

CITY OF NOVI
THOROUGHFARE
MASTER PLAN



TECH MEMO #5
THOROUGHFARE
CLASSIFICATION



March, 2016

Submitted by:

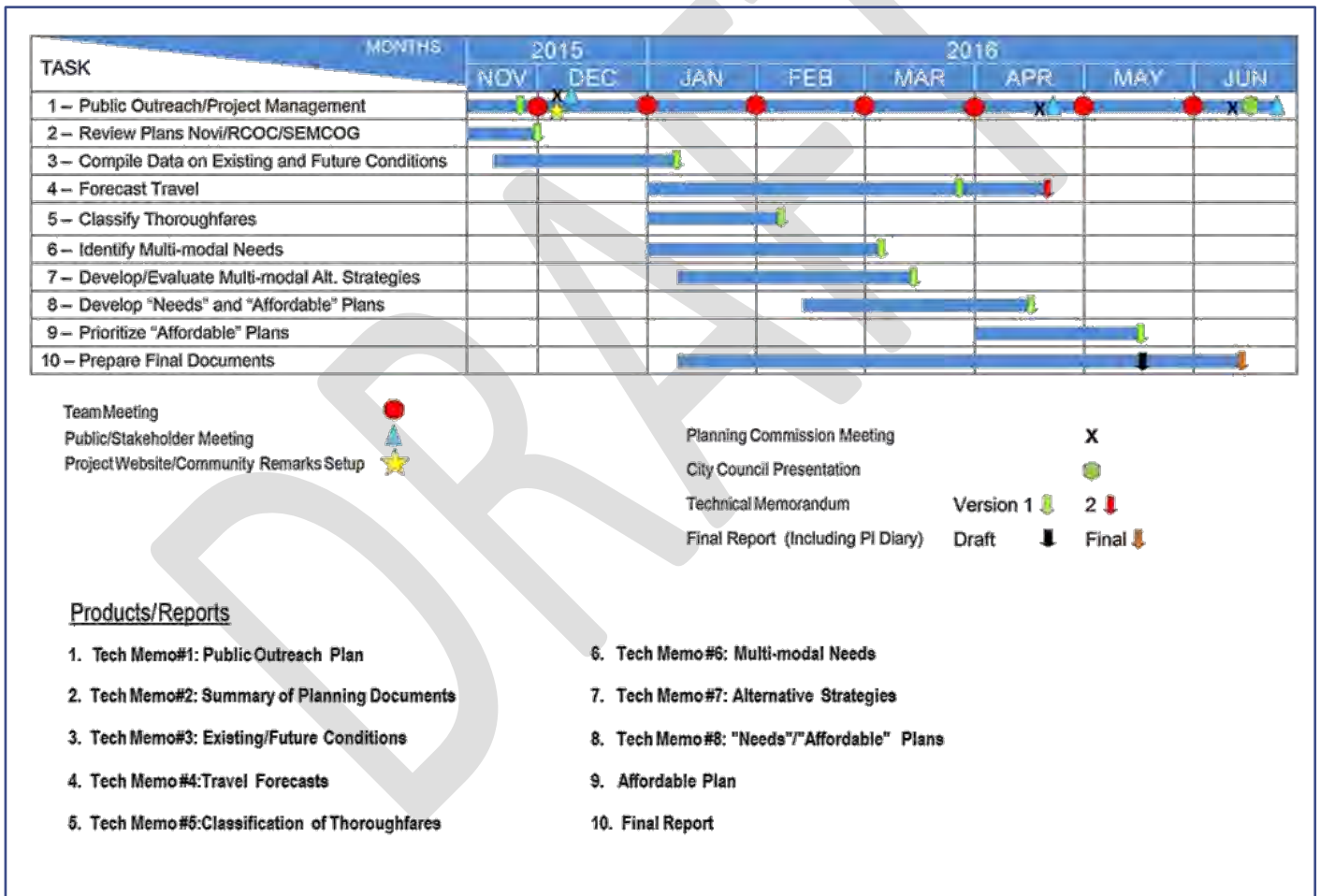


1. Introduction

This Tech Memo is prepared in fulfillment of Task 5 of the 2016 Novi Thoroughfare Master Plan (TMP) (Figure 1). The TMP requires the integration of projects among transportation modes to form a plan that complements the Novi Master Land Use Plan.

Technical Memo #5 examines 2015 traffic with the expected future land use development pattern to classify the roadways in Novi.

Figure 1. Schedule



Source: The Corradino Group of Michigan, Inc.

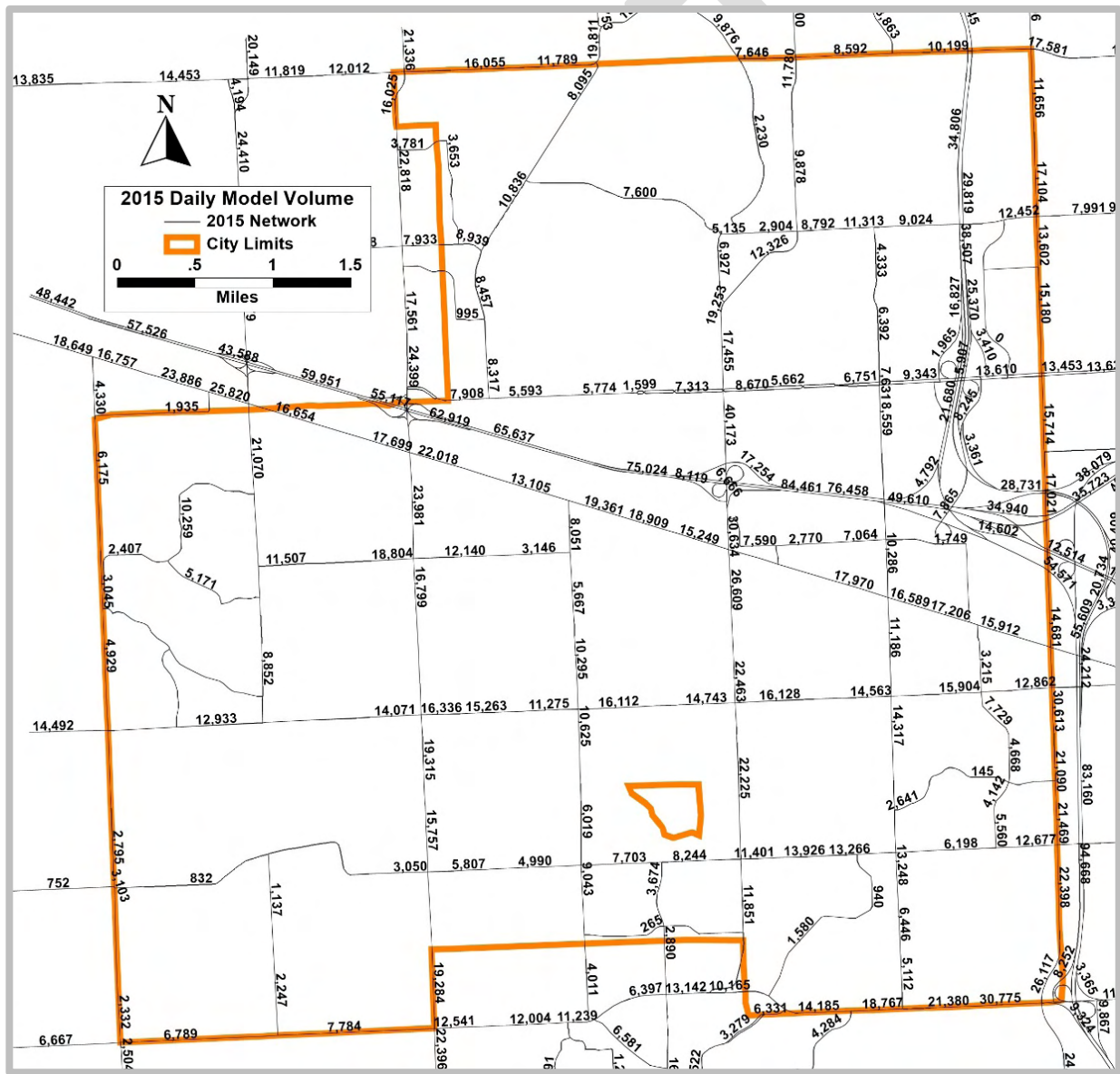
2. Travel Forecasting

2.1 2015 Base and 2040 Models

The TMP consultant, Corradino, developed daily and PM peak-period (3-6 p.m.) travel forecasting models. The 2015 Base Model was calibrated to the latest traffic counts (Figure 2). It and the 2040 E+C models illustrate the

