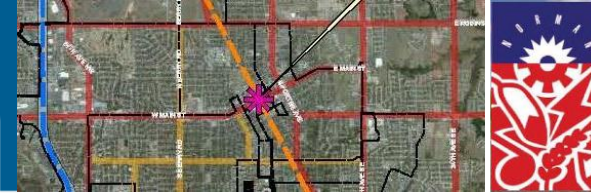


Norman Comprehensive Transportation Plan

TRANSPORTATION CONDITIONS

Sub-Committee Meeting
February 18, 2013

Agenda



6:00-6:30 Goals & Objectives Review and Existing Conditions

6:30-6:35 5 Minute Break

6:35-7:30 1 Hour Breakout Sessions

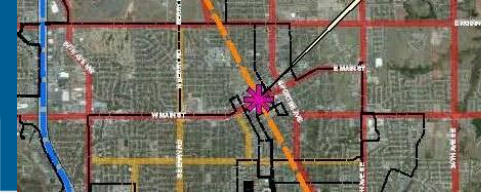
7:30-7:35 5 Minute Break

7:35-7:55 Modal Group Summaries

7:55-8:00 Next Steps

Meeting Goal: Obtain Sub-committee input to transportation system existing conditions.

Goals & Objectives Review



- Great Meeting Input
- Comments on e-Builder

separate objectives for:

- Core Norman
 - walkability
 - crossable streets
 - bikeable

- Rural Norman
 - safety for bicycling
 - trails
 - approach corridors

- Suburban (beyond)

- Downtown?

enhance improve

3. Guiding Principle: Maintain and Preserve Existing Infrastructure

Goal #3: Prioritize investments to ensure the maintenance, rehabilitation, safety and reconstruction of current infrastructure systems.

Objective #1: Design, operate and manage the transportation system to maintain and enhance transportation safety for those traveling in and living within the community.

Objective #2: Implement transportation performance measures to forecast, evaluate and manage the degree to which the transportation system investments accomplish community mobility objectives.

Objective #3: Strive to limit impacts of project implementation upon the health and safety of neighborhoods during construction.

Objective #4: Manage, reduce and avoid roadway congestion through targeted capacity enhancements, and promotion of making trips by transit.

2. Guiding Principle: Mobility

Goal #2: Manage, reduce and avoid roadway congestion by emphasizing multi-modal mobility and network management through operational improvements, and other strategies.

Objective #1: Invest in transit street improvements for a network of arterial roads in the area beyond the core of Norman that support the effective movement of vehicles around rather than through the central core of Norman, while accommodating bicycles and pedestrians as appropriate.

Objective #2: Invest in improvements to arterial and collector street network and parking provisions in the core of Norman that support the balanced mobility of pedestrians, bicyclists and vehicles.

Objective #3: Invest in proactive transit improvements that serve the central core of Norman at a High Level of Service with no parking in the city of Norman and providing connectivity to regional transit services with the intent to provide viable options to the personal vehicle.

Objective #4: Manage, reduce and avoid roadway congestion through operational improvements, targeted capacity enhancements, and promotion of making trips by transit.

Objective #5: Serve as leader in regional transit discussions.

Consider complete streets policy for all roadway project

Create a ~~Freeway~~ bicycle and pedestrian links network not necessarily connected to roadways.

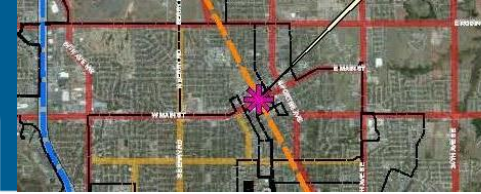


1. Guiding Principle: A Special Place to Live

Goal #1: Provide a transportation system planned and designed with people and places in mind, and provided with amenities and aesthetic treatments that enhance the traveling experience for all modes of transportation.

- Objective S1.** Adopt policies and ordinances and create programs that promote multimodal and context sensitive considerations and aesthetics into the planning and project funding of transportation facilities in Norman.
- Objective S2.** Institute departmental processes and procedures to ensure context sensitive solutions for design and implementation of transportation corridors and facilities in Norman.
- Objective S3.** Provide transportation investments that help enhance the traffic access and circulation, walkability, bikeability, aesthetics and amenities of the central core of Norman including Downtown, Campus Corner, OU, and surrounding neighborhoods.
- Objective S4.** Enhance the aesthetics of the section line roadway corridors that lead residents and visitors to the central core of Norman and to significant attractions in Norman such as Thunderbird Lake.
- Objective S5.** Invest in improvements to minimize the impacts of railroad delay and noise through Norman.
- Objective S6.** Provide a wayfinding system of signage, markers and other devices to inform visitors and residents of the special areas and attractions in Norman.

Goals & Objectives Review



2. Guiding Principle: *Mobility*

Goal #2: Manage, reduce and avoid roadway congestion by emphasizing multi-modal options and network management through operational improvements, and other strategies.

Objective M1. Invest in timely street improvements for a network of section line roads in the area beyond the core of Norman that support the effective movement of vehicles around rather than through the central core of Norman, while accommodating bicyclists and pedestrians as appropriate.

Objective M2. Invest in improvements to arterial and collector street network and parking provisions in the core of Norman that support the balanced mobility of pedestrians, bicyclists and vehicles.

Objective M3. Invest in proactive transit improvements that serve the central core of Norman at a high Level of Service while serving targeted areas of the city of Norman and providing connectivity to regional transit services with the intent to provide viable options to the personal vehicle.

Objective M4. Serve as leaders in regional rail transit discussions.

Objective M5. Provide a network of bicycle and pedestrian facilities, using street and separate rights-of-way that provide mobility options and recreational opportunities for Norman residents.



3. Guiding Principle: *Maintain and Improve Existing Infrastructure*

Goal #3: Prioritize investments to ensure the maintenance, rehabilitation, safety and reconstruction of current infrastructure systems.

Objective P1. Design, operate and manage the transportation system to maintain or improve the quality of multimodal mobility, access and safety for those traveling in and living within Norman.

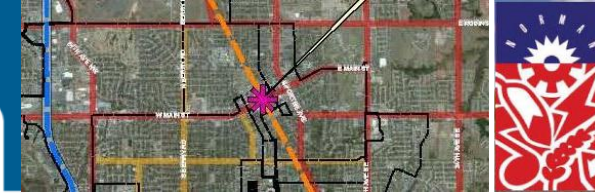
Objective P2. Develop and implement transportation performance measures to regularly monitor, evaluate, and forecast the degree to which the transportation system investments accomplish community goals and mobility objectives.

Objective P3. Minimize the impacts of project implementation upon the multimodal access to businesses and neighborhoods during construction.

Objective P4. Manage, reduce and avoid roadway congestion through operational improvements, targeted capacity enhancements, and promotion of making trips by transit.

Objective P5. Develop and promote programs to incorporate public and business observations of and assistance with the conditions assessment and maintenance of the multimodal transportation infrastructure and corridor amenities.

Goals & Objectives Review



4. Guiding Principle: *Fiscal Stewardship*

Goal #4: Optimize the use of City of Norman funds and leverage additional funding for transportation to maximize the Norman public return on investment in transportation infrastructure and operations.

- Objective F1.** On an ongoing basis, identify and pursue private, regional, state and federal revenue sources for funding **multimodal** transportation improvements in Norman.
- Objective F2.** On an ongoing basis, integrate state and federal long-range transportation planning factors with local and regional transportation planning to maximize future funding opportunities for surface transportation projects in Norman.
- Objective F3.** On a monthly basis as needed, provide transparency and meaningful public awareness, ongoing citizen input, and participation opportunities to prepare the Norman CTP and its long-term implementation process.
- Objective F4.** On an ongoing basis, plan for and preserve rights-of-way for future **multimodal** transportation investments in advance of economic development.
- Objective F5.** Develop a policy and programs for city consideration of private/public partnerships and donations to fund transportation infrastructure, amenities and aesthetics.
- Objective F7.** Create and implement tax assessments for transportation and supporting improvements associated with special initiatives, including bridge repair and rail transit.

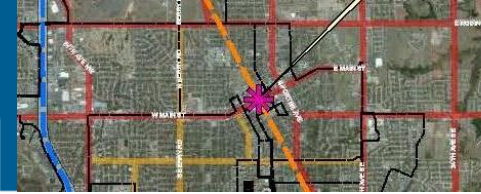


5. Guiding Principle: *Enhance Economic Vitality*

Goal #5: Invest in transportation improvements that support the physical and economic vitality of Norman's neighborhoods, **businesses**, employment and education districts.

- Objective F1.** Provide mobility for **people who live, work and visit Norman** - especially those who are economically, socially or physically challenged - in order to support their full participation in society and contributions to Norman's economic productivity.
- Objective F2.** Initiate and promote a managed parking system(s) and/or district(s) to support and encourage increased activity and density of development within the core of Norman and specifically to address the needs of Downtown, **Campus Corner** and OU, parking management for the adjacent neighborhoods.
- Objective F3.** Provide for effective trucking, railroad and air freight movement to, from and through Norman while minimizing their impact on the quality of life, specifically in the core of Norman.
- Objective F4.** Identify and promote land development strategies and suitable locations to maximize and support multi-modal development, such as mixed-use districts and transit oriented **development**, that maximize the benefits of transit investments.
- Objective F5.** Identify and implement policies and programs to support and incentivize development initiatives within the city by establishment of special districts (e.g. TIF, PID, **MMD**) for use in timely implementation of transportation improvements.
- Objective F6.** Identify and implement policies and programs to streamline the project development process to reduce time to implement transportation improvements.
- Objective F7.** On an on-going basis, plan for and preserve rights-of-way for future multimodal transportation and supporting infrastructure investments in advance of economic development.

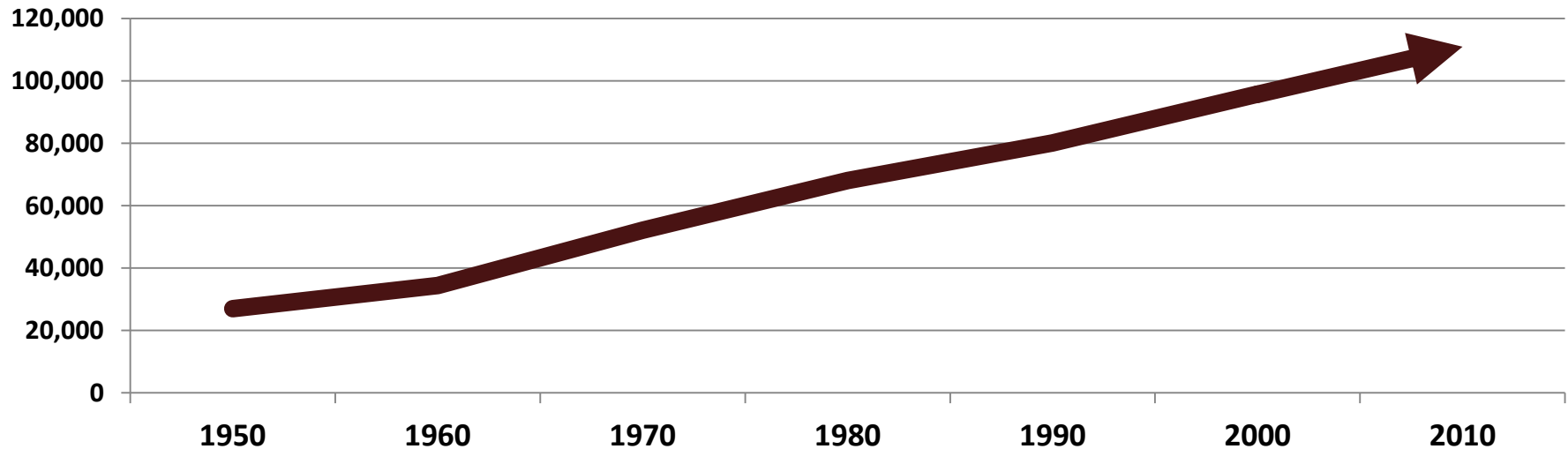
Existing Conditions Population and Employment



Year	Population	Numeric Change	Percent Change
1950	27,006	-	-
1960	34,412	7,406	27.4%
1970	52,117	17,705	51.5%
1980	68,020	15,903	30.5%
1990	80,071	12,051	17.7%
2000	95,694	15,623	19.5%
2010	110,925	15,231	15.9%

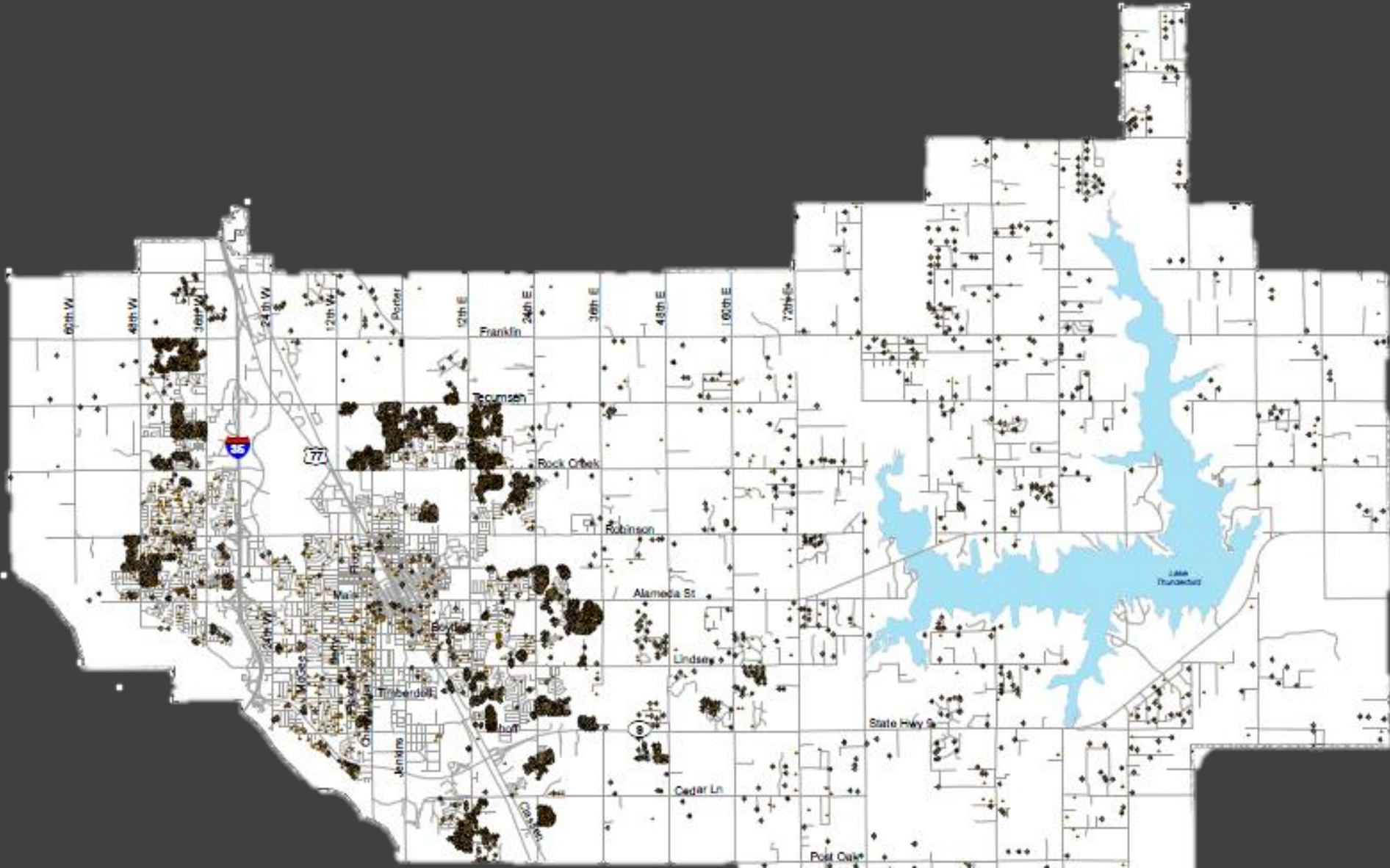
Year	Employment Projections	CAGR
2005	59,002	1.85%
2015	70,872	
2025	85,130	
2035	102,298	

Population Projections			
Year	1.50%	Norman 2025	ACOG
2015	119,497	120,152	121,120
2025	136,682	137,147	137,548
2035	160,946	156,518	156,173



