



Tucson Electric Power

Kino to DeMoss-Petrie 138 Kilovolt Transmission Line Project

Interim Siting Study

Phase 1, 2 & 3 Analysis

Tucson Electric Power Company
October 2020

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Acronyms Used in Report

ACC	Arizona Corporation Commission
ADOT	Arizona Department of Transportation
CEC	Certificate of Environmental Compatibility
CWG	Community Working Group
DMP	DeMoss-Petrie
E/C	Engineering and Constructability
GIS	Geographic Information System
kV	Kilovolt
ROWs	Rights-of-way
TEP	Tucson Electric Power
UPRR	Union Pacific Railroad

1.0 Introduction

Tucson Electric Power (TEP) is developing plans for a new transmission line that will strengthen electric reliability for customers in central Tucson and help satisfy growing energy needs in our community. The Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line (the Project) will connect the existing Kino Substation to the existing DMP Substation and interconnect with the planned UA North Substation.

TEP uses qualitative public/stakeholder and Community Working Group (CWG) input, as well as the quantitative results of additional analysis identified later in this Interim Siting Study, to identify up to three alternative transmission line route corridors in its application to the Arizona Corporation Commission (ACC), which must approve the route corridor before the transmission line can be built. This Interim Siting Study includes the results of the Phase 1 and Phase 2 geospatial analysis. The final Siting Study will include the Phase 3 geospatial analysis and multi-objective decision model, which is the weighted scoring of factors considered in the analysis (see Section 2 below). Phase 3 will be conducted following the current outreach efforts on or around September 13, 2020.

Project benefits include:

- **Improved electric reliability.** New energy infrastructure will strengthen reliability for homes and businesses in the study area by adding redundancy, allowing TEP to deliver energy from more than one direction.
- **Fewer, shorter power outages for residential and other customers.** A looped configuration in this area of the system will improve reliability and increase the capacity available to serve homes and other customers throughout the study area—even during summer months, when the demand for power is highest.
- **Prevention of outages and inadequate voltage.** By increasing electric capacity, TEP can avoid overload conditions that can damage equipment, causing outages or low voltage for customers. Some lower-voltage feeder lines in the study area have reached or are approaching their capacity limitations.
- **Replacement of aging infrastructure.** A large transformer, electric switchgear, and other substation equipment currently providing service to some area customers is nearing the end of its useful life and must be replaced within the next five years. New infrastructure with greater capacity would, instead, allow for the retirement of aging equipment.
- **Service for evolving energy needs.** Our community's peak energy demands have increased by about 9 percent since mid-2015. New infrastructure would help TEP to satisfy customers' current and future energy needs.

- **Support for the University of Arizona and University Medical Center Tucson—Banner.**
The new line will tie into TEP's 138kV transmission system to accommodate increased energy demands.

2.0 Objective and Methodology

The final objective of this study is to identify up to three alternative route corridors to connect the Kino and DMP Substations. These substations represent the fixed end points for the Project. The Project also requires an interconnection with the planned UA North Substation. In Phase 3, TEP will use public/stakeholder and CWG input qualitatively to determine the factors with the most concern, such as Residential Use and Historic Properties. These factors will then be weighted as more important than factors of less importance, such as cost or constructability. Currently, the scores of all factors used in the Phase 1 and Phase 2 analyses are equally weighted.

The methodology used to determine possible route corridors to interconnect the three substations involves two major components: geospatial analysis and a multi-objective decision model that has been used successfully on scoping studies conducted for the purpose of siting energy facilities¹. Both components include coordination with the public, stakeholders, and the CWG. TEP's design philosophy, which is also considered, includes these guidelines:

- Design routes that will utilize existing road rights-of-way (ROWs) and utility corridors in an effort to minimize disturbance to surrounding areas.
- Move underground or retire existing distribution facilities where the proposed line is in the same alignment as existing infrastructure.
- Work with neighbors and other stakeholders to identify concerns and develop alternatives that are in the best interest of the community.

In order to determine the most suitable transmission line links, TEP used Geographic Information System (GIS) technology to conduct a spatial analysis, which incorporated multiple influence factors grouped into common perspectives of society, environment, and engineering capabilities. Following Phase 1, the results of the analysis and public, stakeholder, and CWG input, were used to identify 10 preliminary alternative route corridors.

Phase 3 consists of additional GIS spatial analysis and the completion of the multi-objective decision model, following Phase 2 outreach, to select up to three corridors that possess the fewest constraints for use in the ACC Certificate of Environmental Compatibility (CEC) application.

¹ Horst, T.J. 1982 *A Monte Carlo Methodology for Analyzing Environmental Uncertainties in Siting Energy Facilities*. IMACS. World Congress on System Simulation and Scientific Computation, Montreal, Canada.

The criteria that will be used in the decision model are consistent with the relevant regulatory framework and decision process, which for this study is the ACC CEC.

3.0 Approach

The approach to achieve the study objective involves several steps.

- Step 1: Define the study area.
- Step 2: Define the criteria considered during selection of the alternative links and routes.
- Step 3: Identify preliminary links & conduct preliminary engineering and constructability assessment.
- Step 4: Collect and rank the data used to support the study.
- Step 5: Phase 1 Analysis
- Step 5a: Conduct geospatial analysis of the links.
- Step 5b: Conduct public, stakeholder, and CWG scoping.
- Step 6: Phase 2 Analysis
- Step 6a: Phase 2 geospatial analysis.
- Step 6b: Develop preliminary alternative route corridors.
- Step 6c: Analyze preliminary alternative route corridors (in coordination with the public, stakeholders and CWG).
- Step 7: Phase 3 Analysis: Select up to three alternative route corridors for use in the ACC CEC application.

**Grey text represents completed steps.*

4.0 Step 1: Study Area

The first step was to define the study area. TEP took into consideration the following factors in the development of the Preliminary Study Area:

- The fixed end points of the Project at the existing Kino and DMP Substations.
- The interconnection at the planned UA North Substation.
- A desire for the most direct routes in order to reduce the overall cost of the Project.

- TEP's design principle to first use established infrastructure corridors that meet the Project objectives.

In the Project area, there are a variety of existing infrastructure corridors in which a transmission line could be co-located. These existing infrastructure corridors include Pima County and City of Tucson arterial streets, as well as existing TEP 46kV and 138kV transmission line corridors.

Utilizing these factors, TEP developed the Preliminary Study Area shown in Figure 1, which was presented to the stakeholders and CWG members at the October 2019 CWG meeting and to the public at the October 2019 public open house meeting shortly thereafter.

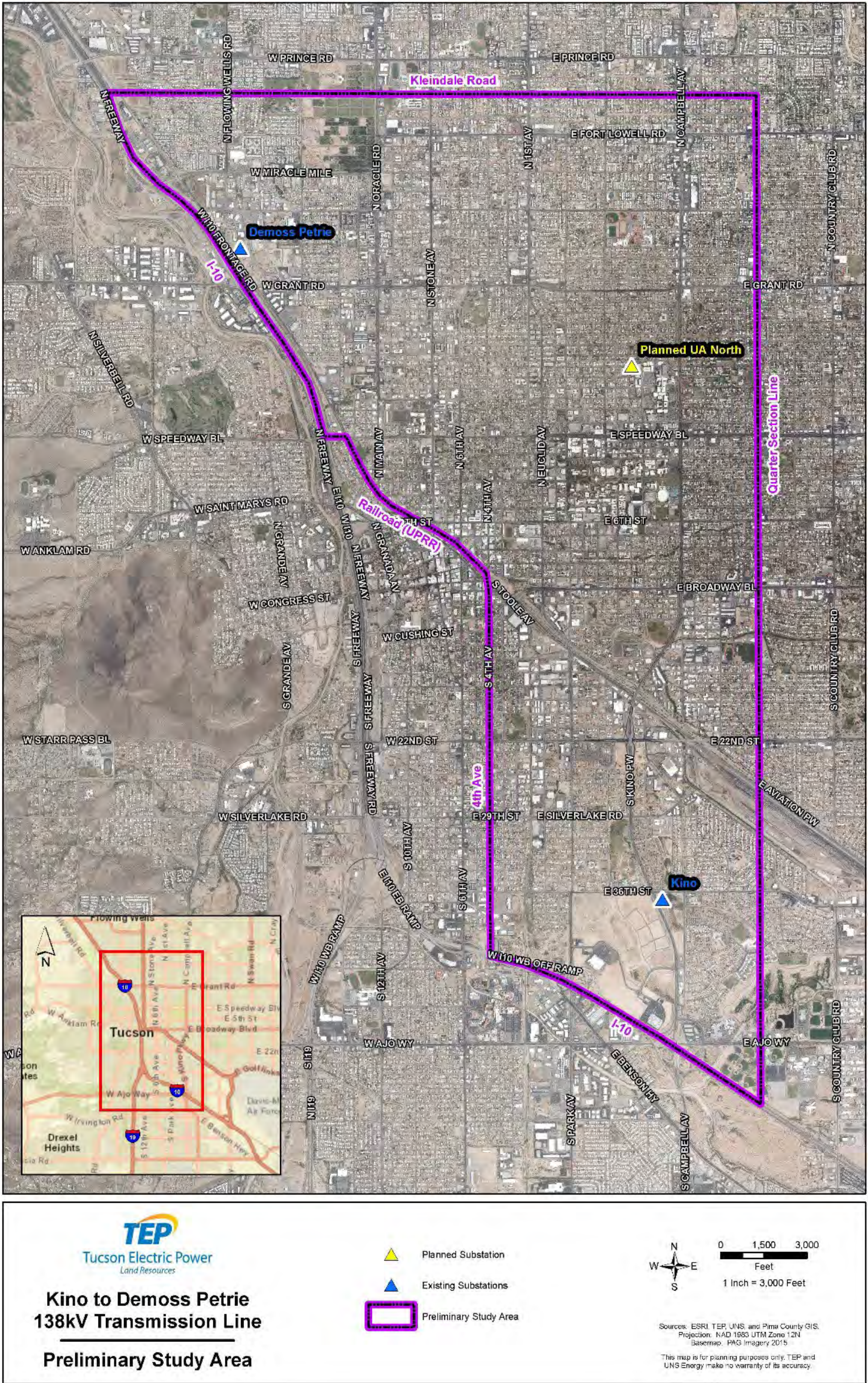


Figure 1. Preliminary Study Area.

5.0 Step 2: Criteria

The second step was to define the criteria to consider during the analysis. TEP identified 12 criteria to be used during the evaluation process. The 12 criteria are aligned to the ACC CEC decision factors (Arizona Revised Statute § 40-360.06) and TEP's design philosophy and standards and include the following:

1. **Presence/ absence of an existing corridor and ability to use.**
2. Existing and planned land use that is compatible with use as a transmission line corridor.
3. **Residential use adjacent to the corridor, as measured by distance to existing residences and planned future development,**
4. **Listed historic properties and districts adjacent to the corridor, as measured by distance to existing listed historic properties.**
5. **Presence/absence of Sensitive Receptors as measured by distance to existing Sensitive Receptors and distance from corridor.**
6. **Room for separation from existing utilities in the corridor as measured by existing and planned utilities and ranked by degree of mitigation required.**
7. Viewshed associated with the corridor as measured by number of people viewing and type of viewing experience (i.e., commuter, recreationist, resident).
8. Known or potentially eligible cultural resources in the corridor as measured by documentation through previous survey effort and ranked by degree of mitigation required.
9. Special status species and/or habitat as measured by the presence/ absence of potentially suitable habitat.
10. 100-Year floodplain as measured by location and engineering design.
11. **Ability to construct and maintain the transmission line.**
12. Cost of construction.

Note: **Bolded** criteria, as well as input received, were used in the Phase 1 and Phase 2 analysis; remaining criteria will be used in the multi-objective decision model.

Given the Project's urban setting, several criteria that would normally be evaluated were not included in the analysis because it was determined at an early stage that these factors were not present or could be avoided completely. These factors included presence of access roads, terrain, threatened and endangered species, and designated critical habitat.

6.0 Step 3: Links Development & Preliminary Engineering and Constructability Assessment

During the Phase 1 analysis, Step 3 consisted of the development of links using all major streets and existing TEP distribution and transmission line routes within the study area. A total of 239 links were identified, after which TEP's transmission line design team conducted a preliminary Engineering and Constructability (E/C) Assessment that included a review of aerial photography, TEP's existing facility locations and operations, and a site visit. Following this preliminary E/C Assessment, the number of links was reduced to 121. These preliminary links were provided to the public, stakeholders, and CWG for review and comment in December 2019 (see Figure 2a below).

Following the December outreach, additional discussions with the Union Pacific Railroad (UPRR) and University of Arizona, additional E/C Assessment, and splitting links at additional intersecting points, the total number of links increased from 121 to 164 (see Appendix A and Figure 2.b).

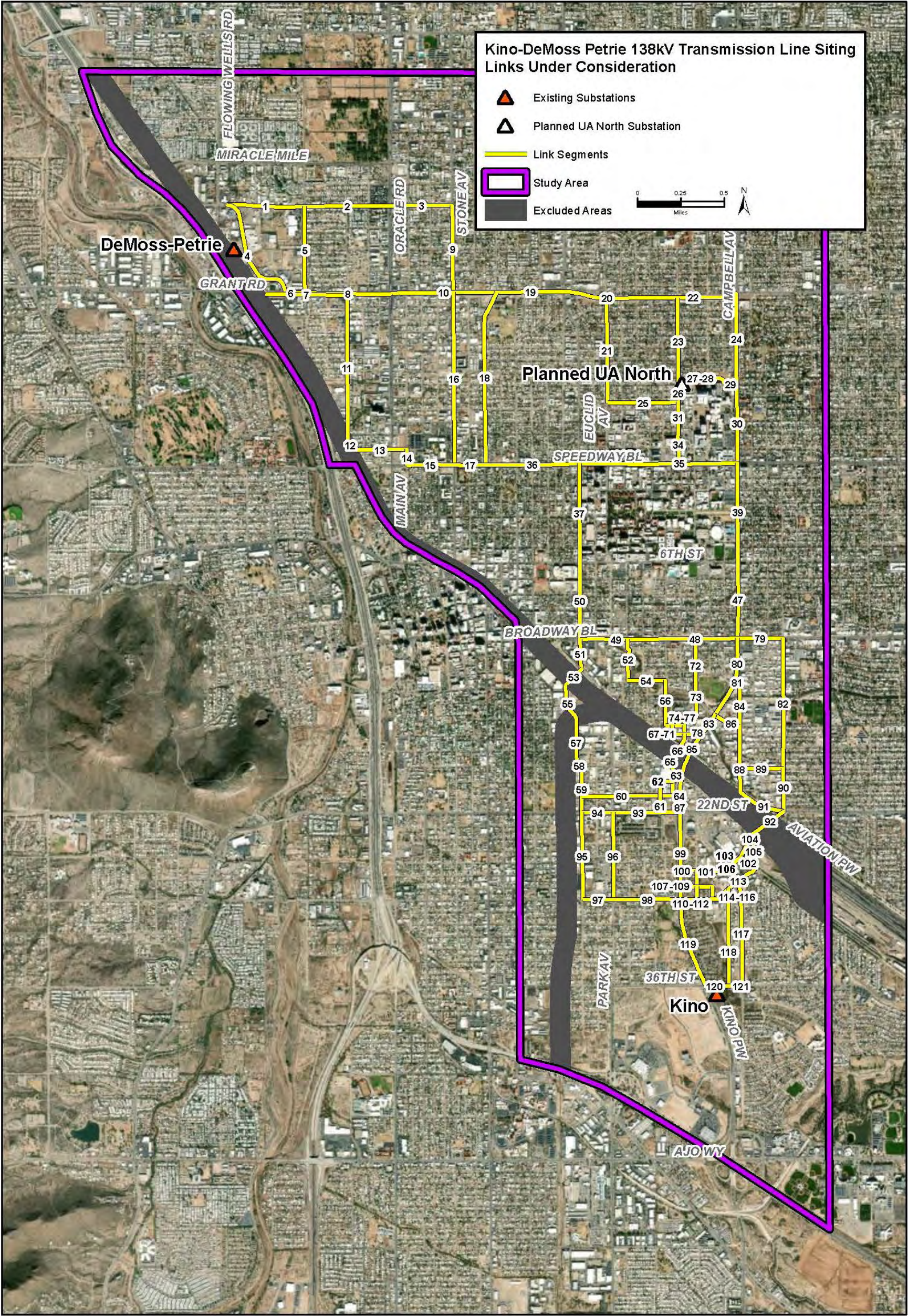
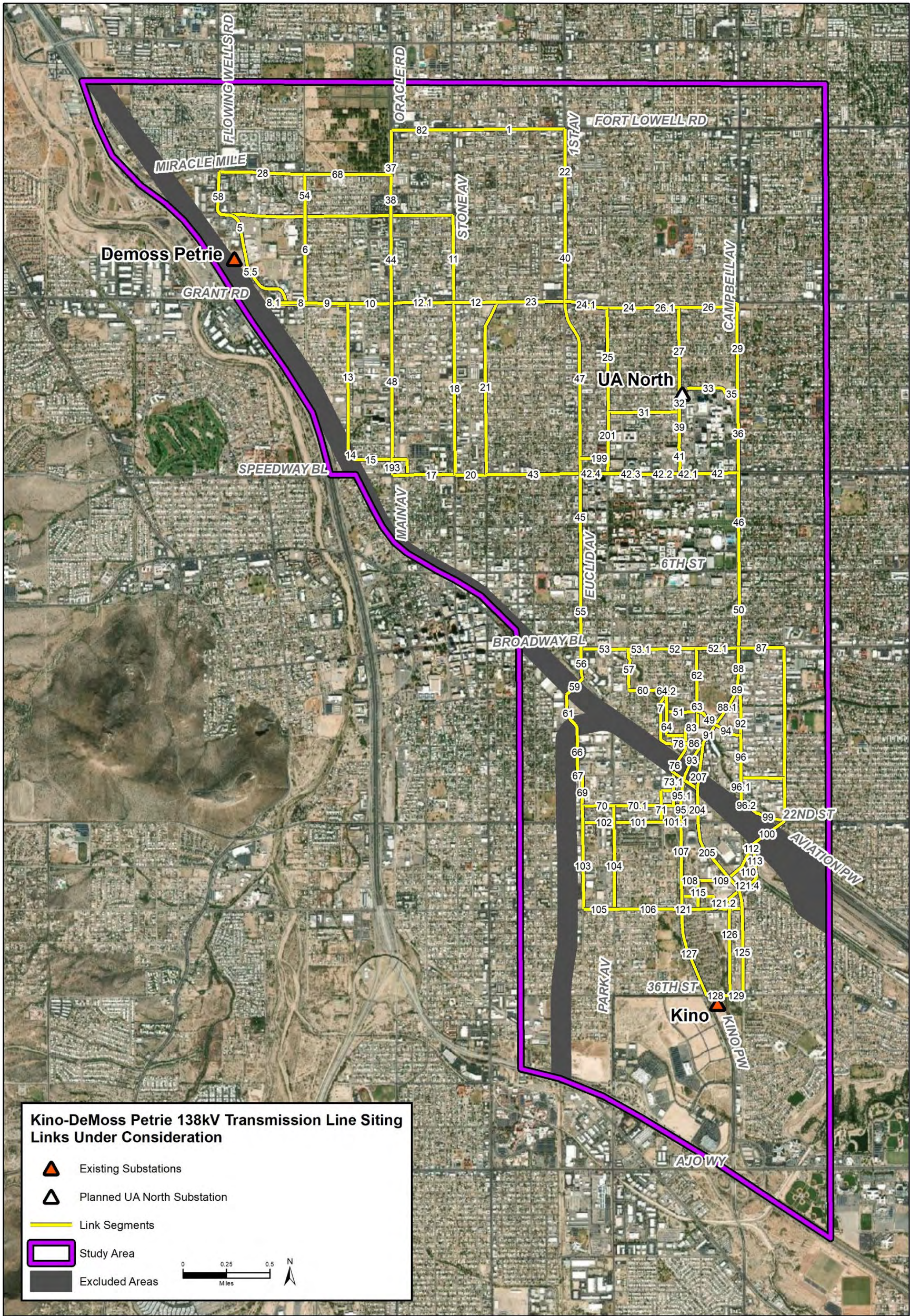


Figure 2a. Preliminary links under consideration following preliminary E/C Assessment in December 2019.



7.0 Step 4: Data Collection

Step 4 included the collection and ranking of data in support of analyzing the 12 criteria listed in Step 2. TEP collected GIS layers from its own data repository as well as from Pima County, the City of Tucson, the U.S. Geological Survey, FEMA.gov, Southwest Gas, Pima County Wastewater Management, the Arizona Department of Transportation (ADOT), and Kinder Morgan. The data was then ranked from 1 to 3 based on the TEP team's perceived importance of that resource in the analysis, where 1 has the most importance in the analysis and 3 has the least importance. The ranks were later shared at the February 2020 stakeholder/CWG meetings and in the April 2020 Online Project Update, and *no comments were received that indicated that the importance of a particular resource had been undervalued*. Table 1 shows the data collected and the ranks assigned.

Table 1. Data Collected and Ranks Assigned

Data	Rank	Comment	Source
Residential Use	2	Review of aerial imagery and building footprints for identification of residential areas.	<i>Pima County GIS</i>
Sensitive Receptors	1	Schools, hospitals, churches, daycare and adult care facilities, etc., grouped together ^a . Given a 300-foot buffer from the parcel boundary.	<i>Pima County GIS</i>
Historic Properties	1	As listed in the National Registry of Historic Places. Given a 300-foot buffer from the parcel boundary.	<i>City of Tucson GIS, City of Tucson Historic Preservation Officer</i>
Transportation corridors	3		<i>Pima County GIS</i>
Existing TEP transmission line corridors	3		<i>TEP GIS</i>
Water, wastewater, gas utility lines	n/a ^b		<i>City of Tucson GIS, Southwest Gas, Kinder Morgan</i>
Arizona Department of Transportation (ADOT) rights-of-way	0	Excluded per ADOT standards.	<i>ADOT</i>
Union Pacific Railroad (UPRR) rights-of-way	0	Excluded per UPRR standards.	<i>TEP GIS, Pima County GIS</i>

^a Pima Community College and University of Arizona were not included as they are institutions of higher learning.

^b See Constructability Analysis in Appendix A (Table A.1).

8.0 Step 5a: Phase 1 Geospatial Analysis

Step 5a was the completion of geospatial analyses of the 164 preliminary links developed in Step 3. The TEP team utilized geospatial analysis to evaluate the influence of Residential Use, Sensitive Receptors, and Historic Properties on each link.

8.1 Phase 1 Geospatial Analysis Methodology

The geospatial analysis relied on a strategy referred to as a “Weighted Sum Analysis.” This method assigns values to the variables that are then combined to create a raster surface. The analysis utilized the three variables listed above: Residential Use, Sensitive Receptors, and Historic Properties. The three variables were then combined with roads and existing transmission lines to create a Composite. The values for the variables are as follows:

- Excluded Areas (ADOT and UPRR ROWs): 0
- Residential Use: 2
- Sensitive Receptors: 1
- Historic Properties: 1
- Areas not designated as one of these variables, such as transmission line corridors and existing road ROWs, were given a default value of 3 (as labeled on the following figures).

8.1.1 Residential Use Analysis

The first step was to prepare a layer that depicted residential use in the study area. This layer was prepared by digitizing these areas from aerial imagery and using Bing building footprint data acquired from Pima County GIS. This data was given an influence value of “2” (on a scale of 0—3, with 3 being good). It was then converted to a raster surface layer so that the data could be analyzed using the Weighted Sum Analysis. The analysis summed the value of the links and the surface layer value(s), giving the links an updated value. Links intersecting with residential areas received a lower score than links that did not. Figures 3a–d highlight the Phase 1 Residential Use geospatial process.

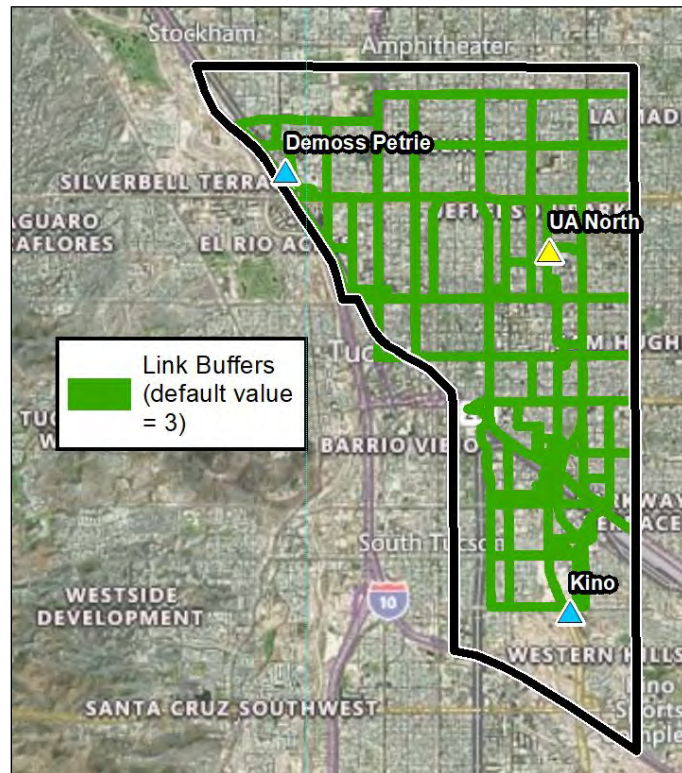


Figure 3.a. Phase 1 links with a default value of “3.”

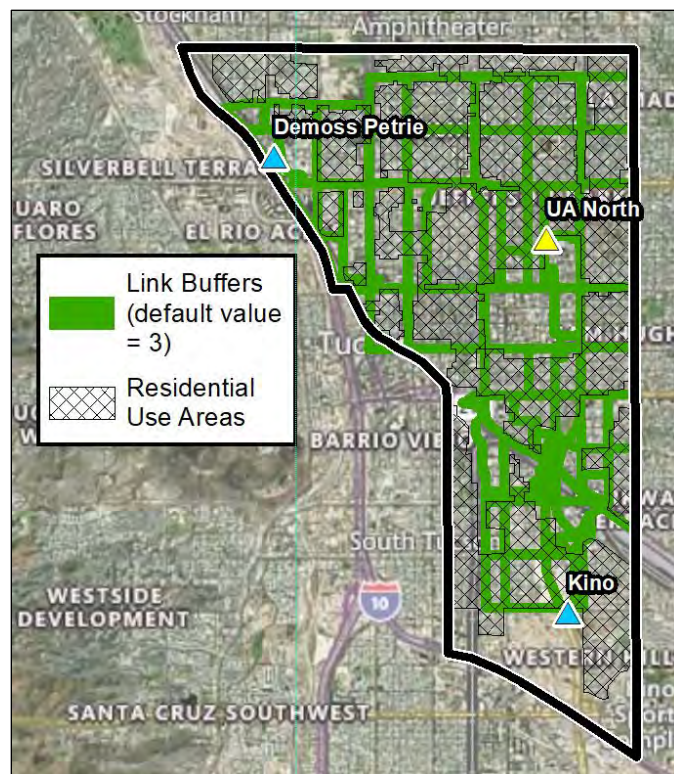


Figure 3.b. Links with intersecting Residential Use areas.

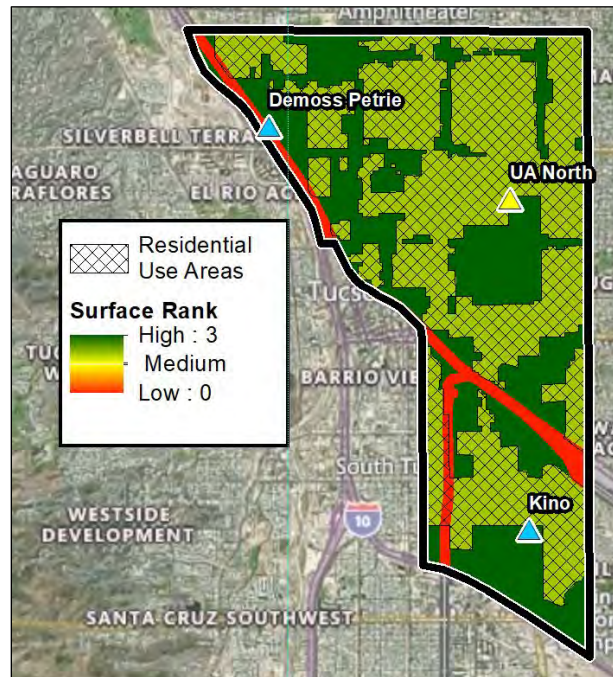


Figure 3.c. The Residential Use layer converted to a raster surface layer. Lighter green areas indicate where the surface has a value of 2 because it is Residential Use. Areas in darker green have a value of “3” because they are not Residential Use and reflect the default value of “3.” Red areas have a value of “0” (excluded areas).

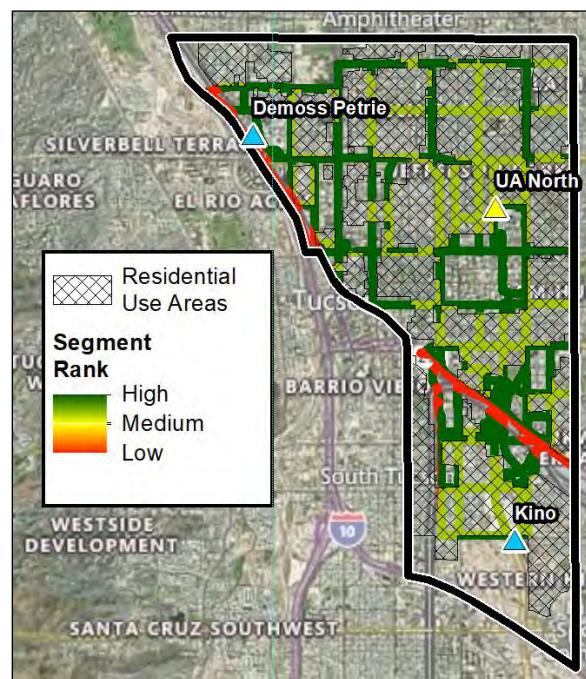


Figure 3.d. Weighted Sum Analysis. Note the links have changed color, and thus received a lower ranking where they intersect with residential areas.

8.1.2 Sensitive Receptor Analysis

The first step was to prepare a layer that depicted Sensitive Receptors in the study area. This layer was prepared by using point data acquired from Pima County GIS. The layer includes the locations of schools, hospitals, skilled nursing facilities, daycare centers, and rehabilitation facilities. Each point was given a 300-foot buffer from the parcel boundary. The data was given an influence value of 1 (on a scale of 0–3, with 3 being good). It was then converted to a raster surface layer so that the data could be analyzed using the Weighted Sum Analysis. The analysis summed the value of the links and the surface value, giving the links an updated value. Links intersecting with Sensitive Receptor buffers received a lower score than links that did not. Figures 3e–g highlight the Phase 1 Sensitive Receptor geospatial process.

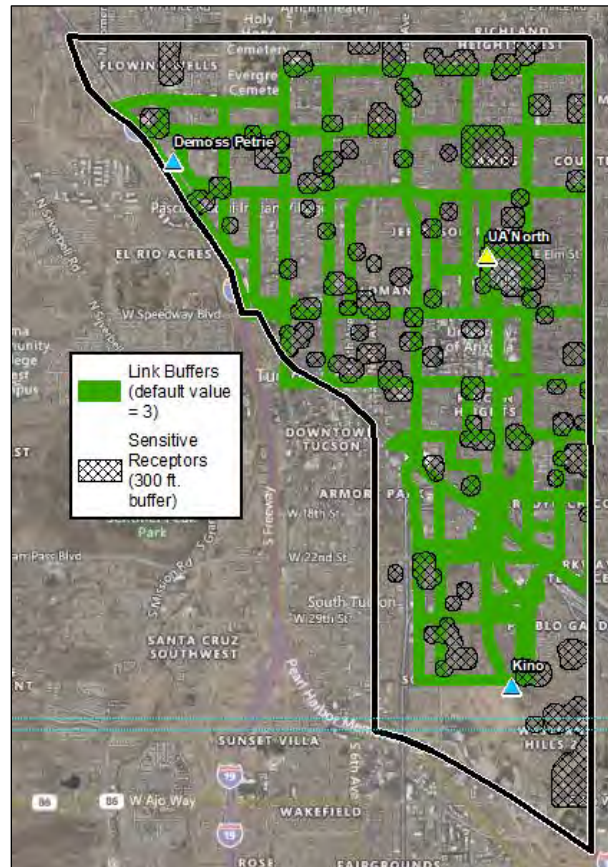


Figure 3.e. Links with Sensitive Receptor buffers.

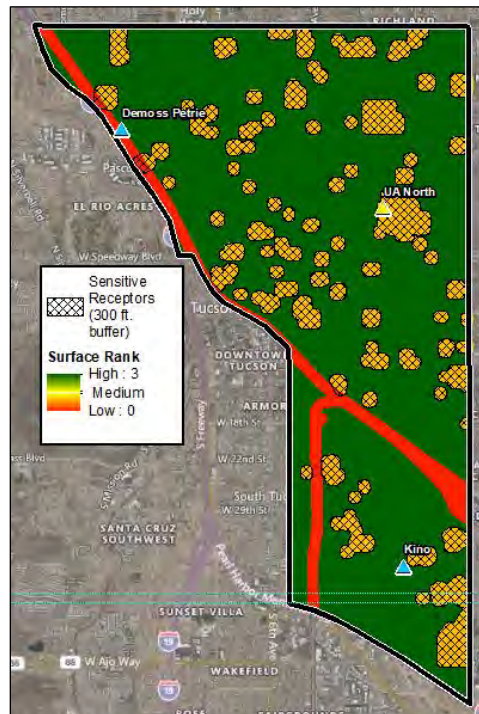


Figure 3.f. The Sensitive Receptor layer converted to a raster surface layer. Orange areas indicate where the surface has a value of 1 because it is within the 300-foot buffer of a Sensitive Receptor. Areas in dark green have a value of 3 because they are not within the buffer of a Sensitive Receptor. Red areas have a value of 0 (excluded areas).

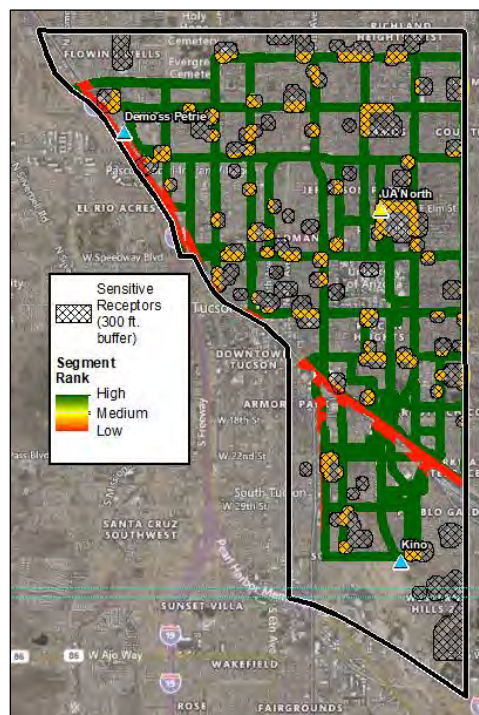


Figure 3.g. Weighted Sum Analysis. Note the links have changed color, and thus received a lower ranking where they intersect with Sensitive Receptors.

8.1.3 Historic Properties Analysis

The Historic Properties analysis was applied similarly to the Sensitive Receptors analysis. Historic Properties (building footprint data was acquired from City of Tucson GIS) were given 300-foot buffers from the parcel boundary. This data was given an influence value of 1 (on a scale of 0–3, with 3 being good). It was then converted to a raster surface layer so that the data could be analyzed using the Weighted Sum Analysis. The analysis summed the value of the links and the surface value, giving the links an updated value. Links intersecting with the Historic Properties buffers received a lower score than links that did not. Figures 3h–j highlight the Phase 1 historic property geospatial process.

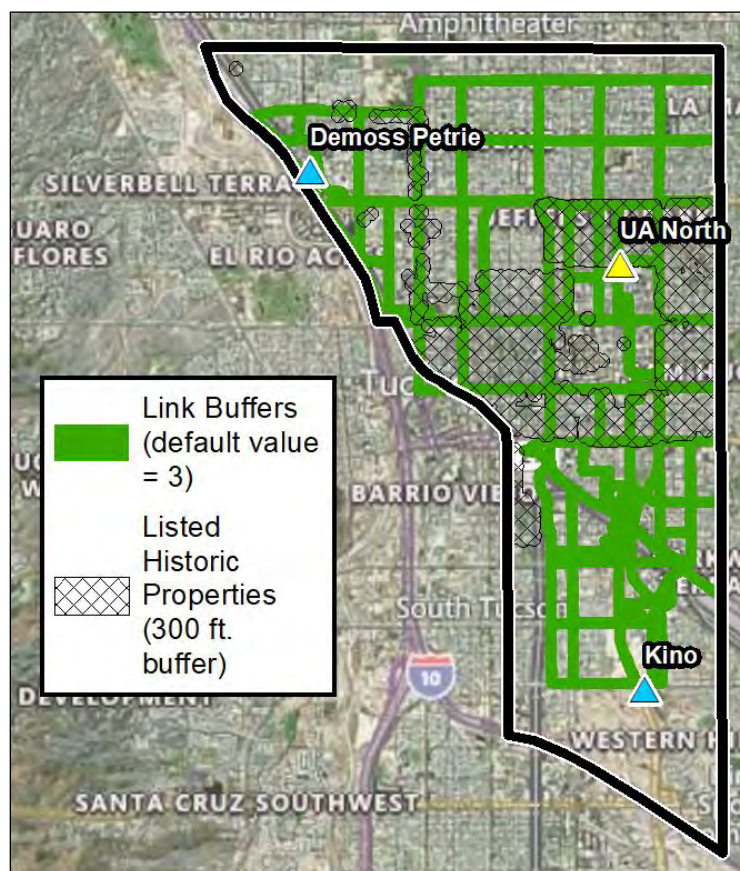


Figure 3.h. Links with Historic Properties buffers.

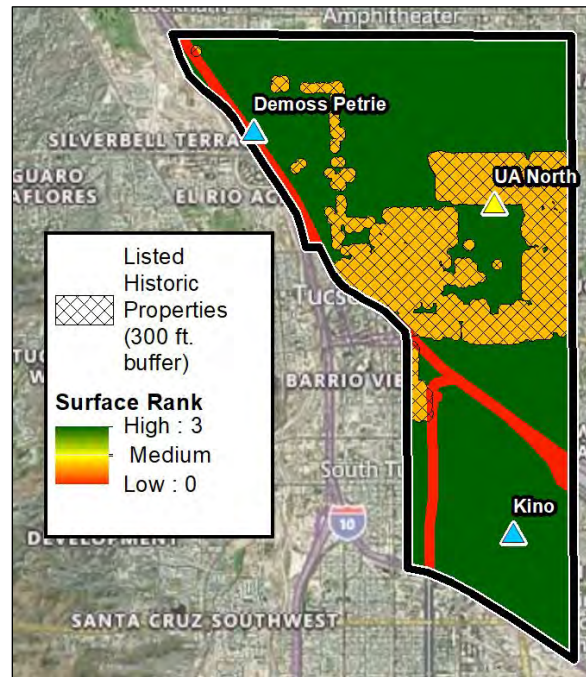


Figure 3.i. The Historic Properties layer converted to a raster surface layer. Orange areas indicate surfaces within the 300-foot buffer of Historic Properties. Areas in dark green have a value of 3 because they are not within the buffer of a Historic Property. Red areas have a value of 0 (excluded areas).

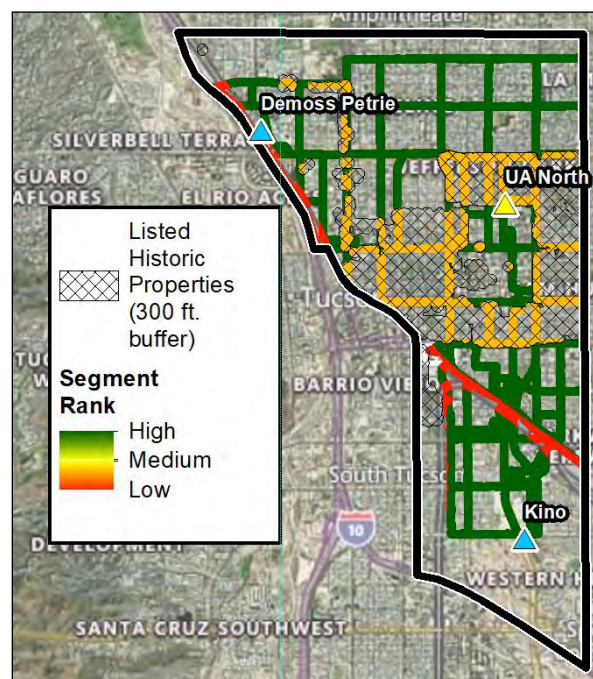


Figure 3.j. Weighted Sum Analysis. Note the links have changed color, and thus received a lower ranking where they intersect with Historic Properties.

The final step for the Phase 1 Analysis was to create a Composite raster surface that combined the values from the 3 variables (Residential Use, Sensitive Receptors, and Historic Properties) into a single raster surface layer (Figure 3.k). The Composite analysis included two additional variables: existing transmission lines and existing road ROWs. The Composite depicts particular locations where rankings change based on the specific combinations of variables. For example, the residential areas north of Grant Road are shown in a pale green, except where they interact with a Historic Property and/or Sensitive Receptor buffer and change to orange (Figure 3.l).

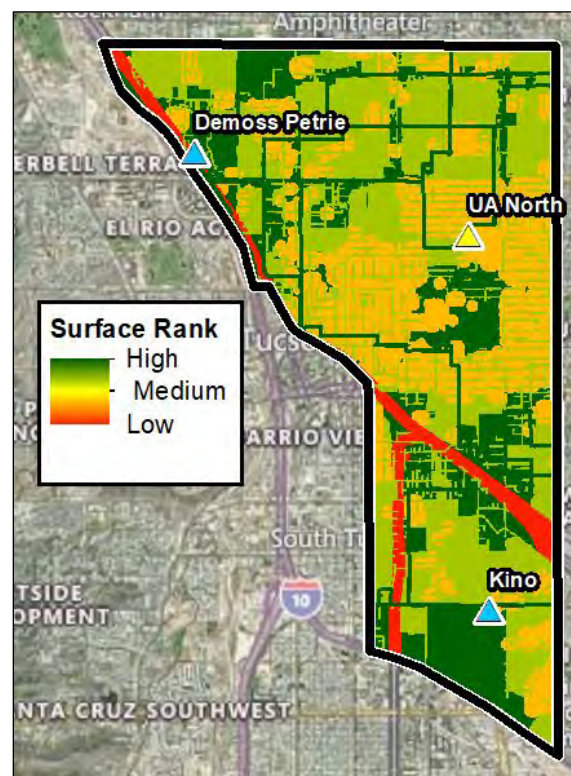


Figure 3.k. Composite raster surface.

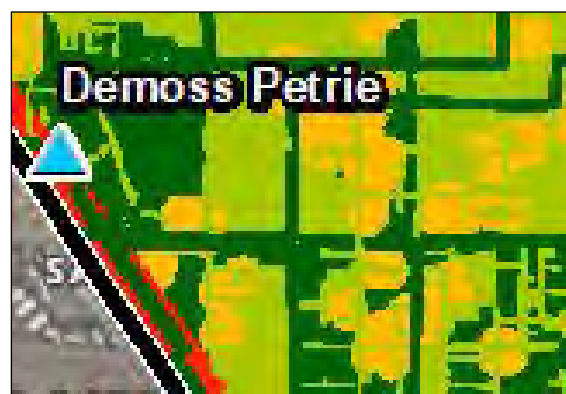


Figure 3.l. Composite raster surface, Grant Road area.

8.2 Phase 1 Geospatial Analysis Results

The results of the geospatial analysis used average pixel range to score each link in order to compare them against each other. The range of numbers shown for each variable are derived from the following:

- The surface value of the entire study area is “3.”
- Where each variable occurs, the study area surface value is replaced with the variable value:
 - Historic Property = “1”
 - Sensitive Receptor = “1”
 - Residential Use = “2”
 - Excluded Area = “0”
- Each link is also assigned a value of “3”
- In the composite score, additional positive influences, such as existing utility corridors, are added to the surface score.

For example, Residential Use score ranged from “4” to “6”. Six is the default score where residential use is not present (Study Area Surface Value “3” + Link Value “3” = “6”).

Typically, the score would be “5” where Residential Use is present (Study Area Surface Value [in this case Residential] “2” + the Link Value “3” = “5”). Scores lower than “5” indicate that some portion of the link is within an excluded area. See Appendix A (Table A.1) for a table of the values assigned to each link.

8.2.1 Residential Use

The average pixel range across the link was 4–6, where the higher number indicates less influence or less potential impact on Residential Use. Figure 4 depicts the influence of Residential Use on the links.

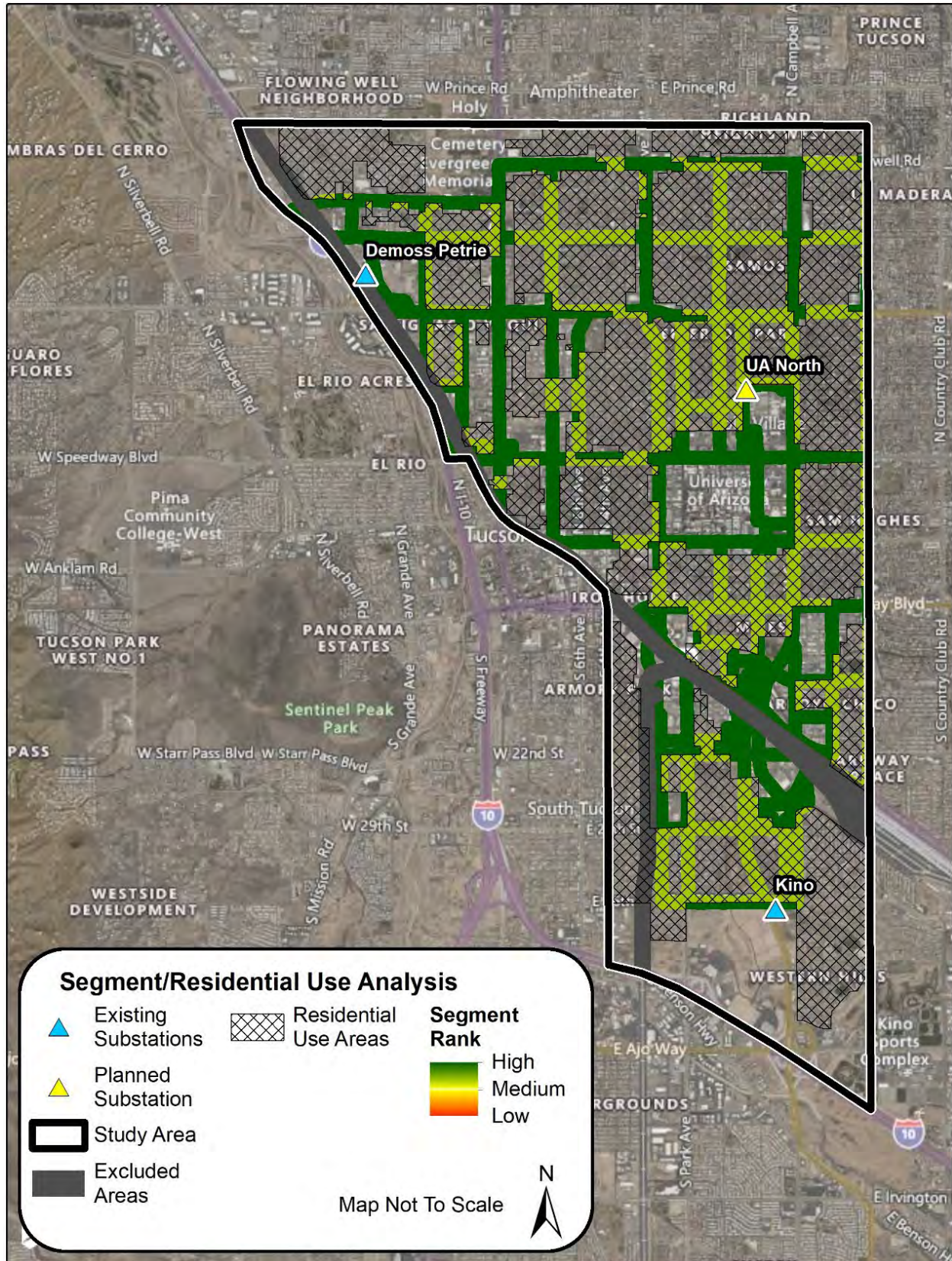


Figure 4. Phase 1 Residential Use Analysis.

8.2.2 Sensitive Receptors

The average pixel range was 4–6, where the higher number indicates less influence or less potential impact on Sensitive Receptors. Figure 5 depicts the influence of Sensitive Receptors on the links. See Appendix A (Table A.1) for a table of the values assigned to each link.

8.2.3 Historic Properties

The average pixel range was 3.5–6, where the higher number indicates less influence or less potential impact on Sensitive Receptors. Figure 6 depicts the influence of Historic Properties on the links. See Appendix A (Table A.1) for a table of the values assigned to each link.

8.2.4 Composite of Residential Use, Sensitive Receptors, and Historic Properties

The average pixel range was 4–5.5, where the higher number indicates less influence or less potential impact from these variables. Figure 7 depicts the influence of the combined variables (Composite) on the links. See Appendix A (Table A.1) for a table of the values assigned to each link.

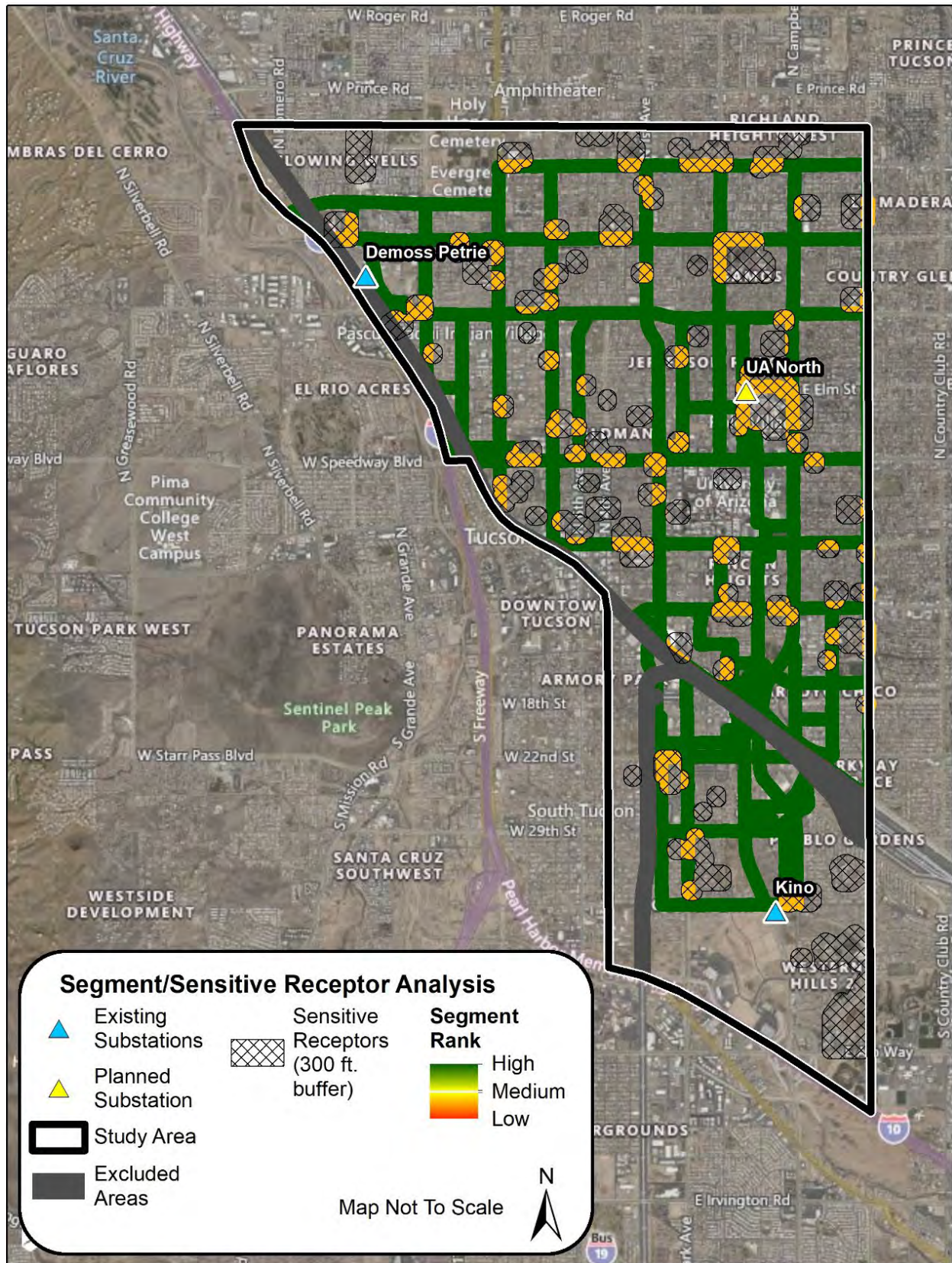


Figure 5. Phase 1 Sensitive Receptor Analysis.

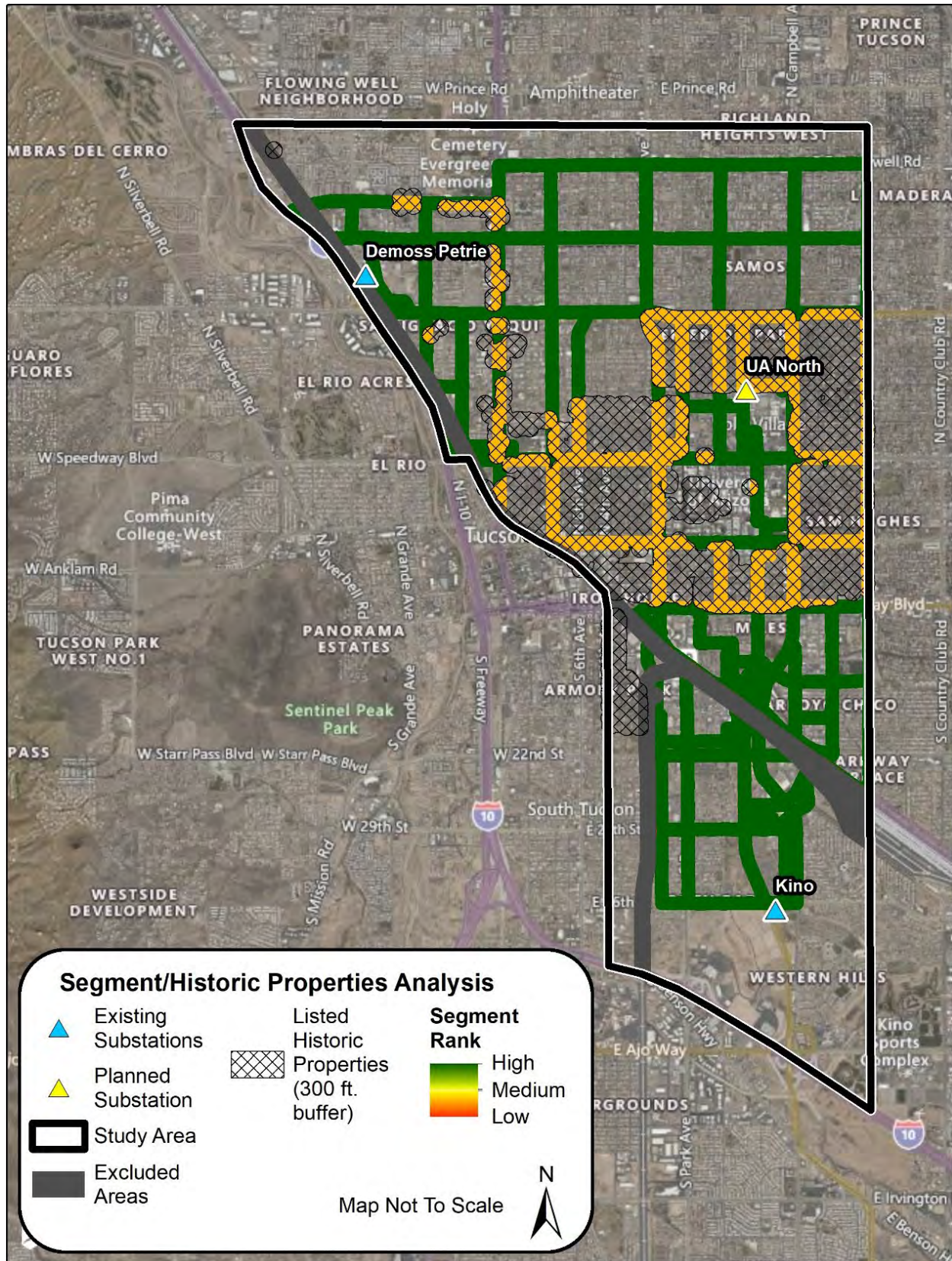


Figure 6. Phase 1 Historic Properties Analysis.

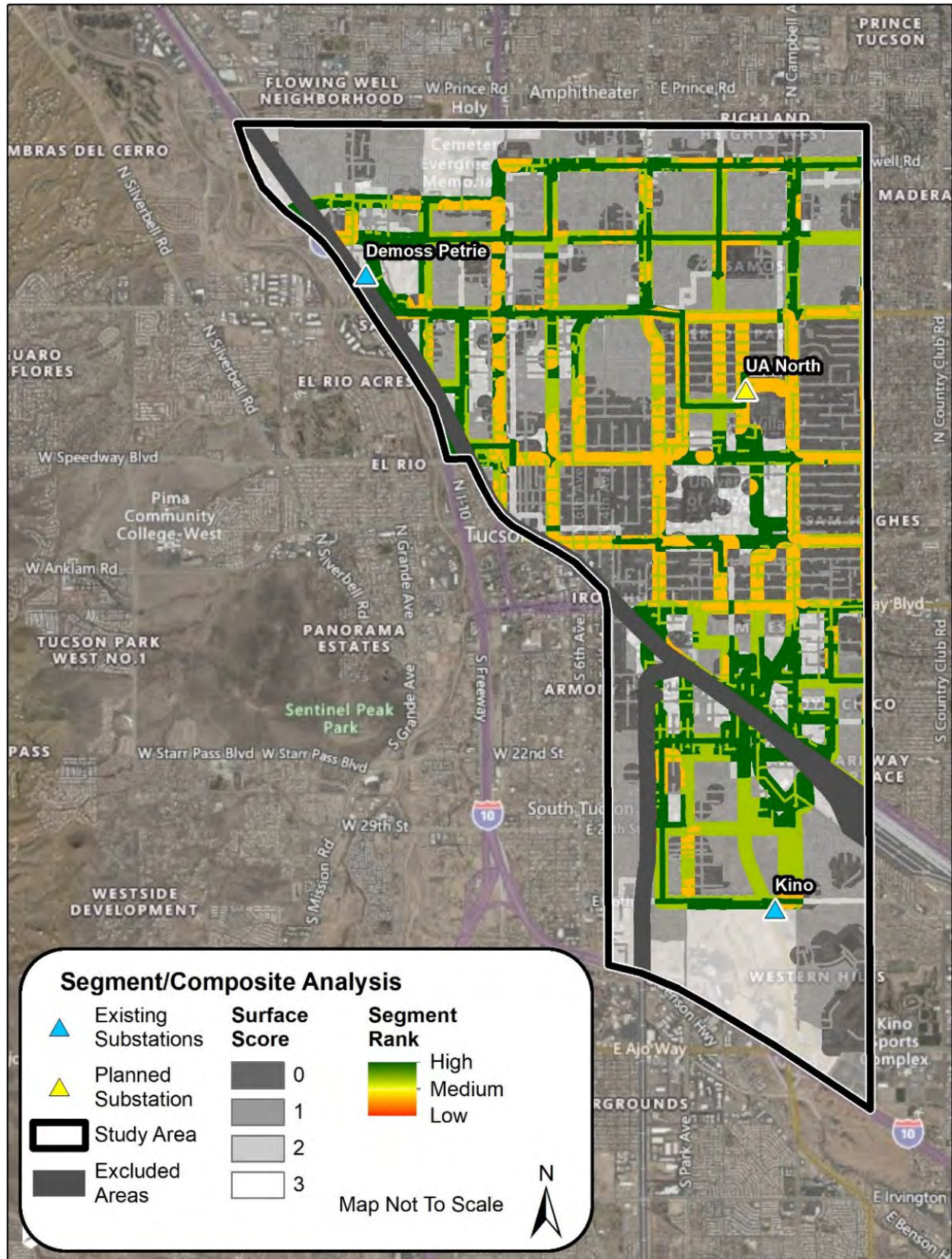


Figure 7. Phase 1 Composite Analysis.

9.0 Step 5b: Phase 1 Public, Stakeholder, and CWG Outreach

As shown in Table 2, TEP received input and data from stakeholders. CWG comments were received following CWG Meetings 1, 2, and 3. Public comments were received throughout the process, which included one round of Public Open House meetings at two separate locations, an online Project Update in April 2020, and an upcoming Virtual Public Open House Meeting in August 2020. Each outreach was preceded by a newsletter and/or postcard mailing.

These comments are located on TEP's Project webpage (<https://www.tep.com/kino-to-demoss-petrie/>).

Table 2. Stakeholder Input

Stakeholder	Input	Response
ADOT	–	TEP excluded ADOT ROWs from the study.
UPRR	UPRR indicated that any parallel facilities should be at least 300 feet from the centerline of the railroad and crossings should be at 0° angle.	TEP excluded a 300-foot buffer on either side of the centerline of the railroad from the analysis. TEP will obtain required permits for UPRR crossings.
	Transmission line across UPRR railyard could have significant impacts on UPRR operations. Look for link that skirts yard or avoids altogether.	Added links 204, 205, 206.
City of Tucson	Sun Link Streetcar cannot be taken out of service for any length of time for construction or operation. Routes should avoid streetcar.	Sam Hughes suggestion to underground along Park and close for pedestrian use does not appear viable.
	Possible streetcar addition on Campbell Avenue/Kino Parkway between River Road and 36th Street. City of Tucson will not know for sure until after CEC application is filed.	Assume that any plans on Campbell Avenue/Kino Parkway could be designed around given ROW width and time until City of Tucson plans would be carried out.
University of Arizona	University of Arizona suggested an additional alternative to Speedway Boulevard between Euclid Avenue and Campbell Avenue be added.	Added links 198, 199, 201.

All input received from the public, stakeholders, and the CWG was considered in the Phase 2 analysis process (see Step 6a) to help inform TEP in making decisions as to which links to utilize in the development of the preliminary alternative route corridors. TEP received over 390 comments related to the location of facilities. Where a commenter specifically mentioned a link as preferable or not preferable, these comments were counted as a single response per commenter and tallied. Figure 8 shows the tally of both preferable and not preferable comments received on each link as of June 16, 2020. A negative number indicates that more not preferable comments were received than preferable comments for that particular link.

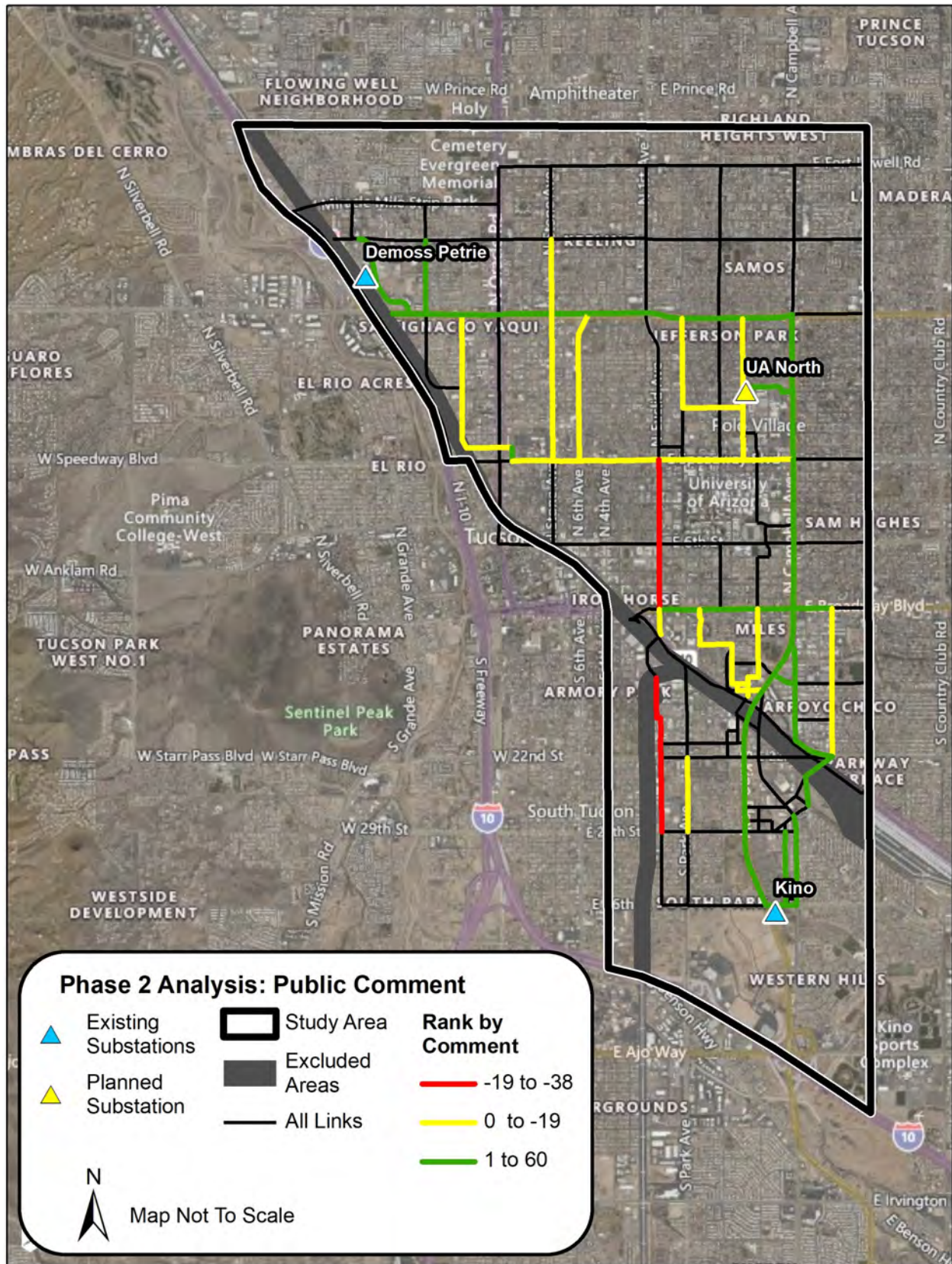


Figure 8. Public, stakeholder, and CWG comment tally.

10.0 Step 6a: Phase 2 Geospatial Analysis

For Phase 2 of the Geospatial Analysis, data from Phase 1 was used as a starting point, which added the influence of public, stakeholder, and CWG comments on the links and constructability values determined by TEP Engineering staff in the E/C Assessment. Figure 9 shows the comments on each link converted to raster surface values. The values assigned to the link comments in Phase 2 were:

- 1 to 60 = **3**
- 0 to -12 = **2**
- -13 to -38 = **1**

Links not receiving public comment during Phase 1 received a default value of **3**.