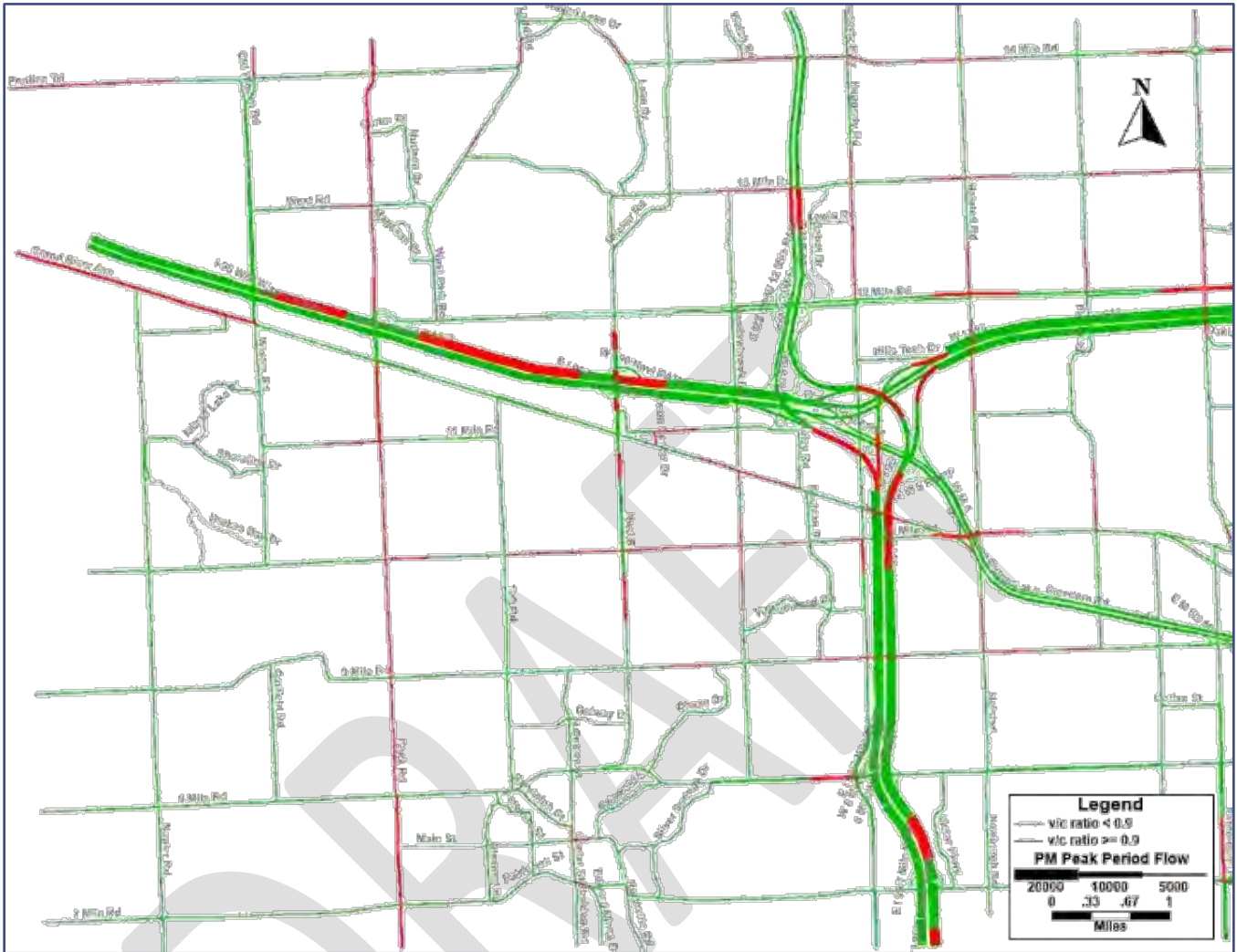
Volume-to-Capacity ratios in the PM peak-period (Figures 3 and 4). RED indicates the V/C ratio is greater than 1.0 reflecting congestion. GREEN signifies congestion is not evident.

Figure 2. 2015 Base Model Annual Daily Traffic (ADT)



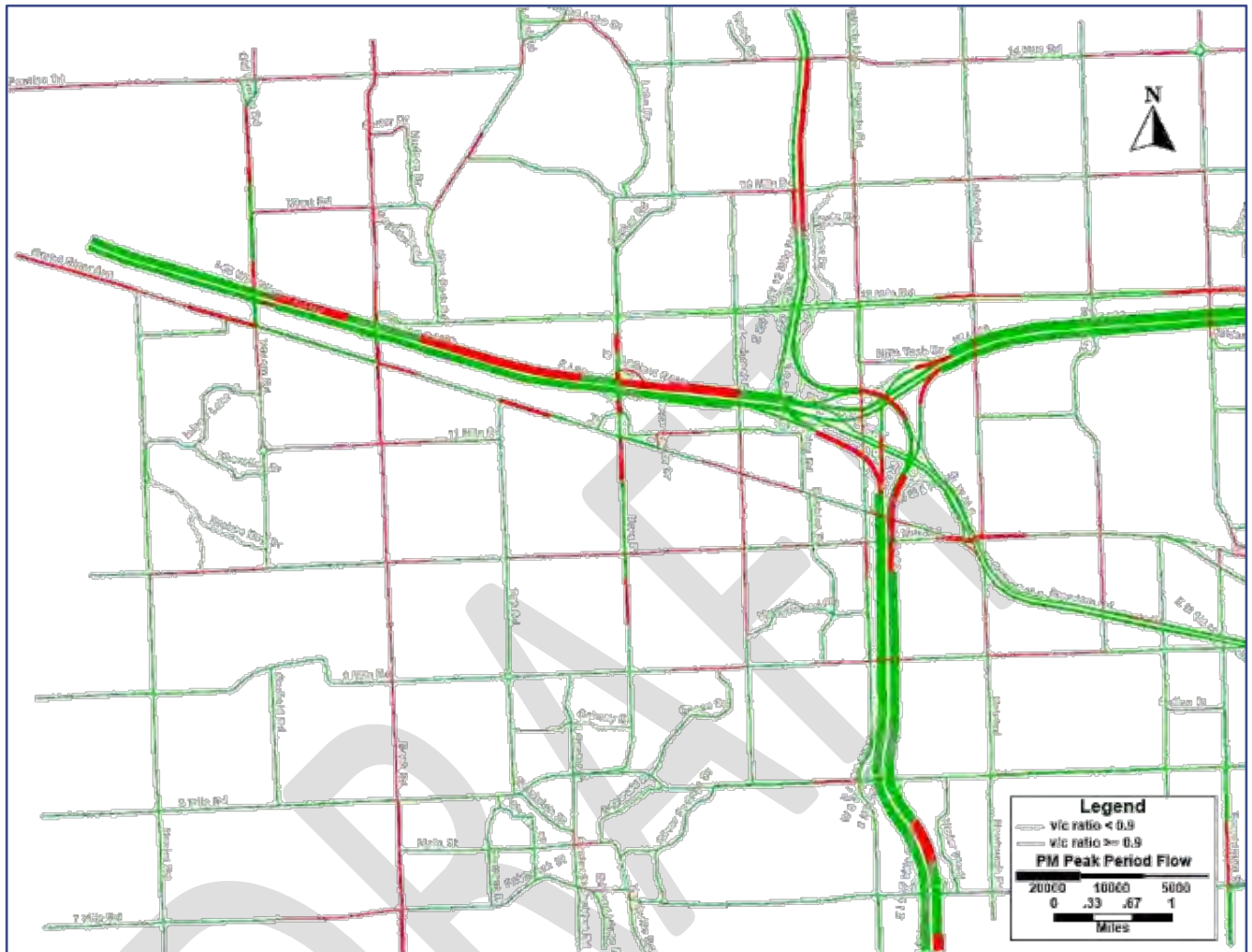
Source: The Corradino Group of Michigan, Inc.

