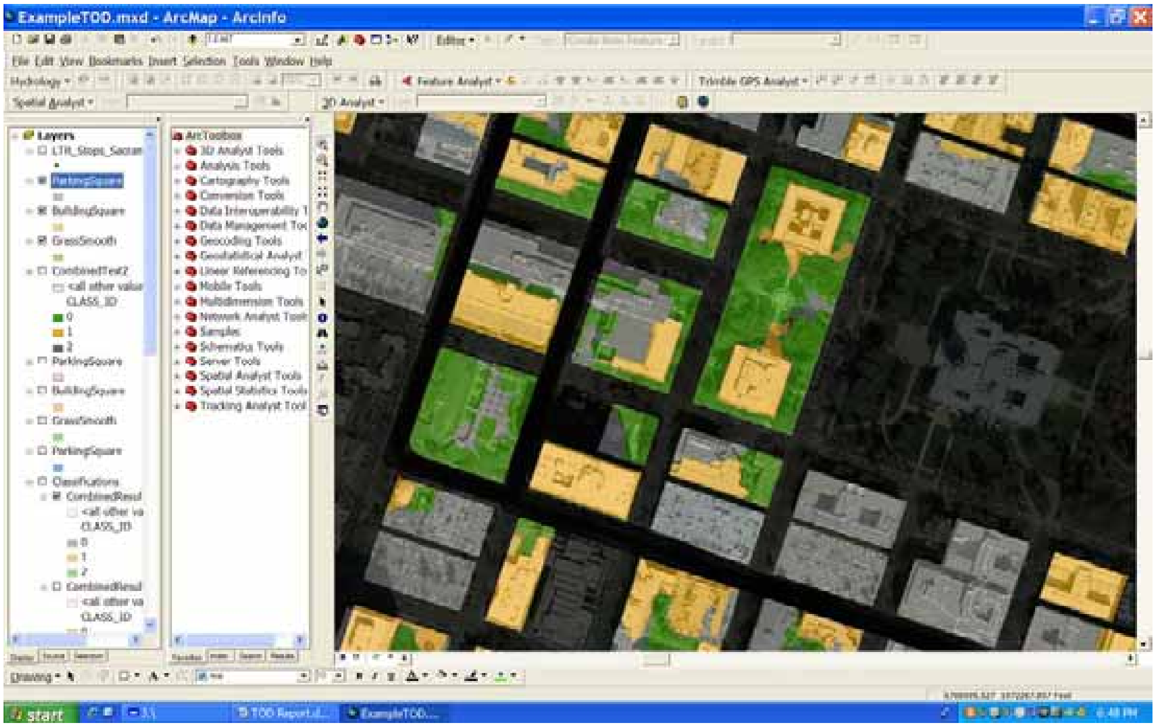



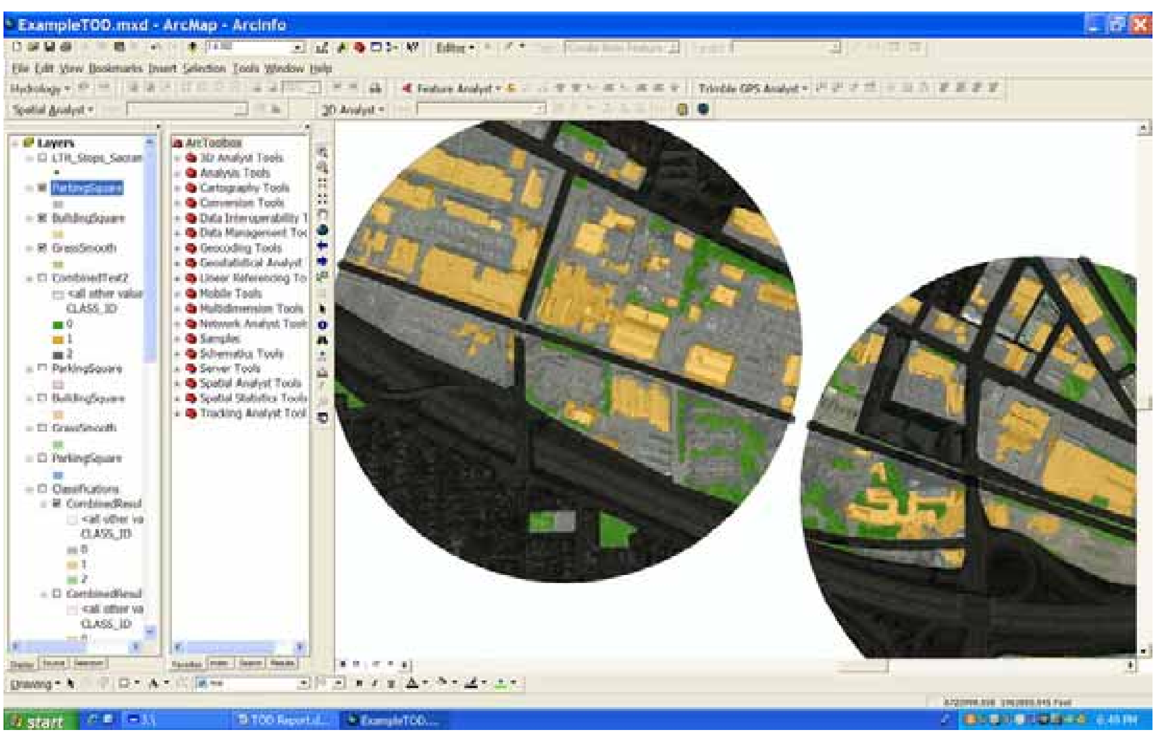
19) The result of the third combined classification was decided to be close enough.  The downtown region still had some major misclassifications but suburban areas were classified surprising well.  Because my main concern was parking lots I didn't care if buildings and vegetation were mixed so long as parking lots actually encompassed parking lots.  Below all layers are tuned off but.  Dark buildings downtown were especially prone to being classified as parking lots.  Because this primarily took place downtown in a limited geographical area, I decided that this could be cleared up in post-processing editing.  Below is an urban area compared to a suburban area with all layers but parking lots (coded in blue) off.



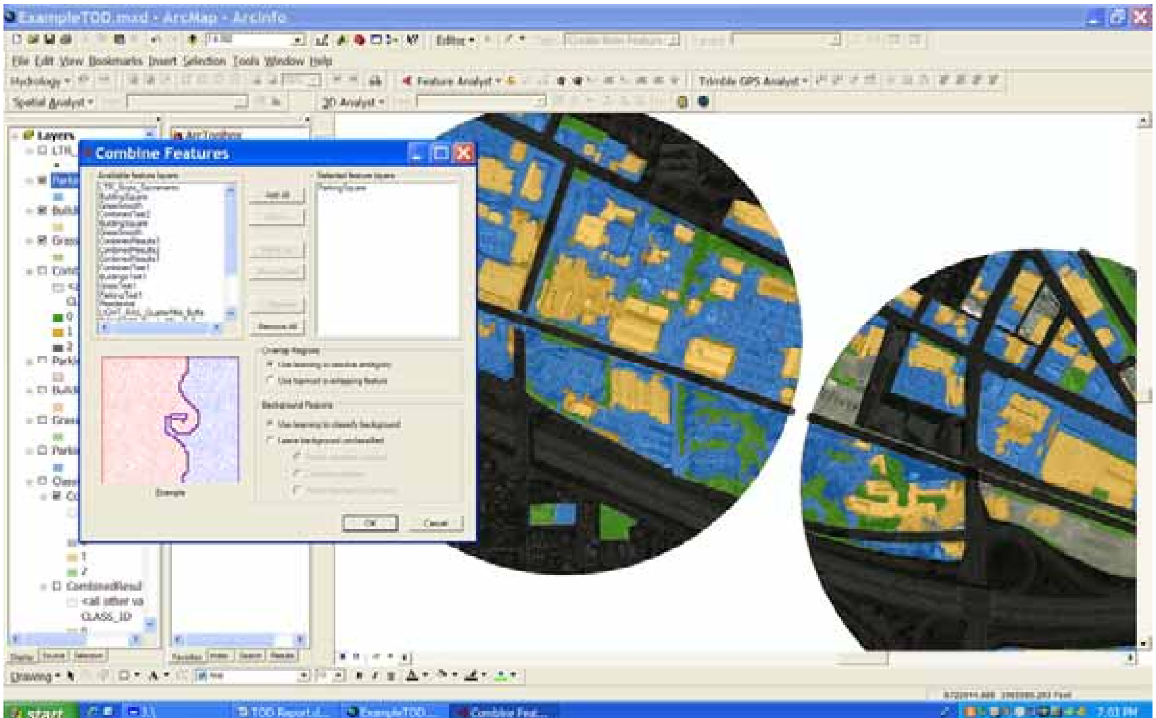



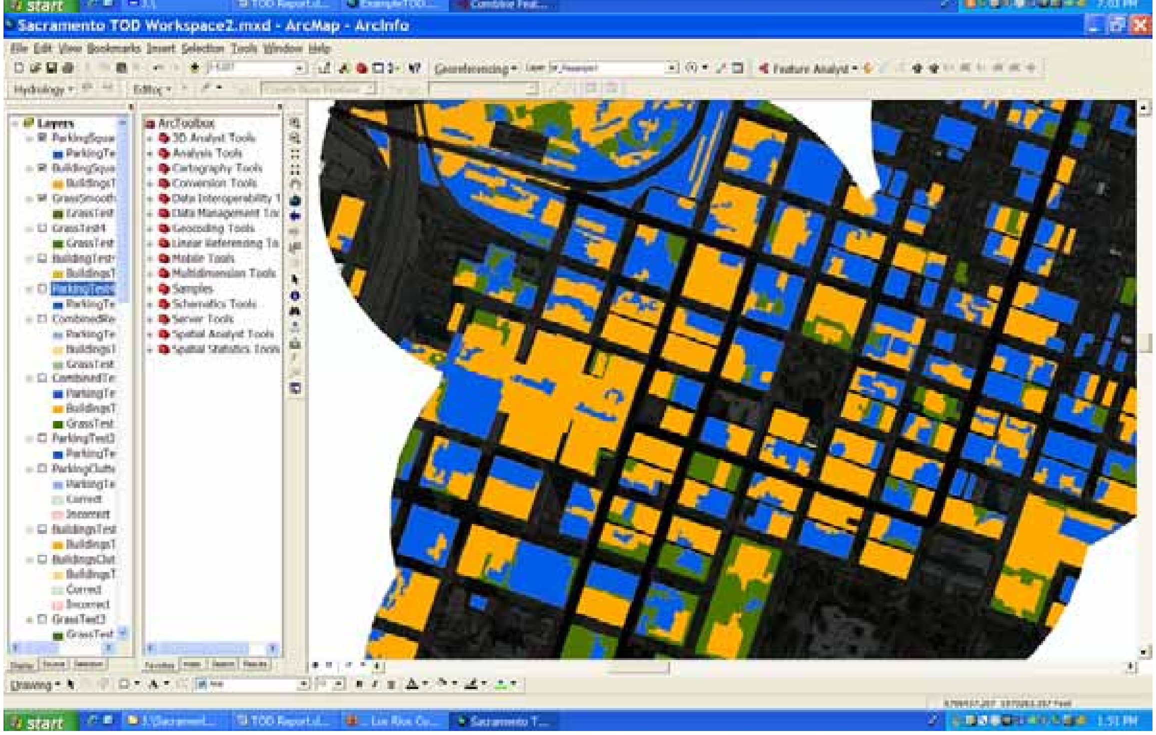
20) The next step was to square up the parking lot and building shapefiles in order to make them look more realistic.  Most features are bordered by straight streets and have sharp edges. The default squaring parameters were used. In addition the vacant grass classification was smoothed to make it appear more realistic.  The Bezier Smooth setting was used because it created less jagged, more realistic looking polygons.



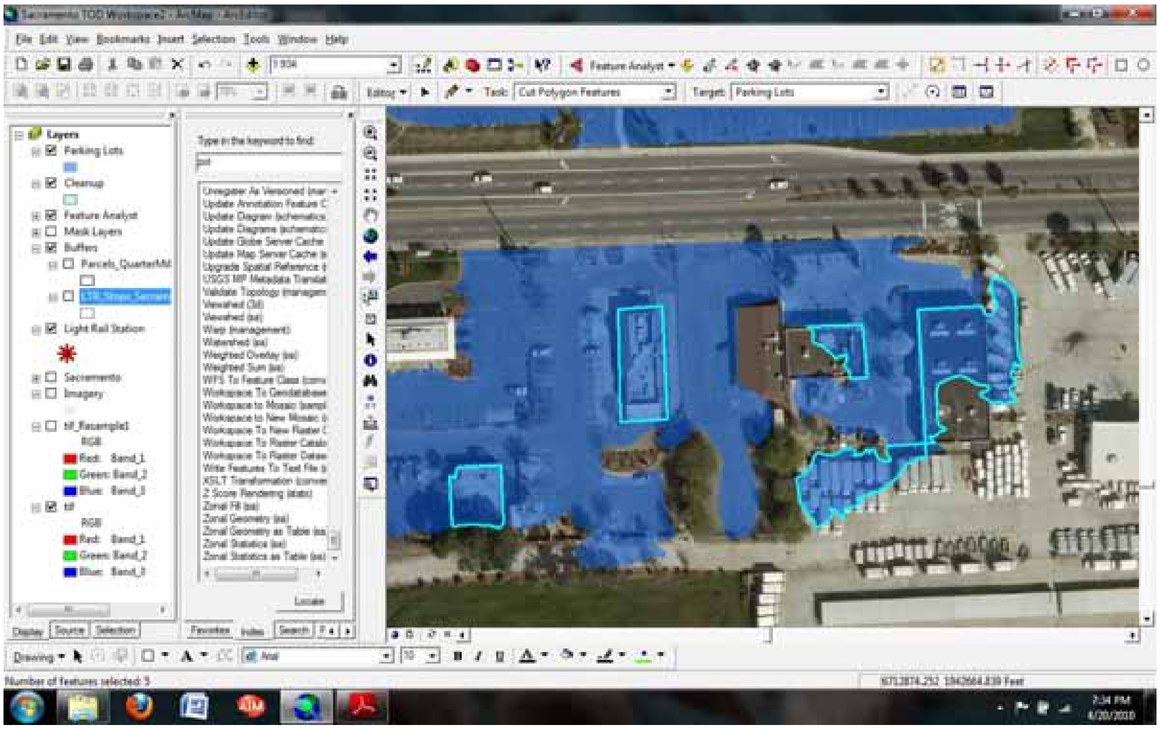



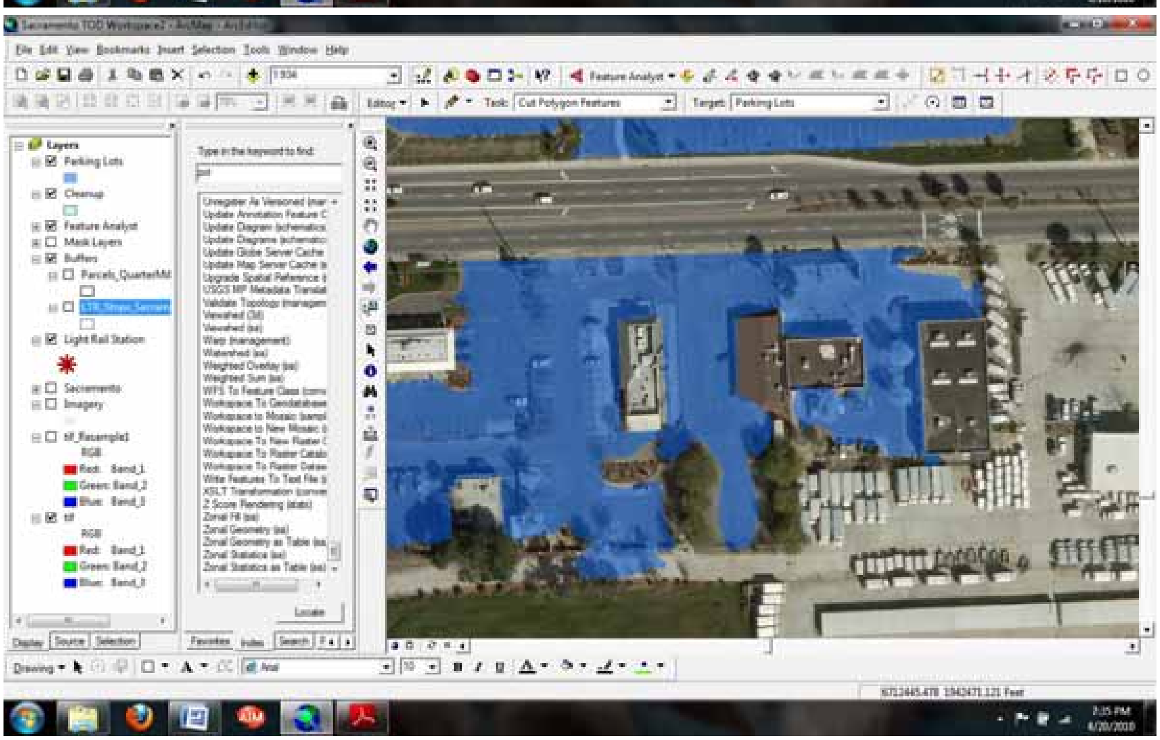
21) All three post-proceeded layers were then recombined using the Combine Features tool set. The "Use learning to resolve ambiguity" and "Use learning to classify background" were selected to ensure another round of classification took place with the newly squared features and that all area of the study zones were classified. For learning settings, the square was again used along with the accompanying mask layers mentioned above with Approach 1 "General purpose" being used.