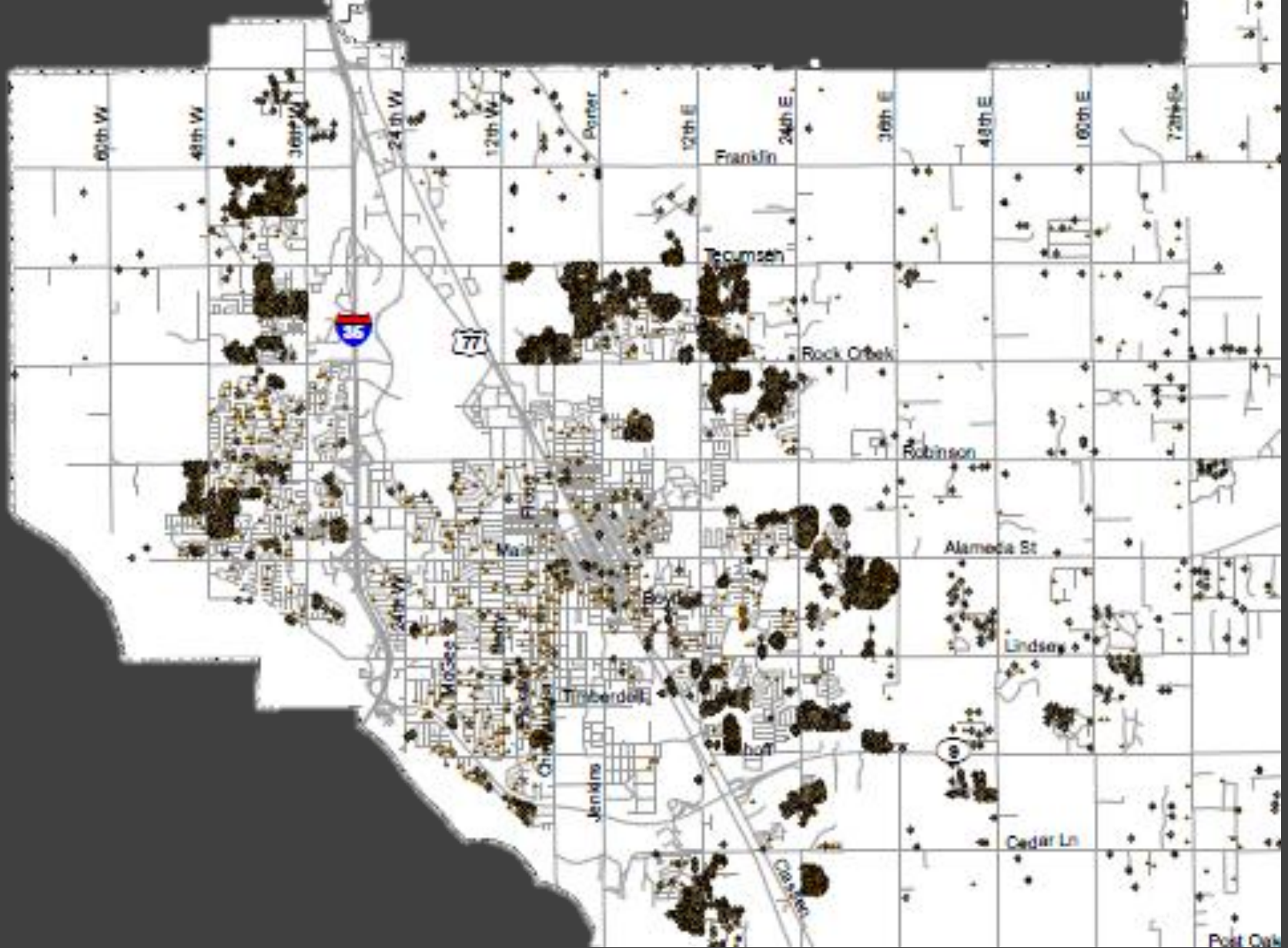
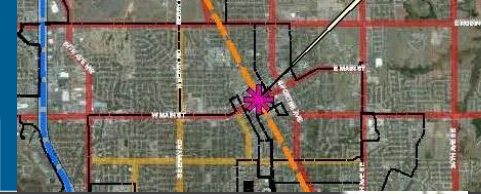
Existing Conditions

2002-2011 Residential Building Permits

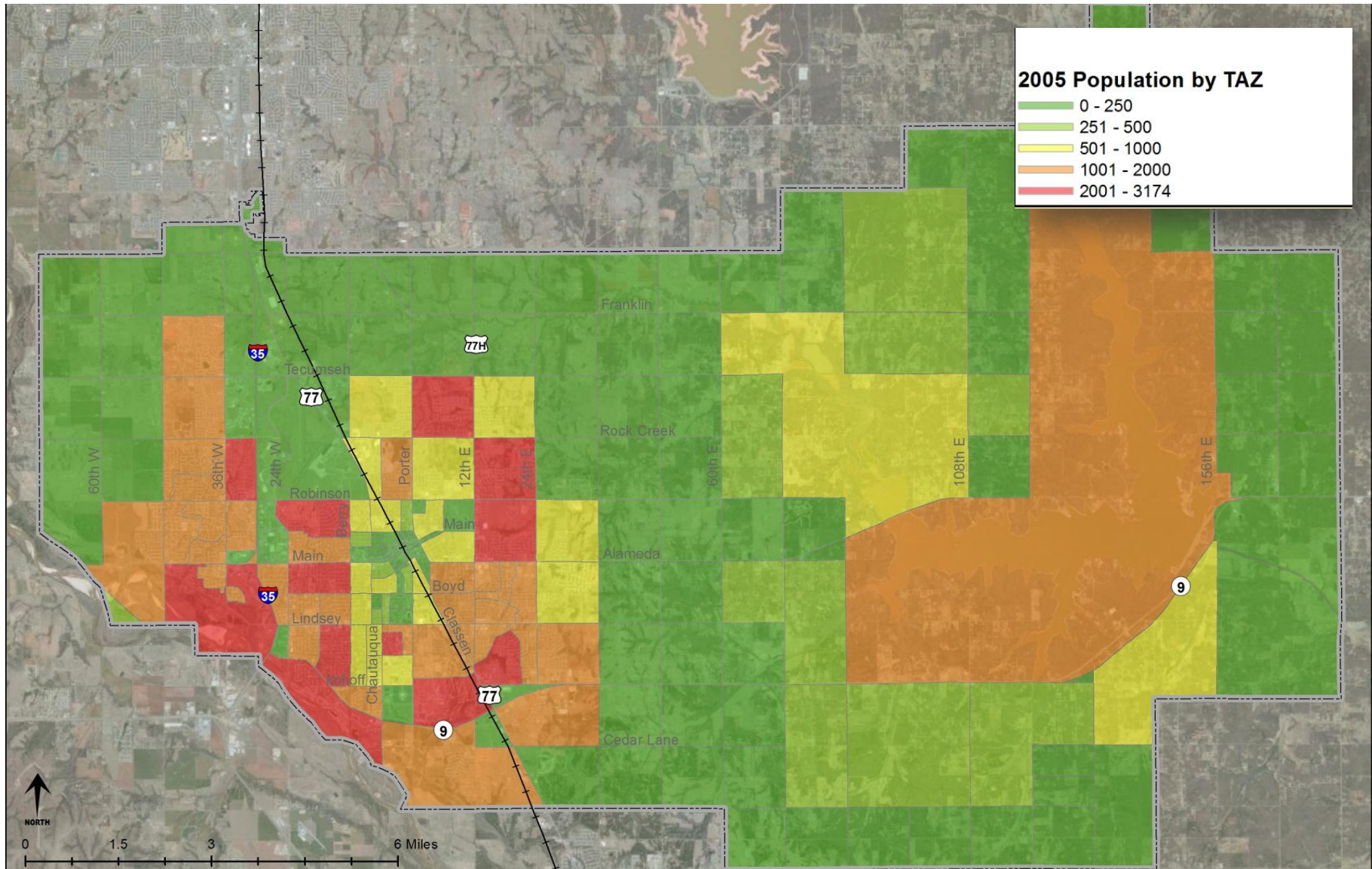
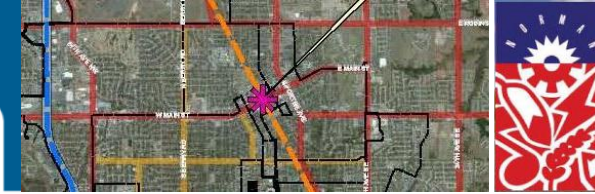


Existing Conditions

2002-2011 Residential Building Permits

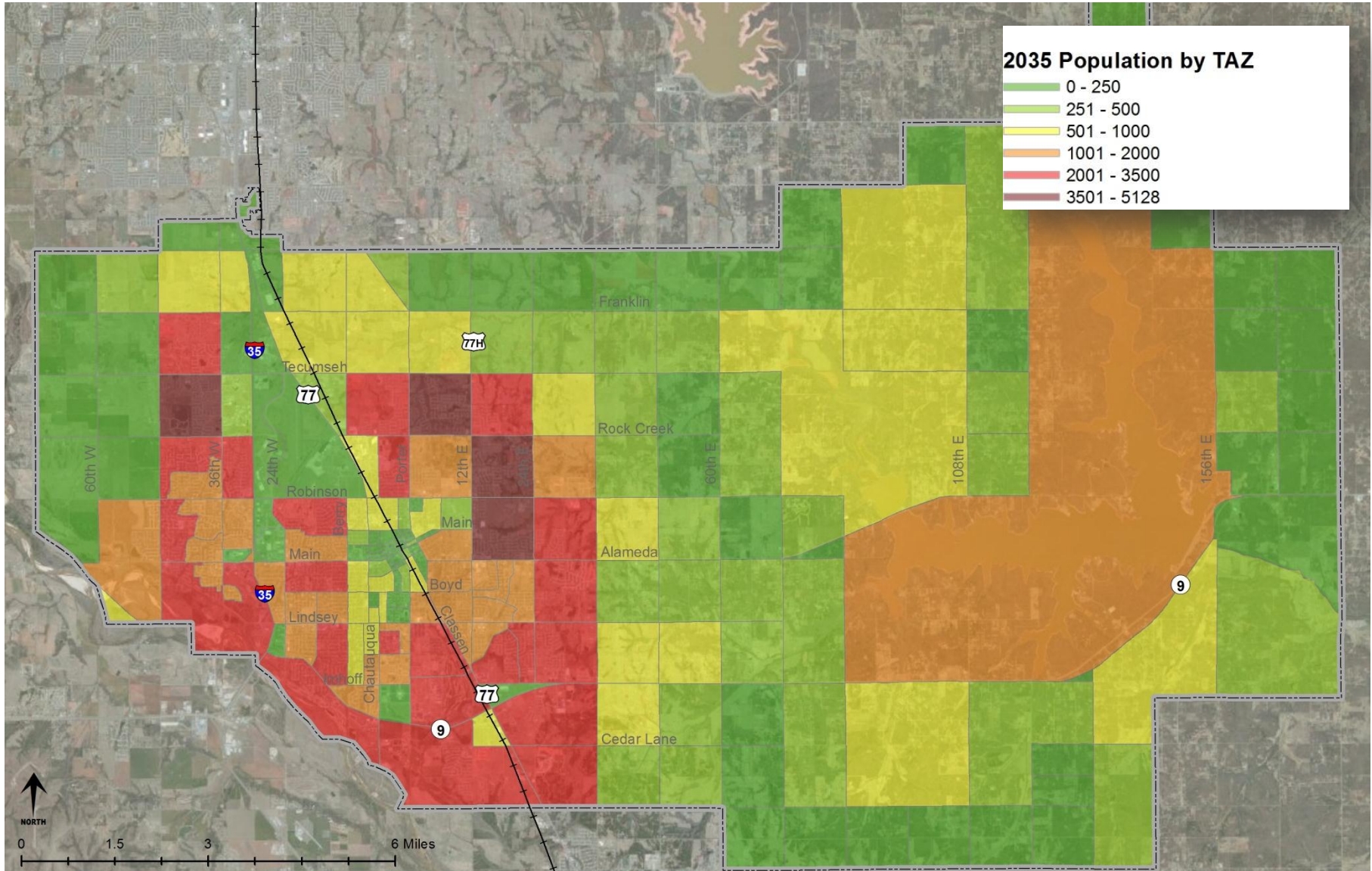


Existing Conditions 2005 Population by TAZ (ACOG)



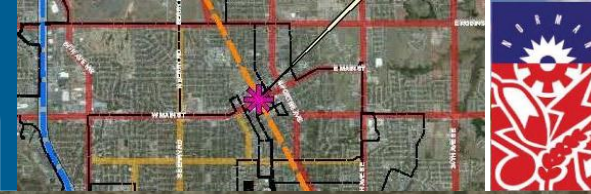
Existing Conditions

2035 Population by TAZ (ACOG)



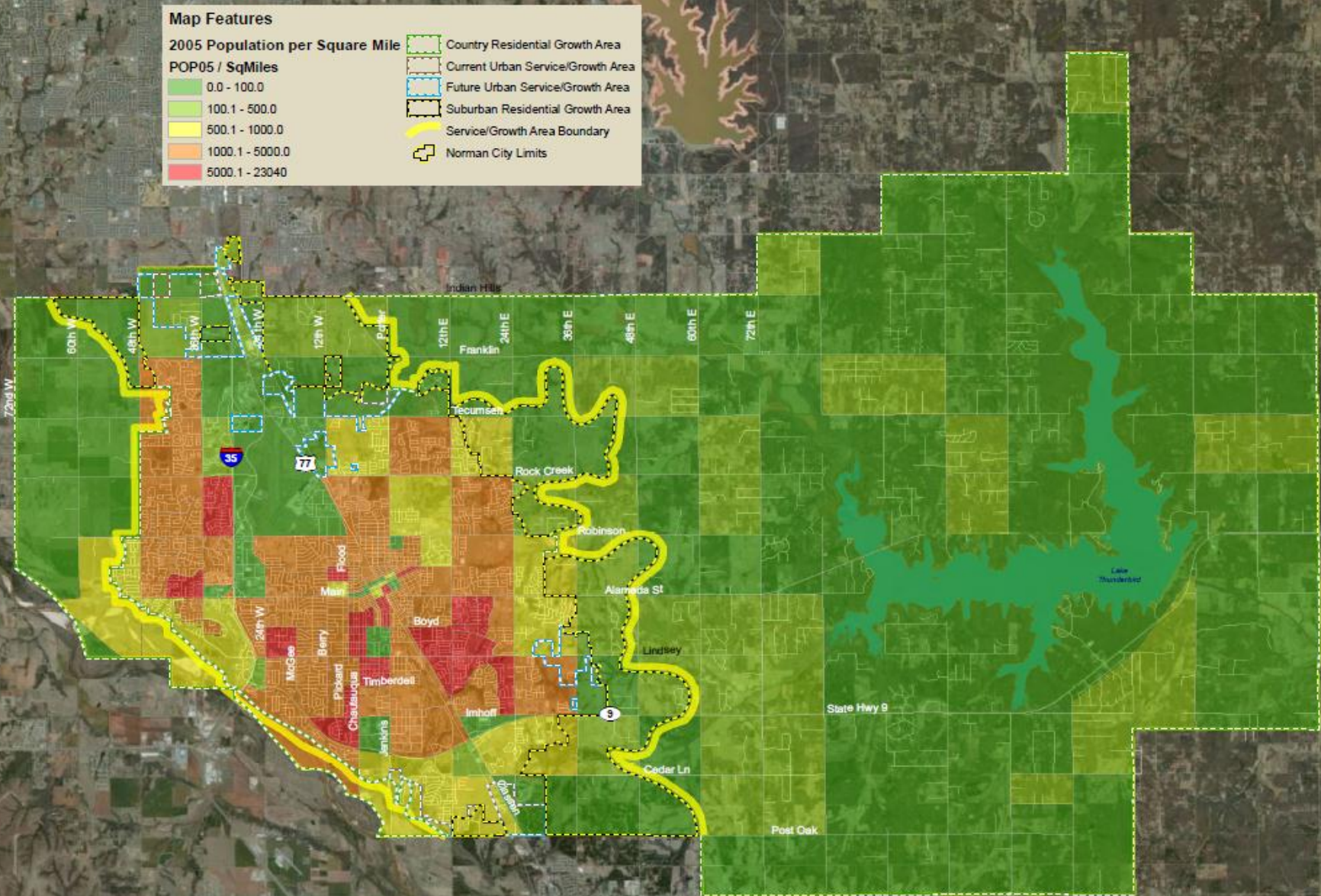
Existing Conditions

2005 Population Density (ACOG)



Map Features

2005 Population per Square Mile		Country Residential Growth Area
POP05 / SqMiles		Current Urban Service/Growth Area
0.0 - 100.0	(Light Green)	Future Urban Service/Growth Area
100.1 - 500.0	(Medium Green)	Suburban Residential Growth Area
500.1 - 1000.0	(Yellow)	Service/Growth Area Boundary
1000.1 - 5000.0	(Orange)	Norman City Limits
5000.1 - 23040	(Red)	

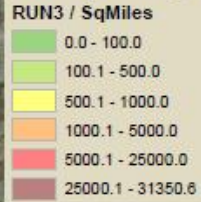


Existing Conditions 2035 Population Density (ACOG)

