

Evaluation of Illustrative Alternatives Technical Report Volume 3C: Route Technical Data

The Detroit River International Crossing Study



October 2007

FOREWORD

Background

The Detroit River International Crossing (DRIC) Study is a bi-national effort to complete the environmental study processes for the United States, Michigan, Canada and Ontario governments. The study will identify solutions that support the region, state, provincial and national economies while addressing civil and national defense and homeland security needs of the busiest trade corridor between the United States and Canada (Figure F-1).

Figure F-1
Detroit River International Crossing Study
Existing Detroit River International Crossings



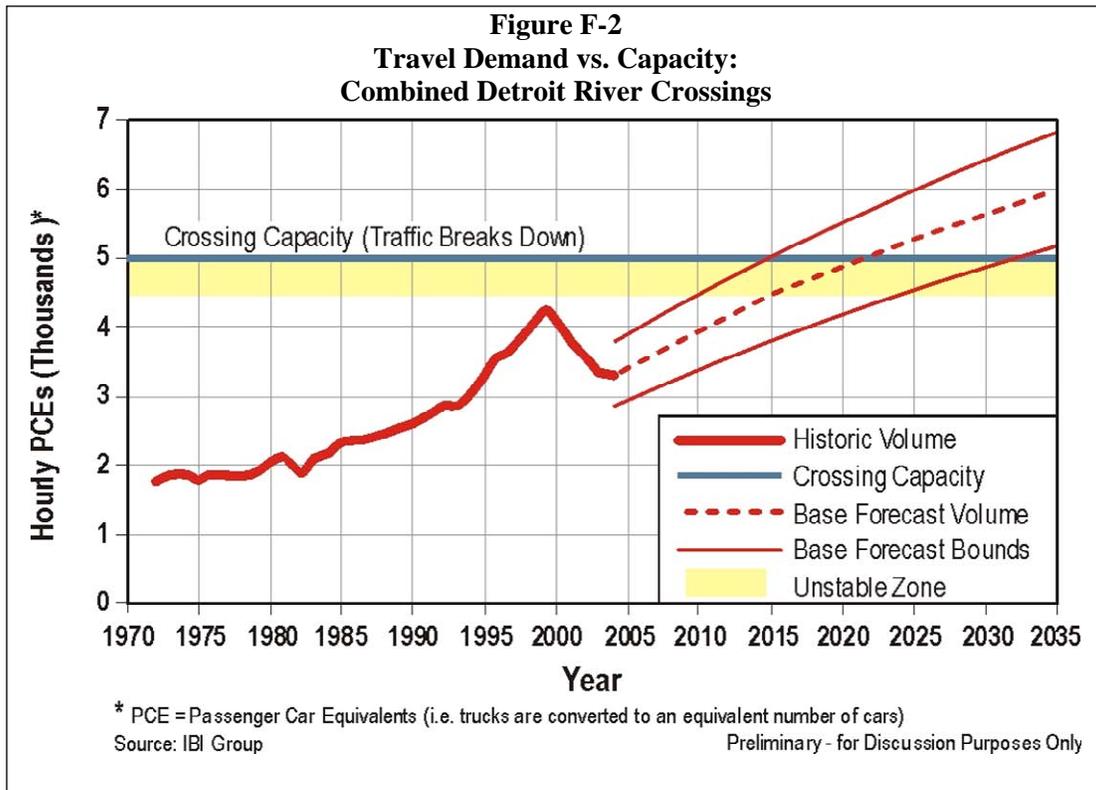
The purpose of the Detroit River International Crossing Project is to: (for the foreseeable future, i.e., at least 30 years):

- Provide safe, efficient and secure movement of people and goods across the Canadian-U.S. border in the Detroit River area to support the economies of Michigan, Ontario, Canada and the U.S.
- Support the mobility needs of national and civil defense to protect the homeland.

To address future mobility requirements (i.e., at least 30 years) across the Canada-U.S. border, there is a need to:

- Provide new border crossing capacity to meet increased long-term demand;
- Improve system connectivity to enhance the seamless flow of people and goods;
- Improve operations and processing capability; and,
- Provide reasonable and secure crossing options in the event of incidents, maintenance, congestion, or other disruptions.

Over the next 30 years, Detroit River area cross-border passenger car traffic is forecast to increase by approximately 57 percent, and movement of trucks by 128 percent. Traffic demand could exceed the “breakdown” cross-border roadway capacity as early as 2015 under high growth scenarios. Even under “low” projections of cross-border traffic, the “breakdown” roadway capacity of the existing Detroit River border crossings (bridge and tunnel combined) will be exceeded by 2033 (Figure F-2). Additionally, the capacity of the connections and plaza operations will be exceeded in advance of capacity constraints of the roadway. Without improvements, this will result in a deterioration of operations, increased congestion and unacceptable delays to the movement of people and goods in this strategic international corridor.