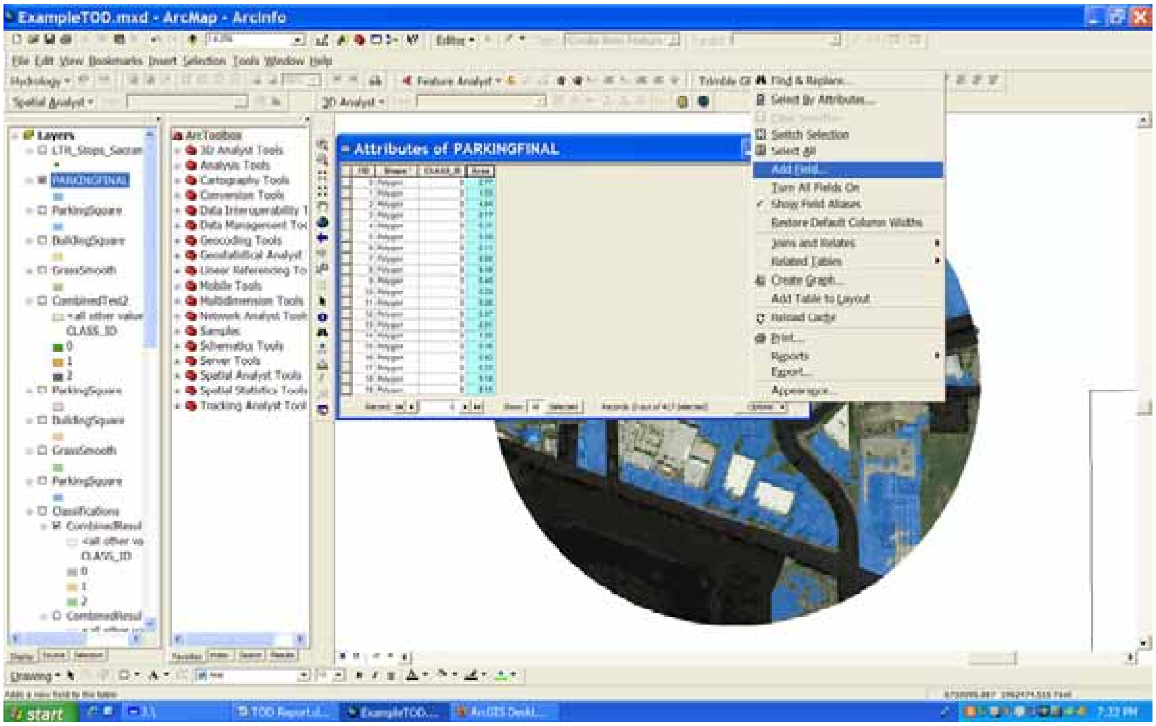



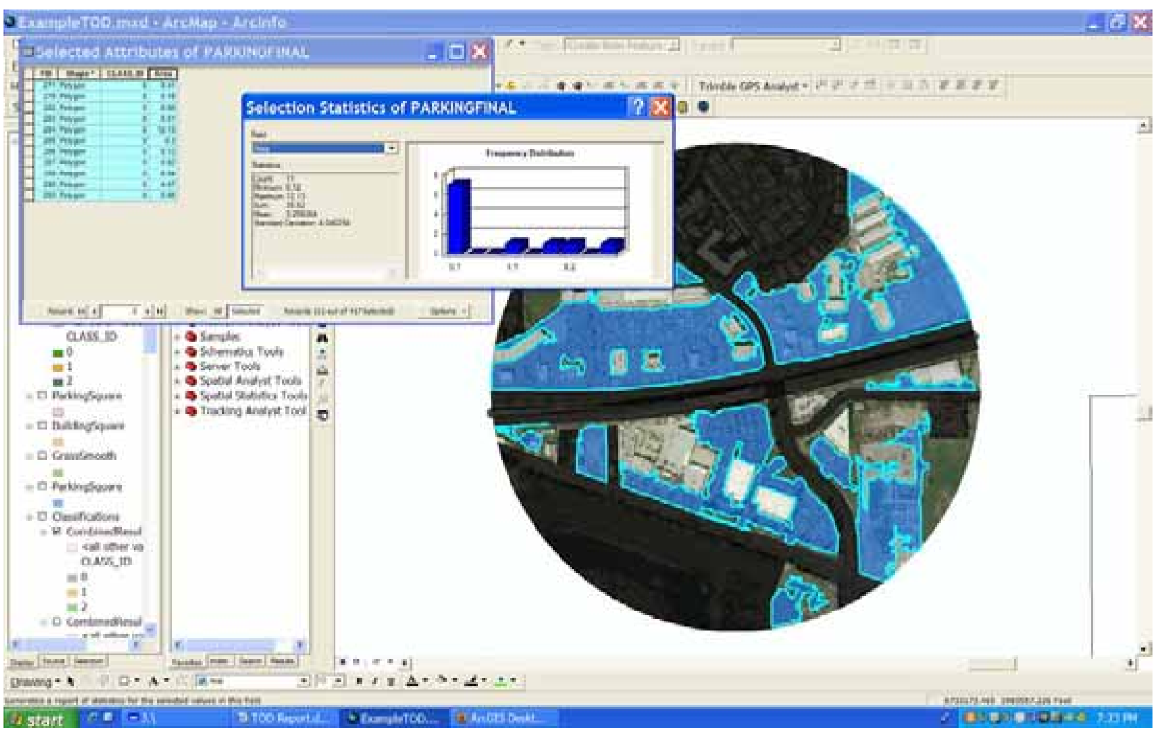
22) The next step was the manually go through the image and use the Editor tools to clean up the parking lot classification. Polygons were split and rearranged or deleted if they had buildings within them. Parking garages were deleted if identified as parking lots (I wanted open lot sites with a high potential for redevelopment). New polygons were created if Feature Analyst had not identified a parking lot correctly. This process took about an hour and was primarily conducted in the downtown area.



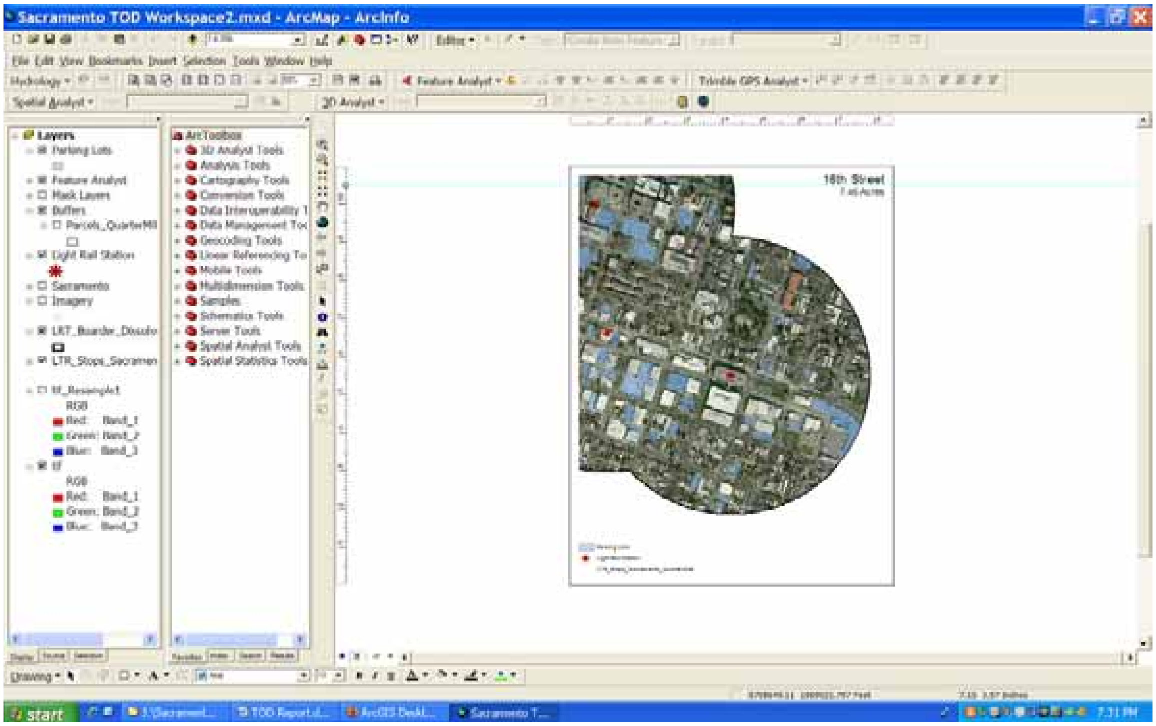


23) As a final step an additional field was added to the final parking lot shapefile in order to calculate area. A Float field was created with a Precision of 5 and a Scale of 2 allowing for up to five digits with 2 decimal places to be stored. The Calculate Geometry tool was used to get the parking lot area in acres. Acres for each specific study was calculated by selected all parcels within the study area then running the Statistics tool on the Area field.



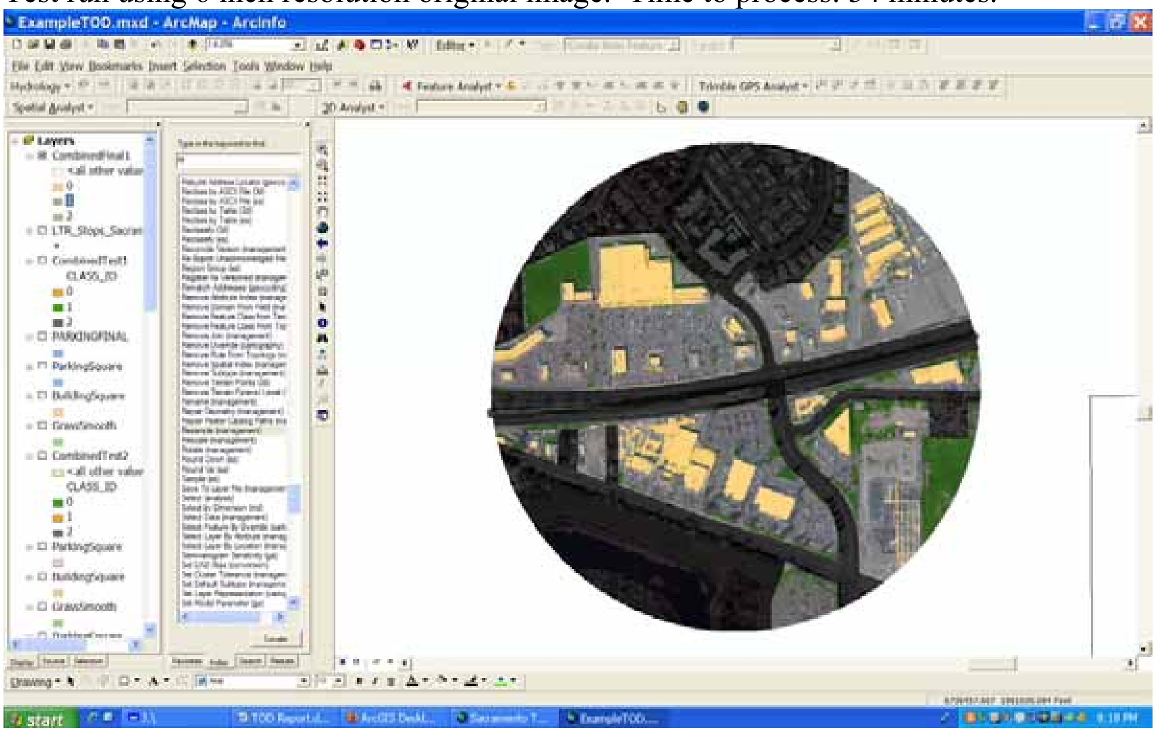
24) An Adobe PDF was created for each study area showing parking lots and total acres of parking lot. Some downtown stops were combined since they were essential the same stop just on opposite sides of the block due to the one-way street configuration (i.e. 7th & K and 9th & K). PDFs are attached below.



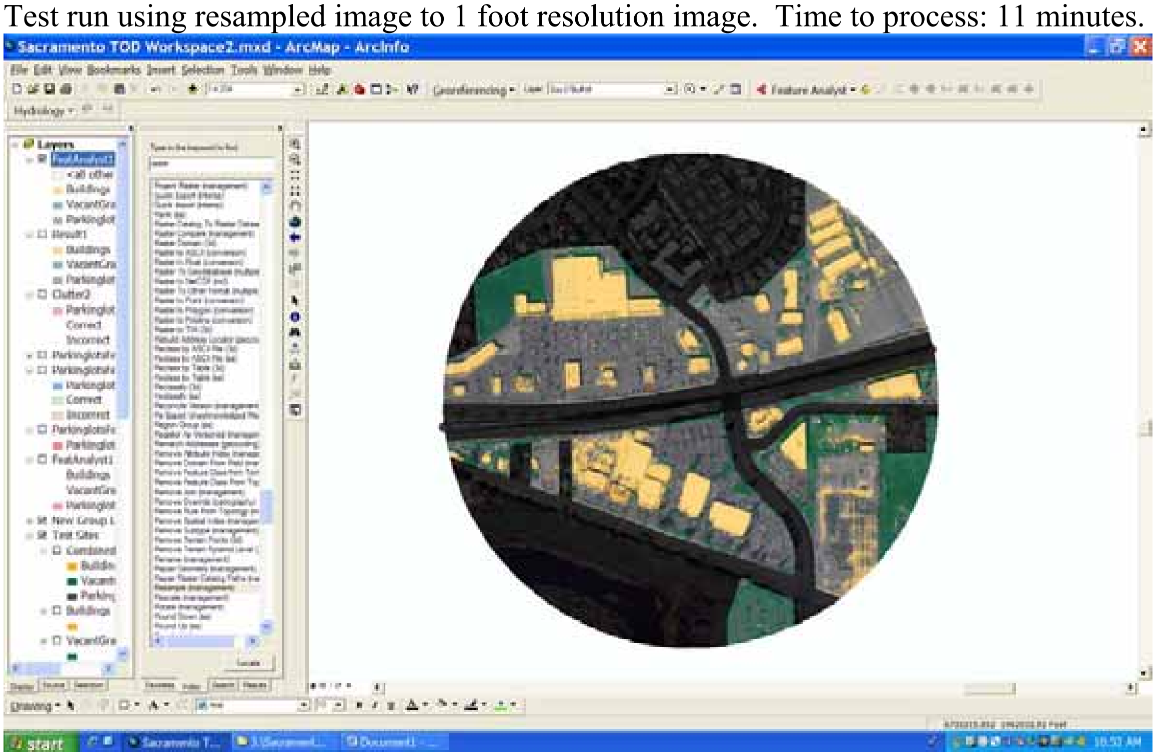
## Issues Encountered

By far the biggest issue encountered during the Feature Analyst processing stage was that each classification run was taking an extremely long time. When I started the project I only focused on one quarter mile study area in order to fine tune the process before moving on to the entire city. The 6 inch resolution along with the MrSID compaction was causing Feature Analyst to run exceedingly slow. I resampled the image at 1 foot and 3 feet to see how the classification run time and quality of classification would change.

Test run using 6 inch resolution original image. Time to process: 34 minutes.




Test run using resampled image to 1 foot resolution image. Time to process: 11 minutes.

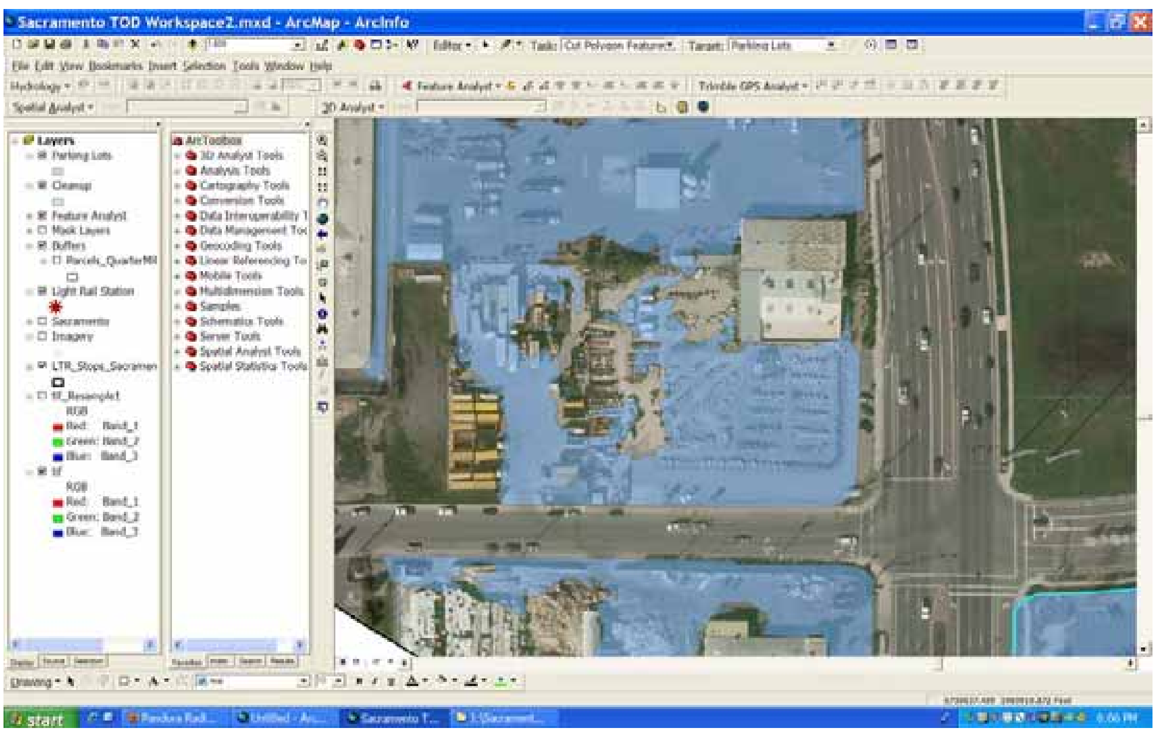


Given the number of sites that needed to be analyzed and the huge time difference compared to only moderately better classification, I decided it was okay for this project to use 3 feet resolution.

Another problem that was encountered was that dark colored buildings were often misclassified as being parking lots. I tried to remedy this problem by creating another two classes for dark color buildings and vacant dirt parcels to further refine my classifications. Unfortunately, using 5 classes created even more of a mess with parking lots being classified as dark buildings, light buildings and vacant dirt in addition to the parking lot classification. I decided that most dark buildings were located downtown and would be fairly easy to remove in post processing and that 5 classes were too much of a hassle. Post processing editing was done to eliminate misclassified dark buildings.

In addition I encountered a problem unrelated to Feature Analysis. Creating a mosaic out of rasters needs to be done in a geodatabase. Only when I created a new raster in a geodatabase with a defined projection was I able to get the tool to run correctly.

Finally, I encountered a problem where industrial shipping yards and truck lots being included in my parking sample. If I were to redo this project I would mask out industrial sites as well as residential in order to eliminate false positives with Feature Analyst.



## Discussion of Results

Overall I feel that parking lots in suburban areas came out fine. In the downtown area there are not too many parking lots and they all have a rectangular shape due to the grid pattern of the streets so manually digitizing incorrect or unclassified parking lots was not too time consuming to do in such a small study area. Most of downtown is already built out so there were not a large number of surface parking lots.

I think that this project gives a fairly good estimation of how much parking is surrounding each light rail station. However if you look closely at each study area image you can see buildings that I missed in my post processing clip and parking lots that do not cover the entire lot. These types of errors probably make the area I come up with inaccurate. If I had actual dimensions for some of these parking lots I would do an accuracy assessment to see how close I came.

After I was able to figure out my sampling problem the process of running Feature Analyst was much easier. Although I lost some quality by resampling, had I not resampled I don't think I would have been able to get this project done on time given the geographical scope.

## Conclusions

I believe that my project was successful. I was able to identify parking lots using Feature Analyst and I feel that my methods were very good at finding large parking lots in suburban areas. However, downtown areas had issues that required an investment of manual editing to clean up enough to make my findings presentable.