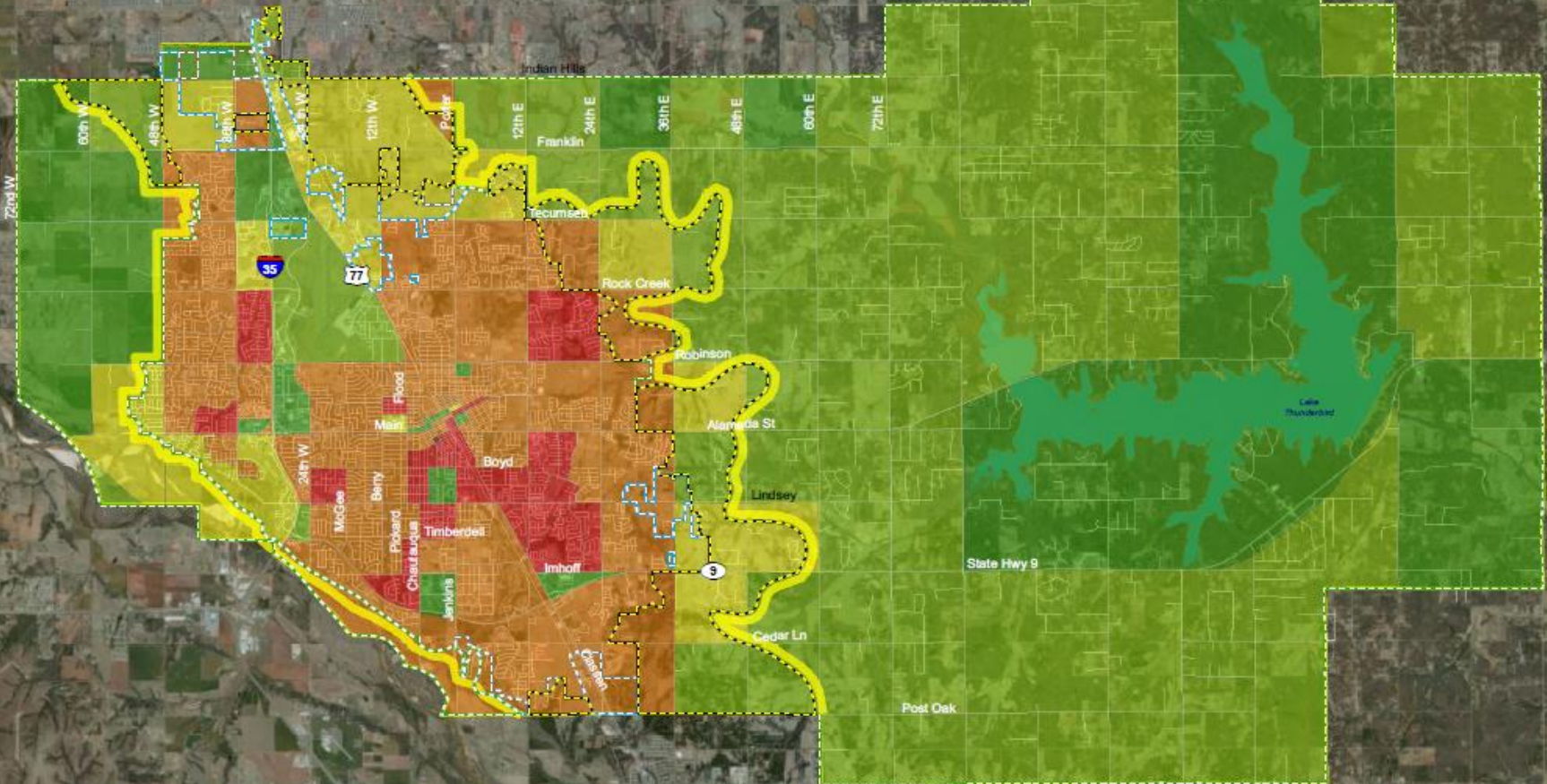


Map Features

2035 Population per Square Mile

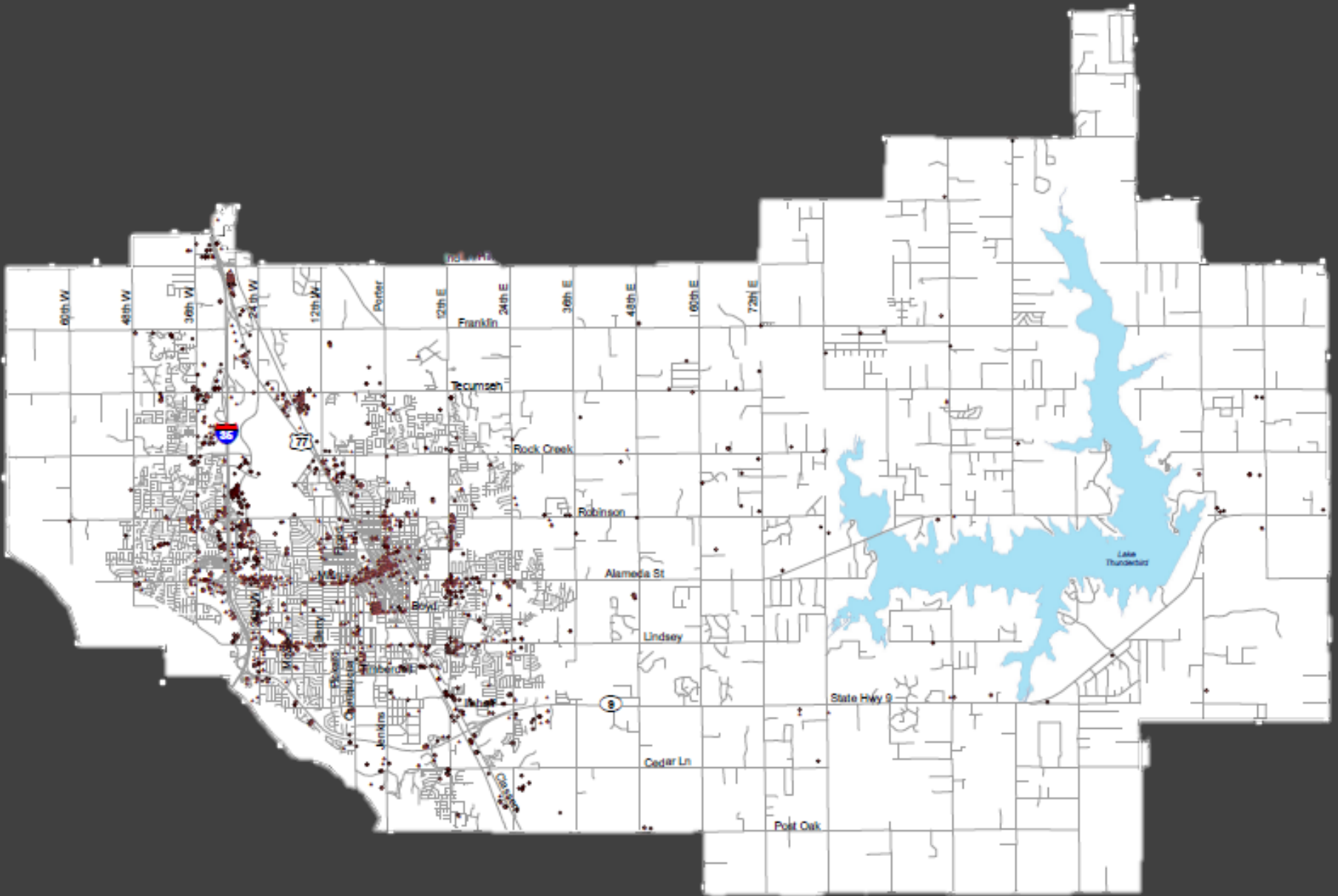


- Country Residential Growth Area
- Current Urban Service/Growth Area
- Future Urban Service/Growth Area
- Suburban Residential Growth Area
- Service/Growth Area Boundary
- Norman City Limits



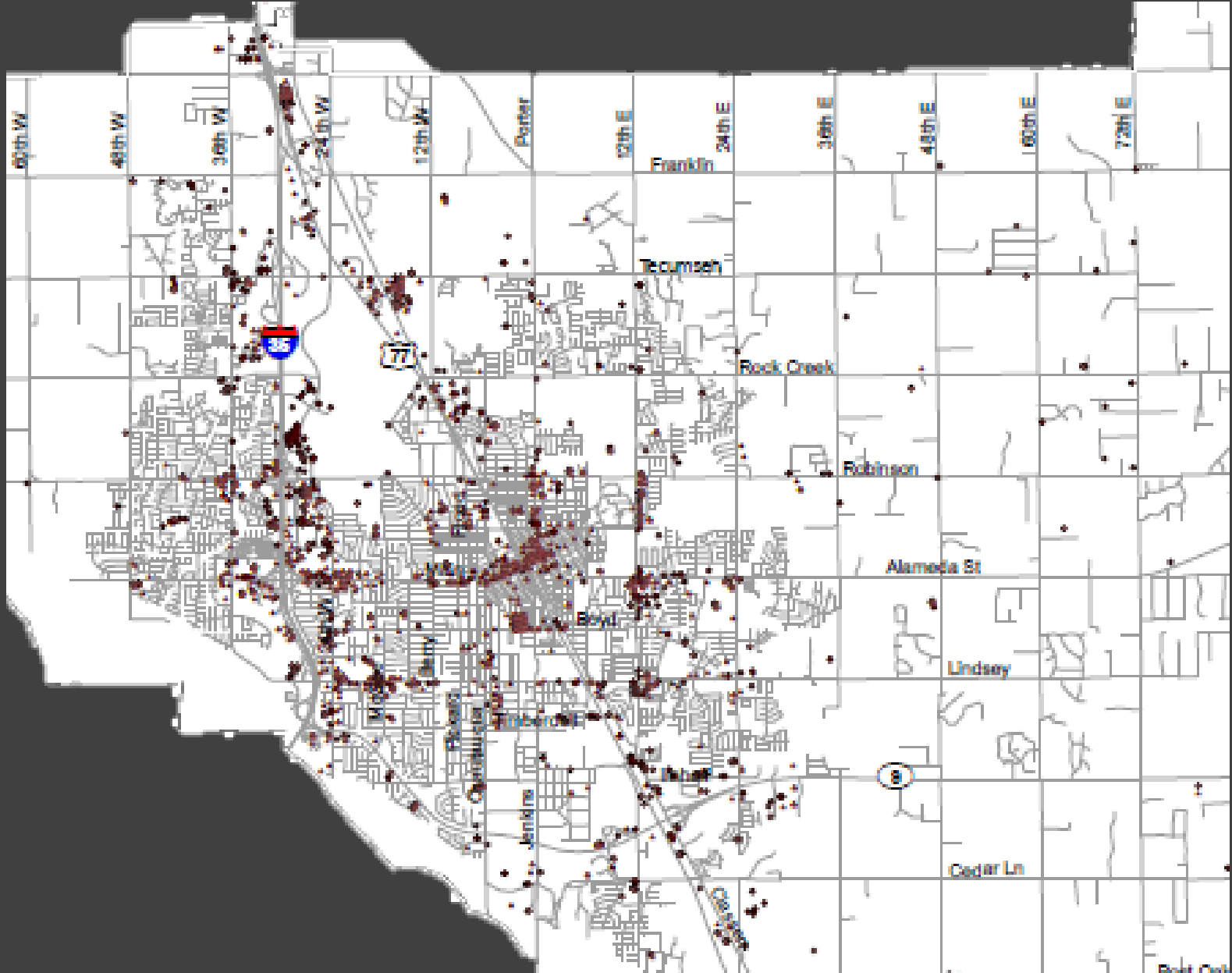
Existing Conditions

2002-2011 Commercial Building Permits



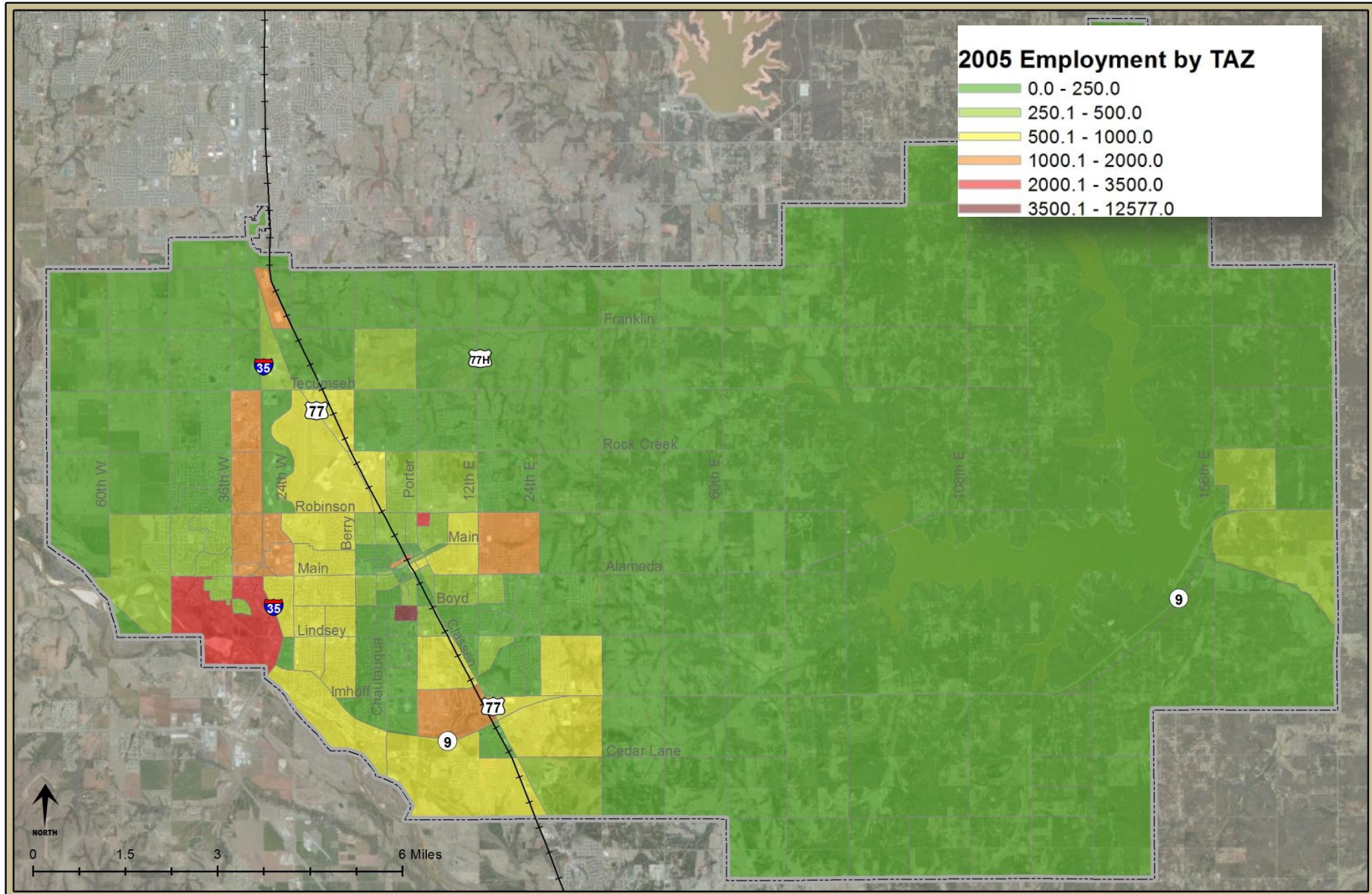
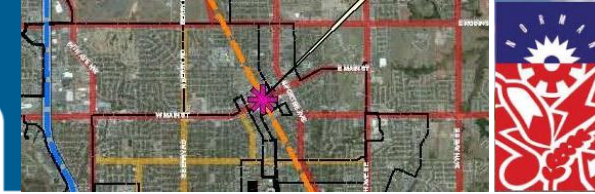
Existing Conditions

2002-2011 Commercial Building Permits



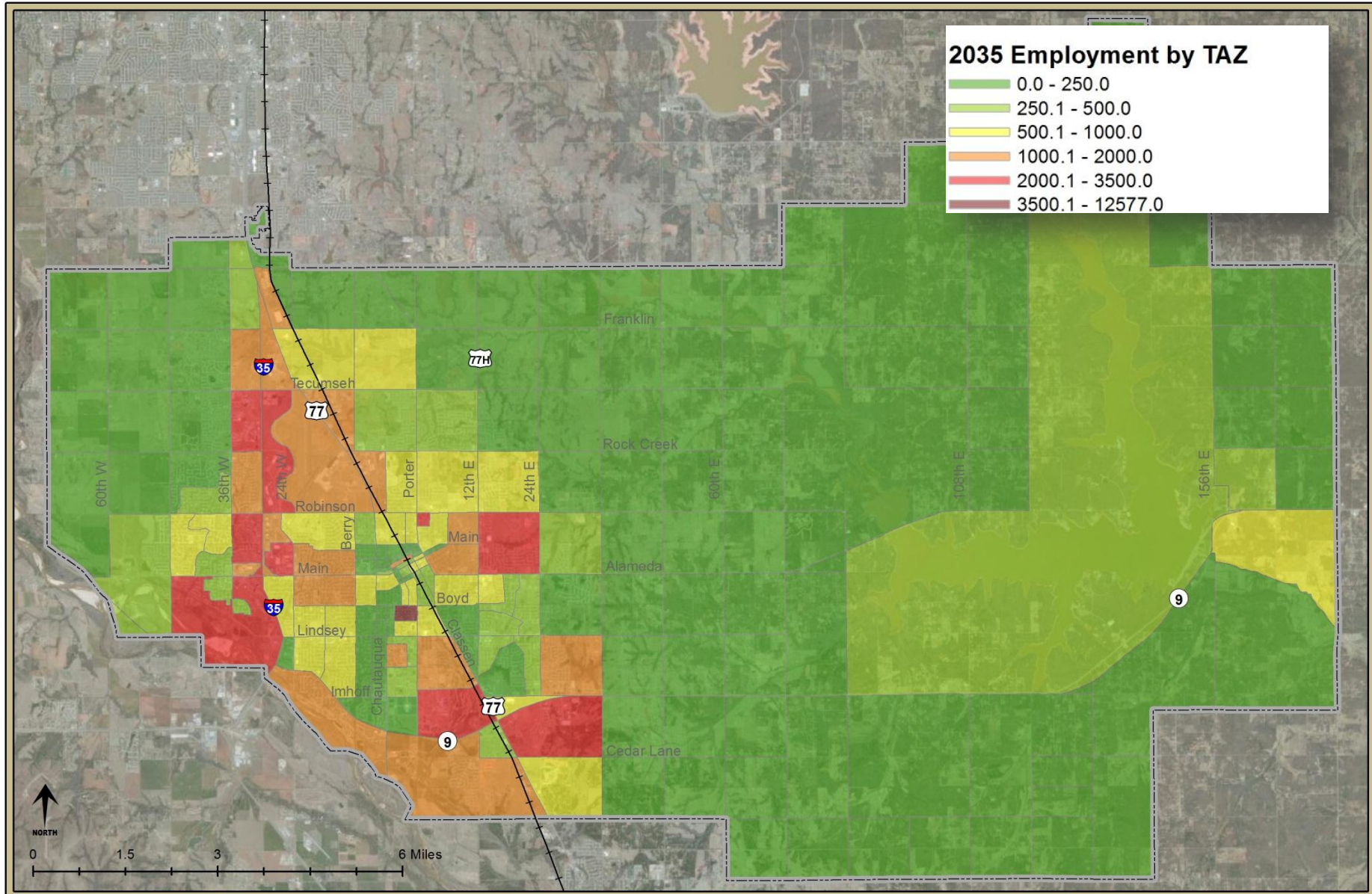
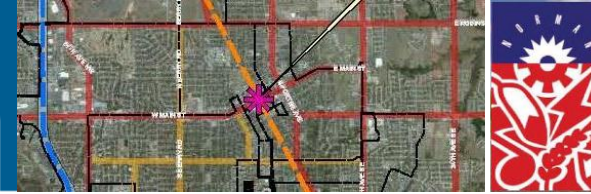
Existing Conditions