Figure 3. 2015 PM Peak-period Traffic Conditions



Source: The Corradino Group of Michigan, Inc.

Figure 4. 2040 E+C PM Peak-period Traffic Condition



Source: The Corradino Group of Michigan, Inc.

3. Thoroughfare Classification

Thoroughfare classification defines aspects of roadway design or redesign, such as lane width, shoulder width, and width of median areas, as well as design speed. By extension, design speed impacts the horizontal and vertical alignments of a roadway, affecting land use and neighborhood cohesion. A sub-classification of roadways may also be determined based on its intended focus – auto-, bicycle-, or pedestrian-oriented – resulting in different emphases in design concept.

Each roadway in a community falls into one of several general classification groups: local, collector, and arterial. In some cases, freeways, a higher form of arterial, will serve a community, as in Novi.

Novi's thoroughfares are subdivided to differentiate among Major Arterials, Arterials, Minor Arterials, Non-Residential and Residential Collectors, and Scenic Drives, to account for differences in design, preservation, and usage. The current classifications of Novi's roads are illustrated in Figure 5 and elaborated upon below.

Freeways

Freeways are a high-level classification of Arterials. Freeways have directional travel lanes, which are usually separated by a barrier and/or median. Access is limited to specific on- and off-ramp locations. Two freeways traverse Novi: M5 and I-96.

Arterials

Arterials are major roadways, which generally serve a regional or sub-regional purpose, and may service intra-area demands between business centers and outlying residential districts. There are usually several arterials servicing an urban/suburban area, and these can be differentiated based on usage and function, with major arterials having an emphasis on longer trips, higher traffic volumes, and greater proportion of urban travel within the community. Minor arterials generally provide service for trips of more moderate length, and provide connections to the arterial systems (i.e. Major Arterials, Freeways). Different than Freeways, arterials can directly serve adjoining land. Average Daily Traffic for urban Major Arterials generally ranges between 7,000 and 27,000 vehicles, with urban Minor Arterials ranging between 3,000 and 14,000 vehicles per day.

- **Major Arterials** – Novi currently has one roadway segment designated as a major arterial: Twelve Mile Road between Haggerty Road and Declaration Drive (Figure 6).
- **Arterial** – Arterials within Novi include Beck Road, Eight Mile Road, Eleven Mile Road, Fourteen Mile Road, Grand River Avenue, Haggerty Road, Napier Road, Novi Road, Pontiac Trail, Taft Road, Ten Mile Road, Twelve Mile Road between Declaration Drive and Beck Road, and Wixom Road (Figure 7).

Figure 6. Example of Major Arterial



Source: Google Earth

Figure 7. Example of Arterial



Source: Google Earth

Figure 5. Existing Thoroughfare Classification

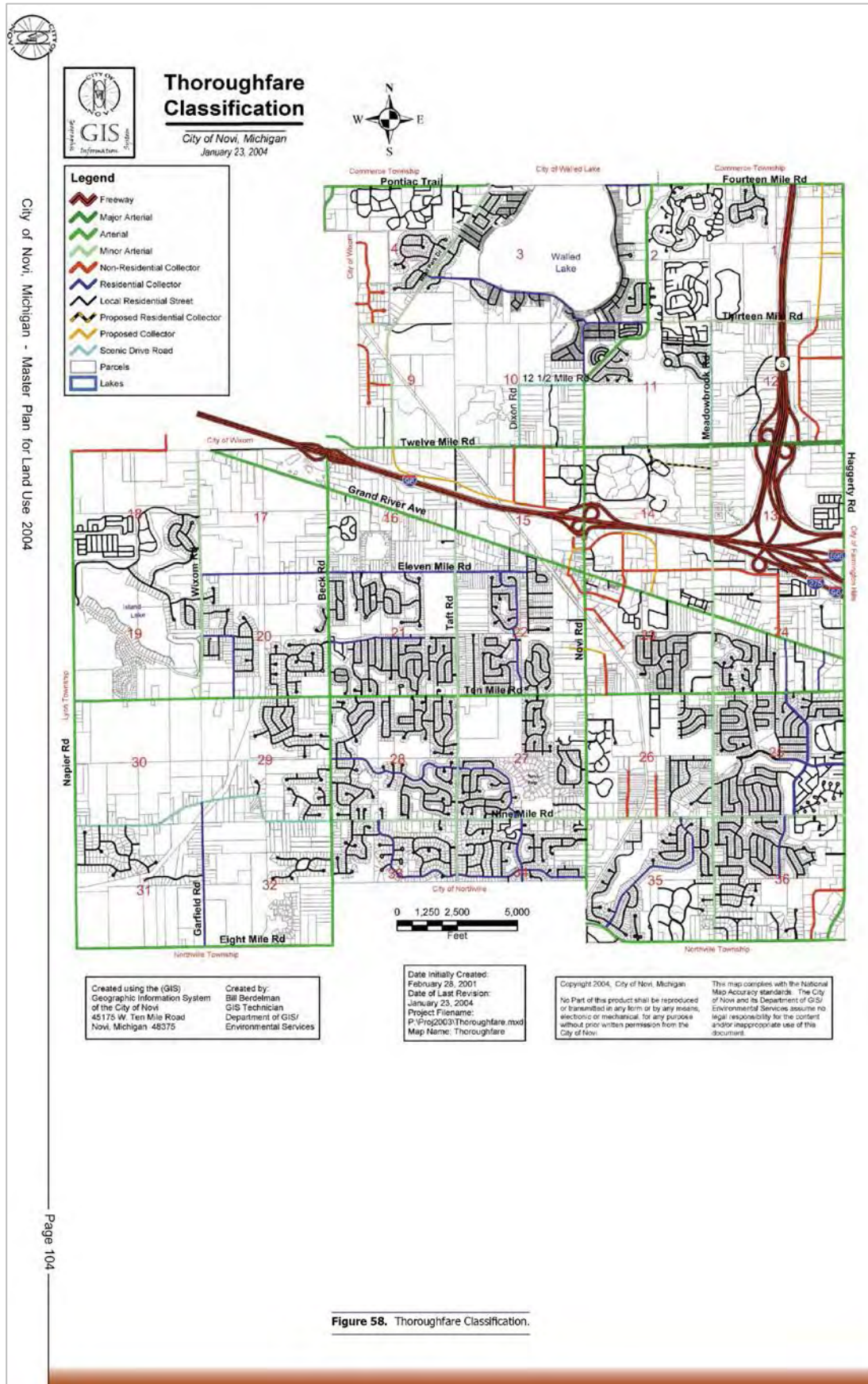


Figure 58. Thoroughfare Classification.