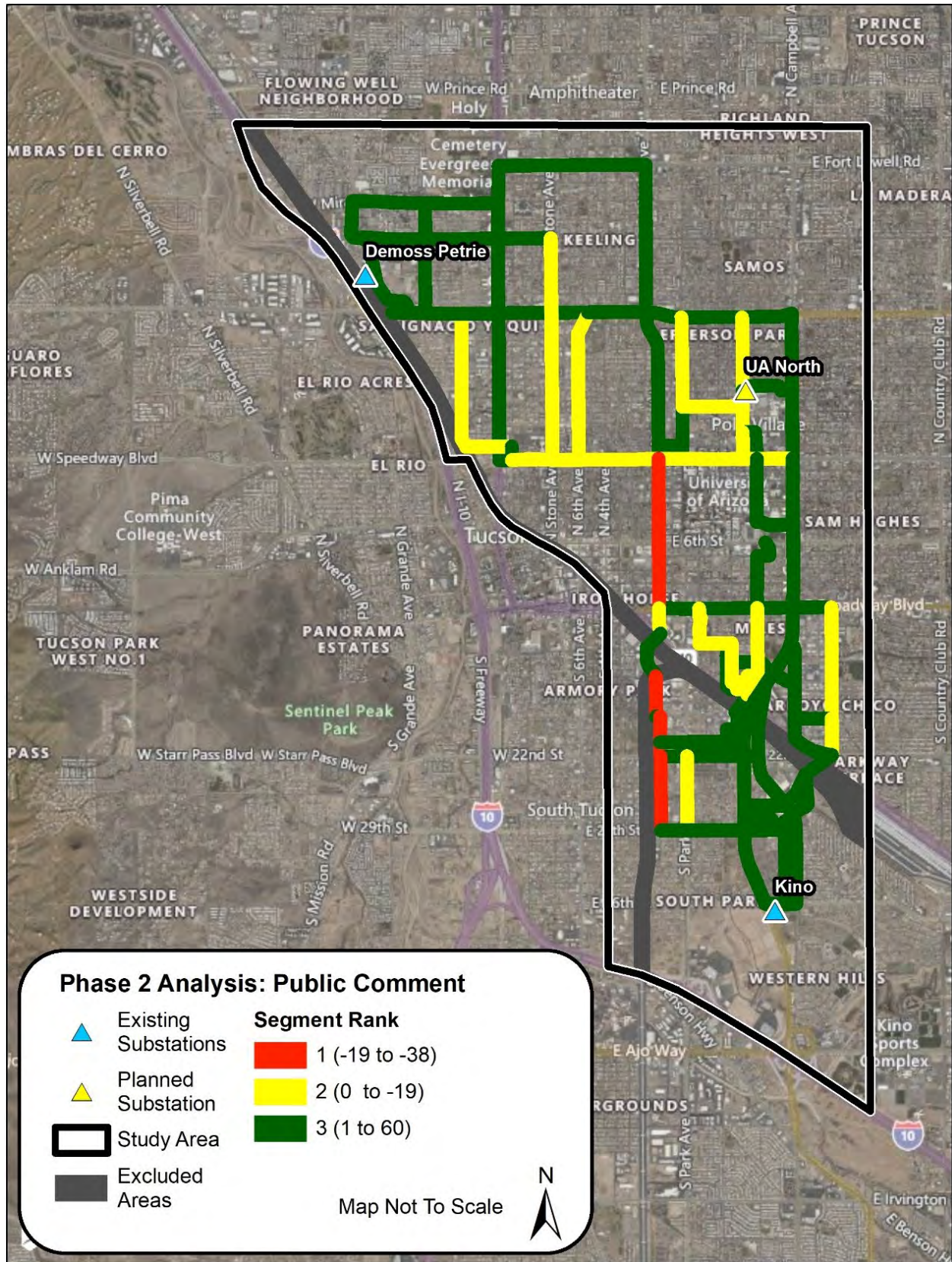


Figure 9. Phase 2 public, stakeholder, and CWG comment analysis.

The 164 links that were remaining at the end of the Phase 1 analysis were then re-evaluated in a comprehensive E/C Assessment during Phase 2. The links were evaluated and scored based on the following factors:

- TEP overhead/underground line conflicts/constraints.
- TEP underground required/sufficient room for new TEP underground facilities.
- TEP outage requirements.
- Communications attachments located on existing structures that would require relocation.
- Other electric utility conflicts.
- Sidewalk conflicts.
- Storm drain conflicts.
- Easements required.
- Roadway improvement conflicts.
- Gas line conflicts.
- Pima County Waste Water conflicts.
- Tucson Water line conflicts.
- Other conflicts.

The E/C Assessment values can be viewed in Figure 10 and Appendix B (Table B.1).

Following Phase 2 analysis, eight additional links were eliminated (Figure 11). Six links were also added based on stakeholder input and due to additional splitting of existing links (Figure 12). Table 3 lists the links that were removed from and added to the analysis as a result of the E/C Assessment and the reasons why they were removed or added. The E/C Assessment will be revised following Phase 2 analysis and used in ranking the alternative routes used in the CEC application.

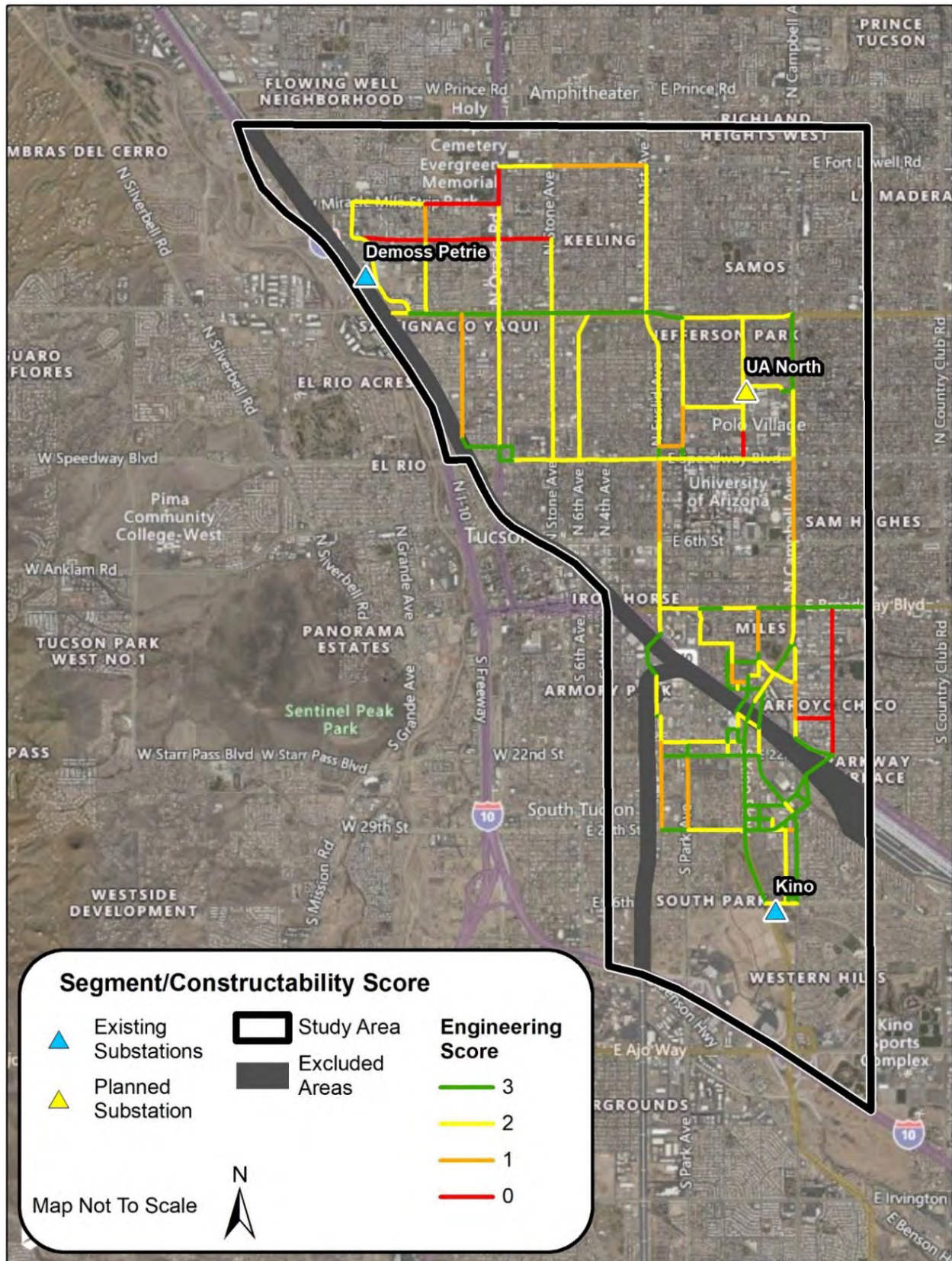


Figure 10. Phase 2 E/C Assessment Scores.

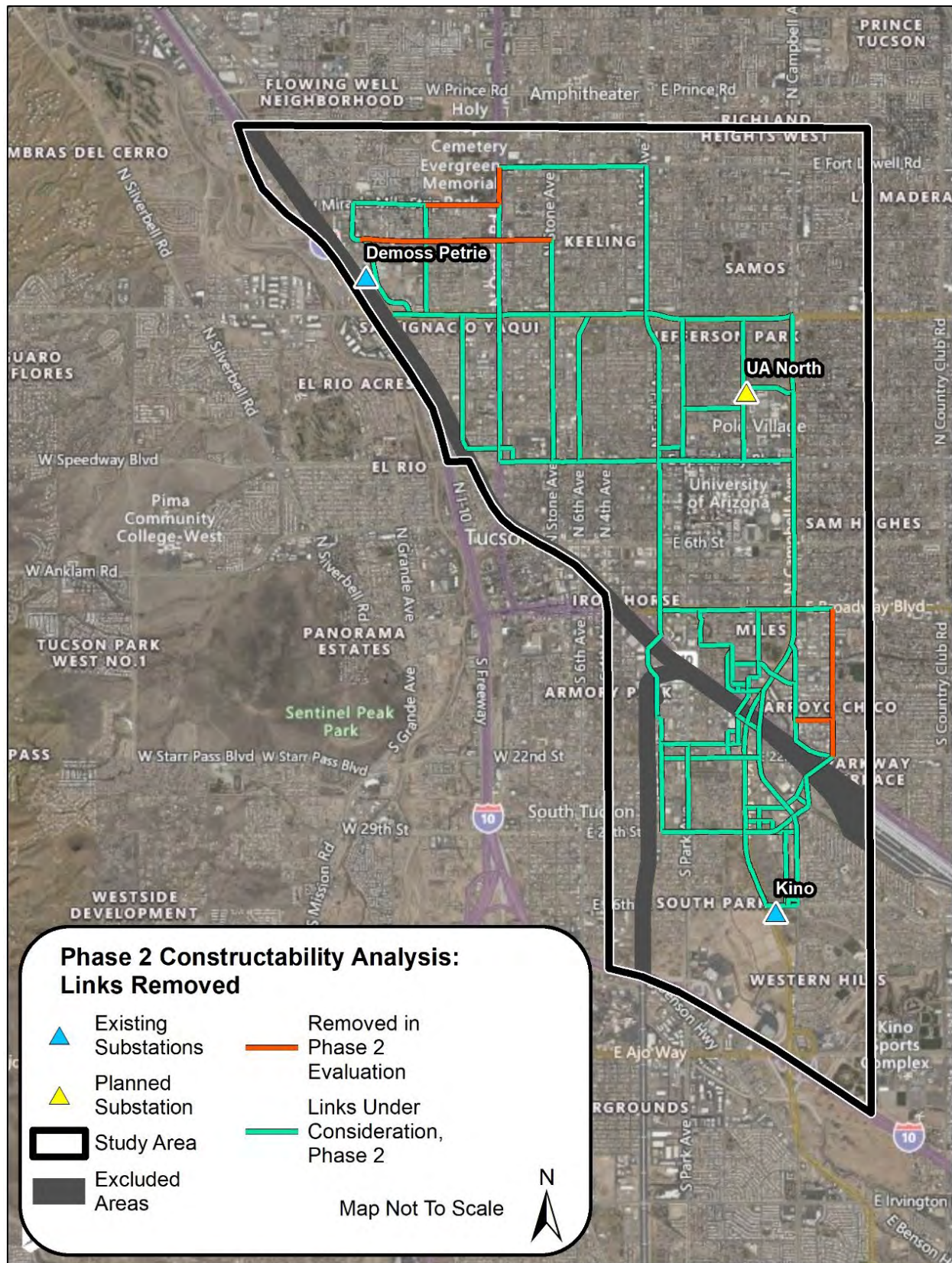


Figure 11. Phase 2 links removed.

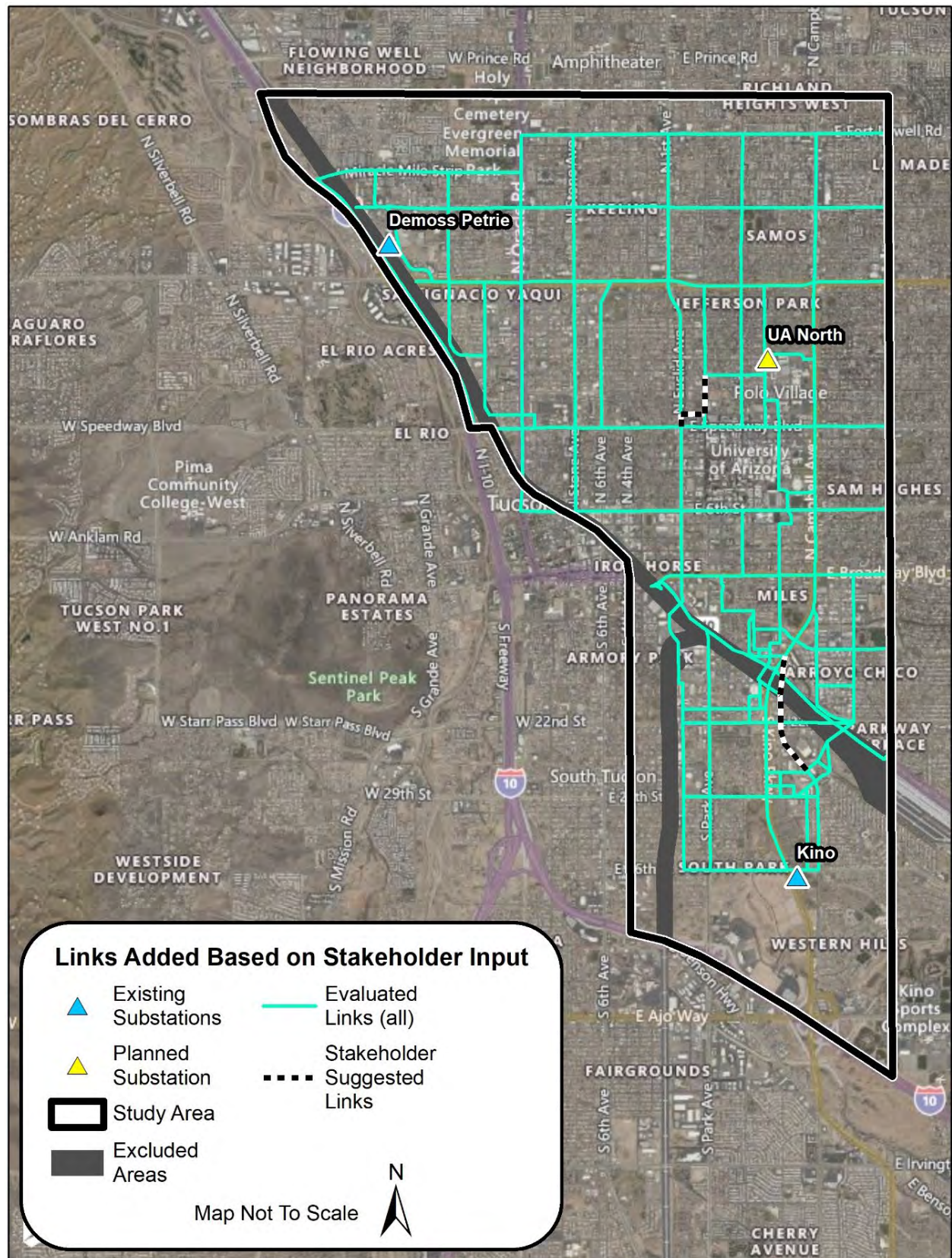


Figure 12. Phase 2 links added.

Table 3. Segments Removed and Added During the E/C Assessment

Segment No.	Road	Segment	Removed (R) or Added (A)	Primary Reasons for Removal/Addition
2	Glenn	Fairview–Flowing Wells	R	Distribution Circuit is currently underbuilt on the existing 138kV line. There is not enough room to underground the existing overhead distribution line and build a double-circuit 138kV line in same ROW due to other utilities.
3	Glenn	Oracle–Fairview	R	Distribution Circuit is currently underbuilt on the existing 138kV line. There is not enough room to underground the existing overhead distribution line and build a double-circuit 138kV line in same ROW due to other utilities.
4	Glenn	Stone–Oracle	R	Distribution Circuit is currently underbuilt on the existing 138kV line. There is not enough room to underground the existing overhead distribution line and build a double-circuit 138kV line in same ROW due to other utilities.
37	Oracle	Ft. Lowell–Miracle Mile	R	Not enough room due to existing utilities on the east side and limited available ROW on the west side.
68	Miracle Mile	Oracle–Fairview	R	Not enough room due to existing utilities on the south side and a storm drain on the north.
90	Plumer	19th–Broadway	R	Due to the number and locations of utilities along this corridor, it is not feasible to fit an additional transmission line.
97	19th Street	Plumer–Campbell	R	Due to the number and locations of utilities along this corridor, it is not feasible to fit an additional transmission line.
98	Plumer	19th–22nd	R	Due to the number and locations of utilities along this corridor, it is not feasible to fit an additional transmission line.
198	Euclid	Speedway–Helen	A	Added as an alternative to Speedway Blvd. in this area.
199	Helen	Euclid–Park	A	Added as an alternative to Speedway Blvd. in this area.
201	Park	Helen–Alley	A	Added as an alternative to Speedway Blvd. in this area.
204	Warehouse/Cherry	Kino–2nd	A	Added as an alternative to crossing the UPRR railyard.
205	Cherrybell	Willets–22nd	A	Added as an alternative to crossing the UPRR railyard.
206	cross-country	Warehouse–Kino	A	Added as an alternative to crossing the UPRR railyard.

10.1 Phase 2 Geospatial Analysis Results

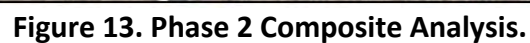
In order to better visualize the results of the Phase 2 analysis, two additional composite views were developed. The first included raster data sets of the E/C Assessment data and the links ranked by public comment (Figure 13). The second combined the Phase 1 Composite (Residential Use, Sensitive Receptors, and Historic Properties) and the Phase 2 Composite (Comments, E/C Assessment) (Figure 14).

The Phase 2 Composite Analysis (see Figure 13) highlights the interaction of the constructability assessment and the public, stakeholder, and CWG comments received. Links that were ranked “3” because of favorable or no public comment may have had their rank reduced because of constructability constraints.

When comparing the Phase 1 Composite Analysis (see Figure 7) with the Phase 2 Composite Analysis, it is evident that constructability and input from the public, stakeholders, and CWG impacted some of the links. For example:

- Euclid Avenue between Broadway Boulevard and Speedway Boulevard changed from yellow-orange to orange and red.
- Campbell Avenue between Broadway Boulevard and Speedway Boulevard changed from yellow-orange to yellow and green.
- Broadway Boulevard between Campbell Avenue and Euclid Avenue changed from yellow-orange to green.
- Vine Avenue between Speedway Boulevard and Helen Street changed from green to red.

The Phase 1/Phase 2 Composite Analysis (see Figure 14) combined the composite rasters from Phases 1 and 2. It reflects the influence of public comments and constructability on the Phase 1 variables. Initial visual analysis shows, for example, that while Speedway Boulevard and Grant Road retained their ranking from Phase 1, other streets including Euclid Avenue, Plumer Avenue, and stretches of Miracle Mile became less favorable, and portions of Campbell Avenue/Kino Parkway became more favorable.



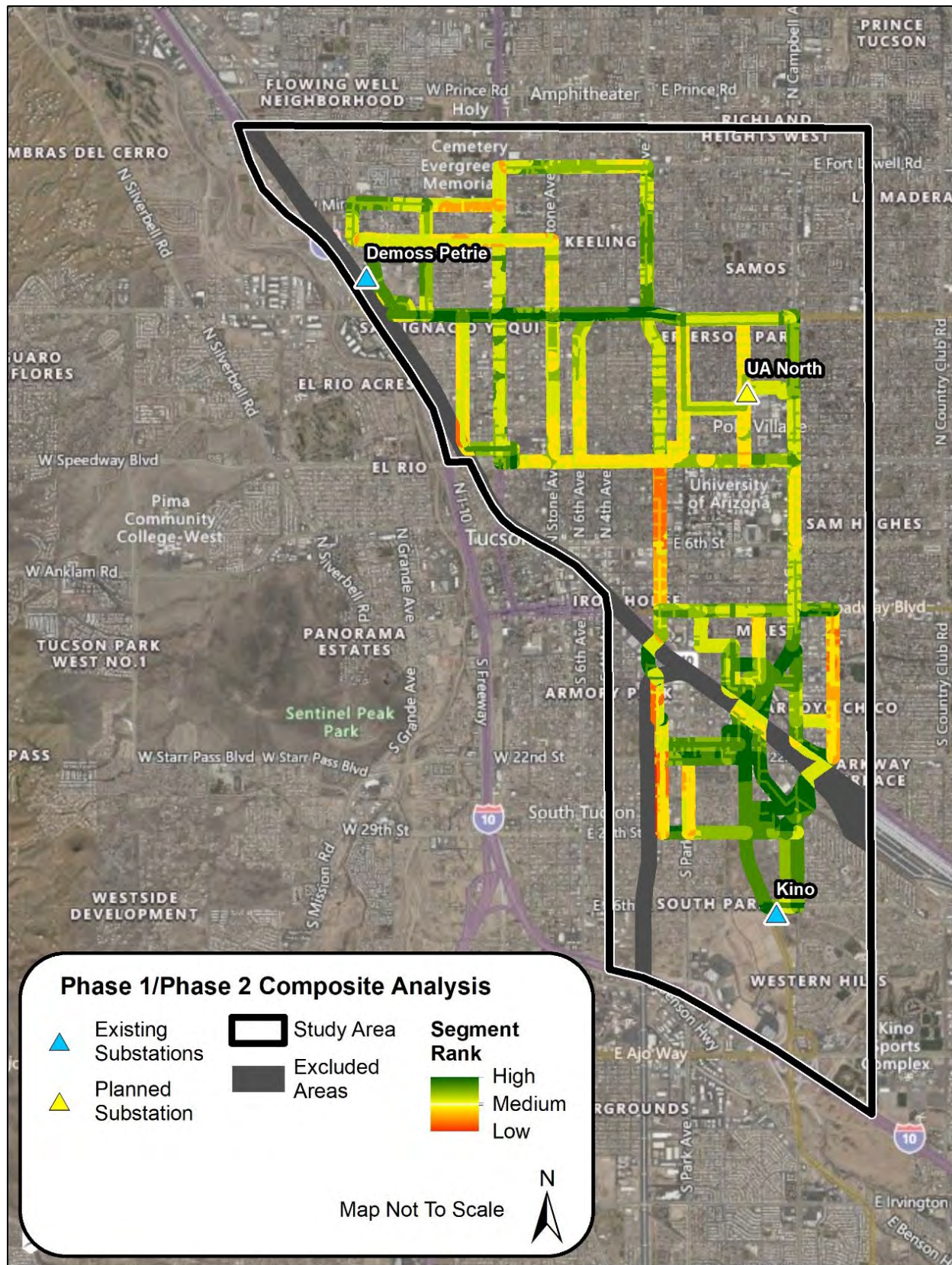


Figure 14. Combined Phase 1/Phase 2 composite analysis.

11.0 Step 6b: Develop Preliminary Alternative Route Corridors

The results of the Phase 1 and Phase 2 analyses, which highlight the influence of the variables on the preliminary links, guided the development of six preliminary alternative route corridors (Routes 1–6) that could connect the Kino Substation to the planned UA North Substation, and four preliminary alternative route corridors (Routes A–D) that could connect the planned UA North Substation to the DMP Substation (Figure 15; see Appendix C for individual route corridor maps). Note that one numbered route corridor and one lettered route corridor must be combined to create a single Kino to DMP 138kV Transmission Line route corridor. Where a numbered route corridor and a lettered route corridor overlap, the two cannot be combined, as this would not serve the Project’s purpose and need for system redundancy. These route combinations are not feasible:

- Route 1 cannot be combined with Route D.
- Route 2 cannot be combined with Route D.
- Route 3 cannot be combined with Route B.
- Route 4 cannot be combined with Route C.
- Route 5 cannot be combined with Route B.
- Route 6 cannot be combined with Route C.
- Route B cannot be combined with Routes 3 or 5.
- Route C cannot be combined with Routes 4 or 6.
- Route D cannot be combined with Routes 1 or 2.

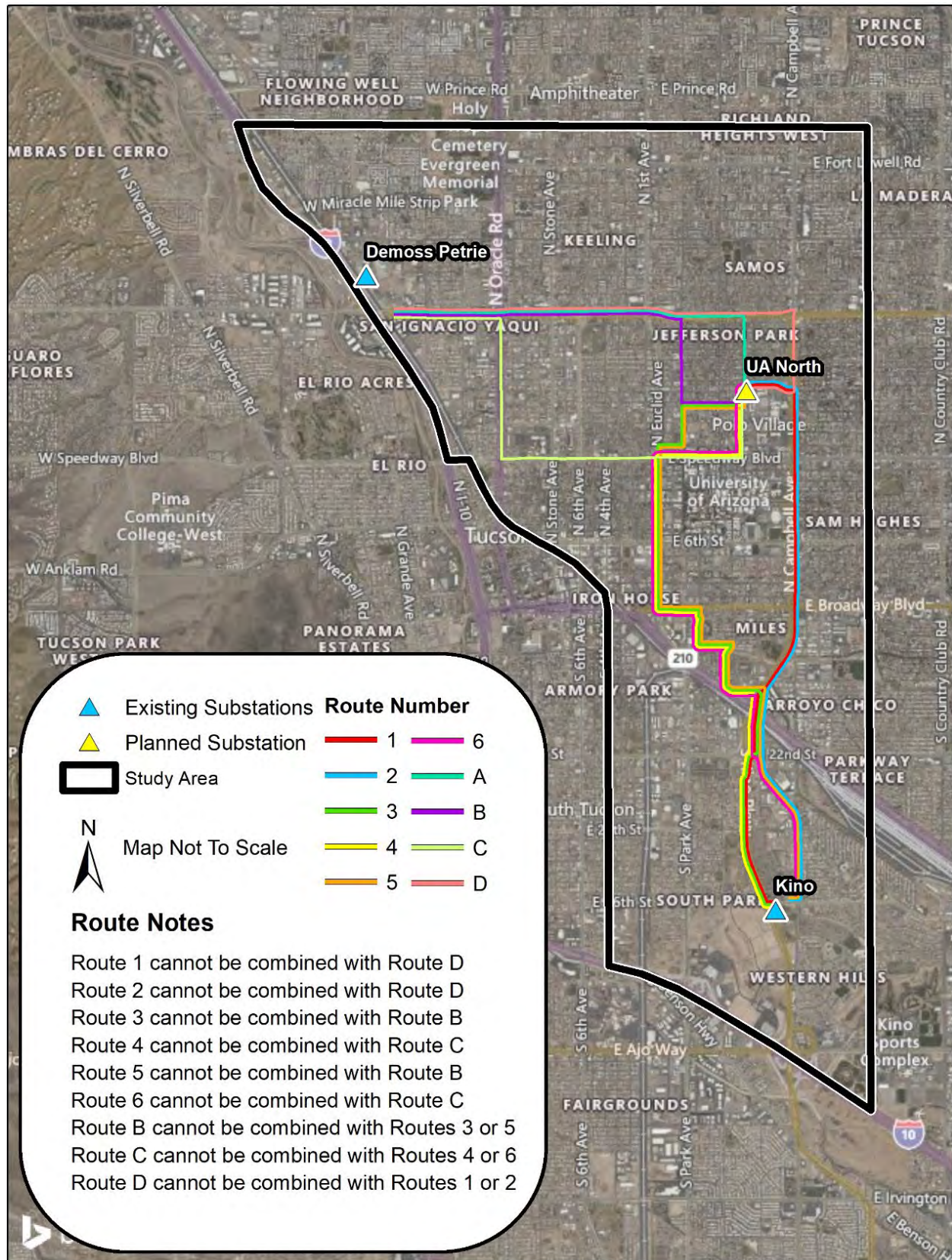


Figure 15. Preliminary route corridor overview.

12.0 Step 6c: Preliminary Alternative Route Corridor Analysis

Appendix D includes a summary analysis of the Phase 1 and Phase 2 link analyses with the preliminary alternative transmission line route corridors overlaid. This allows visual comparison of the influence of the variables used in each stage of the analysis.

Once the preliminary alternative route corridors were developed, the route corridors were analyzed under the same criteria as the links in Phase 1—Residential Use, Sensitive Receptors, Historic Properties, and a Composite of all three criteria (see Appendix E for a table of the results). The Route Corridor Analysis maps can be viewed in Appendix F. In addition, TEP completed an additional analysis where the positive influence of existing roads and TEP facilities was removed and the influence of the Phase 1 criteria and constructability on each route corridor was assessed; these maps can be viewed in Appendix G.

13.0 Step 7: Phase 3 Alternative Route Corridor Narrowing

Phase 3 analysis involved the completion of a multi-objective decision model for the twelve preliminary routes. Between the Phase 2 and Phase 3 analyses, it was discovered that Route C could not be constructed due to a planned UA development on Vine Road. As a result, Route C was removed, and a new Route E was developed that could link the UA North Substation to the DMP Substation.

In addition, TEP added Route Combinations 1d and 2d to the analysis. Previously, TEP had concluded these routes could not be combined, as a double-circuit line would not meet the Project's purpose and need for redundancy and reliability. TEP received many comments as to why these routes could not be combined. TEP took another look at the portion of the route along Elm Street/Ring Road/Chauncy Lane between Campbell Avenue and the UA North Substation and determined that, with easement acquisition on private land, a single-circuit line could be placed on both the north and south sides of these roads in order to combine Routes 1 and 2 with Route D. Therefore, for the purposes of the Phase 3 analysis, the 12 routes analyzed were 1a, 1b, 1d, 1e, 2a, 2b, 2d, 2e, 3a, 3d, 5a, and 5d (Figure 16).

Review of public, stakeholder, and CWG comments; geospatial analysis; and the results of independent studies were used to weight and score the 12 evaluation criteria with the goal of determining the applicable ranking for each alternative. Details of how criteria were classified into three general rating categories is described below.

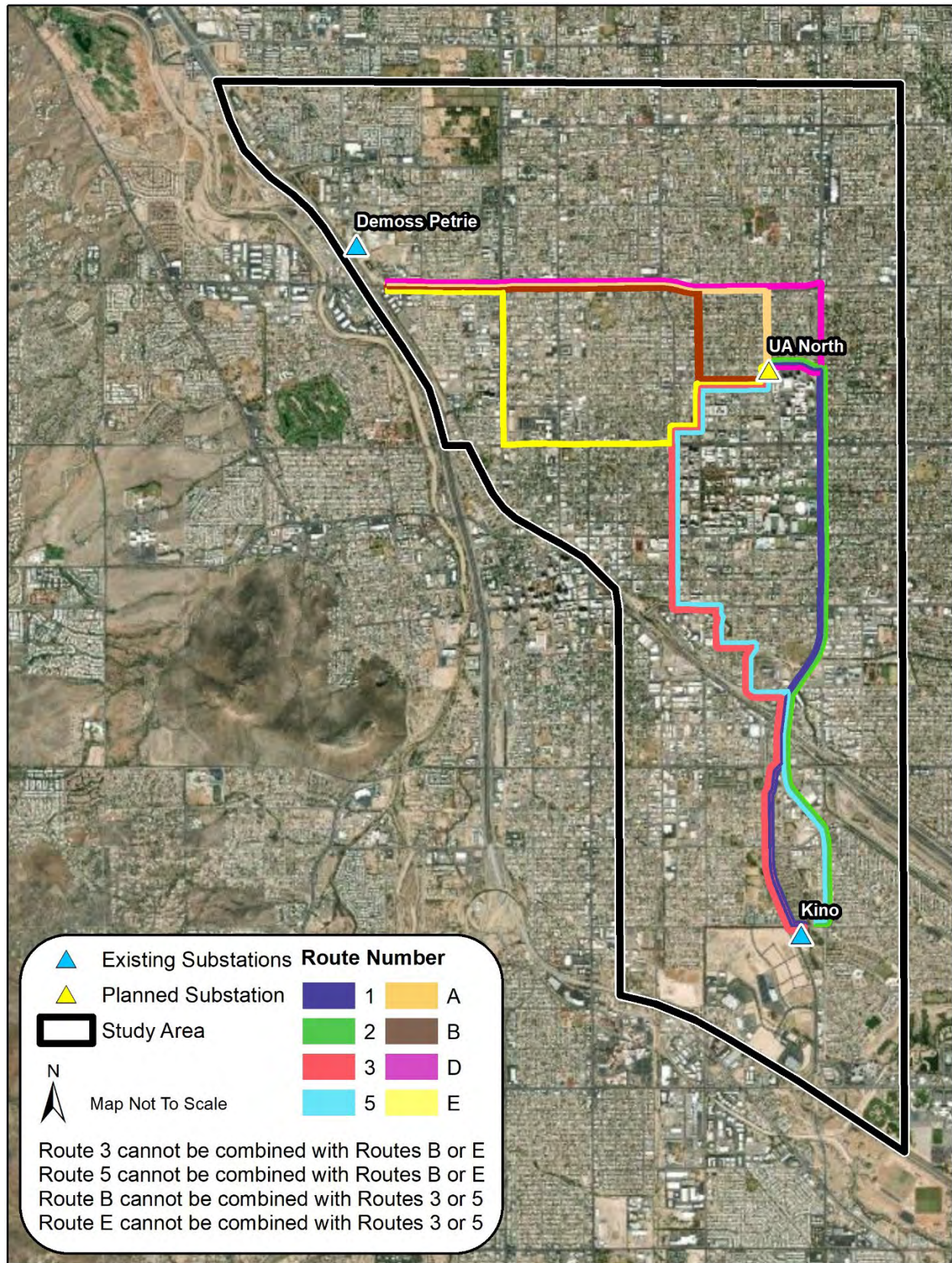


Figure 16. Preliminary Alternative Routes used in Phase 3 Analysis.

The ratings for the criteria of most concern (Residential Use, Historic Properties/Districts, Sensitive Receptors, and Viewshed) were weighted and their scores adjusted. Alternatives with higher total numeric scores are considered to have fewer constraints to construction, while alternatives with lower scores are considered to have more constraints.

Of note, TEP asked members of the CWG to rank the criteria in order of importance. Seven neighborhoods responded: Blenman-Elm, Feldman's, Jefferson Park, Miles, Pueblo Gardens, Sam Hughes, and West University. Using each neighborhood's top four concerns, the primary concerns of the CWG (those that responded) were tallied. In addition, public comments was also reviewed and tallied to determine the percentage of total comments that related to the criteria analyzed. These results are shown in Table 4.

Table 4. Criteria Survey and Public Comment Results

Criteria	Tally (Out of 7)	% of Neighborhoods	% Public Comment ^a
Existing Corridor	4	57	0
Existing & Planned Land Use	2	29	0
Residential Use	5	71	84
Historic Properties/Districts	5	71	41
Sensitive Receptors	4	59	14
Room for Separation	1	14	0
Viewshed	2	29	33
Special Status Species	1	14	0
Ability to Construct	2	29	0
Cost	2	29	21

^a Percentage of comments as of 10/1/2020; a commenter may have submitted more than one comment on the same topic.

13.1 Phase 3 Results

A discussion of the rating of the alternatives within each of the 12 criteria categories is provided in the following paragraphs. Table 5, at the end of this report, summarizes the results of the criteria ratings or "scores" (i.e., 3, 2, or 1) applied to each of the project alternatives and provides a total numeric score for each alternative. Figures referenced in this section of the report are located in Appendix H.

13.1.1 Criterion 1—Presence/Absence of Existing Corridor and Ability to Use the Corridor.

Using Criterion 1, each alternative was scored based on the percentage of the preliminary alternative route that was in an existing road ROWs. In addition, the percentage of the proposed transmission line that could co-locate on an existing TEP power line or replace an existing TEP power line was determined. For this project, all instances are the replacement of existing 46kV

sub-transmission lines with the proposed new 138kV transmission line (see Appendix H, Figure H.1).

The percentages of each route in existing road ROWs ranged from 93.01 to 96.61%. The percentage of each route involving 46kV sub-transmission line replacement ranged from 6.78 to 21.42%. These two percentages were added together to form a percentage total that was then assigned a comparison score.

A score of 3 was given to alternatives with a percentage total higher than 116. A score of 2 was given to alternatives with a percentage total of 105–116. A score of 1 was given to those alternatives with a percentage total less than 105.

Alternatives 1b and 2b scored a 3. Alternatives 1e, 2e, 3a, 3d, and 5a scored a 2, and Alternatives 1a, 1d, 2a, 2d, and 5d scored a 1 (see Appendix H, Table H.1 for additional details).

13.1.2 Criterion 2—Existing and Planned Land Use is Compatible with its Use as a Transmission Line Corridor

Using Criterion 2, each alternative was scored based on the presence/absence of compatible land uses and whether the transmission line had the potential to negatively impact existing or planned land use designations such as a large land acquisition, reduction in business parking areas, etc. Land use designations obtained from the City of Tucson and Pima County were used to inform the analysis and ranking.

A score of 3 was given to those alternatives that were compatible with and would not negatively impact the local land use plans and would not require additional coordination, approvals, or mitigation. A score of 2 was given to those alternatives that were compatible with and/or would have a moderate impact on the local land use plans and would require additional coordination or approvals. A score of 1 was given to those alternatives that were not compatible with and/or would have a significant impact on the local land use plans or are compatible with mitigation, but mitigation would be approaching cost-prohibitive.

All alternatives are compatible with local land use plans and would not negatively impact land use designations, and all were given a score of 3 (see Appendix H, Table H.1 for additional details).

13.1.3 Criterion 3—Existing and Future Residential Land Use

Using Criterion 3, each alternative was scored based on the percentage of existing residential land use within 152 m (500 feet) of each alternative corridor (see Appendix H, Figure H.2). Aerial photographs and site visits were used to interpret the locations of residential use. Future residential land use was determined through a review of Pima County and City of Tucson development plans.

The percentage of existing and future residential use ranged from 43.32 to 58.85%. A score of 3 was given to alternatives with 0% adjacent residential use. A score of 2.5 was given to alternatives between 1 and 25%, a score of 2 was given to alternatives between 26 and 50%, a score of 1.5 was given to alternatives between 51 and 75%, and a score of 1 was given to those alternatives between 76 and 100%.

Alternatives 1a, 1b, 1d, 1e, 2a, 2b, 2d, and 2e scored a 2. Alternatives 3a, 3d, 5a, and 5d scored a 1.5.

Residential use was weighted 5x greater based on public comment (84%) and the CWG survey (71%). Alternatives 1a, 1b, 1d, 1e, 2a, 2b, 2d, and 2e scored a 0.40. Alternatives 3a, 3d, 5a, and 5d scored a 0.30 (see Appendix H, Table H.1 for additional details).

13.1.4 Criterion 4—Historic Property and District Impacts

TEP contracted a Historic District Analysis (also termed a Build Environment Study) to determine the potential impacts of each alternative on historic properties and districts. The study can be reviewed at (<https://www.tep.com/wp-content/uploads/Kino-DMP-Historic-District-Analysis.pdf>). The study considered several factors in the analysis, including:

- *Bisecting vs. Bordering Historic Districts*: Bisecting has a more negative impact than bordering.
- *Street Designation*: Residential streets would be the most impacted, followed by Gateway Routes, collector streets, and arterial streets.
- *Existing Power Poles*: Number of existing power poles as well as their height and spacing were evaluated.
- *Historic Light Fixtures*: Power poles would dwarf historic light fixtures; therefore, routes with no or fewer historic light fixtures would have a less negative impact.
- *Historic Contributing Properties within 800 Feet*: Number of historic contributing properties.
- *Access to Historic Contributing Properties*: Number of properties located directly on the routes that use the street the route is located on for direct access to their properties.
- *Architectural Impact*: Professional historic architect's observation that takes all measurable criteria into account along with the architect's viewpoint of the historic district integrity, scale of project, size of historic district, and architect's impression of each routes impact.

Total scores of the above categories ranged from 505 to 733, where the higher the score, the greater the impact. A score of 3 was given to alternatives with 0% negative impact. A score of 2.5 was given to alternatives that scored 492. A score of 2.25 was given to alternatives that scored

505. A score of 2 was given to alternatives that scored 530, and a score of 1 was given to those alternatives with a score of 695–728. There is a large break between those alternatives with a score of 2 and those that scored a 1.

Alternatives 1d and 2d scored a 2.5, Alternatives 1b and 2b scored a 2.25, Alternatives 1a and 2a scored a 2, and Alternatives 1e, 2e, 3a, 3d, 5a, and 5d scored a 1.

Historic property and district impacts were weighted 3x greater based on public comment (41%) and the CWG survey (71%). Alternatives 1d and 2d scored a 0.83, Alternatives 1b and 2b scored a 0.75, Alternatives 1a and 2a scored a 0.67, and Alternatives 1e, 2e, 3a, 3d, 5a, and 5d scored a 0.33 (see Appendix H, Table H.1 for additional details).

13.1.5 Criterion 5—Presence/Absence of Sensitive Receptors

Using Criterion 5, each alternative was scored based on a review of known locations of Sensitive Receptors (schools, hospitals, nursing homes, daycare facilities, etc.) and their proximity to the proposed alternatives (see Appendix H, Figure H.3). Locations were field-verified and, when in doubt, contacted directly by phone to confirm. The parcel boundary was used as the receptor point. Note that some parcels had more than one Sensitive Receptor on the parcel (a school and a day care for example), which was counted as 1 receptor for the purpose of the study.

If no Sensitive Receptors were located in the buffer, a score of 3 was given. If there were 1–5 Sensitive Receptors, a score of 2.5 was given. If there were 6–10 Sensitive Receptors, a score of 2 was given. If there were 11–15 Sensitive Receptors, a score of 1.5 was given. If there were 16–20 Sensitive Receptors, a score of 1 was given.

Alternatives 1a, 1b, and 1d, received a score of 2. Alternatives 2a, 2b, 2d, 3a, 3d, and 5a received a score of 1.5. Alternatives 1e, 2e, and 5d received a score of 1.

Sensitive receptors were weighted 2x greater based on public comment (14%) and the CWG survey (71%). Alternatives 1a, 1b, and 1d, received a score of 1. Alternatives 2a, 2b, 2d, 3a, 3d, and 5a received a score of .75. Alternatives 1e, 2e, and 5d received a score of 0.5 (see Appendix H, Table H.1 for additional details).

13.1.6 Criterion 6—Room for Separation from Potentially Conflicting Uses in the Corridor

Using Criterion 6, each alternative was scored based on the room for separation from existing utilities and other facilities, such as sidewalks and storm drains, as well as whether there would be outage requirements or any other conflicts in the corridor, as measured by the degree of difficulty to manage the conflicting use and the degree of mitigation required (see Appendix B for constructability analysis). In addition, a significant constraint adjustment was added to those segments of each route that had considerable, “layered” constraints, where the more “layers,”

the higher the adjustment made. Adjustments ranged from 2.3–8.4 points, which were subtracted from the constructability score (see Appendix H, Tables H.2. and H.3) for details of the significant constraint adjustment.

Adjusted scores ranged from 19.95–31.77. A score of 3 was given to alternatives with the least potentially conflicting uses and constraints. A score of 2 was given to alternatives with a greater number of conflicting uses and constraints, but the conflicting uses could be mitigated. A score of 1 was given to those alternatives with the most conflicting uses and significant constraints that would cause construction schedule impacts and for which cost to mitigate would be prohibitive.

Alternatives 1a, 1b, 1d, and 2a were given a score of 3; Alternatives 2b and 2d were given a score of 2; and Alternatives 1e, 2e, 3a, 3d, 5a, and 5d were given a score of 1 (see Appendix H, Table H.1 for additional details).

13.1.7 Criterion 7—Viewshed

TEP contracted a visual impacts assessment to determine the potential impacts of each alternative on viewshed. The study can be reviewed at (<https://www.tep.com/wp-content/uploads/Visual-Impacts-Assessment.pdf>).

The assessment considered:

- Existing vs. future landscape
- Gateway streets
- Types of viewers
- Degree of impact

The level of impacts were categorized as high, moderate-high, moderate, moderate-low, and low. The visual resources expert then scored each route on a scale of 1–3, with 1 being the highest impact and 3 being no impact.

Alternative scores ranged from 2.2–2.53. Viewshed was weighted 2x greater based on public comment (33%) and the CWG survey (29%). All alternative weighted scores were in the 1 range between 1.13–1.26 (see Appendix H, Table H.1 for additional details).

13.1.8 Criterion 8—Known or Potentially Eligible Cultural Resources

TEP contracted a cultural resources specialist to conduct a cultural resources literature and records review, in which locations of recorded cultural resources were overlaid on maps of the study area and the alternatives. The specialist then determined which routes were within cultural sensitivity zones or cultural resource sites, and those routes were scored lower due to the potential for subsurface deposits and because cultural resources monitoring would be required

during ground-disturbing activities. The study can be reviewed at (<https://www.tep.com/wp-content/uploads/Kino-DMP-Cultural-Resources-Class-I-Analysis.pdf>).

A score of 3 was given to Alternatives 1a, 1b, 1d, 2a, 2b, and 2d, as no impacts to known or potentially eligible cultural resources are anticipated. A score of 2 was given to Alternatives 1e, 2e, 3a, 3d, 5a, and 5d because known cultural resources are located in the corridor and/or the corridor is in a cultural sensitivity zone and would require monitoring during construction due to potential subsurface deposits. A score of 1 was not given to any alternatives, as anticipated potential impacts can be mitigated and are not expected to be cost prohibitive (see Appendix H, Table H.1 for additional details).

13.1.9 Criterion 9—Special Status Species and Biological Resources

TEP contracted a biologist to conduct a Biological Evaluation to identify each alternative's potential to impact the overall biotic community, general wildlife/vegetation, special status species, water resources, wildlife linkages, and riparian habitat in the area.

TEP's consultant performed background "desktop" research, including a review of the U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System (IPAC) and the Arizona Game and Fish Department (AZGFD) Heritage Data Management System (HDMS), to obtain information on sensitive biological resources that may be present in the study area. After compiling a list of special status species potentially occurring in the study area, a reconnaissance site visit of the study area was conducted. Site reconnaissance consisted of driving all the alternative corridors and stopping frequently to note plant species present, inspect areas with potentially suitable habitat for special status species, and to photographically document the study area. The assessed corridor width during the site visit included the entire ROW of the roads and utility corridors associated with the alternatives. Following the site visit, special status species were assessed for their potential to occur in the study area. The study can be reviewed at (https://www.tep.com/wp-content/uploads/Kino2DMP_Biological-Evaluation_08262020.pdf).

The biologist's impact scores ranged from 28–30. Given the minimal spread between the alternatives, all routes were scored a 3 because impacts to any biological resources are anticipated to be negligible (see Appendix H, Table H.1 for additional details).

Criterion 10—100-Year Floodplains as Measured by Location and Engineering Design

Criterion 10 addresses the presence/ absence of Federal Emergency Management Agency (FEMA) 100-year floodplains (see Appendix H, Figure H.4). FEMA 100-year floodplain data was obtained for Pima County, Arizona. All 100-year floodplains can be spanned; therefore, a score of 3 was given to all alternatives (see Appendix H, Table H.1 for additional details).

Criterion 11—Ability to Construct and Maintain the Transmission Line

Criterion 11 addresses TEP’s ability to construct and maintain the transmission line from existing access roads. A score of 3 was given to all alternatives because they can be accessed easily from existing roads (see Appendix H, Table H.1 for additional details).

Criterion 12—Cost of Construction

A high-level cost estimate was completed for each alternative. In addition, 10%, 20%, or 30% of the cost of construction was added to those routes with special considerations:

- **Routes 1d and 2d**—10% increase for areas along Grant Road between Campbell Avenue and Park Avenue and along Elm Street/Ring Road/Chauncy Lane for easement acquisition.
- **Routes 3a and 5a**—20% for additional turning structures needed to cross back and forth along Euclid Avenue.
- **Route 1e and 2e**—20% for removal of the existing 46kV sub-transmission line and to bury existing distribution and service connections.
- **Routes 3d and 5d**—30% increase for areas along Grant Road between Campbell Avenue and Park Avenue and along Elm Street/Ring Road/Chauncy Lane for easement acquisition, and 20% additional for turning structures needed to cross back and forth along Euclid Avenue.

The alternatives that cost less than \$7 million were scored a 3, alternatives that cost between \$7–8 million scored a 2.5, alternatives that cost \$8–9 million scored a 2, alternatives that cost \$9–10 million scored a 1.5, and the alternatives that cost greater than \$10 million scored a 1 (see Appendix H, Table H.1 for additional details).

13.2 Summary and Conclusion

The results summarized in Table 5 and more fully described in this report have shown, based on the criteria used in the assessment, that Alternatives 1e, 2e, 3a, 3d, 5a, and 5d scored significantly lower; therefore, they have been removed from further consideration.

The remaining six alternatives still under consideration are 1a, 1b, 1d, 2a, 2b, and 2d. The alternatives with the highest Total Weighted Scores were, from highest to lowest: 1b, 2b, 1a, 2a, 1d, and 2d (Figure 17). Using only the four criteria of most importance (Residential Use, Historic Properties/Districts, Sensitive Receptors, and Viewshed), the alternatives with the highest scores were, from highest to lowest: 1b, 1d, 1a, 2b, 2d, and 2a.

The results summarized in Table 5 and more fully described in this report have shown, based on the criteria used in the assessment that Alternatives 1e, 2e, 3a, 3d, 5a, and 5d scored significantly lower, therefore they have been removed from further consideration. The remaining six alternatives are still under consideration. Of the remaining alternatives, 1b, 1a, and 2b have the highest scores (in that order) using the Total Weighted Score (Figure 17). Using only the 4 criteria of most importance (residential use, historic properties/districts, Sensitive Receptors, and viewshed), the highest scoring alternatives are 1b, 1d, and 1a (in that order).

A final Siting Study Report will be prepared for use in TEP's application to the ACC once a preferred alternative and at least two additional routes are identified.

Table 5. Kino to DMP 138kV Transmission Line Project Siting Report Summary Criteria Matrix

Criteria	Preliminary Alternative Routes											
	1a	1b	1d	1e	2a	2b	2d	2e	3a	3d	5a	5d
1. Ability to Use Existing Road ROW and TEP Corridors (29% CWG/ 1 point weight assigned)	1	3	1	2	1	3	1	2	2	2	2	1
2. Compatible with Existing & Future Land Use Plans (29% CWG/ 1 point weight assigned)	3	3	3	3	3	3	3	3	3	3	3	3
3. Existing and planned residential use adjacent to the corridor (84% of Comments/71% CWG/4-point weight assigned)	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.30	0.30	0.30	0.30
4. Historic property/district impacts (41% of comments/71% CWG/3 point weight assigned)	0.67	0.75	0.83	0.33	0.67	0.75	0.83	0.33	0.33	0.33	0.33	0.33
5. Adjacent Sensitive Receptors (14% of comments/57% CWG/2 points weight assigned)	1.00	1.00	1.00	0.50	0.75	0.75	0.75	0.50	0.75	0.75	0.75	0.50
6. Room for separation from conflicting utility and infrastructure uses (14% CWG/1 points weight assigned)	3	3	3	1	3	2	2	1	1	1	1	1
7. Viewshed impacts (33% of comments/ CWG 29%/2 points weight assigned)	1.13	1.24	1.13	1.10	1.16	1.27	1.15	1.13	1.25	1.25	1.26	1.25
8. Cultural resources impacts (1 point weight assigned)	3	3	3	2	3	3	3	2	2	2	2	2
9. Biological impacts (1 point weight assigned)	3	3	3	3	3	3	3	3	3	3	3	3

Criteria	Preliminary Alternative Routes											
	1a	1b	1d	1e	2a	2b	2d	2e	3a	3d	5a	5d
10. 100-year floodplain impacts (1 point weight assigned)	3	3	3	3	3	3	3	3	3	3	3	3
11. Ability to Construct and Maintain the Transmission Line (1 point weight assigned)	3	3	3	3	3	3	3	3	3	3	3	3
12. Cost (1 point weight assigned)	3	3	2.5	1.5	3	3	2.5	1.5	1.5	1	1.5	1
Total 0s (less than 1) Greatest effect/impact on criteria	2	2	2	3	3	3	3	3	3	3	3	3
Total 1s (Major effect/impact on criteria)	3	2	3	3	2	1	2	3	3	3	3	4
Total 2s (Moderate effect/impact on criteria, relative to other alternatives)	0	0	1	2	1	1	2	2	2	2	2	1
Total 3s (No effect/impact or meets criteria)	7	8	6	4	6	7	5	4	4	4	4	4
Total Weighted Score	25.20	27.39	24.86	20.83	24.97	26.17	23.63	20.86	21.13	20.63	21.14	19.38
Criteria of Most Concern Weighted Score (Residential, Historic, Sensitive Receptor, Viewshed)	3.20	3.39	3.36	2.33	2.97	3.17	3.13	2.36	2.63	2.63	2.64	2.38

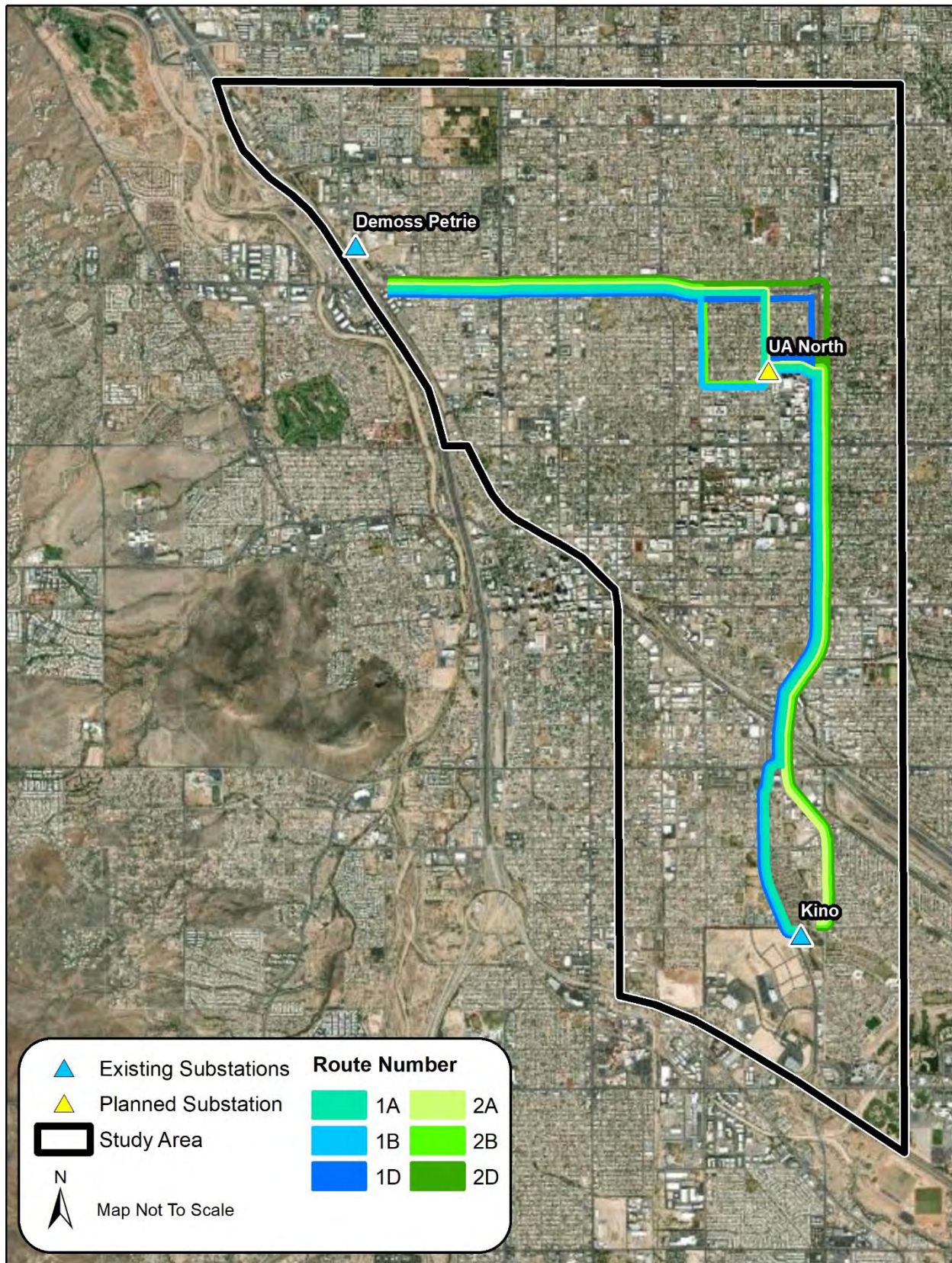


Figure 17. Remaining Preliminary Routes, Following Phase 3 Analysis.

Appendix A. Phase 1 Geospatial Analysis Variable Values

Table A.1. Phase 1 Geospatial Analysis Variable Values

Map ID (New)	Map ID (Original)	Street	Segment	Status	Phase 1 Composite Average Score	Historic Properties Average Score	Residential Use Average Score	Sensitive Receptor Average Score	Customer Score (as of 7/1/2020)	Constructability Score	Phase 2 Composite Score	Phases 1 and 2 Composite Score Sum	Phase 1 and 2 Composite Score Average
1.0	n/a	Fort Lowell	6th Ave–Stone	added back; Under Consideration	5	6	5.5	5		1	1	6	3
2.0	n/a	Glenn	Fairview– Flowing Wells	Eliminated	5	6	5.5	5		0	0	5	2.5
3.0	2	Glenn	Oracle–Fairview	Eliminated	5	5	5.5	5		0	0	5	2.5
4.0	3	Glenn	Stone–Oracle	Eliminated	5	5	5.5	5		0	0	5	2.5
5.0	4	Flowing Wells	Glenn–DMP	Under Consideration	5	6	6	5		2	2	7	3.5
5.5	4	Flowing Wells	DMP–Grant	Under Consideration	4.5	4.5	4.5	4.333333333	3	2	5	9.5	4.75
6.0	5	Fairview	Glenn–Grant	Under Consideration	5	6	5.5	5	3	2	5	10	5
7.0	n/a	Highland/17th	Manlove–Curtis	added back; Under Consideration	4.5	4.5	4.666666667	4.333333333		3	3	7.5	3.75
8.0	6	Grant	Fairview– Flowing Wells	Under Consideration	5	6	5.5	5		3	3	8	4
8.1	6	Grant	Flowing Wells– DMP Parcel	Under Consideration	4.5	4.5	4.5	4.333333333	3	2	5	9.5	4.75
9.0	7	Grant	15th–Fairview	Under Consideration	5	5	5.5	5	3	3	6	11	5.5
10.0	8	Grant	Oracle–15th	Under Consideration	5	5	5.5	6	3	3	6	11	5.5
11.0	9	Stone	Glenn–Grant	Under Consideration	5	6	5.5	5	2	2	4	9	4.5
12.0	10	Grant	6th Ave–Stone	Under Consideration	5	6	5.5	5		3	3	8	4
12.1	10	Grant	Stone–Oracle	Under Consideration	5	5	5.5	5	3	3	6	11	5.5
13.0	11	15th	Alto–Grant	Under Consideration	4.666666667	4.5	4.666666667	4.5	2	1	3	7.666666667	3.833333333
14.0	12	cross-country	Helen–Alto	Under Consideration	4.666666667	4.5	4.666666667	4.5	2	3	5	9.666666667	4.833333333
15.0	13	Helen	15th–Main	Under Consideration	4.5	4.333333333	4.666666667	4.5	2	3	5	9.5	4.75
15.1	n/a				5	5	5.5	5			0	5	2.5
16.0	14	11th	Speedway– Helen	Under Consideration	5	5	5.5	5		3	3	8	4
17.0	n/a				5	5	5.5	5		2	2	7	3.5
18.0	16	Stone	Speedway– Grant	Under Consideration	5	5	5.5	5		2	2	7	3.5
20.0	17	Speedway	6th Ave–Stone	Under Consideration	5	5	5.5	5		2	2	7	3.5
21	18	6th	Speedway– Grant	Under Consideration	5	5	5.5	5			0	5	2.5
22.0	n/a	1st	Fort Lowell– Glenn	added back; Under Consideration	5	6	5.5	5		2	2	7	3.5
23.0	19	Grant	1st–6th Ave	Under Consideration	5	5	5.5	6	3	3	6	11	5.5
24.0	20	Grant	Park–Mountain	Under Consideration	5	5	5.5	6	3	2	5	10	5

Map ID (New)	Map ID (Original)	Street	Segment	Status	Phase 1 Composite Average Score	Historic Properties Average Score	Residential Use Average Score	Sensitive Receptor Average Score	Customer Score (as of 7/1/2020)	Constructability Score	Phase 2 Composite Score	Phases 1 and 2 Composite Score Sum	Phase 1 and 2 Composite Score Average
24.1	20	Grant	Euclid–Park	Under Consideration	5	5	5.5	6		3	3	8	4
25.0	21	Park	Alley–Grant	Under Consideration	5	5	5.5	5	2	2	4	9	4.5
26.0	22	Grant	Campbell–Vine	Under Consideration	5	5	5.5	5	3	2	5	10	5
26.1	22	Grant	Vine–Mountain	Under Consideration	4.5	5	5	6		2	2	6.5	3.25
27.0	23	Vine	Elm–Grant	Under Consideration	5	5	5.5	5	2	2	4	9	4.5
28.0	n/a	Miracle Mile	Fairview– Flowing Wells	added back; Under Consideration	5	5	5.5	6		2	2	7	3.5
29.0	24	Campbell	Grant–Elm	Under Consideration	5	5	5.5	5	3	3	6	11	5.5
30	n/a	Miracle Mile	Flowing Wells– Casa Grande Highway	Eliminated	4.666666667	4.5	4.666666667	4.5			0	4.666666667	2.333333333
31.0	25	alley btw. Lee & Adams	Vine–Park	Under Consideration	5	5	5.5	5	2	2	4	9	4.5
32.0	26	Vine	Alley–Elm	Under Consideration	5	5	5.5	5	2	2	4	9	4.5
33.0	27	Ring	Warren– Substation	Under Consideration	5	5	5.5	4	3	2	5	10	5
34.0	28	Elm	Substation– Vine	Under Consideration	5	5	5.5	4	3	3	6	11	5.5
35.0	29	Elm	Campbell–Ring Road	Under Consideration	4.5	5	5.5	5	3	3	6	10.5	5.25
36.0	30	Campbell	Elm–Speedway	Under Consideration	5	5	5.5	5	3	2	5	10	5
37.0	n/a	Oracle	Fort Lowell– Miracle Mile	added back; Under Consideration	5	5	5.5	5		0	0	5	2.5
38.0	n/a	Oracle	Miracle Mile– Glenn	added back; Under Consideration	5	5	5.5	5		2	2	7	3.5
39.0	26	Vine	Mabel–Alley	Under Consideration	5	6	5.5	5		2	2	7	3.5
40.0	n/a	1st	Glenn–Grant	added back; Under Consideration	5	5	5.5	5		2	2	7	3.5
41.0	34	Vine	Speedway– Helen	Eliminated	5	6	5.5	5	2	0	2	7	3.5
42.0	35	Speedway	Campbell– Cherry	Under Consideration	5	5	6	5	2	2	4	9	4.5
42.1	35	Speedway	Cherry–Vine	Under Consideration	5.5	6	6	6		2	2	7.5	3.75
42.2	35	Speedway	Vine–Mountain	Under Consideration	5	5	6	6		2	2	7	3.5
42.3	35	Speedway	Mountain–Park	Under Consideration	5	5	6	6		2	2	7	3.5
42.4	35	Speedway	Park–Euclid	Under Consideration	5	5	5.5	5		2	2	7	3.5
43.0	36	Speedway	Euclid–6th Ave	Under Consideration	4.5	5	5.5	5	2	2	4	8.5	4.25

Map ID (New)	Map ID (Original)	Street	Segment	Status	Phase 1 Composite Average Score	Historic Properties Average Score	Residential Use Average Score	Sensitive Receptor Average Score	Customer Score (as of 7/1/2020)	Constructability Score	Phase 2 Composite Score	Phases 1 and 2 Composite Score Sum	Phase 1 and 2 Composite Score Average
44.0	n/a	Oracle	Glenn–Grant	added back; Under Consideration	5	5	5.5	5		2	2	7	3.5
45.0	37	Euclid	Speedway– 6th St	Under Consideration	5	5	5.5	5	1	1	2	7	3.5
46.0	39	Campbell	Speedway– 6th St	Under Consideration	5	5	5.5	5	3	1	4	9	4.5
47.0	n/a	Euclid	Grant–Helen	Under Consideration	5	5	5.5	5		2	2	7	3.5
48.0	n/a	Oracle	Grant–Helen	added back; Under Consideration	5	5	5.5	5		2	2	7	3.5
49.0	n/a	15th	Kino Pkwy– Cherry	added back; Under Consideration	5.5	6	5.5	6		2	2	7.5	3.75
50.0	47	Campbell	6th St– Broadway	Under Consideration	5	5	5.5	5	3	2	5	10	5
51.0	n/a	15th	Cherry–Existing 46kV	added back; Under Consideration	5	6	5.5	5		3	3	8	4
52.0	48	Broadway	Cherry– Mountain	Under Consideration	5	5	5	5	3	2	5	10	5
52.1	48	Broadway	Kino Pkwy– Cherry	Under Consideration	5	5	5.5	5		3	3	8	4
53.0	49	Broadway	Euclid–Fremont	Under Consideration	5	5	5.5	6	3	2	5	10	5
53.1	49	Broadway	Fremont– Mountain	Under Consideration	4.5	5	5	5		3	3	7.5	3.75
54.0	n/a	Fairview	Miracle Mile– Glenn	added back; Under Consideration	5	5	5.5	6		1	1	6	3
55.0	50	Euclid	6th St– Broadway	Under Consideration	5	5	5.5	5	1	2	3	8	4
56.0	51	Euclid	Broadway– cross-country	Under Consideration	4.5	4.333333333	4.666666667	4.333333333	2	2	4	8.5	4.25
57.0	52	Fremont	Manlove– Broadway	Under Consideration	5	5	5.5	6	2	2	4	9	4.5
58.0	n/a	Flowing Wells	Miracle Mile– Glenn	added back; Under Consideration	5	6	5.5	5		2	2	7	3.5
59.0	53	cross-country	Toole–Euclid	Under Consideration	4.333333333	4.5	4.5	4.333333333		3	3	7.333333333	3.666666667
60.0	54	cross-country	46kV–Fremont	Under Consideration	5.5	6	5.5	6	2	2	4	9.5	4.75
61.0	55	Toole	cross-country– 16th	Under Consideration	4.666666667	4.5	4.5	4.5		3	3	7.666666667	3.833333333
62.0	72	Cherry	cross-country– Broadway	Under Consideration	5	5	5.5	5	2	1	3	8	4
63.0	73	cross-country	15th–Cherry	Under Consideration	5.5	6	5.5	6	2	3	5	10.5	5.25