2005 Employment by TAZ (ACOG)



Existing Conditions

2035 Employment by TAZ (ACOG)



Existing Conditions

2005 Employment Density



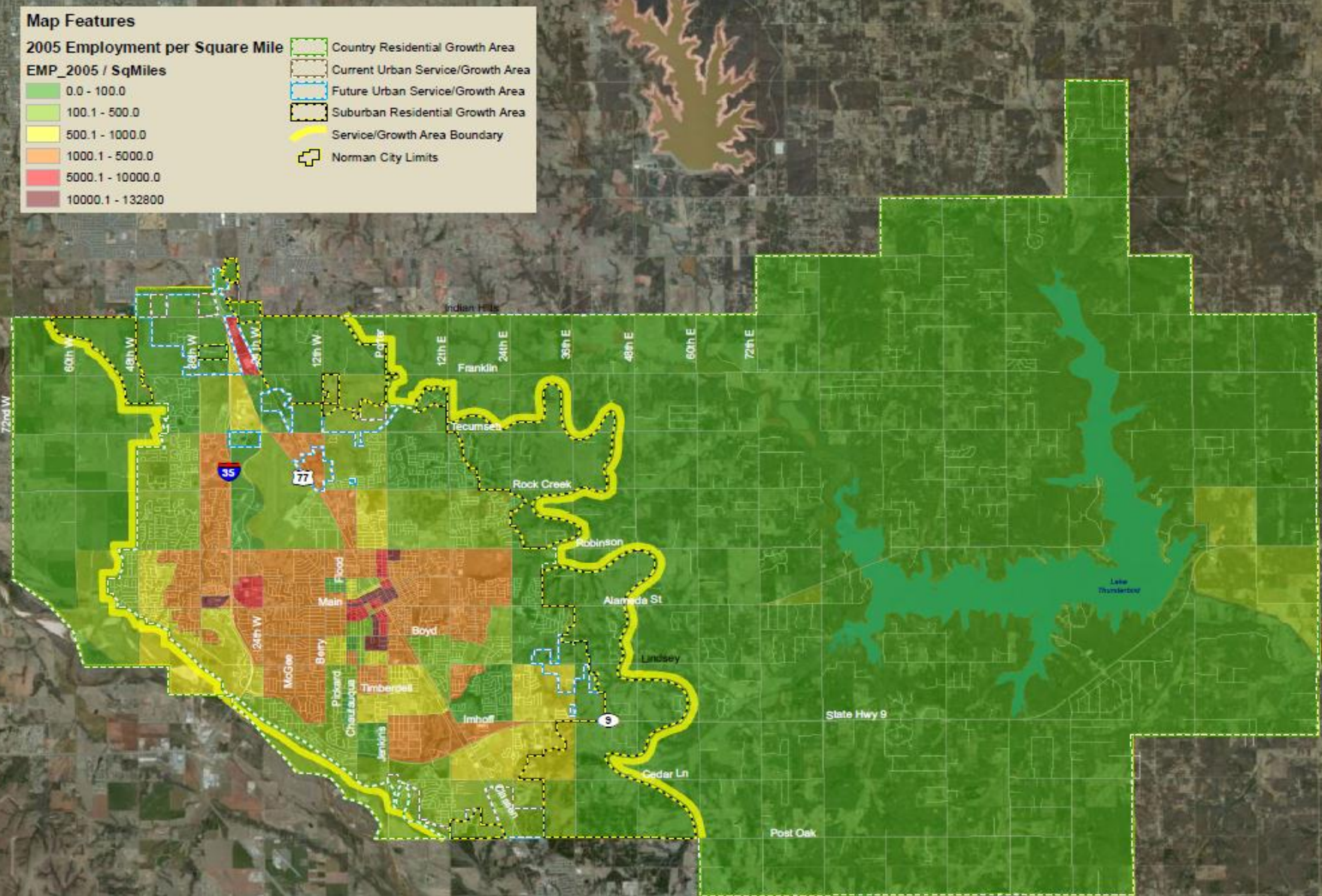
Map Features

2005 Employment per Square Mile

EMP_2005 / SqMiles

- 0.0 - 100.0
- 100.1 - 500.0
- 500.1 - 1000.0
- 1000.1 - 5000.0
- 5000.1 - 10000.0
- 10000.1 - 132800

- Country Residential Growth Area
- Current Urban Service/Growth Area
- Future Urban Service/Growth Area
- Suburban Residential Growth Area
- Service/Growth Area Boundary
- Norman City Limits



Existing Conditions 2035 Employment Density



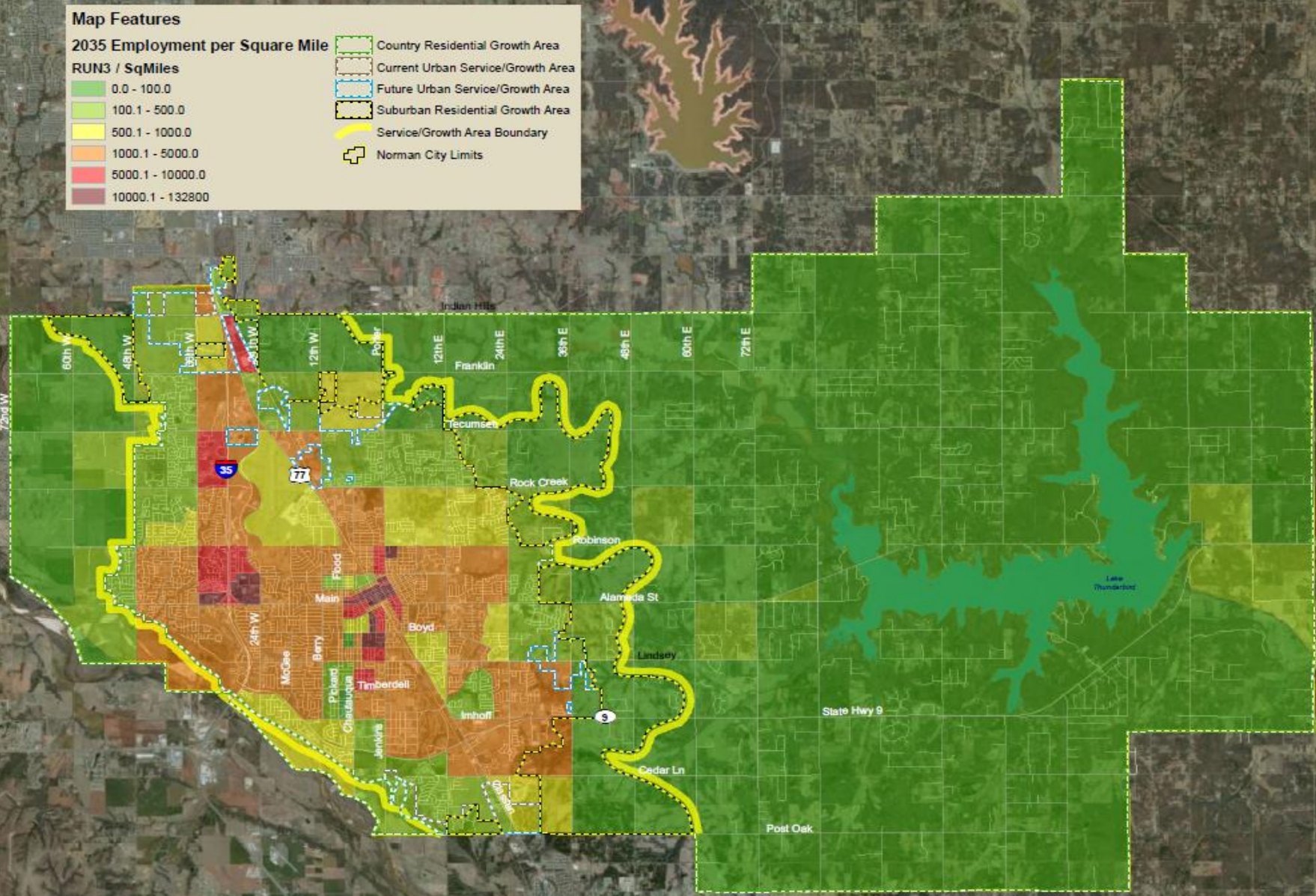
Map Features

2035 Employment per Square Mile

RUN3 / SqMiles

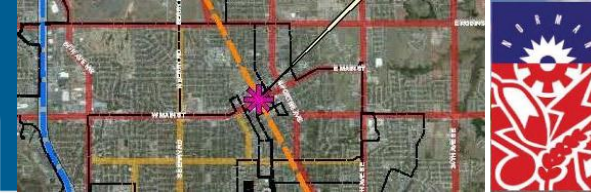
- 0.0 - 100.0
- 100.1 - 500.0
- 500.1 - 1000.0
- 1000.1 - 5000.0
- 5000.1 - 10000.0
- 10000.1 - 132800

- Country Residential Growth Area
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- Service/Growth Area Boundary
- Norman City Limits



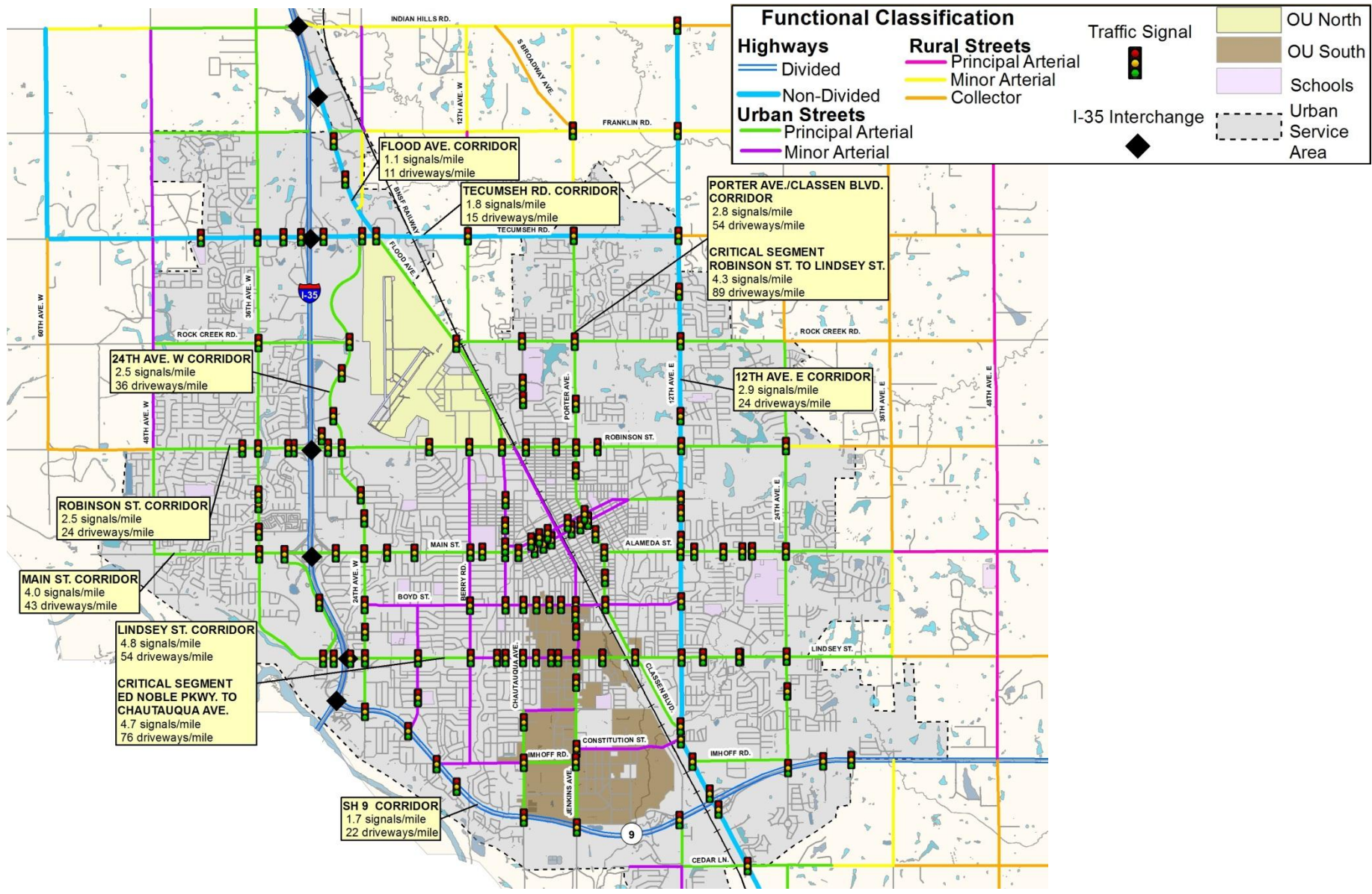
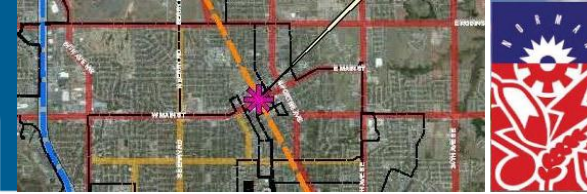
Existing Conditions

Major Topic Areas



- Roadway Network
- Access Management
- Traffic Volumes
- Congestion-Major Corridors
- Roadway Safety
- Parking Inventory
- Freight
- Aviation
- Roadway Inventory & Maintenance
- System Improvements
- Bike & Pedestrian Accommodations
- Transit Service

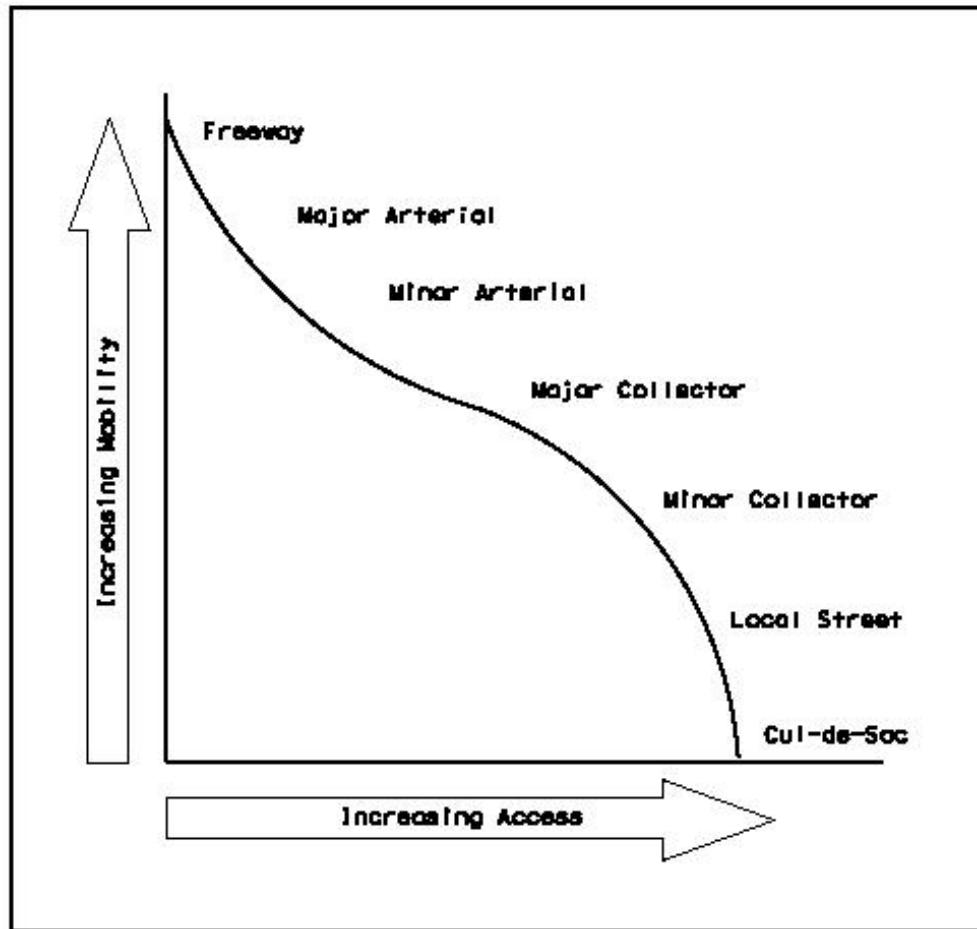
Existing Conditions Roadway Network



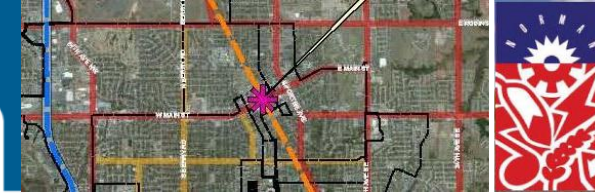
Existing Conditions Roadway Network



Balancing the Competing Demands of Mobility and Access



Existing Conditions Access Management

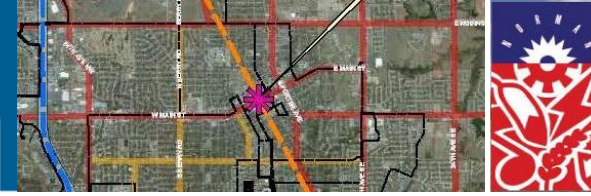


Existing Impediments

- Number and spacing of traffic signals
- Inefficient signal timings
- High number of access points
- Lack of turn lanes
- Lack of median presence
- Poor geometrics