In retrospect I would change the following things about this project to get a better result:

- Use a higher resolution-- if time were not a factor I would use the original 6 inch resolution to get the best classification result.
- Mask out industrial uses- I think Feature Analyst gives the best results when you can eliminate as much as the image as possible to reduce false positives. I included industrial sites because I thought they would make good redevelopment sites; however, their internal loading lots and truck lots create too many false positives that I had to manually delete.
- I would have created two separate test site and Feature Analyst classification runs for downtown and suburban areas. I think my classification had issues downtown because Feature Analyst was looking at downtown with some suburban training sites. If time was not an issue I would treat each study area independently and go through the steps outline in this document for each site instead of running a city wide classification.

**Learning Outcomes**

In this project I learned how to use Feature Analyst to classify land cover types in a raster image. Though working with Feature Analyst I gained a better understanding of the potential and limitations of remote sensing in its current state (especially with ArcGIS). As computers become even more intelligent I am sure the hierarchical learning process will improve. However, I think an actual human being will be required to actually look at an image and decided whether the computer was correct in its assessment.

I thought it was really cool that using a couple of public available shapefiles and publically available raster image I was able to produce new useful information through using Feature Analyst. With remote sensing and GIS one has the potential to create new data about the world. That is probably the aspect of remote sensing that I most appreciate—the ability to derive new data from existing data through technology and ingenuity.

I would like to learn more how remote sensing can be used to get a better sense of how the built environment functions. Although it is easy to get out at a light rail stop and say "there is a lot of parking lots around here" actually coming up with a statistically relevant figure has a greater impact. I hope to use remote sensing to better understand how cities currently operate and have a better understanding of what works and what doesn't. Remote sensing has the tremendous potential of letting us better understand our world.