Source: City of Novi, Michigan

- **Minor Arterial** – Minor Arterials within Novi include: Meadowbrook Road, between Twelve Mile Road and Eight Mile Road; Nine Mile Road; Taft Road; Thirteen Mile Road; West Park Drive; West Road; and, Wixom Road (**Figure 8**).

Figure 8. Example of Minor Arterial



Source: Google Earth

between Napier Road and Grand River Drive, and Venture Drive.

Example 9. Example of Non-residential Collector



Source: Google Earth

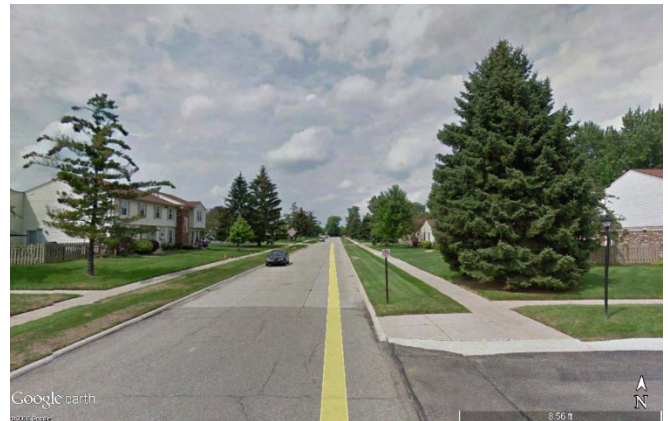
Collectors

Collector roads gather traffic from local roads and funnel it to arterials. For Collectors, Average Daily Traffic and spacing are key components to determine classification. The mileage of Collector roadways is typically, about 1/3 of the overall local road mileage. Collectors generally serve Average Daily Traffic of 1,100 to 6,300 vehicles.

- **Non-residential Collectors** – Non-residential Collectors are roadways designated to route traffic from non-residential areas to the arterials (**Figure 9**). Non-Residential Collectors within Novi include Caberet Drive, Cabot Drive, Cartier Drive, Catherine Industrial Road, Crescent Boulevard, DeSoto Court, Donelson Drive, Dylan Drive, Eleven Mile Road, Energy Way, Expo Center Drive, Flint, Fountain Walk Drive, Heslip Drive, Heyn Drive, Hudson Drive, Humboldt Drive, Lee BeGole Drive, Lewis Drive, MacKenzie Drive, Magellan Drive, Main Street, Nadlan Drive, Orchard Hill Place, Peary Court, Regency Drive, Ryan Court, Seeley Road, Town Center Drive, Trans X Road, Twelve Mile

- **Residential Collectors** – Residential Collectors serve as conduits between local residential roads and arterials (**Figure 10**). While some residences are accessed by collectors, their primary purpose is to funnel traffic to local streets. Residential Collectors within the City include Bashian Drive, Buckminster Drive, Center Street, Chase Drive, Christina Lane, Cranbrooke Drive, Delmont Drive, Dinser Drive, Galway Drive, Garfield Road, Karim Boulevard, Midway Drive, Old Novi Road, Petros Boulevard, South Lake Drive, Sunrise Boulevard, Thirteen Mile Road, Village Wood Road, and White Pines Drive.

Figure 10. Example of Residential Collector



Source: Google Earth

Scenic Drive Roads

The City of Novi classifies Dixon Road, Meadowbrook Road between Twelve Mile Road and Thirteen Mile Road, Nine Mile Road between Beck Road and Napier Road, and Twelve ½ Mile Road as Scenic Drive Roads.

Local Roads

All other roadways in Novi are currently classified as local roads.

Thoroughfare Classification

Two factors are key to evaluating each thoroughfare's classification and whether it should be re-classified:

1. Accessibility, related to the land use to which the roadways connect, and how they connect.
2. Mobility, allowing for varying levels of movements, at different speeds, around and through a community.



To determine accessibility and mobility in relation to each other, current and expected future roadway usage and surrounding land uses are examined. Further, the interrelationship between roadways is also examined.

Existing Roadway Classification Analysis

Roadways affected by proximity to exits from freeways include Twelve Mile Road, Wixom Road, Beck Road, Novi Road, Haggerty Road, and Eight Mile Road. I-96 is the principal traffic carrier through Novi, with interchanges at Wixom Road, Beck Road, and Novi Road. Additionally, M5 runs north-south within Novi between Haggerty Road and Meadowbrook Road, and the I-275 freeway lies immediately east of the city. M5 is accessed at Twelve Mile Road on the east side of the city, and I-275 is accessed at Eight Mile Road, just outside the eastern border of Novi.

Referring to Figure 2, the 2015 Average Daily Traffic on Twelve Mile Road, the only Major Arterial in the city, is in

the range of 9,000 to over 13,500 vehicular trips near M5. Ten Mile Road exceeds this range throughout Novi. North-south roads that also exceed the range of traffic on Twelve Mile Road are: Beck Road, throughout Novi; Novi Road, throughout Novi; Meadowbrook, between Nine Mile Road and Twelve Mile Road; and, Haggerty Road and Grand River Avenue for their entire lengths across Novi.

Field review and considerations of future roadway design of Beck Road indicate characteristics more like a Major Arterial as opposed to its current Arterial designation; it should be re-classified as a Major Arterial. Ten Mile Road provides both residential and crosstown connectivity as a direct path to the Town Center area and surrounding land uses. Further, Ten Mile Road provides a direct path for east-west traffic in the city east to M5. It also should be re-classified as a Major Arterial. Novi Road should also be re-designated as a Major Arterial between Nine Mile Road and Twelve Mile Road, which would be consistent with current usage/traffic levels, right-of-way design, and adjoining regional commercial land uses.

Grand River Avenue, unlike Twelve Mile, Novi and Ten Mile Roads, has a widely-varying traffic pattern. It is more a connection to areas close to Wixom. So, in Novi, retention on Grand River Avenue as an Arterial is believed appropriate.

Haggerty Road, based on analysis of local ADT and roadway considerations, has some characteristics that, at first glance, would reasonably lend credence towards re-classification, at least between Ten Mile Road and Eight Mile Road. However, looking north from Ten Mile Road, traffic on Haggerty Road drops from approximately 30,000 to 14,000 vehicle per day. This road's usage is affected by its proximity to the freeways, causing it to function much like a frontage road. Retention of standard Arterial status is considered acceptable.

Meadowbrook Road, unlike Novi Road and Beck Road, funnels traffic to collectors and local destinations and not necessarily to other higher arterials. This pattern indicates lack of high-intensity traffic over a long range that is expected of a higher-tier arterial.

An examination of Collectors, Scenic Roads, and Local Roads concluded no changes in designation are warranted. This includes Eleven Mile Road, a Residential

Collector, with high traffic volumes (>9,000 ADT). It lacks the geographic range that the previously-evaluated roadways in this section have and which would allow funneling traffic across a longer distance.

3.1 Land Use

Concurrently, as with the Thoroughfare Master Plan, Novi is updating its Master Plan for Land Use. Land use and density are depicted on **Figure 11**. Examination of the 2040 Future Land Use Plan indicates no major changes from the previous land use plan adopted in 2010 of a sufficient level to impact roadway needs. Therefore, no roadway classification changes are merited from this portion of the analysis.