Route	Segment	Distance	# of Signals	Signals / Mile	# of Driveways	Driveways / Mile
SH 9	I-35 to S Jenkins Road	2.5	6	2.4	12	4.8
	S Jenkins Road to 24th Ave E	2.2	2	0.9	10	4.5
	Total	4.7	8	1.7	22	4.7
Lindsey Street	Ed Noble Parkway to S Berry Rd	1.4	6	4.3	101	72.1
	S Berry Rd to Chataouqua Ave	0.5	3	6.0	43	86.0
	Chataouqua Ave to Classen Blvd	1.1	8	7.5	23	21.5
	Classen Blvd to 24th Ave E	1.4	4	2.8	69	48.3
	Total	4.4	21	4.8	236	53.6
Main Street	48th Ave W to 36th Ave W	1.0	1	1.0	27	27.0
	36th Ave W to 24th Ave W	1.0	3	3.0	33	33.0
	24th Ave W to University Blvd	1.6	7	4.3	97	59.9
	University Blvd to Porter Ave	0.6	6	10.0	23	38.3
	Total	4.2	17	4.0	180	42.7
Robinson Street	48th Ave W to 36th Ave W	1.0	2	2.0	26	26.0
	36th Ave W to 24th Ave W	0.8	4	5.0	16	20.0
	24th Ave W to Porter Ave	2.2	6	2.7	47	21.4
	Porter Ave to 24th Ave E	2.0	3	1.5	53	26.5
	Total	6.0	15	2.5	142	23.7
24th Ave W	Tecumseh Rd to Robinson St	2.3	5	2.2	18	8.0
	Robinson St to SH 9	2.6	7	2.7	154	60.4
	Total	4.8	12	2.5	172	35.8
12th Ave E	Tecumseh Rd to Robinson St	2.0	5	2.5	32	16.0
	Robinson St to Alameda St	1.0	4	4.0	27	27.0
	Alameda St to Classen Blvd	1.7	3	1.8	45	27.3
	Classen Blvd to SH 9	0.9	4	4.7	26	30.6
	Total	5.5	16	2.9	130	23.6
Porter Ave / Classen Blvd	Tecumseh Rd to Robinson St	2.0	4	2.0	63	31.5
	Robinson St to Alameda St	1.1	5	4.8	97	92.4
	Alameda St to Lindsey St	1.1	4	3.8	89	84.8
	Lindsey St to 12th Ave	0.9	1	1.1	21	23.3
	Total	5.0	14	2.8	270	54.0
Flood Ave	I-35 to Robinson Street	3.6	4	1.1	38	10.7
	Total	3.6	4	1.1	38	10.7
Tecumseh Rd	48th Ave W to 36th Ave W	1.0	1	1.0	30	30.0
	36th Ave W to 12th Ave W	2.0	6	3.0	30	15.0
	12th Ave W to 12th Ave E	2.0	2	1.0	14	7.0
	Total	5.0	9	1.8	74	14.8

Existing Conditions Access Management



Effects of Signals on Traffic

Signals Per Mile	Increase in Travel Time (%)	Crashes Per Million Vehicles Miles Traveled
2	--	3.53
3	9	6.89
4	16	
5	23	7.49
6	29	
7	34	9.11
8	39	

Source: FHWA Access Management Brochure and NCHRP Report 420

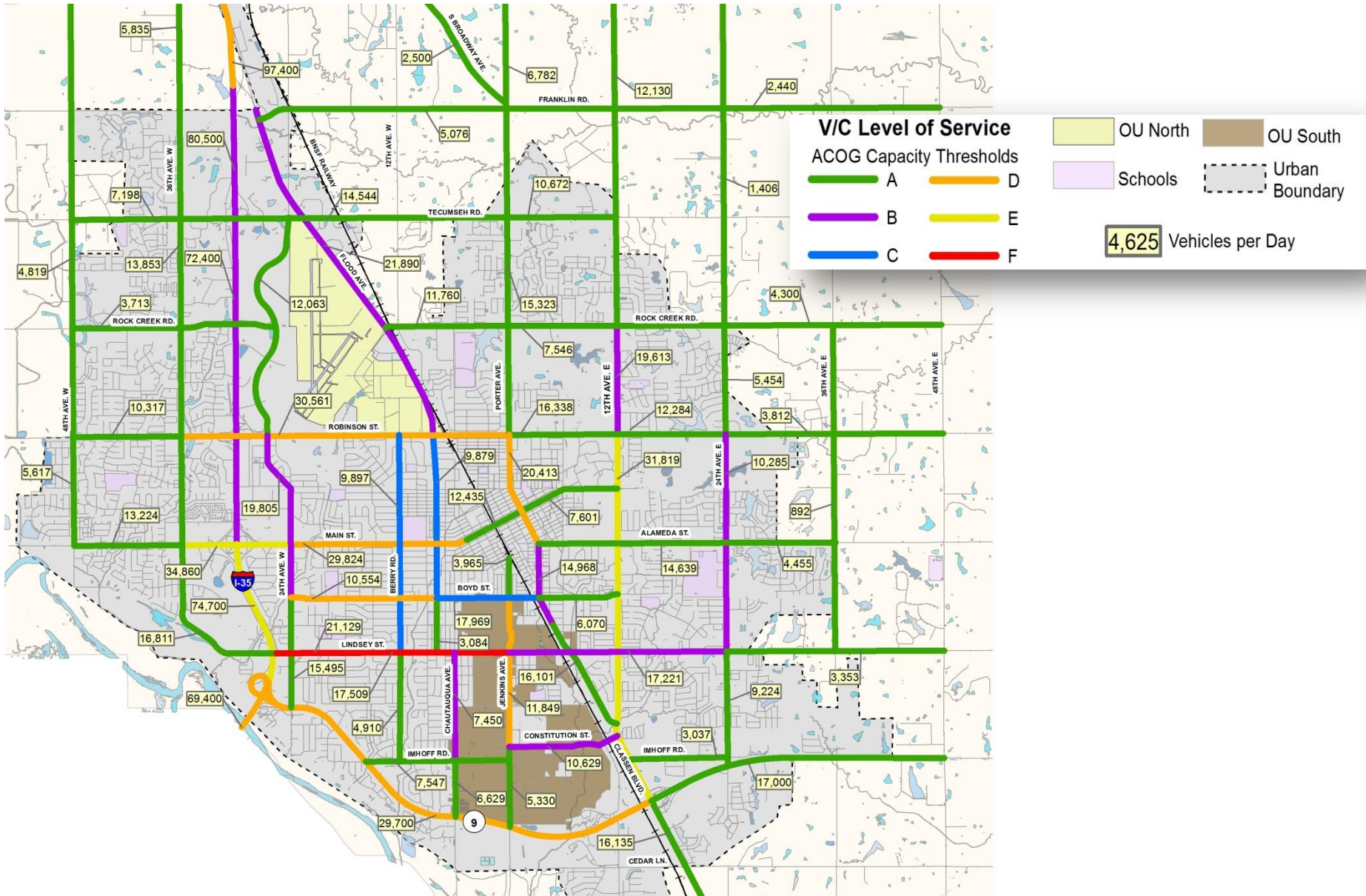
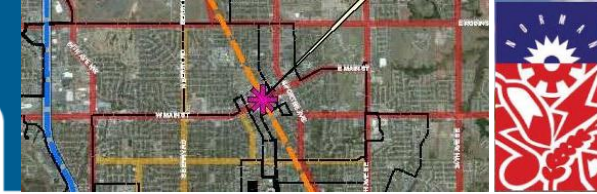


Effects of Access Points on Traffic

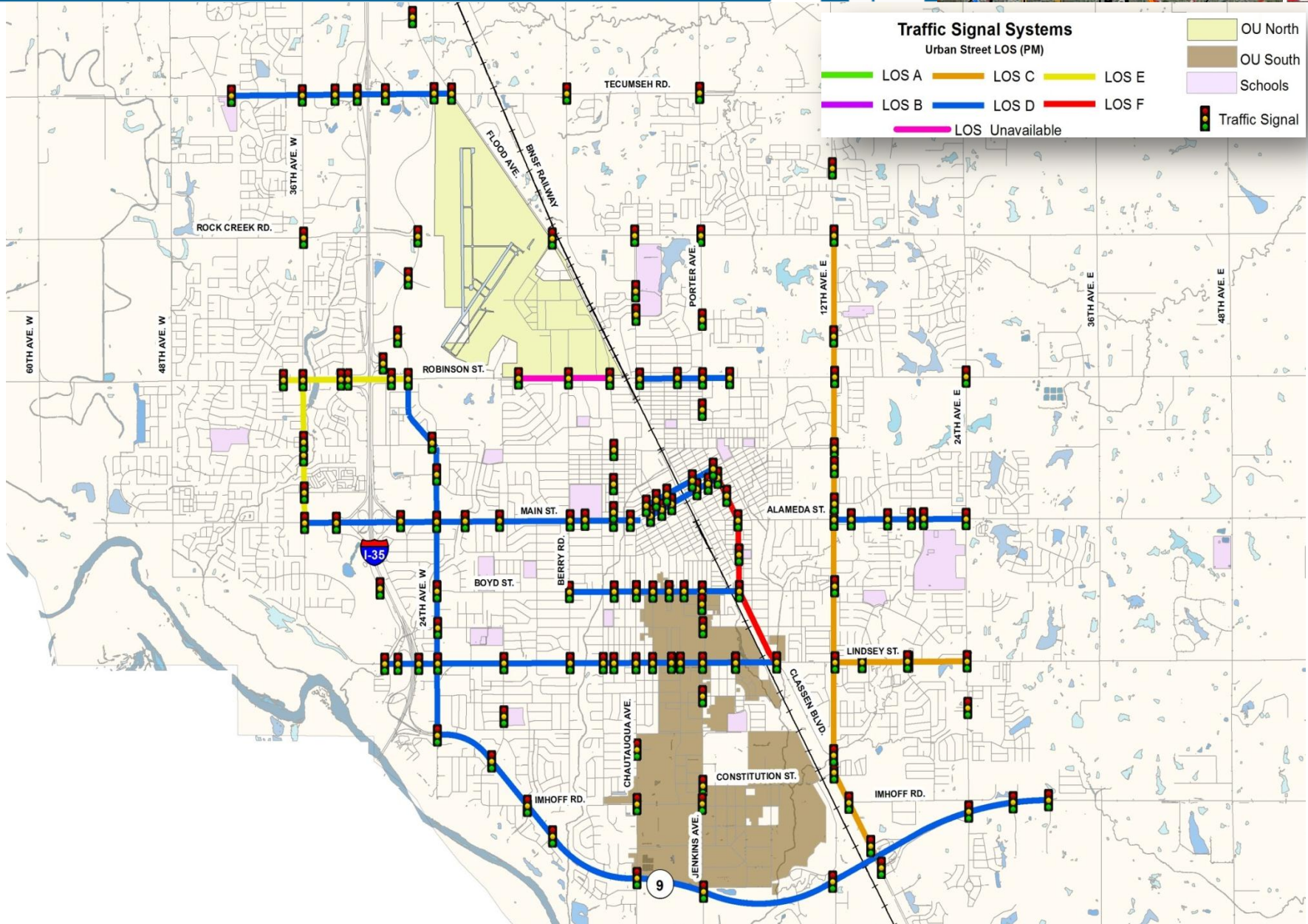
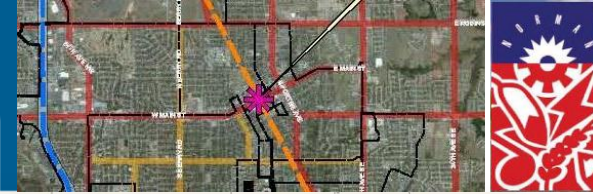
Access Points per Mile (Bi-Directional)	Reduction in Free-Flow Speed (mph)	Crash Rate Index
0	0	1
20	2.5	1.4
40	5	2.1
60	7.5	3
80 or more	10	3.5

Source: Highway Capacity Manual and NCHRP Report 420

Existing Conditions Daily Traffic Volumes & Congestion

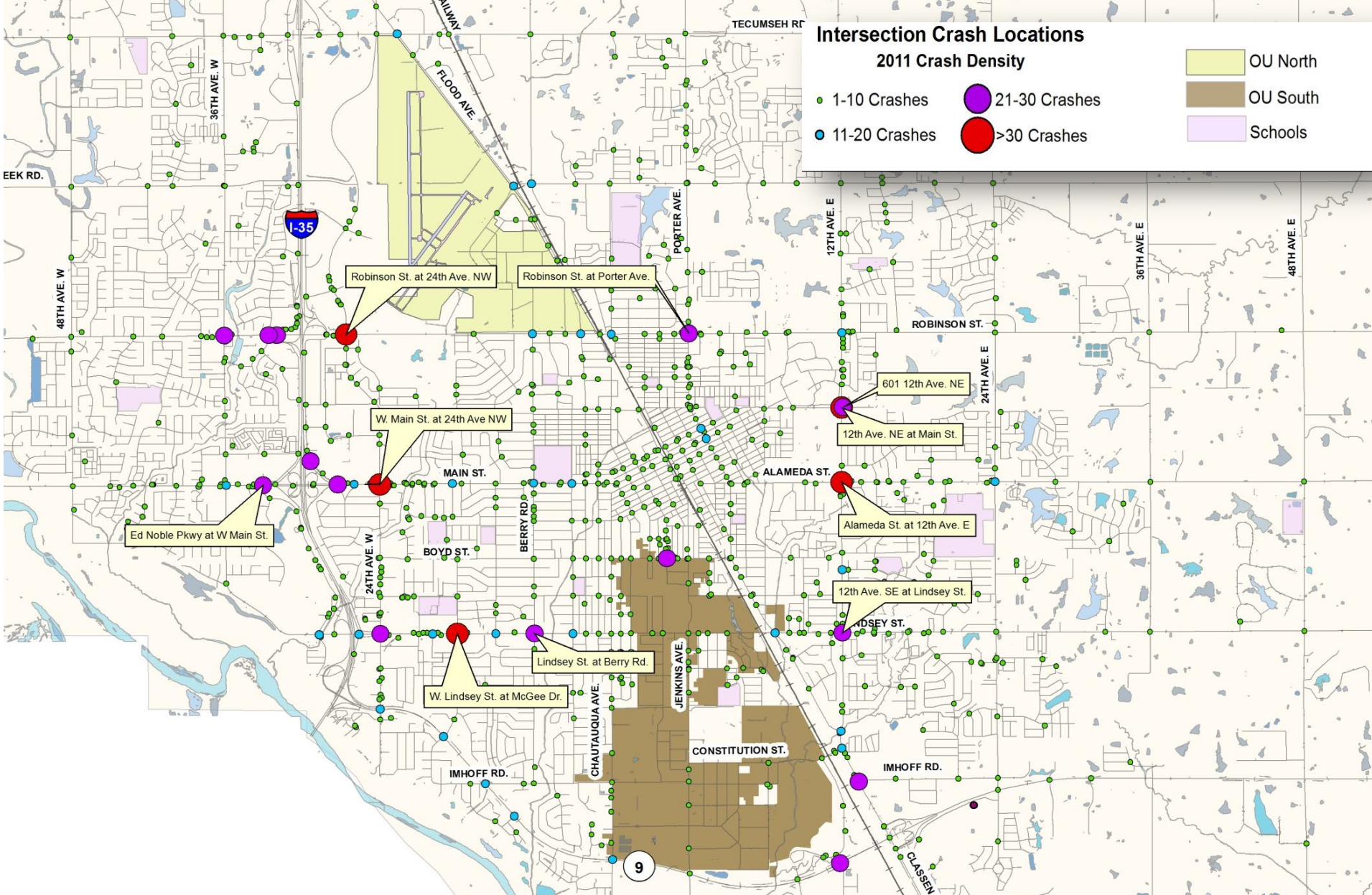
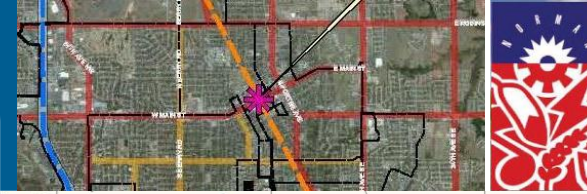


Existing Conditions Coordinated Traffic Signals



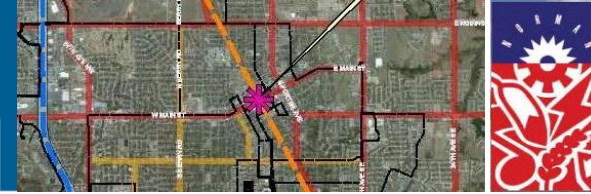
Existing Conditions

Roadway Safety-Crash Locations



Existing Conditions

Roadway Safety-Crash Locations



Most Common Intersection Crash Locations for 2011

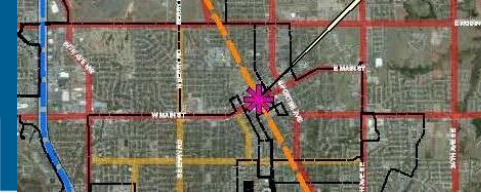
Intersection	Number of Crashes	% Injuries	% Rear End	% Angle	% Right Angle	% Other
24th Avenue W at Main Street	57	29%	58%	12%	30%	0%
12th Avenue E at Alameda Street	47	24%	52%	28%	4%	16%
24th Avenue W at Robinson Street	38	19%	43%	33%	10%	14%
Lindsey Street at McGee Street	37	42%	83%	9%	8%	0%
12th Avenue E at Main Street	31	27%	45%	55%	0%	0%