Map ID (New)	Map ID (Original)	Street	Segment	Status	Phase 1 Composite Average Score	Historic Properties Average Score	Residential Use Average Score	Sensitive Receptor Average Score	Customer Score (as of 7/1/2020)	Constructability Score	Phase 2 Composite Score	Phases 1 and 2 Composite Score Sum	Phase 1 and 2 Composite Score Average
64.0	56	46kV line	alley btw. 16th & 17th–15th	Under Consideration	5	6	5.5	5	2	1	3	8	4
64.1	56	46kV line	15th–Highland	Under Consideration	5	6	5.5	5		2	2	7	3.5
64.2	n/a	46kV line	Highland– Manlove	Under Consideration	5.5	6	5.5	6		2	2	7.5	3.75
65.0	74	Cherry	16th–15th	Under Consideration	5.5	6	5.5	6	2	2	4	9.5	4.75
66.0	57	Euclid	16th–19th St	Under Consideration	4.666666667	4.5	4.5	4.5	1	2	3	7.666666667	3.833333333
67.0	58	19th	Euclid–Euclid	Under Consideration	4.666666667	4.5	4.5	4.5		3	3	7.666666667	3.833333333
68.0	n/a	Miracle Mile	Oracle–Fairview	added back; Under Consideration	5	5	5.5	6		0	0	5	2.5
69.0	59	Euclid	19th–21st	Under Consideration	4.666666667	4.5	4.5	4.333333333	1	2	3	7.666666667	3.833333333
69.1	59	Euclid	21st–22nd	Under Consideration	4.5	4.5	4.666666667	4.333333333		1	1	5.5	2.75
70.0	60	21st	Euclid–Park	Under Consideration	4.5	4.5	4.666666667	4.333333333		2	2	6.5	3.25
70.1	60	21st	Park–Highland	Under Consideration	5.5	6	5.5	6		2	2	7.5	3.75
70.2	60	21st	Highland–Curtis	Under Consideration	5.5	6	5.5	6		2	2	7.5	3.75
71.0	61	Highland	22nd–21st	Under Consideration	5.5	6	5.5	6		2	2	7.5	3.75
71.1	61	Highland	21st–20th	Under Consideration	5.5	6	5.5	6		2	2	7.5	3.75
72.0	62	20th	Highland–Curtis	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
73.0	63	Curtis	20th–21st	Under Consideration	5.5	6	6	6		3	3	8.5	4.25
73.1	63	Curtis	Warehouse– 20th	Under Consideration	4.666666667	4.5	4.5	4.5		2	2	6.666666667	3.333333333
74.0	64	cross-country	Curtis–Kino	Under Consideration	5.5	6	6	6		3	3	8.5	4.25
75.0	65	Warehouse	cross-country– Curtis	Under Consideration	4.666666667	4.5	4.5	4.5		2	2	6.666666667	3.333333333
76.0	66	cross-country	Warehouse Ave–Vine St	Under Consideration	4.666666667	4.5	4.5	4.5		3	3	7.666666667	3.833333333
77.0	67	Vine	cross-country– 17th	Under Consideration	4.666666667	4.5	4.5	4.5	2	3	5	9.666666667	4.833333333
78.0	68	17th	Curtis–Vine	Under Consideration	4.666666667	4.5	4.666666667	4.5	2	3	5	9.666666667	4.833333333
79.0	69	Curtis	alley btw. 16th & 17th & 46kV line	Under Consideration	4.666666667	4.5	4.666666667	4.5	2	2	4	8.666666667	4.333333333
80.0	70	alley btw. 16th & 17th	Curtis–46kV line	Under Consideration	5	6	5.5	5	2	1	3	8	4
81.0	71	alley btw. 16th & 17th	Curtis–Vine	Under Consideration	5.5	6	5.5	6	2	1	3	8.5	4.25
82.0	n/a	Fort Lowell	Stone–Oracle	added back; Under Consideration	5	6	5.5	5		2	2	7	3.5

Map ID (New)	Map ID (Original)	Street	Segment	Status	Phase 1 Composite Average Score	Historic Properties Average Score	Residential Use Average Score	Sensitive Receptor Average Score	Customer Score (as of 7/1/2020)	Constructability Score	Phase 2 Composite Score	Phases 1 and 2 Composite Score Sum	Phase 1 and 2 Composite Score Average
83.0	75	16th	Vine–Cherry	Under Consideration	5.5	6	6	6	2	2	4	9.5	4.75
84.0	76	Vine	Alley and 16th	Under Consideration	5.5	6	6	6	2	3	5	10.5	5.25
85.0	77	Vine	17th–alley btw. 16th & 17th	Under Consideration	5.5	6	6	6	2	3	5	10.5	5.25
86.0	78	17th	Vine–Kino	Under Consideration	5.5	6	6	6	2	3	5	10.5	5.25
87.0	79	Broadway	Plumer–Kino Pkwy	Under Consideration	5	5	5.5	5	3	3	6	11	5.5
88.0	80	Kino	Broadway– cross-country	Under Consideration	5	5	5.5	5		2	2	7	3.5
88.1	80	Kino	cross-country– Winsett	Under Consideration	5.5	6	5.5	6	3	3	6	11.5	5.75
89.0	81	cross-country	14th–Kino	Under Consideration	5.5	6	5.5	6	3	3	6	11.5	5.75
90.0	82	Plumer	19th–Broadway	Eliminated	5	5	5.5	5	2	0	2	7	3.5
91.0	83	Kino	15th–18th	Under Consideration	4.666666667	4.5	4.5	4.5	3	2	5	9.666666667	4.833333333
92.0	84	Campbell	Winsett– 14th St	Under Consideration	5.5	6	5.5	6	3	2	5	10.5	5.25
93.0	85	Kino	Aviation–18th	Under Consideration	4.666666667	4.5	4.5	4.5	3	3	6	10.666666667	5.333333333
94.0	86	Winsett	Campbell–Kino Pkwy	Under Consideration	5.5	6	5.5	6	3	2	5	10.5	5.25
95.0	87	Kino	22nd–21st	Under Consideration	5.5	6	6	6		3	3	8.5	4.25
95.1	87	Kino	Warehouse– 21st	Under Consideration	4.666666667	4.5	4.5	4.5	3	3	6	10.666666667	5.333333333
95.2	87	Kino	Barraza Aviation Parkway– Warehouse	Under Consideration	4.666666667	4.5	4.5	4.5		3	3	7.666666667	3.833333333
96.0	88	Campbell	Winsett–19th	Under Consideration	5.5	6	5.5	6		1	1	6.5	3.25
96.1	88	Campbell	19th–Norris	Under Consideration	4.666666667	4.5	4.666666667	4.5	3	2	5	9.666666667	4.833333333
96.2	88	Norris	Campbell– cross-country	Under Consideration	4.666666667	4.5	4.5	4.5	0	3	3	7.666666667	3.833333333
97.0	89	19th	Plumer– Campbell	Eliminated	5.5	6	5.5	6	0	0	0	5.5	2.75
98.0	90	Plumer	22nd–19th	Eliminated	5.5	6	5.5	6	2	0	2	7.5	3.75
99.0	91	cross-country	Plumer–Norris	Under Consideration	4.666666667	4.5	4.666666667	4.5	3	3	6	10.666666667	5.333333333
100.0	92	cross-country	rail yard– Plumer	Under Consideration	4.666666667	4.5	4.666666667	4.5	3	3	6	10.666666667	5.333333333
101.0	93	22nd	Highland–Park	Under Consideration	5	6	5.5	5		3	3	8	4

Map ID (New)	Map ID (Original)	Street	Segment	Status	Phase 1 Composite Average Score	Historic Properties Average Score	Residential Use Average Score	Sensitive Receptor Average Score	Customer Score (as of 7/1/2020)	Constructability Score	Phase 2 Composite Score	Phases 1 and 2 Composite Score Sum	Phase 1 and 2 Composite Score Average
101.1	93	22nd	Kino Pkwy– Highland	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
102.0	94	22nd	Park–Euclid	Under Consideration	4.5	4.5	4.666666667	4.333333333		3	3	7.5	3.75
103.0	95	Euclid	22nd St– Silverlake	Under Consideration	4.5	4.5	4.666666667	4.333333333	1	1	2	6.5	3.25
104.0	96	Park	22nd St– Silverlake	Under Consideration	5	6	5.5	5	2	1	3	8	4
104.5	n/a	Park	22nd–21st	Under Consideration	5	6	5.5	5		3	3	8	4
105.0	97	Silverlake	Park Euclid	Under Consideration	4.5	4.5	4.666666667	4.333333333		3	3	7.5	3.75
106.0	98	Silverlake	Kino Pkwy–Park	Under Consideration	5	6	5.5	5		2	2	7	3.5
107.0	99	Kino	22nd–27th	Under Consideration	5.5	6	5.5	6	3	3	6	11.5	5.75
107.1	99	Kino	27th–28th	Under Consideration	5	6	5	6		3	3	8	4
107.2	99	Kino	28th–Silverlake	Under Consideration	5	6	5	6		3	3	8	4
108.0	100	27th	Cherry and Kino	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
109.0	101	cross-country	Cherry– Cherrybell	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
110.0	102	Fairland	Willits– Silverlake	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
111.0	103	Willits	Cherrybell– Fairland	Under Consideration	5.5	6	6	6		3	3	8.5	4.25
112.0	104	cross-country	Fairland– rail yard	Under Consideration	4.666666667	4.5	4.5	4.5		3	3	7.666666667	3.833333333
113.0	105	cross-country	Silverlake– rail yard	Under Consideration	4.666666667	4.5	4.666666667	4.5	3	3	6	10.66666667	5.333333333
114.0	106	Cherrybell	Silverlake– cross-country	Under Consideration	5.5	6	5.5	6		2	2	7.5	3.75
114.1	106	Cherrybell	cross-country– Willets	Under Consideration	5.5	6	6	6		2	2	7.5	3.75
115.0	107	Cherry	28th–27th	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
116.0	108	cross-country	connects 28th across Kino	Under Consideration	5	6	5	6	3	3	6	11	5.5
117.0	109	28th	Cherry–Kino connector link	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
118.0	110	28th	Warren–Cherry	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
119.0	111	Cherry	Silverlake–28th	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
120.0	112	Warren	Silverlake–28th	Under Consideration	5.5	6	5.5	6		2	2	7.5	3.75
121.0	113	Silverlake	Kino Pkwy– Cherry	Under Consideration	5	6	5	6		3	3	8	4

Map ID (New)	Map ID (Original)	Street	Segment	Status	Phase 1 Composite Average Score	Historic Properties Average Score	Residential Use Average Score	Sensitive Receptor Average Score	Customer Score (as of 7/1/2020)	Constructability Score	Phase 2 Composite Score	Phases 1 and 2 Composite Score Sum	Phase 1 and 2 Composite Score Average
121.1	113	Silverlake	Cherry–Warren	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
121.2	113	Silverlake	Warrin–Martin	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
121.3	113	Silverlake	Martin– Cherrybell	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
121.4	113	Silverlake	Cherrybell– Fairland	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
122.0	114	cross-country	Martin–parking lot–Silverlake	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
123.0	115	cross-country	Martin– Silverlake	Under Consideration	5.5	6	5.5	6		2	2	7.5	3.75
124.0	116	Barleycorn	Martin– Cherrybell	Under Consideration	5.5	6	5.5	6		1	1	6.5	3.25
125.0	117	Campbell	36th– Barleycorn	Under Consideration	5	6	5.5	5	3	3	6	11	5.5
125.1	117	Campbell	Barleycorn– Silverlake	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
126.0	118	Martin	Barleycorn– 36th	Under Consideration	5	6	5.5	5	3	2	5	10	5
127.0	119	Kino	Silverlake–36th	Under Consideration	5.5	6	5.5	6	3	3	6	11.5	5.75
128.0	120	36th	Martin–Kino Pkwy	Under Consideration	5	6	5.5	5	3	2	5	10	5
129.0	121	36th	Campbell – Martin	Under Consideration	5	6	5.5	5	3	2	5	10	5
129.1	n/a	cross-country	36th St– Campbell	Under Consideration	5	6	5.5	4		3	3	8	4
130	n/a	Glenn	1st Ave–Stone	Eliminated	5	6	5.5	5			0	5	2.5
131	n/a	Tucson	22nd St– Barraza Aviation Parkway	Eliminated	4	4.5	4	4.5			0	4	2
132	n/a	Aviation	22nd St– Country Club	Eliminated	4.666666667	4.5	4.666666667	4.5			0	4.666666667	2.333333333
133	n/a	Tucson	6th St– Broadway	Eliminated	5	5	5.5	5			0	5	2.5
134	n/a	Aviation PW EB on Ramp	Broadway–Kino Pkwy	Eliminated	4.5	4.5	4.666666667	4.333333333			0	4.5	2.25
135	n/a	Fort Lowell	Campbell– Mountain	Eliminated	5	6	5.5	5			0	5	2.5
136	n/a	Glenn	Campbell– Mountain	Eliminated	5	6	5.5	5			0	5	2.5

Map ID (New)	Map ID (Original)	Street	Segment	Status	Phase 1 Composite Average Score	Historic Properties Average Score	Residential Use Average Score	Sensitive Receptor Average Score	Customer Score (as of 7/1/2020)	Constructability Score	Phase 2 Composite Score	Phases 1 and 2 Composite Score Sum	Phase 1 and 2 Composite Score Average
137	n/a	Mountain	Elm–Speedway	Eliminated	5	5	5.5	6			0	5	2.5
138	n/a	Tucson	Elm–Speedway	Eliminated	4.5	4	5.5	6			0	4.5	2.25
139	n/a	Broadway	Euclid–Railroad	Eliminated	4.5	4.333333333	4.666666667	4.5			0	4.5	2.25
140	n/a	Glenn	Flowing Wells– Railroad	Eliminated	4.5	4.5	4.5	4.333333333			0	4.5	2.25
141	n/a	Campbell	Fort Lowell– Glenn	Eliminated	5	6	5.5	5			0	5	2.5
142	n/a	Mountain	Fort Lowell– Glenn	Eliminated	5	6	5.5	5			0	5	2.5
143	n/a	Tucson	Broadway– Winsett	Eliminated	5	6	5.5	5			0	5	2.5
145	n/a	Campbell	Glenn–Grant	Eliminated	5	5	5.5	5			0	5	2.5
146	n/a	Mountain	Glenn–Grant	Eliminated	5	5	5	5			0	5	2.5
147	n/a	Tucson	Glenn–Grant	Eliminated	5	5	5.5	5			0	5	2.5
148	n/a	Fairview	Grant–15th Ave	Eliminated	4.5	4.333333333	4.666666667	4.333333333			0	4.5	2.25
149	n/a	Tucson	Fort Lowell– Glenn	Eliminated	5	6	5.5	5			0	5	2.5
150	n/a	Mountain	Grant–Elm	Eliminated	4.5	5	5	6			0	4.5	2.25
151	n/a	Tucson	Grant–Elm	Eliminated	5	5	5.5	5			0	5	2.5
152	n/a	I-10 Frontage	Grant– Speedway	Eliminated	4.666666667	4.5	4.5	4.5			0	4.666666667	2.333333333
153	n/a	Aviation PW EB on Ramp	Kino Pkwy– 22nd St	Eliminated	4.666666667	4.5	4.5	4.5			0	4.666666667	2.333333333
154	n/a	36th	Kino Pkwy–Park	Eliminated	5	6	5.5	5			0	5	2.5
155	n/a	Speedway	Main–Frontage Rd	Eliminated	4.5	4.333333333	4.666666667	4.333333333			0	4.5	2.25
156	n/a	Park	Aviation–21st	Eliminated	4.5	4.5	4.666666667	4.333333333			0	4.5	2.25
157	n/a	I-10 Frontage	Miracle Mile– Grant	Eliminated	4.666666667	4.5	4.5	4.5			0	4.666666667	2.333333333
158	n/a	Fort Lowell	Mountain– 1st Ave	Eliminated	5	6	5.5	5			0	5	2.5
159	n/a	Glenn	Mountain– 1st Ave	Eliminated	5	6	5.5	5			0	5	2.5
160	n/a	22nd	Norton–Cherry	Eliminated	4.666666667	4.5	4.666666667	4.5			0	4.666666667	2.333333333
160.1	n/a	22nd	Kino Pkwy– Cherry	Under Consideration	5.5	6	6	6		3	3	8.5	4.25
161	n/a	36th	Park–Euclid	Eliminated	5	6	5.5	5			0	5	2.5

Map ID (New)	Map ID (Original)	Street	Segment	Status	Phase 1 Composite Average Score	Historic Properties Average Score	Residential Use Average Score	Sensitive Receptor Average Score	Customer Score (as of 7/1/2020)	Constructability Score	Phase 2 Composite Score	Phases 1 and 2 Composite Score Sum	Phase 1 and 2 Composite Score Average
162	n/a	Euclid	Silverlake–36th St	Eliminated	4.5	4.5	4.666666667	4.333333333			0	4.5	2.25
163	n/a	Park	Silverlake–36th St	Eliminated	5	6	5.5	5			0	5	2.5
164	n/a	Tucson	Speedway–6th St	Eliminated	4.5	4	5.5	5			0	4.5	2.25
165	n/a	6th	Tucson Blvd– Campbell	Eliminated	5	5	5.5	5			0	5	2.5
166	n/a	Fort Lowell	Tucson Blvd– Campbell	Eliminated	5	6	5.5	5			0	5	2.5
167	n/a	Glenn	Tucson Blvd– Campbell	Eliminated	5.5	6	5.5	6			0	5.5	2.75
168	n/a	Grant	Tucson Blvd– Campbell	Eliminated	5	5	5.5	5			0	5	2.5
169	n/a	Speedway	Tucson Blvd– Campbell	Eliminated	5	5	5.5	5			0	5	2.5
170	n/a	Tucson	18th–22nd St	Eliminated	5	6	5	5			0	5	2.5
172	n/a	Main	Speedway–6th St	Eliminated	4.5	4.333333333	4.666666667	4.333333333			0	4.5	2.25
173	n/a	6th St	Stone–Main	Eliminated	4	3.5	4.5	4.5			0	4	2
176	n/a	6th St	6th Ave–Stone	Eliminated	4	3.5	4.5	4.333333333			0	4	2
178.0	32	Mabel	Cherry–Vine	Eliminated	5	6	5.5	5			0	5	2.5
179.0	33	Cherry	Speedway– Adams	Eliminated	5	6	6	5			0	5	2.5
181.0	38	Cherry	Enke– Speedway	Eliminated	5	5	6	6			0	5	2.5
182.0	41	Enke	National Championship– Cherry	Eliminated	6	6	6	6			0	6	3
183.0	40	Enke	Campbell– National Champion	Eliminated	5	5	5.5	6			0	5	2.5
184	n/a	National Championship	6th–Enke	Eliminated	5.5	6	6	6			0	5.5	2.75
185.0	43	cross-country	Warren–6th	Eliminated	5	5	5.5	6			0	5	2.5
186.0	44	Warren	7th– cross-country	Eliminated	5	5	5.5	6			0	5	2.5
187.0	45	7th	Cherry–Warren	Eliminated	5	5	5.5	6			0	5	2.5
188.0	46	Cherry	Broadway–7th	Eliminated	5	5	5.5	5			0	5	2.5

Map ID (New)	Map ID (Original)	Street	Segment	Status	Phase 1 Composite Average Score	Historic Properties Average Score	Residential Use Average Score	Sensitive Receptor Average Score	Customer Score (as of 7/1/2020)	Constructability Score	Phase 2 Composite Score	Phases 1 and 2 Composite Score Sum	Phase 1 and 2 Composite Score Average
189	n/a	Stone	Fort Lowell– Glenn	Eliminated	5	6	5.5	5			0	5	2.5
190	n/a	Stone	Speedway– 6th St	Eliminated	4.5	4.333333333	4.666666667	4.333333333			0	4.5	2.25
191	n/a	6th St	Euclid–6th Ave	Eliminated	5	5	5.5	5			0	5	2.5
192	n/a	6th St	Mountain– Euclid	Eliminated	5	5	5.5	5			0	5	2.5
193	n/a	Main	Helen– Speedway	Under Consideration	5	5	5.5	5		3	3	8	4
194	n/a	Mountain	6th St– Broadway	Eliminated	5	5	5.5	5			0	5	2.5
195	n/a	Winsett	Tucson Blvd– Campbell	Eliminated	5.5	6	5.5	6			0	5.5	2.75
196	n/a	6th St	Campbell– Mountain	Eliminated	5	5	5.5	5			0	5	2.5
198.0	n/a	Euclid	Speedway– Helen	Under Consideration	4.5	4	5.5	5		3	3	7.5	3.75
199.0	n/a	Helen	Euclid–Park	Under Consideration	5	5	5.5	5		1	1	6	3
200.0	n/a	Park	Speedway– Helen	Under Consideration	5	5	6	5		3	3	8	4
201.0	n/a	Park	Helen–Alley	Under Consideration	5	5	5.5	5		1	1	6	3
202.0	n/a	Speedway	11th–Main	Under Consideration	5	5	5.5	5		3	3	8	4
203.0	n/a	Warehouse	Kino–Curtis	Under Consideration	4.666666667	4.5	4.5	4.5		2	2	6.666666667	3.333333333
204.0	n/a	Warehouse/ Cherry	Kino–22nd	Under Consideration	4.666666667	4.5	4.5	4.5		2	2	6.666666667	3.333333333
205.0	n/a	Cherrybell	Willets–22nd	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
206.0	n/a	cross-country	Warehouse– Kino		4.666666667	4.5	4.5	4.5		3	3	7.666666667	3.833333333
207	n/a	cross-country	Warehouse– Kino	Under Consideration	5	5	5.5	5			0	5	2.5

Appendix B. Engineering and Constructability Assessment Values

Table B.1. E/C Assessment Results

Map ID (New)	Street	Segment	Status	Notes	Score												Other Conflict	Total
					TEP Engineering Conflicts/ Constraints/ Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict		
1	Fort Lowell	1st Ave–Stone	Added back; Under Consideration	Links along the existing 138kV line along Ft. Lowell had been removed because construction and future maintenance would require that the existing and future circuits would both have to be taken out of service, however further review determined that with careful coordination of outages it could be accomplished.	2	1	1	1	3	1	3	1	3	2	2	2	3	25
2	Glenn	Fairview– Flowing Wells	Under Consideration		0	0	1	3	2	1	3	1	3	2	2	2	3	0
3	Glenn	Oracle– Fairview	Under Consideration		0	0	1	1	3	1	3	1	3	3	3	2	3	0
4	Glenn	Stone–Oracle	Under Consideration		0	0	1	1	3	1	3	1	3	2	3	2	3	0
5	Flowing Wells	Glenn–DMP	Under Consideration		1	1	2	3	2	3	3	2	3	2	1	2	3	28
5.5	Flowing Wells	DMP–Grant	Under Consideration		1	1	1	1	3	3	3	2	3	2	1	2	3	26
6	Fairview	Glenn–Grant	Under Consideration		2	2	2	2	3	2	3	2	3	2	2	2	3	30
7	Highland/ 17th	Manlove– Curtis	Added back; Under Consideration		3	3	3	3	3	2	3	2	3	2	1	2	3	33
8	Grant	Fairview– Flowing Wells	Under Consideration		2	3	3	1	3	2	3	2	3	3	3	2	3	33
8.1	Grant	Flowing Wells–DMP Parcel	Under Consideration		2	3	2	1	3	2	3	1	2	3	3	2	3	30
9	Grant	15th–Fairview	Under Consideration		2	3	3	1	3	2	3	2	3	3	3	3	3	34
10	Grant	Oracle–15th	Under Consideration		3	3	3	3	3	2	2	2	3	2	3	3	3	35
11	Stone	Glenn–Grant	Under Consideration		2	2	2	2	3	1	3	3	3	2	1	2	3	29
12	Grant	6th Ave– Stone	Under Consideration		2	2	3	3	3	3	3	3	2	2	3	3	3	35
12.1	Grant	Stone–Oracle	Under Consideration		2	2	3	3	3	3	3	3	2	2	3	3	3	35

Map ID (New)	Street	Segment	Status	Notes	Score													Other Conflict	Total
					TEP Engineering Conflicts/ Constraints/ Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict			
13	15th	Alto–Grant	Under Consideration		2	1	2	1	3	1	3	1	3	1	3	1	1	23	
14	cross- country	Helen–Alto	Under Consideration		2	3	3	3	3	3	3	1	3	3	3	3	1	34	
15	Helen	11th–15th	Under Consideration		2	3	3	2	3	2	3	2	2	3	3	3	3	34	
16	11th	Speedway– Helen	Under Consideration		2	3	3	1	3	3	3	3	3	3	3	3	3	36	
17	Speedway	Stone–Helen	Under Consideration	U of A prefers north side of Speedway	3	3	3	3	3	1	3	1	3	2	3	2	2	32	
18	Stone	Speedway– Grant	Under Consideration		3	3	3	3	3	1	3	1	3	2	3	2	1	31	
20	Speedway	6th Ave– Stone	Under Consideration	U of A prefers north side of Speedway	1	3	3	3	3	1	3	1	3	2	3	3	3	32	
21	6th	Speedway– Grant	Under Consideration		2	2	2	2	3	3	3	3	3	2	2	3	2	32	
22	1st	Fort Lowell– Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is required to connect with other links.	2	2	2	1	3	2	2	1	3	2	3	2	2	27	
23	Grant	1st–6th Ave	Under Consideration		2	2	3	3	3	3	3	3	2	2	3	3	3	35	
24	Grant	Park– Mountain	Under Consideration		2	2	2	1	3	3	3	1	0	3	3	3	3	0	
24.1	Grant	Euclid–Park	Under Consideration		2	2	3	3	3	2	3	2	2	3	3	2	3	33	
25	Park	Alley–Grant	Under Consideration		2	2	2	1	3	2	3	2	2	2	3	2	3	29	
26	Grant	Campbell– Vine	Under Consideration		1	2	2	1	3	3	3	1	0	3	3	2	3	0	
26.1	Grant	Vine– Mountain	Under Consideration		1	2	2	1	3	3	3	1	0	3	3	2	3	0	
27	Vine	Elm–Grant	Under Consideration		2	3	2	2	3	1	3	1	3	2	3	2	3	30	

Map ID (New)	Street	Segment	Status	Notes	Score													Other Conflict	Total
					TEP Engineering Conflicts/ Constraints/ Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict			
28	Miracle Mile	Fairview– Flowing Wells	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	2	2	2	1	3	2	3	2	2	2	2	3	2	28	
29	Campbell	Grant–Elm	Under Consideration	East side is preferred by Banner. Plans to redevelop in this area.	3	3	3	3	3	3	2	3	3	3	2	2	3	36	
31	alley btw. Lee & Adams	Vine–Park	Under Consideration		1	1	1	1	3	3	3	2	3	2	3	3	1	27	
32	Vine	Alley–Elm	Under Consideration		1	3	2	1	3	1	3	1	3	1	3	2	2	26	
33	Ring	Warren– Substation	Under Consideration		1	1	2	1	3	3	2	2	3	3	2	2	1	26	
34	Elm	Substation– Vine	Under Consideration		3	3	3	3	3	3	3	3	3	3	3	3	3	39	
35	Elm	Campbell– Ring Road	Under Consideration		3	3	3	3	3	3	3	3	3	3	3	2	3	38	
36	Campbell	Elm– Speedway	Under Consideration		2	2	2	1	3	2	3	2	3	2	3	3	2	30	
37	Oracle	Fort Lowell– Miracle Mile	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	3	3	3	3	3	2	0	1	3	1	0	2	0	0	
38	Oracle	Miracle Mile– Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	1	3	3	3	3	1	2	1	3	2	2	2	2	28	
39	Vine	Mabel–Alley	Under Consideration		1	3	3	1	3	1	3	1	3	2	3	2	1	27	
40	1st	Glenn–Grant	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	2	2	2	2	3	2	3	2	3	2	3	2	3	31	
41	Vine	Speedway– Helen	Under Consideration		0	3	3	3	3	1	3	1	3	3	3	3	1	0	
42	Speedway	Campbell– Cherry	Under Consideration		1	3	3	3	3	1	3	1	3	3	3	2	1	30	

Map ID (New)	Street	Segment	Status	Notes	Score													Other Conflict	Total
					TEP Engineering Conflicts/ Constraints/ Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict			
42.1	Speedway	Cherry–Vine	Under Consideration		1	3	3	3	3	1	3	1	3	3	3	2	3	32	
42.2	Speedway	Vine– Mountain	Under Consideration		1	3	3	3	3	1	3	1	3	3	3	2	1	30	
42.3	Speedway	Mountain– Park	Under Consideration		1	3	3	3	3	1	3	1	3	2	3	3	1	30	
42.4	Speedway	Park–Euclid	Under Consideration		1	3	3	3	3	1	3	1	3	2	3	3	1	30	
43	Speedway	Euclid–6th Ave	Under Consideration		1	3	3	3	3	1	3	1	3	2	3	2	1	29	
44	Oracle	Glenn–Grant	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	2	3	3	3	3	1	3	1	3	2	1	2	1	28	
45	Euclid	Speedway– 6th St	Under Consideration		1	1	1	1	3	1	3	1	3	3	1	2	1	22	
46	Campbell	Speedway– 6th St	Under Consideration		2	2	2	1	3	2	2	1	2	2	2	2	1	24	
47	Euclid	Grant–Helen	Under Consideration	This link may work if we obtain private easements and only need a single circuit.	3	3	3	3	3	1	2	1	3	1	3	2	2	30	
48	Oracle	Grant–Helen	Added back; Under Consideration	This link was originally removed because it would require private easement and the links would jump back and forth from one side of the road to the other. Further review determined that it should be added back in to allow for more flexibility in siting.	1	3	3	3	3	1	2	1	3	2	1	2	1	26	
49	15th	Kino Pkwy– Cherry	Added back; Under Consideration		3	3	3	3	2	1	1	1	3	2	3	3	1	29	
50	Campbell	6th St– Broadway	Under Consideration		2	2	1	3	2	2	2	2	2	2	2	2	2	26	
51	15th	Cherry–Exist. 46kV	Added back; Under Consideration		3	3	3	3	3	2	3	2	3	2	2	3	2	34	
52	Broadway	Cherry– Mountain	Under Consideration		2	3	3	3	3	2	2	2	1	3	3	2	3	32	
52.1	Broadway	Kino Pkwy– Cherry	Under Consideration		3	3	3	3	3	2	2	2	1	3	3	3	3	34	

Map ID (New)	Street	Segment	Status	Notes	Score													Other Conflict	Total
					TEP Engineering Conflicts/ Constraints/ Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict			
53	Broadway	Euclid–Fremont	Under Consideration		2	3	3	3	3	2	2	2	1	2	2	2	2	29	
53.1	Broadway	Fremont–Mountain	Under Consideration		3	3	3	3	3	2	2	2	1	3	3	3	3	34	
54	Fairview	Miracle Mile–Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	1	1	2	1	3	1	3	1	3	1	1	1	3	22	
55	Euclid	6th St–Broadway	Under Consideration		1	2	2	2	3	1	3	1	3	2	3	2	1	26	
56	Euclid	Broadway–cross-country	Under Consideration		2	3	3	3	3	2	3	2	3	2	1	2	2	31	
57	Fremont	Manlove–Broadway	Under Consideration		2	2	2	1	3	3	2	2	3	3	2	2	3	30	
58	Flowing Wells	Miracle Mile–Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	2	2	2	1	2	3	3	3	3	2	1	2	3	29	
59	cross-country	Toole–Euclid	Under Consideration		3	3	3	3	3	3	3	2	2	3	3	3	2	36	
60	cross-country	46kV–Fremont	Under Consideration		2	2	2	1	3	3	1	2	3	3	2	2	3	29	
61	Toole	cross-country–16th	Under Consideration		3	3	3	3	3	3	3	3	3	3	3	2	2	37	
62	Cherry	cross-country–Broadway	Under Consideration		2	2	2	1	3	1	3	1	3	2	2	2	1	25	
63	cross-country	15th–Cherry	Under Consideration		2	3	3	3	3	3	2	2	3	3	2	2	3	34	
64	46kV line	alley btw. 16th & 17th–15th	Under Consideration		1	1	2	1	3	3	1	2	3	2	2	2	1	24	
64.1	46kV line	15th–Highland	Under Consideration		1	1	2	1	3	3	1	2	3	2	3	3	3	28	
64.2	46kV line	Highland–Manlove	Under Consideration		1	1	2	1	3	3	1	2	3	2	3	3	3	28	
65	Cherry	16th–15th	Under Consideration		2	2	2	1	3	2	3	2	3	2	3	3	3	31	

Map ID (New)	Street	Segment	Status	Notes	Score													Other Conflict	Total
					TEP Engineering Conflicts/ Constraints/ Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict			
66	Euclid	16th–19th St	Under Consideration		2	2	2	1	3	2	3	2	3	2	2	2	2	28	
67	19th	Euclid–Euclid	Under Consideration		2	3	3	3	3	2	3	2	3	2	3	3	2	34	
68	Miracle Mile	Oracle– Fairview	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	3	3	3	3	3	1	0	1	3	0	0	2	1	0	
69	Euclid	19th–21st	Under Consideration		2	2	2	1	3	2	3	2	3	2	2	2	2	28	
69.1	Euclid	21st–22nd	Under Consideration		1	2	2	1	3	2	3	2	3	1	1	1	2	24	
70	21st	Euclid–Park	Under Consideration		1	2	2	2	3	2	3	2	3	3	3	2	2	30	
70.1	21st	Park– Highland	Under Consideration		1	2	2	2	3	2	3	1	3	2	2	2	2	27	
70.2	21st	Highland– Curtis	Under Consideration		2	2	2	2	3	2	3	2	3	2	2	2	3	30	
71	Highland	22nd–21st	Under Consideration		2	2	2	3	3	2	3	2	3	2	2	2	2	30	
71.1	Highland	21st–20th	Under Consideration		2	3	3	3	3	2	3	2	3	2	3	3	2	34	
72	20th	Highland– Curtis	Under Consideration		3	3	3	3	3	2	3	2	3	3	3	2	2	35	
73	Curtis	20th–21st	Under Consideration		2	3	3	3	3	3	3	2	3	3	3	3	2	36	
73.1	Curtis	Warehouse– 20th	Under Consideration		2	2	2	1	3	2	3	2	3	2	2	2	2	28	
74	cross- country	Curtis–Kino	Under Consideration		2	2	2	3	3	3	3	2	3	3	2	3	2	33	
75	Warehouse	cross- country– Curtis	Under Consideration		2	2	2	1	3	3	3	3	3	2	2	2	1	29	
76	cross- country	Warehouse Ave–Vine St	Under Consideration		3	3	3	3	3	3	3	2	2	3	3	3	2	36	

Map ID (New)	Street	Segment	Status	Notes	Score													Other Conflict	Total
					TEP Engineering Conflicts/ Constraints/ Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict			
77	Vine	cross– country–17th	Under Consideration		3	3	3	3	3	2	3	2	3	3	3	3	2	36	
78	17th	Curtis–Vine	Under Consideration		3	3	3	3	3	3	3	3	3	3	2	2	3	37	
79	Curtis	alley btw. 16th & 17th & 46kV line	Under Consideration		2	2	2	3	3	2	3	2	3	1	3	3	2	31	
80	alley btw. 16th & 17th	Curtis–46kV line	Under Consideration		1	1	1	1	3	3	3	1	3	1	2	2	1	23	
81	alley btw. 16th & 17th	Curtis–Vine	Under Consideration		1	1	1	1	3	3	3	1	3	1	2	2	1	23	
82	Fort Lowell	Stone–Oracle	Added back; Under Consideration	Links along the existing 138kV line along Ft. Lowell had been removed because construction and future maintenance would require that the existing and future circuits would both have to be taken out of service; however, further review determined that, with careful coordination of outages, it could be accomplished.	2	2	2	2	3	2	2	2	3	2	2	2	3	29	
83	16th	Vine–Cherry	Under Consideration		2	2	2	2	3	2	3	2	3	2	3	2	3	31	
84	Vine	Alley and 16th	Under Consideration		2	3	3	3	3	2	3	1	3	3	3	3	1	33	
85	Vine	17th–alley btw. 16th & 17th	Under Consideration		2	3	3	3	3	2	3	1	3	3	3	3	1	33	
86	17th	Vine–Kino	Under Consideration		2	3	3	3	3	2	3	2	3	3	3	2	2	34	
87	Broadway	Plummer– Kino Pkwy	Under Consideration	Broadway (in this area) eliminated due to recent City of Tucson PI project. TEP just rebuilt the 46kV and distribution here, and there will also be a 5-year hiatus on pavement cuts. The line could not be installed without pavement cuts, as newly built 46kV and distribution would have to be undergrounded.	2	3	3	3	3	2	3	2	3	3	3	3	3	36	
88	Kino	Broadway– cross–country	Under Consideration		2	2	2	2	3	3	2	2	3	2	2	2	2	29	
88.1	Kino	cross- country– Winsett	Under Consideration		3	3	3	3	3	3	2	2	3	3	3	3	2	36	

Map ID (New)	Street	Segment	Status	Notes	Score													Other Conflict	Total
					TEP Engineering Conflicts/ Constraints/ Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict			
89	cross-country	14th–Kino	Under Consideration		3	3	3	3	3	3	2	2	3	3	3	3	3	37	
90	Plumer	19th–Broadway	Under Consideration	Plumer, culvert PI project; n/a identified	1	0	2	1	3	1	3	1	3	1	1	1	1	0	
91	Kino	15th–18th	Under Consideration		2	3	3	3	3	3	2	2	3	2	2	2	2	32	
92	Campbell	Winsett–14th St	Under Consideration	Dam present, 408 permitting required (Pima County)	2	2	2	2	3	1	3	1	3	2	2	2	2	27	
93	Kino	Aviation–18th	Under Consideration		2	3	3	3	3	3	3	2	3	3	2	2	1	33	
94	Winsett	Campbell–Kino Pkwy	Under Consideration		2	2	2	1	3	2	3	2	3	2	2	2	2	28	
95	Kino	22nd–21st	Under Consideration		3	3	3	3	3	3	3	1	3	3	3	3	1	35	
95.1	Kino	Warehouse–21st	Under Consideration		3	3	3	3	3	3	3	1	3	3	3	3	1	35	
95.2	Kino	Barraza Aviation Parkway–Warehouse	Under Consideration		3	3	3	3	3	3	3	1	3	3	3	3	1	35	
96	Campbell	Winsett–19th	Under Consideration		1	1	3	3	3	1	3	1	3	2	1	2	1	25	
96.1	Campbell	19th–Norris	Under Consideration		2	2	2	1	3	1	3	1	3	2	1	2	3	26	
96.2	Norris	Campbell–cross-country	Under Consideration		3	3	3	3	3	2	3	2	3	2	2	3	2	34	
97	19th	Plumer–Campbell	Under Consideration		1	0	2	1	3	1	3	1	3	1	1	1	2	0	
98	Plumer	22nd–19th	Under Consideration		1	0	2	1	3	1	3	1	3	1	1	1	3	0	
99	cross-country	Plumer–Norris	Under Consideration		3	3	3	3	3	3	2	2	3	2	2	3	3	35	
100	cross-country	rail yard–Plumer	Under Consideration		3	3	3	3	3	3	3	1	3	3	2	2	1	33	
101	22nd	Highland–Park	Under Consideration		2	2	2	2	3	3	3	3	3	3	3	3	3	35	

Map ID (New)	Street	Segment	Status	Notes	Score													Other Conflict	Total
					TEP Engineering Conflicts/ Constraints/ Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict			
101.1	22nd	Kino Pkwy– Highland	Under Consideration		2	3	3	3	3	3	3	2	3	3	3	3	2	36	
102	22nd	Park–Euclid	Under Consideration		2	2	2	2	3	3	3	3	3	3	3	3	3	35	
103	Euclid	22nd St– Silverlake	Under Consideration		1	1	2	1	3	3	2	2	3	2	2	2	1	25	
104	Park	22nd St– Silverlake	Under Consideration		1	1	2	2	3	1	1	1	3	1	1	1	1	19	
104.5	Park	22nd–21st	Under Consideration		2	2	2	3	3	2	3	2	3	3	3	3	3	34	
105	Silverlake	Park Euclid	Under Consideration		3	3	3	3	3	3	3	3	3	2	3	3	3	38	
106	Silverlake	Kino Pkwy– Park	Under Consideration	Waste Water prefers to avoid impacts to Quincie Douglas and other developments in this area	2	3	3	3	3	2	2	1	3	2	3	2	2	31	
107	Kino	22nd–27th	Under Consideration	Pima County opposed the visual impact to Kino (gateway to City of Tucson)	3	3	3	3	3	3	3	3	3	3	3	3	2	38	
107.1	Kino	27th–28th	Under Consideration	Pima County opposed the visual impact to Kino (gateway to City of Tucson)	3	3	3	3	3	3	3	3	3	3	3	3	3	39	
107.2	Kino	28th– Silverlake	Under Consideration	Pima County opposed the visual impact to Kino (gateway to City of Tucson)	3	3	3	3	3	3	2	3	3	3	3	2	3	37	
108	27th	Cherry and Kino	Under Consideration		3	3	3	3	3	3	3	3	3	2	3	3	3	38	
109	cross- country	Cherry– Cherrybell	Under Consideration		3	3	3	3	3	3	3	1	3	3	3	3	3	37	
110	Fairland	Willits– Silverlake	Under Consideration		2	3	3	3	3	3	3	3	3	3	2	3	2	36	
111	Willits	Cherrybell– Fairland	Under Consideration		2	3	3	3	3	3	3	3	3	2	3	2	2	35	
112	cross- country	Fairland– rail yard	Under Consideration		3	3	3	3	3	3	3	1	3	3	3	3	3	37	
113	cross- country	Silverlake– rail yard	Under Consideration		3	3	3	3	3	3	3	1	3	3	3	3	3	37	
114	Cherrybell	Silverlake– cross-country	Under Consideration		2	2	2	2	3	3	3	3	3	2	3	1	2	31	
114.1	Cherrybell	Cross-country to Willits			2	2	2	2	3	3	3	3	3	2	3	1	2	31	

Map ID (New)	Street	Segment	Status	Notes	Score													Other Conflict	Total
					TEP Engineering Conflicts/ Constraints/ Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict			
115	Cherry	28th–27th	Under Consideration		2	3	3	3	3	3	3	3	3	2	3	2	2	35	
116	cross- country	connects 28th across Kino	Under Consideration		3	3	3	3	3	3	3	3	3	3	3	3	3	39	
117	28th	Cherry–Kino connector link	Under Consideration		3	3	3	3	3	3	3	3	3	2	1	2	2	34	
118	28th	Warren– Cherry	Under Consideration		3	3	3	3	3	3	3	3	3	2	3	2	2	36	
119	Cherry	Silverlake– 28th	Under Consideration		3	3	3	3	3	3	3	3	3	2	1	3	2	35	
120	Warren	Silverlake– 28th	Under Consideration		2	2	2	1	3	3	3	3	3	3	2	2	2	31	
121	Silverlake	Kino Pkwy– Cherry	Under Consideration		3	3	3	3	3	3	3	3	3	1	3	3	3	37	
121.1	Silverlake	Cherry– Warren	Under Consideration		3	3	3	3	3	3	3	3	3	2	3	2	3	37	
121.2	Silverlake	Warrin– Martin	Under Consideration		3	3	3	3	3	3	3	3	3	3	3	3	2	38	
121.3	Silverlake	Martin– Cherrybell	Under Consideration		3	3	3	3	3	3	3	3	3	3	3	3	3	39	
121.4	Silverlake	Cherrybell– Fairland	Under Consideration		3	3	3	3	3	3	3	3	3	3	3	1	2	36	
122	cross- country	Martin– parking lot– Silverlake	Under Consideration		3	3	3	3	3	3	3	1	3	3	3	3	1	35	
123	cross- country	Martin– Silverlake	Under Consideration		2	2	2	1	3	3	3	1	3	1	3	1	2	27	
124	Barleycorn	Martin– Cherrybell	Under Consideration		1	1	1	1	3	1	3	1	3	1	1	1	1	19	
125	Campbell	36th– Barleycorn	Under Consideration		2	2	2	3	3	3	3	3	3	3	3	3	3	36	
125.1	Campbell	Barleycorn– Silverlake	Under Consideration		2	2	2	3	3	3	3	3	3	3	2	2	3	34	
126	Martin	Barleycorn– 36th	Under Consideration		2	2	2	3	3	3	3	1	3	3	3	1	1	30	
127	Kino	Silverlake– 36th St	Under Consideration		3	3	3	3	3	3	2	3	3	3	3	2	2	36	

Map ID (New)	Street	Segment	Status	Notes	Score												Other Conflict	Total
					TEP Engineering Conflicts/ Constraints/ Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict		
128	36th	Martin–Kino Pkwy	Under Consideration		1	3	2	3	3	3	3	3	3	3	1	2	1	31
129	36th	Campbell– Martin	Under Consideration		1	3	3	2	3	3	3	1	3	3	1	2	1	29
129.1	cross- country	36th– Campbell	Under Consideration		3	3	3	3	3	3	3	1	3	3	3	3	3	37
193	Main	Helen– Speedway	Under Consideration		2	3	3	3	3	2	3	2	3	3	3	3	2	35
198	Euclid	Speedway– Helen	Under Consideration	Originally removed because of limited right-of-way further north on Euclid Avenue. Added back based on stakeholder (U of A) comment to add links on Helen and Park to alley (46kV).	3	3	3	3	3	2	3	2	3	2	3	3	3	36
199	Helen	Euclid–Park	Under Consideration	Link added based on stakeholder comment (U of A).	1	1	2	1	3	1	3	1	3	1	2	1	2	22
200	Park	Speedway– Helen	Under Consideration	We would have to switch back and forth on east and west side of road to avoid buildings. We would have to obtain private easement. Not sure about other utilities.	2	3	3	3	3	2	3	2	3	2	3	3	2	34
201	Park	Helen–Alley	Under Consideration	Link added based on stakeholder comment (U of A).	1	1	2	1	3	1	3	1	3	2	1	1	2	22
202	Speedway	11th–Main	Under Consideration		2	3	3	3	3	3	3	3	3	3	3	2	3	37
203	Warehouse	Kino–Curtis	Under Consideration		2	2	2	2	3	1	3	1	3	2	2	2	1	26
204	Warehouse/ Cherry	Kino–22nd	Under Consideration		1	2	2	2	3	1	3	1	3	1	3	3	1	26
205	Cherrybell	Willets–22nd	Under Consideration		2	2	2	2	3	3	3	3	3	3	3	1	3	33

Note: If a link has a score of zero, it will fall off of the considered links. Pima County Waste Water Conflicts are weighted heavier in some areas due to the separation they require to install next to their utility. If communications attachers need to be relocated, this was weighted heavier due to the amount of coordination and underground trenching required to relocate them. If several customers are served off of a distribution line that would need to be rebuilt underground, this was weighted heavier due to the amount of services that would also need to be fed underground. **Maximum score is 39.**

Key: **0** = Not able to mitigate conflict; **1** = Multiple conflicts but able to mitigate/difficulty of conflict to mitigate; **2** = Single conflict but able to mitigate; **3** = No conflict.

Table B.2a. E/C Conflicts and Constraints

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
1	Fort Lowell	1st Ave–Stone	Added back; Under Consideration	Links along the existing 138kV line along Ft. Lowell had been removed because construction and future maintenance would require that the existing and future circuits would both have to be taken out of service, however further review determined that with careful coordination of outages it could be accomplished.	North and South ^a	Requires the rebuild of 138kV line. Distribution underbuilt would need to be relocated underground. Some easements may be required (see sidewalk conflicts and easement notes).	Distribution Circuit is currently underbuilt on the 138kV line. It would need to be removed from the 138kV structures and rebuilt underground. Due to the number of utilities in the road, it would be difficult to add an additional underground line. The distribution line also serves a number of customers that would need to have underground services installed.	Yes, extended outage on 138kV line and outages on distribution as well as cutover outages to customers being served off of distribution.	Yes, there are 4 communications attachers on the 138kV structures that would need to be relocated.	none
2	Glenn	Fairview– Flowing Wells	Under Consideration		North and South ^a	Requires the rebuild of 138kV line. 46kV line would need to be relocated. Distribution overhead line that would need to be relocated. Distribution underground line on north side of the road.	46kV Circuit is currently located on the 138kV structure and would need to be relocated. Distribution Circuit is currently underbuilt on the 138kV line. It would need to be removed from the 138kV structures and rebuilt underground. (There is not be enough room to underground the existing overhead line in same right-of-way)	Yes, extended outage on 138kV line and 46kV line. Outages on distribution as well as cutover outages to customers being served off of distribution.	none	Yes, other utility high voltage line crossing.
3	Glenn	Oracle–Fairview	Under Consideration		North and South ^a	Requires the rebuild of 138kV line. Distribution underbuilt would need to be relocated underground. Distribution underground line on north side of the road.	Distribution Circuit is currently underbuilt on the 138kV line and would need to be underground or relocated. (There is not be enough room to underground the existing overhead line in same right-of-way)	Yes, outage required on the 138kV and Distribution Circuit as well as outages on the customers being served off the distribution.	Yes, there are 2 communications attachers on the existing 46kV line that would need to be relocated.	none
4	Glenn	Stone–Oracle	Under Consideration		North and South ^a	Requires the rebuild of 138kV line. Distribution underbuilt would need to be relocated underground. Distribution underground line on north side of the road.	Distribution Circuit is currently underbuilt on the 138kV line and would need to be underground or relocated. (There is not be enough room to underground the existing overhead line in same right-of-way)	Yes, outage required on the 138kV and Distribution Circuit as well as outages on the customers being served off the distribution.	Yes, there are 2 communications attachers on the existing 46kV line that would need to be relocated.	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
5	Flowing Wells	Glenn–DMP	Under Consideration		East and West (based on conflicts and constraints)	Requires the rebuild of the 138kV line. Requires the relocation of a 46kV line on west side of the road. Distribution underground line on west side of the road.	Possibly, may need to rebuild the 46kV circuit underground. Limited room in right-of-way to add the underground line.	Yes, outage required on the 46kV.	none	Yes, other utility high-voltage line crossing.
5.5	Flowing Wells	DMP–Grant	Under Consideration		East and West (based on conflicts and constraints)	46kV Line on West side of the road that may need to be rebuilt based on other utility conflicts on east side of the road. Double Circuit Distribution overhead on west side of the road that may need to be rebuilt. Two circuits of distribution underground line on west side of the road.	Possibly, based on other utility conflicts on the east side of the road. Limited room to underground distribution if needed.	Yes, 46kV outage and possible distribution outages.	Yes, there are 3 communication attachers on the existing lines that may need to be relocated.	none
6	Fairview	Glenn–Grant	Under Consideration		Either side	46kV on east side of the road. Distribution on the west side of the road.	Possibly, based on other utility conflicts on the east side of the road	Yes, on the 46kV circuit and possible if the distribution needs to be underground	Possible, 1 current attacher	none
7	Highland/ 17th	Manlove–Curtis	Added back; Under Consideration		Either side	none	none	none	none	none
8	Grant	Fairview– Flowing Wells	Under Consideration		South side	46kV Line on the south side of the road that will need to be rebuilt. Possible conflict with 46kV and double circuit distribution line on the north side of the road that will needed to be crossed to go to DMP substation.	none	No, existing 46kV line is currently deenergized	Yes, 3 current attachers	none
8.1	Grant	Flowing Wells– DMP Parcel	Under Consideration		South side	46kV Line on the south side of the road that will need to be rebuilt. Possible conflict with 46kV and double circuit distribution line on the north side of the road that will needed to be crossed to go to DMP substation.	none	Yes, outage needed on 46kV line on north side of the road to cross to DMP substation due to a shared structure.	Yes, 3 current attachers	none
9	Grant	15th–Fairview	Under Consideration		South side	46kV Line on the south side of the road that will need to be rebuilt.	none	No, existing 46kV line is currently deenergized	Yes, 2 current attachers	none
10	Grant	Oracle–15th	Under Consideration		Either side	none	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
11	Stone	Glenn–Grant	Under Consideration		Either side	Distribution on west side of the road. Distribution service line on east side of the road. 46kV crossing at Kelso St.	Yes, if line is constructed on west side of the road. Possible if line is constructed on east side of the road based on 138kV clearance.	Yes, for either side of the road	There is a communication line running on the east side of the road.	none
12	Grant	6th Ave–Stone	Under Consideration		North (required due to recent road improvements/ paving)	46kV/distribution line on south side of the road.	Cannot do underground distribution in this area due to recent roadway improvements/ five-year hiatus on pavement.	none	none	none
12.1	Grant	Stone–Oracle	Under Consideration		North (required due to recent road improvements/ paving)	46kV/distribution line on south side of the road.	Cannot di underground distribution in this area due to recent roadway improvements/ five-year hiatus on pavement.	none	none	none
13	15th	Alto–Grant	Under Consideration		West side	46kV line that will need to be rebuilt. Distribution underbuilt that will need to be relocated underground.	Yes, distribution line that will need to be relocated underground/ underground services to customers served on the line	Yes, outage on the distribution for relocation and customers served on the line	Yes, 3 current attachers	none
14	cross- country	Helen–Alto	Under Consideration		n/a	46kV line that will need to be rebuilt.	none	None, the 46kV line is currently deenergized	none	none
15	Helen	11th–15th	Under Consideration		North side	46kV line on the north side of the road that will need to be rebuilt. Distribution line on the south side of the road.	none	None, the 46kV line is currently deenergized	Existing communication line running underneath the current 46kV line. Clearances must be maintained.	none
16	11th	Speedway– Helen	Under Consideration		West side	46kV with distribution underbuild on east side. 46kV single circuit on west side that will need to be rebuilt. 46kV crossing at Speedway and 11th.	none	None, the 46kV line is currently deenergized	Yes, 1 current attacher	none
17	Speedway	Stone–Helen	Under Consideration	U of A prefers north side of Speedway	North and South ^a	46kV crossing at Helen. Limited room for TEP overhead facilities.	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
18	Stone	Speedway– Grant	Under Consideration		East and West (requires the line to jump from one side of the road to the other based on conflicts and constraints, mainly building conflicts)	none	none	none	none	none
20	Speedway	6th Ave–Stone	Under Consideration	U of A prefers north side of Speedway	North and South ^a	Limited room for TEP overhead facilities along link. Possible 46kV crossing.	none	none	none	none
21	6th	Speedway– Grant	Under Consideration		East and West ^a	Distribution on portions of the road that will need to be mitigated.	Possible if distribution overhead cannot be avoided with new construction.	Possible on distribution line	Yes, 2 current attachers	none
22	1st	Fort Lowell– Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is required to connect with other links.	East and West ^a	Distribution Line on west side of the road.	Possible if structures need to be set on the west side of the road.	Possible if structures need to be set on the west side of the road.	Yes, 2 current attachers	none
23	Grant	1st–6th Ave	Under Consideration		North (required due to recent road improvements/ paving)	46kV distribution line on south side of the road.	Cannot do underground distribution in this area due to recent roadway improvements/ five-year hiatus on pavement.	none	none	none
24	Grant	Park–Mountain	Under Consideration		South, not feasible due to Grant Road widening project.	46kV Crossing at Park. Possible opportunity to relocate to alley just south of Grant Rd. but there is a distribution line currently located there and limited space (would require easements, limited room for TEP overhead facilities).	Yes, distribution line to the south and services to customers on this line.	Yes, distribution line to the south	Yes, 4 attachers	none
24.1	Grant	Euclid–Park	Under Consideration		North (required due to recent road improvements/ paving)	46kV/distribution line on south side of the road. 46kV crossing at Park.	Cannot do underground distribution in this area due to recent roadway improvements/ five-year hiatus on pavement.	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
25	Park	Alley–Grant	Under Consideration		East and West ^a	46kV/distribution line on east side of the road.	Yes, underbuilt distribution will need to be relocated underground.	Yes, to rebuild the 46kV line and underground the distribution	Yes, 3 current attachers	none
26	Grant	Campbell–Vine	Under Consideration		South, not feasible due to Grant Road widening project.	Possible opportunity to relocate to alley just south of Grant Rd. but there is a distribution line currently located there and limited space (would require easements, limited room for TEP overhead facilities).	Yes, distribution line to the south in alley and services to customers on this line.	Yes, distribution line to the south	Yes, 4 attachers	none
26.1	Grant	Vine–Mountain	Under Consideration		South, not feasible due to Grant Road widening project.	Possible opportunity to relocate to alley just south of Grant Rd. but there is a distribution line currently located there and limited space (would require easements, limited room for TEP overhead facilities).	Yes, distribution line to the south in alley and services to customers on this line.	Yes, distribution line to the south	Yes, 4 attachers	none
27	Vine	Elm–Grant	Under Consideration		East and West ^a	46kV line on the east side of the road that would need to be rebuilt.	none	Yes, on 46kV line	There is a communication line running on the west side of the road.	none
28	Miracle Mile	Fairview– Flowing Wells	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	North and South ^a	Distribution line on the north side of the road. Distribution service line on south side of the road.	Need to underground distribution line.	Yes, on distribution line	Communication line on south side of the road, 3 attachers on the north side of the road	none
29	Campbell	Grant–Elm	Under Consideration	East side is preferred by Banner. Plans to redevelop in this area.	Either side	none	none	none	none	none
31	alley btw. Lee & Adams	Vine–Park	Under Consideration		n/a	46kV line that will need to be rebuilt or relocated. If the line cannot be relocated there is not enough room for a double circuit in the alley. Distribution line that will need to be relocated underground. Limited room for overhead facilities.	Yes, distribution line that will need to be relocated underground/underground services to customers served on the line. Limited space to underground the line and fit the transmission structure.	Yes, 46kV line and the distribution line and customers served on the distribution line.	Yes, multiple attachers that will need to be relocated	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
32	Vine	Alley–Elm	Under Consideration		East and West ^a	46kV crossing at alley, 46kV overhead line on east side of the road that would need to be rebuilt. Two distribution circuits of underground located on the east side of the road. One circuit of 46kV underground on the west side of the road.	none	Yes, 46kV line.	Communication line running on west side of the road that would need to be relocated, 3 attachers.	none
33	Ring	Warren– Substation	Under Consideration		North and South ^a	Underground Distribution along portions of north and south side of the road. Overhead distribution starts just before ring road curves that would need to be underground.	Yes, underground distribution. Limited room to underground.	Yes, to underground distribution line	Yes, 4 attachers	none
34	Elm	Substation–Vine	Under Consideration		n/a	none	none	none	none	none
35	Elm	Campbell–Ring Road	Under Consideration		North	none	none	none	none	none
36	Campbell	Elm–Speedway	Under Consideration		East and West ^a	Distribution overhead on east side of the road. Distribution underground on portions of the east and west side of the road.	May need to underground distribution on the east side of the road, see other conflicts.	Yes, to underground distribution line	Yes, 2 current attachers	none
37	Oracle	Fort Lowell– Miracle Mile	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	Due to the existing utilities on the East side and the limited right-of-way on the West side the link is no longer viable.	none	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
38	Oracle	Miracle Mile– Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	West due to utilities on the East	46kV crossing at Glenn. Limited room for overhead facilities on the west side.	none	none	none	none
39	Vine	Mabel–Alley	Under Consideration		East and West ^a	46kV crossing at alley, two distribution circuits of underground located on the east side of the road.	none	none	Communication line running on west side of the road that would need to be relocated, 2 attachers.	none
40	1st	Glenn–Grant	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	East and West ^a	Distribution Line on west side of the road.	Possible if structures need to be set on the west side of the road.	Possible if structures need to be set on the west side of the road.	Yes, 2 current attachers.	none
41	Vine	Speedway– Helen	Under Consideration		Due to the existing utilities and clearance conflicts, this link is no longer viable.	Limited room for TEP overhead facilities along link. Underground distribution on east side of the road limits placement of transmission structure to mitigate clearance concerns to the building conflict.	none	none	none	none
42	Speedway	Campbell– Cherry	Under Consideration		North and South ^a	Limited room for TEP overhead facilities along link.	none	none	none	none
42.1	Speedway	Cherry–Vine	Under Consideration		North and South ^a	Limited room for TEP overhead facilities along link.	none	none	none	none
42.2	Speedway	Vine–Mountain	Under Consideration		North and South ^a	Limited room for TEP overhead facilities along link.	none	none	none	none
42.3	Speedway	Mountain–Park	Under Consideration		North and South ^a	Limited room for TEP overhead facilities along link.	none	none	none	none
42.4	Speedway	Park–Euclid	Under Consideration		North and South ^a	Limited room for TEP overhead facilities along link. Possible.	none	none	none	none
43	Speedway	Euclid–6th Ave	Under Consideration		North and South ^a	Limited room for TEP overhead facilities along link.	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
44	Oracle	Glenn–Grant	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	East and West ^a	46kV crossing at Glenn	none	none	none	none
45	Euclid	Speedway–6th St	Under Consideration		East and West ^a	Overhead distribution line on west side of the road that would need to be underground. Limited right-of-way to fit overhead transmission poles.	Yes, distribution will need to be relocated underground. Limited right-of-way to rebuild underground.	Yes, distribution line and customers telecommunications service.	Yes, 2 current attachers	none
46	Campbell	Speedway–6th St	Under Consideration		West side of the road, but may need to jump to East side to mitigate conflicts	Overhead distribution line on the east side of the road. Distribution underground in areas along the east side of the road.	Distribution line may need to be underground in areas to mitigate conflicts.	Yes, possibly on the overhead distribution line.	Yes, 4 attachers	none
47	Euclid	Grant–Helen	Under Consideration	This link may work if we obtain private easements and only need a single circuit.	East and West ^a	none	none	none	none	none
48	Oracle	Grant–Helen	Added back; Under Consideration	This link was originally removed because it would require private easement and the links would jump back and forth from one side of the road to the other. Further review determined that it should be added back in to allow for more flexibility in siting.	East and West ^a	Limited room for TEP overhead facilities along link. Possible 46kV crossing.	none	none	none	none
49	15th	Kino Pkwy– Cherry	Added back; Under Consideration		North and South ^a	none	none	none	none	none
50	Campbell	6th St– Broadway	Under Consideration		West side of the road, but may need to jump to East side to mitigate conflicts	Underground distribution at Campbell and 6th on east side. Overhead distribution on east side.	Distribution line may need to be underground in areas to mitigate conflicts.	Yes, possibly on the overhead distribution line.	Yes, 3 attachers	none