# 12th and I Street

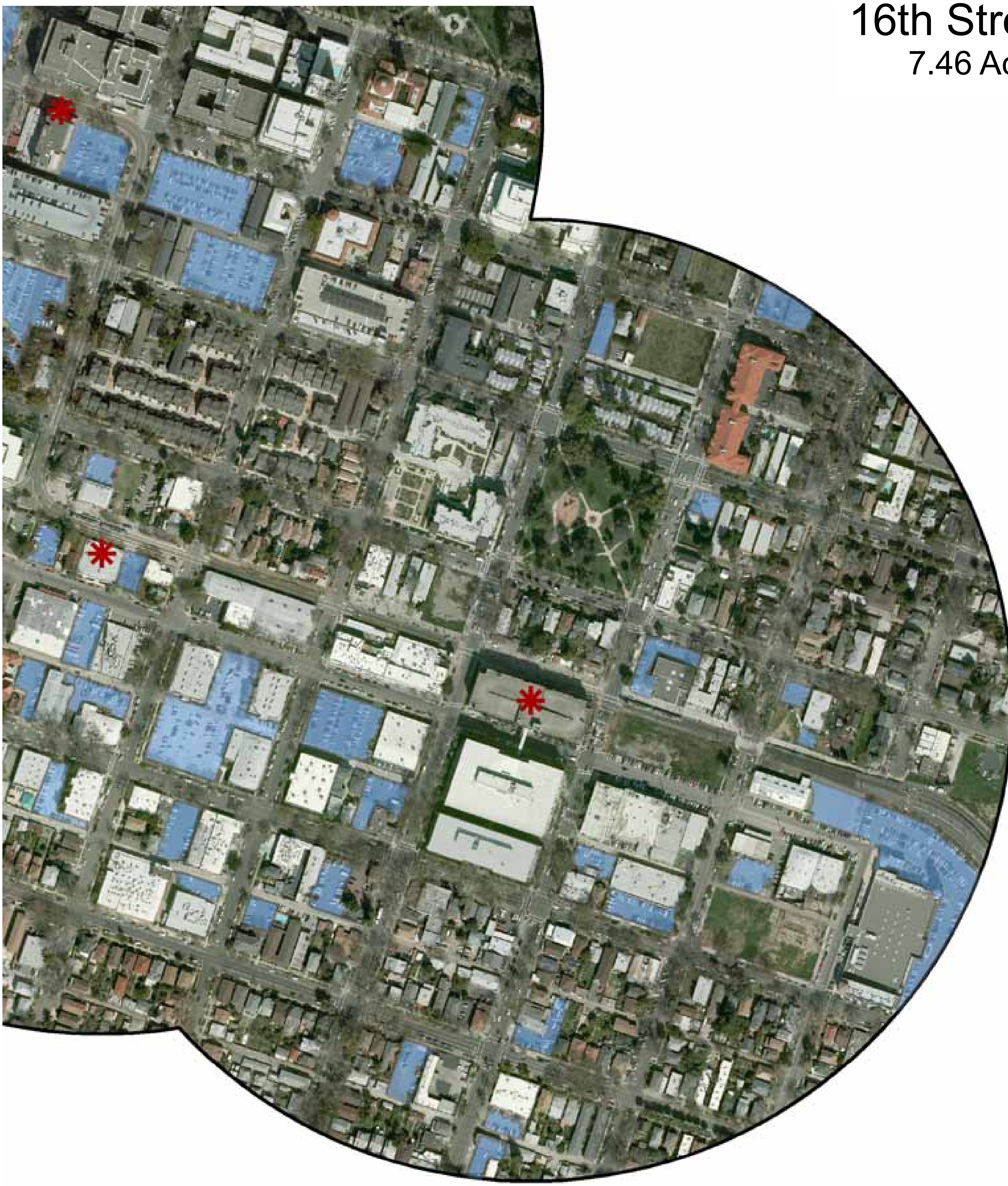
10.39 Acres

# 13th Street

9.49 Acres

# 16th Street

7.46 Acres



Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

# 23rd Street
7.73 Acres

Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

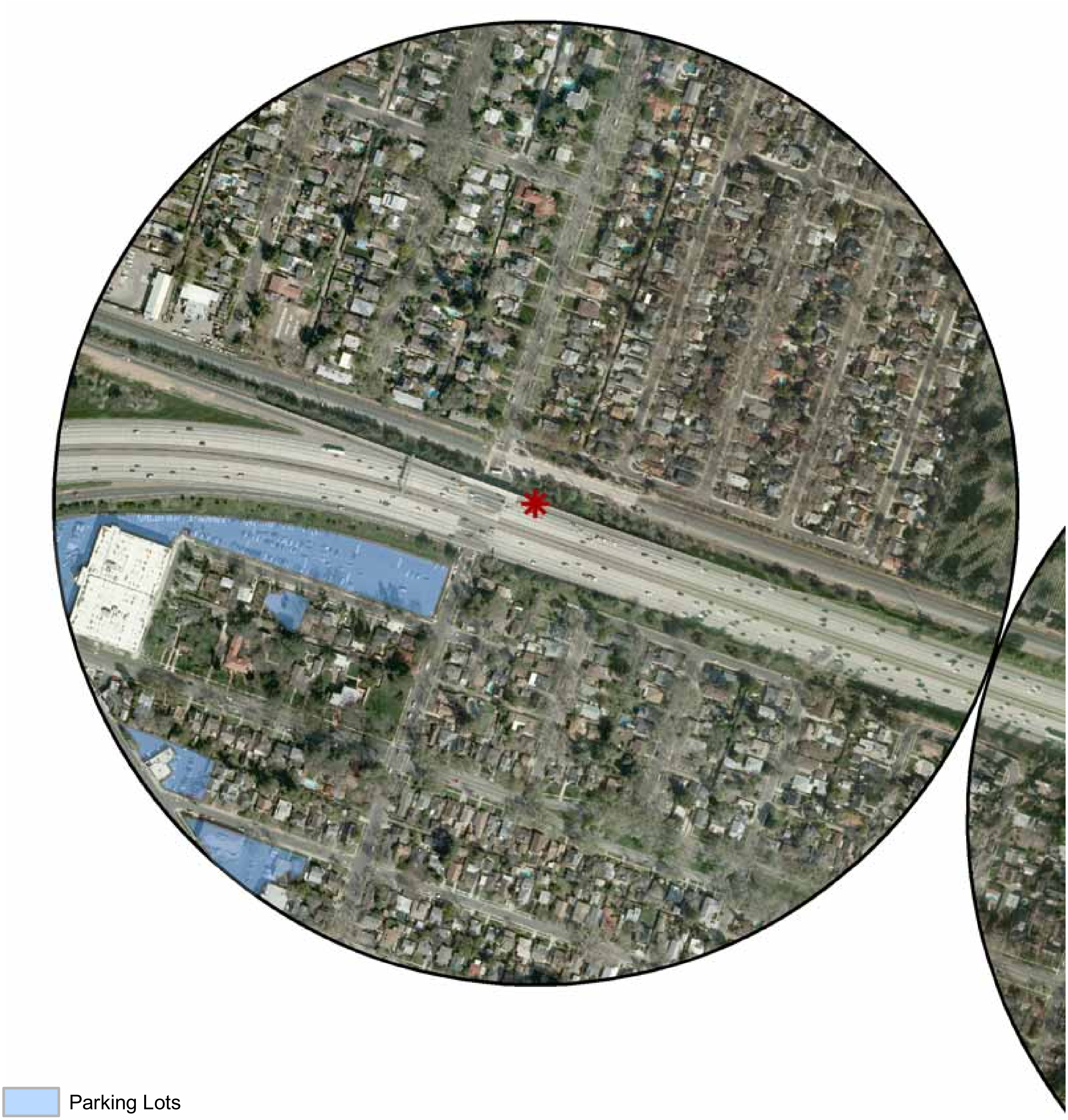
# 29th Street
14.04 Acres

Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

# 39th Street
4.22 Acres



Parking Lots
Light Rail Station
LTR_Stops_Sacramento_QuarterMile

# 47th Avenue
27.55 Acres

Parking Lots

Light Rail Station

# 4th Avenue/Wayne Hultgren
3.64 Acres

Parking Lots

Light Rail Station

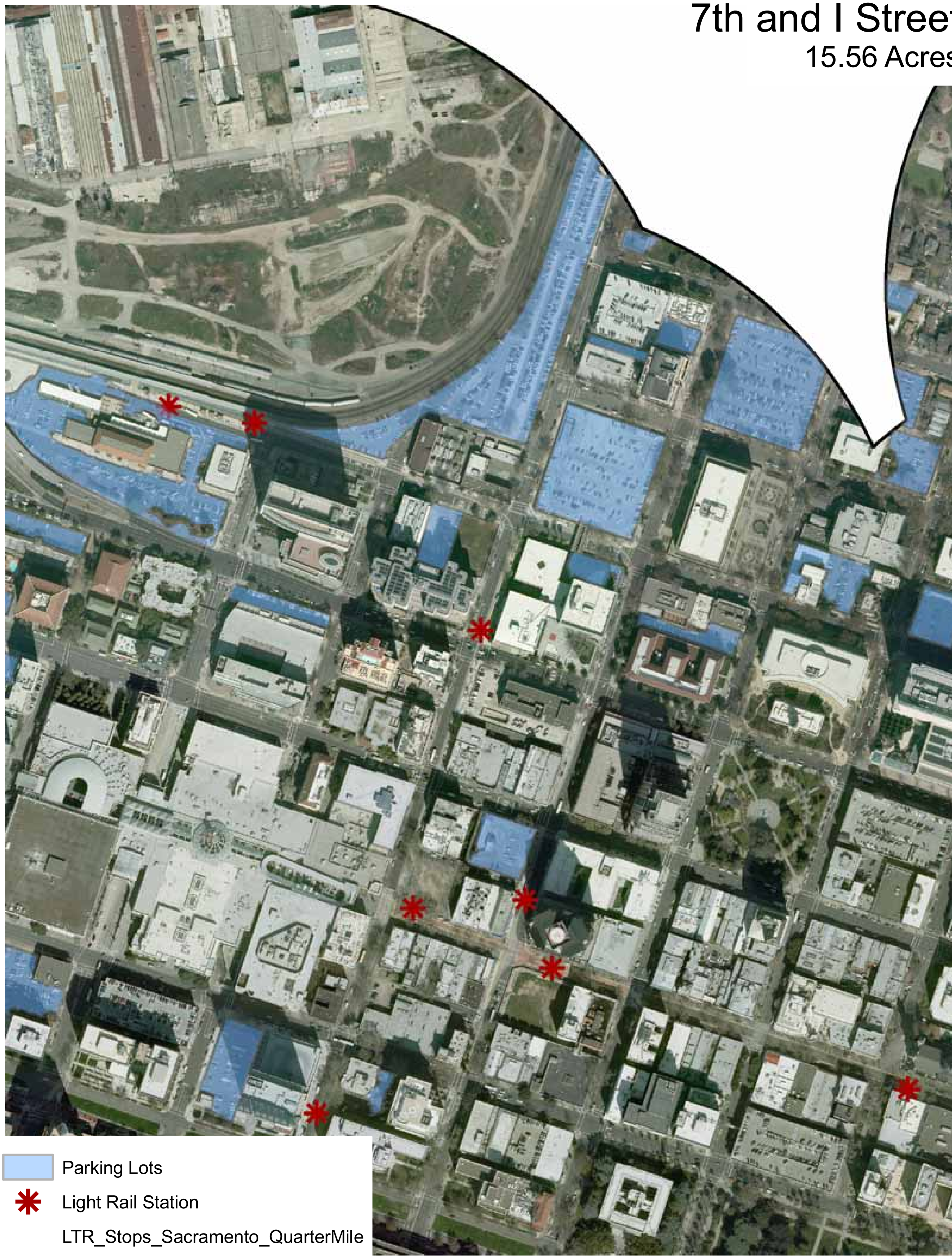
LTR_Stops_Sacramento_QuarterMile

# 59th Street
42.03 Acres

Parking Lots
Light Rail Station
LTR_Stops_Sacramento_QuarterMile

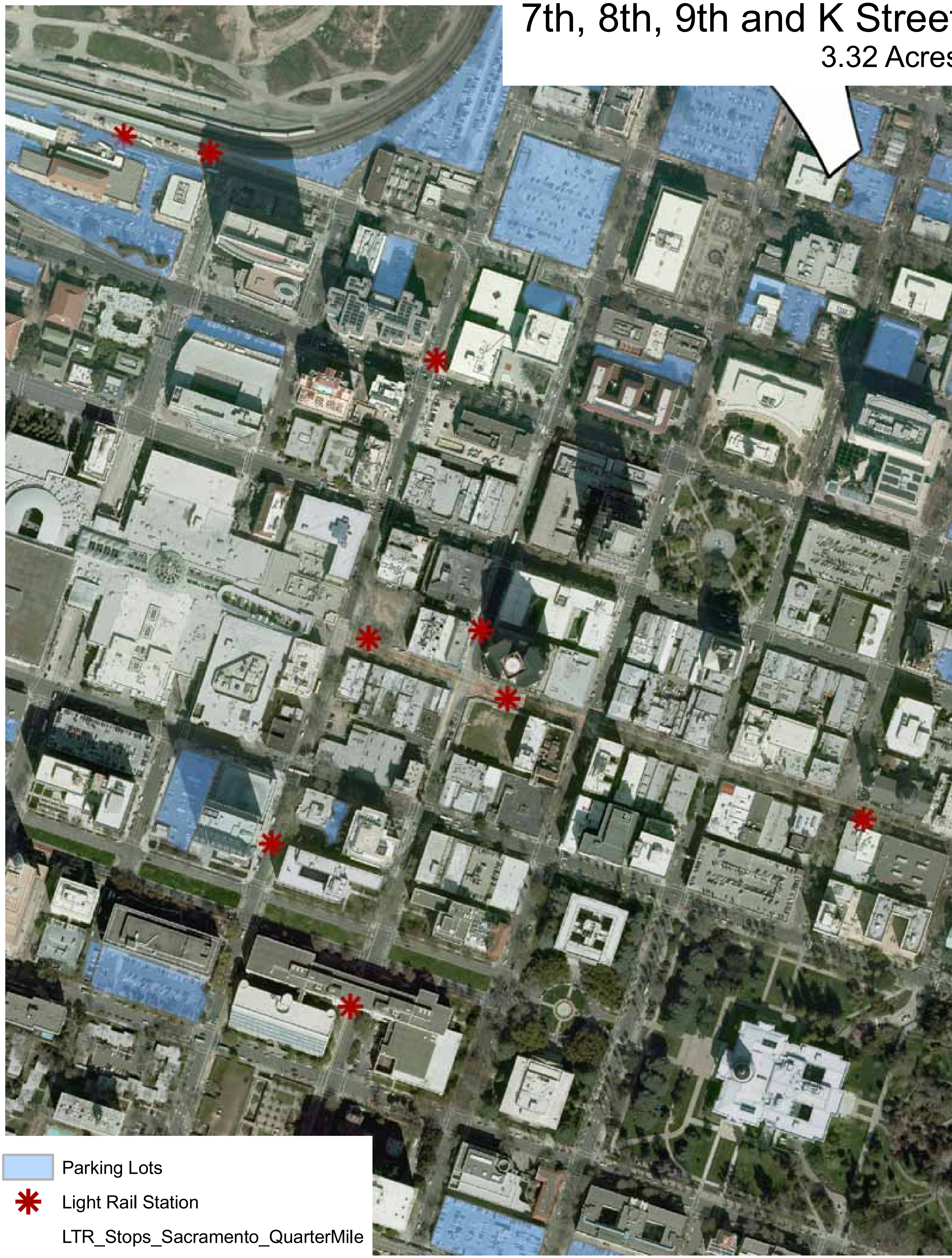
# 7th and I Street

15.56 Acres



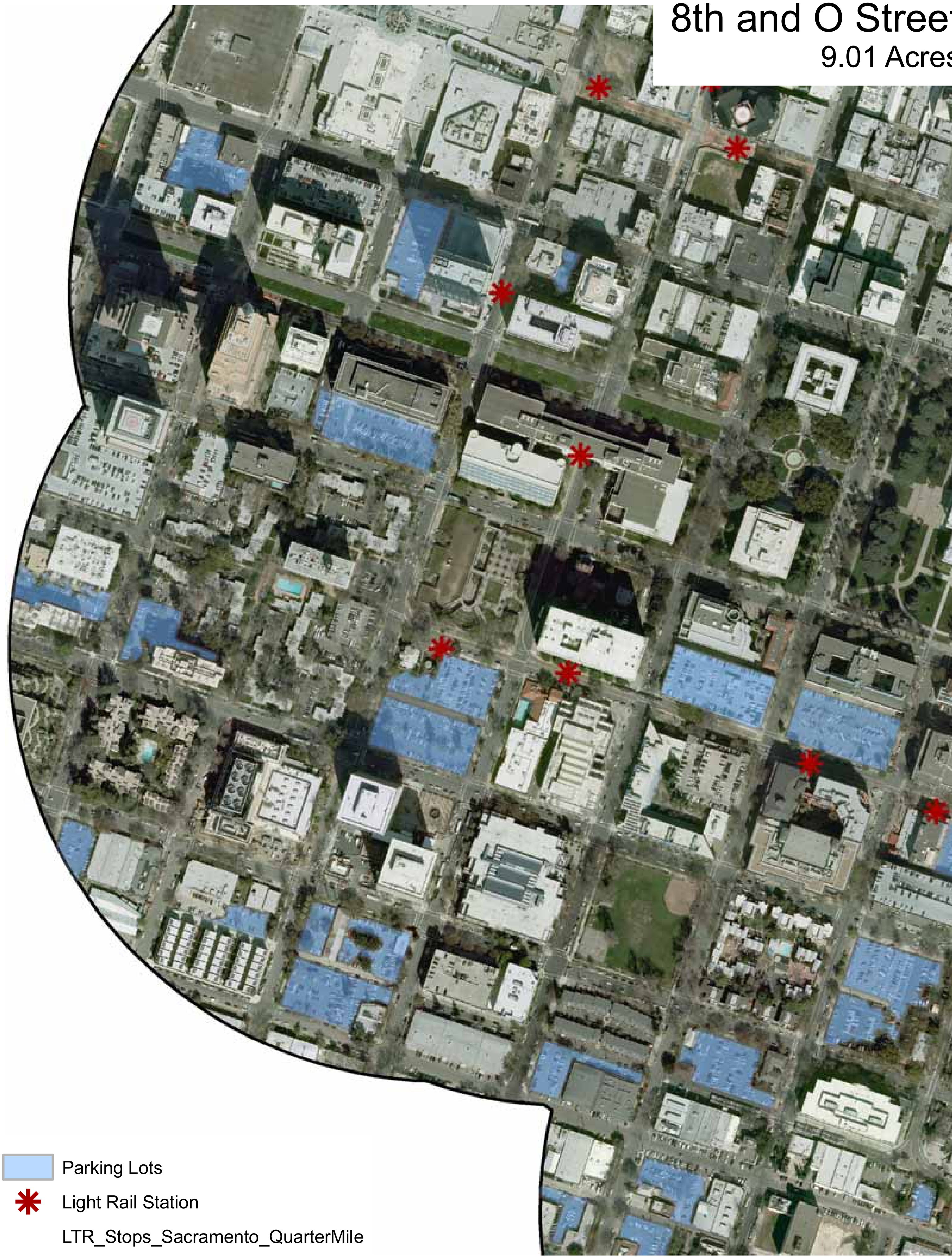
# 7th, 8th, 9th and K Street

3.32 Acres



# 8th and O Street

9.01 Acres

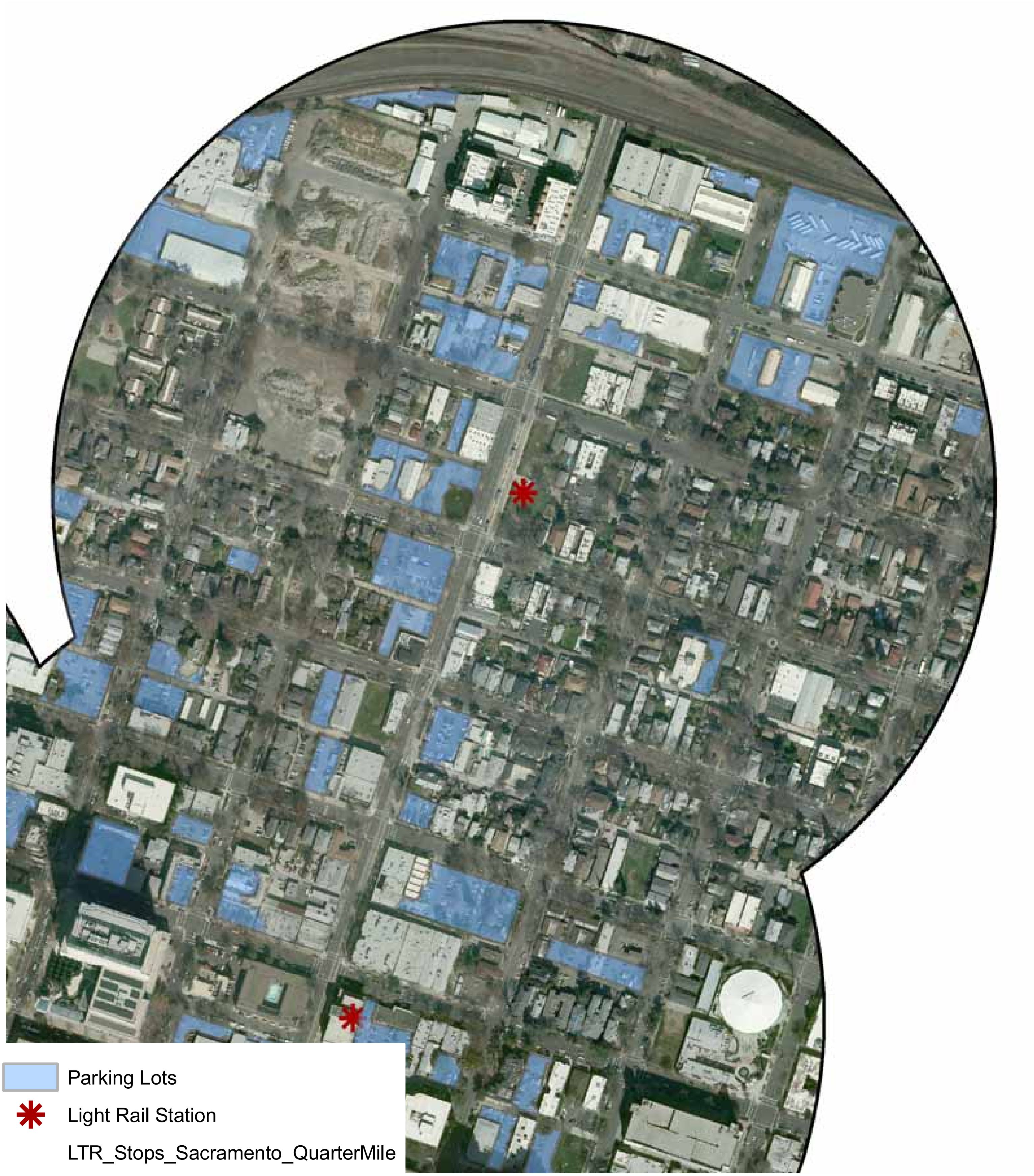


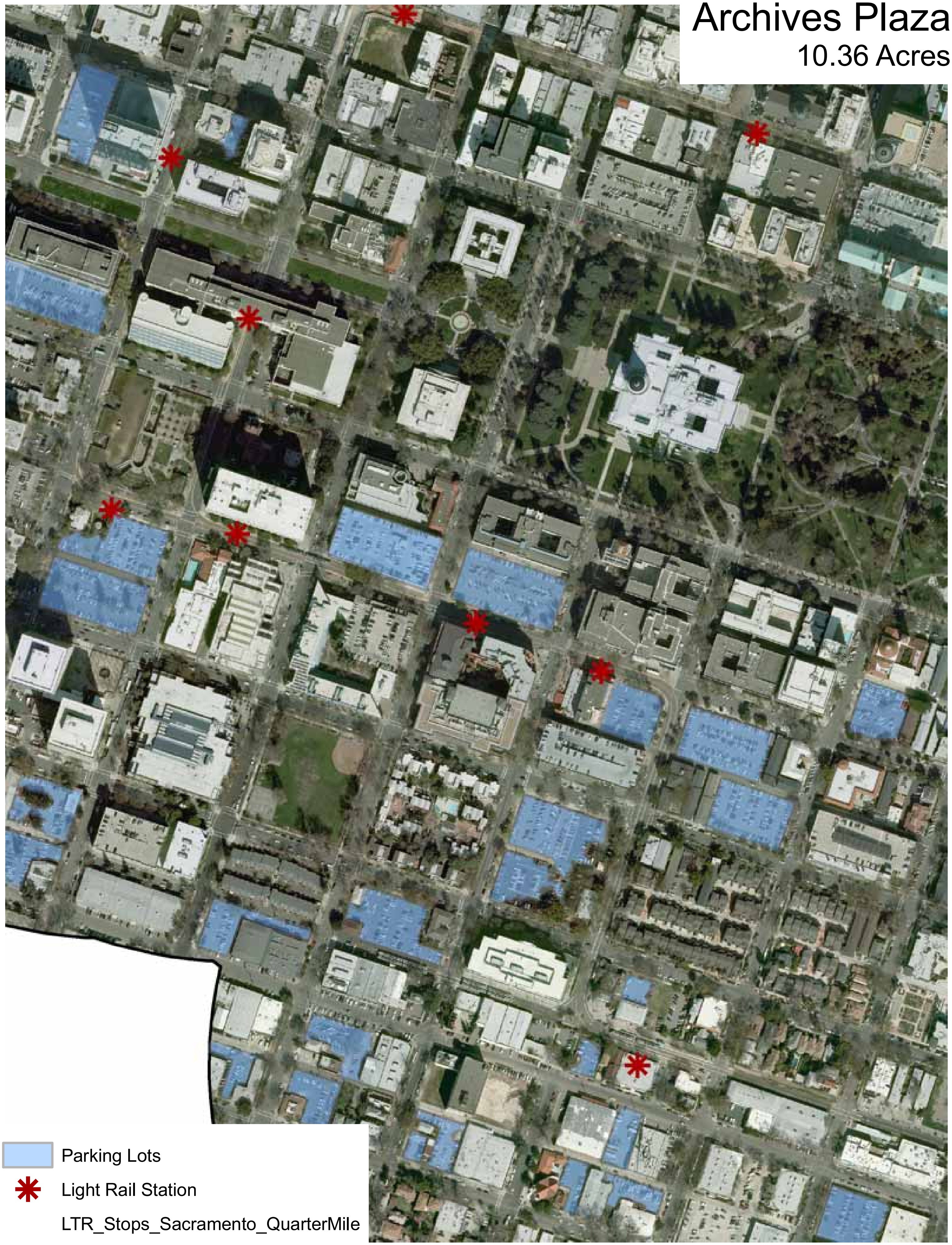
Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

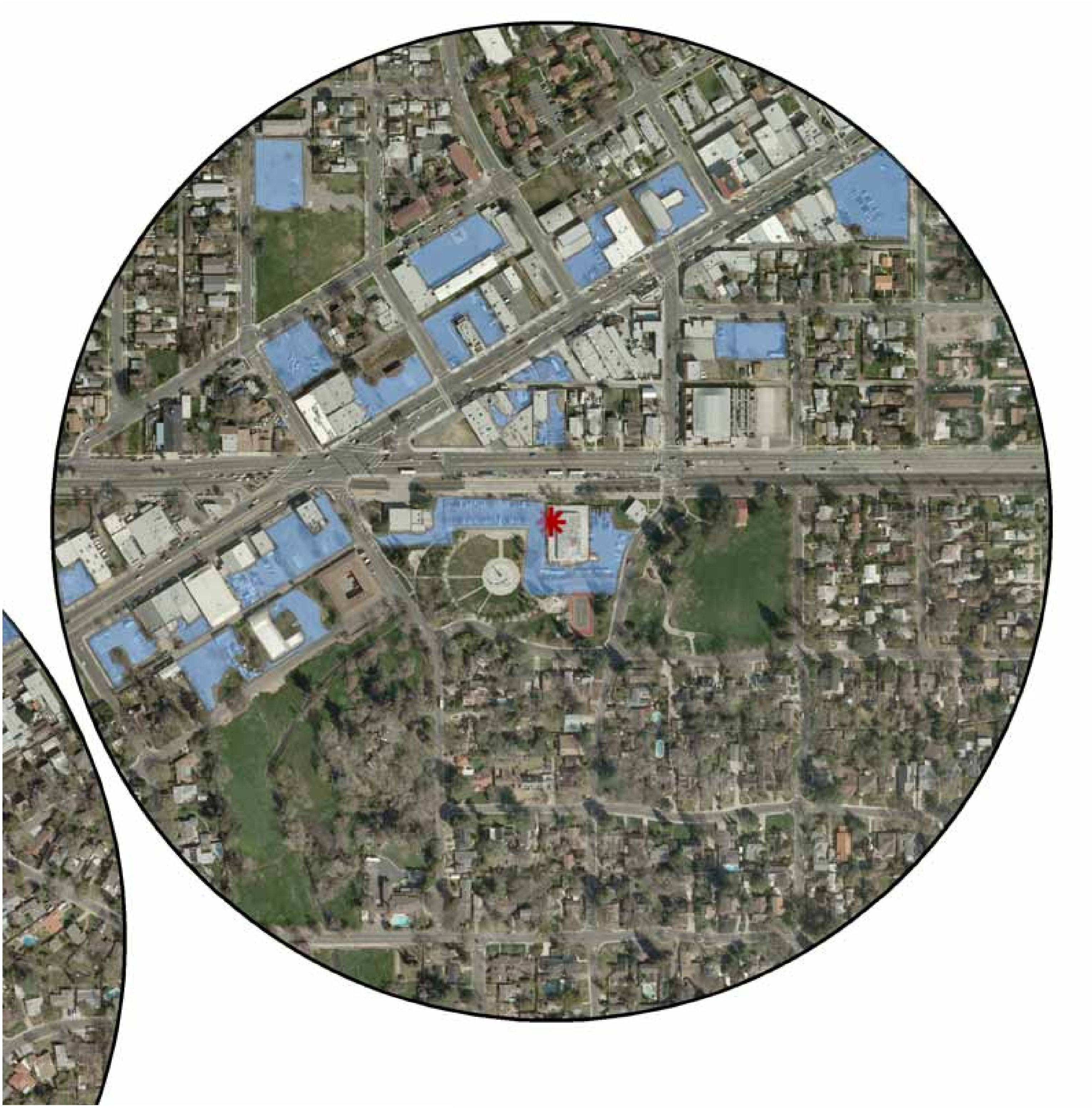
# Alkali Flats
11.42 Acres





Archives Plaza
10.36 Acres
Parking Lots
Light Rail Station
LTR_Stops_Sacramento_QuarterMile