Corridor Crash Rates (2009-2011)

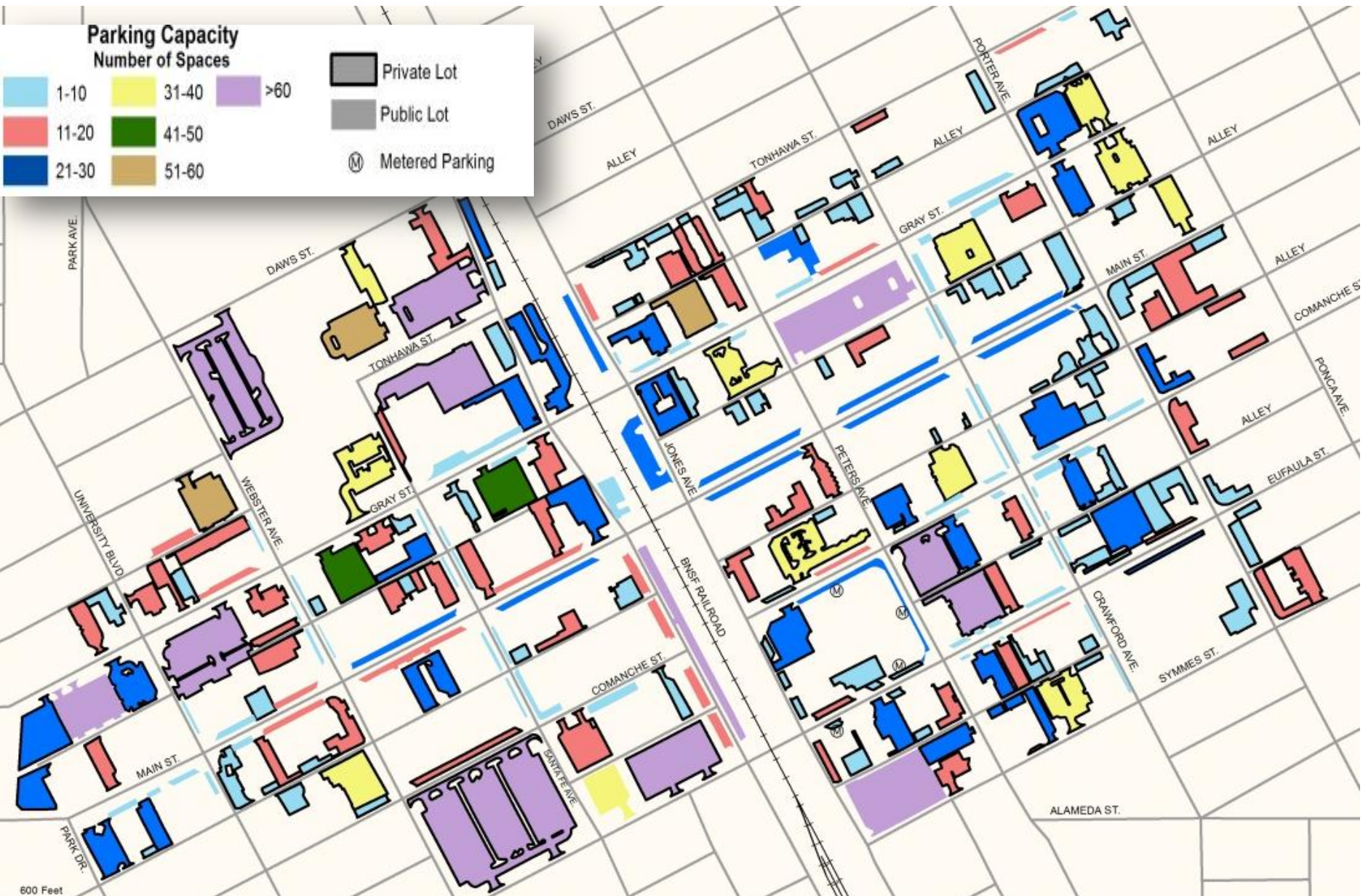
Route	Segment	Distance (miles)	Average Segment Volume (vpd)	Average Number of Crashes (2009-2011)	Average Crash Rate (2009-2011) ¹	State Crash Rate ¹	Ratio
Lindsey Street	East of 24th Ave W to East of Asp Ave	1.8	19,319	200	1573	179	8.8
Main Street	Thompson Drive to University Blvd.	1.3	29,824	131	923	378	2.4
Robinson Street	Brookhaven Blvd to 24th Ave W	1.0	30,561	147	1315	378	3.5
Tecumseh Road	36th Ave W to Flood Ave	1.1	14,544	43	736	378	1.9
24th Avenue W	Rock Creek Road to SH 9	3.65	16,291	209	965	378	2.6
Porter Avenue / Classen Boulevard	Robinson St to 12th Ave E	2.95	17,329	187	1000	378	2.6
12th Avenue E	Rock Creek Rd to SH 9	4.55	29,136	372	769	378	2.0
Berry Road	Robinson St to Imhoff Rd	3.0	8,235	104	1150	179	6.4

¹Crash rates are shown per one million vehicle miles travelled

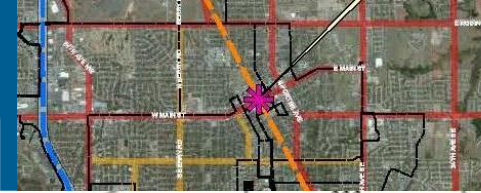
Existing Conditions Downtown Parking Inventory



Parking Capacity Number of Spaces

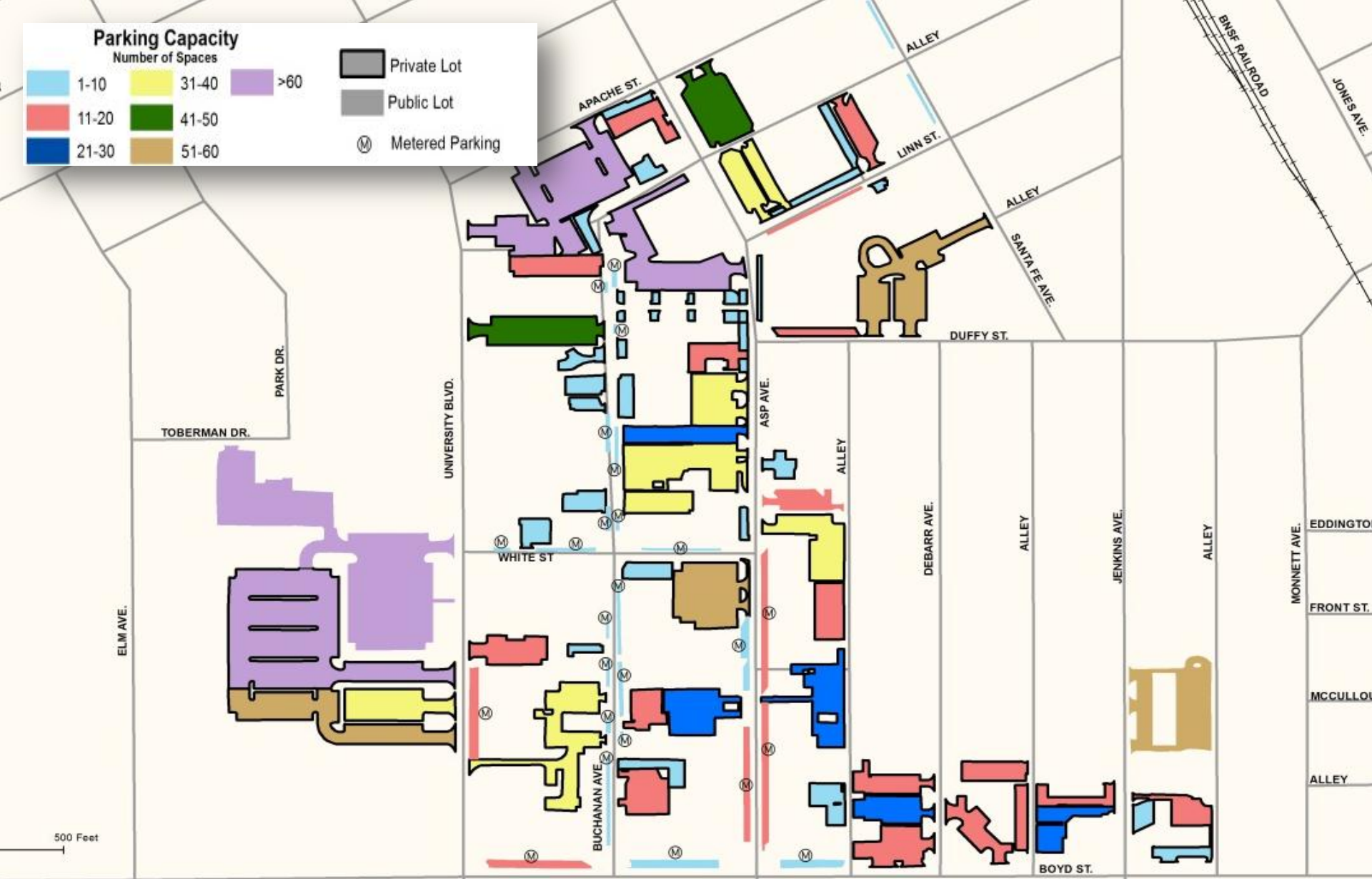


Existing Conditions Campus Corner Parking Inventory



Parking Capacity
Number of Spaces

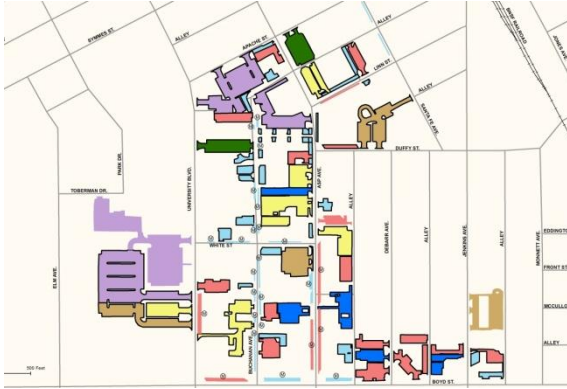
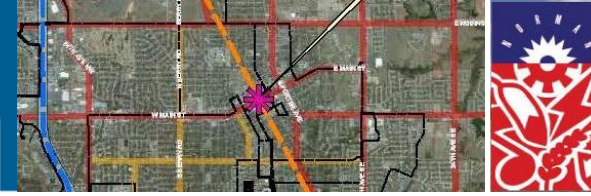
Light Blue	1-10	Yellow	31-40	Purple	>60
Red	11-20	Green	41-50	Grey	Private Lot
Dark Blue	21-30	Tan	51-60	Light Grey	Public Lot
				(M)	Metered Parking



500 Feet

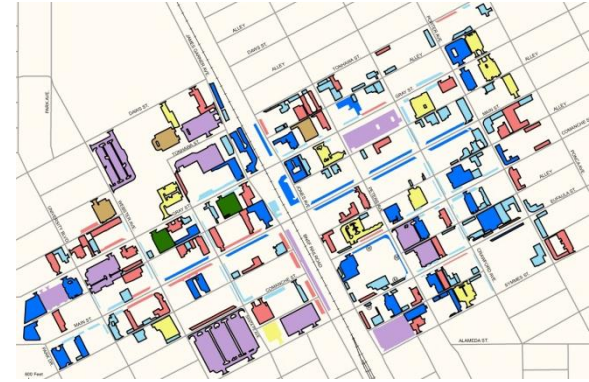
Existing Conditions

Parking Inventory Breakdown



Campus Corner

- Just under 2,000 spaces
- 87% surface
- 13% on-street
- 25% public
- Insufficient parking in the southern portion of the district



Central Business District

- 4,900 spaces
- 77% surface
- 23% on-street
- 25% public
- Insufficient parking in the eastern portion of the district especially along Main Street

Existing Conditions

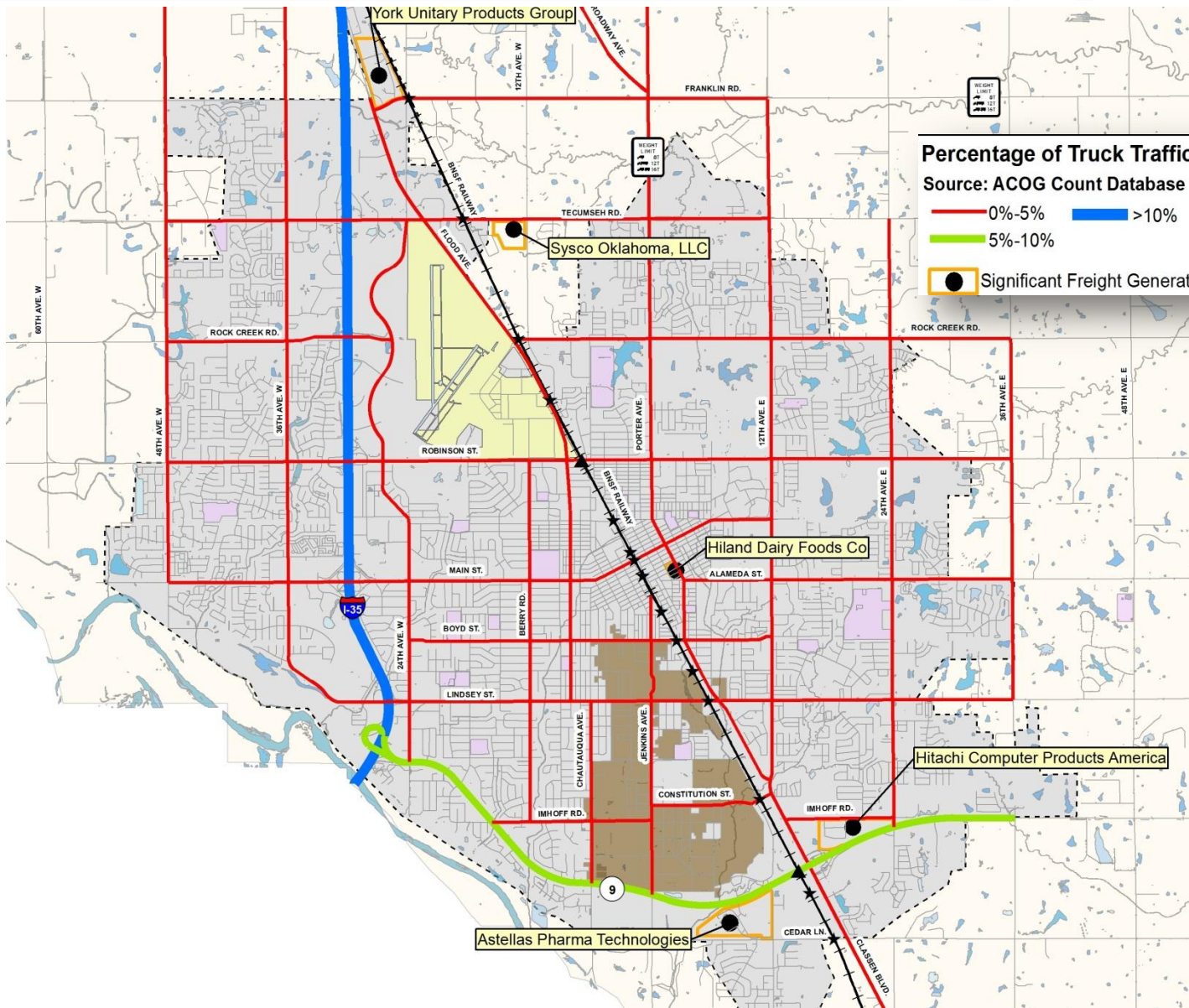
Freight Operations



- Rail
 - BNSF “Mid-Con” corridor
 - 50 million tons of freight per year
- Passenger Rail
 - Amtrak’s “Heartland Flyer”
 - Along BNSF Line
 - Service Between Oklahoma City and Fort Worth
 - 84,000 annual ridership
 - On Average 10% originate/destined for Norman. Numbers differ by year (In 2011, 12% originating/destined for Norman)
- Truck Operations
 - Interstate 35 (15% Truck Traffic)
 - SH 9 (6% Truck Traffic)



Existing Conditions Freight Truck Operations



Percentage of Truck Traffic
Source: ACOG Count Database

- 0%-5%
- 5%-10%
- >10%

● Significant Freight Generators

- ★ At Grade RR Crossing
- ▲ Grade Separated RR Crossing
- Load Posted Bridges
- OU North
- OU South
- Schools
- Urban Boundary