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						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
51	15th	Cherry–Exist. 46kV	Added back; Under Consideration		North	none	none	none	none	none
52	Broadway	Cherry– Mountain	Under Consideration		North and South ^a	46kV crossing at Highland	none	none	none	none
52.1	Broadway	Kino Pkwy– Cherry	Under Consideration		North and South ^a	none	none	none	none	none
53	Broadway	Euclid–Fremont	Under Consideration		North	Underground distribution north side near apartment building	none	none	none	none
53.1	Broadway	Fremont– Mountain	Under Consideration		North and South ^a	none	none	none	none	none
54	Fairview	Miracle Mile– Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	Either side	46kV line on the east side of the road. Distribution overhead line on west side of the road. Distribution underground on west side of the road near Glenn.	Need to underground either the 46kV line or the distribution line. Limited right-of-way to construct underground lines.	Yes, to underground either the 46kV or the 13.8kV line.	Yes, 2 attachers	none
55	Euclid	6th St– Broadway	Under Consideration		East and West ^a	46kV overhead line at 6th and Euclid. Distribution underground line on west side of the road at 5th and Euclid. 46kV crossing. Distribution overhead line on west side of the road. Limited right-of-way for transmission structure along this link.	Underground distribution line in areas to mitigate conflicts.	Yes, underground distribution and customers it serves	Yes, 1 current attacher	none
56	Euclid	Broadway– cross-country	Under Consideration		East	Distribution overhead on the west side of the road	none	none	none	none
57	Fremont	Manlove– Broadway	Under Consideration		East and West ^a	Single circuit distribution part of the way. Double circuit distribution along north segment of the link	Possible underground needed in areas for the distribution.	Yes, for distribution underground	Yes, 2 attachers	none
58	Flowing Wells	Miracle Mile– Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	Either side	Overhead Distribution line on east side of the road.	Possible underground of distribution line.	Yes, on distribution line	Yes, 4 attachers	Yes, other utility high voltage line crossing.
59	cross- country	Toole–Euclid	Under Consideration		n/a	none	none	none	none	none
60	cross- country	46kV–Fremont	Under Consideration		n/a	Distribution line (Santa Rita to Fremont) needs to be underground.	Yes, distribution line	Yes, distribution line	Yes, 3 attachers	none
61	Toole	cross-country– 16th	Under Consideration		Either side	none	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
62	Cherry	cross-country– Broadway	Under Consideration		East and West ^a	Overhead distribution line along portions of the east and west of the link, needs to be undergrounded to mitigate conflicts	Yes underground distribution line and services to customers.	Yes, outage on distribution line and customer services	Yes, 2 attachers	none
63	cross- country	15th–Cherry	Under Consideration		n/a	Distribution overhead line. Cannot underground under drainage feature need to look at co locating in the corridor	none	none	none	none
64	46kV line	alley btw. 16th & 17th–15th	Under Consideration		n/a	46kV line that will need to be rebuilt/relocated. Not enough room for a double circuit 138kV/46kV line. If line cannot be relocated this link is no longer viable. Distribution underbuilt line that will need to be relocated or rebuilt underground.	Yes, distribution line needs to be relocated underground, most likely along Highland Ave.	Yes, outage on 46kV and the distribution line	Yes, 3 attachers	none
64.1	46kV line	15th–Highland	Under Consideration		n/a	46kV line that will need to be rebuilt. Distribution underbuilt line that will need to be relocated or rebuilt underground.	Yes, distribution line needs to be relocated underground, most likely along Highland Ave.	Yes, outage on 46kV and the distribution line	Yes, 3 attachers	none
64.2	46kV line	Highland– Manlove	Under Consideration		n/a	46kV line that will need to be rebuilt. Distribution underbuilt line that will need to be relocated or rebuilt underground.	Yes, distribution line needs to be relocated underground, most likely along Highland Ave.	Yes, outage on 46kV and the distribution line	Yes, 3 attachers	none
65	Cherry	16th–15th	Under Consideration		Either side	Distribution overhead line on east side of the road.	Distribution would need to be underground if east side of the road is preferred.	Yes, on distribution line	Yes, 2 attachers	none
66	Euclid	16th–19th St	Under Consideration		East and West side depending on conflicts and constraints	Distribution overhead line on east side of the road.	Possible due to other conflicts on east side.	Possible on distribution line	Yes, 2 attachers	none
67	19th	Euclid–Euclid	Under Consideration		North	Distribution overhead line on south side.	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
68	Miracle Mile	Oracle–Fairview	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	Due to the existing utilities on the South and the storm drain in the North, this link is not viable for construction.	none	none	none	none	none
69	Euclid	19th–21st	Under Consideration		West side	Distribution on west side of the road that will need to be underground	Yes, distribution lines	Yes, distribution line	Yes, 2 attachers	none
69.1	Euclid	21st–22nd	Under Consideration		East and West side depending on conflicts and constraints	46kV line on east side that will need to be rebuilt. Distribution line on the west side that might need to be underground due to conflicts on the east side of the road.	Yes, distribution line	Yes, 46kV outage and distribution lien outage	Yes, 2 attachers	none
70	21st	Euclid–Park	Under Consideration		North and South ^a	46kV overhead line on the north side of the road. Distribution underbuilt line on the north side of the road. Limited right-of-way for transmission construction.	Possible due to other conflicts on south side	Yes, 46kV outage and distribution lien outage	Yes, 1 current attacher	none
70.1	21st	Park–Highland	Under Consideration		North and South ^a	46kV overhead line on the north side of the road. Distribution underbuilt line on the north side of the road. Distribution underground line on north side of the road. Limited right-of-way for transmission construction.	Possible due to other conflicts on south side	Yes, 46kV outage and distribution lien outage	Yes, 1 current attacher	none
70.2	21st	Highland–Curtis	Under Consideration		North and South ^a	Distribution overhead line on the north side of the road.	Possible due to other conflicts on south side	Possible on distribution line and services on the line	Yes, 1 current attacher	none
71	Highland	22nd–21st	Under Consideration		East and West ^a	Distribution overhead on west side of the road.	Possible due to other conflicts on east side	Possible on distribution line and services on the line	none	none
71.1	Highland	21st–20th	Under Consideration		East side	Distribution overhead on west side of the road. A couple of distribution service poles on east side of the road.	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
72	20th	Highland–Curtis	Under Consideration		South side	none	none	none	none	none
73	Curtis	20th–21st	Under Consideration		East side	Distribution overhead on the west side of the road.	none	none	none	none
73.1	Curtis	Warehouse– 20th	Under Consideration		East side	Distribution line on the east side of the road that will need to be rebuilt underground.	Yes, overhead distribution placed underground	Yes, on overhead distribution and services to customers	Yes, 2 attachers	none
74	cross-country	Curtis–Kino	Under Consideration		n/a	Distribution overhead line that cannot be undergrounded going east due to Kino bridge. Overhead conflict would need to be mitigate. Line can be underground headed west.	Possible underground headed west	Possible outage on distribution line headed west	none	none
75	Warehouse	cross-country– Curtis	Under Consideration		North	Distribution overhead line that will need to be rebuilt underground.	Yes, distribution overhead line	Yes, distribution overhead line and customers on the line	Yes, 4 attachers	none
76	cross-country	Warehouse Ave–Vine St	Under Consideration		n/a	none	none	none	none	none
77	Vine	cross-country– 17th	Under Consideration		West side of the road to avoid building structure on the East side	none	none	none	none	none
78	17th	Curtis–Vine	Under Consideration		South, see PCWW note	none	none	none	none	none
79	Curtis	alley btw. 16th & 17th & 46kV line	Under Consideration		West side of the road, see gas line comment	Distribution service line that will need to be underground.	Yes, underground service line	Yes, to underground service	none	none
80	alley btw. 16th & 17th	Curtis–46kV line	Under Consideration		n/a	46kV overhead line that would need to be rebuild/relocated to another street. Not sufficient room for double circuit 46kV and 138kV line. If 46kV line cannot be relocated, this link would no longer be viable. Distribution overhead line that would need to be relocated underground and services to customers refed.	Yes, distribution underground probable moved to 17th or 16th Ave.	Yes, on 46kV line and distribution line as well as service to customers	Yes, 4 attachers	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
81	alley btw. 16th & 17th	Curtis–Vine	Under Consideration		n/a	46kV overhead line that would need to be rebuild/relocated to another street. Not sufficient room for double circuit 46kV and 138kV line. If 46kV line cannot be relocated this link would no longer be viable. Distribution overhead line that would need to be relocated underground and services to customers refed.	Yes, distribution underground probably moved to 17th or 16th Ave.	Yes, on 46kV line and distribution line as well as service to customers	Yes, 4 attachers	none
82	Fort Lowell	Stone–Oracle	Added back; Under Consideration	Links along the existing 138kV line along Ft. Lowell had been removed because construction and future maintenance would require that the existing and future circuits would both have to be taken out of service; however, further review determined that, with careful coordination of outages, it could be accomplished.	North	Double circuit distribution line on south side of the road. Appears to be room in right-of-way for TEP overhead facilities. Some easements may be required (see sidewalk conflicts and easement notes).	None, if we remain on the north side.	None, if we remain on the north side	None, if we remain on the north side.	none
83	16th	Vine–Cherry	Under Consideration		Either side	Distribution overhead line on north side of the road.	Possible if underground distribution	Possible if underground distribution	Yes, 2 attachers	none
84	Vine	Alley and 16th	Under Consideration		Either side	46kV crossing at alley. Limited room for transmission structure.	none	none	none	none
85	Vine	17th–alley btw. 16th & 17th	Under Consideration		Either side	46kV crossing at alley. Limited room for transmission structure.	none	none	none	none
86	17th	Vine–Kino	Under Consideration		Either side	46kV crossing at Cherry Ave.	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
87	Broadway	Plummer–Kino Pkw	Under Consideration	Broadway (in this area) eliminated due to recent City of Tucson PI project. TEP just rebuilt the 46kV and distribution here, and there will also be a 5-year hiatus on pavement cuts. The line could not be installed without pavement cuts, as newly built 46kV and distribution would have to be undergrounded.	North side only (distribution on South side and cannot underground due to road way improvement project and 5- year hiatus on pavement)	Distribution on south side	none	none	none	none
88	Kino	Broadway– cross–country	Under Consideration		West side preferred, but may need to move to the East side for portions to mitigate conflicts.	Double circuit distribution line on east side for portion of the link. 46kV line on east side for portion of the link.	Possible to mitigate conflicts.	Possible if lines need to be underground/ rebuilt.	Yes, 3 attachers	none
88.1	Kino	cross-country– Winsett	Under Consideration		Either side	none	none	none	none	none
89	cross- country	14th–Kino	Under Consideration		n/a	none	none	none	none	none
90	Plumer	19th–Broadway	Under Consideration	Plumer, culvert PI project; n/a identified	Due to the amount of utilities along this corridor it is not feasible to fit an additional transmission line	46kV overhead west side of the road move to the east at Winsett. Double circuit distribution overhead on the west side of the road. Distribution underground circuit on west side of the road. Limited right-of-way for transmission overhead facilities.	No room in right-of-way to underground 2 circuits of overhead distribution.	Yes, on 46kV line and 2 circuits of distribution as well as services to customers.	Yes, 3 attachers	none
91	Kino	15th–18th	Under Consideration		Either side depending no connecting links	46kV crossing,	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
92	Campbell	Winsett–14th St	Under Consideration	Dam present, 408 permitting required (Pima County)	West side preferred but may need to move to the East side for portions to mitigate conflicts.	46kV overhead line. Distribution underbuilt line.	Possible underground of distribution line.	46kV outage if needs rebuilt double circuit. Distribution outage and customers served off the line.	Yes, 1 current attacher	none
93	Kino	Aviation–18th	Under Consideration		Either side depending no connecting links	46kV line at 18th that might be in the way of crossing structure.	none	none	none	none
94	Winsett	Campbell–Kino Pkwy	Under Consideration		North and South depending on conflicts and constraints	Overhead distribution on south side of the road for a portion.	Yes, underground distribution line and services to customers	Yes, on distribution line	Yes, 2 attachers	none
95	Kino	22nd–21st	Under Consideration		East or West depending on connecting links	none	none	none	none	none
95.1	Kino	Warehouse– 21st	Under Consideration		East or West depending on connecting links	none	none	none	none	none
95.2	Kino	Barraza Aviation Parkway– Warehouse	Under Consideration		East or West depending on connecting links	none	none	none	none	none
96	Campbell	Winsett–19th	Under Consideration		West side see underground distribution note	46kV line on east side of the road . Double circuit distribution underbuilt line on east side of the road. 46kV crossing at 18th St. Distribution underground on east side of the road near 19th.	No room to underground 2 circuits of distribution in right-of- way, so need to try and locate on west side.	none	none	none
96.1	Campbell	19th–Norris	Under Consideration		East or West depending on connecting links	Distribution overhead on ease side of the road Limited right-of-way.	Yes, if distribution on east side needs undergrounding.	Yes, on distribution line	Yes, 2 attachers	none
96.2	Norris	Campbell– cross-country	Under Consideration		North/East	none	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
97	19th	Plumer– Campbell	Under Consideration		Due to the amount of utilities along this corridor, it is not feasible to fit an additional transmission line	46kV overhead line on the south side of the road that would need to be rebuilt. Overhead underbuilt distribution line that would need to be relocated underground. Underground distribution line on south side of the road. Limited room in right-of-way for a transmission line.	No room in right-of-way to underground another circuit of overhead distribution.	Yes, on 46kV and distribution line	Yes, 3 attachers	none
98	Plumer	22nd–19th	Under Consideration		Due to the amount of utilities along this corridor, it is not feasible to fit an additional transmission line	46kV overhead line on east side of the road. Double circuit distribution line on the west side of the road. Limited room in right-of-way for transmission line.	No room in right-of-way to underground 2 circuits of overhead distribution.	Yes, on 46kV line and 2 circuits of distribution as well as services to customers.	Yes, 3 attachers	none
99	cross-country	Plumer–Norris	Under Consideration		n/a	none	none	none	none	none
100	cross-country	rail yard– Plumer	Under Consideration		n/a	none	none	none	none	none
101	22nd	Highland–Park	Under Consideration		Either side	Distribution overhead on south side of the road	Yes, if on south side.	Yes, if underground distribution line	Yes, 1 current attacher	none
101.1	22nd	Kino Pkwy– Highland	Under Consideration		Either side	Distribution overhead starts at Highland on south side of the road	none	none	none	none
102	22nd	Park–Euclid	Under Consideration		Either side	Distribution overhead on south side of the road	Yes, if on south side.	Yes, if underground distribution line	Yes, 1 current attacher	none
103	Euclid	22nd St– Silverlake	Under Consideration		East and West side depending on conflicts and constraints	46kV on east side of the road. Distribution underbuilt that will need to be relocated.	Yes, distribution line moved to underground.	Yes, on 46kV line and distribution line as well as service to customers.	Yes, 5 current attachers	None
104	Park	22nd St– Silverlake	Under Consideration		East side due to sewer and storm drain and lack of room to underground distribution.	Overhead distribution on the west side of the road. 4-span distribution service line that will need to be underground on east side. Limited right-of-way for transmission line.	Need to underground the 4-span service line, limited room to underground circuit of distribution.	Yes, on distribution service line	Yes, 1 current attacher	None

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
104.5	Park	22nd–21st	Under Consideration		Either side depending no connecting links	Distribution on east side of the road.	Possible depending on side of road	Possible, depending on side of road	none	None
105	Silverlake	Park Euclid	Under Consideration		North	none	none	none	none	None
106	Silverlake	Kino Pkwy–Park	Under Consideration	Waste Water prefers to avoid impacts to Quincie Douglas and other developments in this area	North and South side of the road to mitigate residential other conflicts	Underground distribution along a portion of the link on the north side.	none	none	none	None
107	Kino	22nd–27th	Under Consideration	Pima County opposed the visual impact to Kino (gateway to City of Tucson)	Either side	none	none	none	none	None
107.1	Kino	27th–28th	Under Consideration	Pima County opposed the visual impact to Kino (gateway to City of Tucson)	Either side	none	none	none	none	None
107.2	Kino	28th–Silverlake	Under Consideration	Pima County opposed the visual impact to Kino (gateway to City of Tucson)	Either side	none	none	none	none	None
108	27th	Cherry and Kino	Under Consideration		Either side	none	none	none	none	None
109	cross- country	Cherry– Cherrybell	Under Consideration		n/a	none	none	none	none	None
110	Fairland	Willits– Silverlake	Under Consideration		East side to avoid other conflicts	Distribution overhead on west side of road	none	none	none	None
111	Willits	Cherrybell– Fairland	Under Consideration		South side	Distribution overhead on north side of road	none	none	none	None
112	cross- country	Fairland– rail yard	Under Consideration		n/a	None	None	None	None	None
113	cross- country	Silverlake– rail yard	Under Consideration		n/a	None	None	None	None	None
114	Cherrybell	Silverlake– cross-country	Under Consideration		East side	Overhead distribution on east side of the road	Yes, overhead distribution placed underground	Yes, on distribution line	Yes, 1 current attacher	None
114.1	Cherrybell	Cross-country to Willits			East side	Overhead distribution on east side of the road	Yes, overhead distribution placed underground	Yes, on distribution line	Yes, 1 current attacher	none
115	Cherry	28th–27th	Under Consideration		East side	Distribution on west side	none	none	none	None

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
116	cross-country	connects 28th across Kino	Under Consideration		n/a	none	none	none	none	None
117	28th	Cherry–Kino connector link	Under Consideration		North due to sewer lines	none	none	none	none	None
118	28th	Warren–Cherry	Under Consideration		North due to other conflicts	none	none	none	none	None
119	Cherry	Silverlake–28th	Under Consideration		East side due to gas and sewer lines	none	none	none	none	None
120	Warren	Silverlake–28th	Under Consideration		East side	Distribution line on east side	Yes, distribution line	Yes, distribution line	Yes, 2 attachers	None
121	Silverlake	Kino Pkwy–Cherry	Under Consideration		North and South side to mitigate conflicts	none	none	none	none	None
121.1	Silverlake	Cherry–Warren	Under Consideration		North and South side to mitigate conflicts	none	none	none	none	None
121.2	Silverlake	Warrin–Martin	Under Consideration		North side	none	none	none	none	None
121.3	Silverlake	Martin–Cherrybell	Under Consideration		North side	none	none	none	none	None
121.4	Silverlake	Cherrybell–Fairland	Under Consideration		Either side	none	none	none	none	None
122	cross-country	Martin–parking lot–Silverlake	Under Consideration		n/a	none	none	none	none	None
123	cross-country	Martin–Silverlake	Under Consideration		n/a	Distribution overhead line along link. Limited room for overhead transmission line	Limited room to underground distribution would need easement for both overhead and underground	Yes, if underground distribution line	Yes, 2 attachers	None
124	Barleycorn	Martin–Cherrybell	Under Consideration		North and South side to mitigate conflicts	Distribution line on south side of the road	Yes, to mitigate conflicts. Limited room to underground distribution and distribution services	Yes, distribution and distribution services	Yes, 2 attachers	None
125	Campbell	36th–Barleycorn	Under Consideration		Middle area	Installing new distribution along east side of Campbell but outside of middle area	Possible if in conflict	Possible if in conflict	none	None

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
125.1	Campbell	Barleycorn– Silverlake	Under Consideration		Middle area	Installing new distribution along east side of Campbell but outside of middle area	Possible if in conflict	Possible if in conflict	none	None
126	Martin	Barleycorn– 36th	Under Consideration		West side	Distribution on west side only near 31st Street, limited right-of-way especially with water on west side of the road, may need easements along drainage area.	Possible if in conflict	Possible if in conflict		None
127	Kino	Silverlake–36th St	Under Consideration		Either side	Distribution underground on east side near 36th St. 46kV crossing at 36th.	none	none	none	None
128	36th	Martin–Kino Pkwy	Under Consideration		South side	46kV overhead and distribution underbuilt on north side of the road. 138kV line on south side of the road	none	Possible on 138kV line	none	None
129	36th	Campbell– Martin	Under Consideration		South side	46kV overhead and distribution underbuilt on north side of the road.	none	none	Communication line on south side of the road	None
1291	cross-country	36th–Campbell	Under Consideration		n/a	none	none	none	none	none
193	Main	Helen– Speedway	Under Consideration		East	46kV crossing at Helen.	none	none	none	none
198	Euclid	Speedway– Helen	Under Consideration	Originally removed because of limited right-of-way further north on Euclid Avenue. Added back based on stakeholder (U of A) comment to add links on Helen and Park to alley (46kV).	East and West ^a	none	none	none	none	none
199	Helen	Euclid–Park	Under Consideration	Link added based on stakeholder comment (U of A).	North and South ^a	Distribution line on the south side of the road. Limited right-of-way for overhead transmission line.	Yes, underground distribution line. Limited room to underground line.	Yes, outage to underground the line and underground services to customers.	Yes, 2 current attachers	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
200	Park	Speedway– Helen	Under Consideration	We would have to switch back and forth on east and west side of road to avoid buildings. We would have to obtain private easement. Not sure about other utilities.	East and West ^a	Distribution underground on the east side of the road	none	none	none	none
201	Park	Helen–Alley	Under Consideration	Link added based on stakeholder comment (U of A).	East and West ^a	Distribution overhead on east side of the road	Yes, underground distribution. Limited room to underground.	Yes, outage to underground the line and underground services to customers.	Yes, 4 attachers	none
202	Speedway	11th–Main	Under Consideration		North side	46kV crossing at 11th	none	none	none	none
203	Warehouse	Kino–Curtis	Under Consideration		South side	Distribution service lines that will need to be relocated.	Yes, distribution service lines	Yes, on distribution service lines and customers that it serves	Yes, 1 current attacher	none
204	Warehouse /Cherry	Kino–22nd	Under Consideration		North and South side/East and West side depending on conflicts and constraint.	Overhead distribution line on south side of the road along warehouse. Overhead distribution along east and west side of the road along Cherry Ave.	Yes, on distribution lines	Yes, on distribution line	Communication line on north side of the road	none
205	Cherrybell	Willets–22nd	Under Consideration		East	Overhead distribution line along west side near 22nd St, overhead distribution along east side 24th Street south	Yes, overhead distribution placed underground	Yes, on distribution line	Yes, 1 current attacher	none

Table B.2b. E/C Conflicts and Constraints (continued)

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
1	Fort Lowell	1st Ave– Stone	Added back; Under Consideration	Links along the existing 138kV line along Ft. Lowell had been removed because construction and future maintenance would require that the existing and future circuits would both have to be taken out of service, however further review determined that with careful coordination of outages it could be accomplished.	North and South ^a	Yes (Los Altos Ave. - Estrella Ave.)	none	Possibly (Los Altos Ave. - Estrella Av.)	None	Gas lines on south side of the road.	Possible conflict. Sanitary sewer line on north and south side of road but within traffic lanes. Limits the room for undergrounding the distribution.	Possible conflict. Water line near Stone Avenue on south side of road. Water line in roadway on south side limits room for undergrounding distribution.	none
2	Glenn	Fairview– Flowing Wells	Under Consideration		North and South ^a	There are not currently sidewalks along this stretch of road. If required there is not enough room between curb and property line (easement will be required).	none	Possibly if sidewalk 4-foot maintenance is required.	none	Possible Conflict. Gas line on north side of the road.	Possible conflict. Sanitary sewer line in middle and on south side of road but within traffic lanes.	Possible conflict. Water line on north side of road between Fairview and Burrito Avenue then water lines move to south side of road.	none
3	Glenn	Oracle– Fairview	Under Consideration		North and South ^a	There are not currently 4-foot sidewalks along this segment and in some portions there will not be enough room for pole and 4-foot sidewalk. Additional easements will be required.	none	Possibly if sidewalk 4-foot maintenance is required.	none	none	none	Possible Conflict. Water line on south side of the road between Oracle and 14th Ave. Water line on north side of the road between 14th Ave. and Fairview.	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
4	Glenn	Stone– Oracle	Under Consideration		North and South ^a	There are not currently 4-foot sidewalks along this segment and in some portions there will not be enough room for pole and 4-foot sidewalk. Additional easements will be required.	none	Possibly if sidewalk 4-foot maintenance is required.	none	Possible Conflict. Gas on north side of the road (stone to Balboa) south side of the road (Balboa to Oracle).	none	Possible Conflict. Water line on south side of the road.	none
5	Flowing Wells	Glenn–DMP	Under Consideration		East and West (based on conflicts and constraints)	none	none	Possible for 46kV line relocation.	None	Gas line on east side of the road.	Sewer line on east side of the road.	Water line on east side of the road.	none
5.5	Flowing Wells	DMP–Grant	Under Consideration		East and West (based on conflicts and constraints)	none	none	Possible for structure location outside of conflicts with other utilities.	none	Possible conflict - Gas line on east side of the road.	Possible Conflict. Sewer line on the east side of the road.	Possible Conflict. Water line on east side of the road.	none
6	Fairview	Glenn– Grant	Under Consideration		Either side	Possible, no sidewalks installed at this time but if we need provisions for future 4-0" would require easements	none	Possible, see sidewalk note.	none	Possible Conflict- Gas line on east sod of the road	Sewer on east side of the road.	Possible Conflict. Water line on the west side of the road in places	none
7	Highland/ 17th	Manlove– Curtis	Added back; Under Consideration		Either side	Possible depending on other utility conflicts.	none	Possible, see sidewalk note.	none	Gas line on east side of the road	Possible conflict, sewer on the west side of the road when 17th curves.	Possible Conflict. water line on west side of the road starting at 16th south.	none
8	Grant	Fairview– Flowing Wells	Under Consideration		South side	Possible depending on other utility conflicts on south side of the road	none	Possible, see sidewalk note.	none	none	none	Conflict only at Grand & Flowing Wells. Water line cuts from center of the road to south side of road.	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
8.1	Grant	Flowing Wells–DMP Parcel	Under Consideration		South side	Possible depending on other utility conflicts on south side of the road	none	Yes, see sidewalk note and the Grant Rd. underpass improvements note.	Grant Rd. underpass improvements may need to be on private easement to the south to avoid underpass construction.	none	none	Water line on the south side of the road.	none
9	Grant	15th–Fairview	Under Consideration		South side	Possible depending on other utility conflicts on south side of the road.	none	Possible see sidewalk note.	none	none	none	none	none
10	Grant	Oracle–15th	Under Consideration		Either side	Possible near 15th and Grant on north side and all along the south side of the road.	Yes, conflict on south side of the road.	Possible see sidewalk note.	none	Possible, near 15th there is a gas line on south side of the road.	none	none	none
11	Stone	Glenn–Grant	Under Consideration		Either side	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note.	none	Gas on portions of the west and portions of the east side of the road.	Yes, sewer line on west side of the road.	Water on west side of the road.	none
12	Grant	6th Ave–Stone	Under Consideration		North (required due to recent road improvements/paving)	none	none	none	Cannot do underground distribution in this area due to recent roadway improvements /five-year hiatus on pavement.	Gas on norths ide along portions of the road. Coordinate pole placement.	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
12.1	Grant	Stone– Oracle	Under Consideration		North (required due to recent road improvements/ paving)	none	none	none	Cannot do underground distribution in this area due to recent roadway improvements /five-year hiatus on pavement.	Gas on north side along portions of the road. Coordinate pole placement.	none	None	none
13	15th	Alto–Grant	Under Consideration		West side	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note and other conflicts note.	none	Gas line on east and west side of the road. Also limiting room for distribution underground needed.	none	Water on east side of the road and jumps to west side in a few locations. Conflicting with distribution underground needed.	Properties built to edge of road limited space may require additional easements to mitigate.
14	cross- country	Helen–Alto	Under Consideration		n/a	none	none	Yes, for cross- country pole locations.	none	none	none	Water on east side of the road	Structures cross over building in the existing alignment.
15	Helen	11th–15th	Under Consideration		North side	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note.	none	Gas line along portions of the north and south side of the road.	none	none	none
16	11th	Speedway– Helen	Under Consideration		West side	none	none	none	none	none	none	none	none
17	Speedway	Stone– Helen	Under Consideration	U of A prefers north side of Speedway	North and South ^a	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas on north side of the road	none	Water on north side of the road	Pima Community College building close to road that will require clearance considerations.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
18	Stone	Speedway–Grant	Under Consideration		East and West (requires the line to jump from one side of the road to the other based on conflicts and constraints, mainly building conflicts)	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, for sidewalks and building conflicts.	none	Gas on east side of the road	none	Water on east side of the road	Building conflicts that need to be mitigated by moving to different sides of the road.
20	Speedway	6th Ave–Stone	Under Consideration	U of A prefers north side of Speedway	North and South ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas on north side of the road	none	none	none
21	6th	Speedway–Grant	Under Consideration		East and West ^a	none	none	none	none	Gas line on east and west side of the road	none	Water on east side of the road	none
22	1st	Fort Lowell–Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is required to connect with other links.	East and West ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	Storm Drain system on east side at Fort Lowell	Yes, see sidewalk conflict	none	Gas on east side of the road in areas and Gas on west side of the road in areas.	none	Water on the East Side at Fort Lowell	Building conflicts that need to be mitigated by moving to different sides of the road.
23	Grant	1st–6th Ave	Under Consideration		North (required due to recent road improvements/paving)	none	none	none	Cannot do underground distribution in this area due to recent roadway improvements /five-year hiatus on pavement.	Gas on north side along portions of the road. Coordinate pole placement.	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
24	Grant	Park– Mountain	Under Consideration		South, not feasible due to Grant Road widening project.	none	none	Yes, distribution alley to the south	Grant Road Widening Project. The road has not been widened in this area yet. Poles would need to be relocated later when project continues.	none	none	none	none
24.1	Grant	Euclid–Park	Under Consideration		North (required due to recent road improvements/ paving)	Possible, on north side of the road between curb and right-of-way	none	Yes, possible for side walk.	Cannot do underground distribution in this area due to recent roadway improvements /five-year hiatus on pavement.	none	none	Water line on north side of the road	none
25	Park	Alley–Grant	Under Consideration		East and West ^a	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas line on east side of the road	none	Water line along portions of west and east side of the road.	none
26	Grant	Campbell– Vine	Under Consideration		South, not feasible due to Grant Road widening project.	none	none	Yes	Grant Road Widening Project. The road has not been widened in this area yet. Poles would need to be relocated later when project continues.	none	none	Possible conflict on south side at corner of Grant and Campbell.	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
26.1	Grant	Vine– Mountain	Under Consideration		South, not feasible due to Grant Road widening project.	none	none	Yes	Grant Road Widening Project. The road has not been widened in this area yet. Poles would need to be relocated later when project continues.	none	none	none	none
27	Vine	Elm–Grant	Under Consideration		East and West ^a	Possible—no sidewalks installed at this time but if we need provisions for future 4-foot would require easements.	none	Yes, see sidewalk note.	none	Gas line on east side of the road	none	Water line on west side of the road	none
28	Miracle Mile	Fairview– Flowing Wells	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	North and South ^a	Yes, portions of the link have limited right-of- way for structures and 4-foot sidewalk.	none	Yes, see sidewalk note.	none	Gas line on south side of the road	Sewer line on south side of the road near Miracle Mile and Fairview.	none	Building conflicts that need to be mitigated by moving to different sides of the road.
29	Campbell	Grant–Elm	Under Consideration	West side is preferred by Banner. Plans to redevelop in this area.	Either side	none	Storm Drain system on east side	none	none	none	Sewer on East side	Water on east and west side	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
31	alley btw. Lee & Adams	Vine–Park	Under Consideration		n/a	none	none	Possible due to limited space in the alley.	none	Gas in alley way	none	none	Building and tree clearances and limited space in alley to maintain trash truck/ drivability.
32	Vine	Alley–Elm	Under Consideration		East and West ^a	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note.	none	Gas on west and east side of the road	none	Water on west side of the road	Residential wall structures limit pole placement.
33	Ring	Warren– Substation	Under Consideration		North and South ^a	none	Yes on north side of the road	Yes, limited right- of-way on north side in areas may need easement from hospital on south side.	none	none	Sewer line on north side of the road	Water line on north side of the road	Fiber line underground on the north side of the road. Limited room for overhead lines.
34	Elm	Substation– Vine	Under Consideration		n/a	none	none	none	none	none	none	none	none
35	Elm	Campbell– Ring Road	Under Consideration		North	none	none	none	none	none	none	Water on south side of the road	none
36	Campbell	Elm– Speedway	Under Consideration		East and West ^a	Yes, possibly along portions of the link were the right-of-way narrows.	none	Possibly, see sidewalk and other conflicts.	none	Gas line on west side of the road	none	none	Possible conflict with emergency helicopter flight path at hospital. May need to use shorter poles or locate on a certain side of the road.
37	Oracle	Fort Lowell– Miracle Mile	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	Due to the existing utilities on the East side and the limited right-of-way on the West side the link is no longer viable.	Yes, limited right- of-way and room for 4-foot sidewalks.	Yes east side of the road	Yes	none	Gas along portions of the east side	Sewer on east side of the road	Water on east side of the road	Limited right-of- way on west side. Large trees at cemetery.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
38	Oracle	Miracle Mile–Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	West due to utilities on the East	Yes, limited right-of-way and room for 4-foot sidewalks.	Yes east side of the road	Yes, see sidewalk note.	none	Gas along portions of the east side	Sewer on east side of the road	Water on east side of the road	Large trees on west side of the road
39	Vine	Mabel– Alley	Under Consideration		East and West ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note and other conflict notes about residential property walls.	none	Gas on east side of the road	none	Water on west side of the road	Residential wall structures limit pole placement.
40	1st	Glenn– Grant	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	East and West ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas, line along portions of the east side of the road	none	Water on the west side of the road	none
41	Vine	Speedway– Helen	Under Consideration		Due to the existing utilities and clearance conflicts, this link is no longer viable.	No, sidewalks currently but limited right-of-way for room for 4-foot sidewalk and transmission poles.	none	Yes, needed for sidewalk and to set structures to mitigate buildings.	none	none	none	none	Large trees on west side of the road that would need to be removed for electrical clearances. Building on east side of the road that will need to mitigate clearances.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
42	Speedway	Campbell– Cherry	Under Consideration		North and South ^a	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	none	none	Water on north side of the road	Business built close to the road will be difficult to maintain electrical clearances to.
42.1	Speedway	Cherry–Vine	Under Consideration		North and South ^a	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	none	none	Water on north side of the road	none
42.2	Speedway	Vine– Mountain	Under Consideration		North and South ^a	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	none	none	Water on north side of the road	University buildings built near the road will be hard to mitigate for pole placement and maintain electrical clearances.
42.3	Speedway	Mountain– Park	Under Consideration		North and South ^a	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas on north side of the road	none	none	University buildings built near the road will be hard to mitigate for pole placement and maintain electrical clearances.
42.4	Speedway	Park–Euclid	Under Consideration		North and South ^a	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas on north side of the road	none	none	New tall student housing building next to the road on the south side. Other businesses close to the road.
43	Speedway	Euclid–6th Ave	Under Consideration		North and South ^a	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas on north side of the road	none	Water on north side of the road	Building conflicts that need to be mitigated by moving to different sides of the road.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
44	Oracle	Glenn– Grant	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	East and West ^a	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict and building conflicts.	none	Gas on west side of the road	Sewer on east side of the road	Water on east side of the road	Building conflicts that need to be mitigated by moving to different sides of the road.
45	Euclid	Speedway– 6th St	Under Consideration		East and West ^a	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict and building conflicts.	none	none	Sewer on east side of the road. Due to limited right-of-way may be hard to obtain PCWW's minimum offset to their line.	Water on west side of the road near University Blvd.	Multiple building conflicts near the road will involve possible special structure framing, easements, and moving to different side of the road.
46	Campbell	Speedway– 6th St	Under Consideration		West side of the road, but may need to jump to East side to mitigate conflicts	Yes, limited right- of-way and room for 4-foot sidewalks.	Storm Drain in the road limits room to underground distribution.	Yes, see sidewalk and other conflicts notes. May need easements along the west side to avoid conflicts in the limited right- of-way.	Possible, street car improvement project	Gas line on east side of the road Limits room to underground distribution if needed.	Sewer on east side of the road in areas and on the east side in the road. Limited room to underground distribution line if needed.	Water on east side in road. Limits room for distribution underground if needed.	Field light structures near 6th Street that will need clearance considerations. Several trees in right-of-way that will need clearance considerations. Multiple residential wall structures that limit placement of poles along right- of-way.
47	Euclid	Grant– Helen	Under Consideration	This link may work if we obtain private easements and only need a single circuit.	East and West ^a	Yes, limited right- of-way and room for 4-foot sidewalks.	Yes, east side of the road between Linden and Lester.	Yes, see sidewalk conflict and building conflicts.	none	Gas Line on West and East side of the road between Helen and Adams.	none	Water on west side of the road near curve but in the middle of the road for the remainder of the link.	Residential wall structures limit pole placement.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
48	Oracle	Grant– Helen	Added back; Under Consideration	This link was originally removed because it would require private easement and the links would jump back and forth from one side of the road to the other. Further review determined that it should be added back in to allow for more flexibility in siting.	East and West ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	Storm drain on east side of the road.	Yes, to mitigate sidewalk, building and other utility conflicts.	none	Gas on west side of the road	Sewer line on east side of the road	Water line on portions of the east and west side of the road.	Building conflicts that need to be mitigated by moving to different sides of the road.
49	15th	Kino Pkwy– Cherry	Added back; Under Consideration		North and South ^a	Limited right-of-way on north side	Storm drain at Kino and bank protected drainage on north side and middle of the link.	Yes, see sidewalk and other conflicts note.	none	Gas line on south side of the road	none	none	Wall structure on north side limited the placement of the transmission structures. Road also curves and will require turning structures to mitigate angle.
50	Campbell	6th St– Broadway	Under Consideration		West side of the road, but may need to jump to East side to mitigate conflicts	Yes in a few areas near 6th Ave.	Storm drain in the road on east side, limits distribution underground if needed.	Yes, see sidewalk and other conflicts notes. May need easements along the west side to avoid conflicts in the limited right-of-way.	Possible, street car improvement project	Gas line on east side of the road and just a small stretch on west side near Broadway.	Sewer line on east side of the road	Water line in the road on the east side. Limits distribution underground.	Possible structure conflicts at 6th Ave.
51	15th	Cherry– Exist. 46kV	Added back; Under Consideration		North	Bike path along route and gas line on north side may require easement to north to mitigate conflict.	none	Possible, see sidewalk note and other conflict note.	none	Gas line on north side	Sewer line on south side of the road	none	Wall structure on north side that limits the placement of structures near Cherry Ave.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
52	Broadway	Cherry– Mountain	Under Consideration		North and South ^a	Possible conflict depending on other conflicts and limited space for 4-foot sidewalk.	Storm drain on north side of the road.	Possible conflict depending on other conflicts.	Broadway road widening project	none	none	Water line on south side of the road	none
52.1	Broadway	Kino Pkwy– Cherry	Under Consideration		North and South ^a	Possible conflict depending on other conflicts and limited space for 4-foot sidewalk.	Storm drain on north side of the road	Possible conflict depending on other conflicts.	Broadway road widening project	none	none	none	none
53	Broadway	Euclid– Fremont	Under Consideration		North	Possible conflict depending on other conflicts.	Storm drain at corner of Euclid and Broadway. Storm drain south side of the road.	Possible depending on other conflicts.	Broadway road widening project	Gas line on south side of the road	Sewer South side of the road	Water line south side of road	New building on north side of the road need to maintain clearances.
53.1	Broadway	Fremont– Mountain	Under Consideration		North and South ^a	Possible conflict depending on other conflicts and limited space for 4-foot sidewalk.	Storm drain on north side of the road	Possible conflict depending on other conflicts.	Broadway road widening project	none	none	none	none
54	Fairview	Miracle Mile–Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	Either side	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas line on west side of the road. Limits right-of- way to construct overhead and underground lines.	Sewer on east side of the road. Limits right- of-way to construct overhead and underground lines.	2 water lines running down the middle of the road that limit the space for undergrounding either the 46kV or the distribution line.	none
55	Euclid	6th St– Broadway	Under Consideration		East and West ^a	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas on east side of the road	none	Water on west side of the road	Building structures along route that will limit structure placement and need to maintain clearances too. Limited right-of- way.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
56	Euclid	Broadway– cross- country	Under Consideration		East	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict	none	Gas on east side of the road	Sewer line on east side of the road	Water line on west side of the road	Building structure limit structure placement on the west side.
57	Fremont	Manlove– Broadway	Under Consideration		East and West ^a	none	Drainage area along portion of the segment that might require special structures.	Yes, along drainage area.	none	none	Sewer in middle of the road, but with limited right-of-way, it would be difficult to fit the distribution underground.	Water line on west side of the road	none
58	Flowing Wells	Miracle Mile–Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	Either side	none	none	none	none	Gas line on west side of the road	Sewer on east side of the road	Water line on west side of the road	none
59	cross- country	Toole– Euclid	Under Consideration		n/a	none	none	Yes, for pole placement for crossing.	Possible Downtown Links/Aviation Pkw improvements	none	none	none	Long span for Aviation Pkw crossing.
60	cross- country	46kV– Fremont	Under Consideration		n/a	none	Poles would be in a drainage retention area. Special permitting may be required and special foundations for the drainage area.	Yes, along cross- country pole locations.	none	none	2 Sewer lines between Santa Rita and Fremont that will limit undergrounding distribution line.	Water line on south side that will limit room for undergrounding distribution line.	none
61	Toole	cross- country– 16th	Under Consideration		Either side	none	none	none	none	none	none	Water line on portion of the east and west side of the link.	Link curves and will require multiple angle structures.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
62	Cherry	cross- country– Broadway	Under Consideration		East and West ^a	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas line on east side	Sewer line on east side for portions of the link	Water line on west side of the road	Wall structure on east side of the road, needs possible easement or coordinate pole placement.
63	cross- country	15th– Cherry	Under Consideration		n/a	none	Drainage structure, need to avoid.	Yes, for cross- country pole locations.	none	none	Sewer lines on the north and south side of drainage feature, should be able to mitigate conflict.	Water line along cross-country segment	none
64	46kV line	alley btw. 16th & 17th–15th	Under Consideration		n/a	none	Poles are in drainage retention area. Special permitting may be required and special foundations for the drainage area will be required.	Yes, for cross- country area.	none	Highland Ave. has a Gas line on east side of the road that will impact distribution underground.	Highland Ave. has sewer on the west side of the road when 17th curves that limits undergrounding distribution line.	Highland has a water line on west side of the road starting at 16th south.	Limited space in alley for double circuit line.
64.1	46kV line	15th– Highland	Under Consideration		n/a	none	Poles are in drainage retention area. Special permitting may be required and special foundations for the drainage area will be required.	Yes, for cross- country area.	none	Highland Ave. has a gas line on east side of the road that will impact distribution underground.	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
64.2	46kV line	Highland– Manlove	Under Consideration		n/a	none	Poles are in drainage retention area. Special permitting may be required and special foundations for the drainage area will be required.	Yes, for cross- country area.	none	Highland Ave. has a gas line on east side of the road that will impact distribution underground.	none	none	none
65	Cherry	16th–15th	Under Consideration		Either side	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas line on east side	none	none	Wall structure on west side limits placement of transmission structures.
66	Euclid	16th–19th St	Under Consideration		East and West side depending on conflicts and constraints	No sidewalks currently but limited right-of- way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas line on east side	2 Sewer lines on east side of the road	Water on west side of the road	Buildings and property fences close to the road limit placement of transmission structures.
67	19th	Euclid– Euclid	Under Consideration		North	No sidewalks currently but limited right-of- way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas line on north side	none	none	Railroad track on north side may need clearance to.
68	Miracle Mile	Oracle– Fairview	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	Due to the existing utilities on the South and the storm drain in the North, this link is not viable for construction.	Yes, limited right- of-way and room for 4-foot sidewalks.	Yes, north side of the road	Yes	none	Gas on south side of the road	Sewer on south side of the road. Conflict.	Water on north side of the road	Large trees on north side of the road near the cemetery, buildings constructed near the road on south side.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
69	Euclid	19th–21st	Under Consideration		West side	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	none	Yes, if sidewalk is needed.	none	Gas on east side of the road	2 Sewer lines on east side of the road	Water on west side of the road	No curb/street parking requires transmission pole protection bollards.
69.1	Euclid	21st–22nd	Under Consideration		East and West side depending on conflicts and constraints	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	none	Yes, if sidewalk is needed.	none	Gas on east side of the road	2 Sewer lines on east side of the road	Water on east side of the road	No curb/street parking requires transmission pole protection bollards.
70	21st	Euclid–Park	Under Consideration		North and South ^a	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	none	Yes, if sidewalk is needed.	none	none	none	Water line on south side of the road	No curb/street parking requires transmission pole protection bollards.
70.1	21st	Park–Highland	Under Consideration		North and South ^a	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	none	Yes, if sidewalk is needed and possible for limited right-of-way.	none	Gas line on north side	Sewer in middle of the road, but with limited right-of-way, it would be difficult to fit the distribution underground.	Water line on south side of the road	No curb/street parking requires transmission pole protection bollards.
70.2	21st	Highland–Curtis	Under Consideration		North and South ^a	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	none	Yes, if sidewalk is needed.	none	Gas line on south side of the road	Sewer in middle of the road, but with limited right-of-way, it would be difficult to fit the distribution underground.	Water on south side of the road	none
71	Highland	22nd–21st	Under Consideration		East and West ^a	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	none	Yes, if sidewalk is needed.	none	Gas line on east side of the road	Sewer line in middle of the road that limits right-of-way for undergrounding distribution.	Water line in middle of the road, but with limited right-of-way, it would be difficult to underground the distribution.	Building structure on west side of the road limits structure placement and no curb/street parking requires bollard protection for structures.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
71.1	Highland	21st–20th	Under Consideration		East side	No sidewalks currently but limited right-of- way and room for 4-foot sidewalks.	none	Yes, if sidewalk is needed.	none	Gas line on west side of the road	none	none	Building structures on east side of the road and no curbs/street parking which would require transmission bollard protection.
72	20th	Highland– Curtis	Under Consideration		South side	No sidewalks currently but limited right-of- way and room for 4-foot sidewalks.	none	Yes, if sidewalk is needed.	none	none	none	Water line on south side of the road	Building structure on the south side limits transmission pole placement.
73	Curtis	20th–21st	Under Consideration		East side	none	none	Yes, possible easement on the east side for pole placement along the route.	none	none	none	none	Kino bridge structure and side slopes will require additional engineering and clearances. No curb and street parking may require transmission pole bollard protection.
73.1	Curtis	Warehouse –20th	Under Consideration		East side	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk and other conflicts.	none	Gas line on east side	Sewer line in middle of the road that limits right-of-way for undergrounding distribution.	Water line in middle of the road that limits right-of-way for undergrounding distribution.	Building structure on the west side limits transmission pole placement.
74	cross- country	Curtis–Kino	Under Consideration		n/a	none	none	Possible for pole placements around Kino bridge.	none	none	Sewer line along link	none	Kino bridge structure and side slopes will require additional engineering and clearances.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
75	Warehouse	cross- country– Curtis	Under Consideration		North	none	none	none	none	Gas line on north side	Sewer line in middle of the road that limits right-of-way for undergrounding distribution.	Water line in middle of the road, but with limited right-of- way, it would be difficult to underground the distribution.	Limited right-of- way and building structures near road that will need to maintain clearances too. Street parking need to add bollards for transmission structure protection.
76	cross- country	Warehouse Ave–Vine St	Under Consideration		n/a	none	none	Yes, easement from property owner for crossing Aviation Pkwy on south side.	Possible, Downtown Links/Aviation Pkwy	none	none	none	Long span for Aviation Pkwy crossing.
77	Vine	cross– country– 17th	Under Consideration		West side of the road to avoid building structure on the East side	No sidewalks currently but limited right-of- way and room for 4-foot sidewalks.	none	Possible, see sidewalk notes.	none	none	none	none	Building on east side that limits structure placements.
78	17th	Curtis–Vine	Under Consideration		South, see PCWW note	none	none	none	none	none	Sewer line on north side of the road and in middle of the road.	Water line on south side of the road.	none
79	Curtis	alley btw. 16th & 17th & 46kV line	Under Consideration		West side of the road, see gas line comment	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict and other conflict notes.	none	12-inch steel gas line on east side of the road.	none	none	Residential fencing structures limit the placement of transmission lines.
80	alley btw. 16th & 17th	Curtis–46kV line	Under Consideration		n/a	none	none	Yes, easement required through alley and see other conflicts notes and TEP overhead notes.	none	Gas line in alley	Sewer and water lines on 16th and 17th that limit the distribution underground and relocation of the 46kV line.	Sewer and water lines on 16th and 17th that limit the distribution underground and relocation of the 46kV line.	Building conflicts that need to be mitigated.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
81	alley btw. 16th & 17th	Curtis–Vine	Under Consideration		n/a	none	none	Yes, easement required through alley and see other conflicts notes and TEP overhead notes.	none	Gas line in alley	Sewer and water lines on 16th and 17th that limit the distribution underground and relocation of the 46kV line.	Sewer and water lines on 16th and 17th that limit the distribution underground and relocation of the 46kV line.	Residence owning the parcels have placed equipment and pallets under the existing line. Need clearance mitigation and easement.
82	Fort Lowell	Stone– Oracle	Added back; Under Consideration	Links along the existing 138kV line along Ft. Lowell had been removed because construction and future maintenance would require that the existing and future circuits would both have to be taken out of service; however, further review determined that with careful coordination of outages it could be accomplished.	North	Yes, limited right- of-way and room for 4-foot sidewalks.	Storm Drain at Oracle and Fort Lowell	Yes, see sidewalk note and limited right-of-way on north side near Castro Ave.	none	Gas lines on south side of the road	Possible conflict Sanitary sewer line on south side of road but within traffic lanes. Limits the room for undergrounding the distribution.	Water on north side of the road	none
83	16th	Vine–Cherry	Under Consideration		Either side	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk notes	none	Gas line on south side of the road	none	Water line on south side of the road	none
84	Vine	Alley and 16th	Under Consideration		Either side	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, easement required through alley and see other conflicts notes and TEP overhead notes.	none	none	none	none	Building conflicts near road that will need to maintain electrical clearances too.
85	Vine	17th–alley btw. 16th & 17th	Under Consideration		Either side	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, easement required through alley and see other conflicts notes and TEP overhead notes.	none	none	none	none	Building conflicts near road that will need to maintain electrical clearances too.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
86	17th	Vine–Kino	Under Consideration		Either side	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict and other conflict notes.	none	none	none	Water line on south side of the road	Residential street parking and no curbs. Would need bollards to protect transmission structure.
87	Broadway	Plummer–Kino Pkwy	Under Consideration	Broadway (in this area) eliminated due to recent City of Tucson PI project. TEP just rebuilt the 46kV and distribution here, and there will also be a 5-year hiatus on pavement cuts. The line could not be installed without pavement cuts, as newly built 46kV and distribution would have to be undergrounded.	North side only (distribution on South side and cannot underground due to road way improvement project and 5-year hiatus on pavement)	Possible in order to maintain 4-foot sidewalks	none	Possible in order to maintain 4-foot sidewalks.	Broadway road widening project	none	none	none	none
88	Kino	Broadway–cross–country	Under Consideration		West side preferred, but may need to move to the East side for portions to mitigate conflicts.	none	Storm drain on east side of the road.	Possible as road starts to curve.	none	Gas line on west side of the road	Sewer on east side of the road	Water line on east side of the road	Curved road will require angle structures.
88.1	Kino	cross-country–Winsett	Under Consideration		Either side	none	Drainage channel that will need to be spanned	Possible along curved portion of the road.	none	none	Sewer on east side near Winsett	none	Curved road will require angle structures, trees along route that will require clearance mitigation.
89	cross-country	14th–Kino	Under Consideration		n/a	none	Storm Drain along Kino	Possible if not in road right-of-way	none	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
90	Plumer	19th– Broadway	Under Consideration	Plumer, culvert PI project; n/a identified	Due to the amount of utilities along this corridor it is not feasible to fit an additional transmission line	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk notes and other conflicts notes.	none	Gas on portion of the east and west side of the road	Sewer on east side of the road and in the middle of the road	Water on east and west side of the road	Building and wall structures limit transmission pole placement. Palm trees along right- of-way that would need to be removed or clearances maintained.
91	Kino	15th–18th	Under Consideration		Either side depending no connecting links	none	Drainage channel that will need to be spanned	Possible depending on bridge ramp and pole placement.	none	Gas line on the east side for a portion of the link	Sewer on east side for a portion and west side for a portion of the link.	Water on east side for a portion of the link	Bridge ramp begins, limits pole placement and taller structures.
92	Campbell	Winsett– 14th St	Under Consideration	Dam present, 408 permitting required (Pima County)	West side preferred but may need to move to the East side for portions to mitigate conflicts.	No sidewalks currently but limited right-of- way and room for 4-foot sidewalks.	Storm drain on east side near 14th St.	Possibly for area near storm drain and sidewalks.	none	Gas line on east side	Sewer in middle of the road, but with limited right-of-way, it would be difficult to fit the distribution underground.	Water line in middle of the road, but with limited right-of- way, it would be difficult to underground the distribution.	Buildings next to the road on west side that will need to be mitigated with clearances.
93	Kino	Aviation– 18th	Under Consideration		Either side depending no connecting links	none	none	Yes, might need to place structure in private easement to make bridge crossing.	none	none	Sewer on east side near 18th that limits crossing structure placement.	Water on east side near 18th that limits crossing structure placement.	Bridge over Aviation, need taller structures. Difficult to construct over the bridge.
94	Winsett	Campbell– Kino Pkwy	Under Consideration		North and South depending on conflicts and constraints	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk notes.	none	Gas line on south side of the road	Sewer on north side of the road	Water on south side of the road	Curved road requiring angle structures.
95	Kino	22nd–21st	Under Consideration		East or West depending on connecting links	none	none	Yes, for structure placement.	none	none	none	none	Bridge structure over 22nd requires taller poles possibly and easements to place structures along link.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
95.1	Kino	Warehouse –21st	Under Consideration		East or West depending on connecting links	none	none	Yes, for structure placement.	none	none	none	none	Bridge structure over 22nd requires taller poles and possibly easements to place structures along link. Comm tower on east side, need to maintain clearances.
95.2	Kino	Barraza Aviation Parkway– Warehouse	Under Consideration		East or West depending on connecting links	none	none	Yes, for structure placement.	none	none	none	none	Aviation bridge crossing. Buildings on south end of the link that make structure placement difficult. Will require easements.
96	Campbell	Winsett– 19th	Under Consideration		West side see underground distribution note	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note and other conflicts note.	none	Gas line on west side of the road	2 Sewer lines in middle of the road that limit right-of- way for underground distribution.	Water line in middle of the road, but with limited right-of- way, it would be difficult to underground the distribution.	Limited right-of- way and building structure close to the road may require additional easements.
96.1	Campbell	19th–Norris	Under Consideration		East or West depending on connecting links	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note and other conflicts note.	none	Gas line on west side of the road	Sewer on east side for a portion and in middle of the road that limits right-of- way for undergrounding distribution.	Water line in middle of the road, but with limited right-of- way, it would be difficult to underground the distribution.	none
96.2	Norris	Campbell– cross- country	Under Consideration		North/East	No sidewalks	none	Yes, possible easement on the east side for pole placement along the route.	none	Gas line conflict	Sewer line south side	none	No curb/street parking requires transmission pole protection bollards.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
97	19th	Plumer– Campbell	Under Consideration		Due to the amount of utilities along this corridor, it is not feasible to fit an additional transmission line	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk notes and other conflicts notes.	none	Gas line on south side	2 Sewer lines on north side of the road	Water line on south side	Buildings near road that would need clearances maintained.
98	Plumer	22nd–19th	Under Consideration		Due to the amount of utilities along this corridor, it is not feasible to fit an additional transmission line	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk notes and other conflicts notes.	none	Gas line on south side	Sewer line on east side	Water line on east and west side	none
99	cross-country	Plumer– Norris	Under Consideration		n/a	none	Drainage way, must avoid.	Yes, for cross-country area.	none	Gas line cross-country	Sewer line cross-country	none	none
100	cross-country	rail yard– Plumer	Under Consideration		n/a	none	none	Yes, for cross-country area and pole placement at plumber.	none	none	Sewer conflict at plumber	Water conflict at plumber	Long span over rail yard. 22nd bridge structure limits structure placement and must maintain clearances.
101	22nd	Highland– Park	Under Consideration		Either side	none	none	none	none	none	none	none	none
101.1	22nd	Kino Pkwy– Highland	Under Consideration		Either side	none	none	Possible near Kino/bridge	none	none	none	none	Kino bridge over 22nd
102	22nd	Park–Euclid	Under Consideration		Either side	none	none	none	none	none	none	none	none
103	Euclid	22nd St– Silverlake	Under Consideration		East and West side depending on conflicts and constraints	none	Storm drain on west side of the road that will limit room for pole placement and underground	Possible to avoid building structure and other conflicts.	none	Gas line along portions of the east and west side.	Sewer in middle of the road, but with limited right-of-way, it would be difficult to fit the distribution underground.	Water in middle of the road but will limit the right-of-way to underground distribution.	Building structure on the east and west side of the road that will need to mitigate clearances to.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
104	Park	22nd St– Silverlake	Under Consideration		East side due to sewer and storm drain and lack of room to underground distribution.	Yes, limited right- of-way and room for 4-foot sidewalks.	Drainage wash difficult to underground distribution line. Storm drain on west side of the road.	Yes, for sidewalks and building conflicts	none	Gas line on east and west side of the road.	Sewer line on west side	Water line on east side and water line in middle of the road.	Building structures and residential fences near the road that will need to be mitigated.
104.5	Park	22nd–21st	Under Consideration		Either side depending no connecting links.	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note.	none	None	none	none	none
105	Silverlake	Park Euclid	Under Consideration		North	none	none	none	none	Gas line on south side	none	none	none
106	Silverlake	Kino Pkwy– Park	Under Consideration	Waste Water prefers to avoid impacts to Quincie Douglas and other developments in this area	North and South side of the road to mitigate residential other conflicts.	Limited area for sidewalks along portions of the link.	Storm drain at Kino	Yes, possible easements from the park are and drainage area as well as for sidewalks.	none	Gas line along portion of the north and south side of the road.	none	Water line along south side of the road and along portions of the north side.	Large trees along link at park may need trimming or relocating.
107	Kino	22nd–27th	Under Consideration	Pima County opposed the visual impact to Kino (gateway to City of Tucson)	Either side	none	none	none	none	none	none	none	22nd bridge ramp.
107.1	Kino	27th–28th	Under Consideration	Pima County opposed the visual impact to Kino (gateway to City of Tucson)	Either side	none	none	none	none	none	none	none	none
107.2	Kino	28th– Silverlake	Under Consideration	Pima County opposed the visual impact to Kino (gateway to City of Tucson)	Either side	none	Storm drain at intersection of Silverlake and Kino	none	none	none	none	Water line on east side at Silverlake.	none
108	27th	Cherry and Kino	Under Consideration		Either side	none	Storm drain culvert at Kino that will need to mitigate pole placement.	none	none	Gas on north side	none	none	none
109	cross- country	Cherry– Cherrybell	Under Consideration		n/a	none	none	Yes, for cross- country	none	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
110	Fairland	Willits– Silverlake	Under Consideration		East side to avoid other conflicts	none	none	none	none	none	Sewer line on west side	none	Street parking and no curb may require bollard protection for transmission poles.
111	Willits	Cherrybell– Fairland	Under Consideration		South side	none	none	none	none	Gas line on north side	none	Water line on south side	Street parking and no curb may require bollard protection for transmission poles.
112	cross- country	Fairland– rail yard	Under Consideration		n/a	none	none	Yes, for cross- country	none	none	none	none	none
113	cross- country	Silverlake– rail yard	Under Consideration		n/a	none	none	Yes, for cross- country	none	none	none	none	none
114	Cherrybell	Silverlake– cross- country	Under Consideration		East side	none	none	none	none	Gas line on east side of the road	none	2 Water lines on west side of the road	Street parking and no curb may require bollard protection for transmission poles.
114.1	Cherrybell	Cross- country to Willits			East side	none	none	none	none	Gas line on east side of the road	none	2 Water lines on west side of the road	Street parking and no curb may require bollard protection for transmission poles.
115	Cherry	28th–27th	Under Consideration		East side	none	none	none	none	Gas on west side	none	Water on west side	Street parking and no curb may require bollard protection for transmission poles.
116	cross- country	connects 28th across Kino	Under Consideration		n/a	none	Storm drain culvert at Kino that will need to mitigate pole placement.	none	none	none	none	none	none
117	28th	Cherry–Kino connector link	Under Consideration		North due to sewer lines	none	none	none	none	Gas line on north side	2 Sewer lines on the south side of the road	Water line on south side	Street parking and no curb may require bollard protection for transmission poles

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
118	28th	Warren– Cherry	Under Consideration		North due to other conflicts	none	none	none	none	Gas line on south side	none	Water line on south side	Street parking and no curb may require bollard protection for transmission poles
119	Cherry	Silverlake– 28th	Under Consideration		East side due to gas and sewer lines	none	none	none	none	Gas line on west side	2 Sewer lines on west side of the road	none	Street parking and no curb may require bollard protection for transmission poles
120	Warren	Silverlake– 28th	Under Consideration		East side	none	none	none	none	none	Sewer on west side of the road	Water on west side at 28th	Street parking and no curb may require bollard protection for transmission poles
121	Silverlake	Kino Pkwy– Cherry	Under Consideration		North and South side to mitigate conflicts	No sidewalks in areas	none	none	none	Gas on north side of the road and a portion of the south side of the road.	none	none	none
121.1	Silverlake	Cherry– Warren	Under Consideration		North and South side to mitigate conflicts	No sidewalks in areas	none	none	none	Gas on the north side of the road	none	Water on south side of the road	none
121.2	Silverlake	Warrin– Martin	Under Consideration		North side	No sidewalks in areas	none	none	none	none	none	none	Curve road require angle structures.
121.3	Silverlake	Martin– Cherrybell	Under Consideration		North side	No sidewalks in areas	none	none	none	none	none	none	none
121.4	Silverlake	Cherrybell– Fairland	Under Consideration		Either side	No sidewalks in areas	none	none	none	none	none	Water line on north and south side of the road	Curved road requiring angle structures.
122	cross- country	Martin– parking lot– Silverlake	Under Consideration		n/a	none	none	Yes, for cross- country portion.	none	none	none	none	Tree clearance to mitigate and building clearance to mitigate.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
123	cross- country	Martin– Silverlake	Under Consideration		n/a	none	none	Yes, for cross- country portion both for distribution underground and transmission overhead.	none	Gas line along link	none	Water line along link	Access for transmission structures may be limited.
124	Barleycorn	Martin– Cherrybell	Under Consideration		North and South side to mitigate conflicts	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, for sidewalks and for other utility conflicts.	none	Gas line on north side	Sewer in middle of the road, but with limited right-of-way, it would be difficult to fit the distribution underground.	Water in middle of the road but will limit the right- of-way to underground distribution.	Wall structure limits placement of poles.
125	Campbell	36th– Barleycorn	Under Consideration		Middle area	none	none	Need to follow up and see if we are in middle area.	none	none	none	none	none
125.1	Campbell	Barleycorn– Silverlake	Under Consideration		Middle area	none	none	Need to follow up and see if we are in middle area.	none	none	Sewer line along link coordinate pole placement.	Water line along link coordinate pole placement.	none
126	Martin	Barleycorn– 36th	Under Consideration		West side	none	none	Yes, see TEP overhead notes and other conflicts notes.	none	none	none	Water line on west side of the road	Wall structure near 31st limits right-of- way may need easements.
127	Kino	Silverlake– 36th St	Under Consideration		Either side	none	Storm drain on east side but outside of road right-of-way. Need to clarify that structure foundations will not interfere.	none	none	none	none	Water line on east side of the road	Road curves and will require angle structures.
128	36th	Martin– Kino Pkwy	Under Consideration		South side	none	none	none	none	none	2 Sewer lines on south side and sewer easement	Water line on north side of the road	Must be on TEP property to make this link work.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
129	36th	Campbell– Martin	Under Consideration		South side	none	none	Yes, possible easement to the south due to sewer line easement. Or possible easement to the north on private parcel to cross 46kV line.	none	none	2 Sewer lines on south side and sewer easement	Water line on north side of the road	No room in right- of-way without an easement.
1291	cross- country	36th– Campbell	Under Consideration		n/a	none	none	Yes, for cross- country portion	none	none	none	none	none
193	Main	Helen– Speedway	Under Consideration		East	Possible due to limited right-of- way	none	Possible due to limited right-of- way.	none	none	none	none	Building on west side of the road prevent the allowance of overhead transmission structure.
198	Euclid	Speedway– Helen	Under Consideration	Originally removed because of limited right-of-way further north on Euclid Avenue. Added back based on stakeholder (U of A) comment to add links on Helen and Park to alley (46kV).	East and West ^a	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note and other conflicts note.	none	Gas line on east side of the road	none	none	none
199	Helen	Euclid–Park	Under Consideration	Link added based on stakeholder comment (U of A).	North and South ^a	Yes, limited right- of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note and other conflicts note.	none	Gas line on north side of the road with limited right- of-way would be difficult to place structure on north side.	Sewer in middle of the road, but with limited right-of-way, it would be difficult to fit the distribution underground.	Water on south side of the road	Residential wall structures limit pole placement.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
200	Park	Speedway–Helen	Under Consideration	We would have to switch back and forth on east and west side of road to avoid buildings. We would have to obtain private easement. Not sure about other utilities.	East and West ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note.	none	Gas line on east side of the road	none	none	Residential wall structures limit pole placement.
201	Park	Helen–Alley	Under Consideration	Link added based on stakeholder comment (U of A).	East and West ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note and other conflicts note.	none	Gas line on east side of the road	Sewer in middle of the road, but with limited right-of-way, it would be difficult to fit the distribution underground.	Water line in middle of the road, but with limited right-of-way, it would be difficult to underground the distribution.	Large trees along road that will need clearance mitigation.
202	Speedway	11th–Main	Under Consideration		North side	none	none	none	none	none	none	Water on the north side of the road	none
203	Warehouse	Kino–Curtis	Under Consideration		South side	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	none	Yes, due to limited right-of-way and Aviation bridge crossing.	none	Gas line on north side	Sewer on north side of the road	Water on north side of the road	Aviation bridge crossing building on north side of the road limits transmission structure placement.
204	Warehouse /Cherry	Kino–22nd	Under Consideration		North and South side/East and West side depending on conflicts and constraint.	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk notes and limited space near aviation bridge for crossing structures.	none	Gas line on south side of Warehouse Rd. Gas line along portions of east side and west side of Cherry Ave.	none	none	Aviation bridge crossing building on north side of the road limits transmission structure placement.
205	Cherrybell	Willets–22nd	Under Consideration		East	none	none	none	none	None	none	2 Water line on west side of the road. Water line on east side of the road near 22 nd .	none

^a May require the line to jump from one side of the road to the other based on conflicts and constraints.

Appendix C. Preliminary Route Maps



Figure C.1. Route 1.



Figure C.2. Route 2.

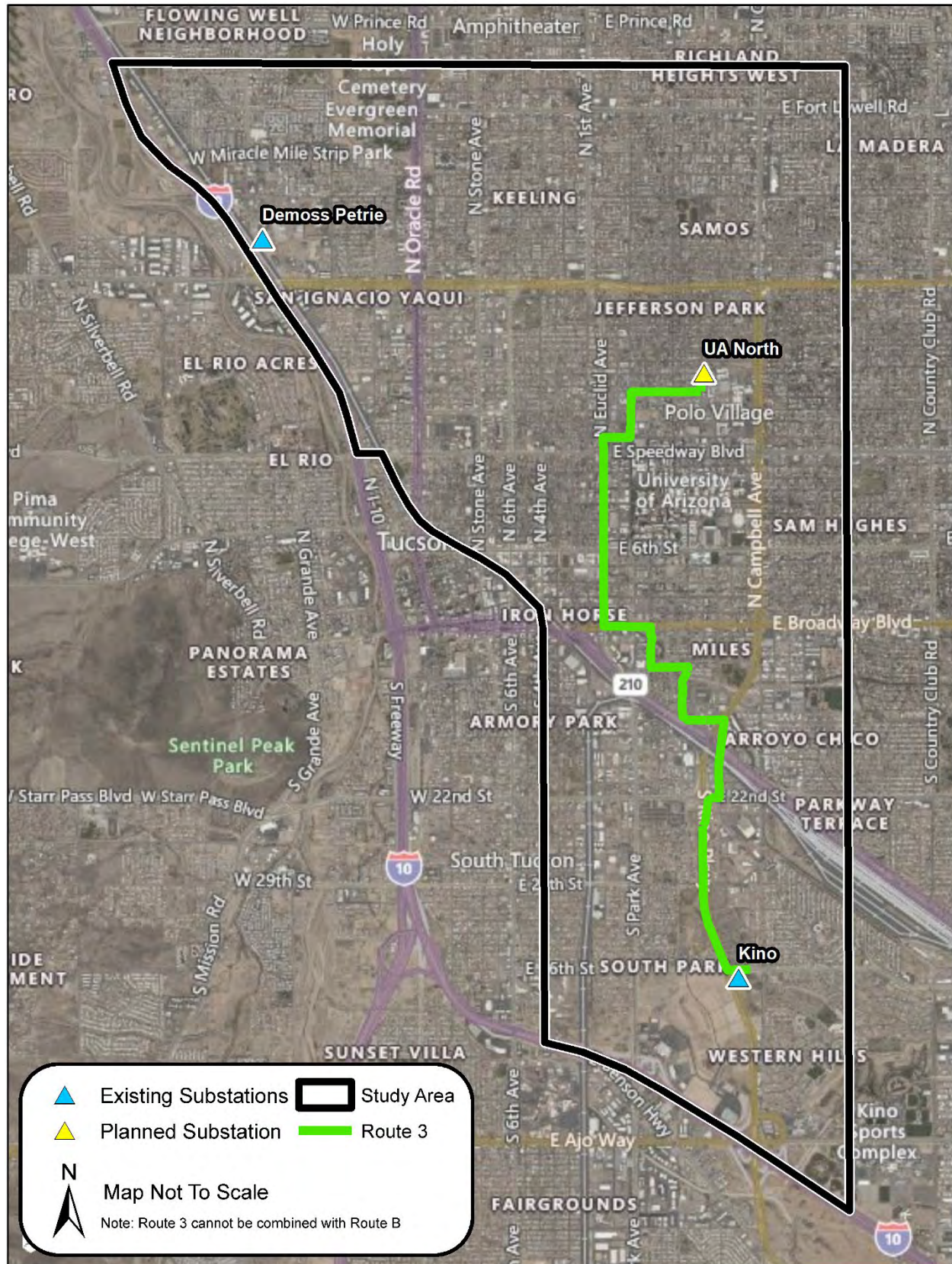


Figure C.3. Route 3.

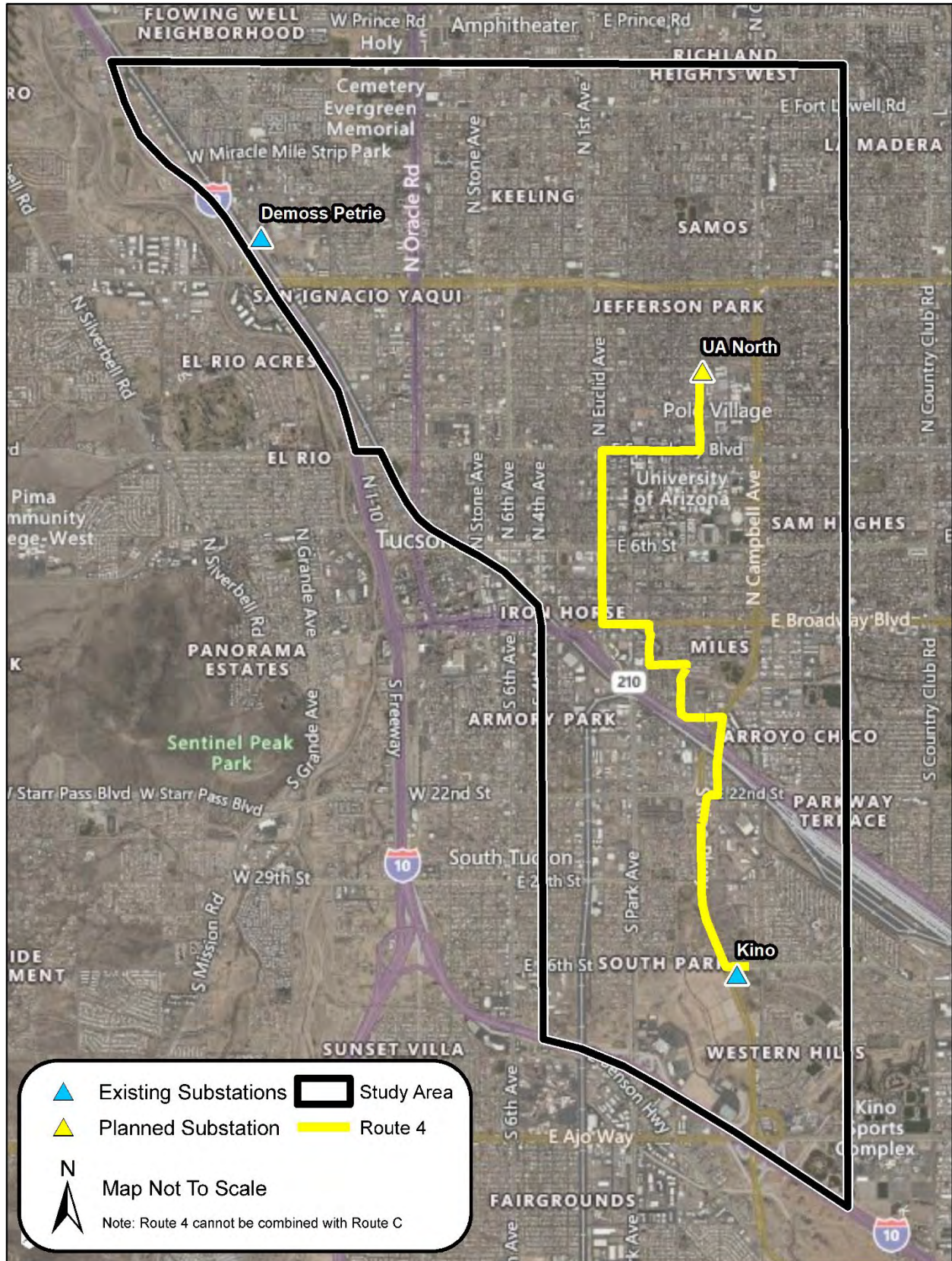


Figure C.4. Route 4.