3.2 Density

3.2.1 Residential Districts

Residential districts were reviewed to determine housing density in relation to existing roadways (**Figure 11**). The highest residential densities are planned for multi-family areas along Thirteen Mile Road and Beck Road, a Minor Arterial and an Arterial, respectively. Current classifications for these roadways are appropriate given the residential densities.

Residential development spreads throughout the city, with some exceptions along Beck Road, at the northern edge of Novi, and along Twelve Mile Road, in proximity to existing commercial development. As with all land uses with higher density in the city, these residential areas, now and as planned, are directly adjacent to arterials, with lower density development planned along existing collectors and local streets. Therefore, no changes to the existing roadway classification are warranted by residential densities. However, the higher densities around Beck Road (between 20.7, 7.3 dwelling units per acre) provide additional justification for roadway re-classification, as presented earlier.

3.2.2 Commercial and Industrial Districts

Commercial and Industrial Districts within Novi are primarily located along arterials and at freeway interchanges, with additional connectivity provided by various collectors. Commercial land is further divided

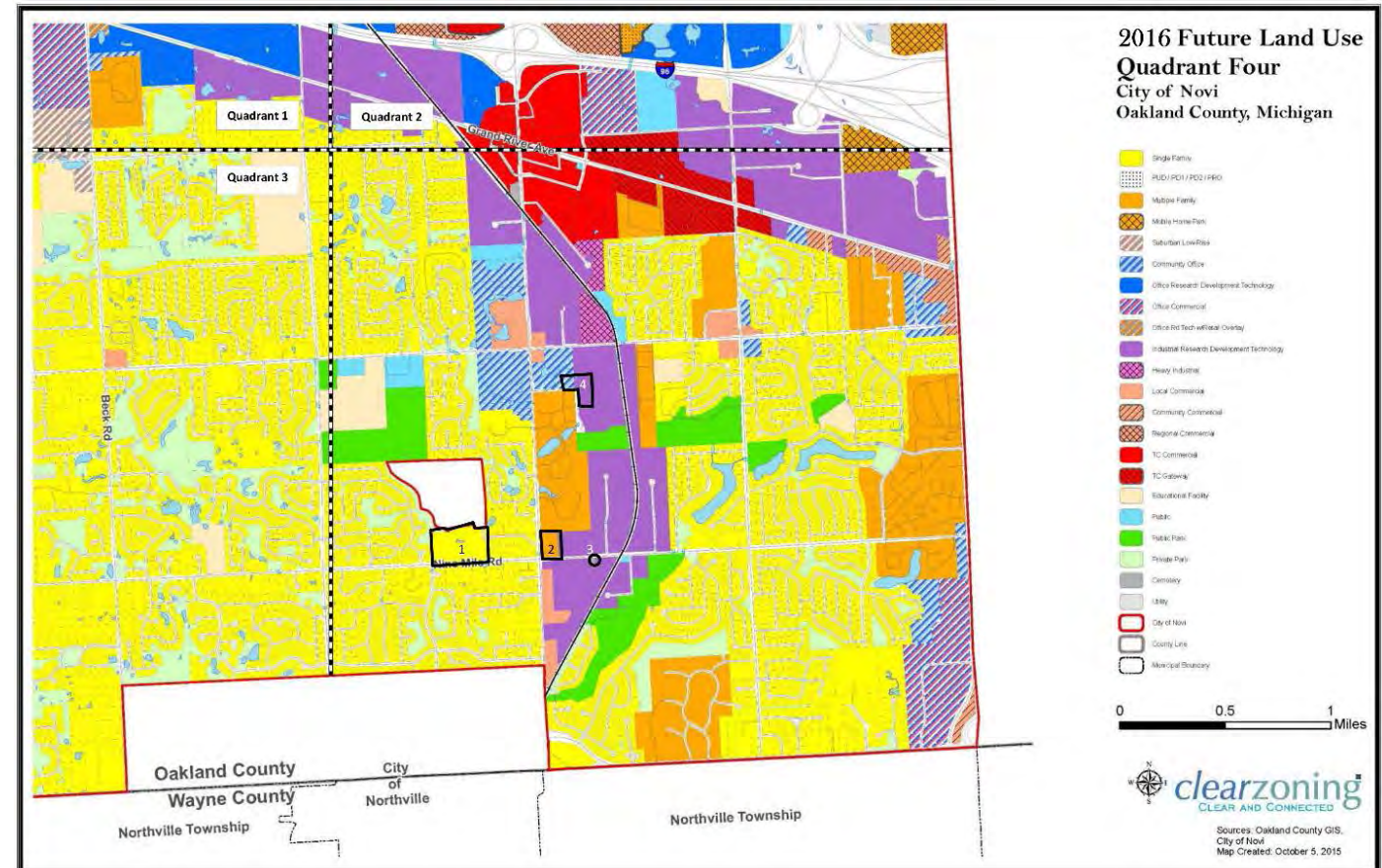
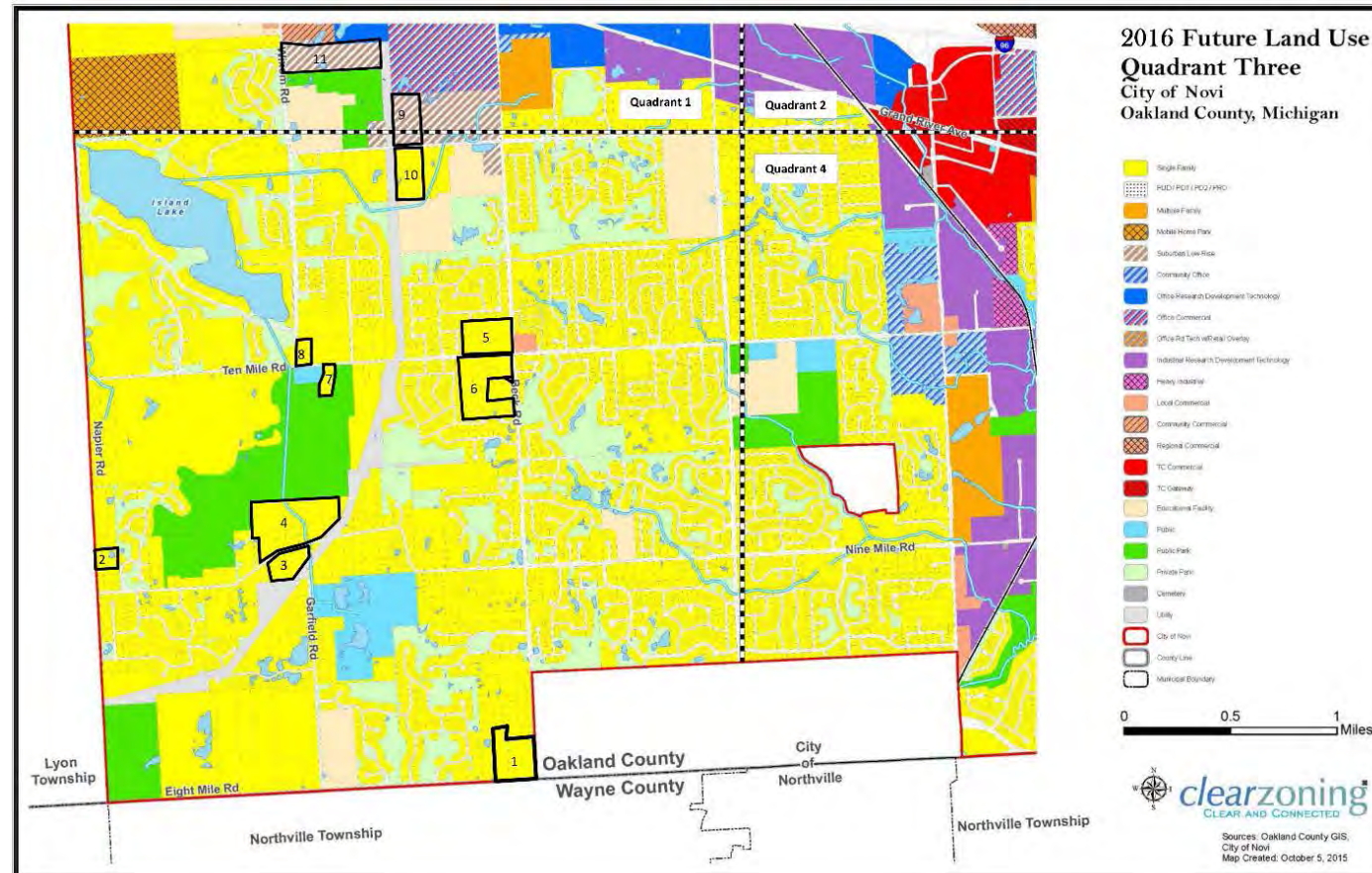
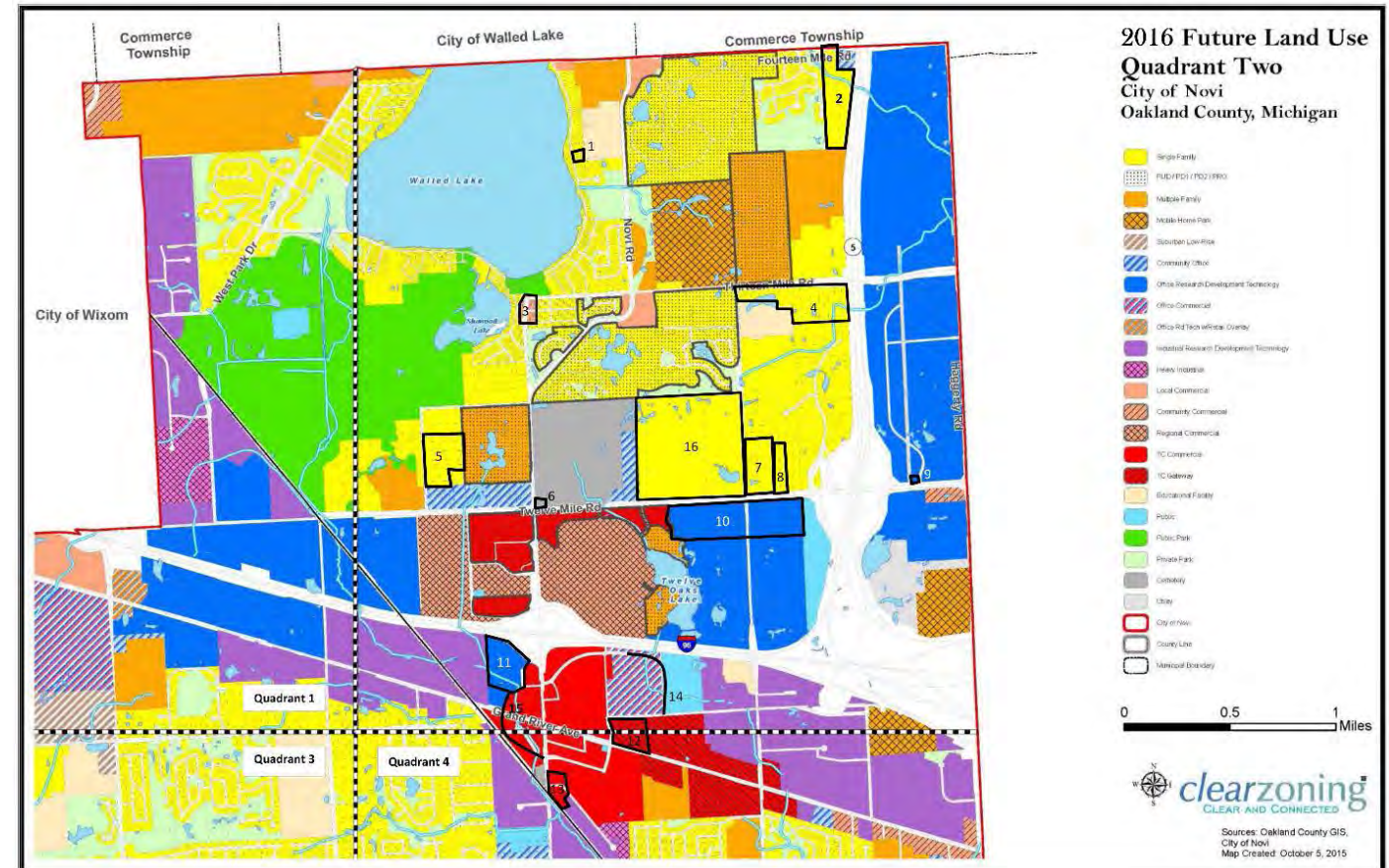
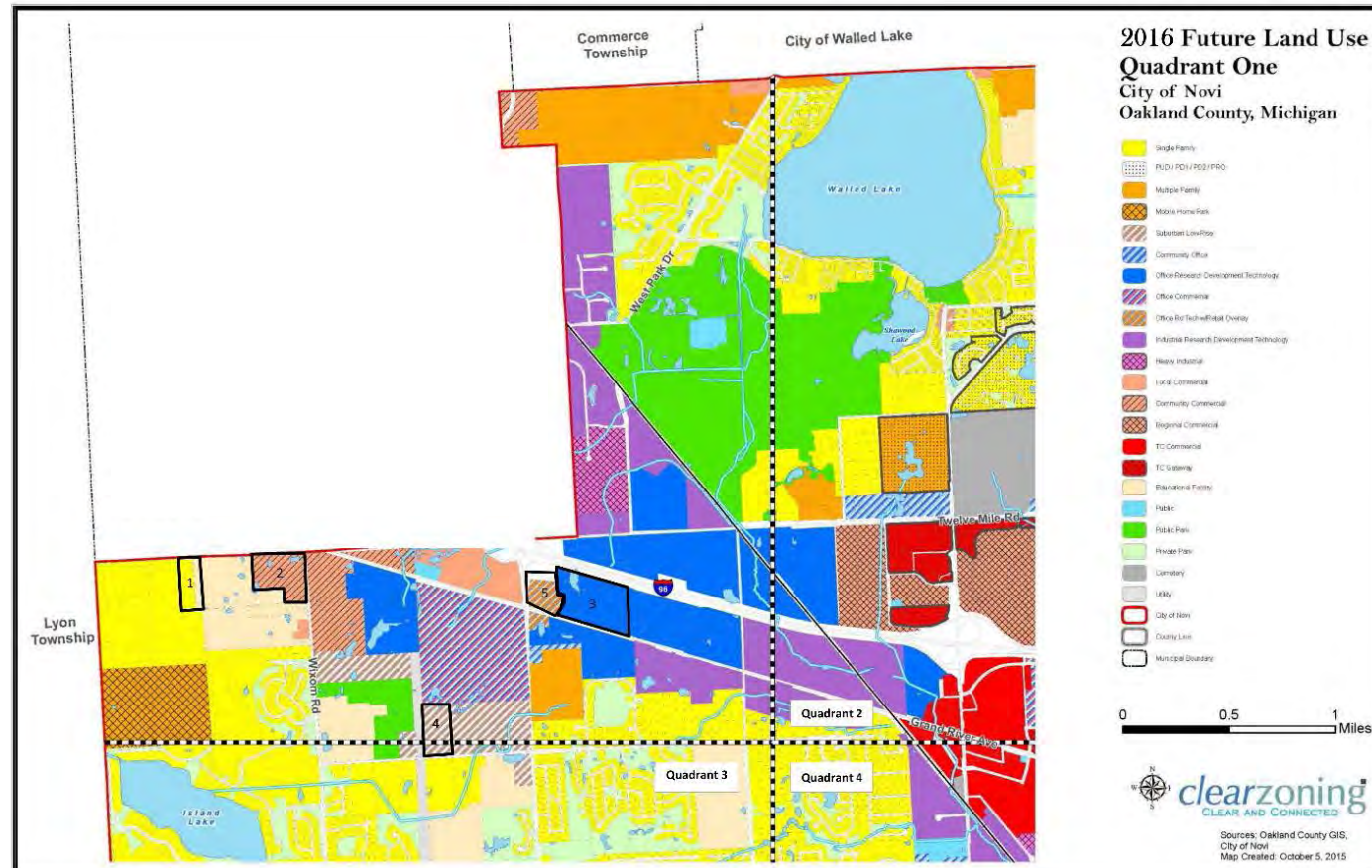
categorically by its local- community or regional character. Much of the regional commercial is located adjacent to Novi Road, an Arterial; north and south of I-96; with office and technology land uses along Grand River Avenue, Twelve Mile Road, and east of M5.