Astellas Pharma Technologies

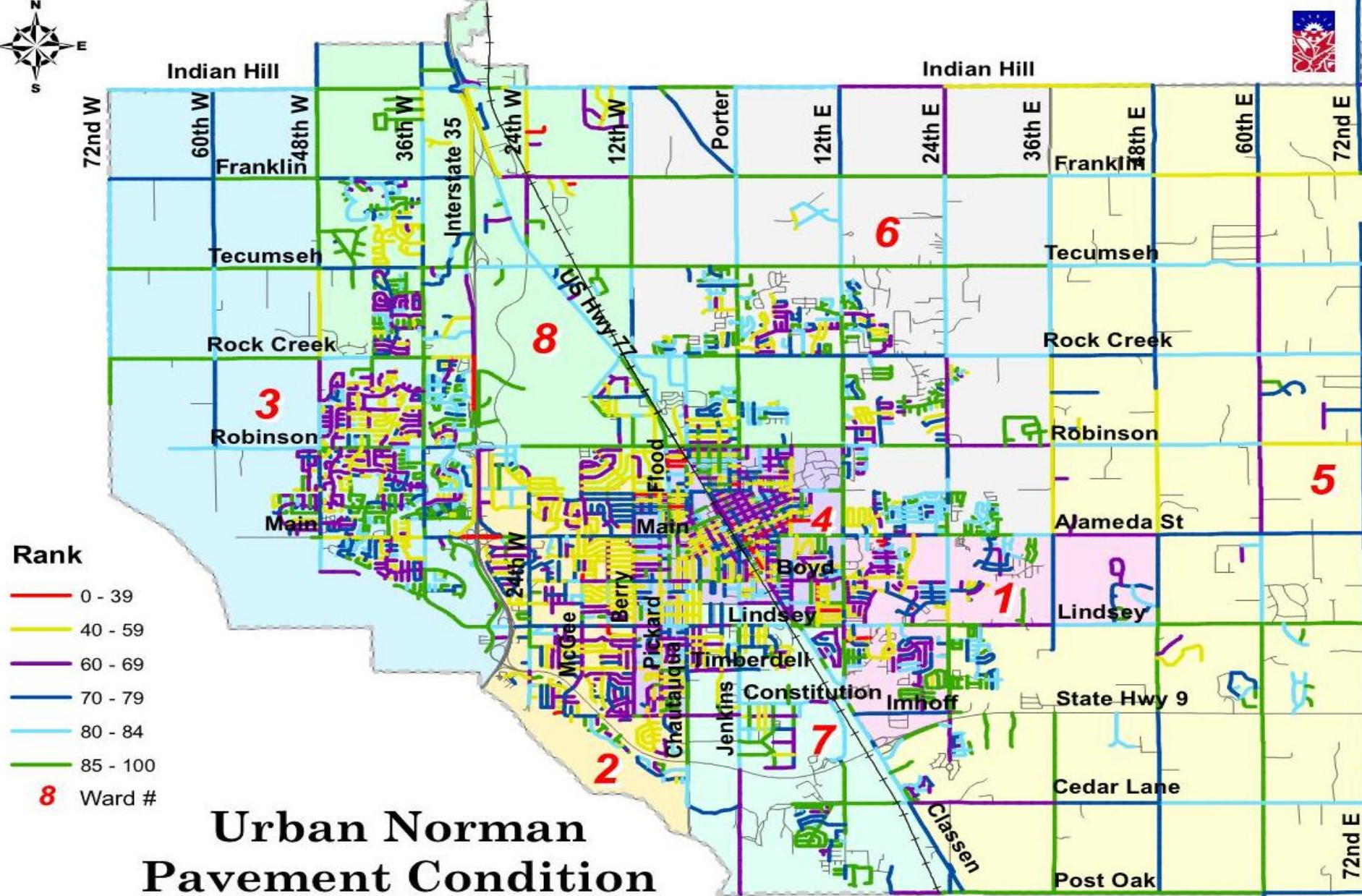
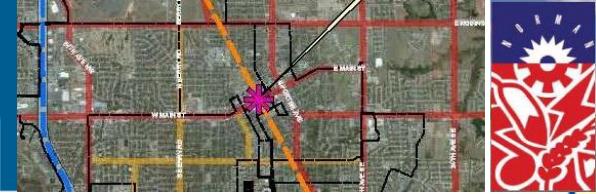
Hitachi Computer Products America

Hiland Dairy Foods Co

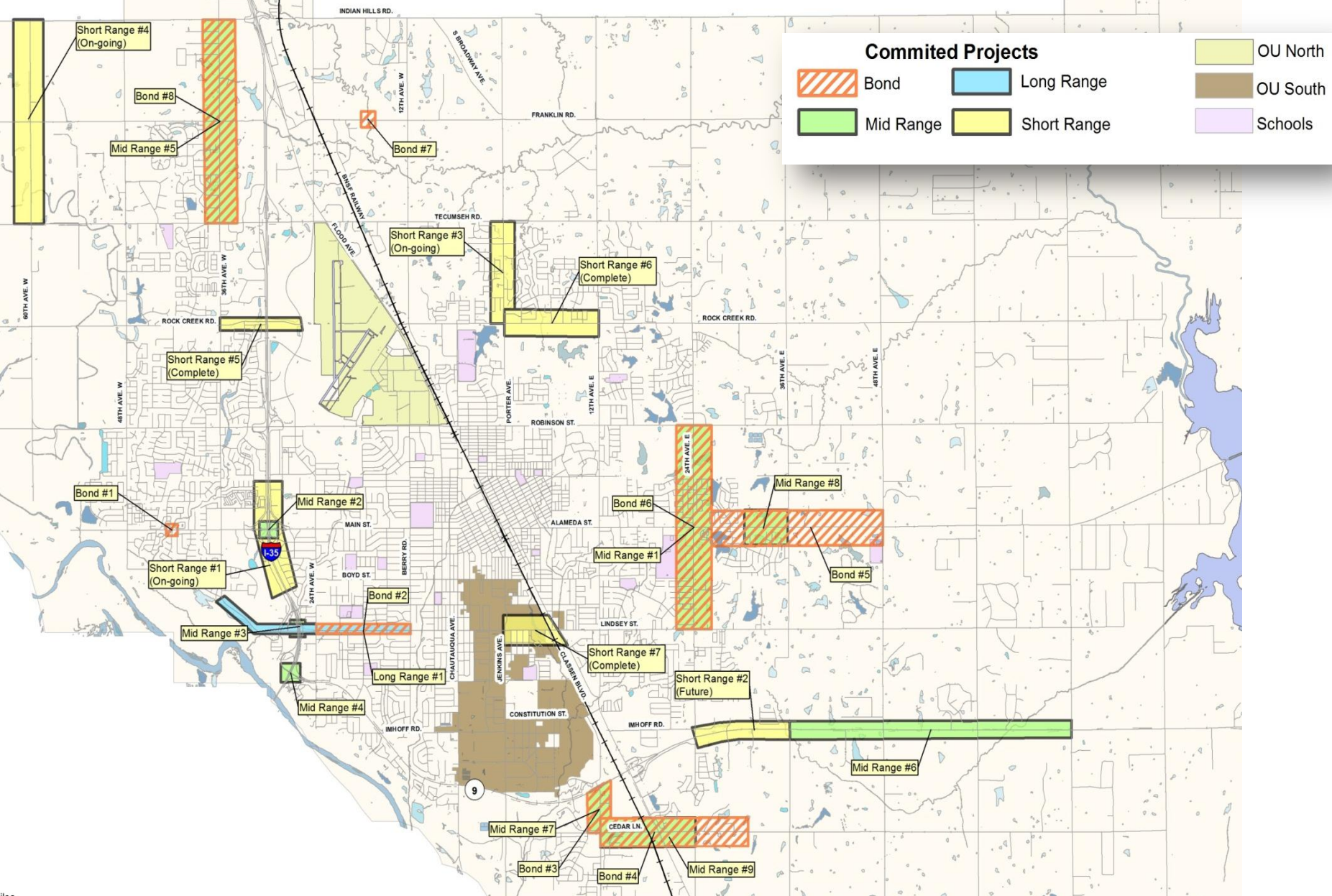
Sysco Oklahoma, LLC

York Unitary Products Group

Existing Conditions Roadway Inventory and Conditions



Existing Conditions Planned Programs and Initiatives



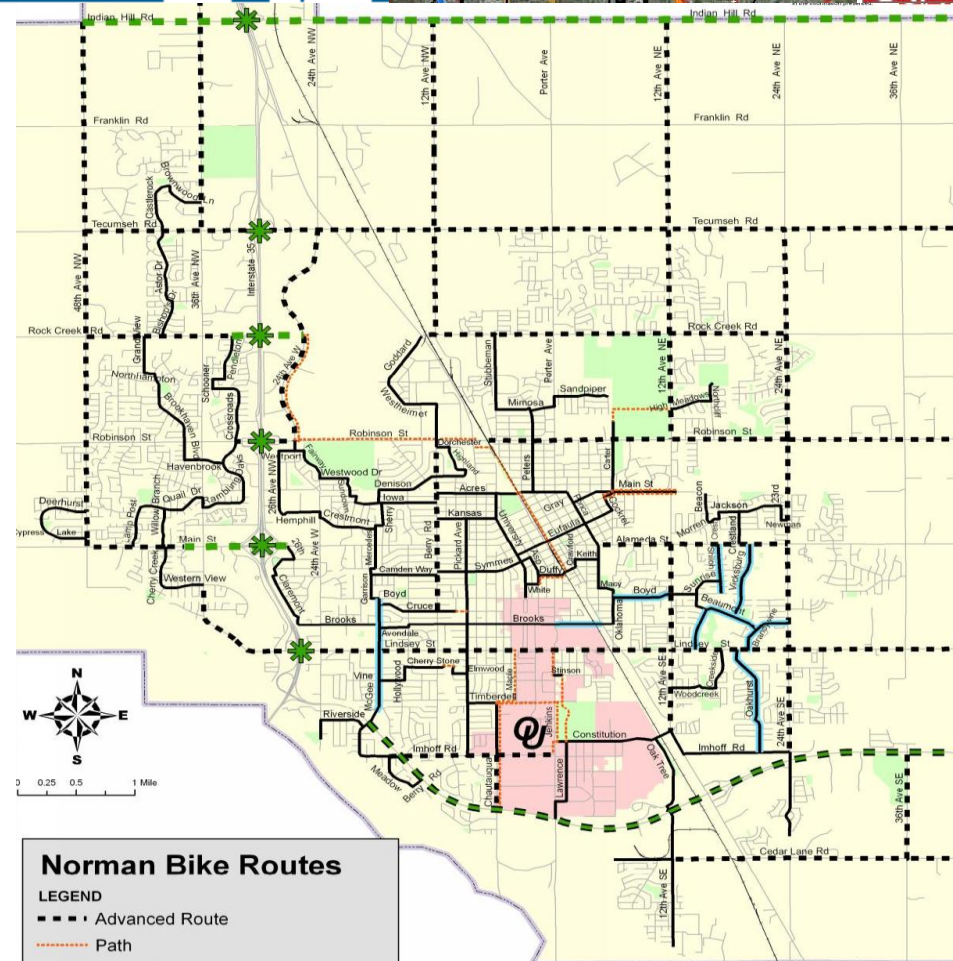
Existing Conditions Bicycle & Pedestrian Accommodations

- **Bicycle Accommodations**

- 1996 Bicycle Transportation Map
- Norman Bicycle Advisory Committee (BAC)
- 2011 Bike Route Map
- OU Bicycle Advisory Committee
- OU Bike Patrol
- Bicycle Friendly City

- **Pedestrian Accommodations**

- Sidewalk Requirements
- Walk Friendly Community (WFC)
- CIP sidewalk project listing



Norman Bike Routes

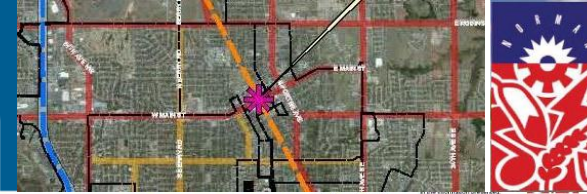
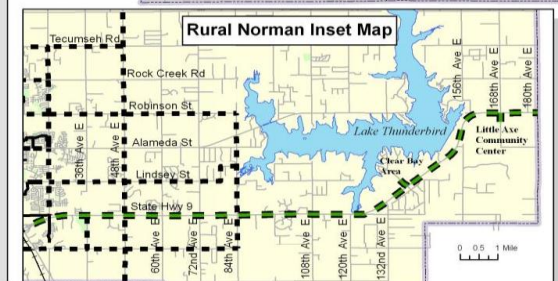
LEGEND

- Advanced Route
- Path
- Basic Route
- Striped Bike Lane

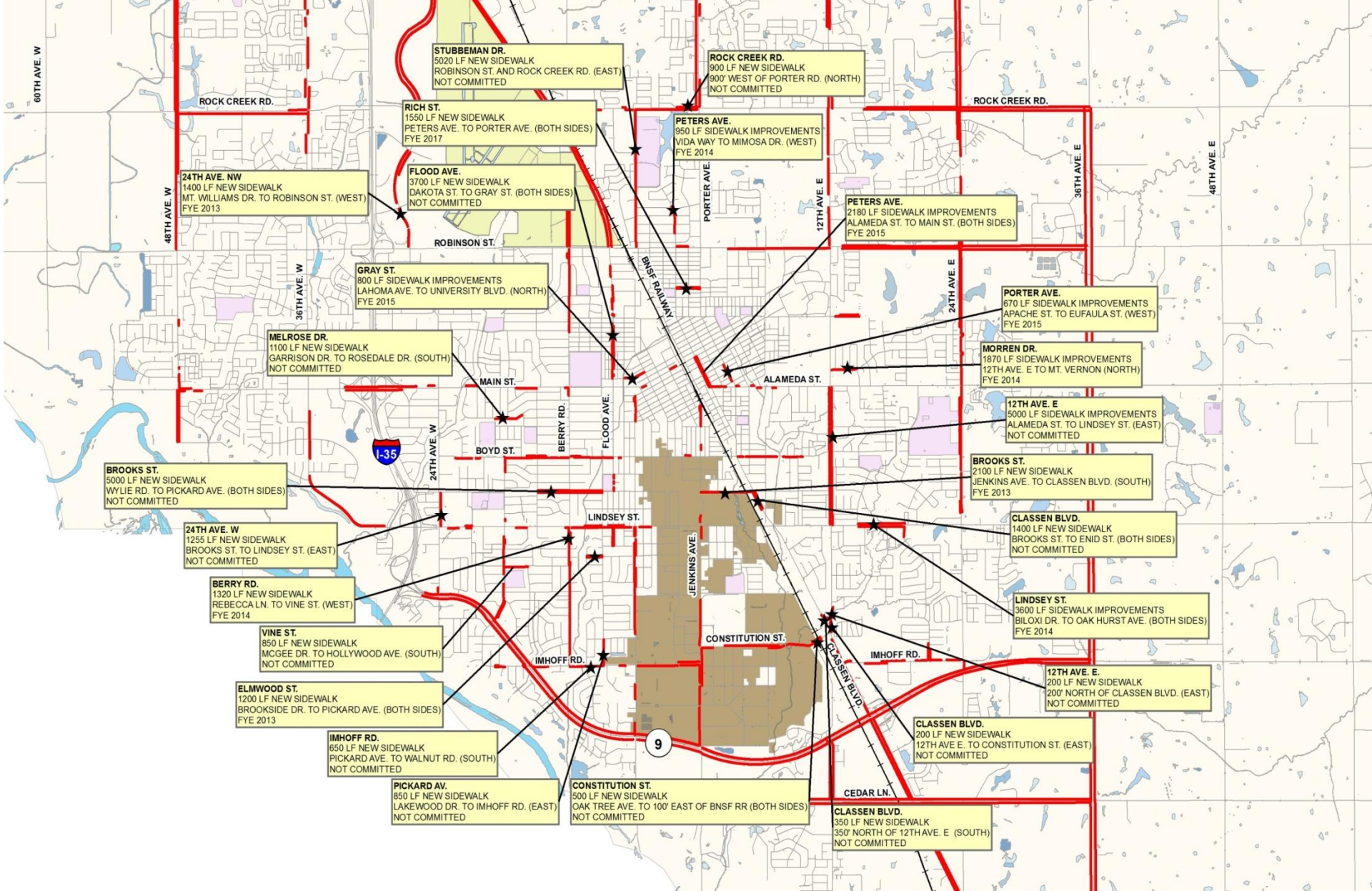
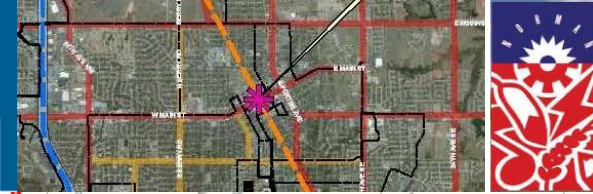
Future Bike Routing

- ★ Make all I-35 bridge crossings bike and pedestrian friendly
- Future Advanced Routes once bridges are modified
- Add separate path along north side of Hwy 9 to East Norman and Lake Thunderbird (Advanced Route)

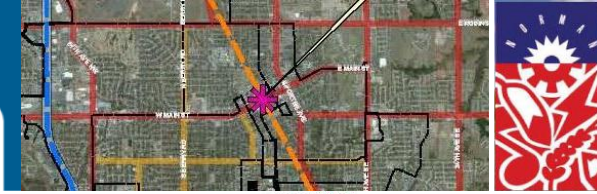
- City Park
- OU Property
- City Boundary