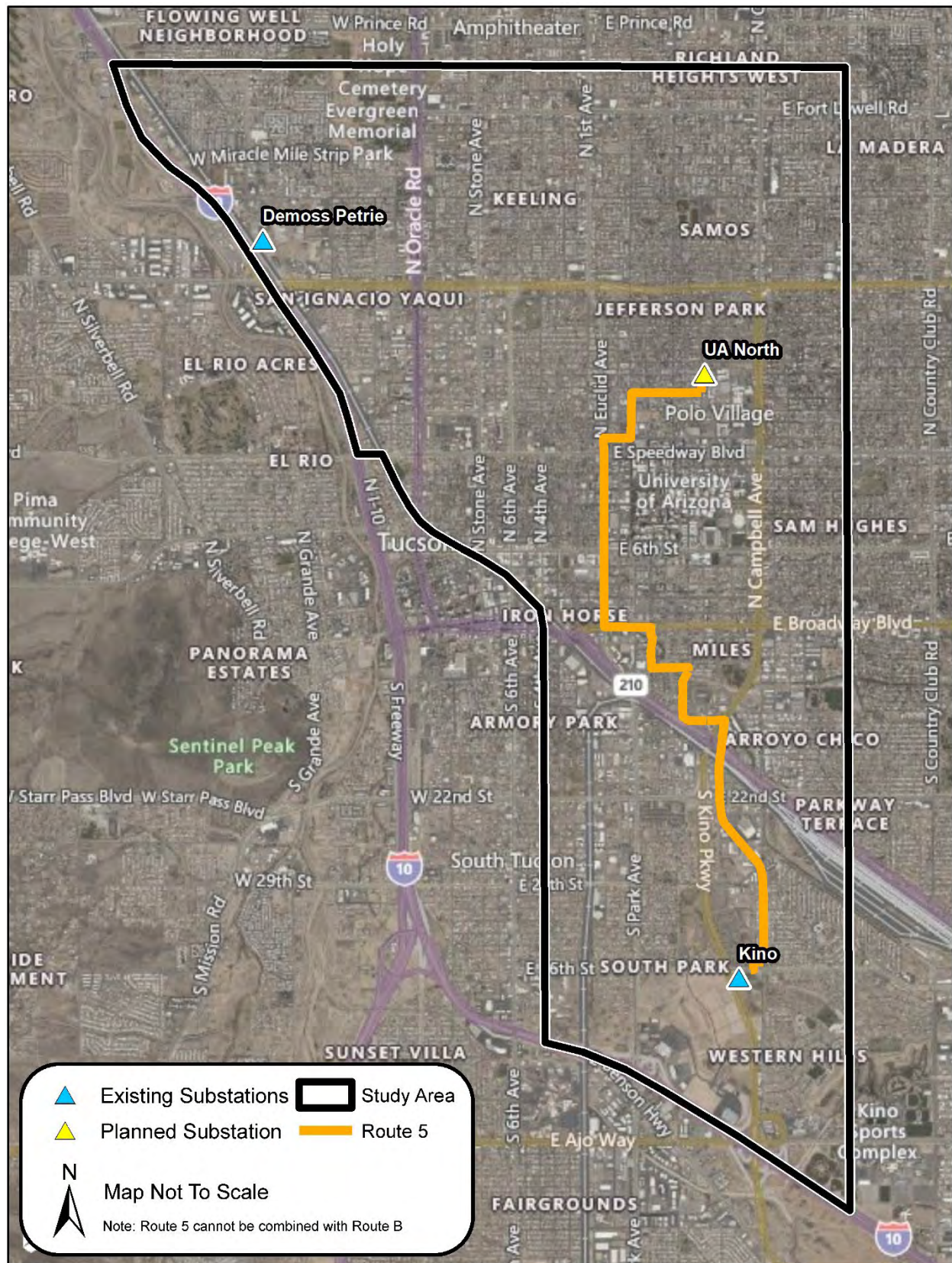


Figure C.5. Route 5.

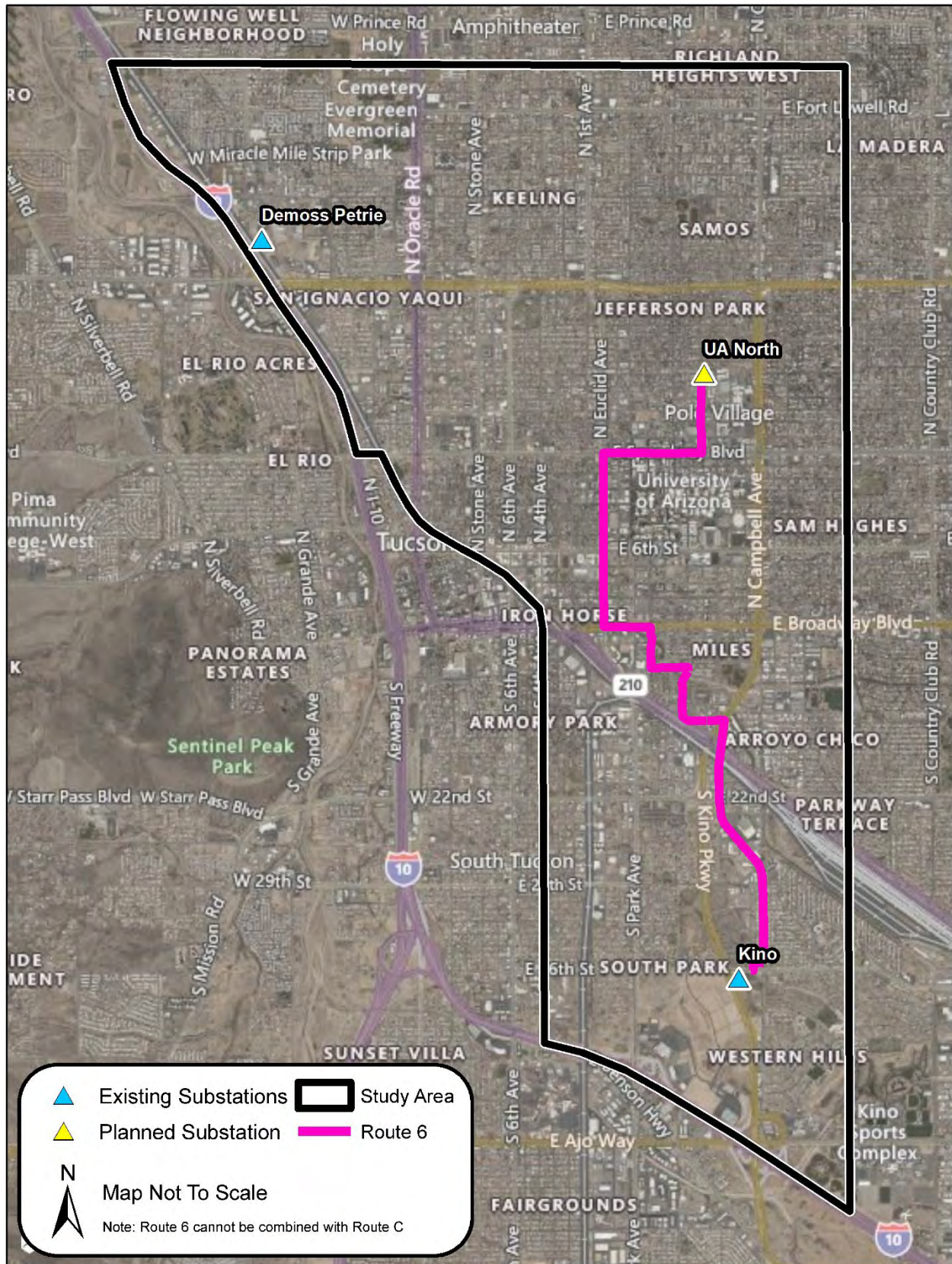
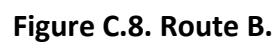


Figure C.6. Route 6.



Figure C.7. Route A.



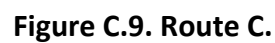
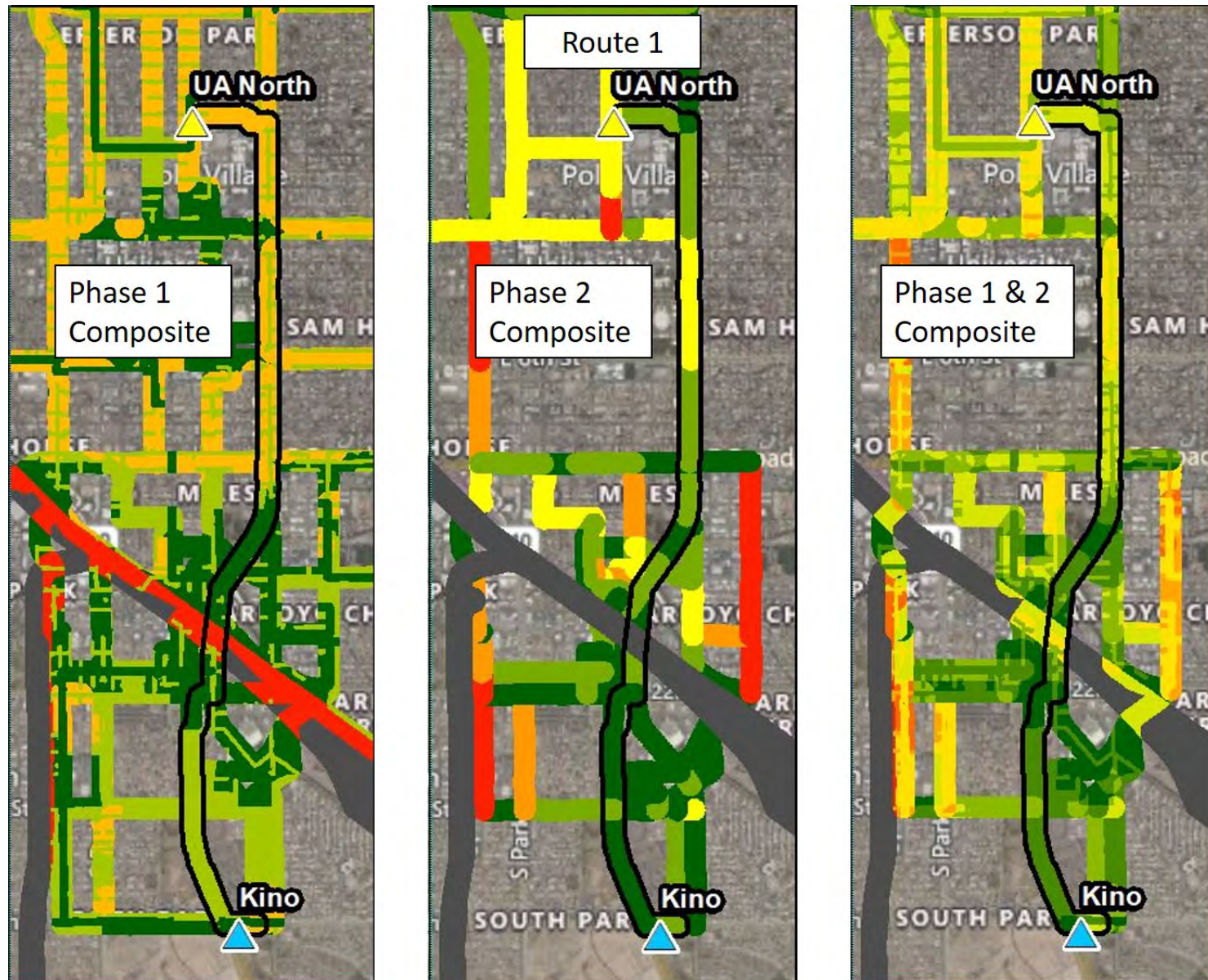
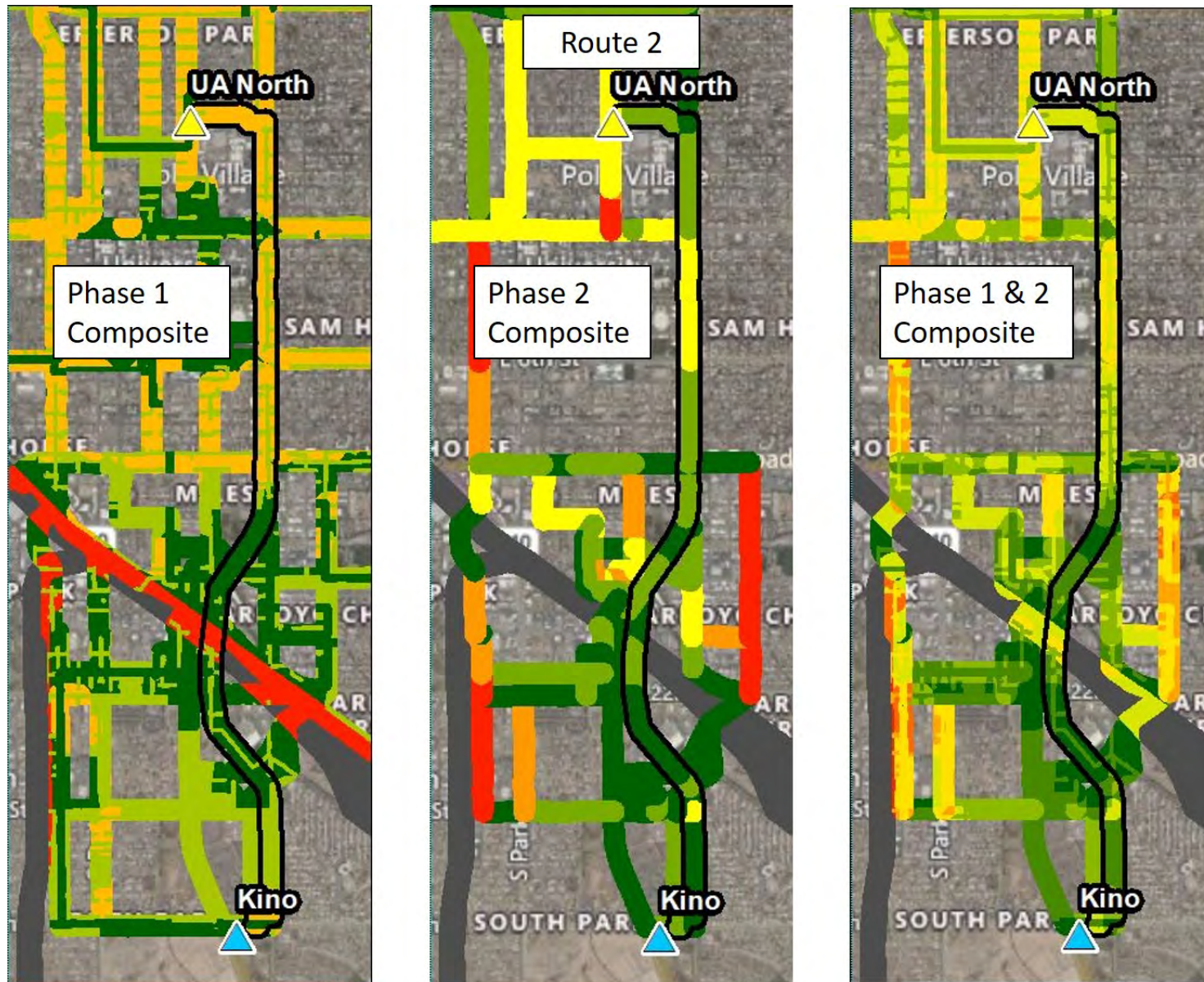


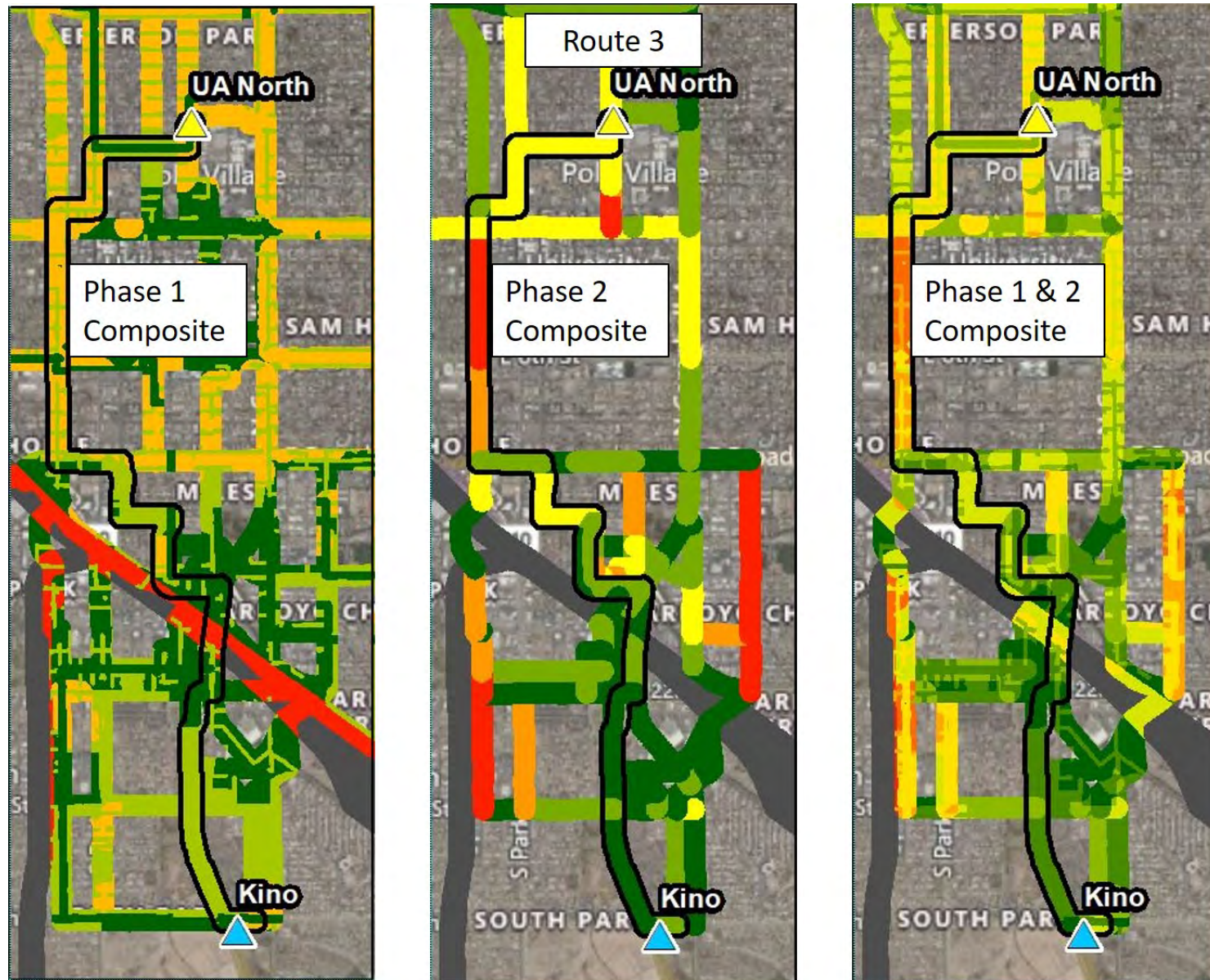


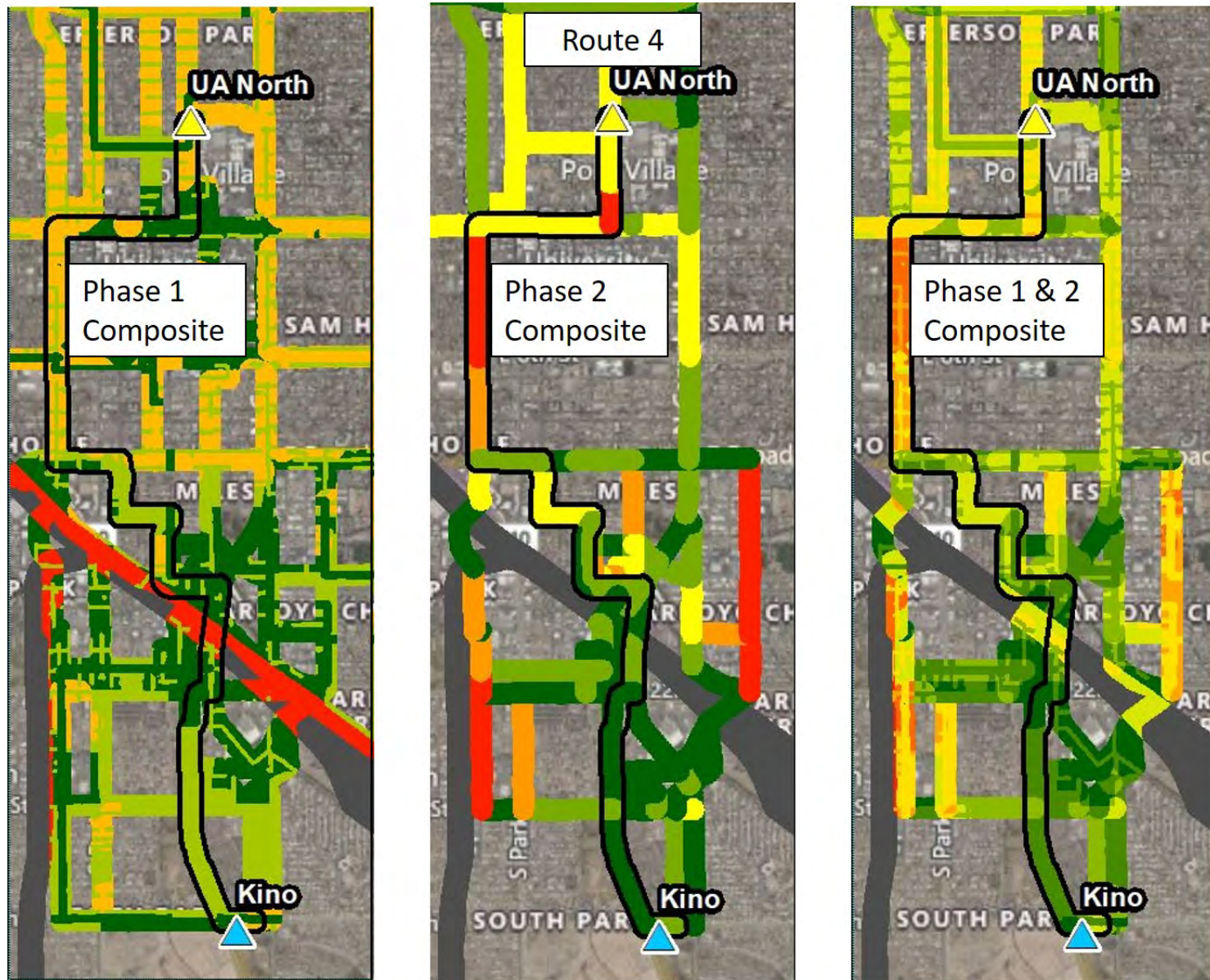
Figure C.10. Route D.

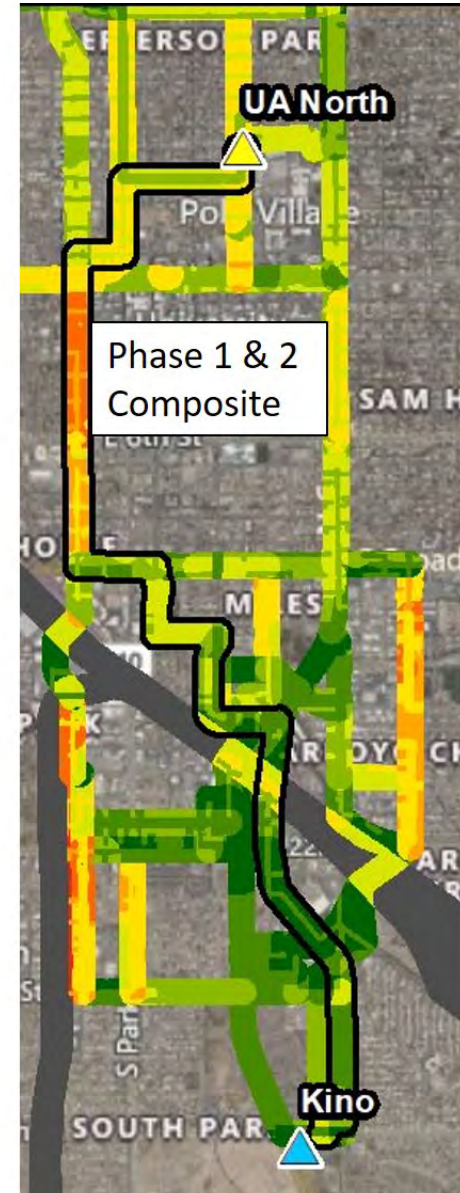
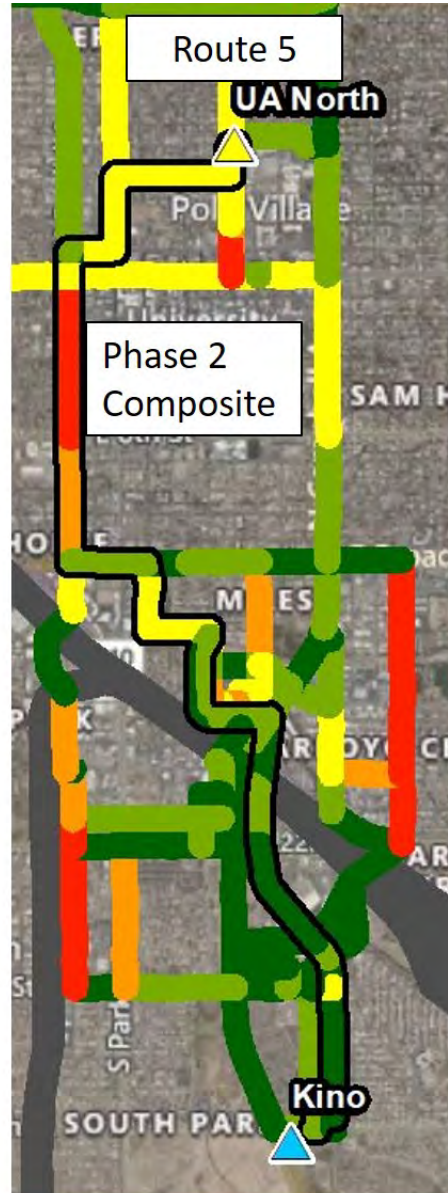
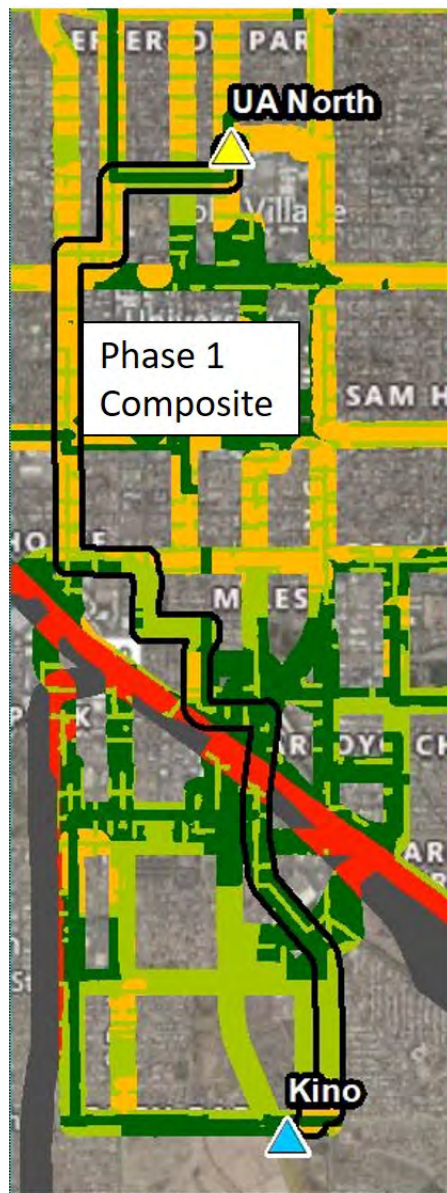
Appendix D. Summary Link Analysis Maps

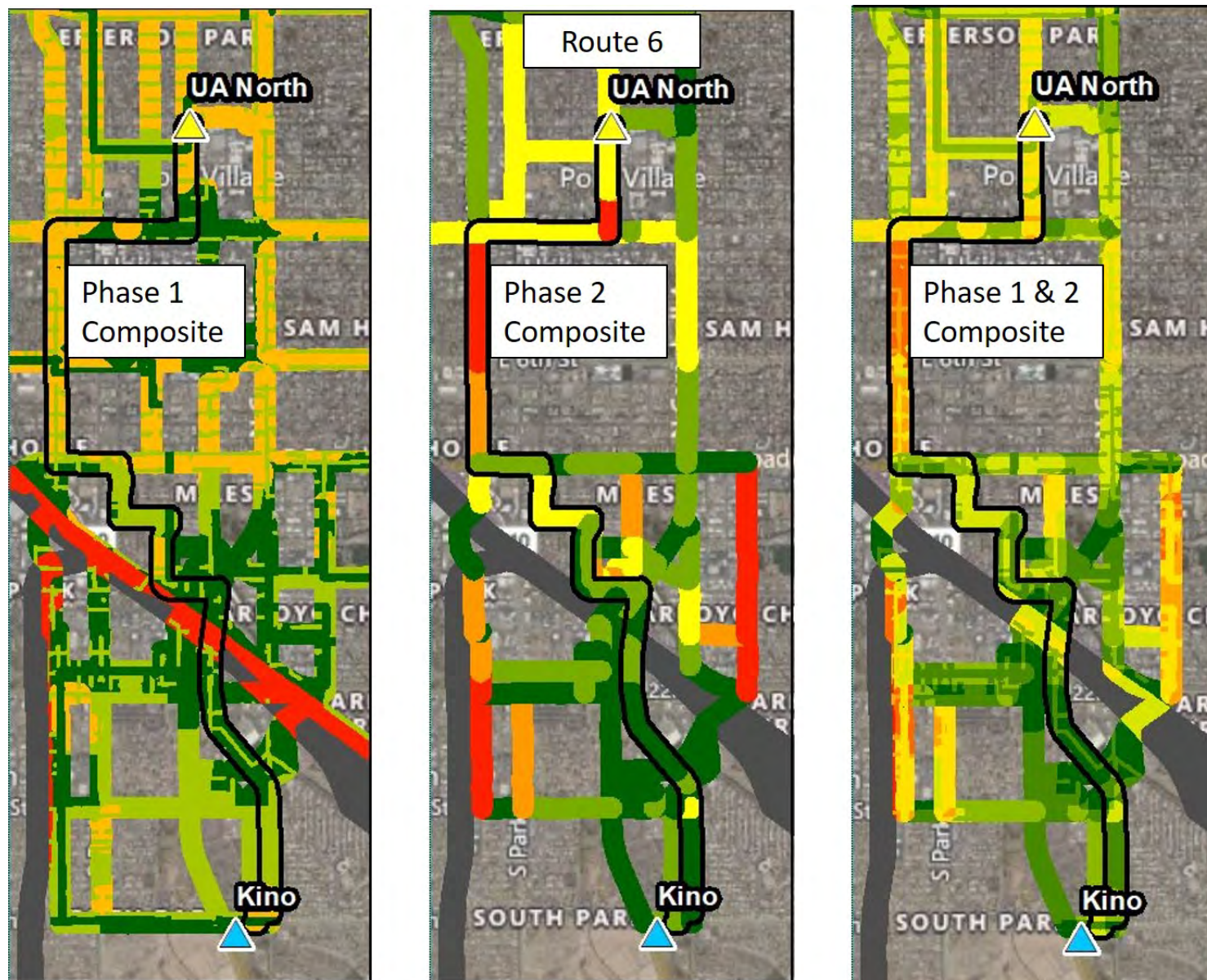


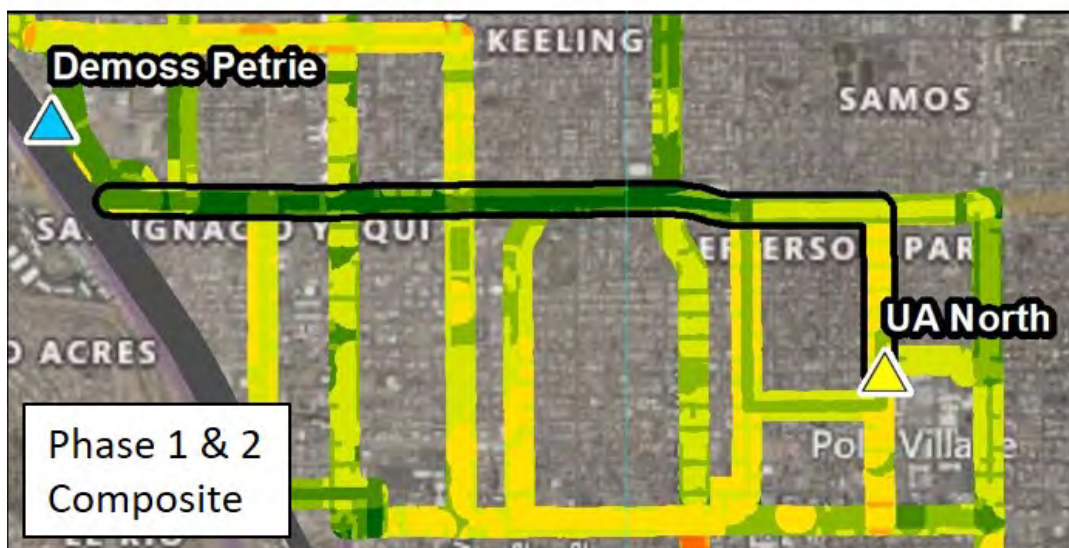
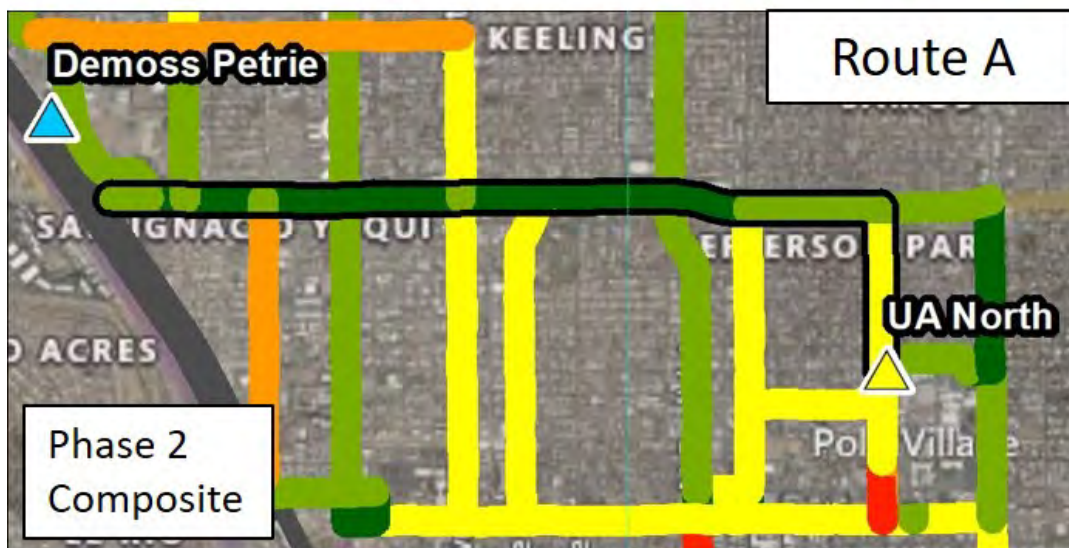
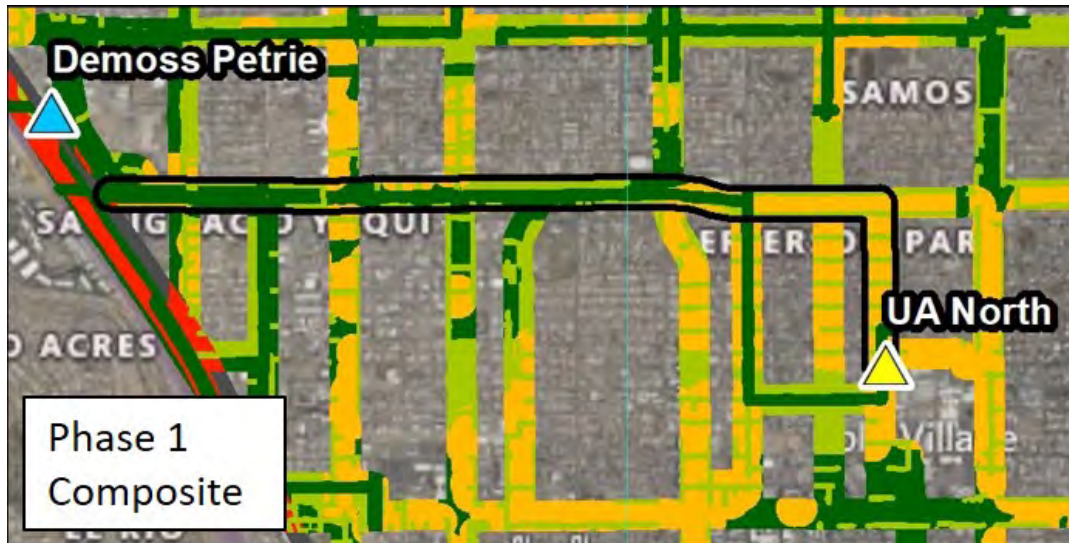


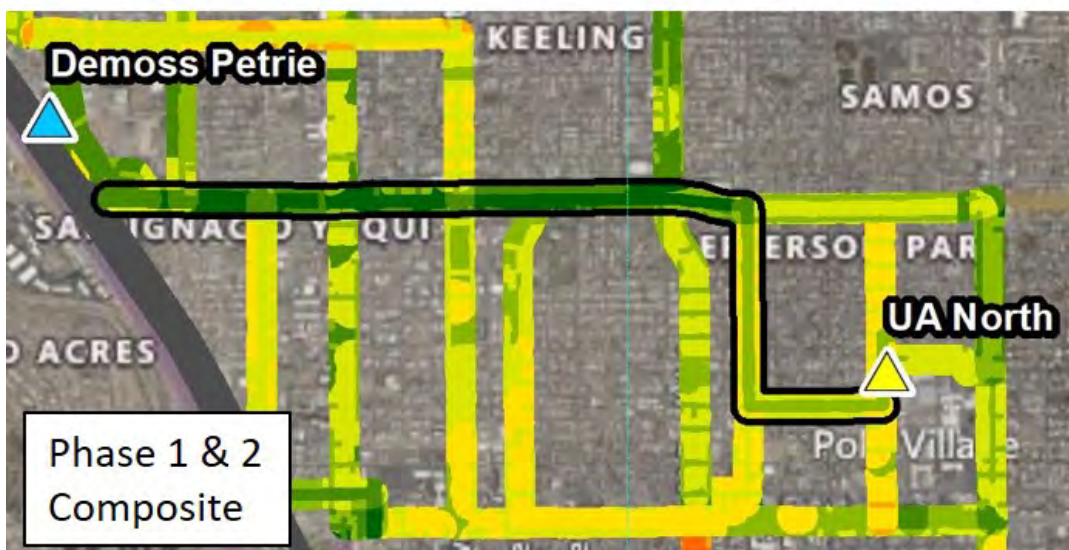
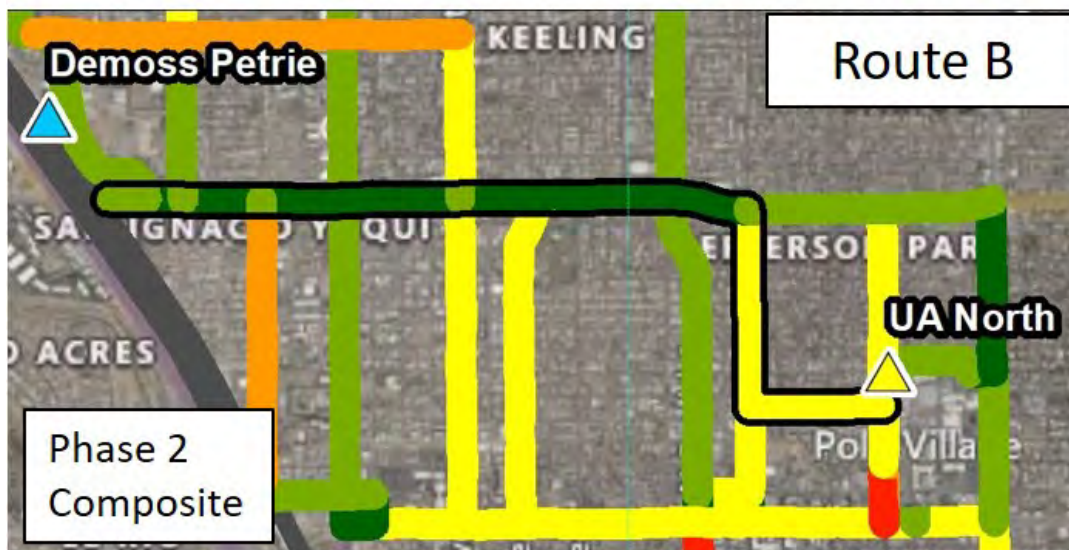
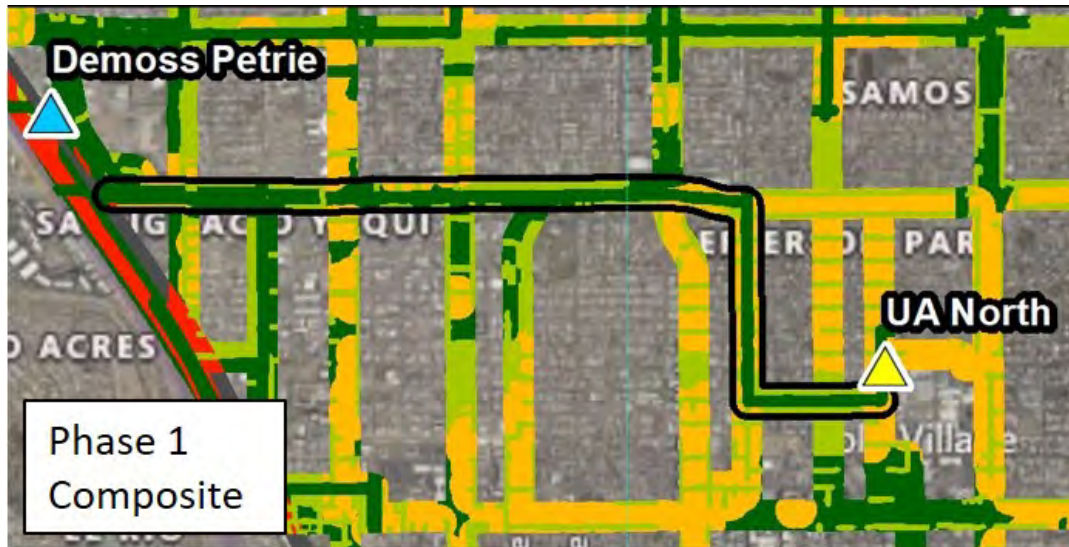


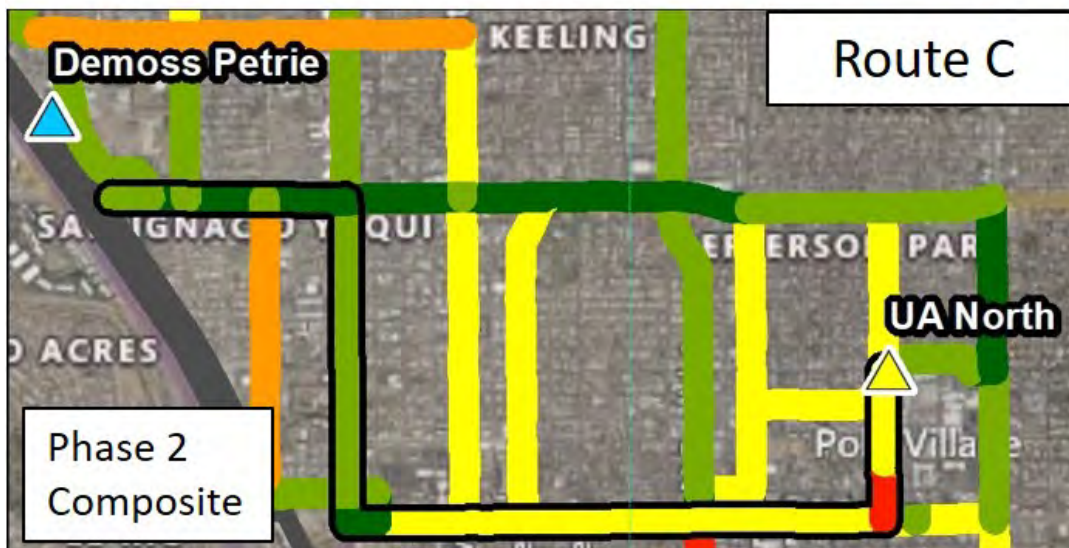


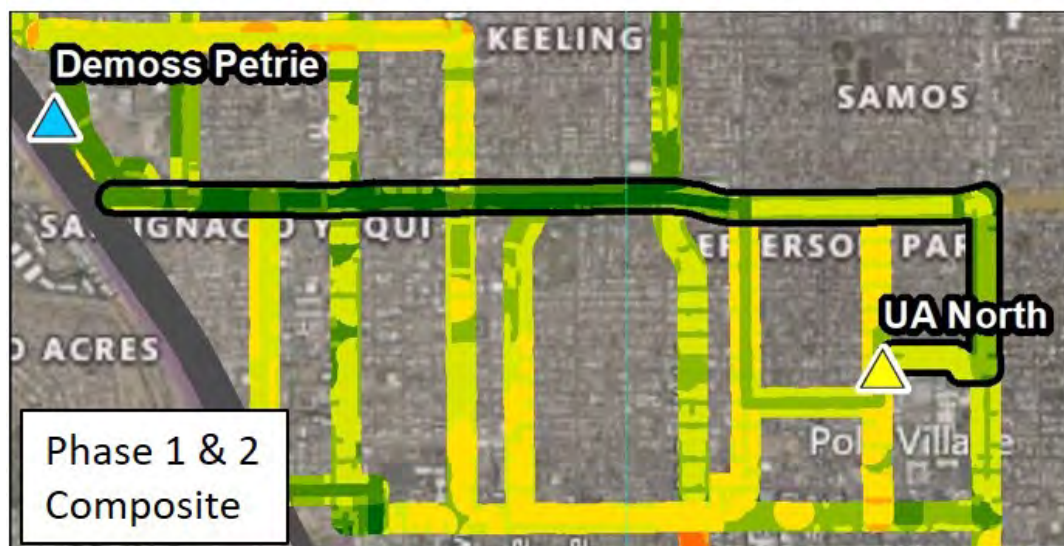
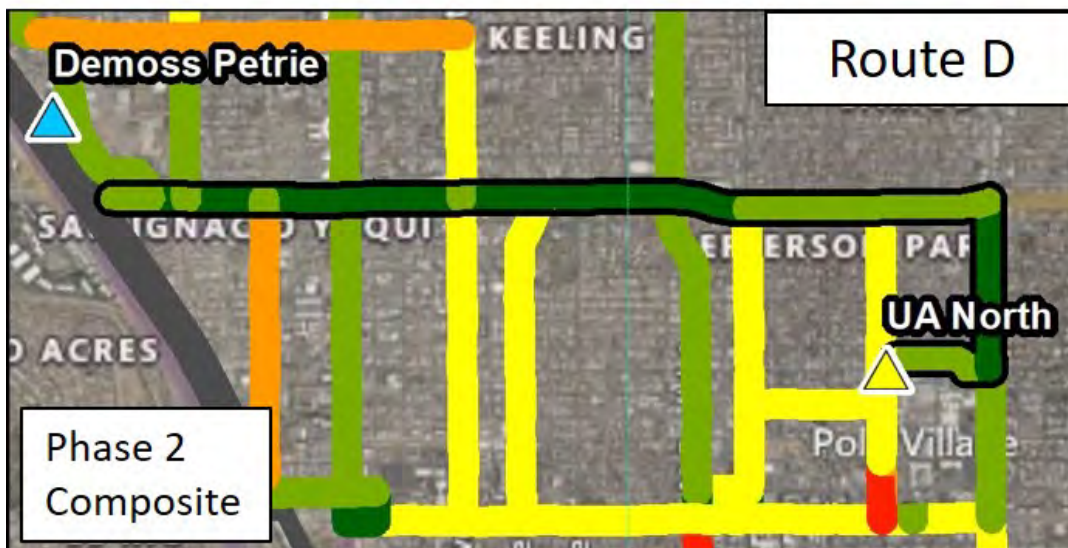
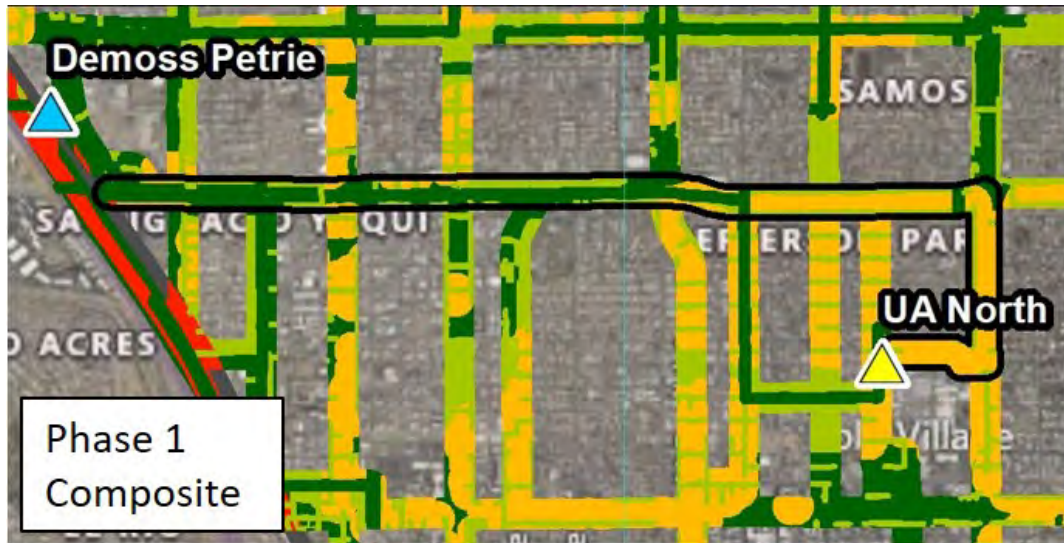












Appendix E. Table of Route Values

Table E.1. Route Resource Scores

Route	Length (miles)	% Historic Properties	Historic Properties Rank	% Sensitive Receptors	Sensitive Receptors Rank	% Residential Use	Residential Use Rank	Resource Rank Total	Average Combined Resource Score	Average Constructability Score	Sum of Average Constructability and Resource Scores	Total Average Resource Score
1	4.01	36.9	2	22.49	3	47.1	2	7	2.33333333	2.25	4.58333333	2.291667
2	4	37.5	2	27.2	2	39.8	2	6	2	2.35	4.35	2.175
3	5	31.7	2	17.7	3	58.6	1	6	2	2.34	4.34	2.17
4	5.01	26.4	2	17	3	46.6	2	7	2.33333333	2.29	4.62333333	2.311667
5	4.93	32.1	2	21.5	3	52.7	1	6	2	2.3	4.3	2.15
6	4.95	26.8	2	20.8	3	40.7	2	7	2.33333333	2.24	4.57333333	2.286667
A	2.87	40.3	2	17.4	3	44.5	2	7	2.33333333	2.63	4.96333333	2.481667
B	2.97	28.6	2	14.1	3	48	2	7	2.33333333	2.7	5.03333333	2.516667
C	3.82	54.6	1	33.8	2	20.6	3	6	2	2.18	4.18	2.09
D	3.56	49.9	2	26.1	2	47.8	2	6	2	2.64	4.64	2.32

Appendix F. Route Analysis Maps

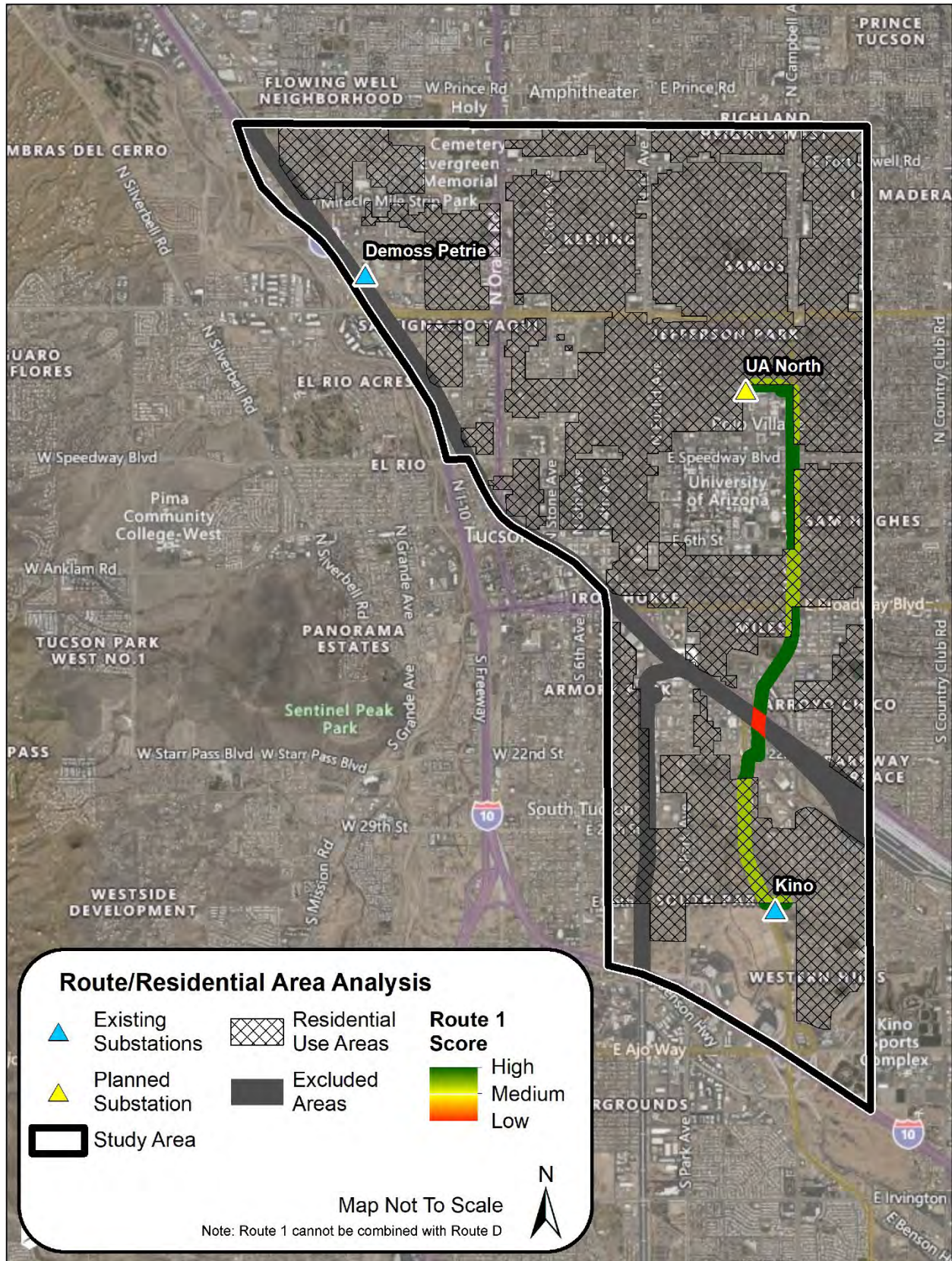


Figure F.1. Residential Use—Route 1.

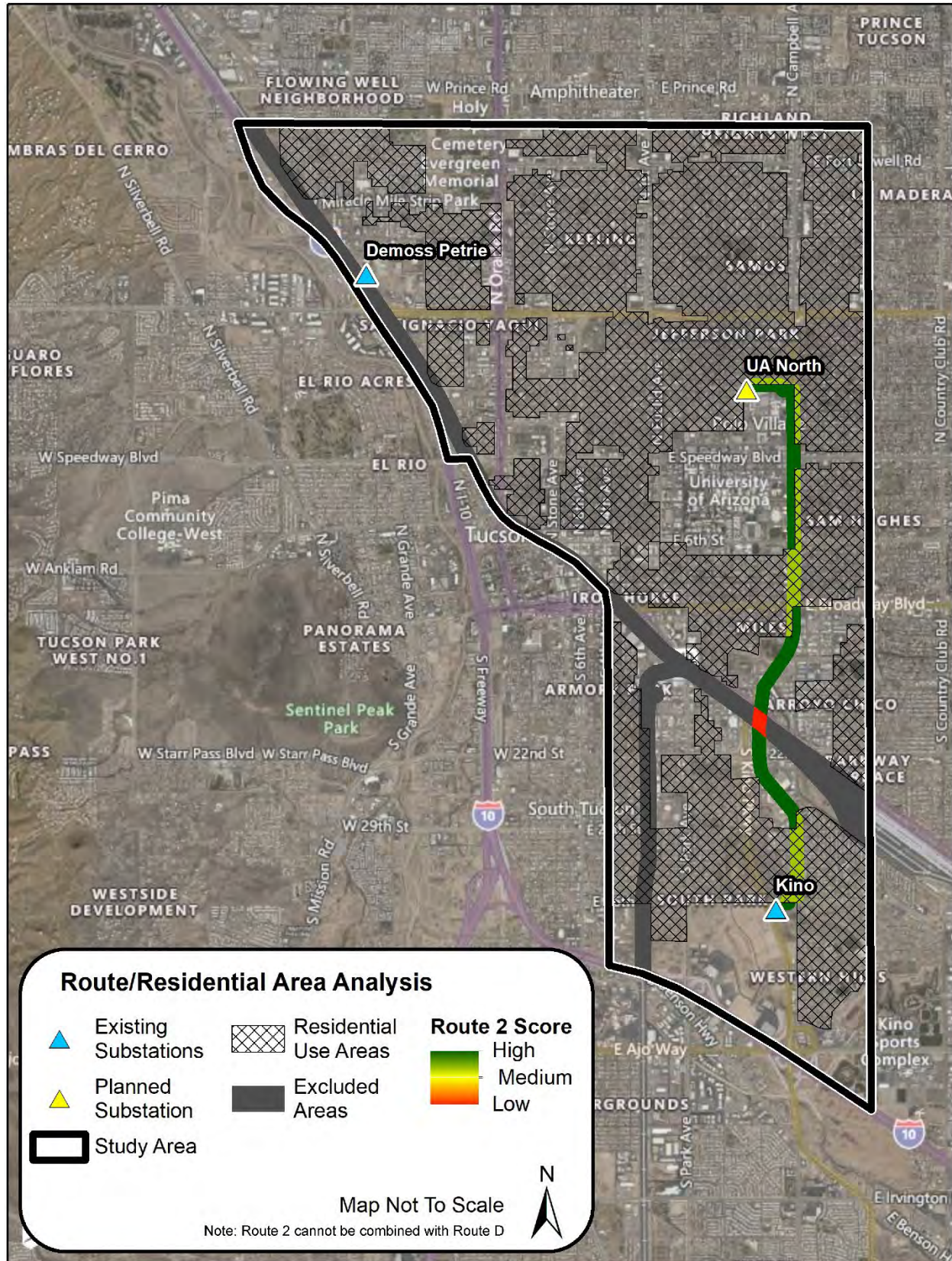


Figure F.2. Residential Use—Route 2.

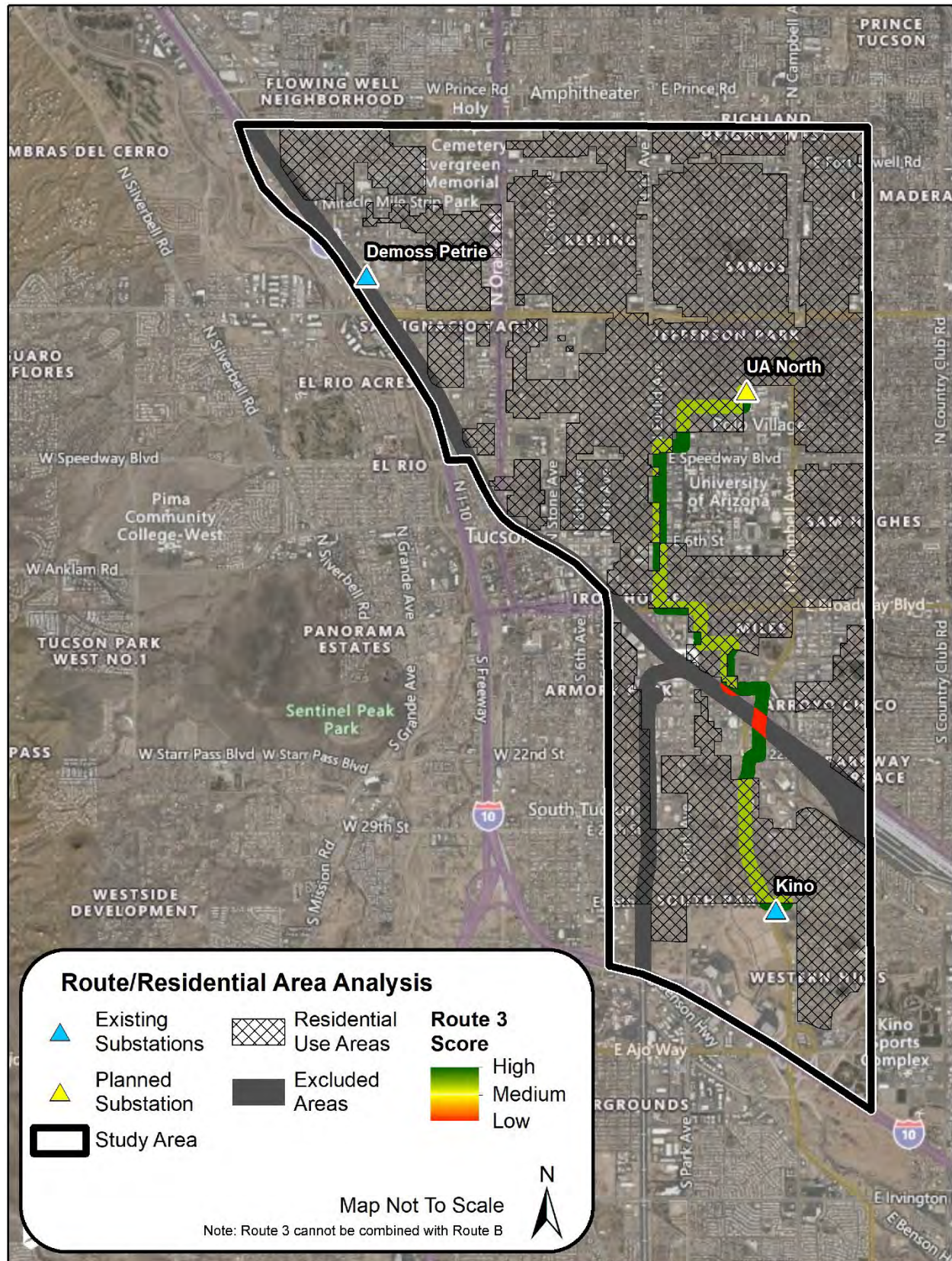


Figure F.3. Residential Use—Route 3.

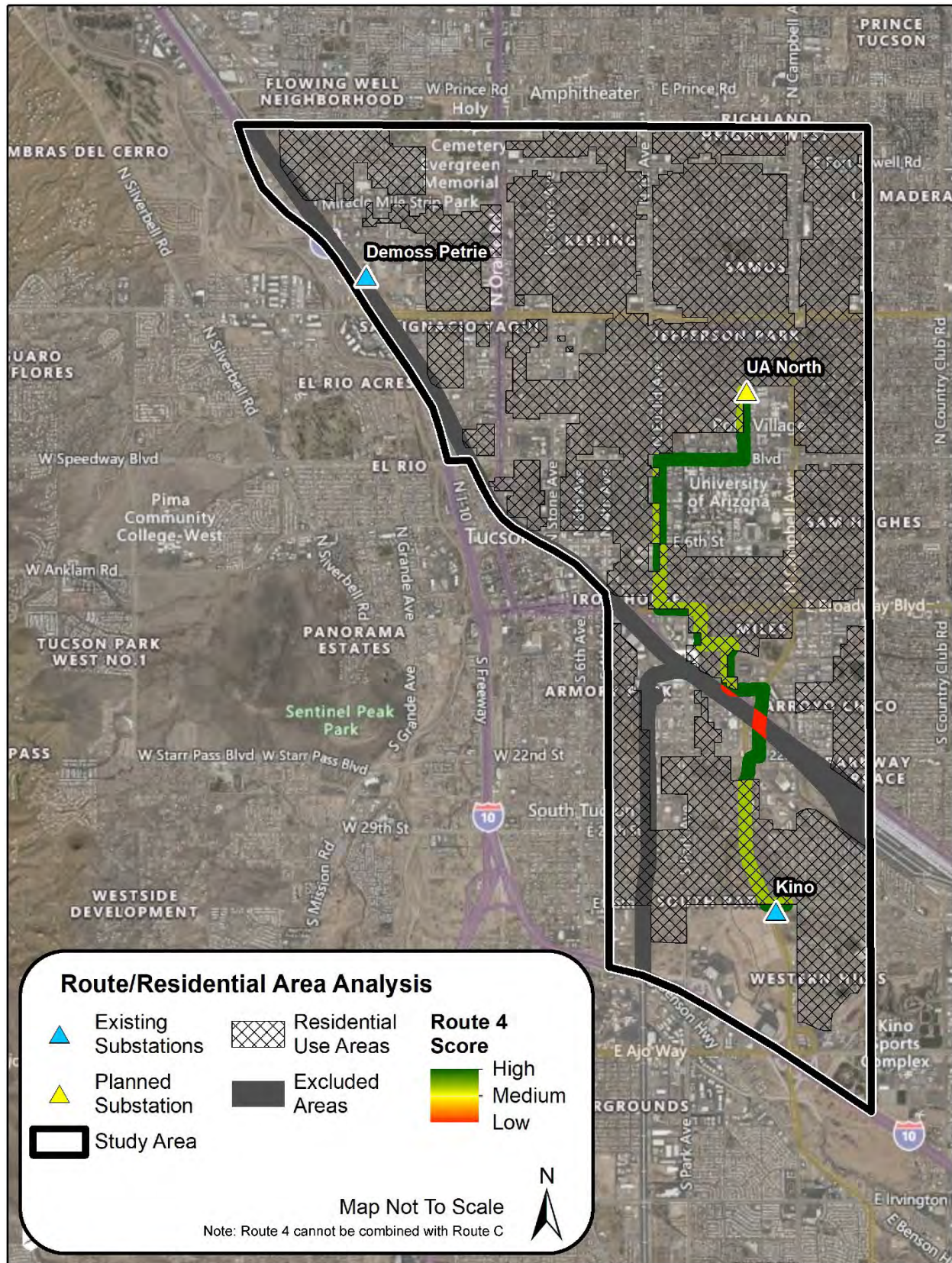


Figure F.4. Residential Use—Route 4.