Industrial districts can be found along West Park Drive, Grand River Avenue, Ten Mile Road, Nine Mile Road, and at the intersection of Haggerty Road and Eight Mile Road. These uses not only vary in intensity and usage, but also in type of vehicular access needed, ranging from office buildings to sites with incoming and outgoing truck traffic, such as along the Non-Residential Collector of Heslip Drive and Venture Drive. Normally, collectors belong in a higher level of roadway hierarchy by virtue of their role in connecting local roads to arterials, plus the need for truck access. However, should the land use around any of the Non-Residential Collectors change in the future, the classification of these roads should be revisited.

3.2.3 Vacant Land

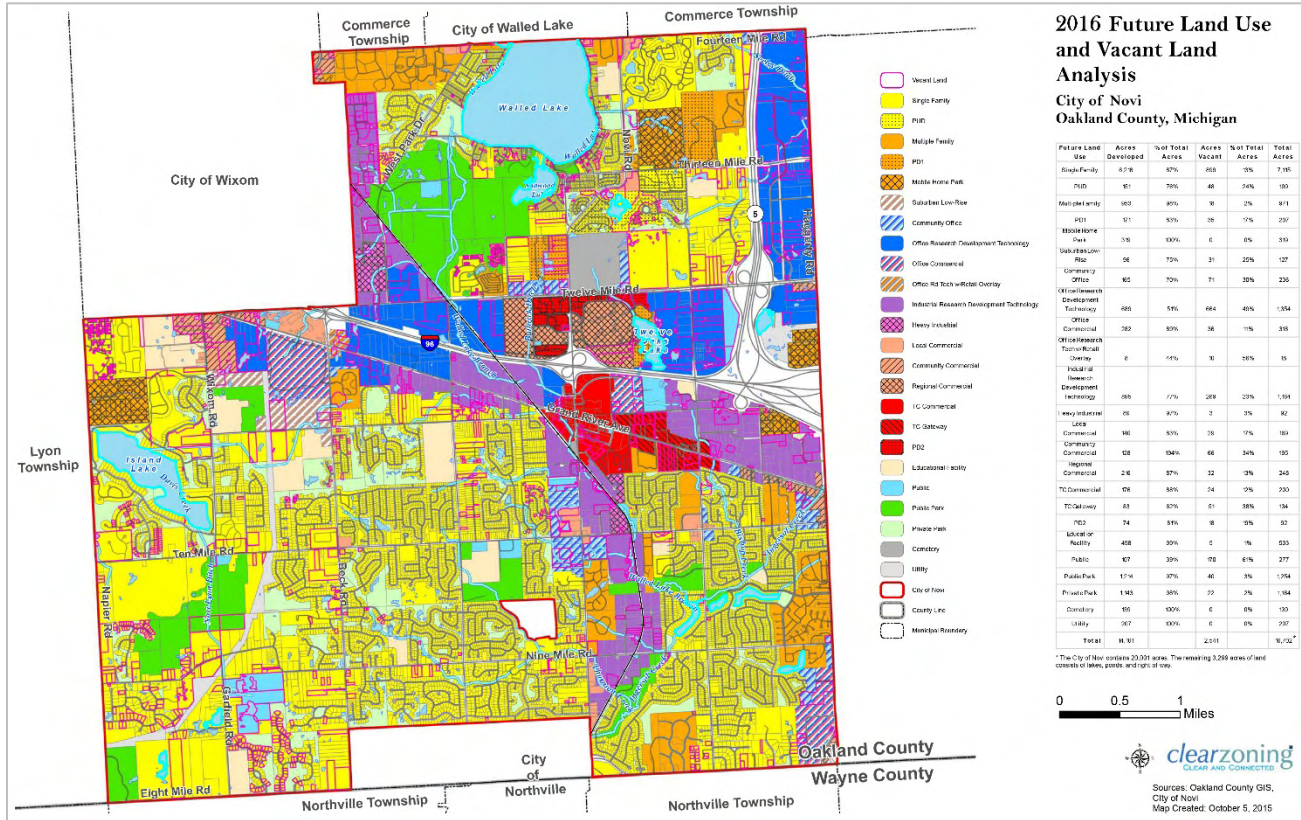
The City's 2016 Master Plan for Land Use indicates there are a number of parcels deemed "vacant land" (noted in pink on **Figure 12**). These do not include preserved lands on which no development is to occur. Most of the vacant parcels fall into one of four land categories: Single Family (899 acres), Office Research Development (674 acres), Industrial Research Development Technology (269 acres) or Public (170 acres). Of these areas, Office Research and Industrial Research have the most potential for traffic impact.