# Arden/Del Paso
8.89 Acres

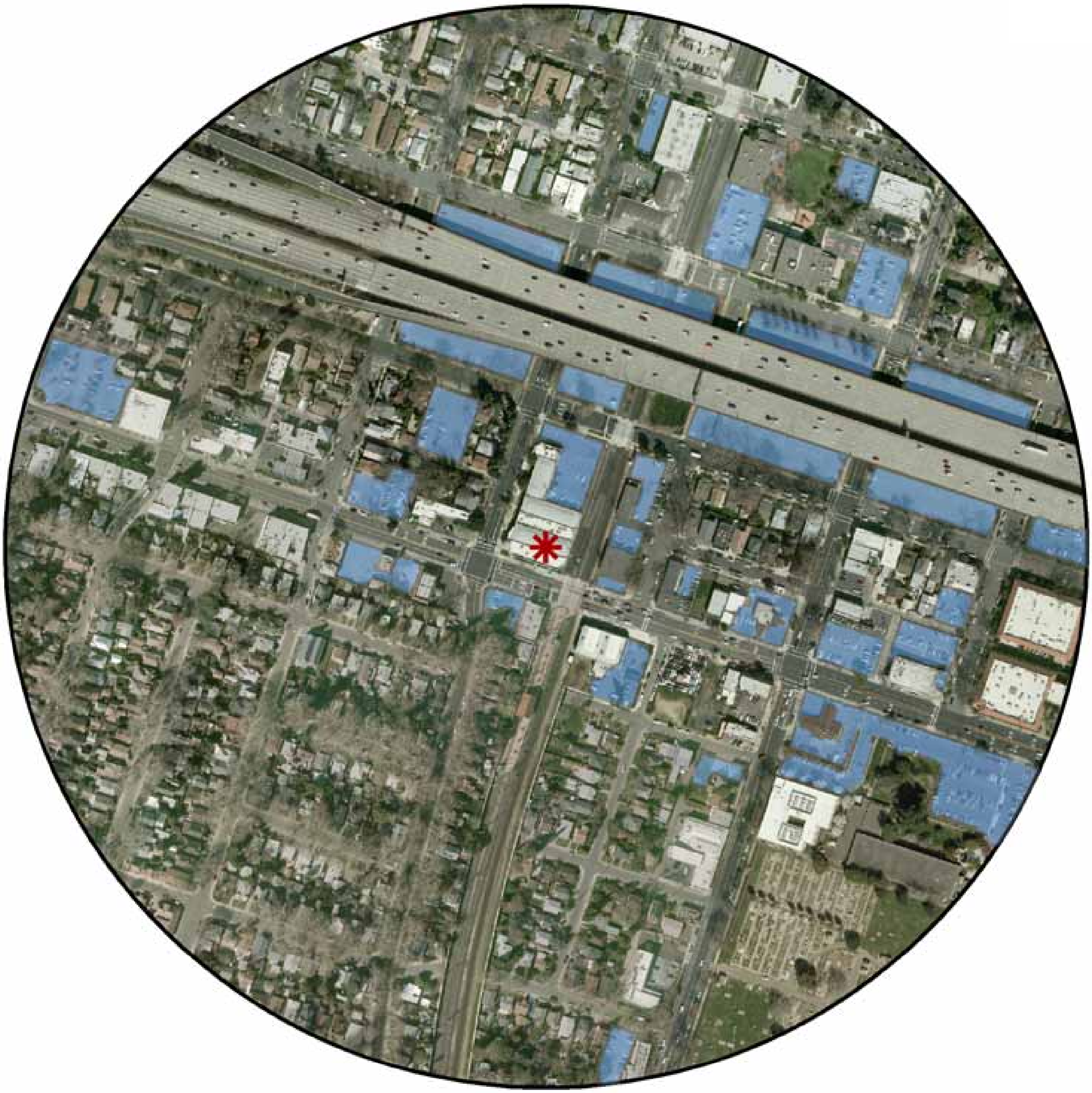


Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

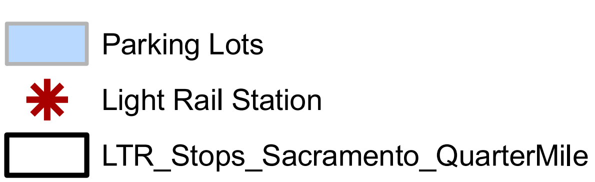
# Broadway
12.14 Acres



Parking Lots
Light Rail Station
LTR_Stops_Sacramento_QuarterMile

# Cathedral Square
2.40 Acres

# City College
10.26 Acres



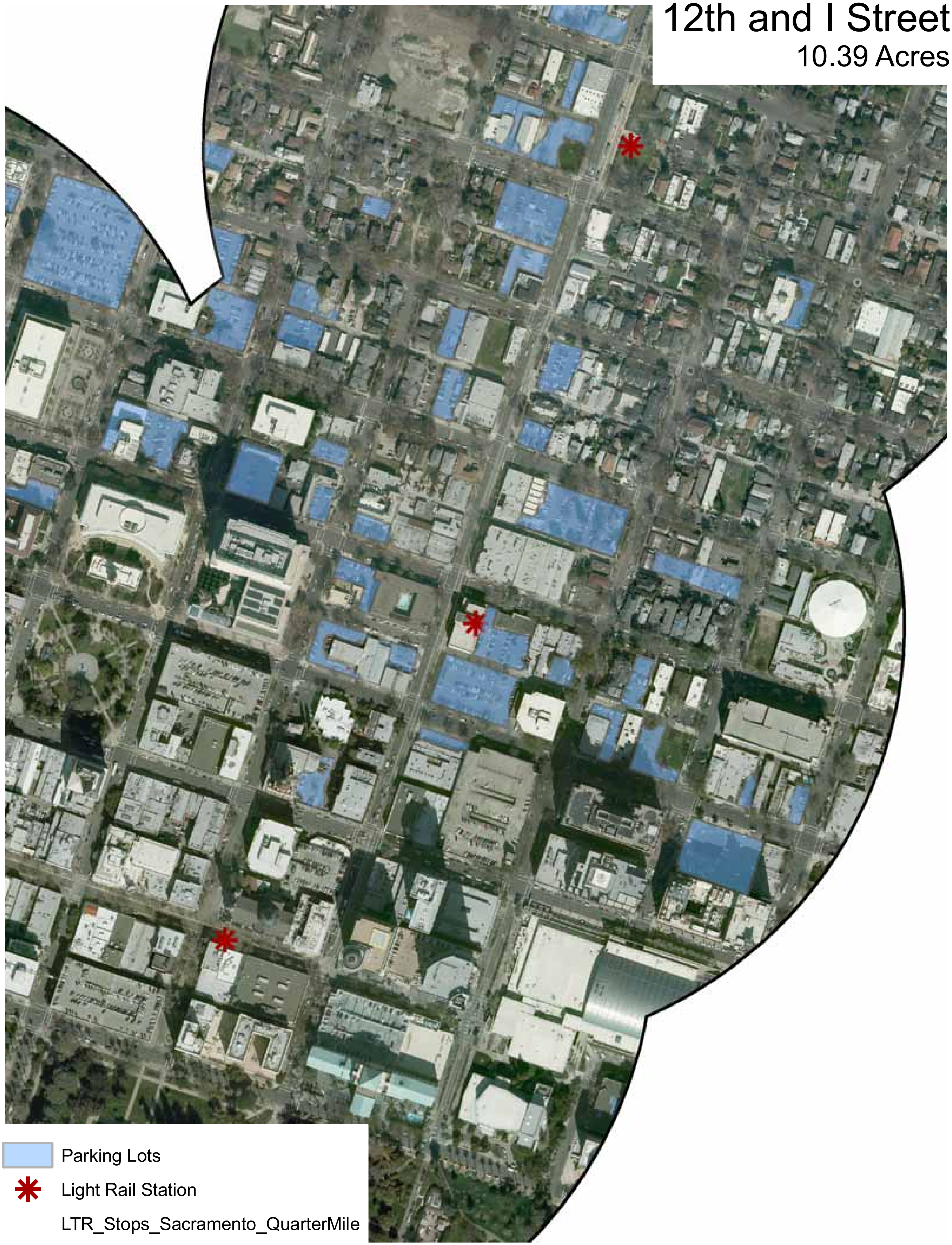
# College Greens
29.06 Acres

Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

# 12th and I Street
10.39 Acres



# 13th Street
9.49 Acres

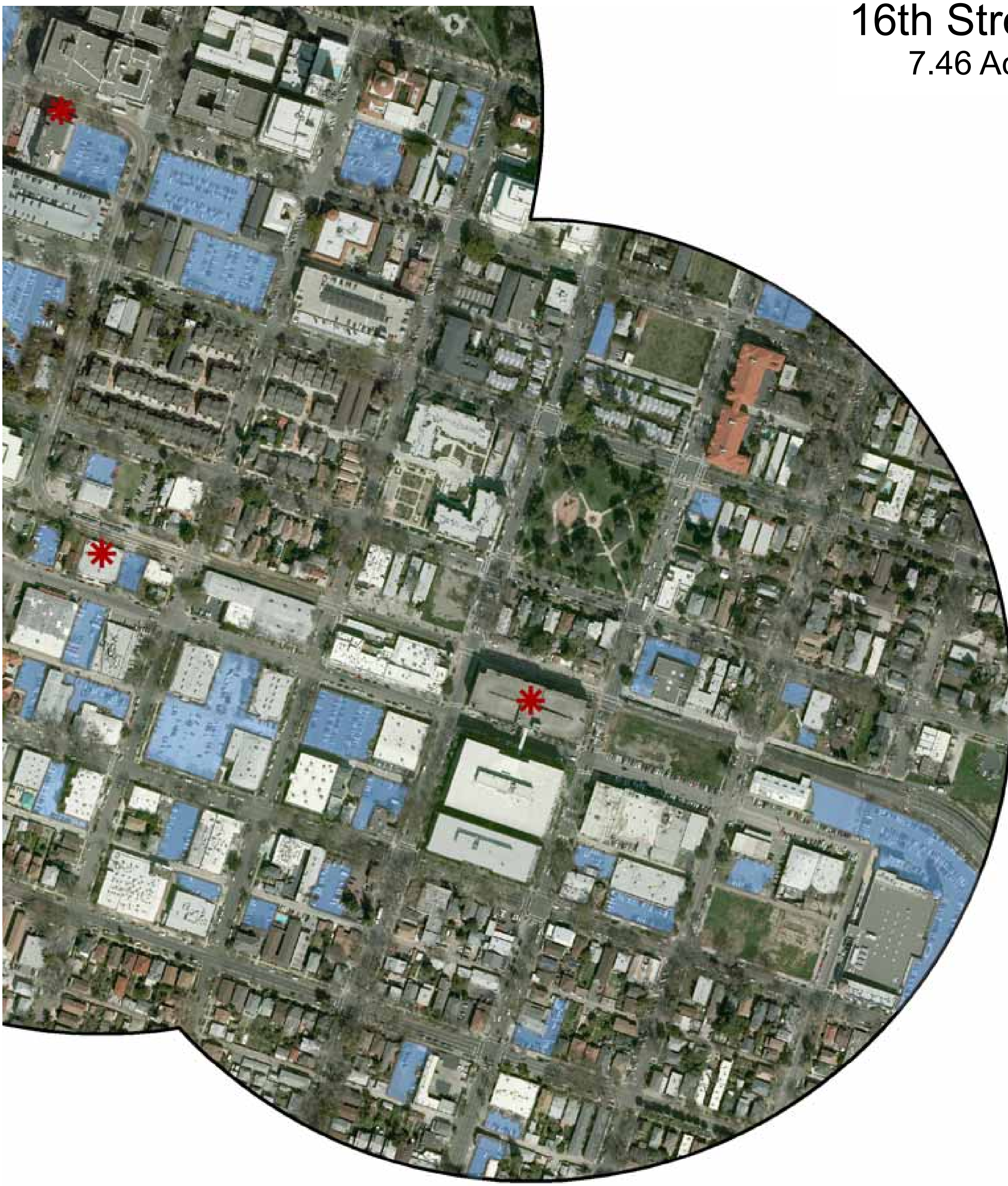
Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