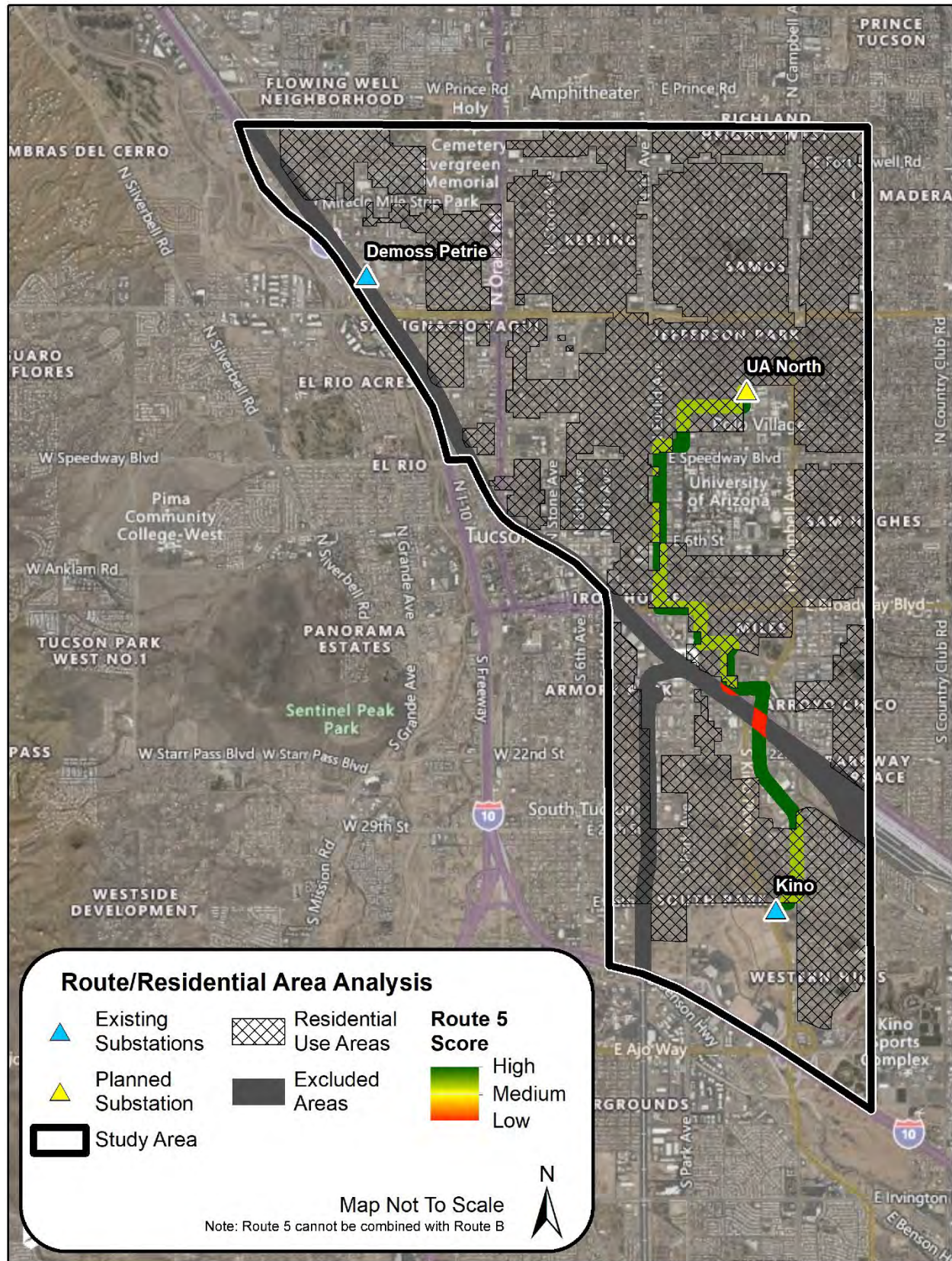


Figure F.5. Residential Use—Route 5.

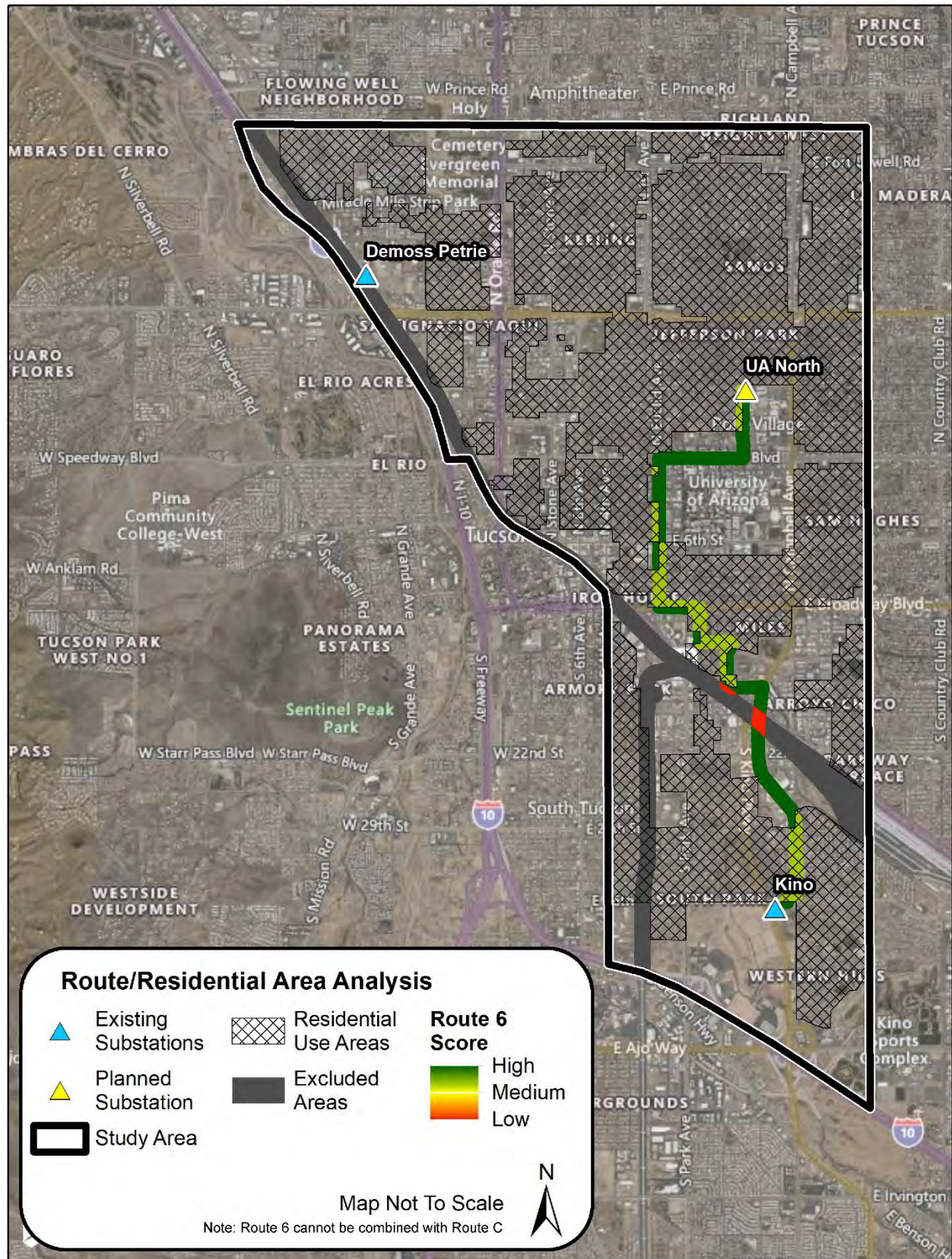


Figure F.6. Residential Use—Route 6.



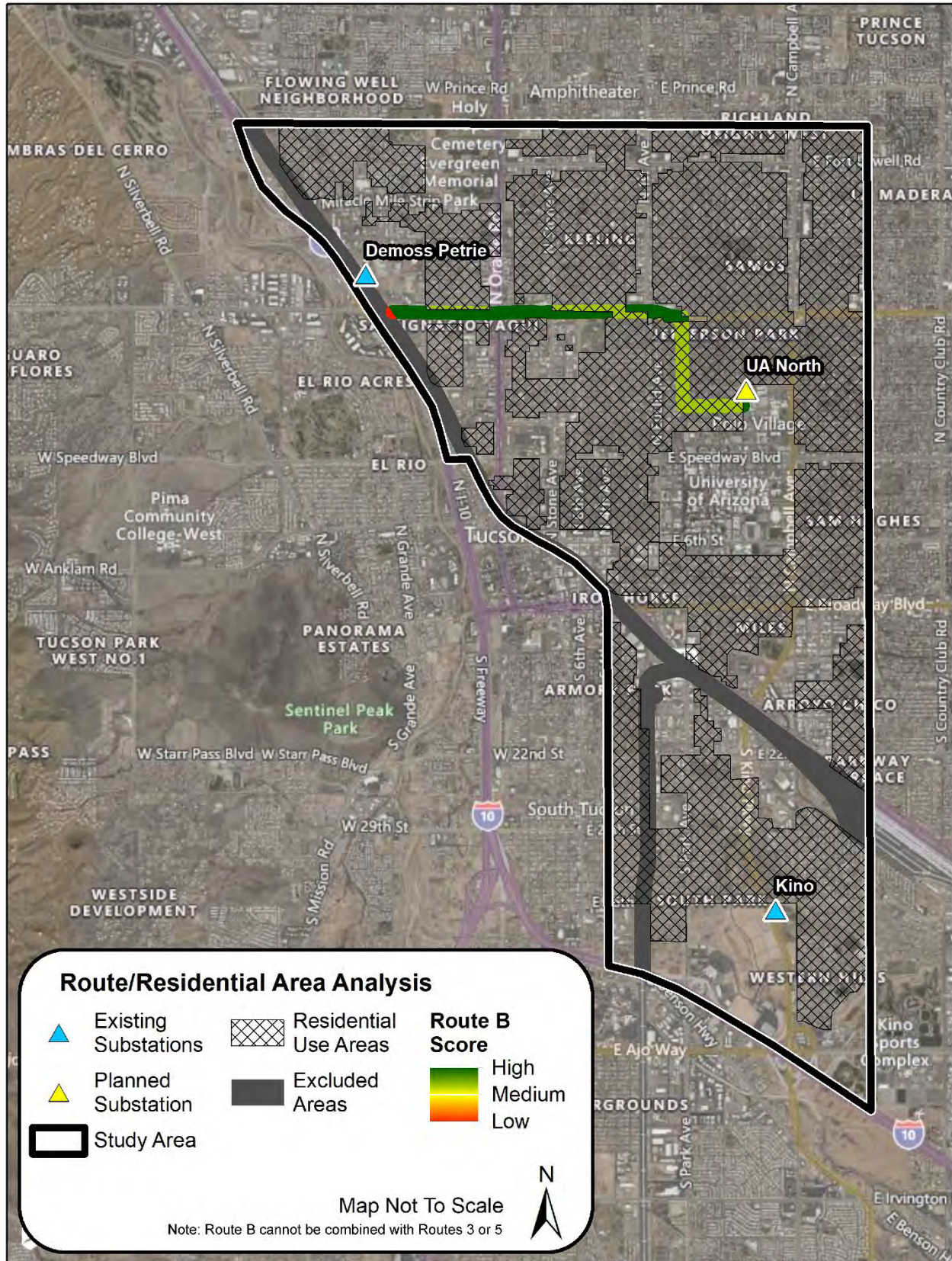


Figure F.8. Residential Use—Route B.



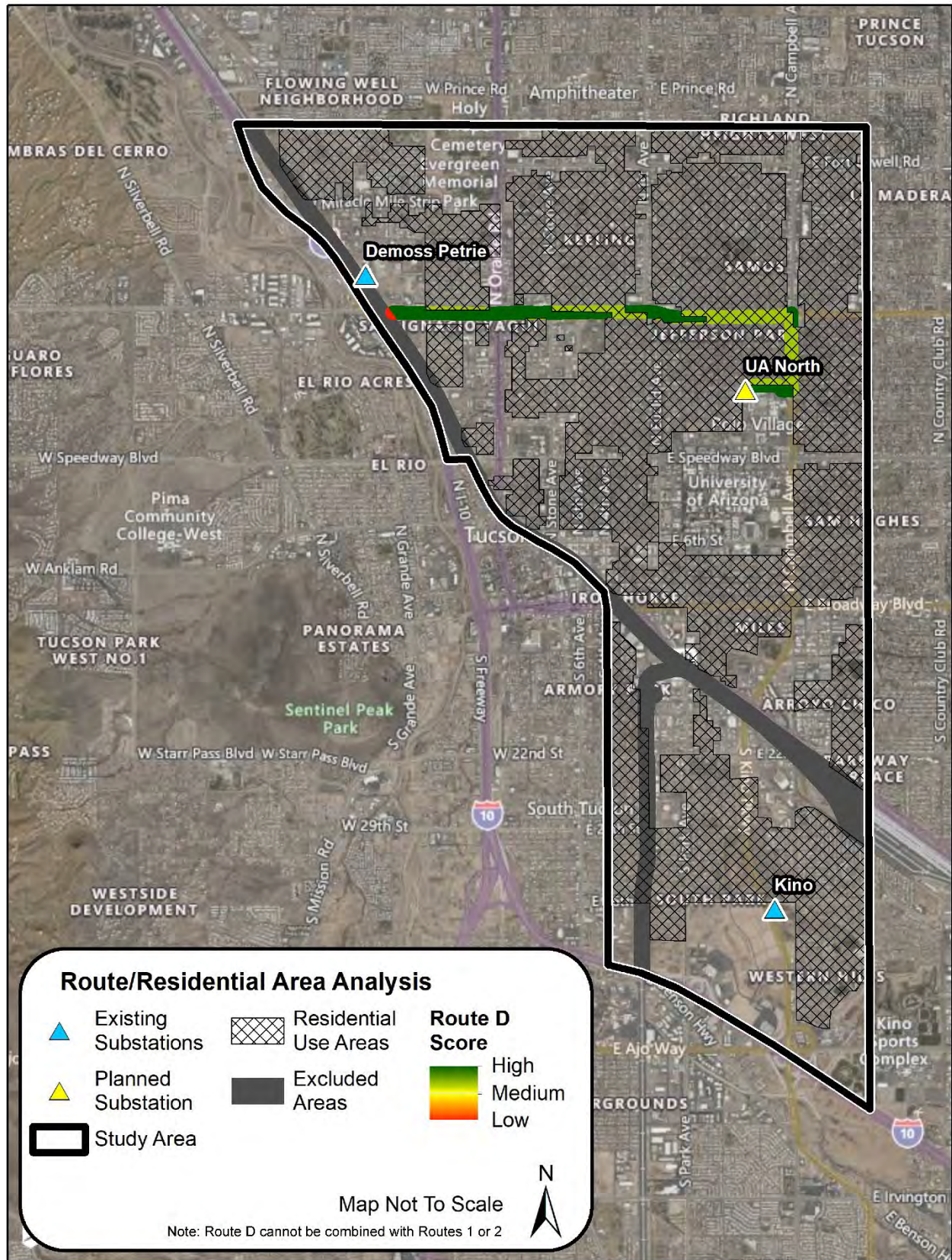


Figure F.10. Residential Use—Route D.

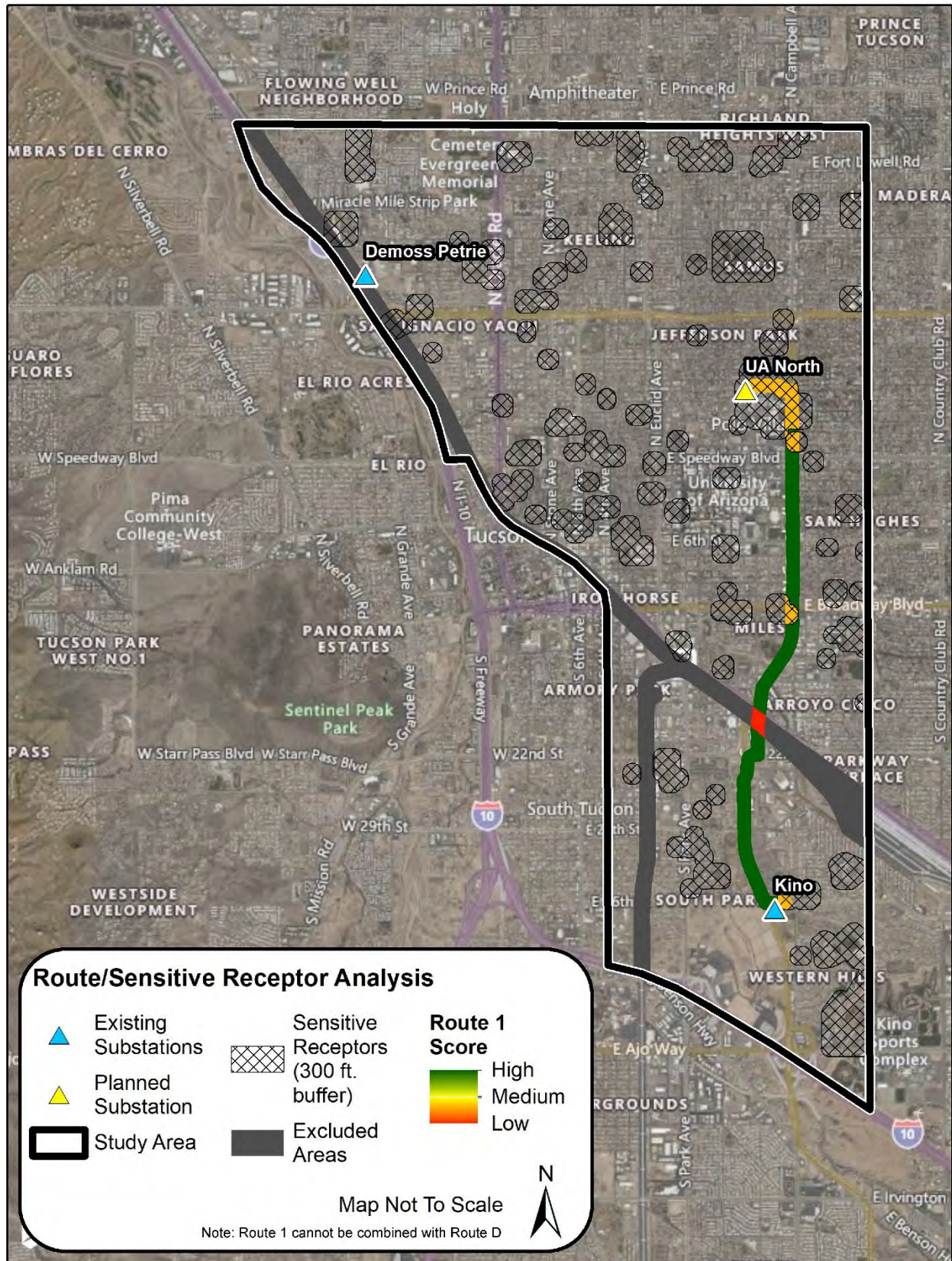


Figure F.11. Sensitive Receptors—Route 1.

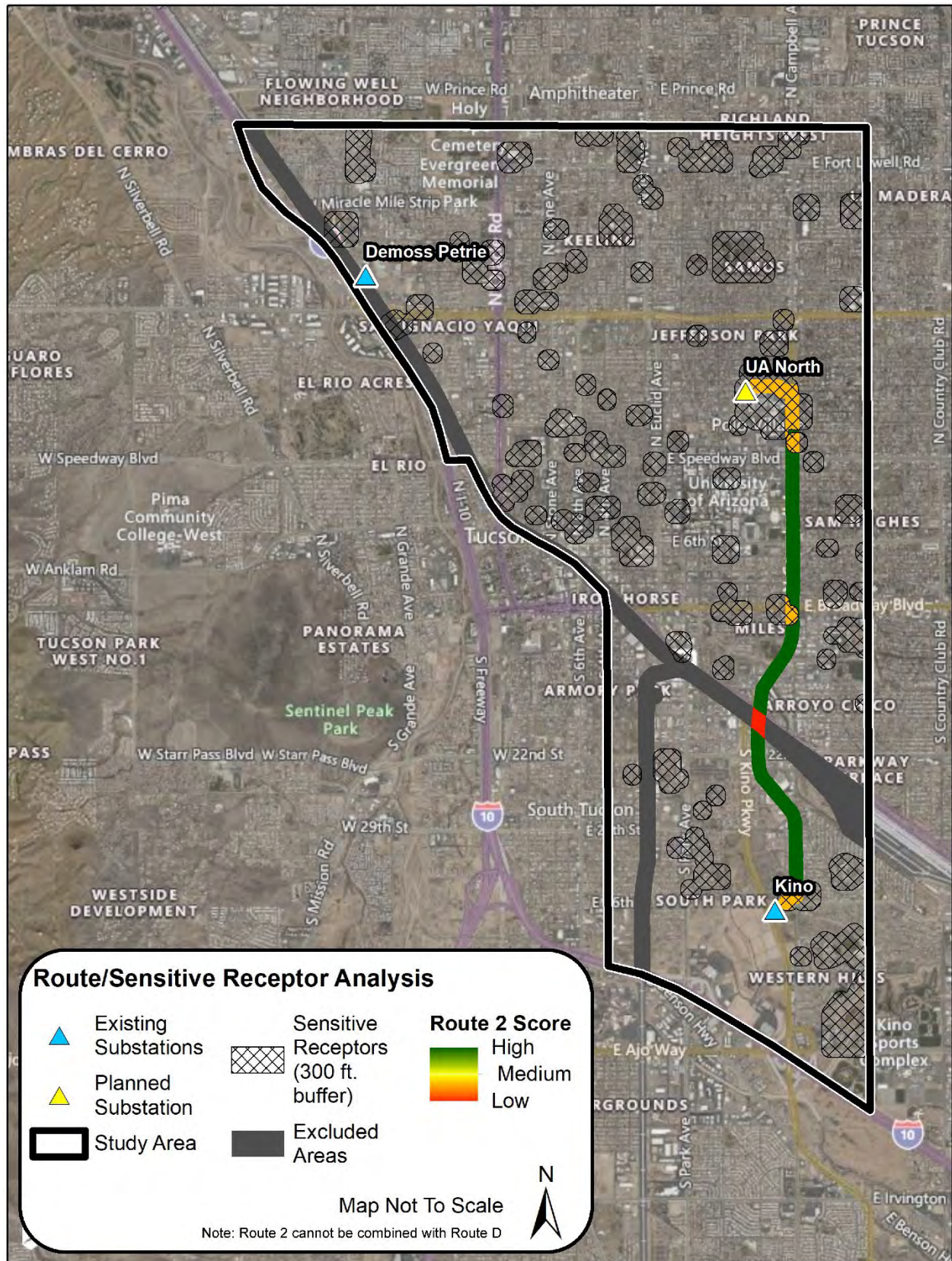


Figure F.12. Sensitive Receptors—Route 2.

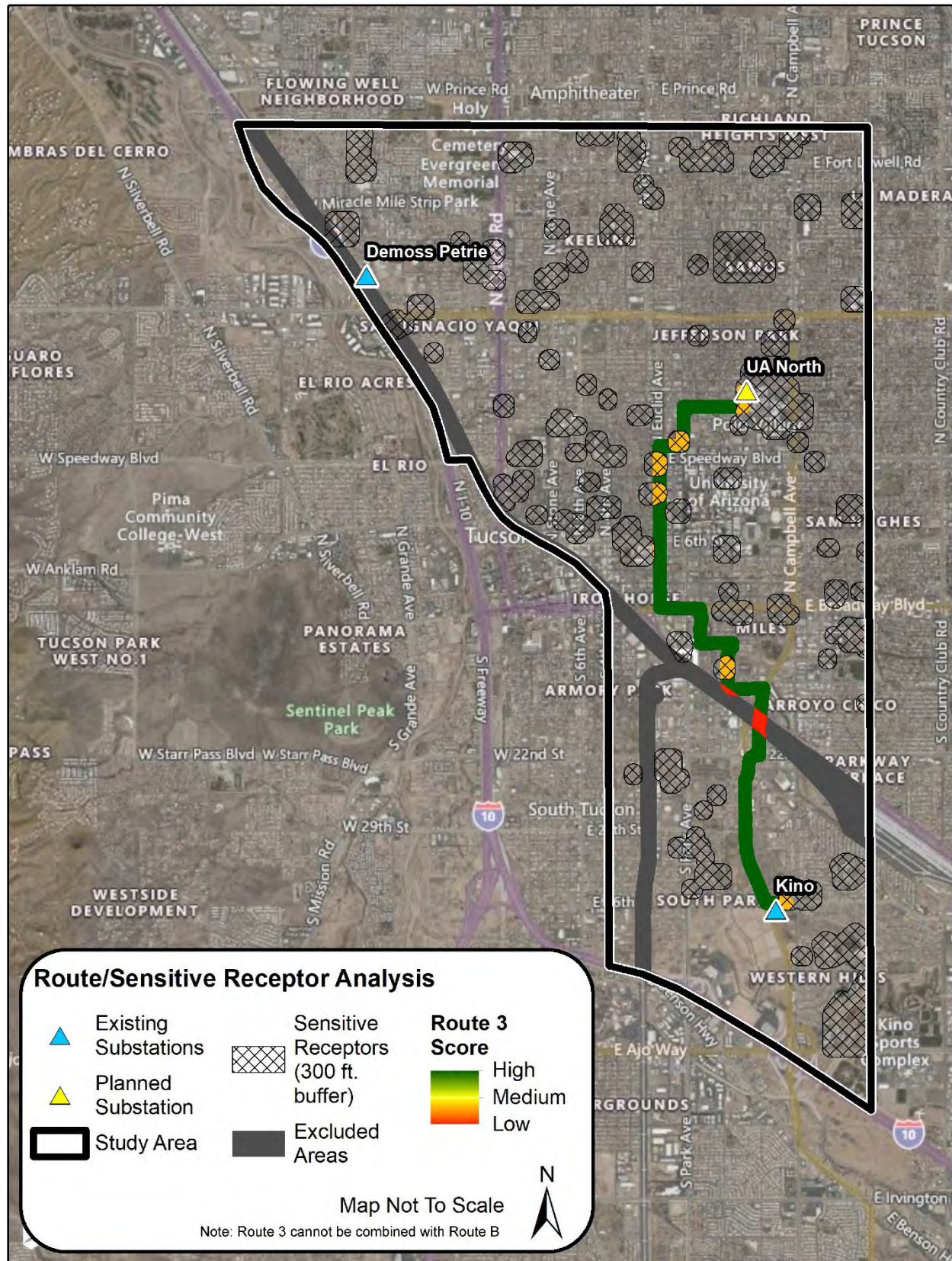


Figure F.13. Sensitive Receptors—Route 3.

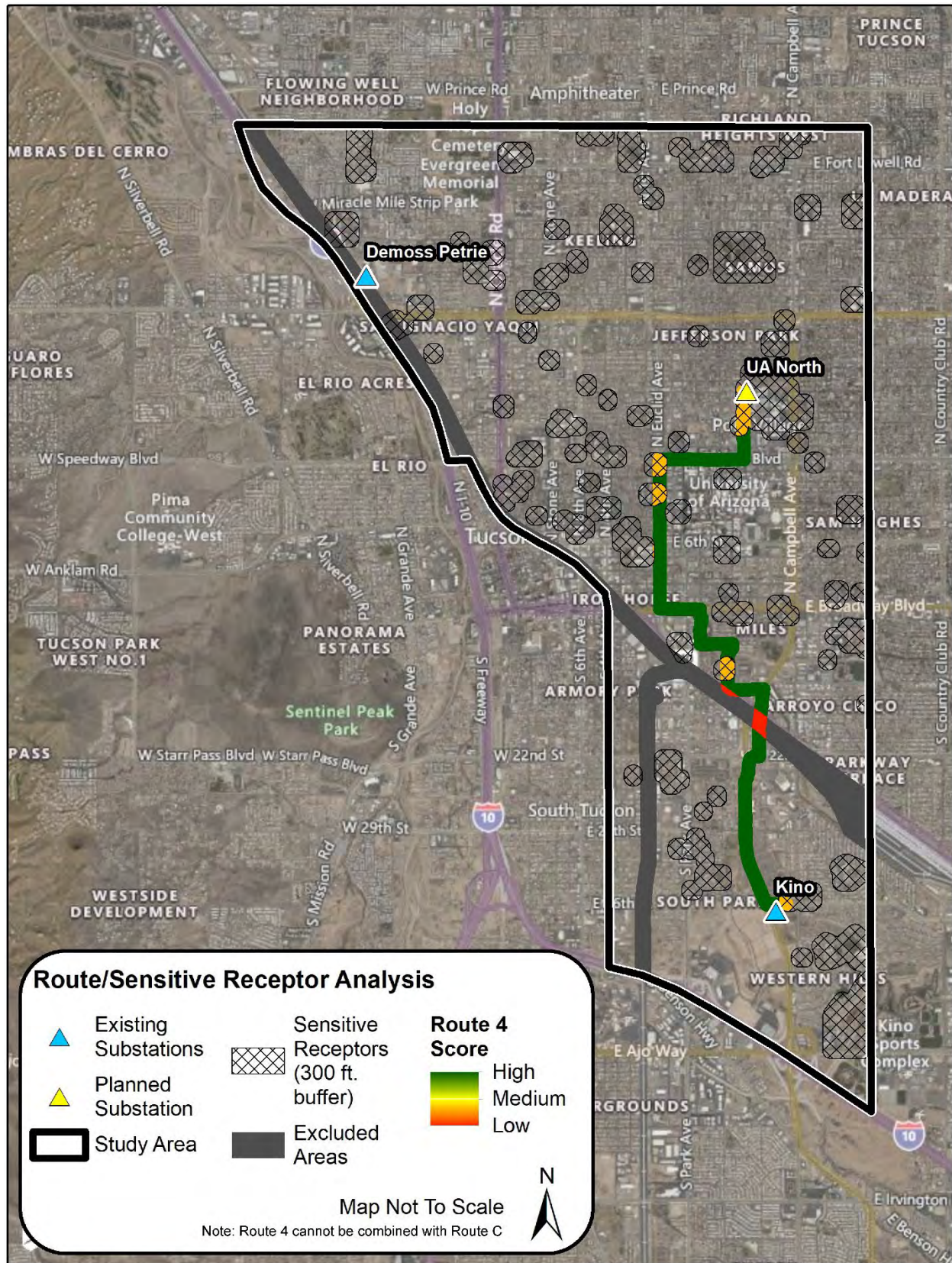


Figure F.14. Sensitive Receptors—Route 4.

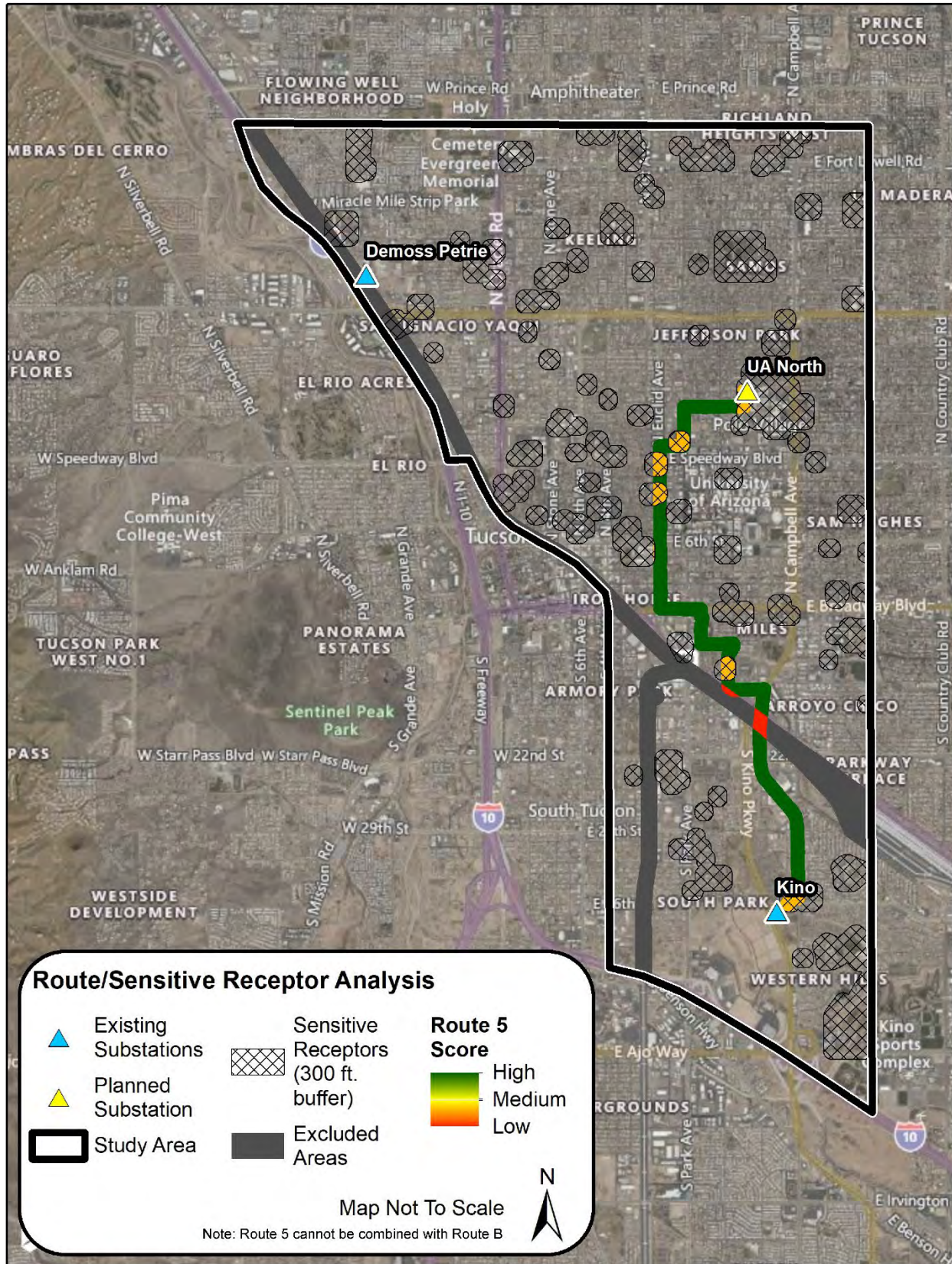


Figure F.15. Sensitive Receptors—Route 5.

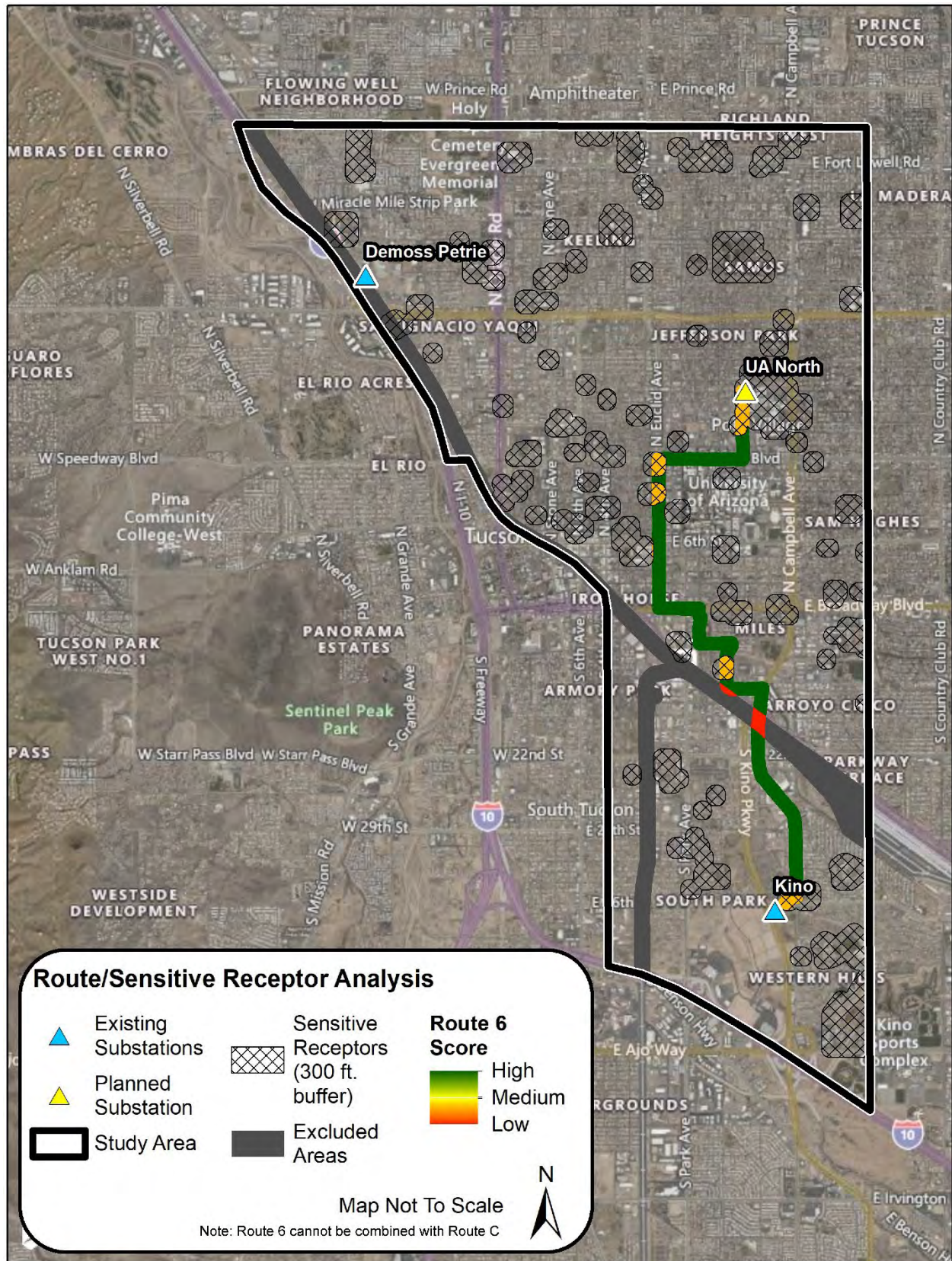


Figure F.16. Sensitive Receptors—Route 6.



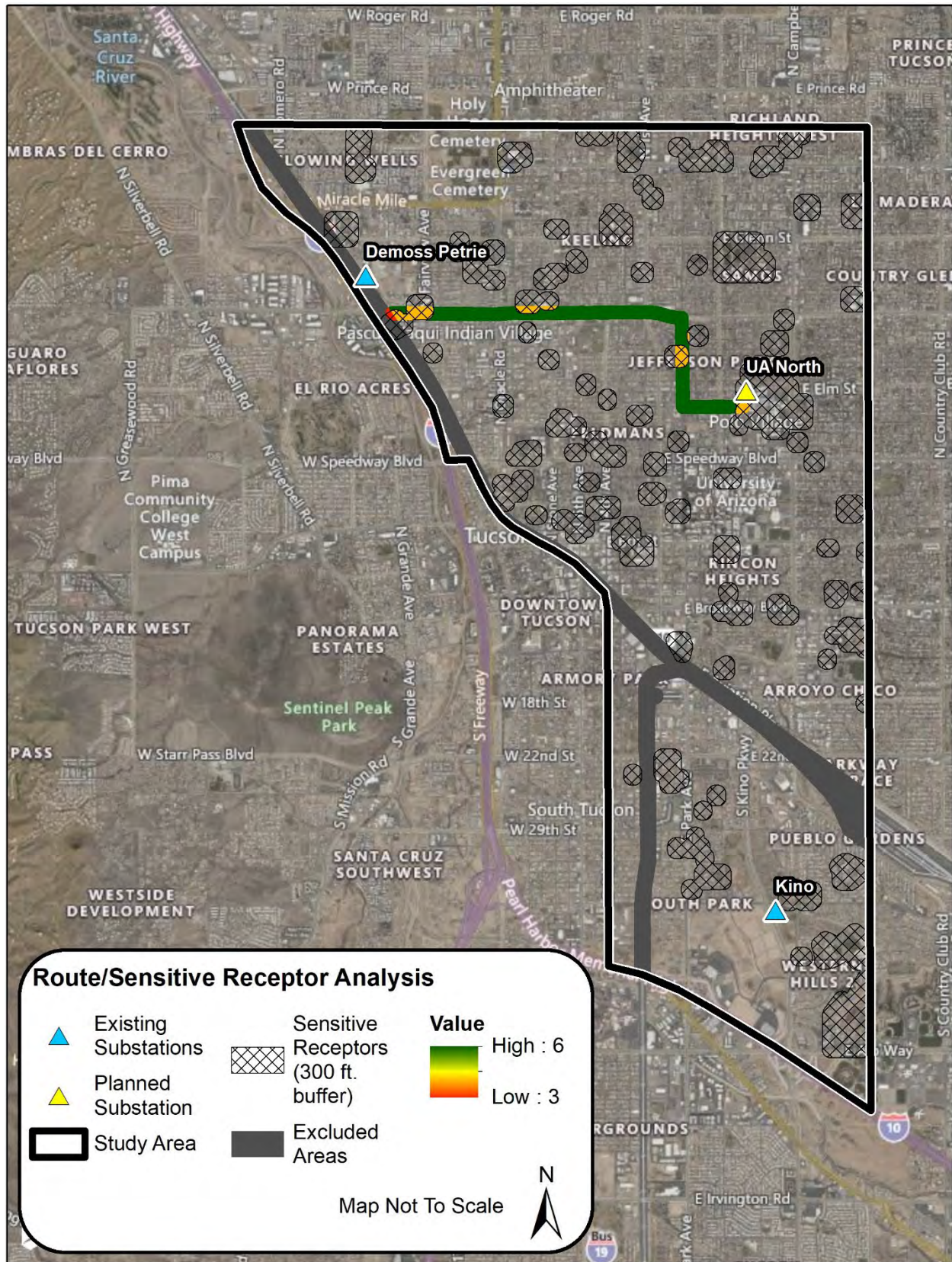


Figure F.18. Sensitive Receptors—Route B.

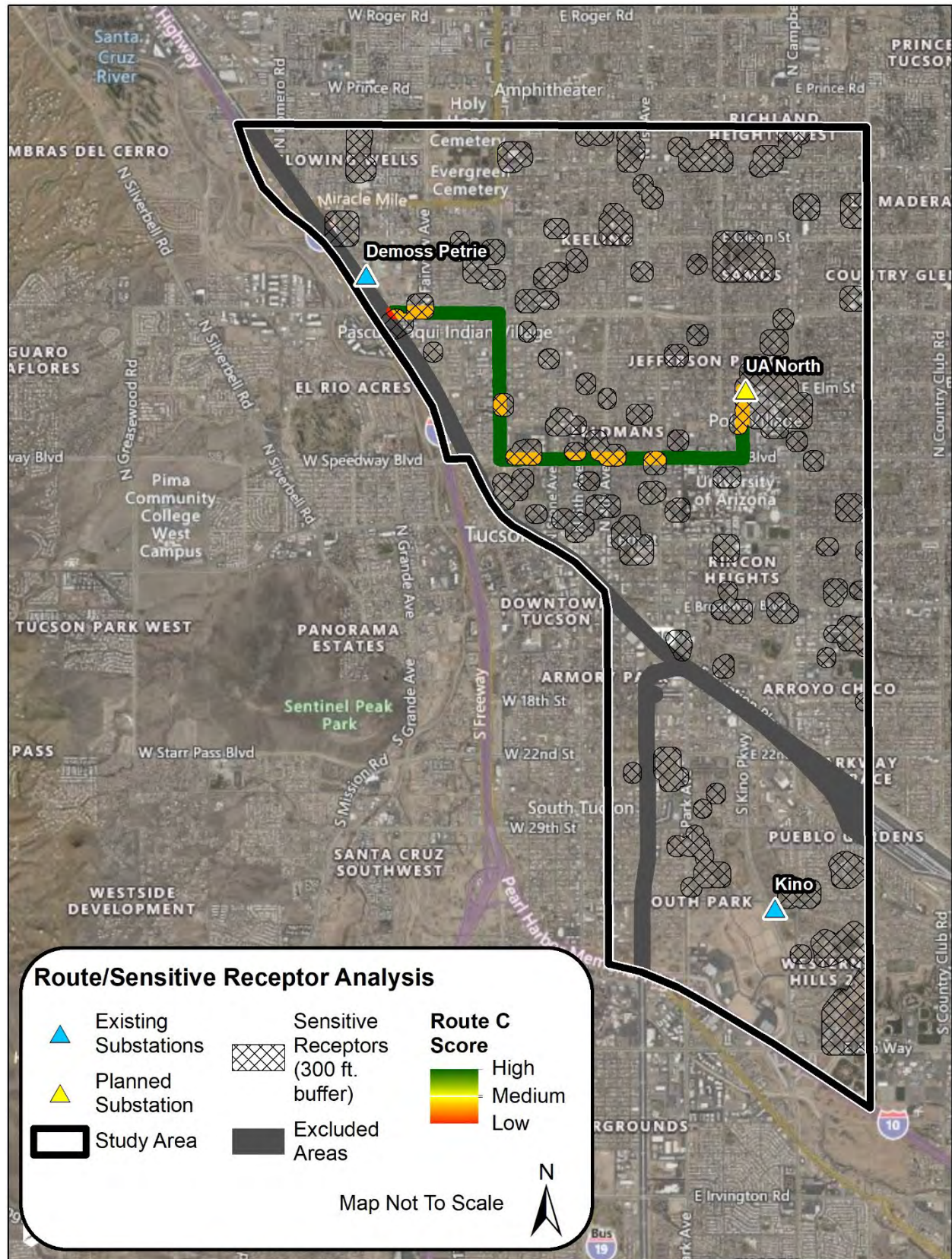
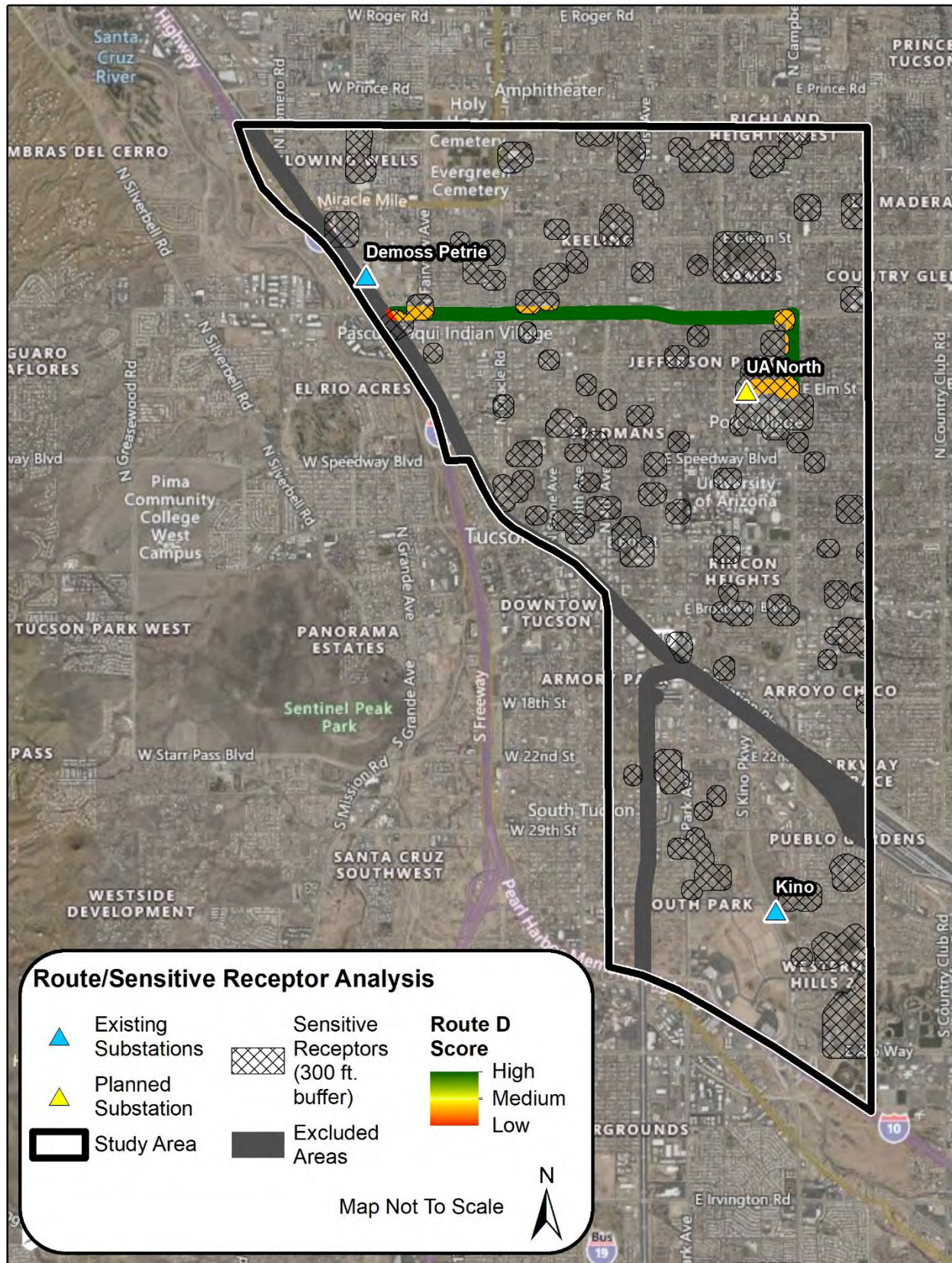


Figure F.19. Sensitive Receptors—Route C.



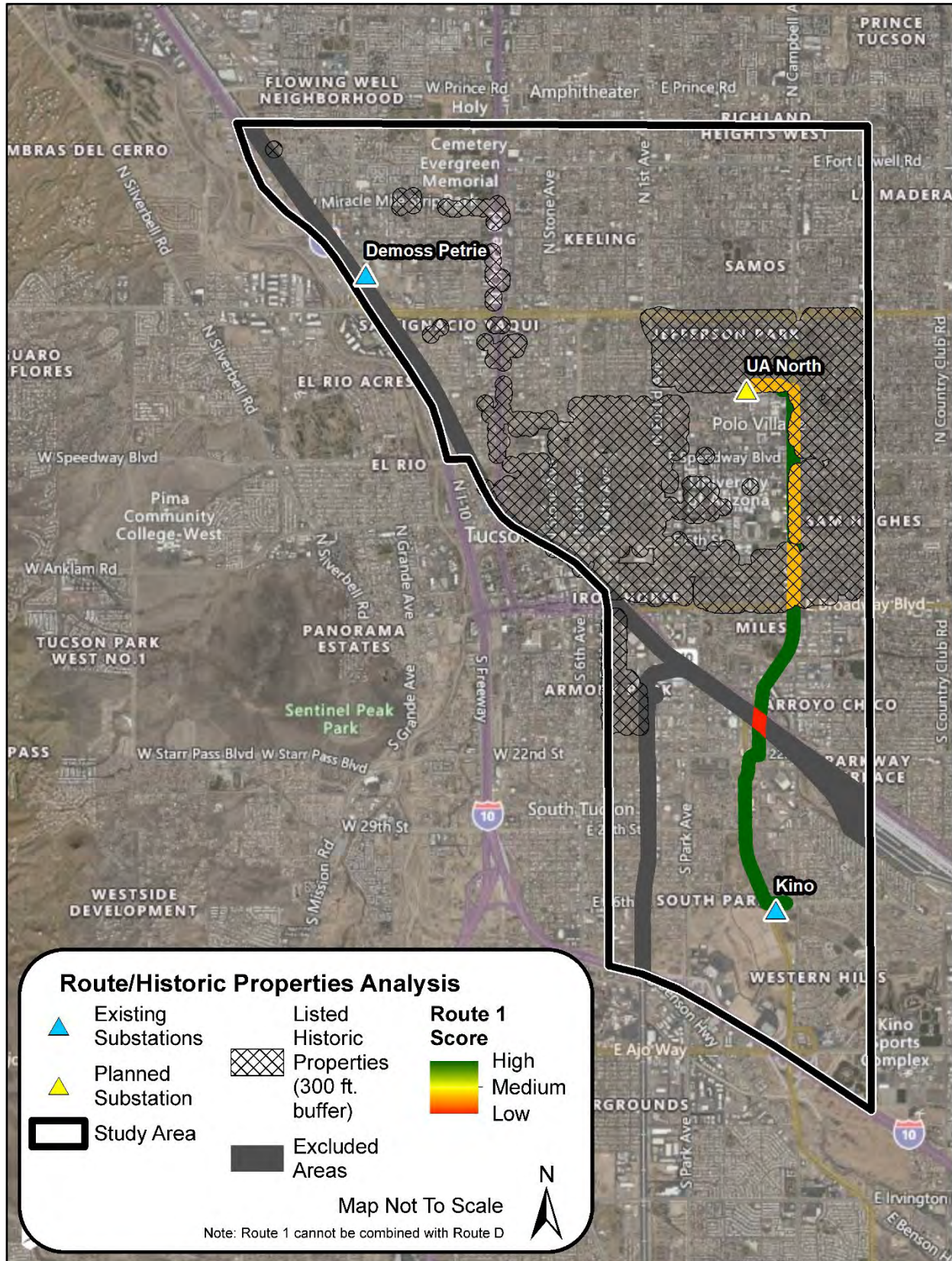


Figure F.21. Historic Properties—Route 1.

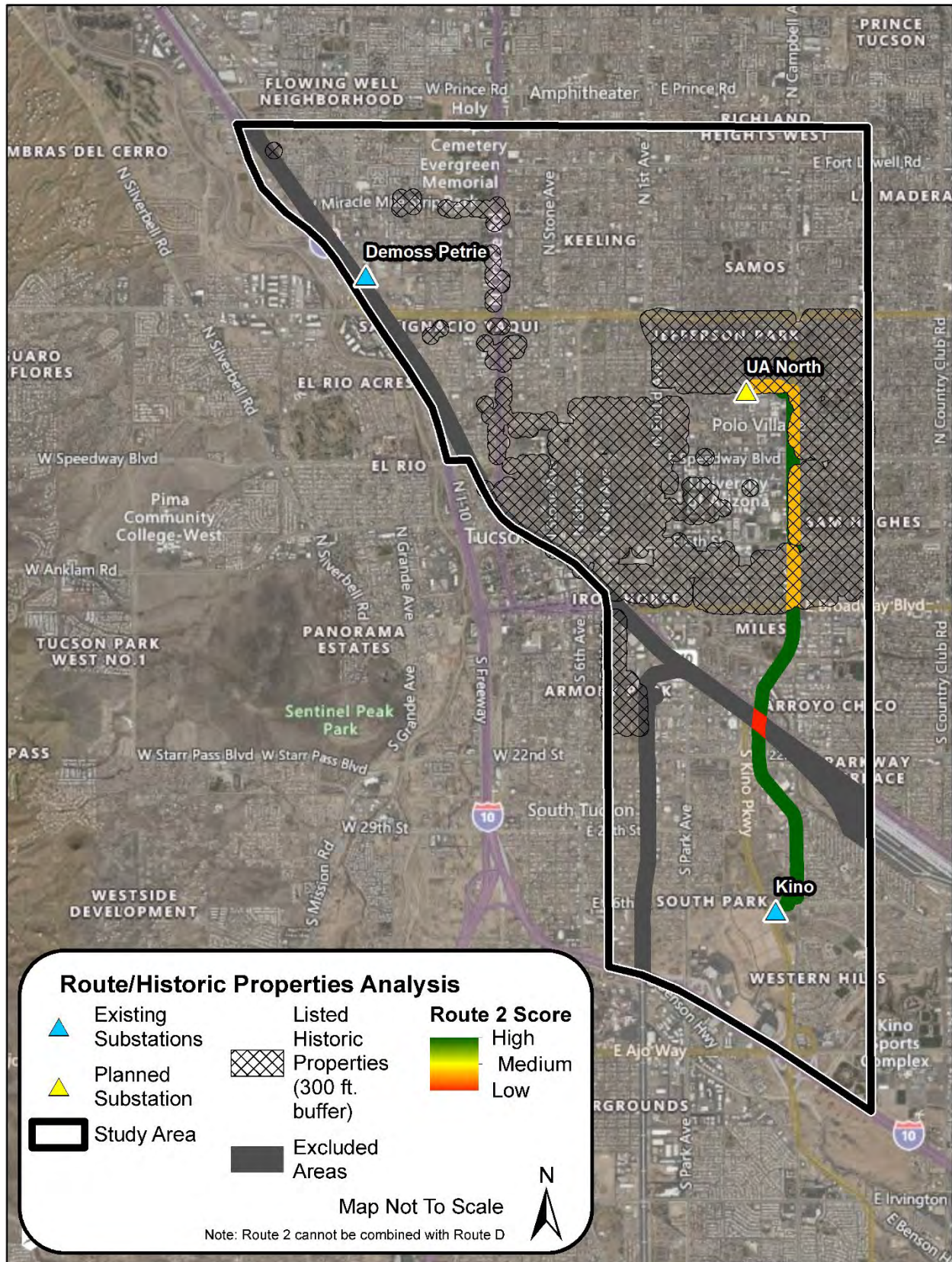


Figure F.22. Historic Properties—Route 2.

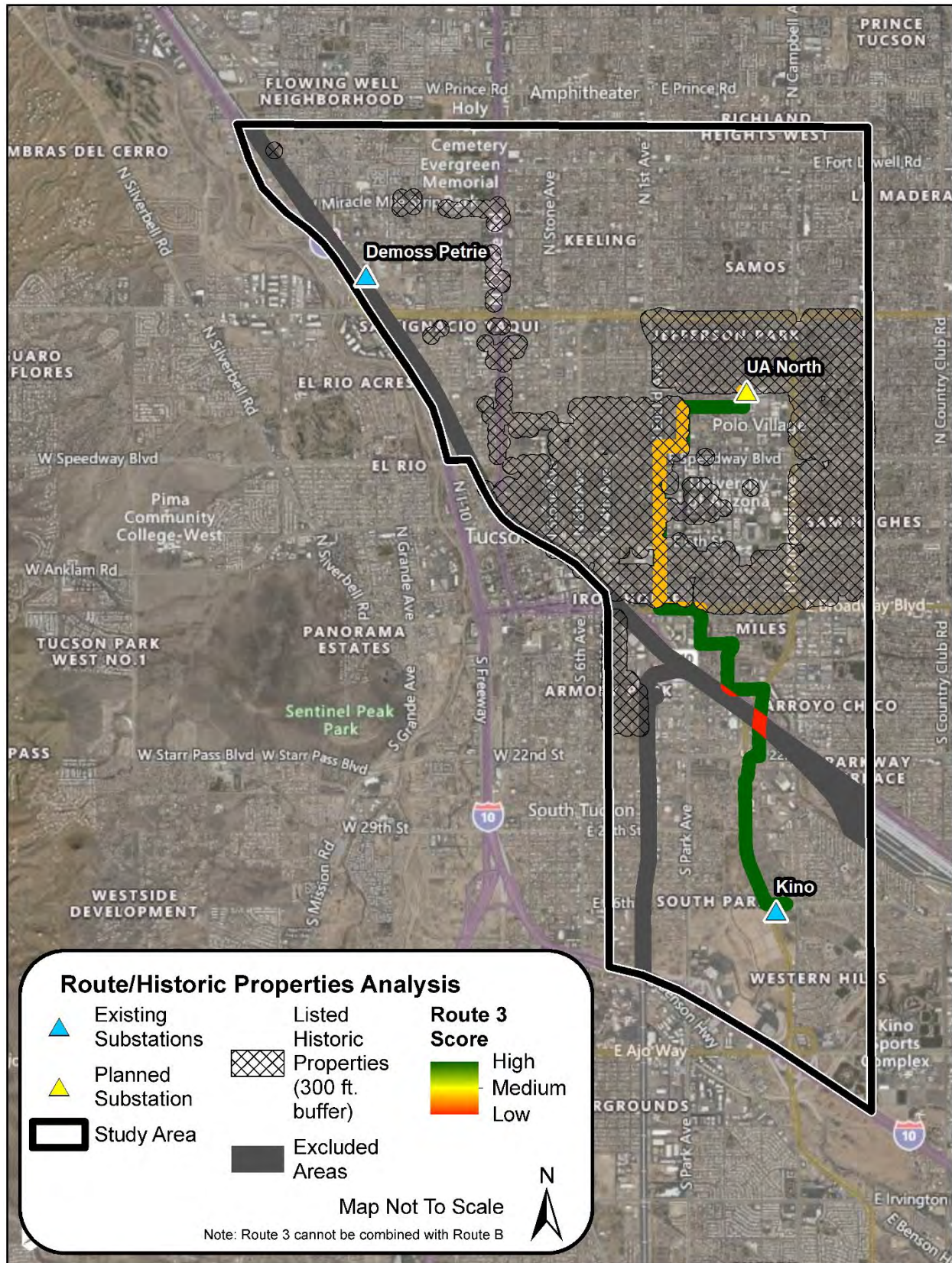


Figure F.23. Historic Properties—Route 3.

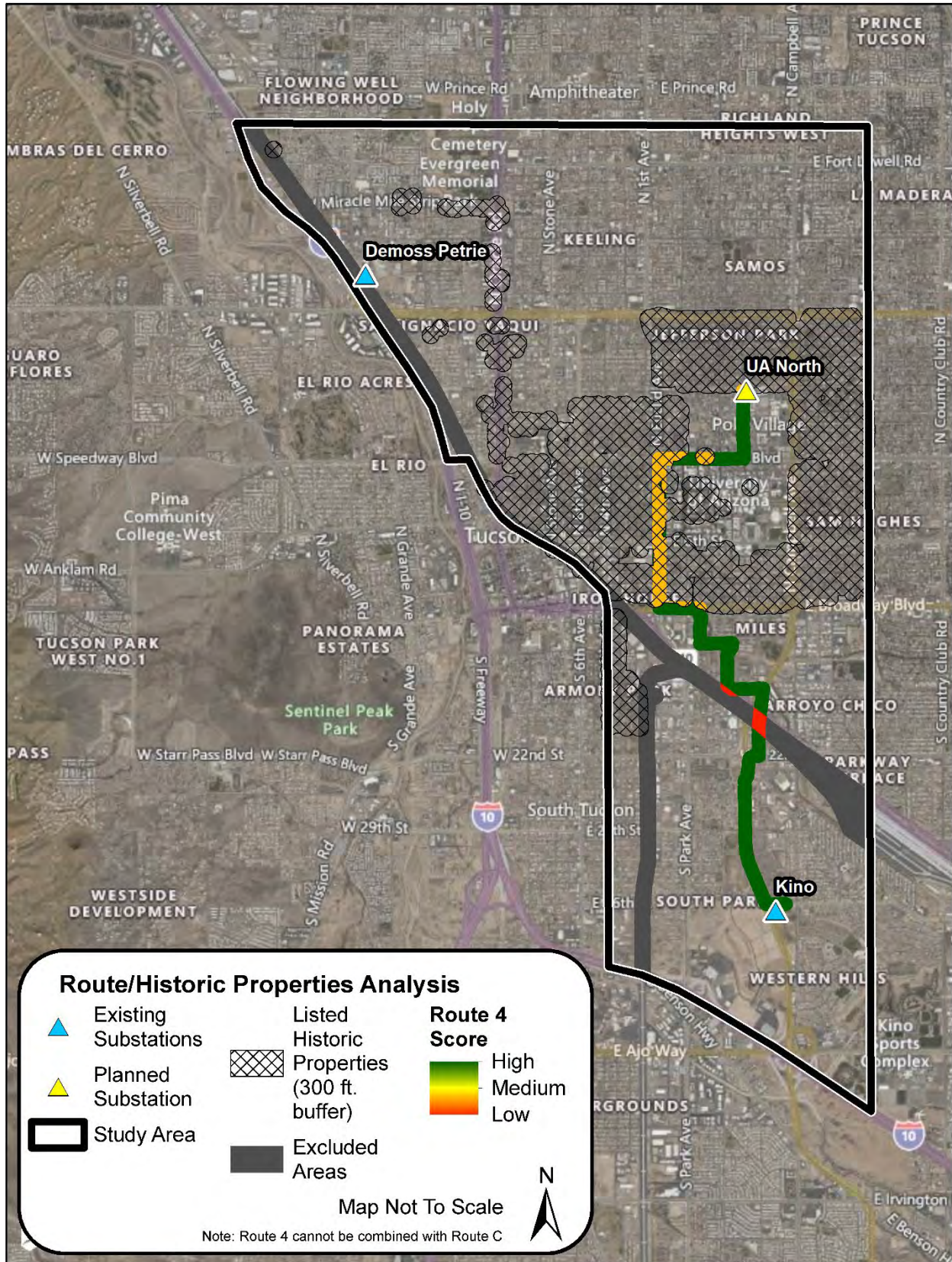


Figure F.24. Historic Properties—Route 4.



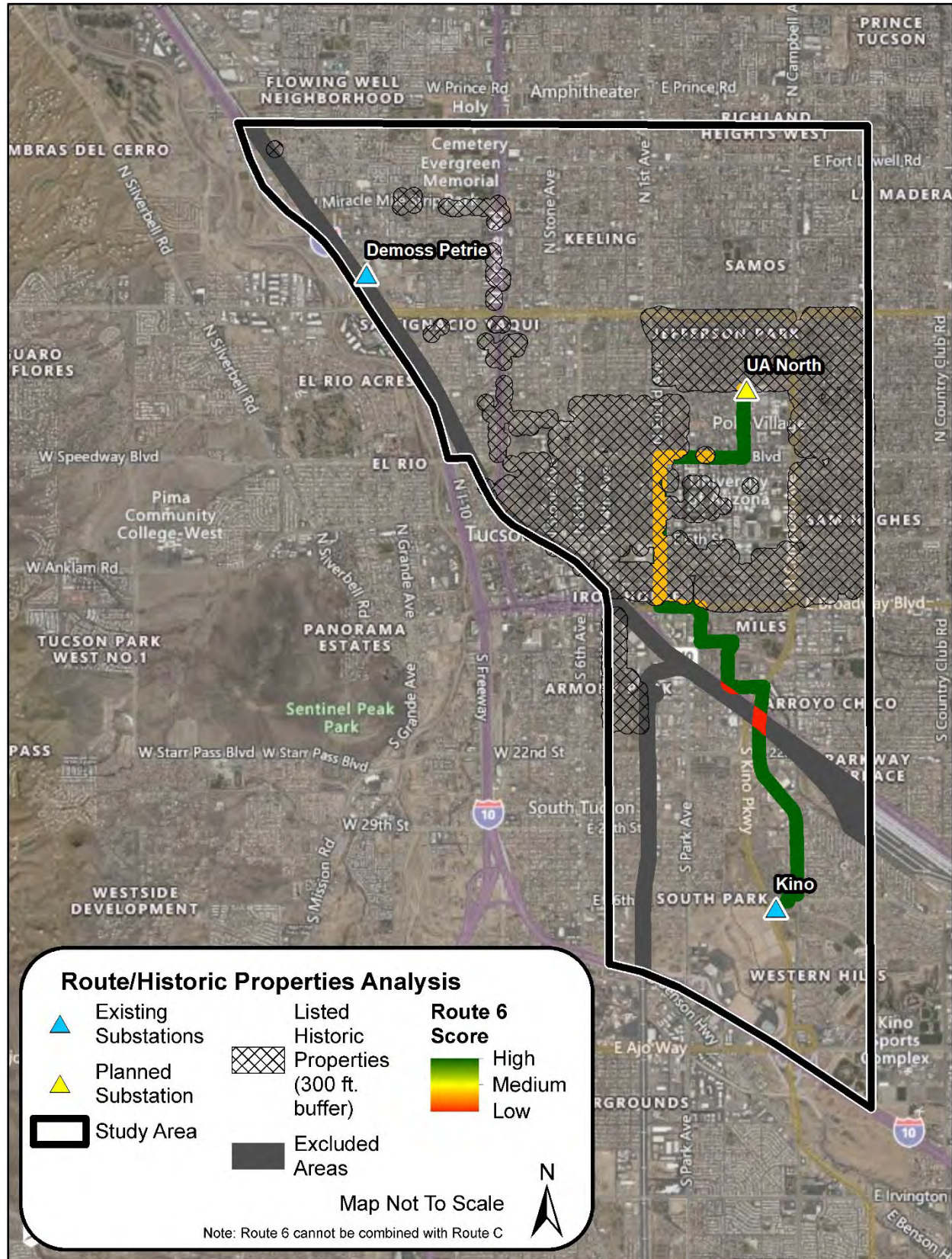


Figure F.26. Historic Properties—Route 6.