Figure 11. Preliminary 2016 Master Land Use Plan



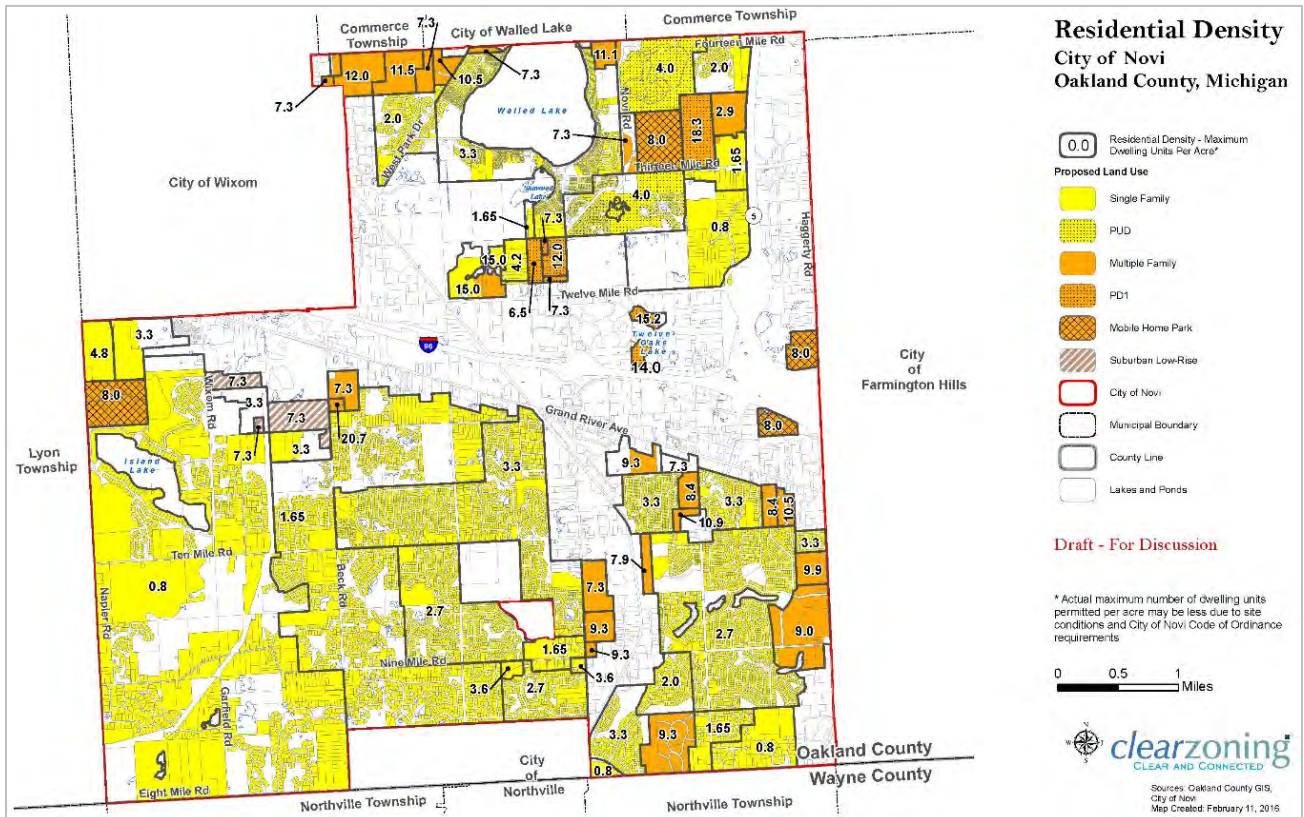
Source: City of Novi, Michigan

Figure 12. 2016 Future Land and Vacant Land Analysis



Source: City of Novi, Michigan

Figure 13. 2016 Residential Density



Source: City of Novi, Michigan

Vacant property designated for residential use is expected to be of medium to higher density. In those cases, the properties are already adjacent to and served by arterials. It should also be noted that while there are density limits, the actual development may have lower development densities due to individual characteristics of specific parcels.

Most of the vacant parcels designated Office Research are by arterial roadways. While these roadways may face future widening for expansion due to increased traffic, they are already categorized in a manner consistent with the proposed land use – expansion of these roadways would also be consistent with the long-range designations for these thoroughfares.

3.2.4 Scenic Routes

The Scenic Routes classification provides protection for roadways with distinctive or unique scenic qualities. Within Novi, these routes adjoin areas of very low densities or

areas of preservation for which no development is expected. Public input to the Thoroughfare Master Plan, and a review of past planning documents adopted by the City, also indicate a desire of the local community to preserve the nature of these roadways.

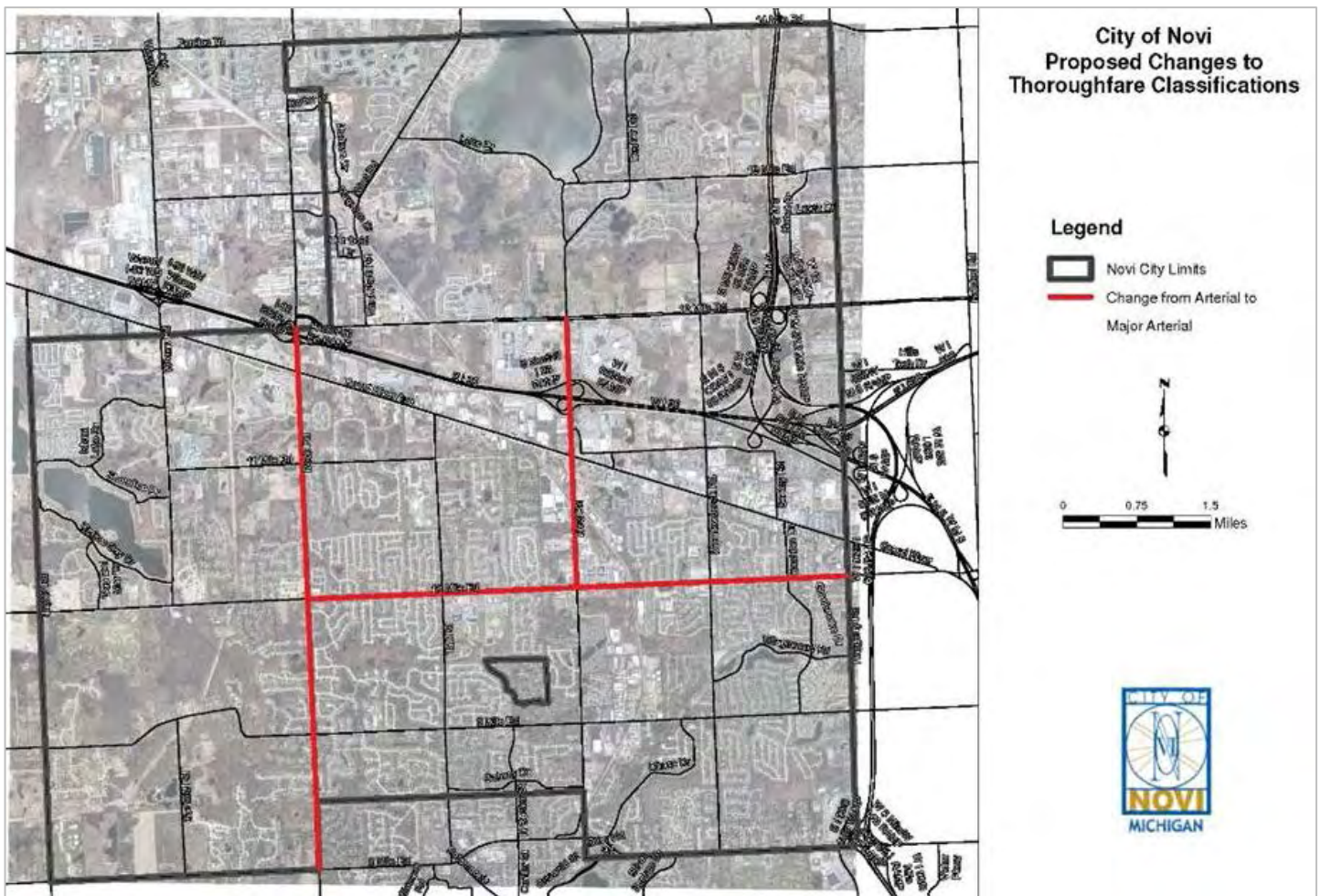
3.2.5 Future Roadways

In future residential or non-residential corridors, as noted on the future land use map, roadways traverse areas that, from adjoining land use, site access, and network connectivity standpoints, these roadways are appropriately designated as collectors as opposed to local roads.

4. Summary of Recommendations

- A. Based on the analysis, the following roadways should have changes in designation (**Figure 14**):
 1. **Beck Road** – All segments within Novi: Change from Arterial to Major Arterial
 2. **Ten Mile Road** – From Beck Road to Haggerty Road: Change from Arterial to Major Arterial
 3. **Novi Road** – From Twelve Mile Road to Ten Mile Road: Change from Arterial to Major Arterial
- B. All Residential Collectors should retain their current designation.
- C. All Scenic Routes should retain their current designation.
- D. All local roads should retain their current designation.

Figure 14. Proposed Changes to Thoroughfare Classifications



Source: The Corradino Group of Michigan, Inc.