# 16th Street

7.46 Acres



Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

# 23rd Street

7.73 Acres

Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

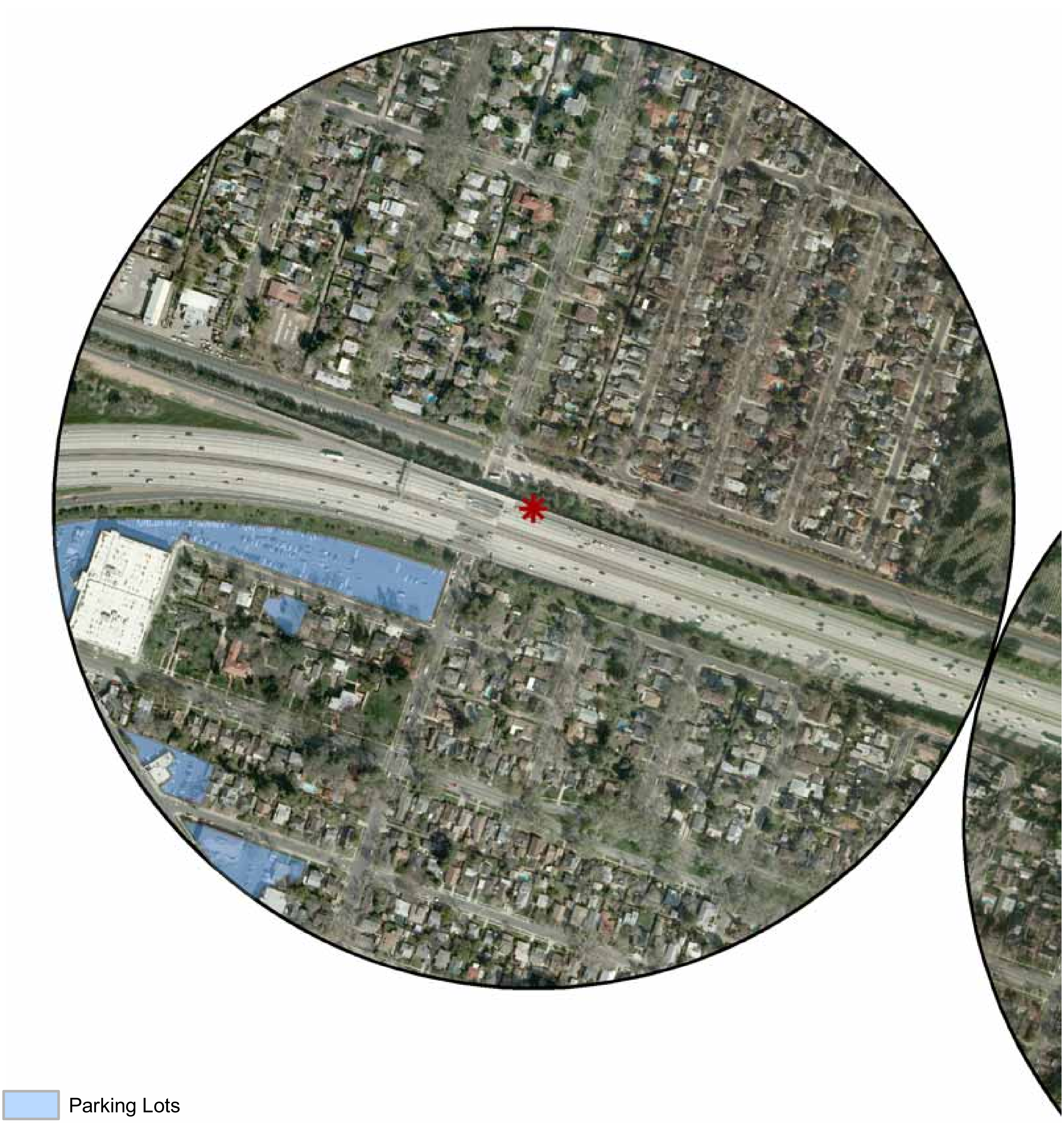
# 29th Street
14.04 Acres

Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

# 39th Street
4.22 Acres



Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

# 47th Avenue

27.55 Acres

# 4th Avenue/Wayne Hultgren

3.64 Acres

Parking Lots

Light Rail Station

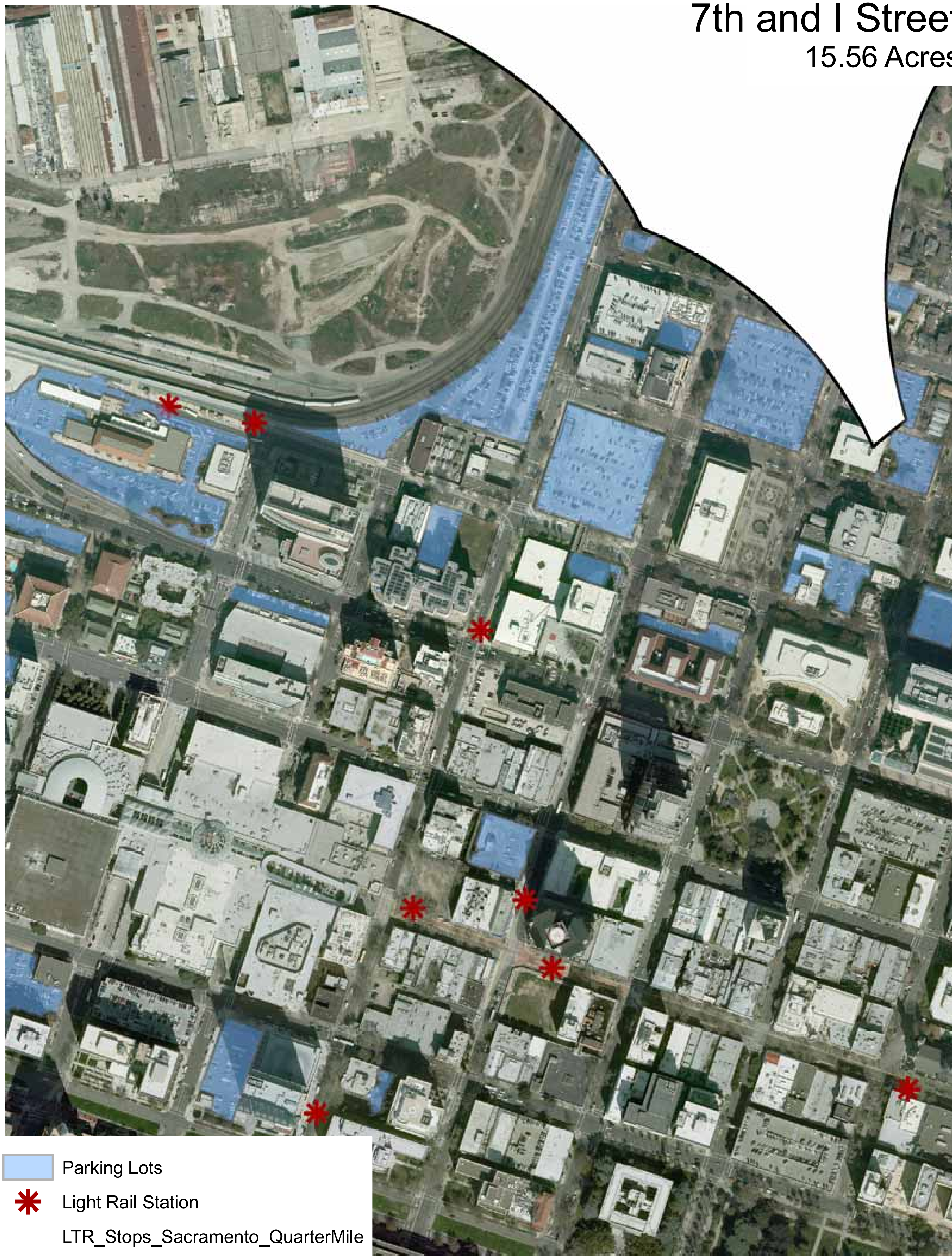
LTR_Stops_Sacramento_QuarterMile

# 59th Street
42.03 Acres

Parking Lots
Light Rail Station
LTR_Stops_Sacramento_QuarterMile

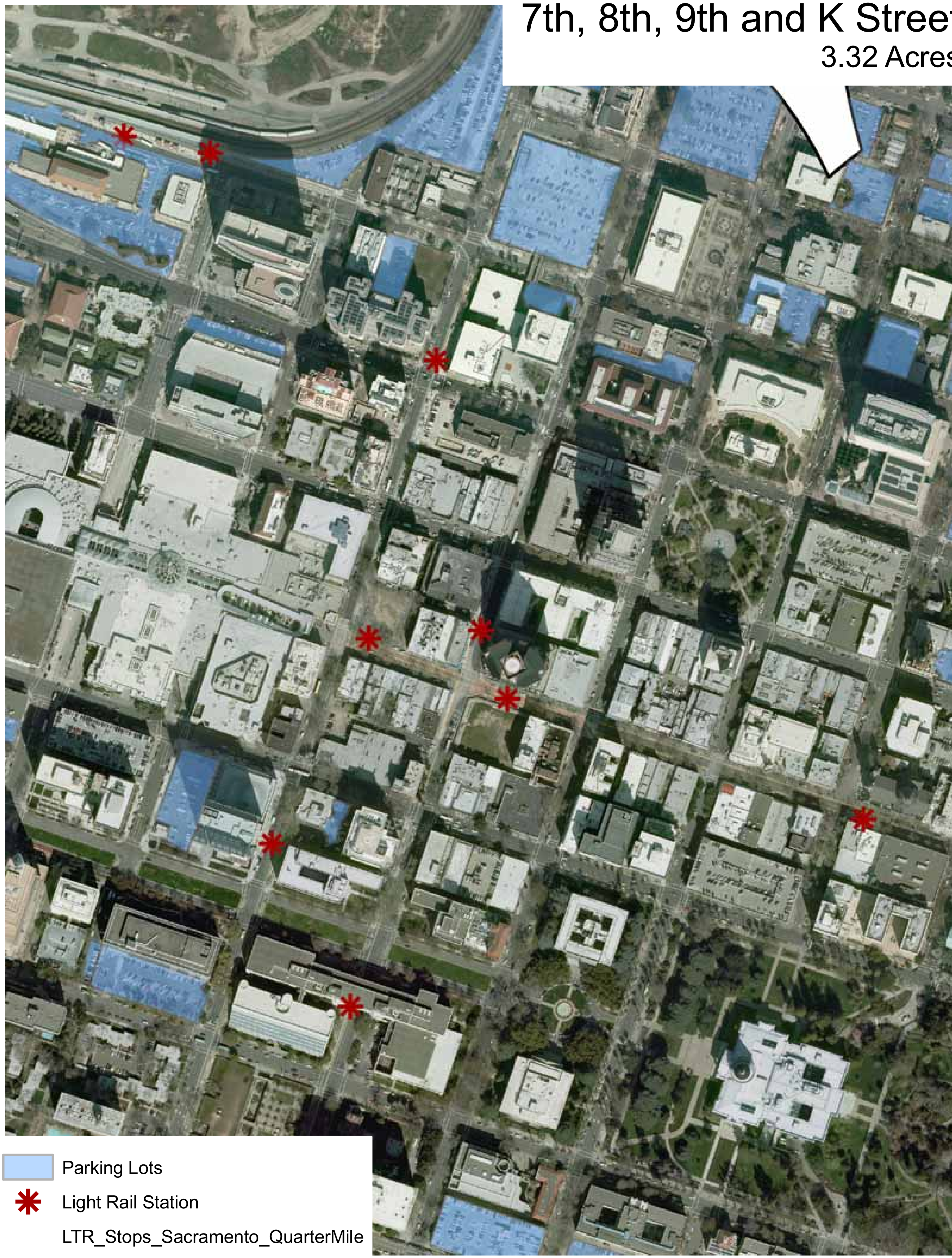
# 7th and I Street

15.56 Acres



# 7th, 8th, 9th and K Street

3.32 Acres



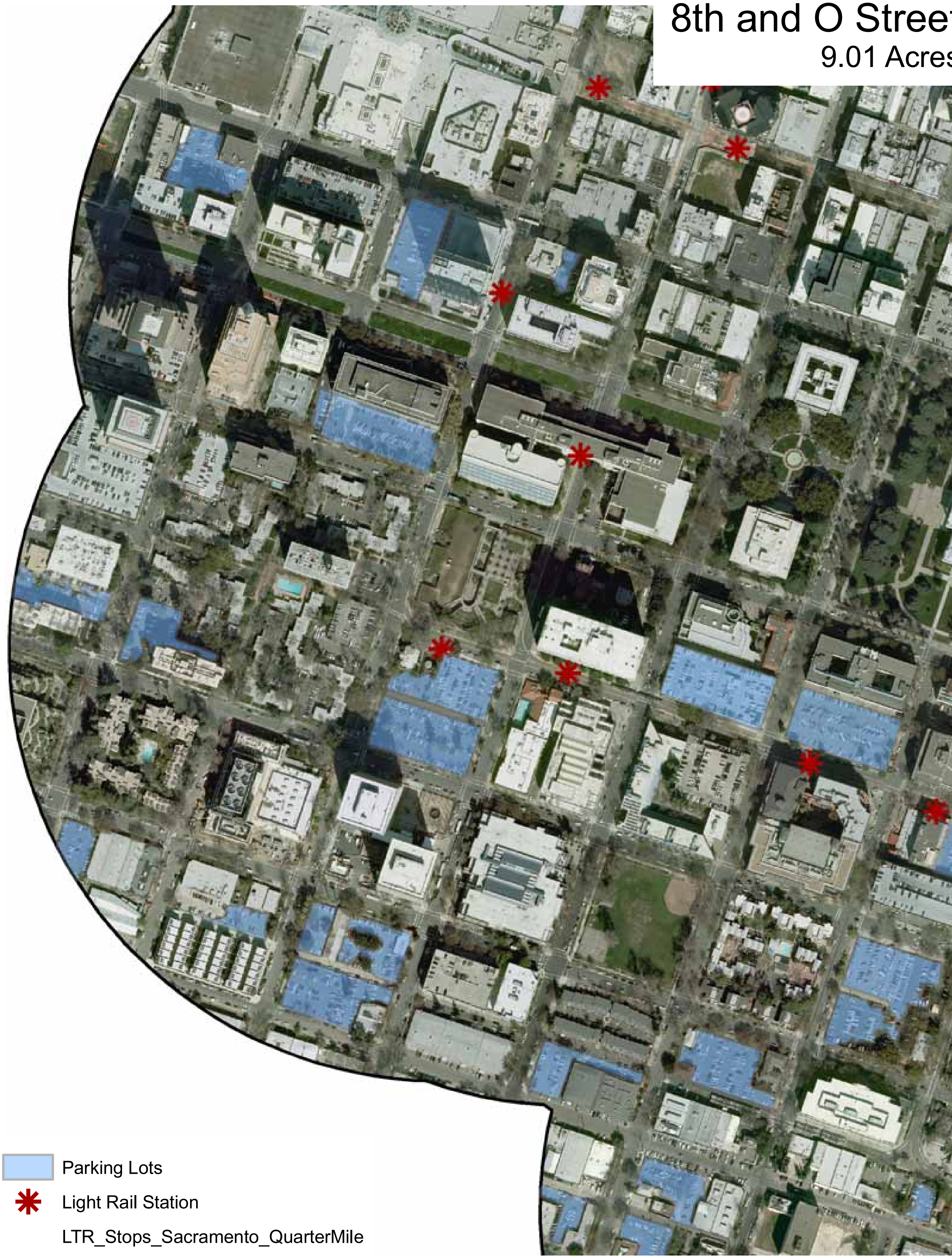
Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