Existing Conditions Sidewalk Gaps and Planned Projects

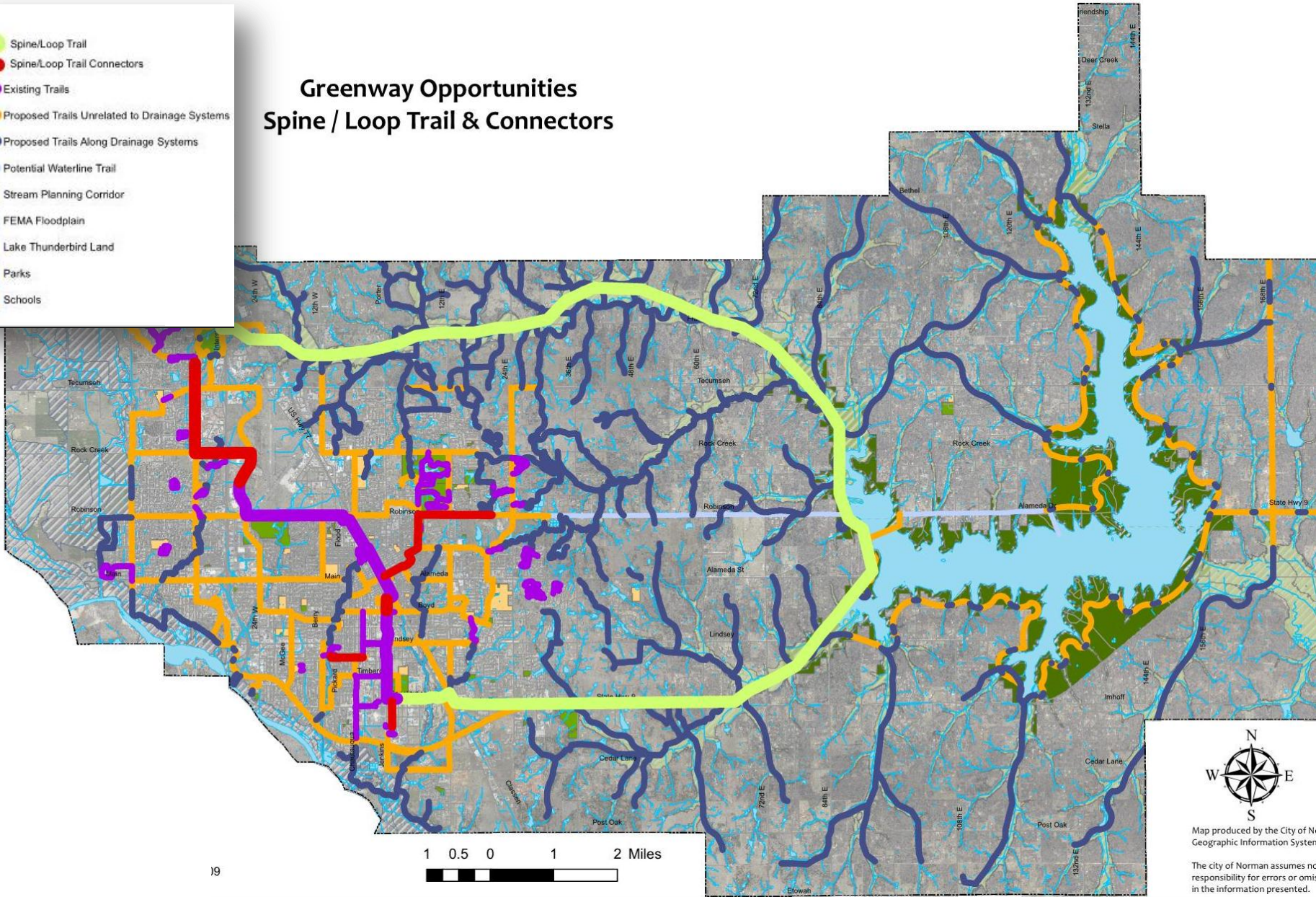


Existing & Planned Conditions Bicycle and Pedestrian Accommodations



Greenway Opportunities Spine / Loop Trail & Connectors

- Spine/Loop Trail
- Spine/Loop Trail Connectors
- Existing Trails
- Proposed Trails Unrelated to Drainage Systems
- Proposed Trails Along Drainage Systems
- Potential Waterline Trail
- Stream Planning Corridor
- FEMA Floodplain
- Lake Thunderbird Land
- Parks
- Schools



Map produced by the City of Norman Geographic Information System

The city of Norman assumes no responsibility for errors or omissions in the information presented.

Existing Conditions Transit Service

- Cleveland Area Rapid Transit
- Greyhound Bus
- Megabus
- Airport Express
- Taxi Operations
- GetAroundOK
- Timecar

Public Transportation

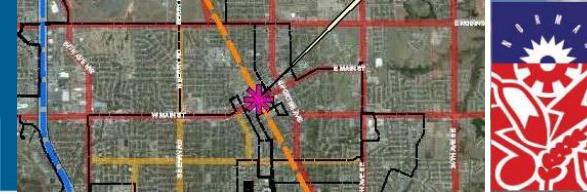
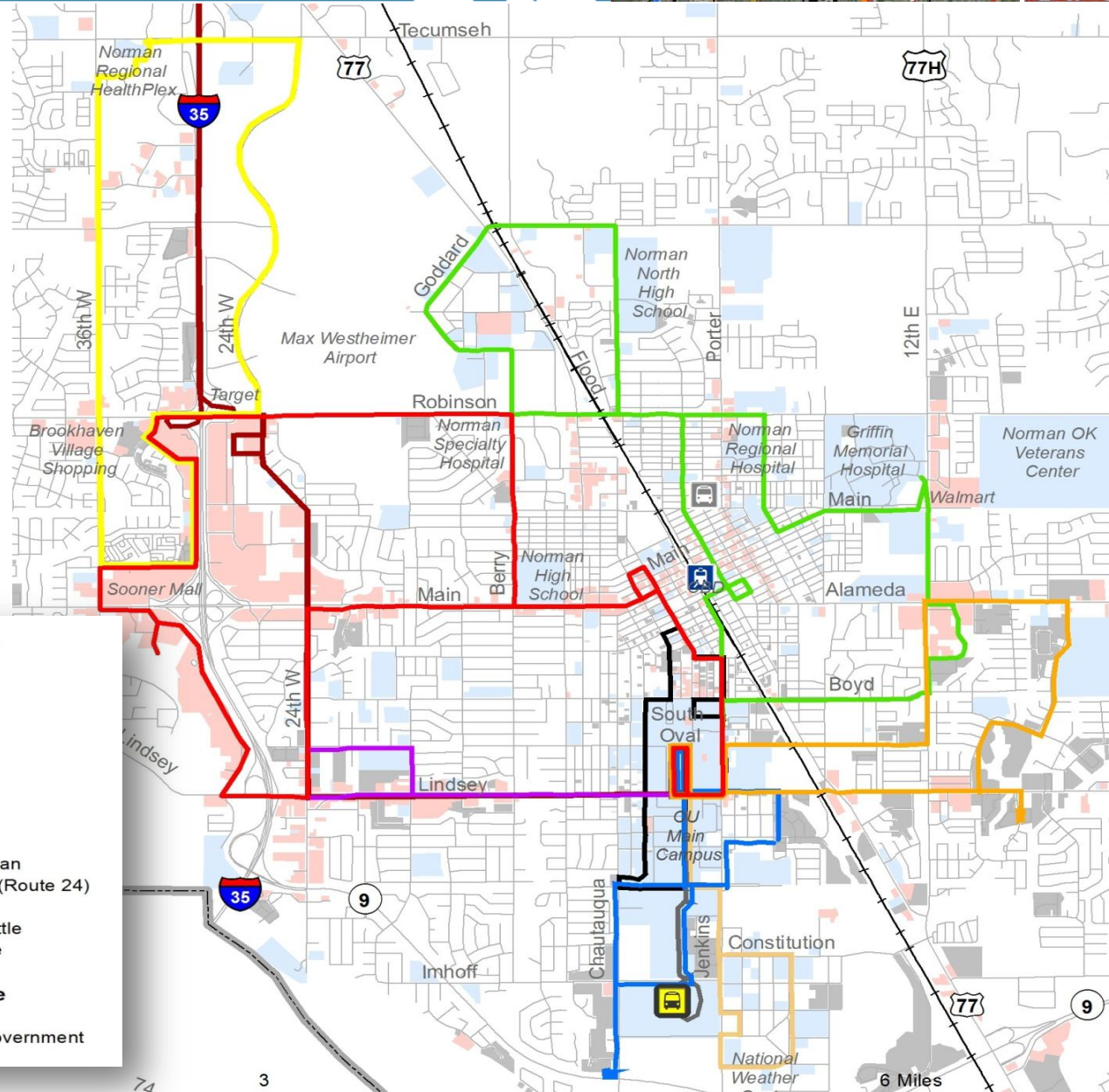
- Amtrak
- Megabus
- Greyhound

N10 Main Street

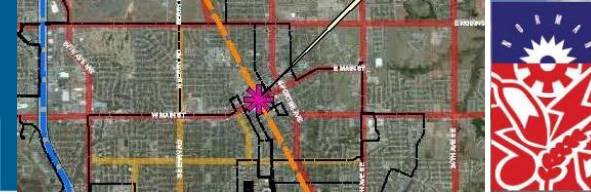
- N10 Main Street
- N11 Lindsey East
- N12 Lindsey West
- N20 West Norman
- N21 Alameda-E Norman
- N24 Sooner Express (Route 24)
- N32 Apartment Loop
- N40 Lloyd Noble Shuttle
- N42 Research Shuttle
- N52 Campus Loop

ACOG: 2005 Land Use

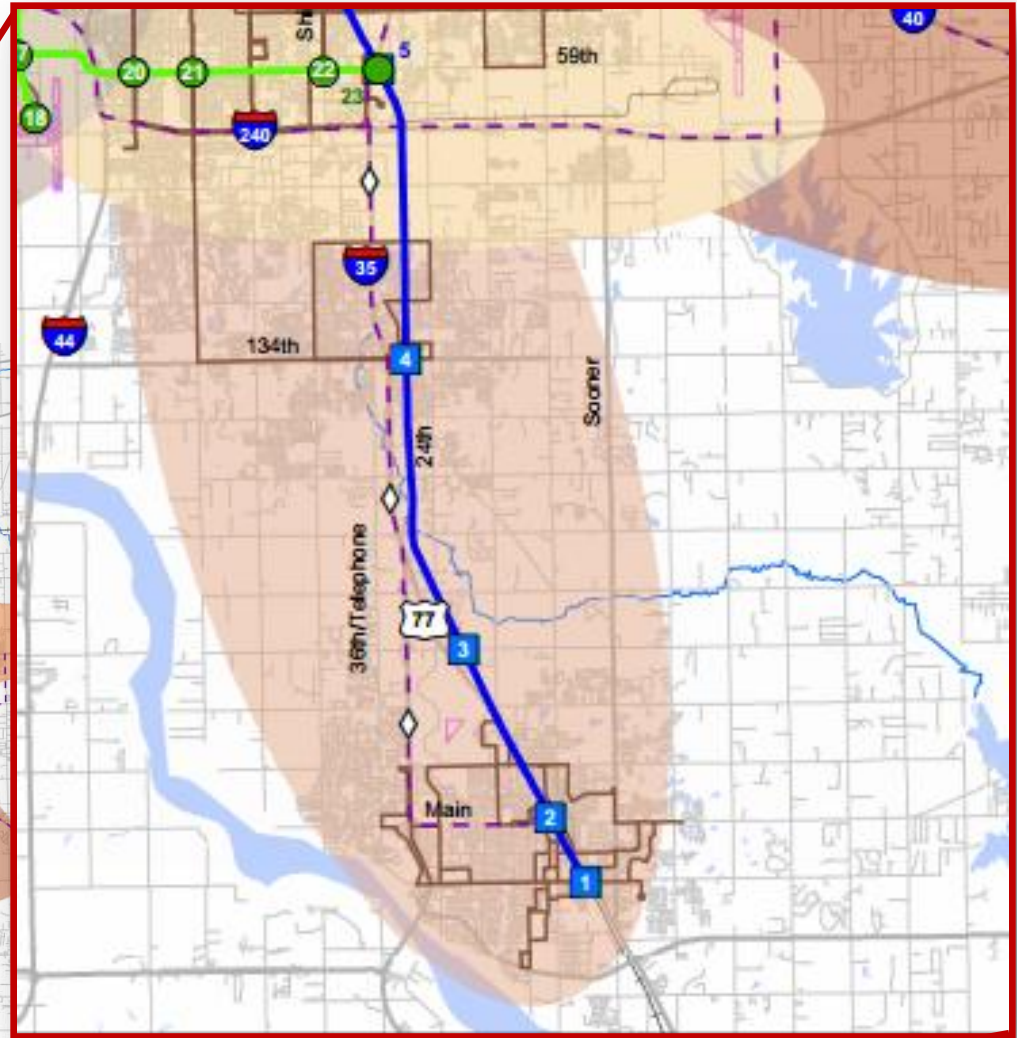
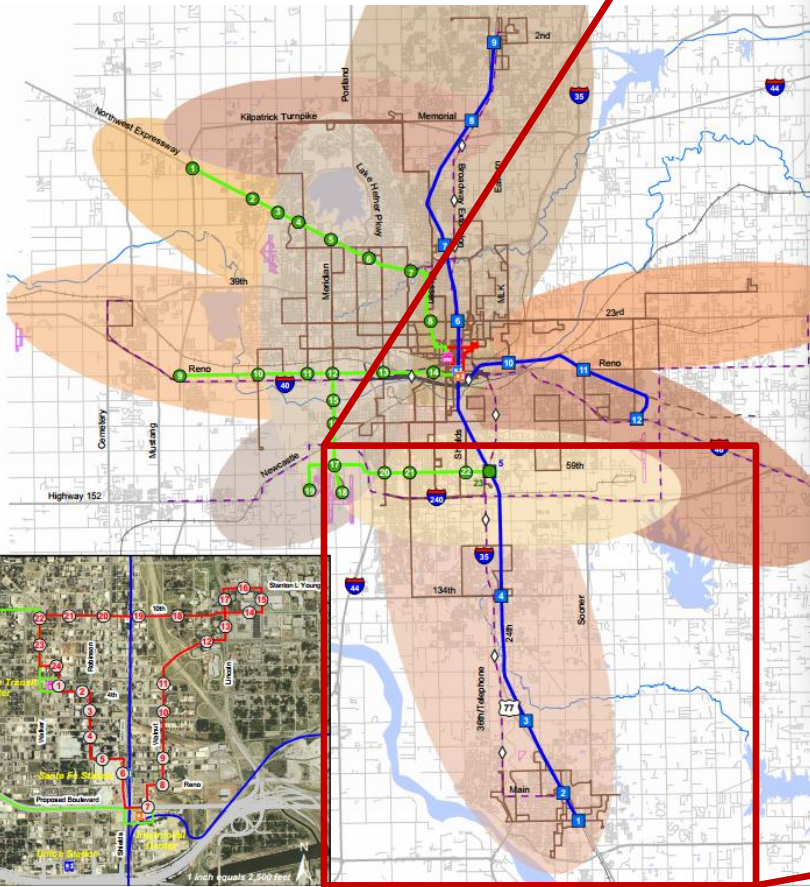
- Commercial / Retail
- Education/Medical/Government
- Apartments



Existing Conditions Transit Service



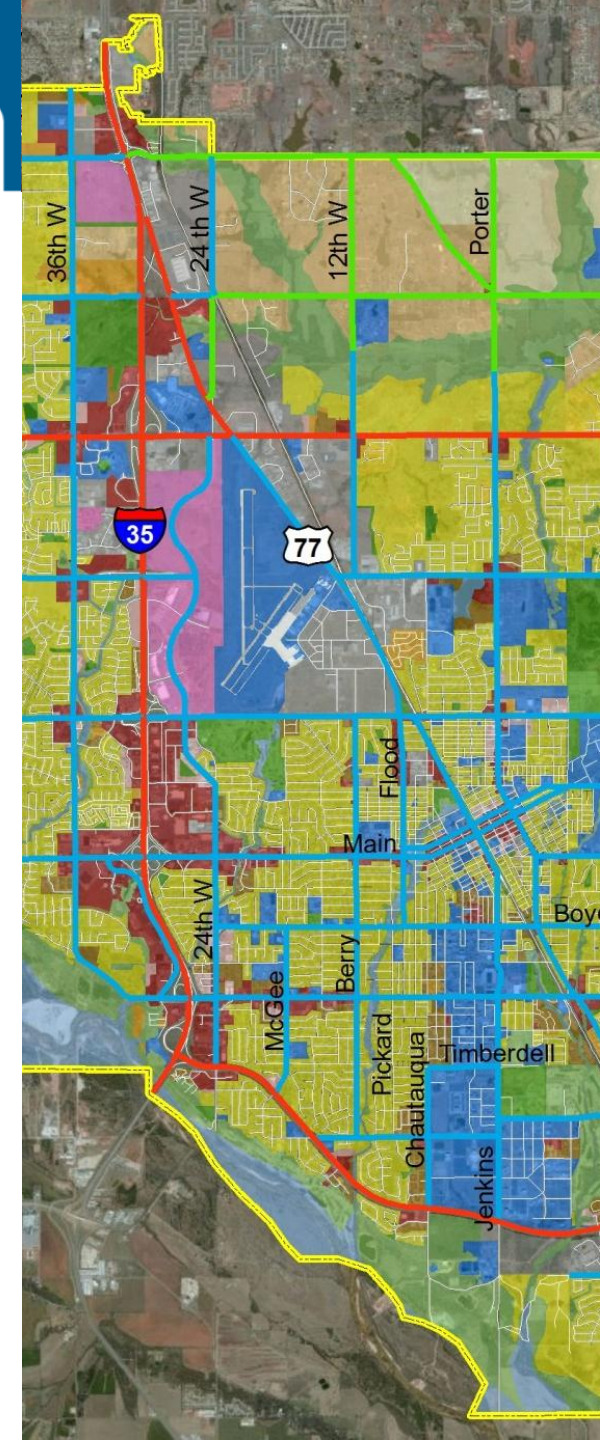
- COTPA Fixed Gateway Study
- 3 Commuter Rail Stations in Norman



Breakout Session

(6:35-7:30)

- Review Existing Conditions
- Discuss Issues
- Discuss Needs
- Input to Needs Assessment



Group Summaries and Next Steps



- Group Summaries

- Automobile Capacity and Parking
- Pedestrian and Bicycle Mobility, Safety and Streetscape
- Transit
- Freight, Airports and Emergency Response

- Next Steps

- Transportation System Needs
- Homework
- Q&A