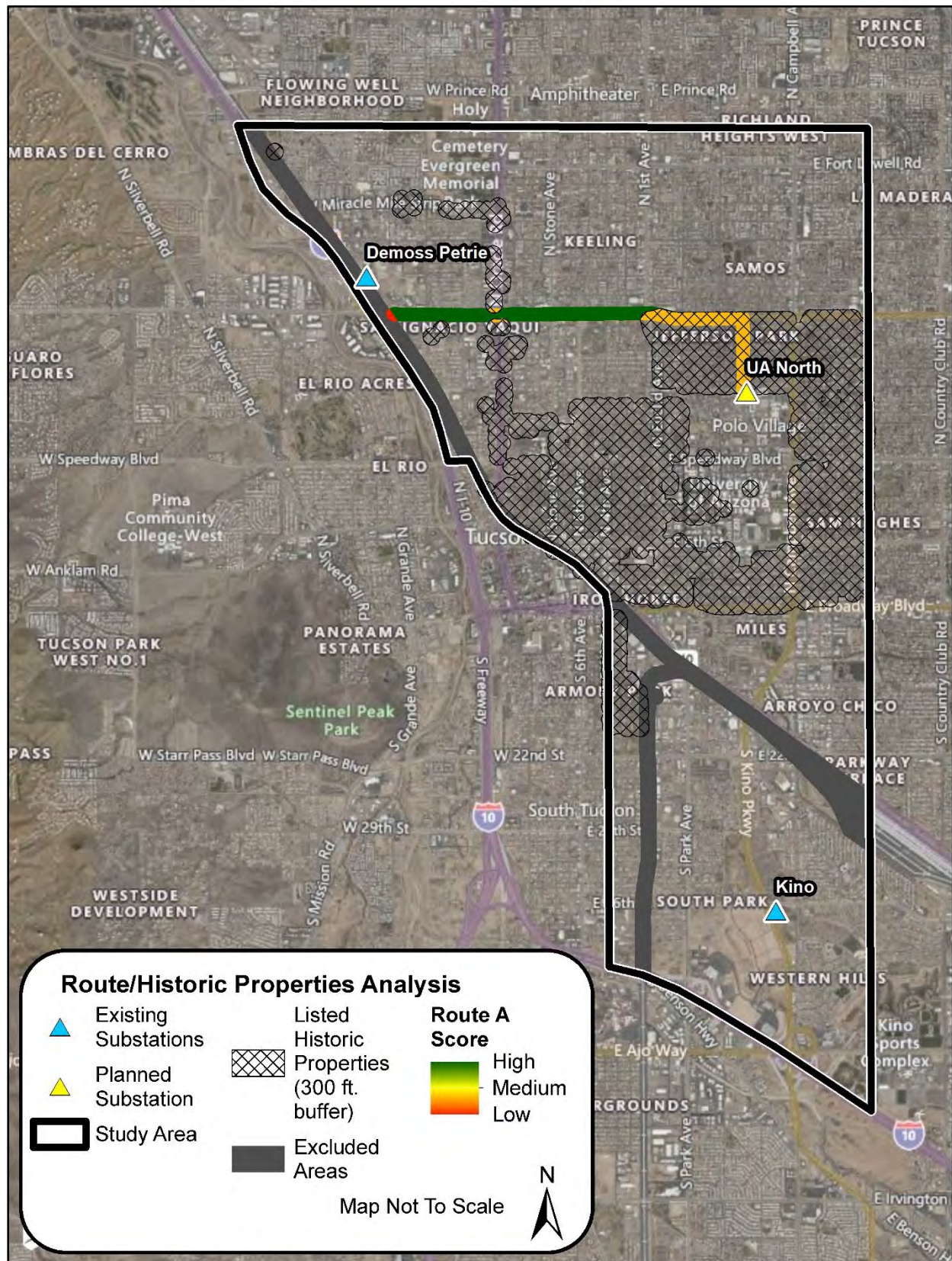


Figure F.27. Historic Properties—Route A.

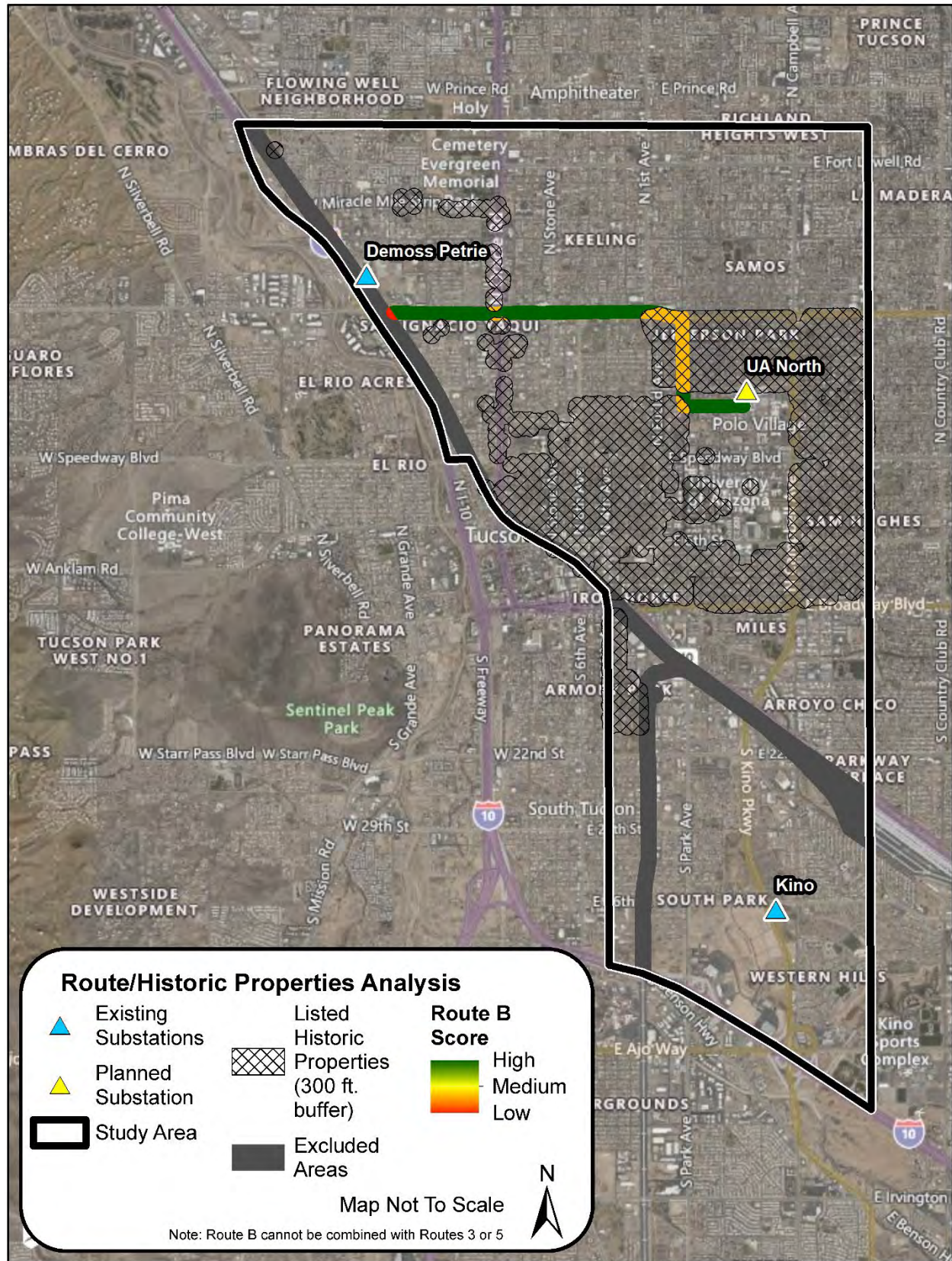


Figure F.28. Historic Properties—Route B.

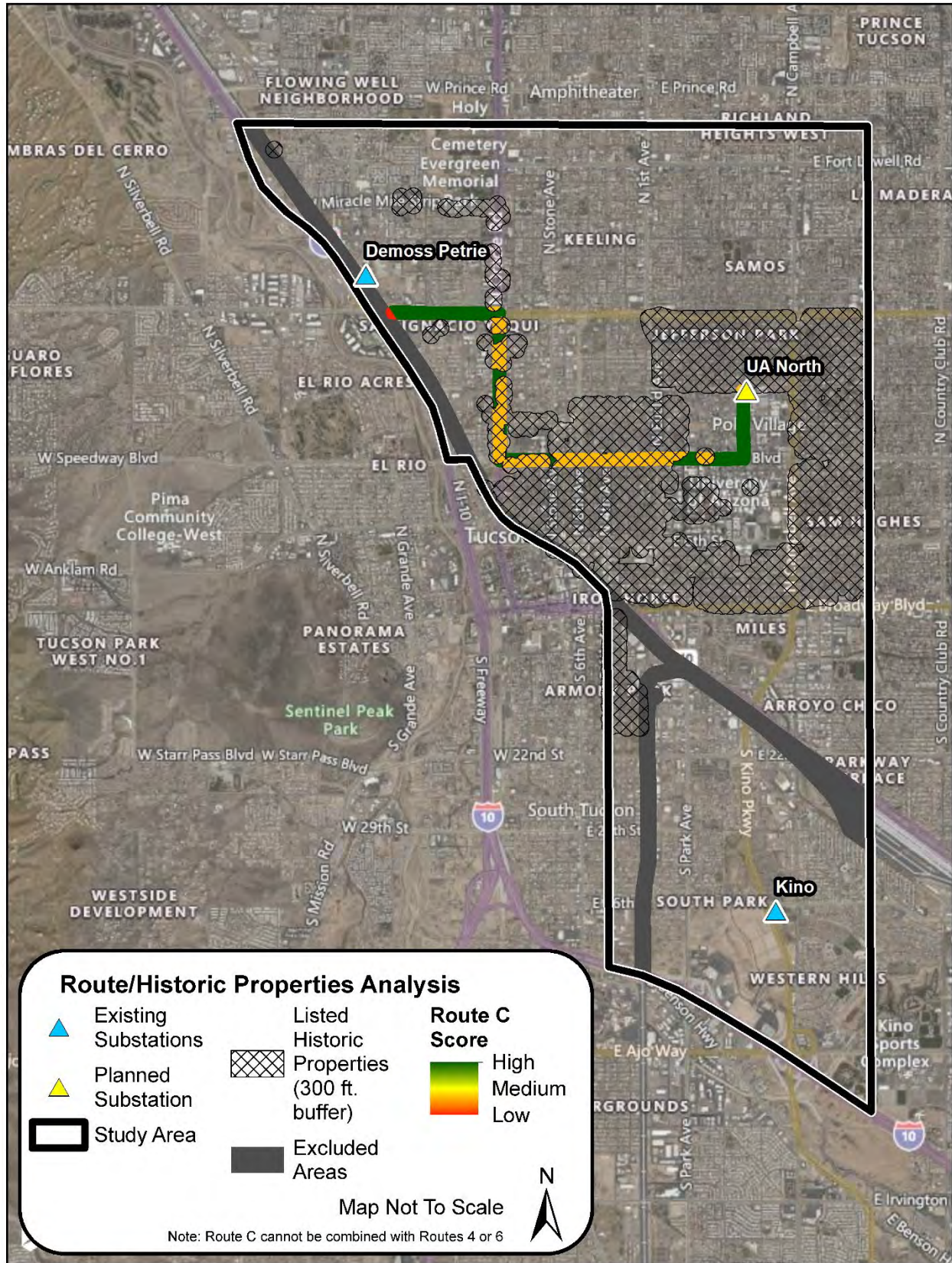


Figure F.29. Historic Properties—Route C.



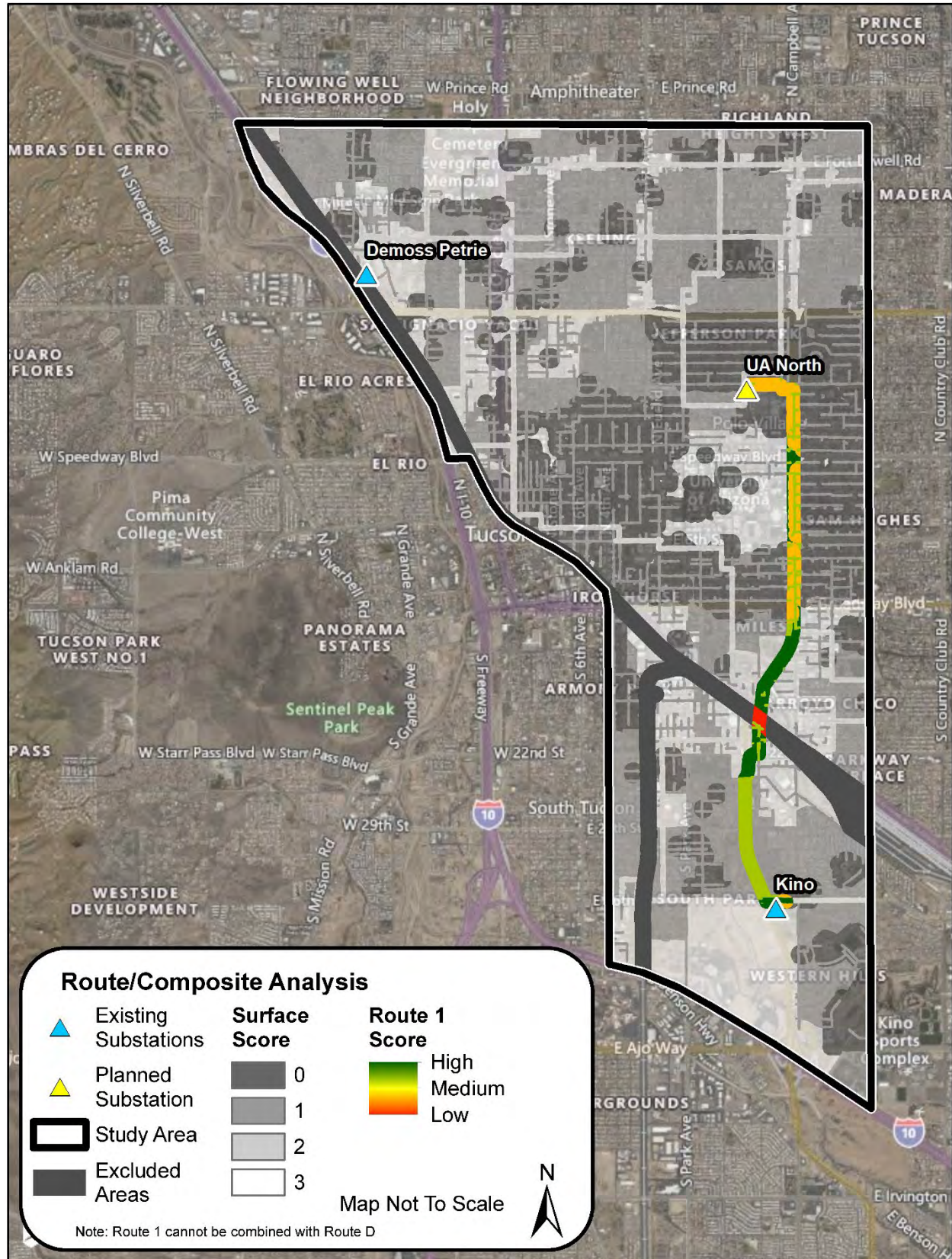


Figure F.31. Composite—Route 1.

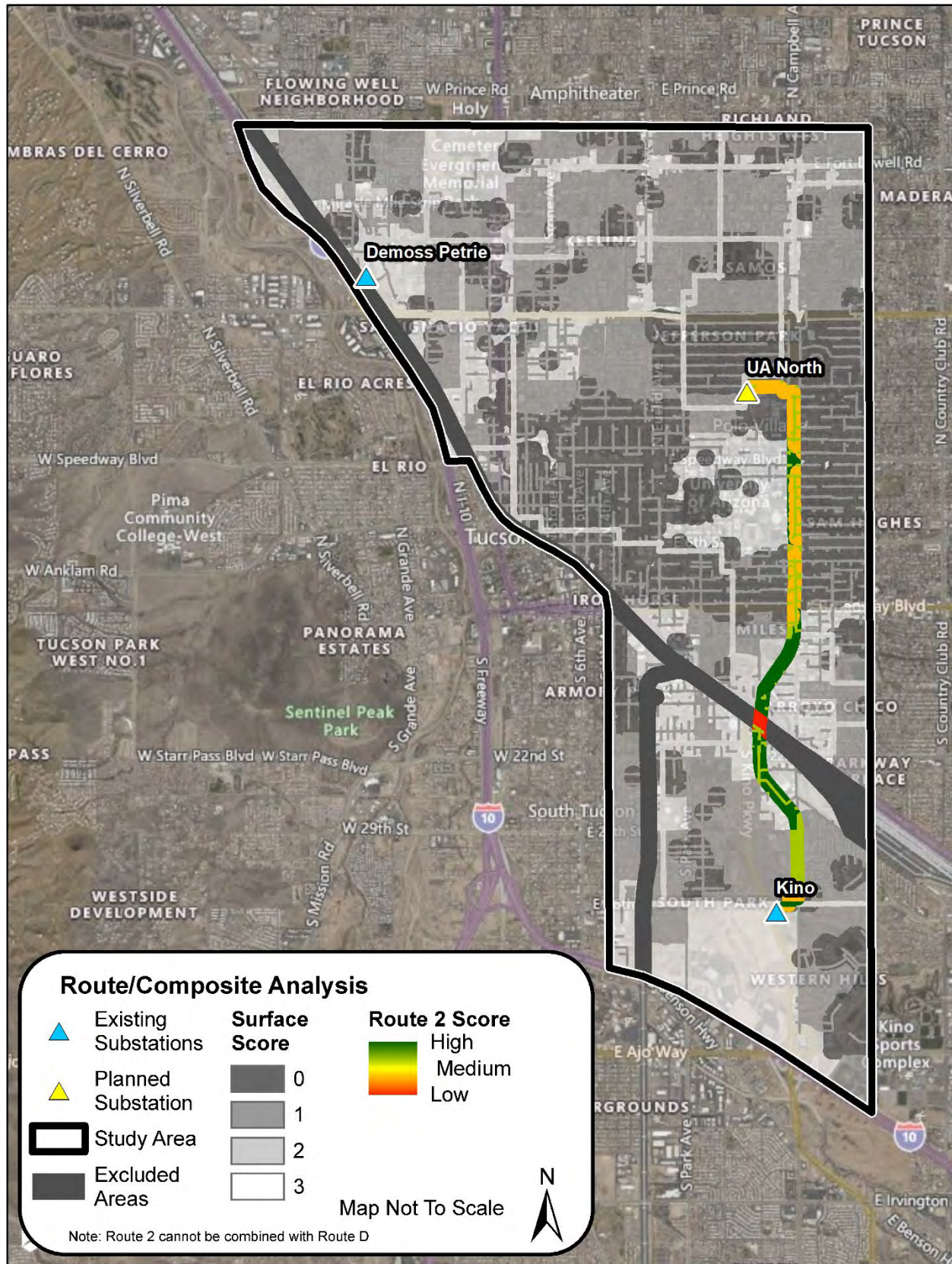


Figure F.32. Composite—Route 2.

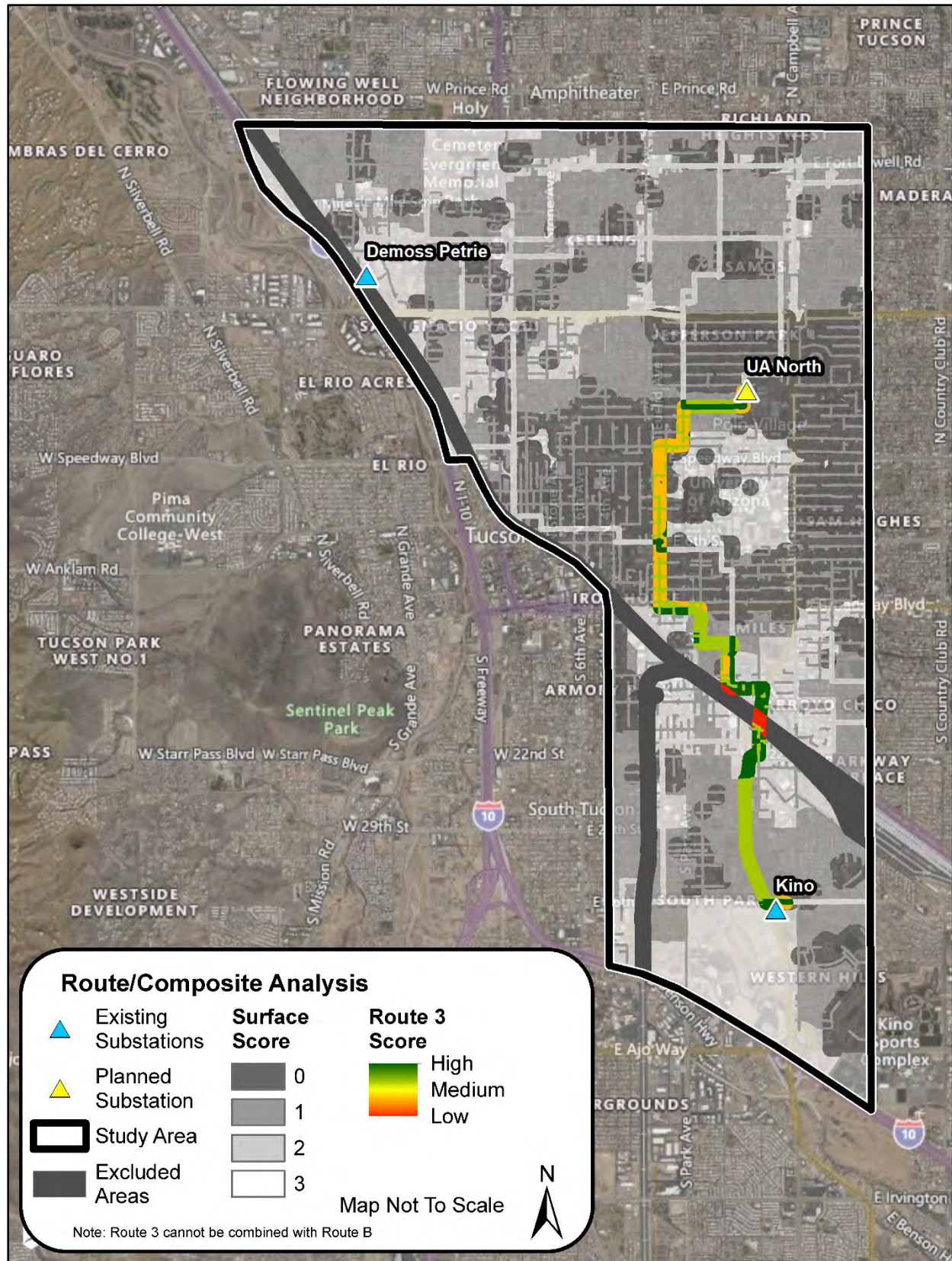


Figure F.33. Composite—Route 3.

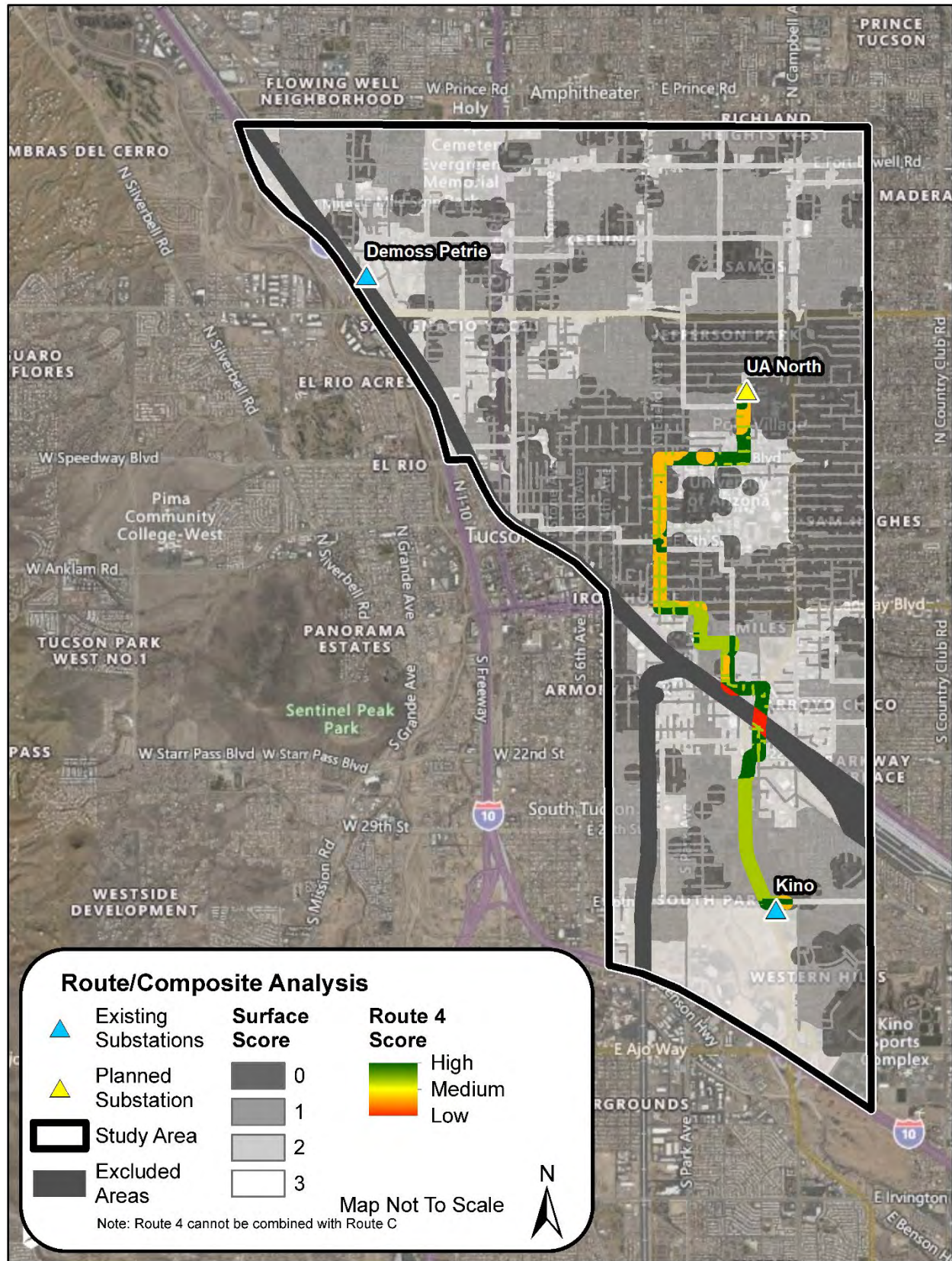


Figure F.34. Composite—Route 4.

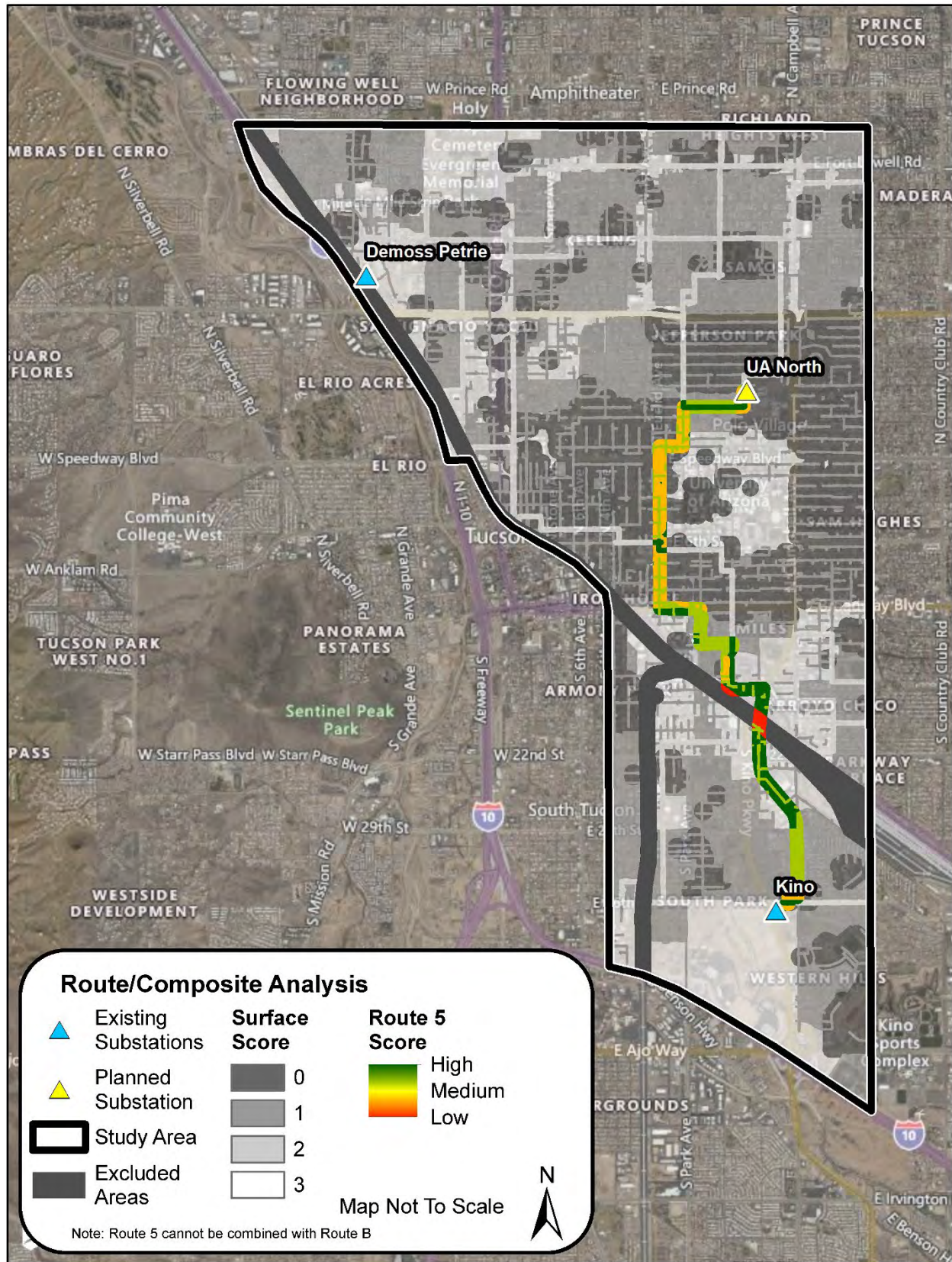


Figure F.35. Composite—Route 5.

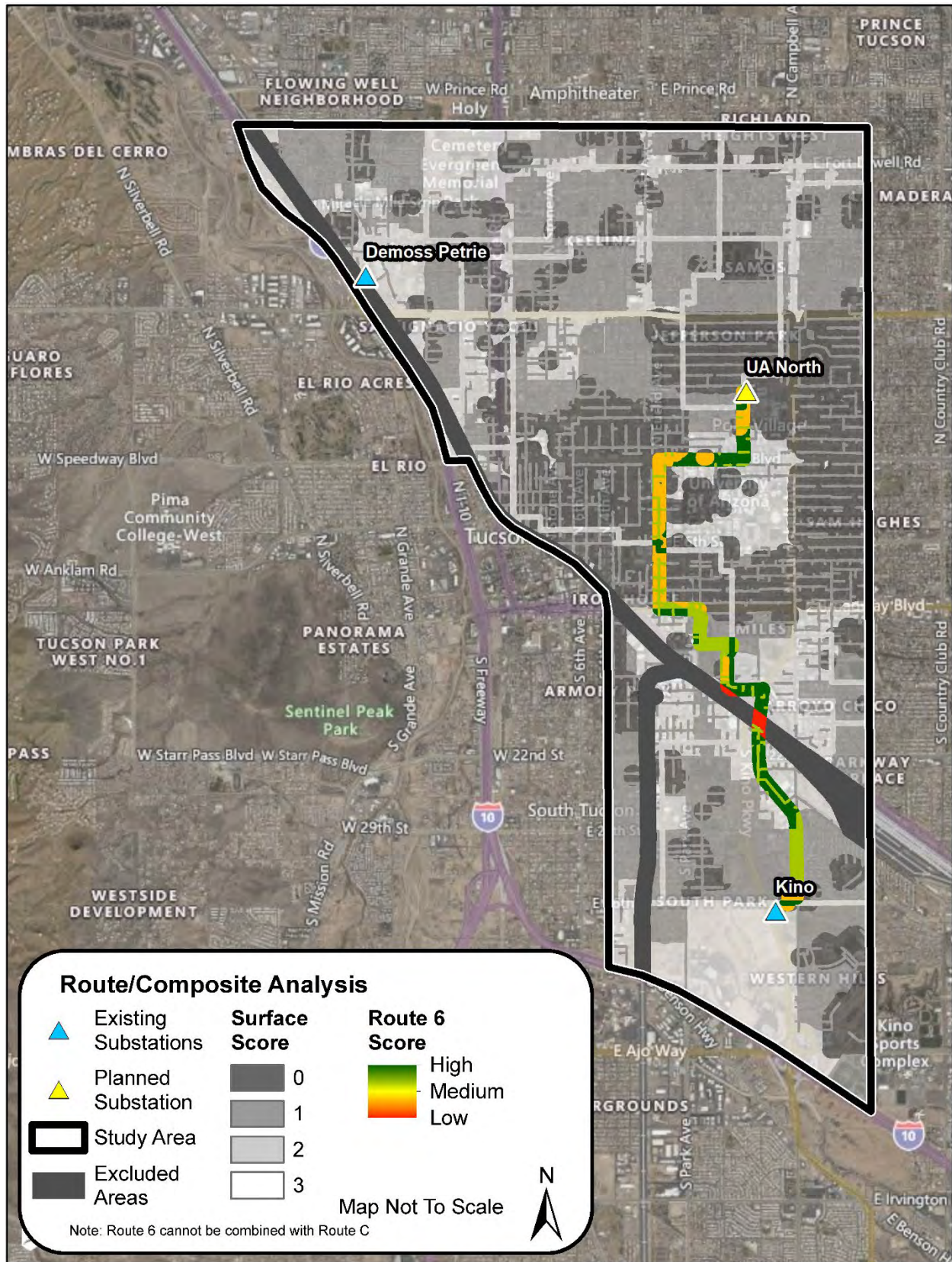


Figure F.36. Composite—Route 6.

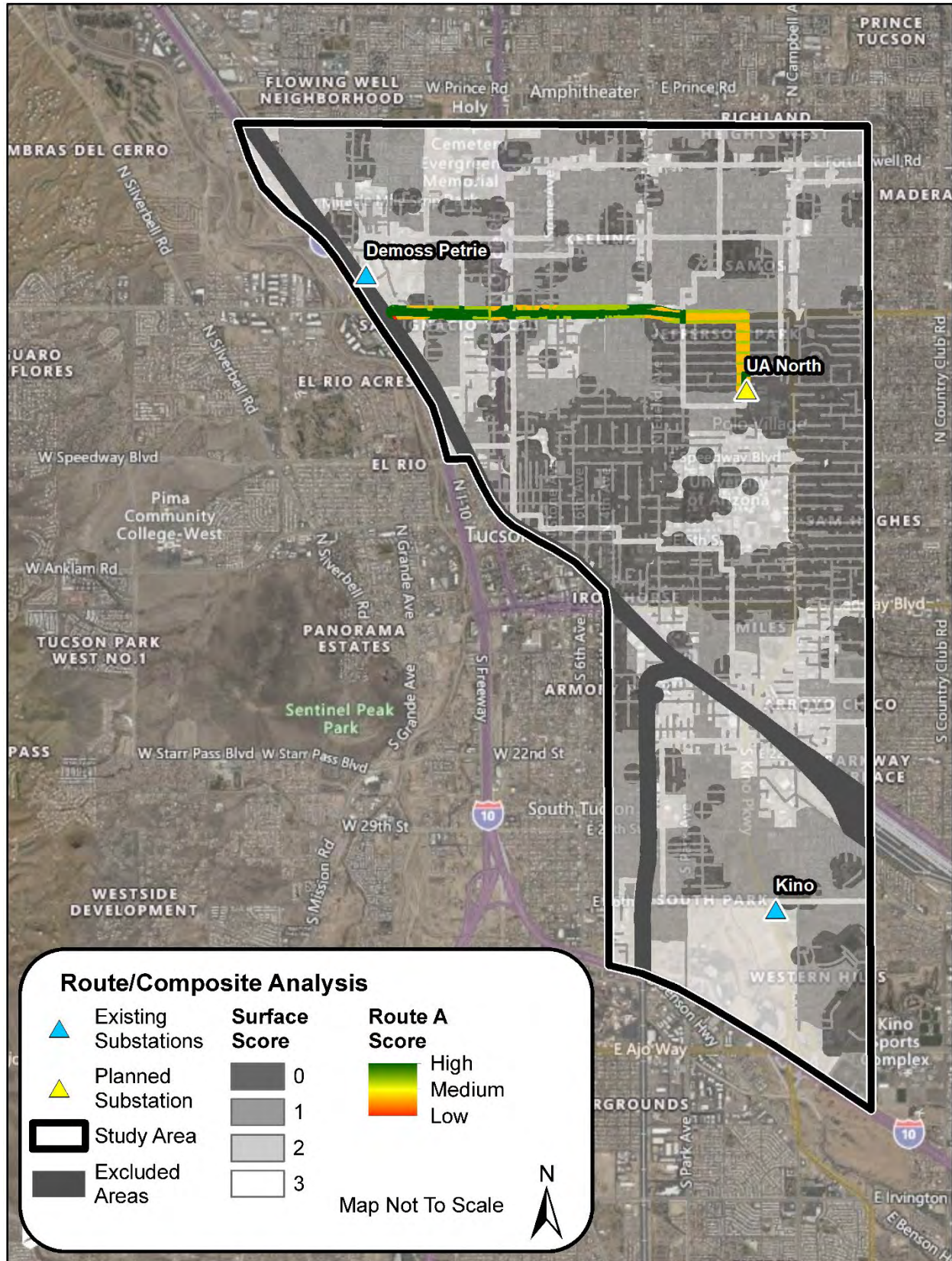


Figure F.37. Composite—Route A.

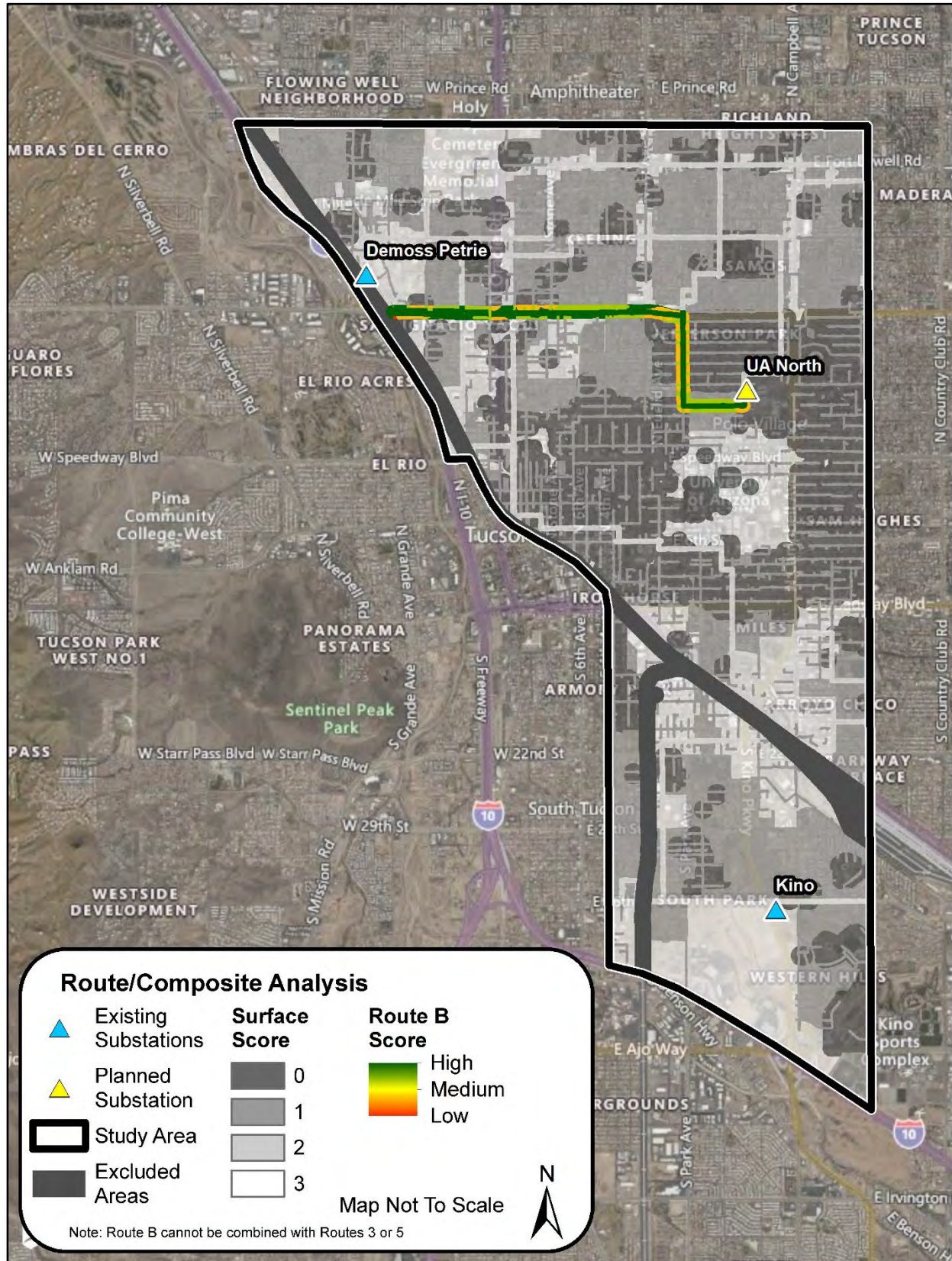


Figure F.38. Composite—Route B.

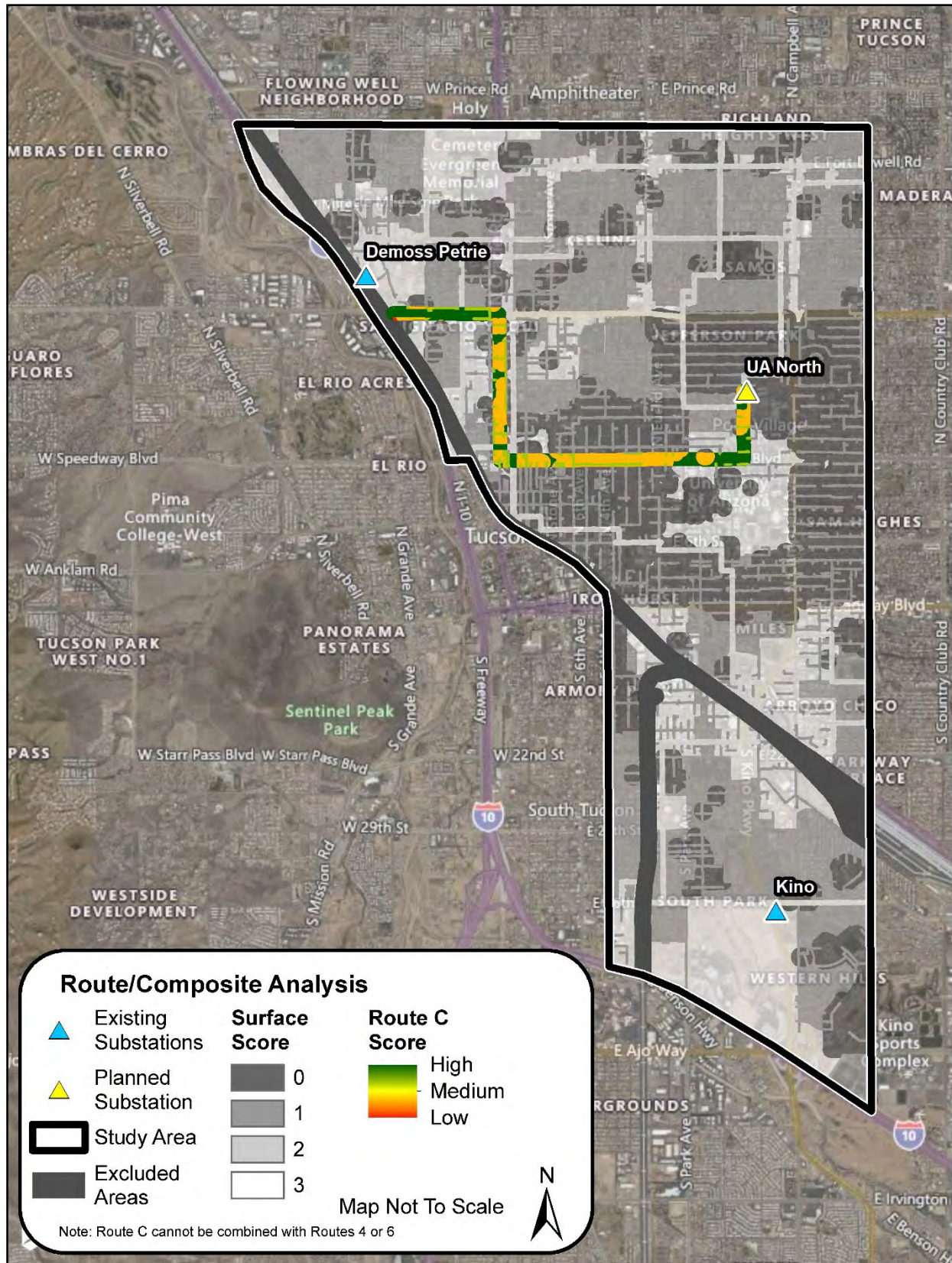


Figure F.39. Composite—Route C.

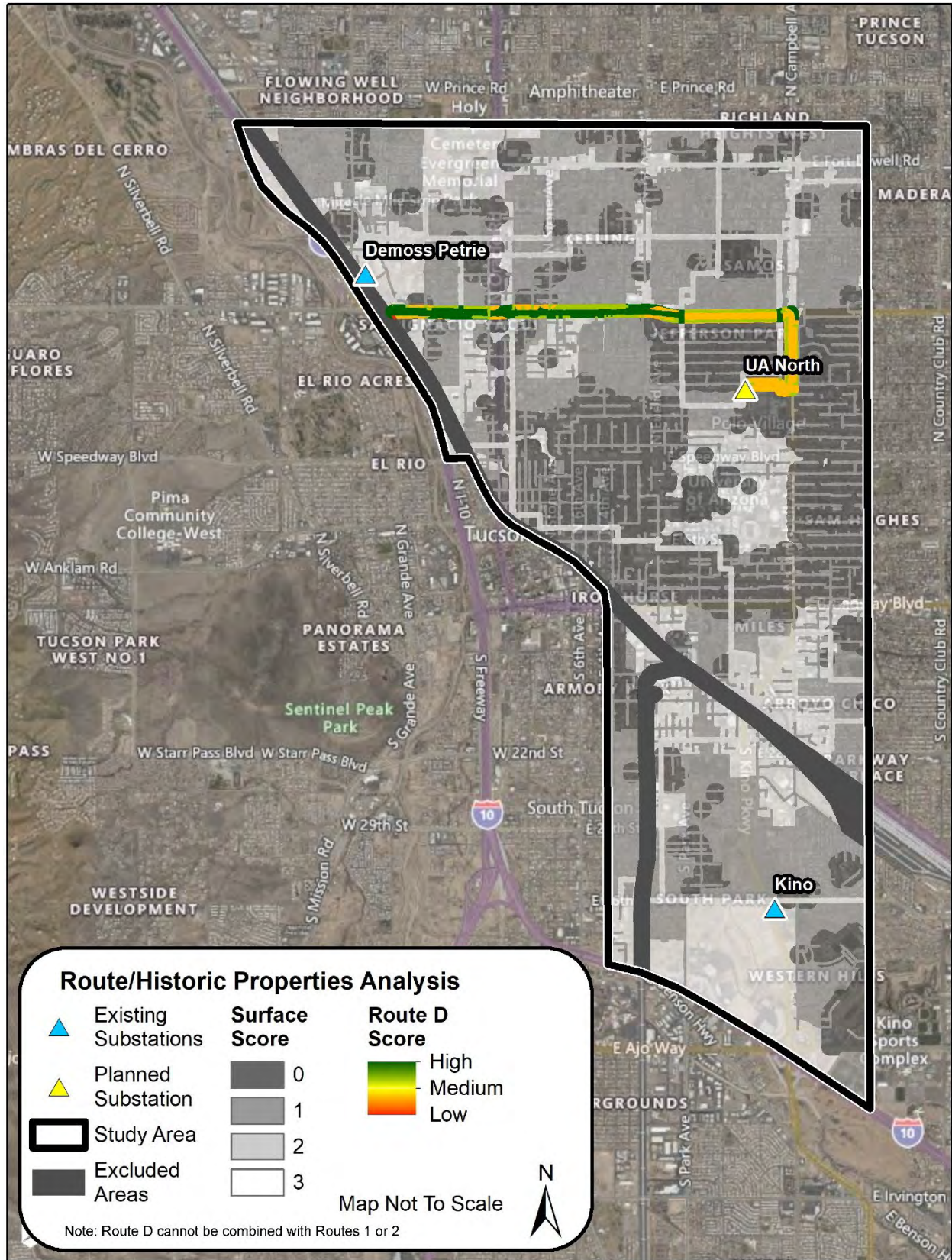


Figure F.40. Composite—Route D.

Appendix G. Revised Route Analysis Maps

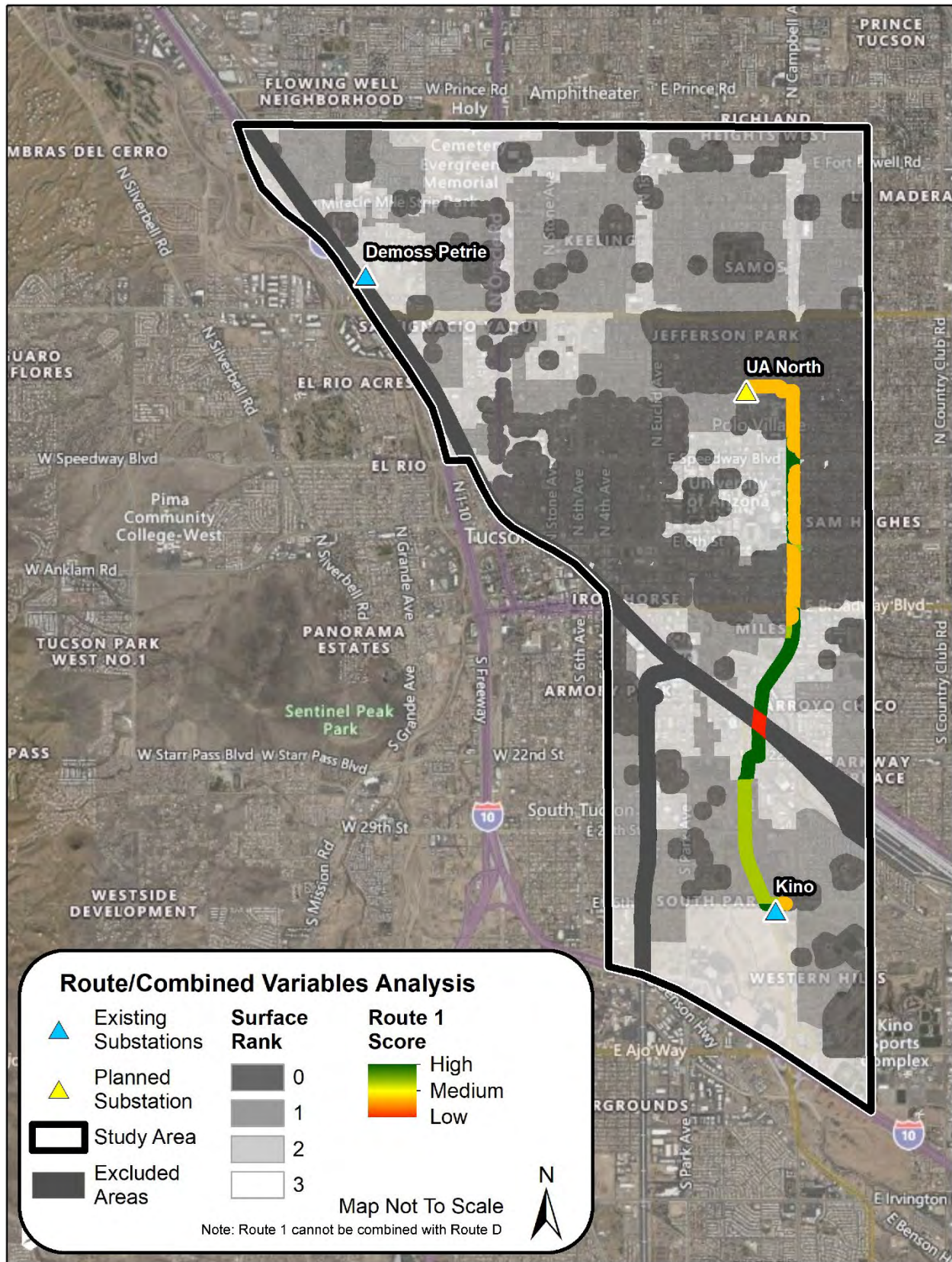


Figure G.1. Route 1.

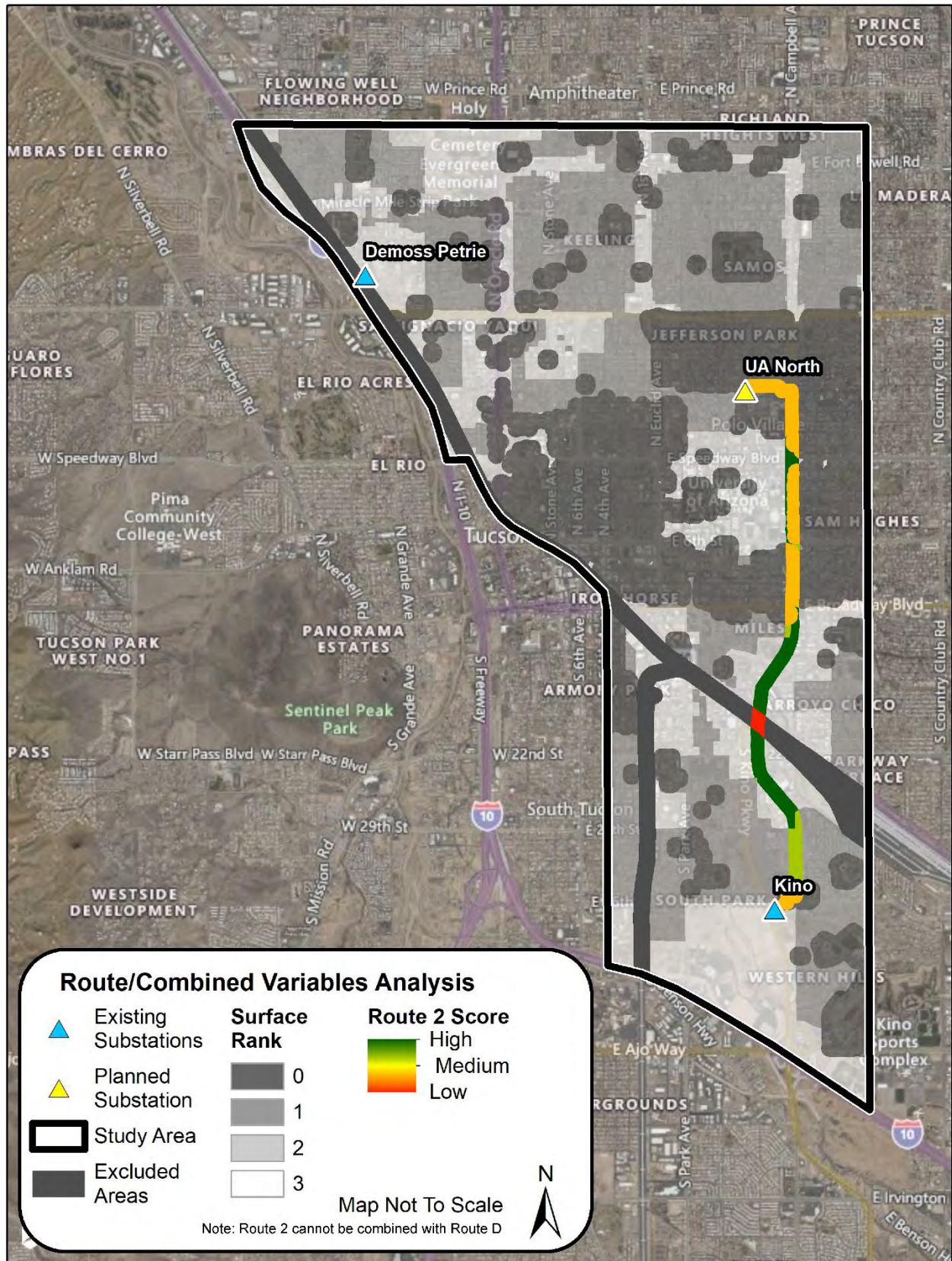


Figure G.2. Route 2.

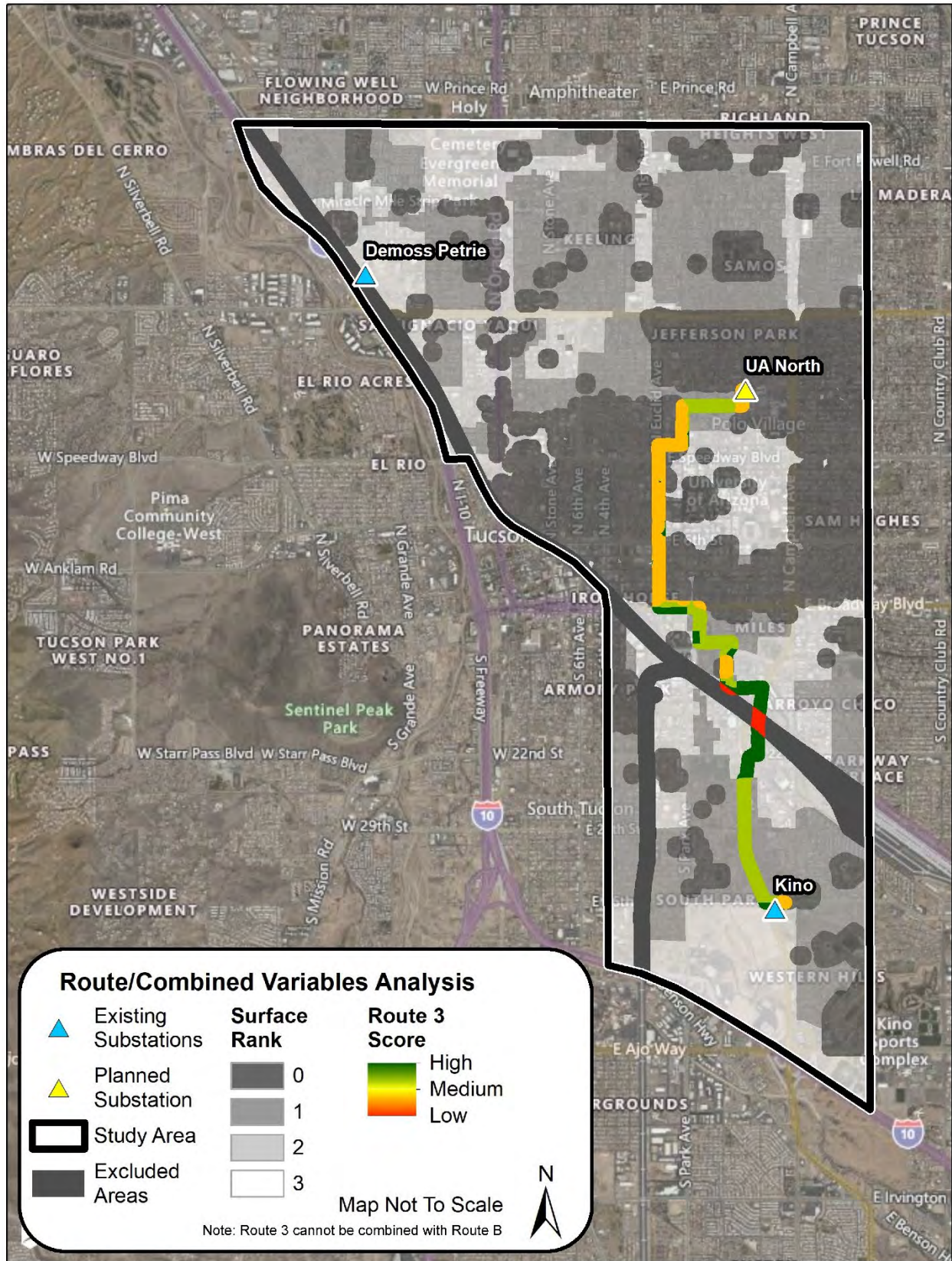


Figure G.3. Route 3.

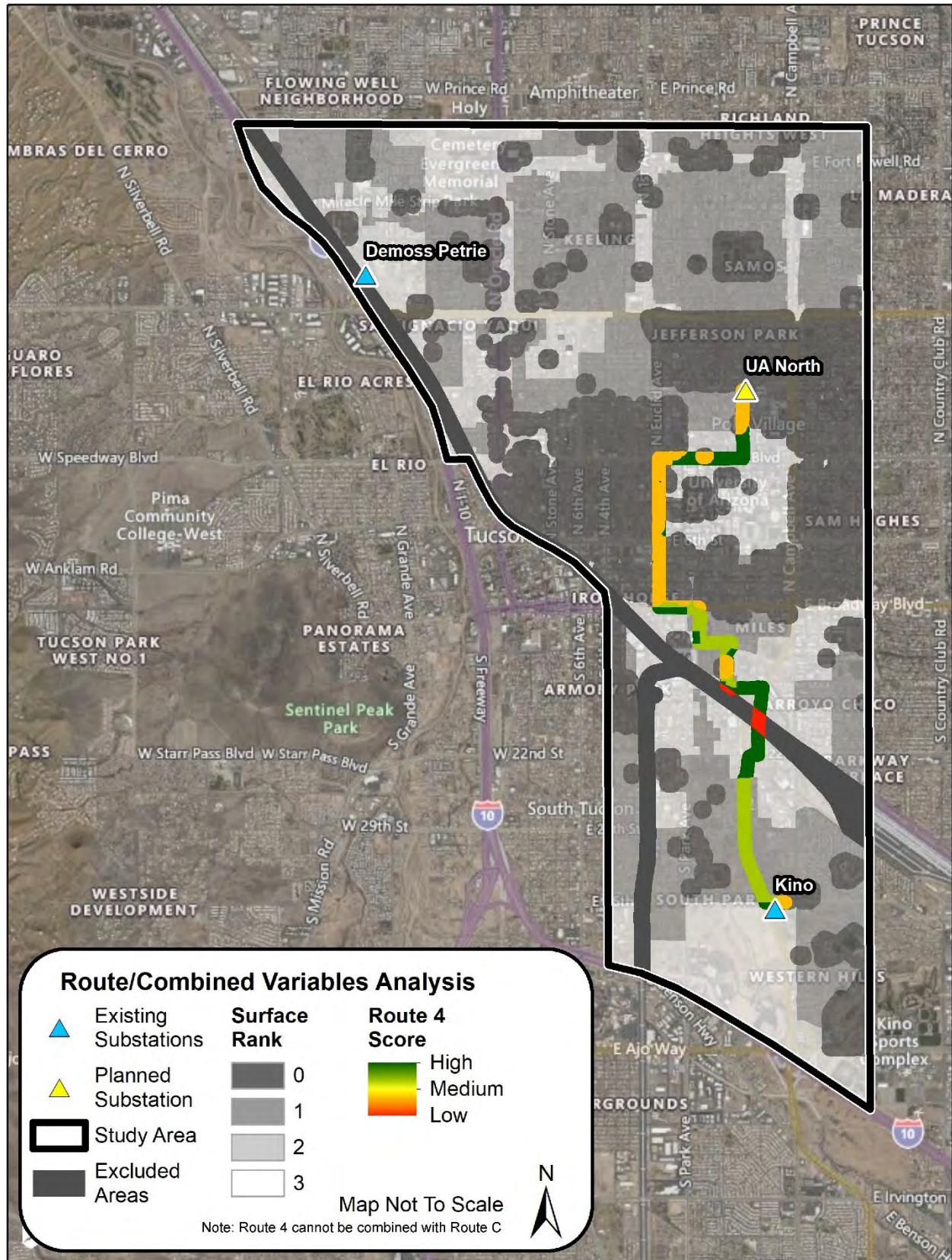


Figure G.4. Route 4.

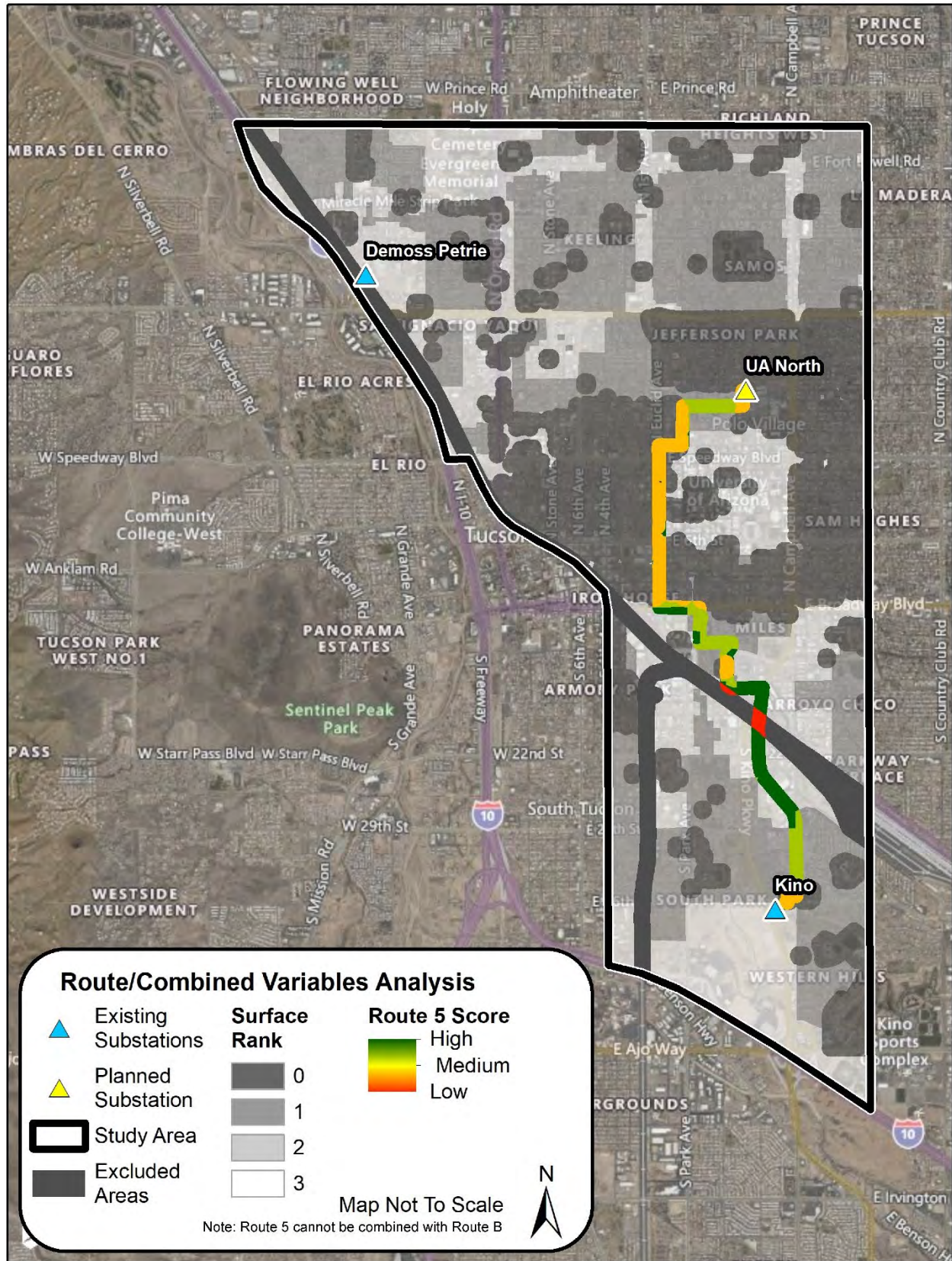


Figure G.5. Route 5.