# 8th and O Street

9.01 Acres



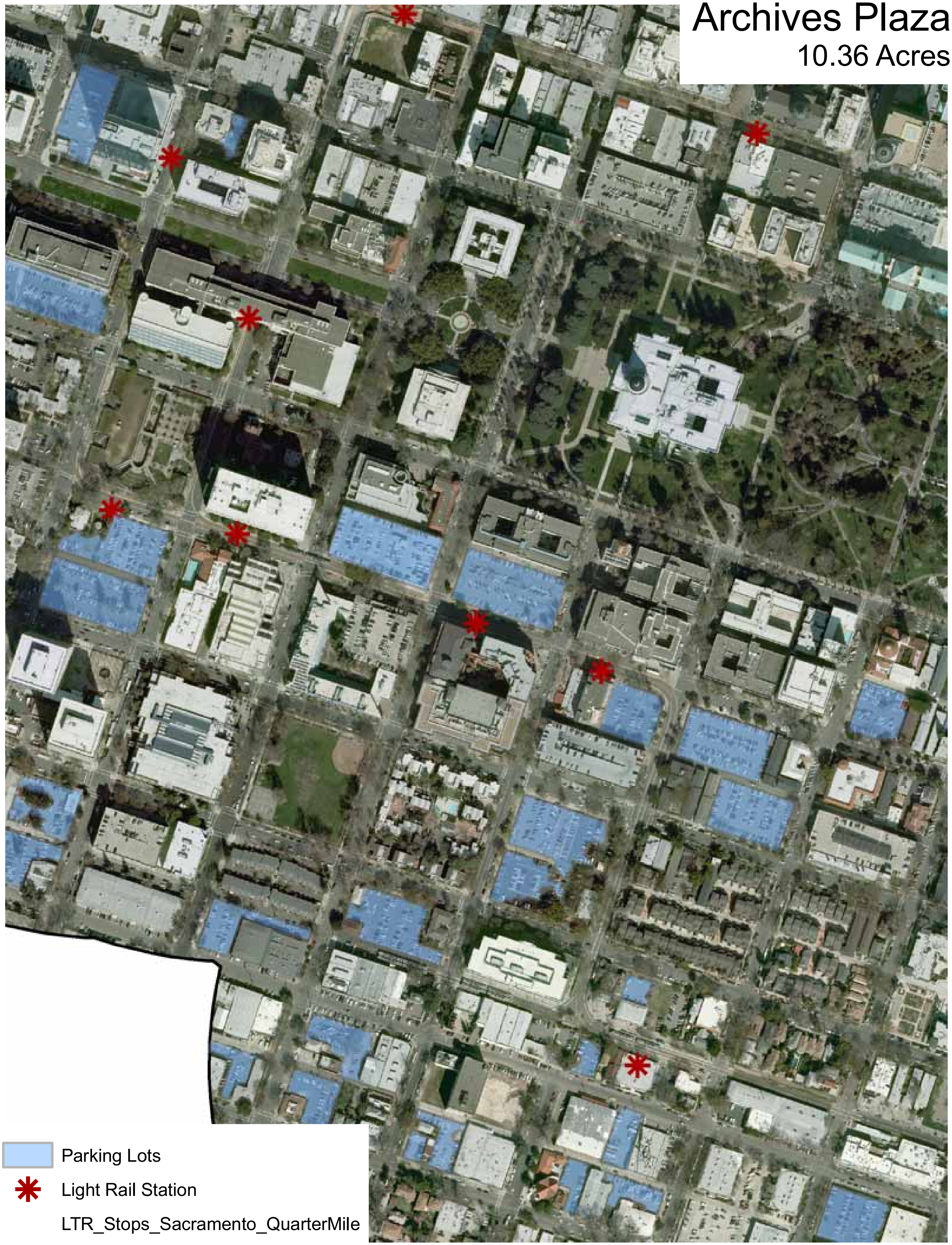
Parking Lots

Light Rail Station

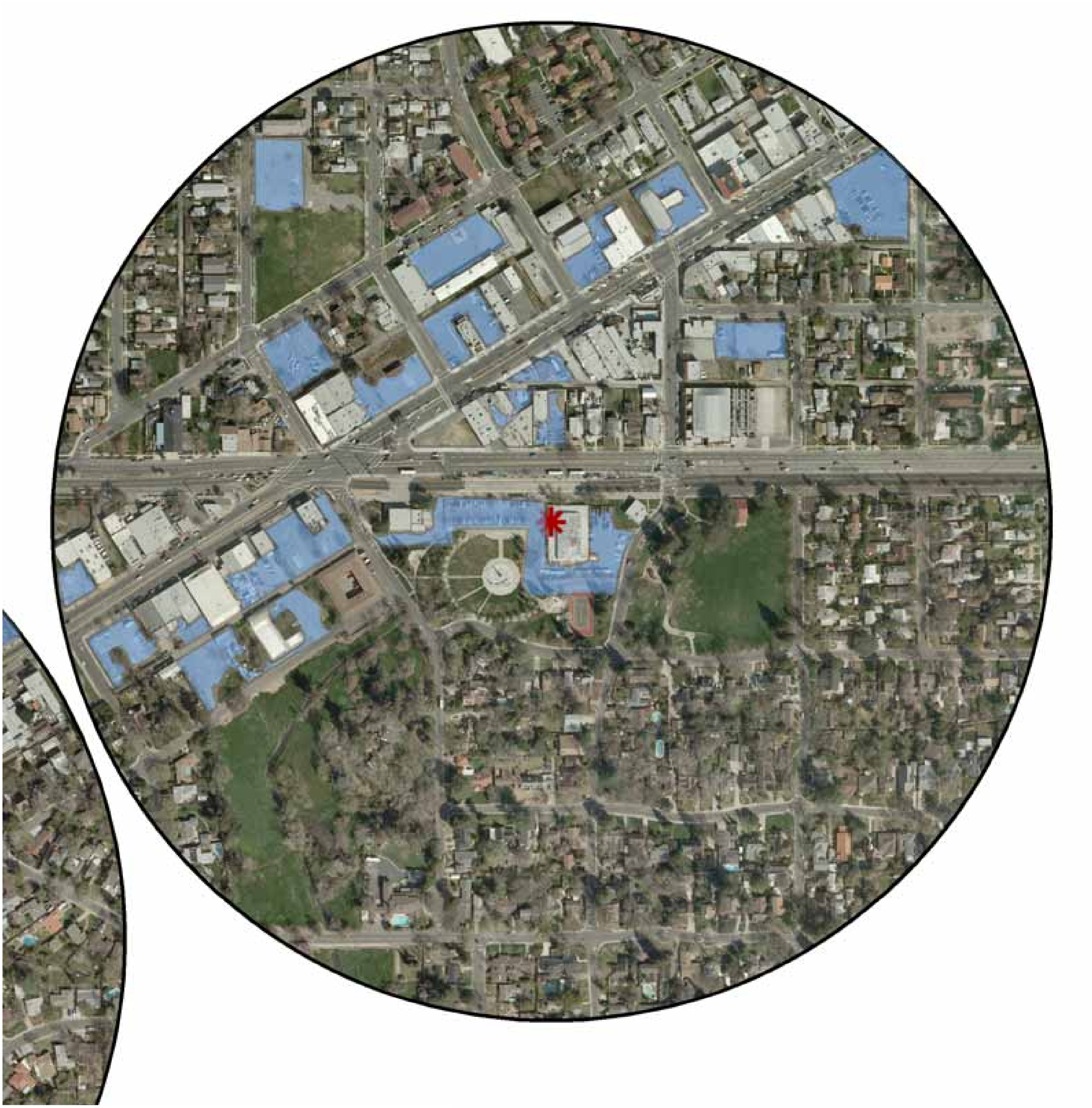
LTR_Stops_Sacramento_QuarterMile

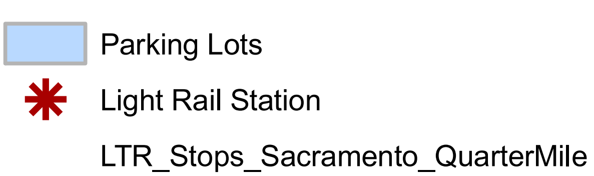
# Alkali Flats
11.42 Acres

# Archives Plaza
10.36 Acres

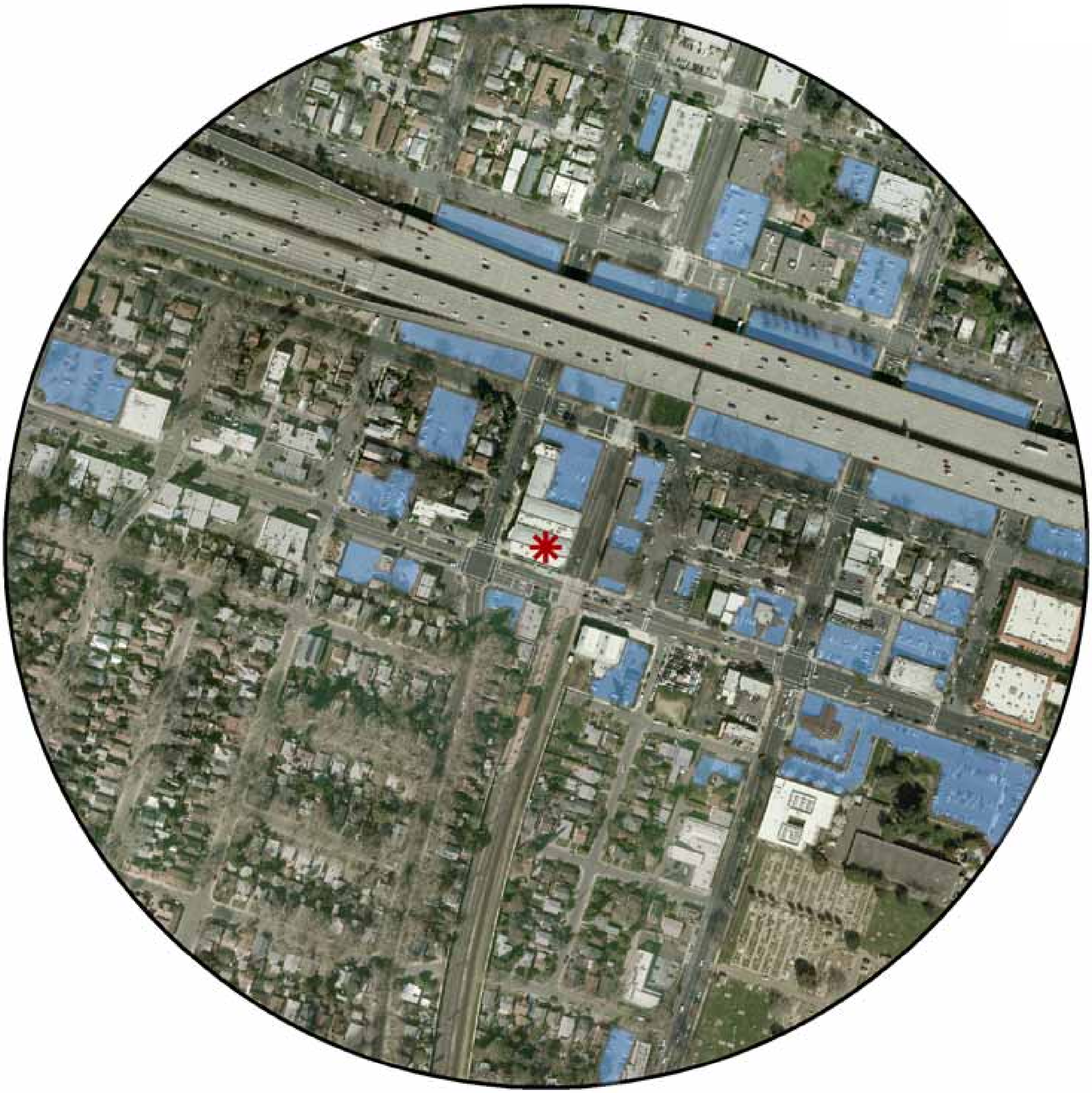


# Arden/Del Paso
8.89 Acres





# Broadway
12.14 Acres



# Cathedral Square

2.40 Acres

Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

# City College
10.26 Acres

Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

# College Greens
29.06 Acres

Parking Lots
Light Rail Station
LTR_Stops_Sacramento_QuarterMile

# Florin
22.65 Acres

Parking Lots
Light Rail Station

# Fruitridge

10.57 Acres

Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

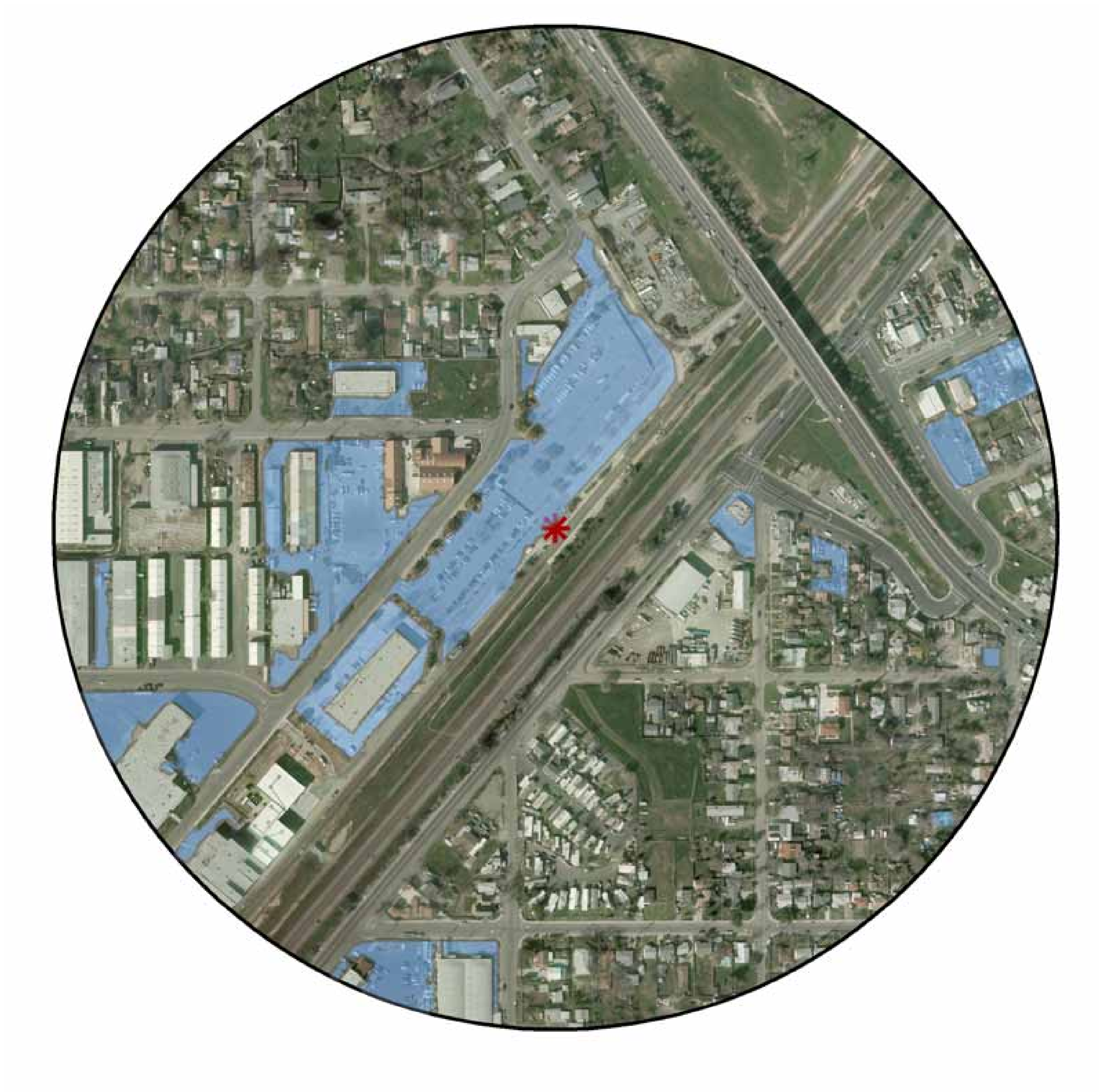
# Globe Mills
15.75 Acres

Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

# Marconi Avenue
14.58 Acres



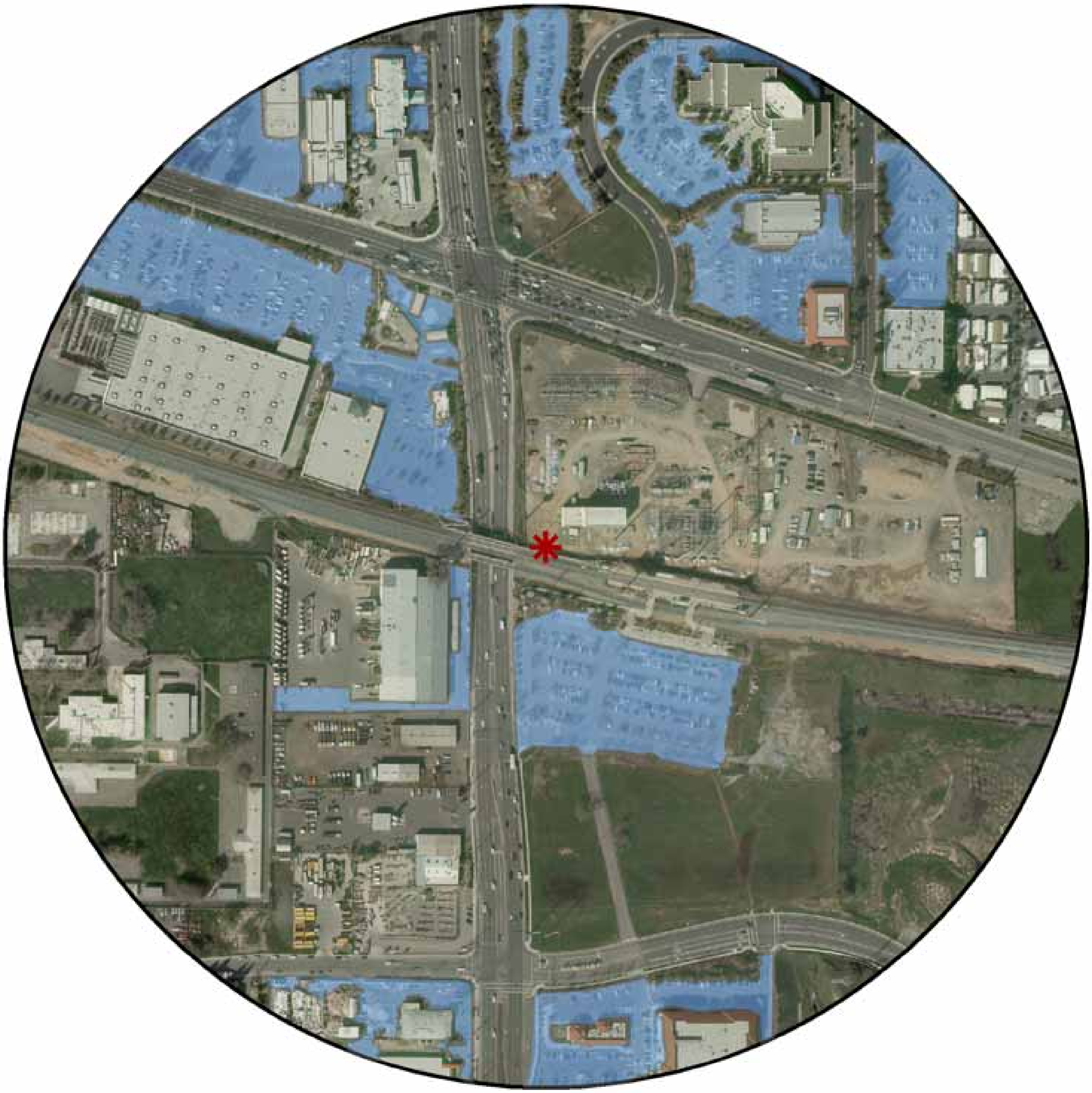
Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

# Meadowview
10.46 Acres

# Power Inn
22.04 Acres

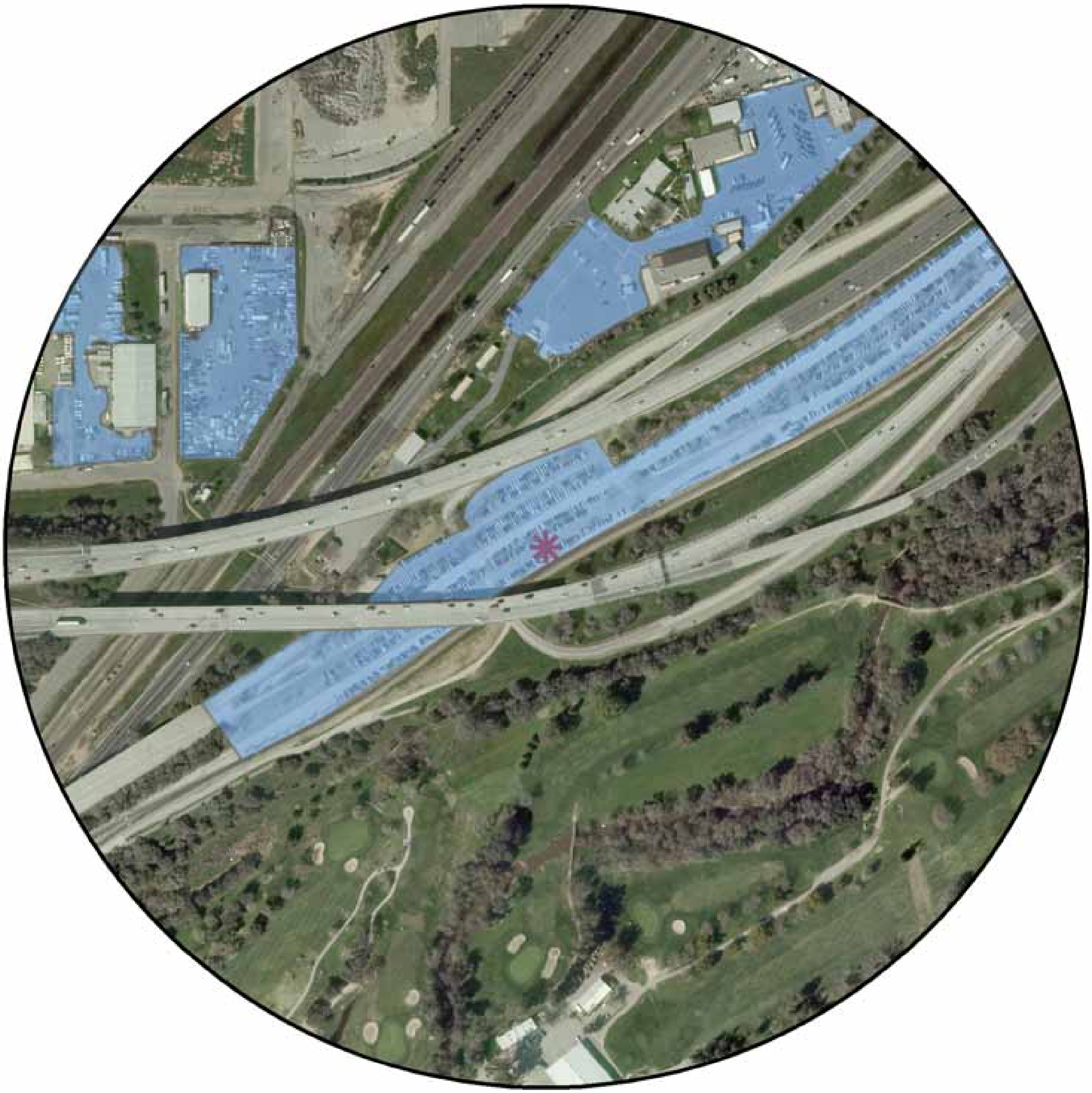


Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

# Roseville Road
## 7.01 Acres

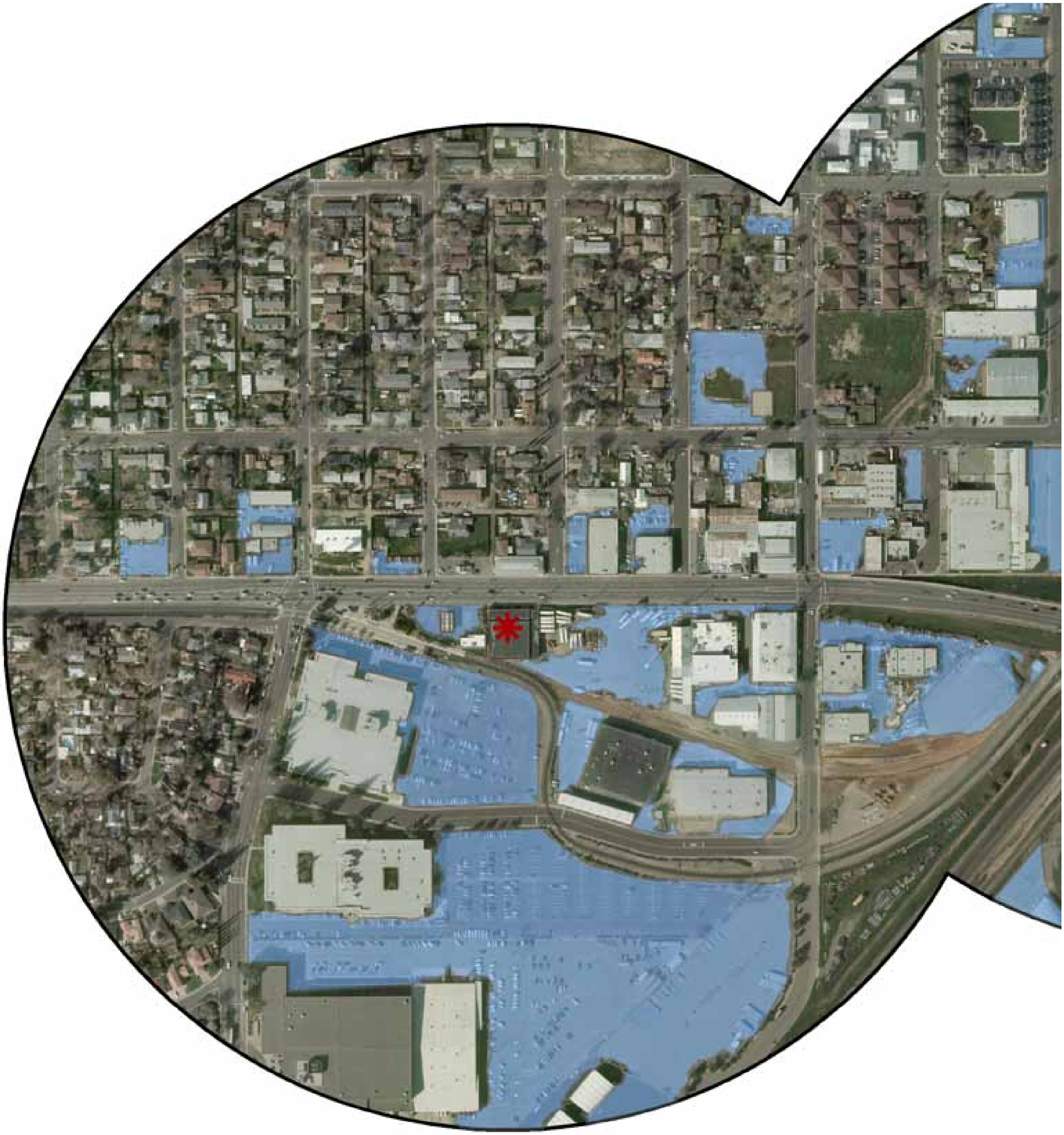


Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

# Royal Oaks
25.46 Acres

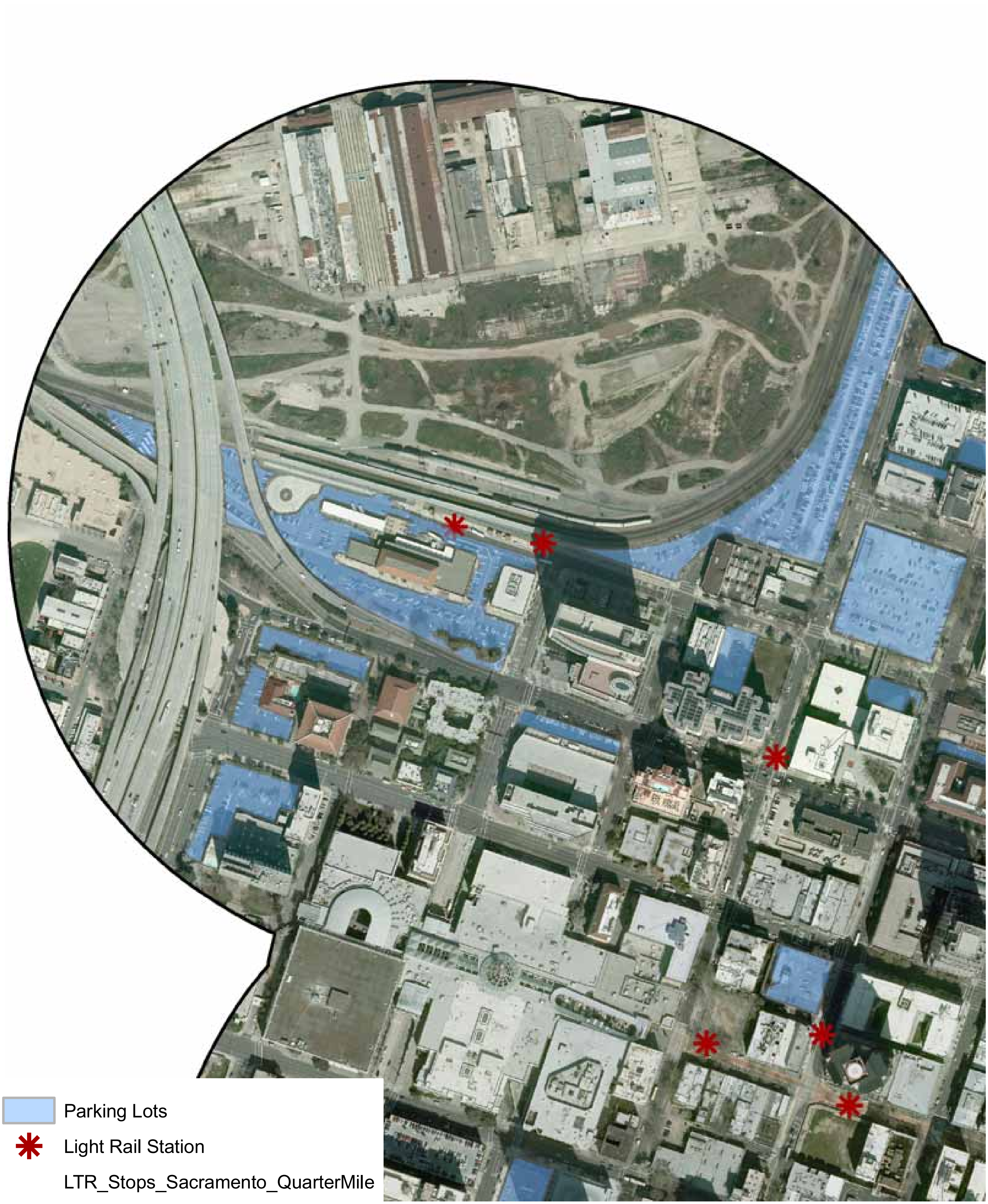


Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

# Sacramento Valley
14.66 Acres



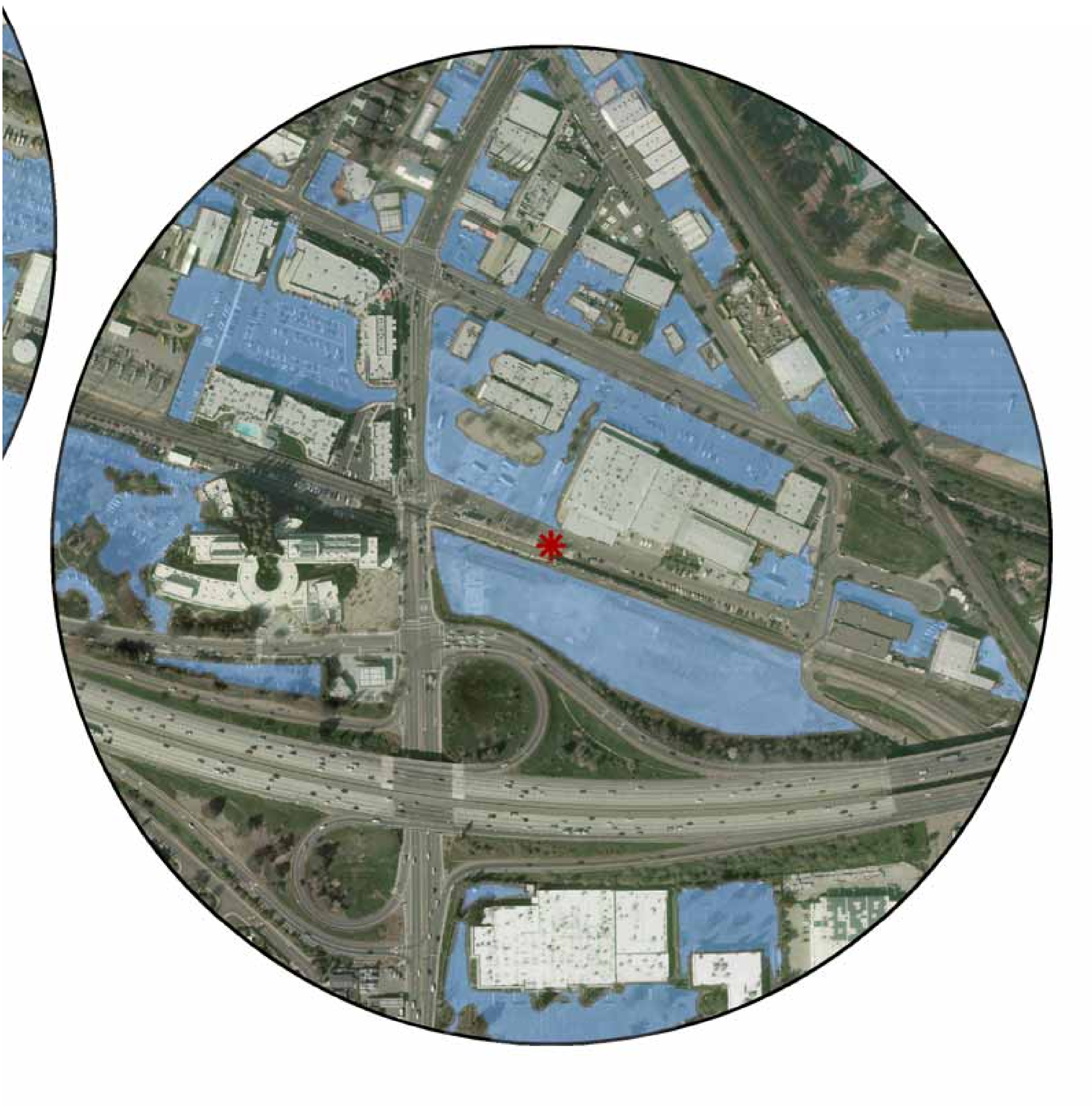
# Swanston Avenue
21.67 Acres

Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

# University/65th Street
28.20 Acres



Parking Lots
Light Rail Station
LTR_Stops_Sacramento_QuarterMile

# Florin
22.65 Acres

Parking Lots

Light Rail Station

# Fruitridge

10.57 Acres

Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

# Globe Mills
15.75 Acres

| | |
|---|---|
| | Parking Lots |
| | Light Rail Station |
| | LTR_Stops_Sacramento_QuarterMile |

# Marconi Avenue
14.58 Acres

Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

# Meadowview
10.46 Acres

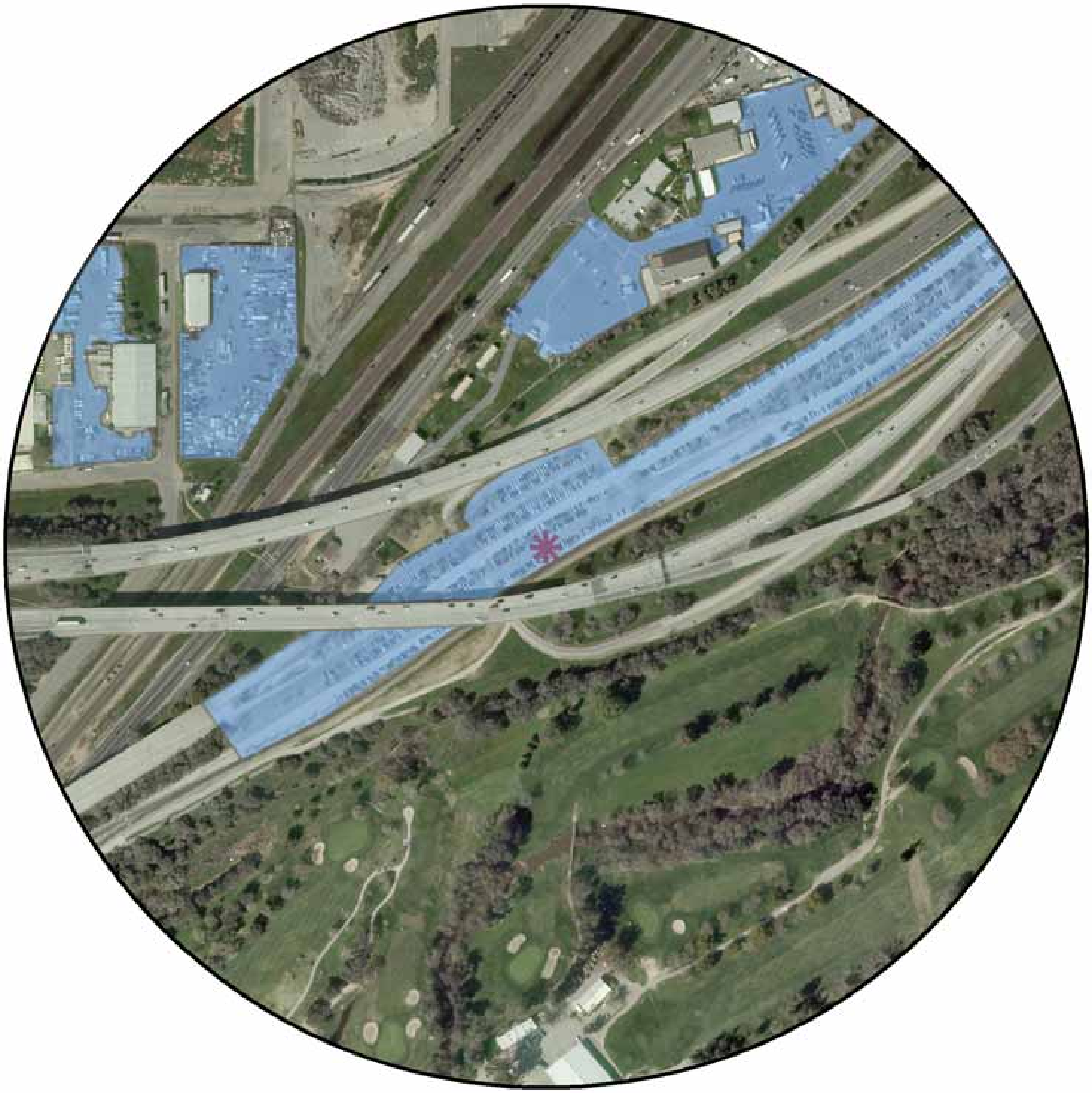
# Power Inn
22.04 Acres

Parking Lots

Light Rail Station

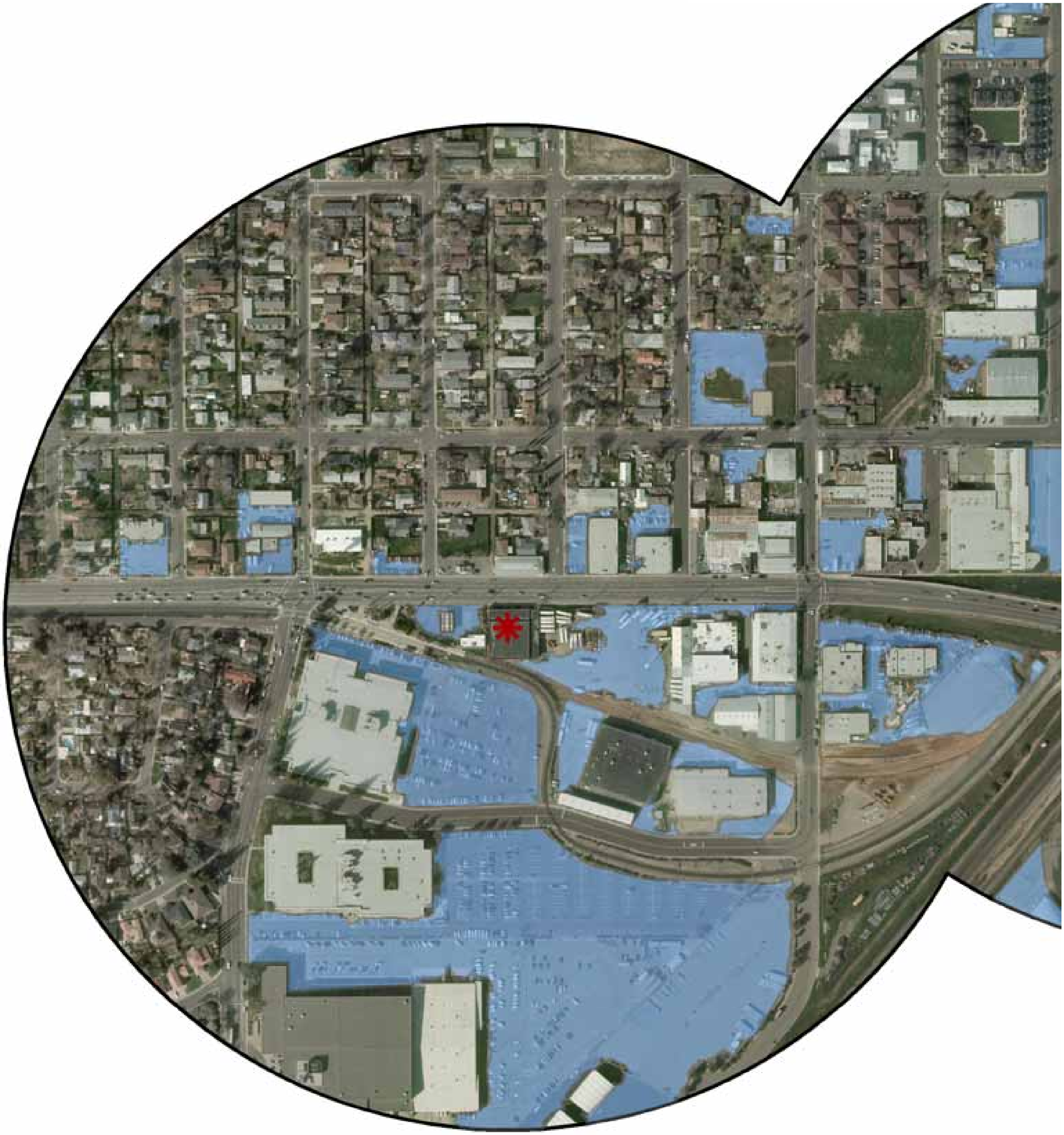
LTR_Stops_Sacramento_QuarterMile

# Roseville Road
7.01 Acres



Parking Lots
Light Rail Station
LTR_Stops_Sacramento_QuarterMile

# Royal Oaks
25.46 Acres

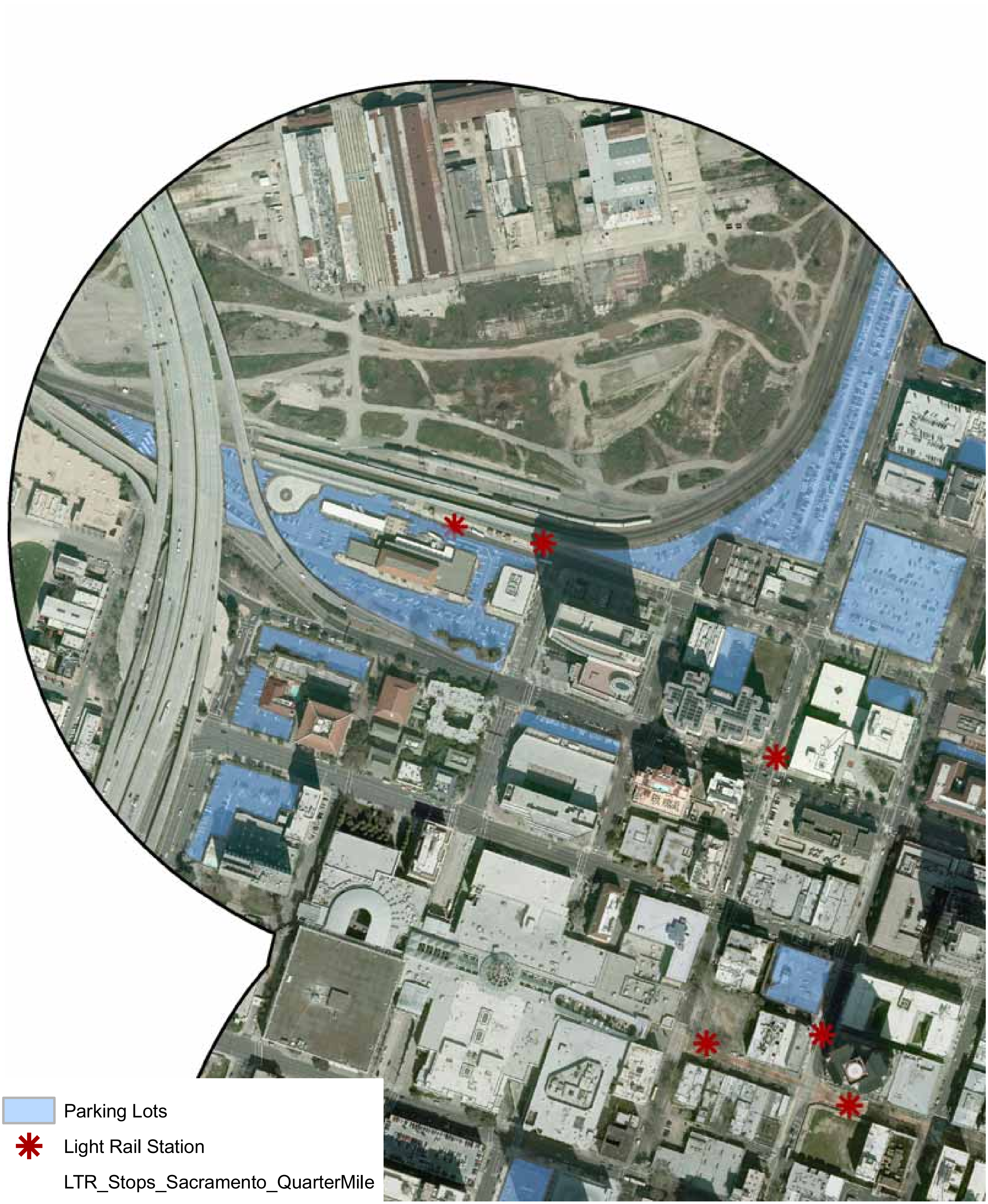


Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

# Sacramento Valley
14.66 Acres



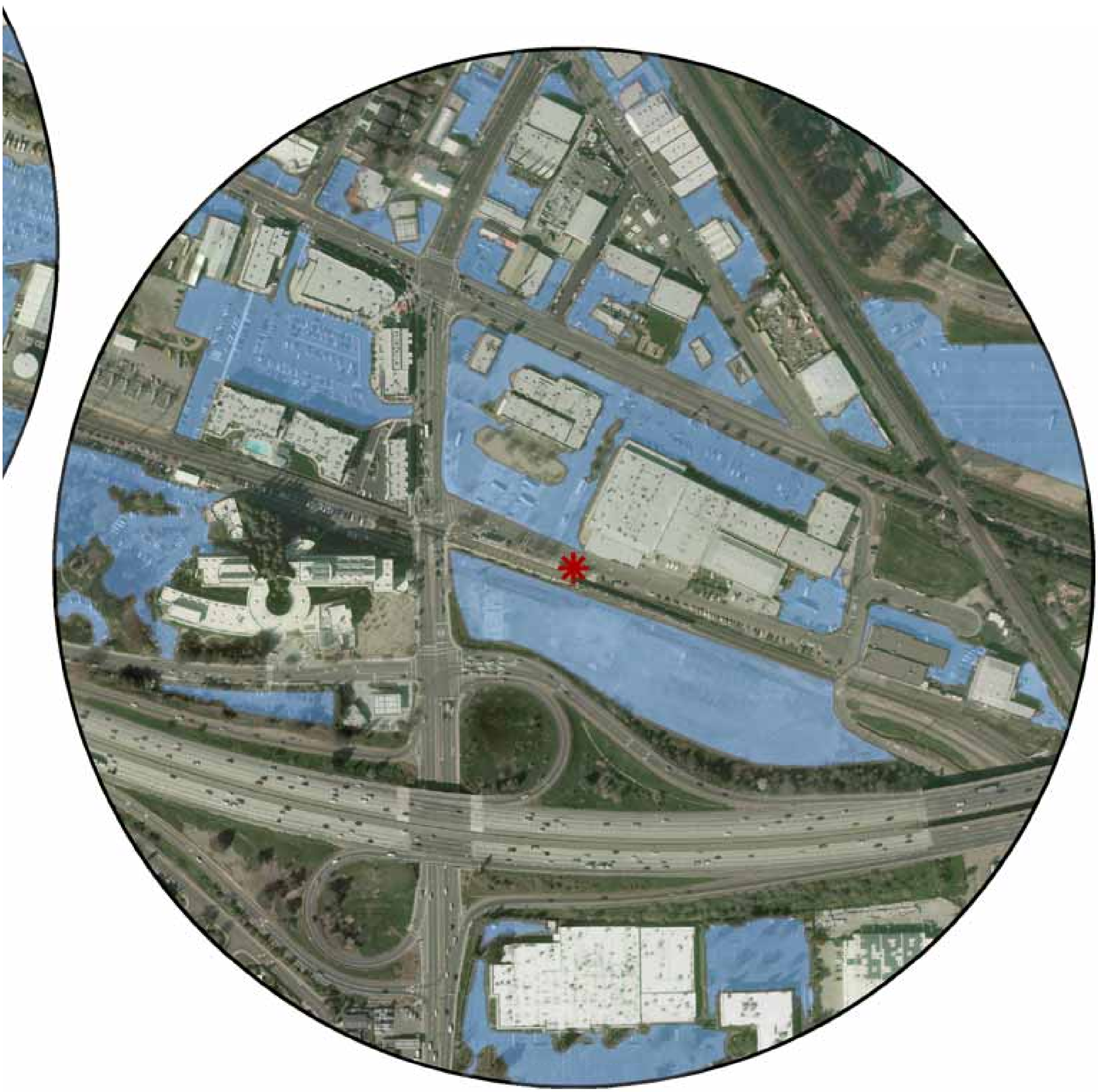
# Swanston Avenue
21.67 Acres

Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile

# University/65th Street
28.20 Acres



Parking Lots

Light Rail Station

LTR_Stops_Sacramento_QuarterMile