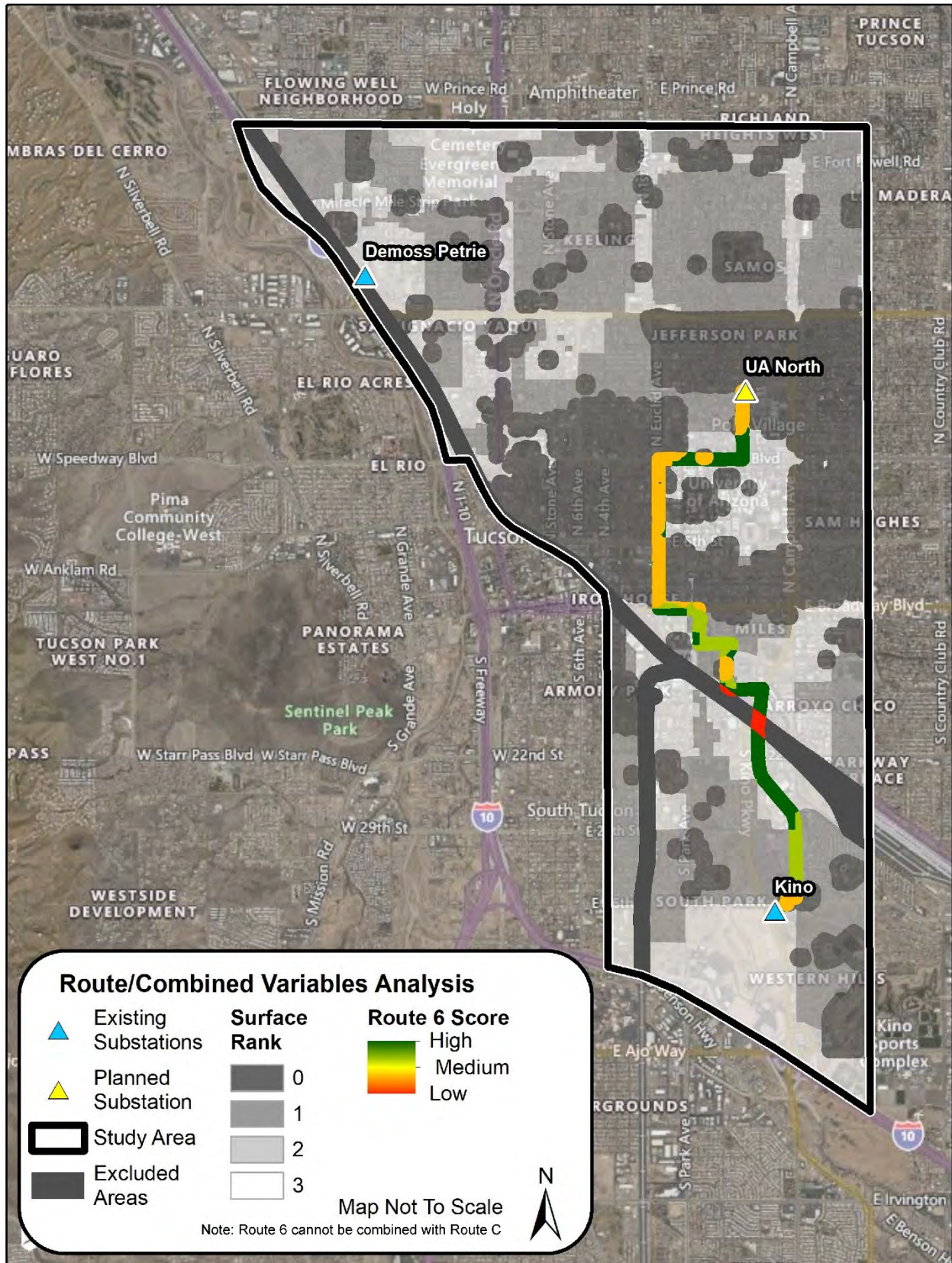


Figure G.6. Route 6.

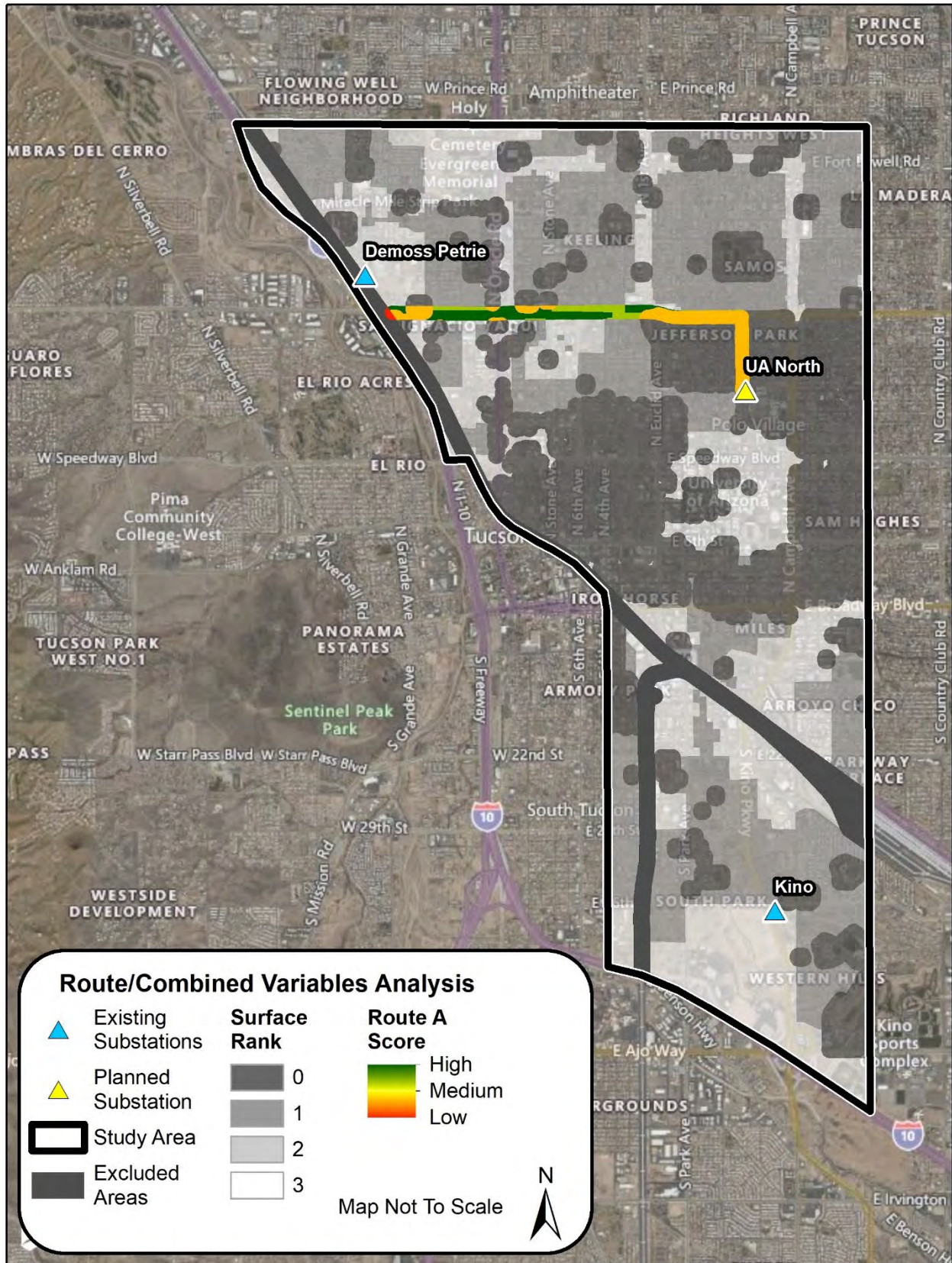


Figure G.7. Route A.

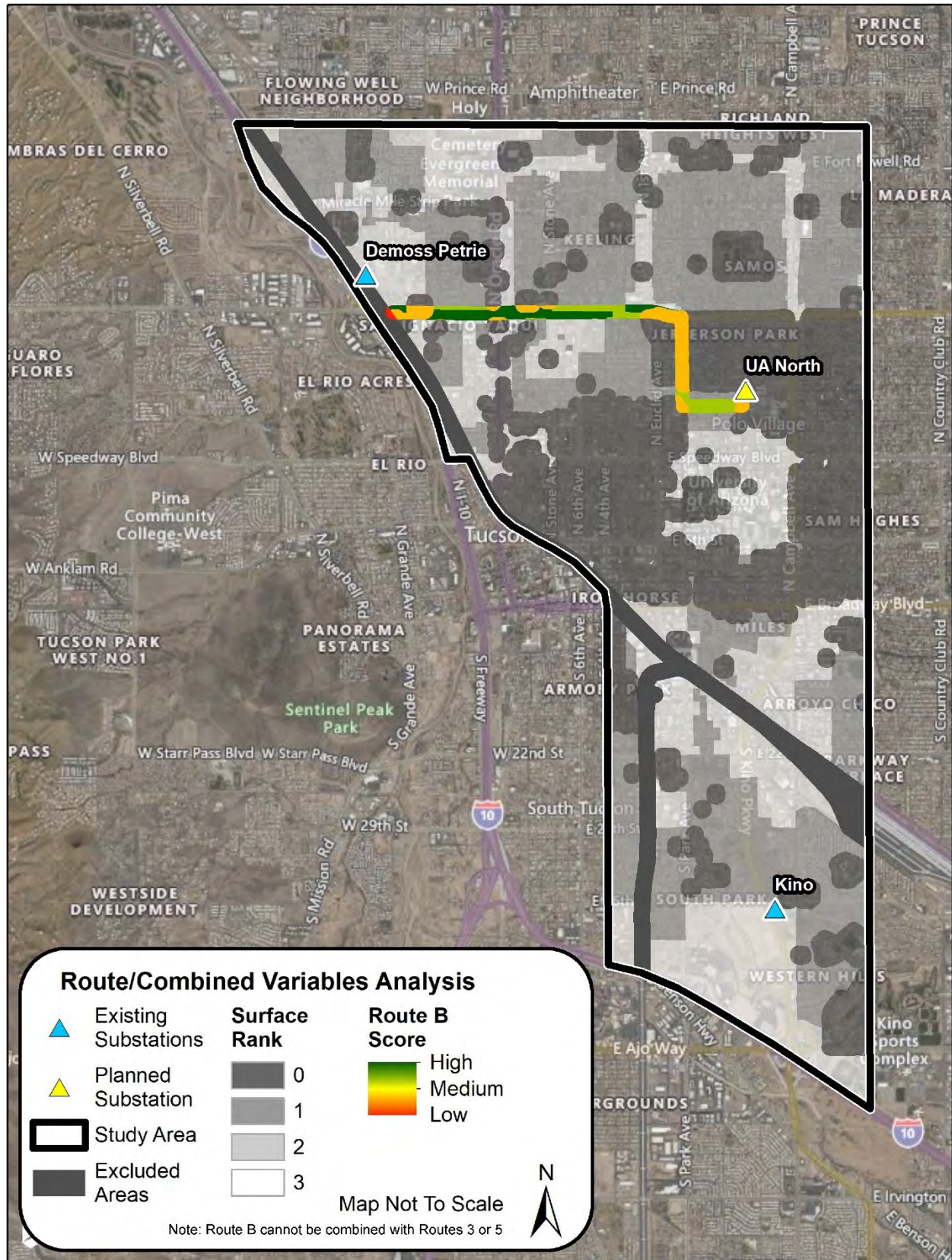
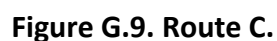


Figure G.8. Route B.



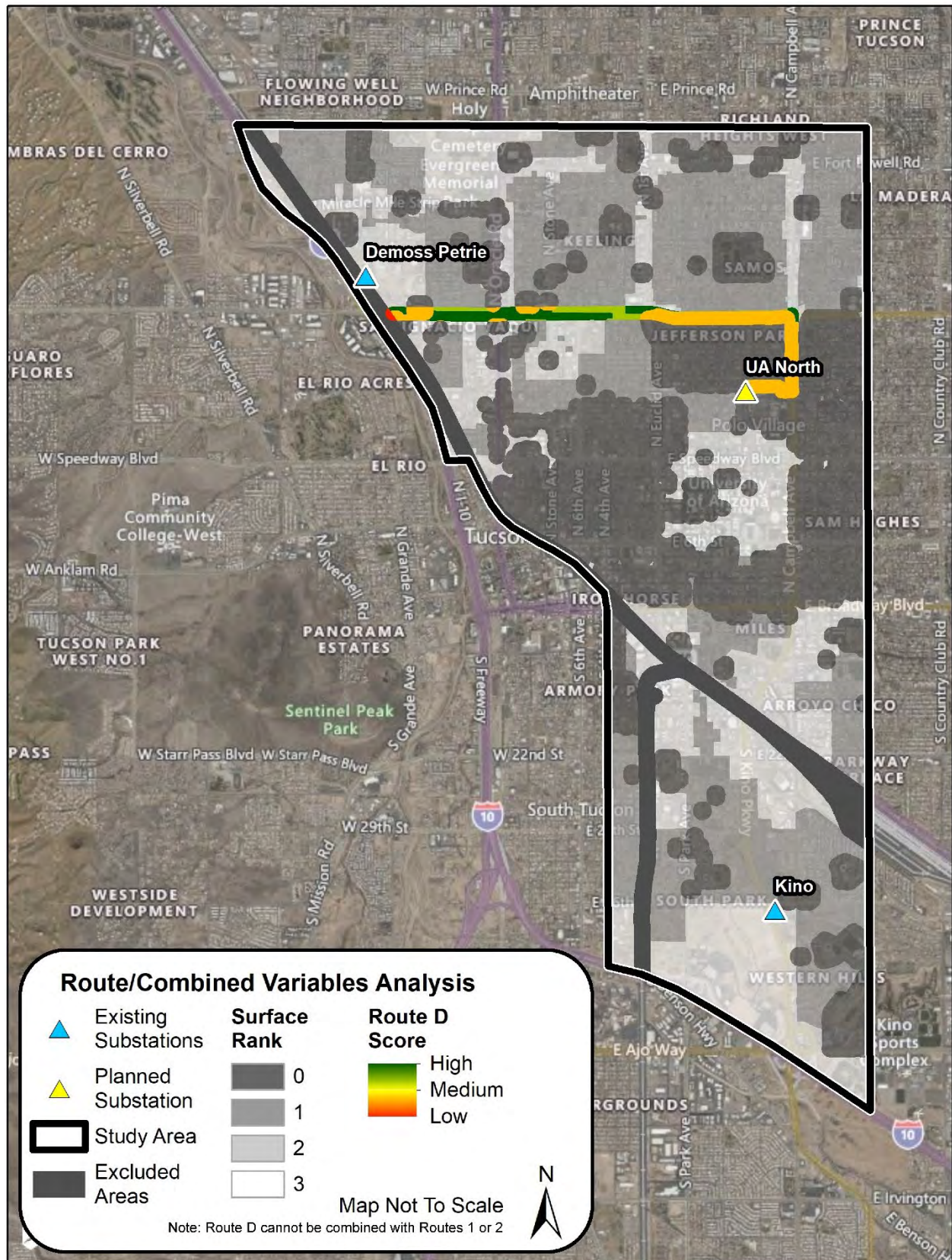


Figure G.10. Route D.

Appendix H. Phase 3 Analysis—Supporting Documentation

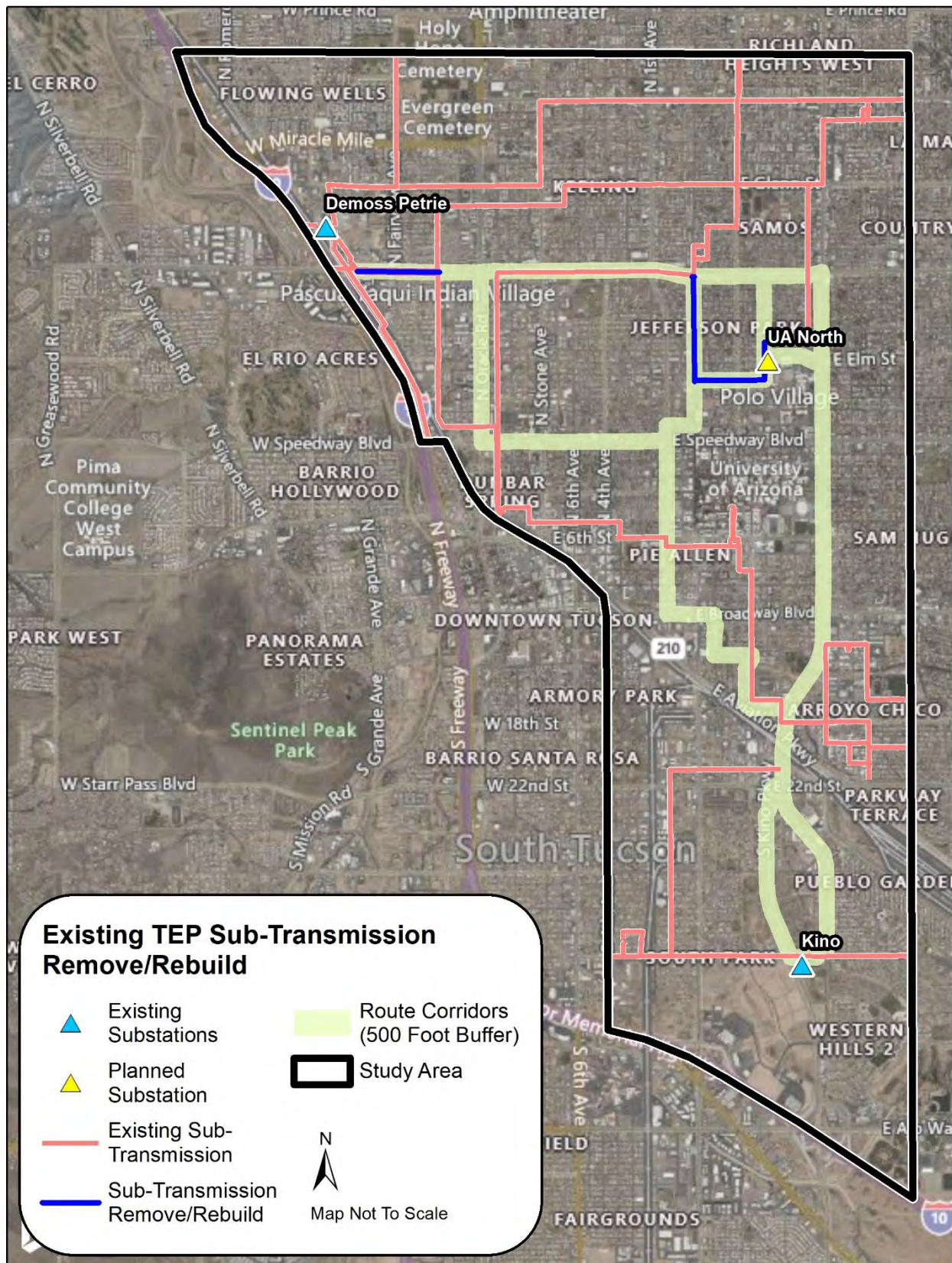


Figure H.1. Criteria 1 Map.

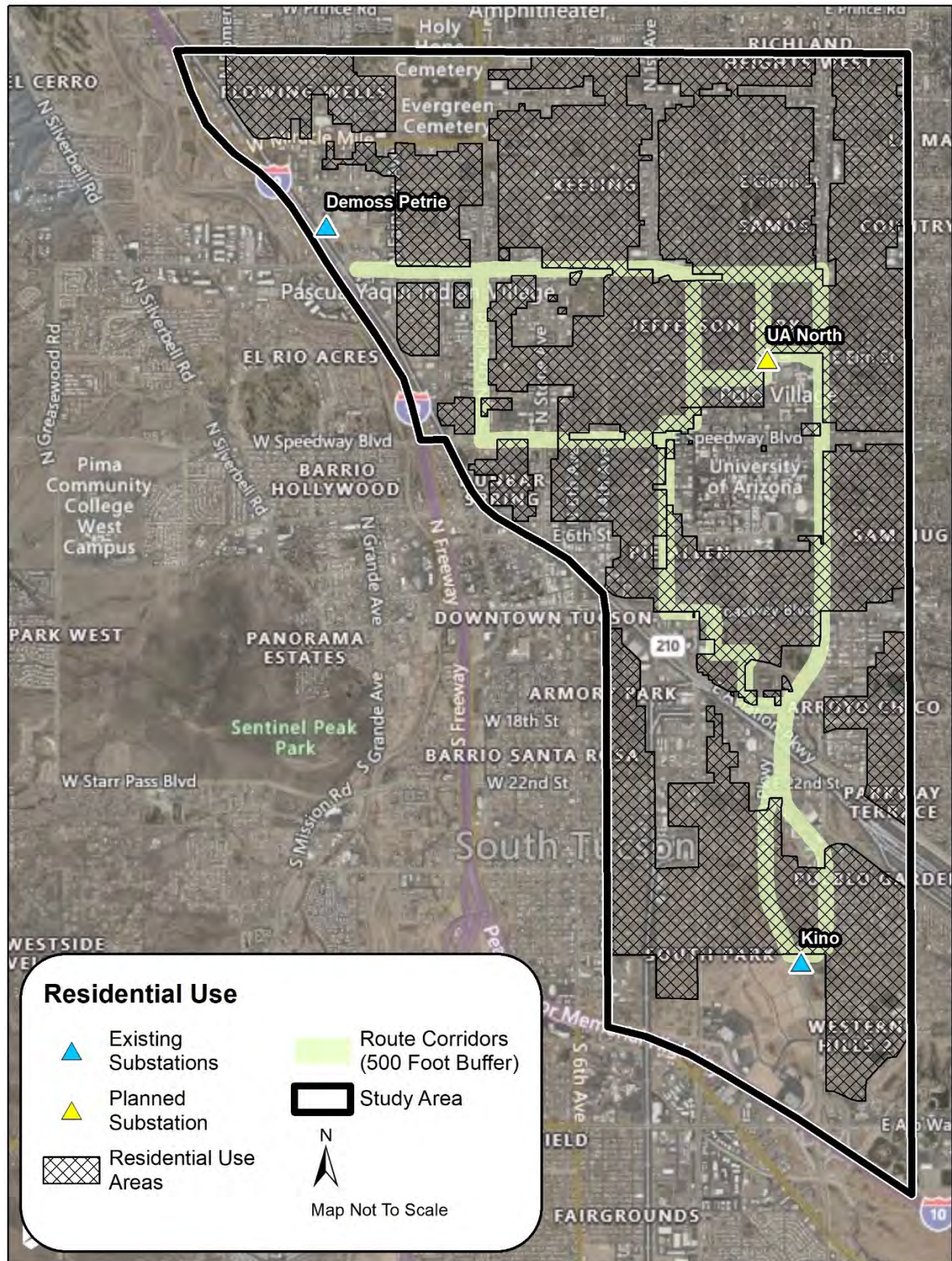


Figure H.2. Criteria 3 Map.

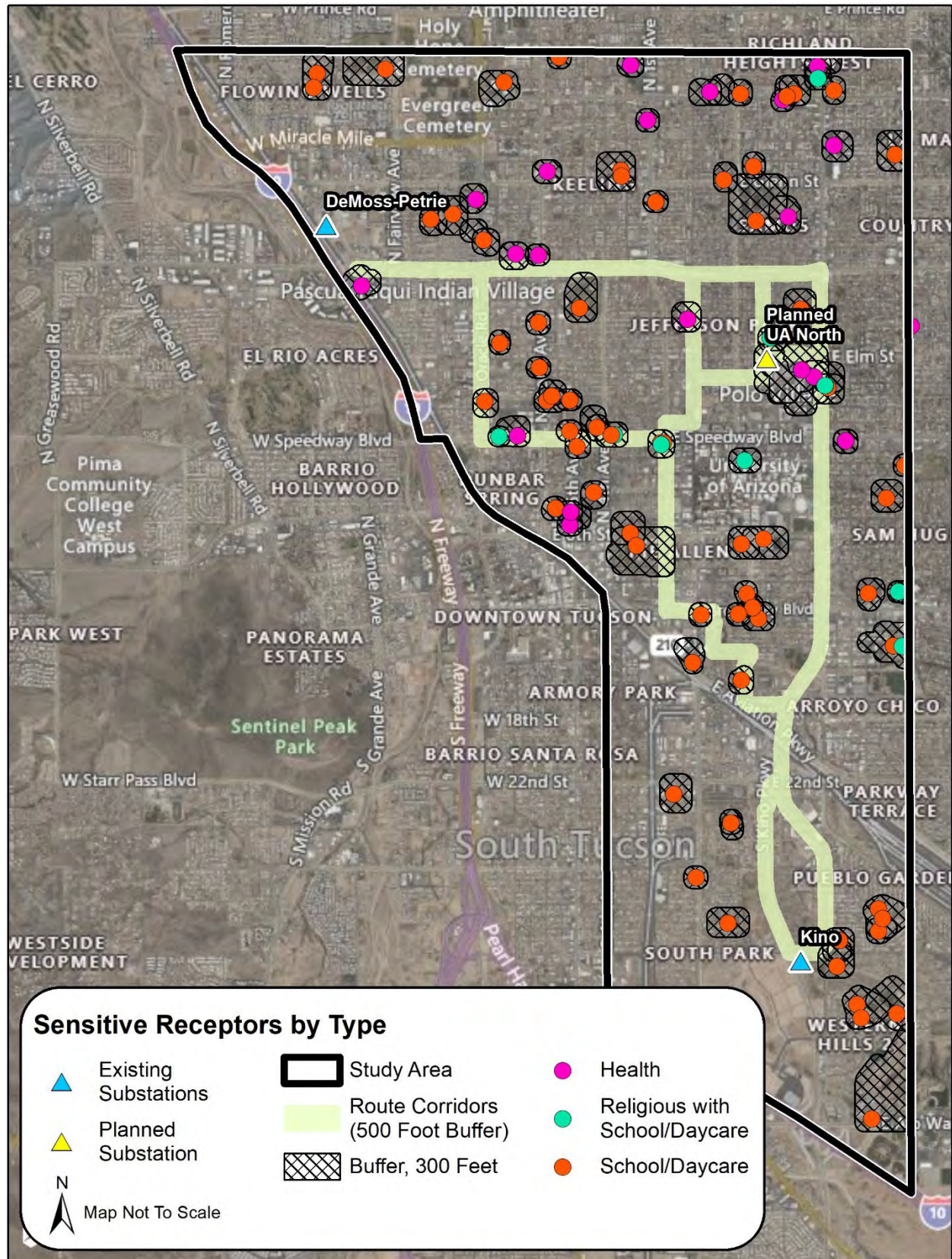


Figure H.3. Criteria 5 Map

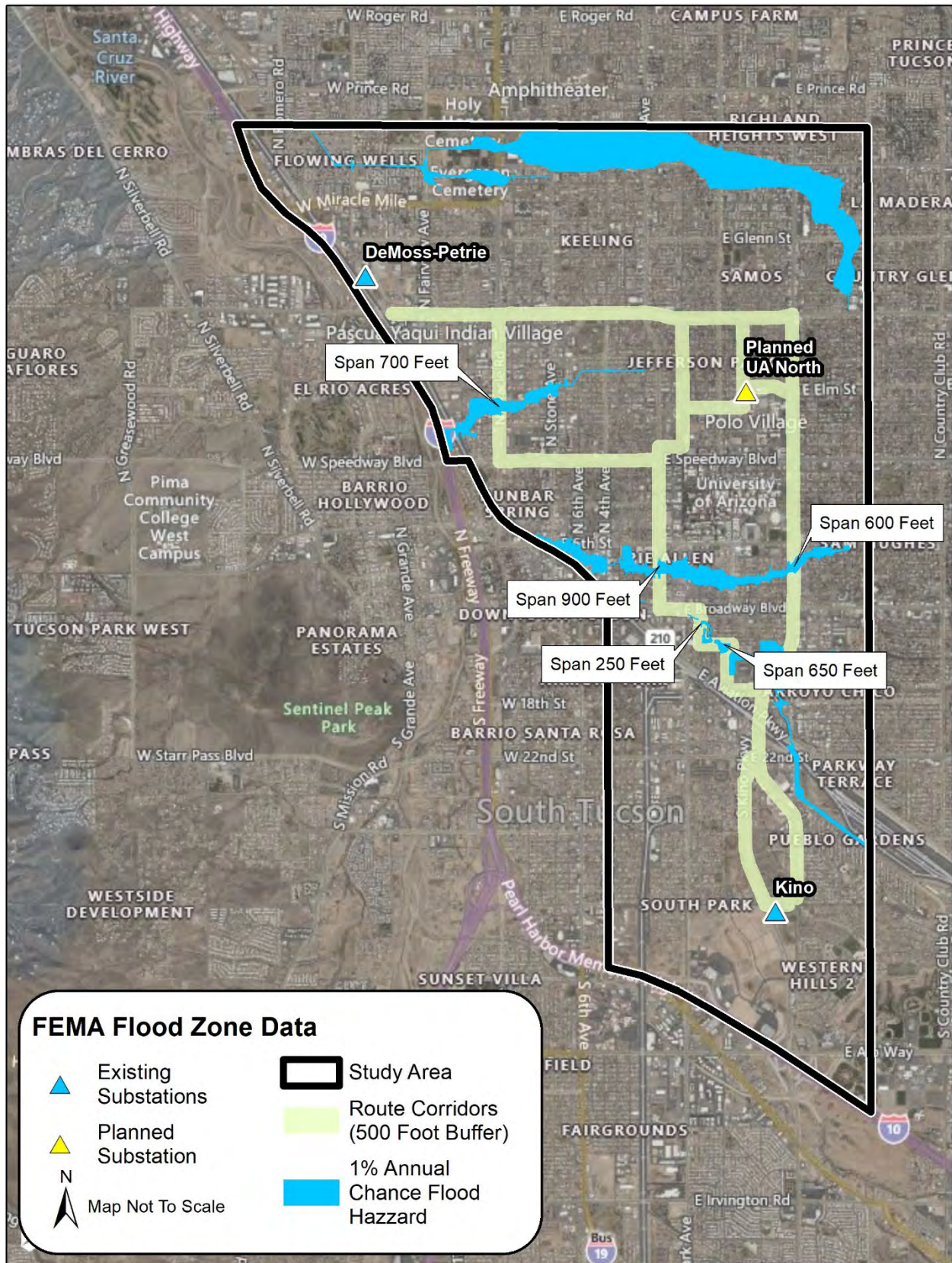


Figure H.4. Criteria 10 Map.

Table H.1. Kino to DMP 138kV Transmission Line Project—Preliminary Alternative Route Phase 3 Comparison Matrix

Criteria for Comparison		1a	1b	1d	1e	2a	2b	2d	2e	3a	3d	5a	5d
1	Ability to Use Existing Road ROW and TEP Corridors (29% CWG/1 point weight assigned)												
	Percentage in existing road right-of-way	96.13	96.19	96.33	96.61	94.62	94.7	94.89	95.28	93.01	93.58	91.57	92.26
	Percentage to be co-located or removed/rebuilt existing TEP sub-transmission or transmission line	8.8	21.39	6.78	12.79	8.81	21.42	6.79	12.8	14.36	11.86	14.5	11.96
	Total (higher the percent the better)	104.93	117.58	103.11	109.4	103.43	116.12	101.68	108.08	107.37	105.44	106.07	104.22
	Comparison Score (1–3)	1	3	1	2	1	3	1	2	2	2	2	1
2	Compatible with Existing & Future Land Use Plans (29% CWG/1 point weight assigned)												
	Zoning, land ownership allow for transmission line	3	3	3	3	3	3	3	3	3	3	3	3
	Comparison Score	3	3	3	3	3	3	3	3	3	3	3	3
3	Residential Use (84% of Comments/71% CWG/4 point weight assigned)												
	Percent existing and planned residential use within the 500-foot corridor buffer	47.72	49.25	49.49	45.15	43.32	44.95	45.31	41.27	58.43	58.84	54.64	55.37
	Comparison Score (0 = 3; 1–25% = 2.5; 26–50% = 2; 51–75% = 1.5; 76–100% = 1)	2	2	2	2	2	2	2	2	1.5	1.5	1.5	1.5
	Weighted Comparison Score	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.30	0.30	0.30	0.30
4	Historic Properties (41% of comments/71% CWG/3 point weight assigned)												
	Bisecting vs. bordering Historic Districts	77	68	76	100	77	68	76	100	97	96	97	96
	Street designation	44	41	35	53	44	41	35	53	61	52	61	52
	Historic Districts with 1 vs. 2 sides of the route	43	35	26	45	43	35	26	45	45	28	45	28
	Existing power poles located on route	60	61	50	71	60	61	50	71	68	58	68	58
	Historic light fixtures within 800-foot route buffer	5	5	5	13	5	5	5	13	10	10	10	10
	Historic contributing properties in 800-foot route buffer	111	112	121	158	111	112	121	158	169	179	169	179
	Access of historic contributing properties along route	48	39	42	108	48	39	42	108	95	89	95	89
	Architectural Impact Rank	142	144	137	180	142	144	137	180	188	183	188	183
	Total (higher the score the worse)	530	505	492	728	530	505	492	728	733	695	733	695
	Comparison Score (1–3)	2	2.25	2.5	1	2	2.25	2.5	1	1	1	1	1
	Weighted Comparison Score	0.67	0.75	0.83	0.33	0.67	0.75	0.83	0.33	0.33	0.33	0.33	0.33
5	Sensitive Receptors (14% of comments/57% CWG/2 points weight assigned)												
	Number of sensitive receptor points within the 500-foot corridor buffer	9	10	10	16	12	13	13	19	13	15	15	17
	Comparison Score (0 = 3; 1–5 = 2.5; 6–10 = 2; 11–15 = 1.5; 16–20 = 1)	2	2	2	1	1.5	1.5	1.5	1	1.5	1.5	1.5	1
	Weighted Comparison Score	1	1	1	0.5	0.75	0.75	0.75	0.5	0.75	0.75	0.75	0.5
6	Room for Separation from Conflicting Utility and Infrastructure Uses (14% CWG/1 points weight assigned)												
	Room for Separation (score from Constructability Assessment)	34.33	34.33	34.33	32.93	31.91	31.91	31.91	31.44	31.82	31.82	30.36	30.36

Criteria for Comparison		1a	1b	1d	1e	2a	2b	2d	2e	3a	3d	5a	5d
	Significant Constraints Adjustment	2.56	5.31	3.00	9.60	2.75	5.41	3.20	9.55	9.90	10.44	10.41	10.38
	Adjusted Score	31.77	29.02	31.33	23.33	29.16	26.50	28.71	21.89	21.92	21.38	19.95	19.98
	Comparison Score (1–3)	3	3	3	1	3	2	2	1	1	1	1	1
7	Viewshed (33% of comments/ CWG 29%/2 points weight assigned)												
	Impact Score from Visual Assessment (max 3)	2.26	2.48	2.25	2.2	2.31	2.53	2.3	2.25	2.5	2.49	2.51	2.5
	Comparison Score (1–3)	2.26	2.48	2.25	2.2	2.31	2.53	2.3	2.25	2.5	2.49	2.51	2.5
	Weighted Comparison Score	1.13	1.24	1.13	1.10	1.16	1.27	1.15	1.13	1.25	1.25	1.26	1.25
8	Cultural Resources (1 point weight assigned)												
	Impact to cultural resources (from the Class I Report)	3	3	3	2	3	3	3	2	2	2	2	2
	Comparison Score (1-3)	3	3	3	2	3	3	3	2	2	2	2	2
9	Special Status Species (1 point weight assigned)												
	Impact to special status species (from Biological Evaluation) Out of Max Score of 30.	30	30	30	30	29	29	29	29	28.46	28.46	28	28
	Comparison Score (1–3)	3	3	3	3	3	3	3	3	3	3	3	3
10	100-Year Floodplain (1 point weight assigned)												
	Impact to floodplain (from FEMA map review)	3	3	3	3	3	3	3	3	3	3	3	3
	Comparison Score (1–3)	3	3	3	3	3	3	3	3	3	3	3	3
11	Ability to Construct and Maintain the Transmission Line (1 point weight assigned)												
	Access to construct	3	3	3	3	3	3	3	3	3	3	3	3
	Comparison Score (1–3)	3	3	3	3	3	3	3	3	3	3	3	3
12	Cost of Construction (1 point weight assigned)												
	Cost of Construction (1M/mile)	\$6,889,813	\$6,993,942	\$7,256,760	\$7,851,294	\$6,880,210	\$6,984,338	\$7,247,157	\$7,841,690	\$7,877,668	\$8,573,737	\$7,799,152	\$8,495,222
	Special consideration (10%) for Route D (Grant between Campbell & Park and Elm), Euclid (turning structures) and 20% for Routes 3, 5, & E for alley (transformers and underground distribution services, removal of 46kV)	\$6,889,813	\$6,993,942	\$7,982,436	\$9,421,553	\$6,880,210	\$6,984,338	\$7,971,873	\$9,410,028	\$9,453,202	\$11,145,858	\$9,358,982	\$11,043,789
	Comparison Score (below \$7M = 3; \$7–8M = 2.5; \$8–9M = 2; \$9–10M = 1.5; greater than \$10M = 1)	3	3	2.5	1.5	3	3	2.5	1.5	1.5	1	1.5	1
	Total Scores												
	Total Comparison Score (No Weight) Max 36	27	30	27	22	27	28	26	22	22	21	22	20
	Total Comparison Score (Weighted) Max 36	25.20	27.39	24.86	20.83	24.97	26.17	23.63	20.86	21.13	20.63	21.14	19.38
	Criteria of Most Concern Weighted Score (Residential, Historic, Sensitive, Viewshed)	3.20	3.39	3.36	2.33	2.97	3.17	3.13	2.36	2.63	2.63	2.64	2.38

Table H.2. Summary of Significant Constructability Constraints

Link No.	Street	Segment	Significant Constraints							Total Stacked Constraints	Summary of Significant Constraints
			1	2	3	4	5	6	7		
20	Speedway	6th Ave–Stone	Limited room for TEP overhead facilities along link. Possible 46kV crossing.	Yes, limited right of way and room for 4'-0" sidewalks.	Gas on north side of the road					3	The right of way along this link is very limited and may not allow for 4'-0" sidewalks even with the purchase of easement due to the location of the building structures to the road. The limited space compounded with the potential gas conflicts makes it difficult to fit 138kV structures along this link without significant mitigation.
23	Grant	1st–6th Ave	46kV/distribution line on south side of the road.	Gas on north side along portions of the road. Coordinate pole placement						2	There is limited right of way behind back of curb along this link. Compounded with other underground utility conflicts it will be difficult to construct without significant mitigation and we are limited to the north side of the road due to the road widening project and other facilities on the south side.
24	Park-Mountain	Grant	Grant Road Widening Project. The road has not been widened in this area yet. Poles would need to be relocated later when project continues.							1	Constructability issues and schedule delays are a large factor along this link, due to the extent of coordination and demolition needed to building along this segment ahead of the Roadway Improvement Project.
25	Helen	Euclid–Park	Distribution line on the south side of the road. Limited right of way for overhead transmission line	Yes outage to underground the line and underground services to customers.	Yes, limited right of way and room for 4'-0" sidewalks.	Gas line on north side of the road with limited right of way would be difficult to place structure on north side	Sewer in middle of the road but with limited right of way it would be difficult to fit the distribution underground.	Water on south side of the road	Residential wall structures limit pole placement.	7	The right of way along this link is very limited and may not allow for 4'-0" sidewalks even with the purchase of easement due to the location of the building structures to the road. The limited space compounded with the potential gas and water conflicts makes it difficult to fit 138kV structures along this link without significant mitigation. Additionally, TEP's own overhead distribution would need to be underground along this segment in addition to the relocation of the overhead telecommunication attachers. This also compounded with the limited space in right of way makes it difficult to construct an underground distribution alignment along this link.
26	Grant	Campbell–Vine	Grant Road Widening Project. The road has not been widened in this area yet. Poles would need to be relocated later when project continues.							1	Constructability issues and schedule delays are a large factor along this link, due to the extent of coordination and demolition needed to building along this segment ahead of the Roadway Improvement Project.

Link No.	Street	Segment	Significant Constraints							Total Stacked Constraints	Summary of Significant Constraints
			1	2	3	4	5	6	7		
26.1	Grant	Vine–Mountain	Grant Road Widening Project. The road has not been widened in this area yet. Poles would need to be relocated later when project continues.							1	Constructability issues and schedule delays are a large factor along this link, due to the extent of coordination and demolition needed to building along this segment ahead of the Roadway Improvement Project.
27	Vine	Elm–Grant	46kV line on the east side of the road that would need to be rebuilt.		Gas line on east side of the road					3	The right of way along this link is very limited and may not allow for 4'-0" sidewalks even with the purchase of easement due to the location of the building structures to the road. The limited space compounded with the potential gas conflict makes it difficult to fit 138kV structures along this link without significant mitigation.
31	Park	Helen–Alley	Distribution overhead on east side of the road	Yes outage to underground the line and underground services to customers.	Yes (4) attachers	Yes, limited right of way and room for 4'-0" sidewalks.	Gas line on east side of the road	Sewer in middle of the road but with limited right of way it would be difficult to fit the distribution underground.	Water line in middle of the road but with limited right of way it would be difficult to underground the distribution.	7	There is limited room in the alley for location of 138kV structures especially with the need to underground the existing distribution and customer service taps. This compounded with the potential conflict with the existing gas line in the alley as well as the relocation of the existing telecommunication wires makes construction along this link difficult without significant mitigation. Additionally, extensive construction coordination would need to occur to limit outages to customers along this link while services are reconfigured and access to the alley is coordinated for residence and other services such as trash pickup.
32	Vine	Alley–Elm	46kV crossing at alley, 46kV overhead line on east side of the road that would need to be rebuilt. Two (2) distribution circuits of underground located on the east side of the road. One (1) circuit of 46kV underground on the west side of the road	Communication line running on west side of the road that would need to be relocated. (3) attachers.	Yes, limited right of way and room for 4'-0" sidewalks.	Gas on west and east side of the road	Residential wall structures limit pole placement.			5	The right of way along this link is very limited and may not allow for 4'-0" sidewalks even with the purchase of easement due to the location of the building structures to the road. The limited space compounded with the potential gas conflict makes it difficult to fit 138kV structures along this link without significant mitigation.
33	Ring	Warren–Substation	Underground Distribution along portions of north and south side of the road. Overhead distribution starts just before ring road curves that would need to be underground	Yes, limited right of way on north side in areas may need easement from hospital on south side.						2	There is a significant amount of conflicts along this link but there is room to locate poles outside of right of way and secure an easement for pole placement.

Link No.	Street	Segment	Significant Constraints							Total Stacked Constraints	Summary of Significant Constraints
			1	2	3	4	5	6	7		
43	alley bet. Lee & Adams	Vine–Park	46kV line that will need to be rebuilt or relocated. If the line cannot be relocated there is not enough room for a double circuit in the alley. Distribution line that will need to be relocated underground. Limited room for overhead facilities.	Yes distribution line that will need to be relocated underground/ underground services to customers served on the line. Limited space to underground the line and fit the transmission structure	Yes, 46kV line and the distribution line and customers served on the distribution line.	Yes, multiple attachers that will need to be relocated	Gas in alley	Building and tree clearances and limited space in alley to maintain trash truck/ drivability.		6	The right of way along this link is very limited and may not allow for 4'-0" sidewalks even with the purchase of easement due to the location of the building structures to the road. The limited space compounded with the potential gas and water conflicts makes it difficult to fit 138kV structures along this link without significant mitigation.
45	Euclid	Speedway–6th St	Overhead distribution line on west side of the road that would need to be underground. Limited right of way to fit overhead transmission poles	Yes (2) current attachers	Yes, limited right of way and room for 4'-0" sidewalks.	Sewer on east side of the road. Due to limited right of way may be hard to obtain Pima County Wastewater’s minimum offset to their line.	Water on west side of the road near University Blvd.	Multiple building conflicts near the road will involve possible special structure framing, easements, and moving to different side of the road		6	The right of way along this link is very limited and would not allow for 4'-0" sidewalks even with the purchase of easement due to the location of the building structures to the road. The limited space compounded with the potential sewer, gas and water conflicts makes it difficult to fit 138kV structures along this link without significant mitigation. Especially, conflicts with the sewer that require a great distance of separation in an already limiting right of way. Additionally, TEP's own overhead distribution might also need to be to be underground along this segment in addition to the relocation of the overhead telecommunication attachers. This also compounded with the limited space in right of way makes it difficult to construct an underground distribution alignment along this link.
48	Oracle	Grant–Helen	Limited room for TEP overhead facilities along link. Possible 46kV crossing.	Yes, limited right of way and room for 4'-0" sidewalks.	Building conflicts that need to be mitigated by moving to different sides of the road.					3	There is limited room behind curb in the right of way along this link as well as building infrastructure near edge of right of way that makes placement of 138kv structures difficult along the route and would require the line to jump from one side of the road to the other to mitigate overhead conflicts. This compounded with the other underground utility conflicts would make it difficult to place structures without significant mitigation.

Link No.	Street	Segment	Significant Constraints							Total Stacked Constraints	Summary of Significant Constraints
			1	2	3	4	5	6	7		
55	Euclid	6th St–Broadway	46kV overhead line at 6th and Euclid. Distribution underground line on west side of the road at 5th and Euclid. 46kV crossing. Distribution overhead line on west side of the road. Limited right of way for transmission structure along this link	Underground distribution line in areas to mitigate conflicts	Yes, limited right of way and room for 4'-0" sidewalks.	Gas on east side of the road	Water on west side of the road	Building structures along route that will limit structure placement and need to maintain clearances too. Limited right of way.		6	The right of way along this link is very limited and may not allow for 4'-0" sidewalks even with the purchase of easement due to the location of the building structures to the road. The limited space compounded with the potential gas and water conflicts makes it difficult to fit 138kV structures along this link without significant mitigation. Additionally, TEP's own overhead distribution might also need to be to be underground along this segment. This also compounded with the limited space in right of way makes it difficult to construct an underground distribution alignment along this link.
199	Park	Alley–Grant	Distribution line on the south side of the road. Limited right of way for overhead transmission line	Yes outage to underground the line and underground services to customers.	Yes, limited right of way and room for 4'-0" sidewalks.	Gas line on north side of the road with limited right of way would be difficult to place structure on north side	Sewer in middle of the road but with limited right of way it would be difficult to fit the distribution underground.	Water on south side of the road	Residential wall structures limit pole placement.	7	The right of way along this link is very limited and would be difficult to allow for 4'-0" sidewalks even with the purchase of easement due to the location of the building structures to the road. The limited space compounded with the potential gas and water conflicts makes it difficult to fit 138kV structures along this link without significant mitigation. Additionally, TEP's own overhead distribution might also need to be to be underground along this segment in addition to the relocation of the overhead telecommunication attachers. This also compounded with the limited space in right of way makes it difficult to construct an underground distribution alignment along this link.

Link No.	Street	Segment	Significant Constraints							Total Stacked Constraints	Summary of Significant Constraints
			1	2	3	4	5	6	7		
201	Speedway	Euclid–6th Ave	Distribution overhead on east side of the road	Yes outage to underground the line and underground services to customers.	Yes (4) attachers	Yes, limited right of way and room for 4'-0" sidewalks.	Gas line on east side of the road	Sewer in middle of the road but with limited right of way it would be difficult to fit the distribution underground.	Water line in middle of the road but with limited right of way it would be difficult to underground the distribution.	7	<p>The right of way along this link is very limited and would be difficult to allow for 4'-0" sidewalks even with the purchase of easement due to the location of the building structures to the road.</p> <p>The limited space compounded with the potential gas and water conflicts makes it difficult to fit 138kV structures along this link without significant mitigation. Additionally, TEP's own overhead distribution might also need to be to be underground along this segment in addition to the relocation of the overhead telecommunication attachers. This also compounded with the limited space in right of way makes it difficult to construct an underground distribution alignment along this link.</p>
205	Cherrybell	Willets–22nd	2 Water lines on west side of the road. Water line on east side of the road near 22nd							1	Link may require the relocation of a water line to mitigate conflicts.

Table H.3. Significant Constraint Link Adjustments

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
8	Fairview–Flowing Wells	Grant	1A	0	
8.1	Flowing Wells–DMP Parcel	Grant	1A	0	
9	15th–Fairview	Grant	1A	0	
10	Oracle–15th	Grant	1A	0	
12	6th Ave–Stone	Grant	1A	0	
12.1	Stone–Oracle	Grant	1A	0	
23	1st–6th Ave	Grant	1A	0.15	
24	Park–Mountain	Grant	1A	0.08	
24.1	Euclid–Park	Grant	1A	0	
26.1	Vine–Mountain	Grant	1A	0.08	
27	Elm–Grant	Vine	1A	0.23	
33	Warren–Substation	Ring	1A	0.15	
35	Campbell–Ring Road	Elm	1A	0	
36	Elm–Speedway	Campbell	1A	0	
46	Speedway–6th St	Campbell	1A	0	
50	6th St–Broadway	Campbell	1A	0	
88	Broadway–cross-country	Kino	1A	0	
88.1	cross-country–Winsett	Kino	1A	0	
91	15th–18th	Kino	1A	0	
107	22nd–27th	Kino	1A	0	
107.1	27th–28th	Kino	1A	0	
107.2	28th–Silverlake	Kino	1A	0	
127	Silverlake–36th St	Kino	1A	0	
128	Martin–Kino Pkwy	36th	1A	0	
204	Kino–22nd	Warehouse/ Cherry	1A	0	
206	Warehouse–Kino	cross-country	1A	0	
	Kino–22nd	Kino Off Ramp	1A	0	
Route 1a Total				0.69	2.555555556
8	Fairview–Flowing Wells	Grant	1B	0	
8.1	Flowing Wells–DMP Parcel	Grant	1B	0	
9	15th–Fairview	Grant	1B	0	
10	Oracle–15th	Grant	1B	0	
12	6th Ave–Stone	Grant	1B	0	
12.1	Stone–Oracle	Grant	1B	0	

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
23	1st–6th Ave	Grant	1B	0.15	
24.1	Euclid–Park	Grant	1B	0	
25	Alley–Grant	Park	1B	0.54	
31	Vine–Park	alley btw. Lee & Adams	1B	0.54	
33	Warren–Substation	Ring	1B	0.15	
35	Campbell–Ring Road	Elm	1B	0	
36	Elm–Speedway	Campbell	1B	0	
46	Speedway–6th St	Campbell	1B	0	
50	6th St–Broadway	Campbell	1B	0	
88	Broadway–cross-country	Kino	1B	0	
88.1	cross-country–Winsett	Kino	1B	0	
91	15th–18th	Kino	1B	0	
107	22nd–27th	Kino	1B	0	
107.1	27th–28th	Kino	1B	0	
107.2	28th–Silverlake	Kino	1B	0	
127	Silverlake–36th St	Kino	1B	0	
128	Martin–Kino Pkwy	36th	1B	0	
204	Kino–22nd	Warehouse/Cherry	1B	0	
206	Warehouse–Kino	cross-country	1B	0	
	Kino–22nd	Kino Off Ramp	1B	0	
<i>Route 1b Total</i>				1.38	5.307692308
8	Fairview–Flowing Wells	Grant	1D	0	
8.1	Flowing Wells–DMP Parcel	Grant	1D	0	
9	15th–Fairview	Grant	1D	0	
10	Oracle–15th	Grant	1D	0	
12	6th Ave–Stone	Grant	1D	0	
12.1	Stone–Oracle	Grant	1D	0	
23	1st–6th Ave	Grant	1D	0.15	
24	Park–Mountain	Grant	1D	0.08	
24.1	Euclid–Park	Grant	1D	0	
26	Campbell–Vine	Grant	1D	0.38	
26.1	Vine–Mountain	Grant	1D	0.08	
29	Grant–Elm	Campbell	1D	0	
33	Warren–Substation	Ring	1D	0.15	
35	Campbell–Ring Road	Elm	1D	0	
36	Elm–Speedway	Campbell	1D	0	

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
46	Speedway–6th St	Campbell	1D	0	
50	6th St–Broadway	Campbell	1D	0	
88	Broadway–cross-country	Kino	1D	0	
88.1	cross-country–Winsett	Kino	1D	0	
91	15th–18th	Kino	1D	0	
107	22nd–27th	Kino	1D	0	
107.1	27th–28th	Kino	1D	0	
107.2	28th–Silverlake	Kino	1D	0	
127	Silverlake–36th St	Kino	1D	0	
128	Martin–Kino Pkwy	36th	1D	0	
204	Kino–22nd	Warehouse/Cherry	1D	0	
206	Warehouse–Kino	cross-country	1D	0	
	Kino–22nd	Kino Off Ramp	1D	0	
<i>Route 1d Total</i>				0.84	3
8	Fairview–Flowing Wells	Grant	1E	0	
8.1	Flowing Wells–DMP Parcel	Grant	1E	0	
9	15th–Fairview	Grant	1E	0	
10	Oracle–15th	Grant	1E	0	
17	Stone–Main	Speedway	1E	0	
20	6th Ave–Stone	Speedway	1E	0.23	
31	Vine–Park	alley btw. Lee & Adams	1E	0.54	
32	Alley–Elm	Vine	1E	0.38	
33	Warren–Substation	Ring	1E	0.15	
34	Substation–Vine	Elm	1E	0	
35	Campbell–Ring Road	Elm	1E	0	
36	Elm–Speedway	Campbell	1E	0	
43	Euclid–6th Ave	Speedway	1E	0.46	
46	Speedway–6th St	Campbell	1E	0	
48	Grant–Helen	Oracle	1E	0.23	
50	6th St–Broadway	Campbell	1E	0	
88	Broadway–cross-country	Kino	1E	0	
88.1	cross-country–Winsett	Kino	1E	0	
91	15th–18th	Kino	1E	0	
107	22nd–27th	Kino	1E	0	
107.1	27th–28th	Kino	1E	0	
107.2	28th–Silverlake	Kino	1E	0	

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
127	Silverlake–36th St	Kino	1E	0	
128	Martin–Kino Pkwy	36th	1E	0	
193	Helen–Speedway	Main	1E	0	
198	Speedway–Helen	Euclid	1E	0	
199	Euclid–Park	Helen	1E	0.54	
201	Helen–Alley	Park	1E	0.54	
202	11th–Main	Speedway	1E	0	
204	Kino–22nd	Warehouse/Cherry	1E	0	
206	Warehouse–Kino	cross-country	1E	0	
	Kino–22nd	Kino Off Ramp	1E	0	
<i>Route 1e Total</i>				3.07	9.59375
8	Fairview–Flowing Wells	Grant	2A	0	
8.1	Flowing Wells–DMP Parcel	Grant	2A	0	
9	15th–Fairview	Grant	2A	0	
10	Oracle–15th	Grant	2A	0	
12	6th Ave–Stone	Grant	2A	0	
12.1	Stone–Oracle	Grant	2A	0	
23	1st–6th Ave	Grant	2A	0.15	
24	Park–Mountain	Grant	2A	0.08	
24.1	Euclid–Park	Grant	2A	0	
26.1	Vine–Mountain	Grant	2A	0.08	
27	Elm–Grant	Vine	2A	0.23	
33	Warren–Substation	Ring	2A	0.15	
35	Campbell–Ring Road	Elm	2A	0	
36	Elm–Speedway	Campbell	2A	0	
46	Speedway–6th St	Campbell	2A	0	
50	6th St–Broadway	Campbell	2A	0	
88	Broadway–cross-country	Kino	2A	0	
88.1	cross-country–Winsett	Kino	2A	0	
91	15th–18th	Kino	2A	0	
114	Silverlake–cross-country	Cherrybell	2A	0	
114.1	cross-country–Willets	Cherrybell	2A	0	
125	36th–Barleycorn	Campbell	2A	0	
125.1	Barleycorn–Silverlake	Campbell	2A	0	
129	Campbell–Martin	36th	2A	0	
129.1	36th–Campbell	cross country	2A	0	
204	Kino–22nd	Warehouse/Cherry	2A	0	

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
205	Willets–22nd	Cherrybell	2A	0.08	
206	Warehouse–Kino	cross-country	2A	0	
<i>Route 2a Total</i>				0.77	2.75
8	Fairview–Flowing Wells	Grant	2B	0	
8.1	Flowing Wells–DMP Parcel	Grant	2B	0	
9	15th–Fairview	Grant	2B	0	
10	Oracle–15th	Grant	2B	0	
12	6th Ave–Stone	Grant	2B	0	
12.1	Stone–Oracle	Grant	2B	0	
23	1st–6th Ave	Grant	2B	0.15	
24.1	Euclid–Park	Grant	2B	0	
25	Alley–Grant	Park	2B	0.54	
31	Vine–Park	alley btw. Lee & Adams	2B	0.54	
33	Warren–Substation	Ring	2B	0.15	
35	Campbell–Ring Road	Elm	2B	0	
36	Elm–Speedway	Campbell	2B	0	
46	Speedway–6th St	Campbell	2B	0	
50	6th St–Broadway	Campbell	2B	0	
88	Broadway–cross-country	Kino	2B	0	
88.1	cross-country–Winsett	Kino	2B	0	
91	15th–18th	Kino	2B	0	
114	Silverlake–cross-country	Cherrybell	2B	0	
114.1	cross-country–Willets	Cherrybell	2B	0	
125	36th–Barleycorn	Campbell	2B	0	
125.1	Barleycorn–Silverlake	Campbell	2B	0	
129	Campbell–Martin	36th	2B	0	
129.1	36th–Campbell	cross country	2B	0	
204	Kino–22nd	Warehouse/Cherry	2B	0	
205	Willets–22nd	Cherrybell	2B	0.08	
206	Warehouse–Kino	cross-country	2B	0	
<i>Route 2b Total</i>				1.46	5.407407407
8	Fairview–Flowing Wells	Grant	2D	0	
8.1	Flowing Wells–DMP Parcel	Grant	2D	0	
9	15th–Fairview	Grant	2D	0	
10	Oracle–15th	Grant	2D	0	
12	6th Ave–Stone	Grant	2D	0	

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
12.1	Stone–Oracle	Grant	2D	0	
23	1st–6th Ave	Grant	2D	0.15	
24	Park–Mountain	Grant	2D	0.08	
24.1	Euclid–Park	Grant	2D	0	
26	Campbell–Vine	Grant	2D	0.38	
26.1	Vine–Mountain	Grant	2D	0.08	
29	Grant–Elm	Campbell	2D	0	
33	Warren–Substation	Ring	2D	0.15	
35	Campbell–Ring Road	Elm	2D	0	
36	Elm–Speedway	Campbell	2D	0	
46	Speedway–6th St	Campbell	2D	0	
50	6th St–Broadway	Campbell	2D	0	
88	Broadway–cross-country	Kino	2D	0	
88.1	cross-country–Winsett	Kino	2D	0	
91	15th–18th	Kino	2D	0	
114	Silverlake–cross-country	Cherrybell	2D	0	
114.1	cross-country–Willets	Cherrybell	2D	0	
125	36th–Barleycorn	Campbell	2D	0	
125.1	Barleycorn–Silverlake	Campbell	2D	0	
129	Campbell–Martin	36th	2D	0	
129.1	36th–Campbell	cross country	2D	0	
204	Kino–22nd	Warehouse/Cherry	2D	0	
205	Willets–22nd	Cherrybell	2D	0.08	
206	Warehouse–Kino	cross-country	2D	0	
<i>Route 2d Total</i>				0.92	3.172413793
8	Fairview–Flowing Wells	Grant	2E	0	
8.1	Flowing Wells–DMP Parcel	Grant	2E	0	
9	15th–Fairview	Grant	2E	0	
10	Oracle–15th	Grant	2E	0	
17	Stone–Main	Speedway	2E	0	
20	6th Ave–Stone	Speedway	2E	0.23	
31	Vine–Park	alley btw. Lee & Adams	2E	0.54	
32	Alley–Elm	Vine	2E	0.38	
33	Warren–Substation	Ring	2E	0.15	
34	Substation–Vine	Elm	2E	0	
35	Campbell–Ring Road	Elm	2E	0	

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
36	Elm–Speedway	Campbell	2E	0	
43	Euclid–6th Ave	Speedway	2E	0.46	
46	Speedway–6th St	Campbell	2E	0	
48	Grant–Helen	Oracle	2E	0.23	
50	6th St–Broadway	Campbell	2E	0	
88	Broadway–cross-country	Kino	2E	0	
88.1	cross-country–Winsett	Kino	2E	0	
91	15th–18th	Kino	2E	0	
114	Silverlake–cross-country	Cherrybell	2E	0	
114.1	cross-country–Willets	Cherrybell	2E	0	
125	36th–Barleycorn	Campbell	2E	0	
125.1	Barleycorn–Silverlake	Campbell	2E	0	
129	Campbell–Martin	36th	2E	0	
129.1	36th–Campbell	cross country	2E	0	
193	Helen–Speedway	Main	2E	0	
198	Speedway–Helen	Euclid	2E	0	
199	Euclid–Park	Helen	2E	0.54	
201	Helen–Alley	Park	2E	0.54	
202	11th–Main	Speedway	2E	0	
204	Kino–22nd	Warehouse/Cherry	2E	0	
205	Willets–22nd	Cherrybell	2E	0.08	
206	Warehouse–Kino	cross-country	2E	0	
<i>Route 2e Total</i>				3.15	9.545454545
7	Manlove–Curtis	Highland/17th	3A	0	
8	Fairview–Flowing Wells	Grant	3A	0	
8.1	Flowing Wells–DMP Parcel	Grant	3A	0	
9	15th–Fairview	Grant	3A	0	
10	Oracle–15th	Grant	3A	0	
12	6th Ave–Stone	Grant	3A	0	
12.1	Stone–Oracle	Grant	3A	0	
23	1st–6th Ave	Grant	3A	0.15	
24	Park–Mountain	Grant	3A	0.08	
24.1	Euclid–Park	Grant	3A	0	
26.1	Vine–Mountain	Grant	3A	0.08	
27	Elm–Grant	Vine	3A	0.23	
31	Vine–Park	alley btw. Lee & Adams	3A	0.54	

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
32	Alley–Elm	Vine	3A	0.38	
34	Substation–Vine	Elm	3A	0	
45	Speedway–6th St	Euclid	3A	0.38	
53	Euclid–Freemont	Broadway	3A	0	
55	6th St–Broadway	Euclid	3A	0.46	
57	Manlove–Broadway	Freemont	3A	0	
60	46kV–Freemont	cross country	3A	0	
64.2	Highland–Manlove	46kV line	3A	0	
78	Curtis–Vine	17th	3A	0	
86	Vine–Kino	17th	3A	0	
107	22nd–27th	Kino	3A	0	
107.1	27th–28th	Kino	3A	0	
107.2	28th–Silverlake	Kino	3A	0	
127	Silverlake–36th St	Kino	3A	0	
128	Martin–Kino Pkwy	36th	3A	0	
160.1	Kino Pkwy–Cherry	22nd	3A	0	
198	Speedway–Helen	Euclid	3A	0	
199	Euclid–Park	Helen	3A	0.54	
201	Helen–Alley	Park	3A	0.54	
204	Kino–22nd	Warehouse/Cherry	3A	0	
206	Warehouse–Kino	cross-country	3A	0	
<i>Route 3a Total</i>				3.38	9.941176471
7	Manlove–Curtis	Highland/17th	3D	0	
8	Fairview–Flowing Wells	Grant	3D	0	
8.1	Flowing Wells–DMP Parcel	Grant	3D	0	
9	15th–Fairview	Grant	3D	0	
10	Oracle–15th	Grant	3D	0	
12	6th Ave–Stone	Grant	3D	0	
12.1	Stone–Oracle	Grant	3D	0	
23	1st–6th Ave	Grant	3D	0.15	
24	Park–Mountain	Grant	3D	0.08	
24.1	Euclid–Park	Grant	3D	0	
26	Campbell–Vine	Grant	3D	0.38	
26.1	Vine–Mountain	Grant	3D	0.08	
29	Grant–Elm	Campbell	3D	0	
31	Vine–Park	alley btw. Lee & Adams	3D	0.54	

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
32	Alley–Elm	Vine	3D	0.38	
33	Warren–Substation	Ring	3D	0.15	
34	Substation–Vine	Elm	3D	0	
35	Campbell–Ring Road	Elm	3D	0	
45	Speedway–6th St	Euclid	3D	0.46	
53	Euclid–Freemont	Broadway	3D	0	
55	6th St–Broadway	Euclid	3D	0.46	
57	Manlove–Broadway	Freemont	3D	0	
60	46kV–Freemont	cross country	3D	0	
64.2	Highland–Manlove	46kV line	3D	0	
78	Curtis–Vine	17th	3D	0	
86	Vine–Kino	17th	3D	0	
107	22nd–27th	Kino	3D	0	
107.1	27th–28th	Kino	3D	0	
107.2	28th–Silverlake	Kino	3D	0	
127	Silverlake–36th St	Kino	3D	0	
128	Martin–Kino Pkwy	36th	3D	0	
160.1	Kino Pkwy–Cherry	22nd	3D	0	
198	Speedway–Helen	Euclid	3D	0	
199	Euclid–Park	Helen	3D	0.54	
201	Helen–Alley	Park	3D	0.54	
204	Kino–22nd	Warehouse/Cherry	3D	0	
206	Warehouse–Kino	cross-country	3D	0	
<i>Route 3d Total</i>				3.76	10.44444444
7	Manlove–Curtis	Highland/17th	5A	0	
8	Fairview–Flowing Wells	Grant	5A	0	
8.1	Flowing Wells–DMP Parcel	Grant	5A	0	
9	15th–Fairview	Grant	5A	0	
10	Oracle–15th	Grant	5A	0	
12	6th Ave–Stone	Grant	5A	0	
12.1	Stone–Oracle	Grant	5A	0	
23	1st–6th Ave	Grant	5A	0.15	
24	Park–Mountain	Grant	5A	0.08	
24.1	Euclid–Park	Grant	5A	0	
26.1	Vine–Mountain	Grant	5A	0.08	
27	Elm–Grant	Vine	5A	0.23	

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
31	Vine–Park	alley btw. Lee & Adams	5A	0.54	
32	Alley–Elm	Vine	5A	0.38	
34	Substation–Vine	Elm	5A	0	
45	Speedway–6th St	Euclid	5A	0.46	
53	Euclid–Freemont	Broadway	5A	0	
55	6th St–Broadway	Euclid	5A	0.46	
57	Manlove–Broadway	Freemont	5A	0	
60	46kV–Freemont	cross country	5A	0	
64.2	Highland–Manlove	46kV line	5A	0	
78	Curtis–Vine	17th	5A	0	
86	Vine–Kino	17th	5A	0	
114	Silverlake–cross-country	Cherrybell	5A	0	
114.1	cross-country–Willets	Cherrybell	5A	0	
125	36th–Barleycorn	Campbell	5A	0	
125.1	Barleycorn–Silverlake	Campbell	5A	0	
129.1	36th–Campbell	cross country	5A	0	
198	Speedway–Helen	Euclid	5A	0	
199	Euclid–Park	Helen	5A	0.54	
201	Helen–Alley	Park	5A	0.54	
204	Kino–22nd	Warehouse/Cherry	5A	0	
205	Willets–22nd	Cherrybell	5A	0.08	
206	Warehouse–Kino	cross-country	5A	0	
<i>Route 5a Total</i>				3.54	10.41176471
7	Manlove–Curtis	Highland/17th	5D	0	
8	Fairview–Flowing Wells	Grant	5D	0	
8.1	Flowing Wells–DMP Parcel	Grant	5D	0	
9	15th–Fairview	Grant	5D	0	
10	Oracle–15th	Grant	5D	0	
12	6th Ave–Stone	Grant	5D	0	
12.1	Stone–Oracle	Grant	5D	0	
23	1st–6th Ave	Grant	5D	0.15	
24	Park–Mountain	Grant	5D	0.08	
24.1	Euclid–Park	Grant	5D	0	
26	Campbell–Vine	Grant	5D	0.38	
26.1	Vine–Mountain	Grant	5D	0.08	
29	Grant–Elm	Campbell	5D	0	

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
31	Vine–Park	alley btw. Lee & Adams	5D	0.54	
32	Alley–Elm	Vine	5D	0.38	
33	Warren–Substation	Ring	5D	0.15	
34	Substation–Vine	Elm	5D	0	
35	Campbell–Ring Road	Elm	5D	0	
45	Speedway–6th St	Euclid	5D	0.46	
53	Euclid–Freemont	Broadway	5D	0	
55	6th St–Broadway	Euclid	5D	0.46	
57	Manlove–Broadway	Freemont	5D	0	
60	46kV–Freemont	cross country	5D	0	
64.2	Highland–Manlove	46kV line	5D	0	
78	Curtis–Vine	17th	5D	0	
86	Vine–Kino	17th	5D	0	
114	Silverlake–cross-country	Cherrybell	5D	0	
114.1	cross-country–Willetts	Cherrybell	5D	0	
125	36th–Barleycorn	Campbell	5D	0	
125.1	Barleycorn–Silverlake	Campbell	5D	0	
129.1	36th–Campbell	cross country	5D	0	
198	Speedway–Helen	Euclid	5D	0	
199	Euclid–Park	Helen	5D	0.54	
201	Helen–Alley	Park	5D	0.54	
204	Kino–22nd	Warehouse/Cherry	5D	0	
205	Willetts–22nd	Cherrybell	5D	0.08	
206	Warehouse–Kino	cross-country	5D	0	
<i>Route 5d Total</i>				3.84	10.37837838