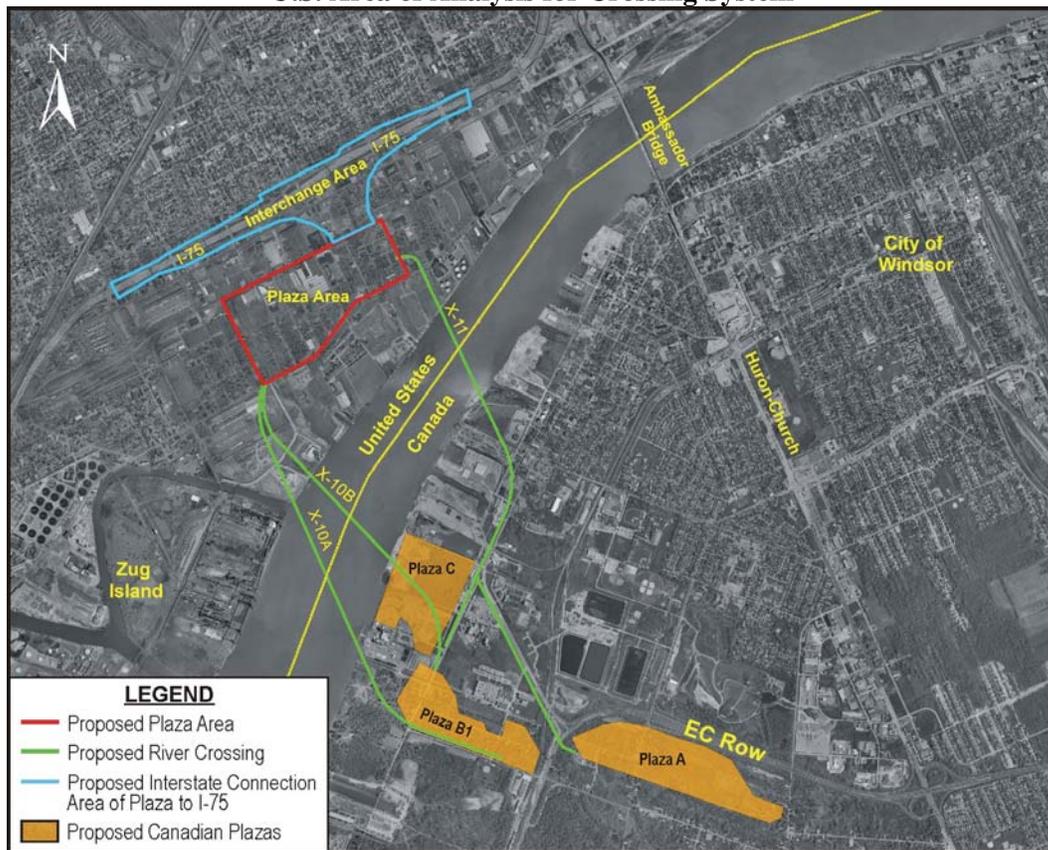


The forecast of capacity indicates that there will be inadequacies in: 1) the roads leading to the existing bridge and tunnel; 2) the ability to process vehicles through customs and immigration; and, 3) the capacities (number of lanes) of the Ambassador Bridge and Detroit-Windsor Tunnel themselves. So, even though incremental adjustments can and will be made to the plazas and, even though there is adequate border crossing capacity today (bridge and tunnel combined), the

planning, design and construction of any major international crossing takes time. Therefore, it is prudent to address, now, how and when the capacity need is to be satisfied at the crossing itself as well as the connecting roads.

The Detroit River International Crossing Study (DRIC) Draft Environmental Impact Statement (DEIS) addresses the analyses of issues/impacts on the U.S. side of the border for the crossing system over the Detroit River between Detroit, Michigan, and Windsor, Ontario, Canada. The alternatives are comprised of three components: the crossing, plaza (where tolls are collected and Customs inspections take place), and interchange connecting the plaza to I-75 (Figure F-3).

Figure F-3
Detroit River International Crossing Study
U.S. Area of Analysis for Crossing System



Source: The Corradino Group of Michigan, Inc.

This is a Summary of the Detroit River International Crossing Study Evaluation of Illustrative Alternatives on the U.S. side of the border conducted in 2005. It is one of 13 technical reports supporting the Draft Environmental Impact Statement. This summary is Volume 1 of a three-volume set of reports. Volume 2 presents the details of the technical evaluation process. Volume 3 graphically displays the data reported upon in Volumes 1 and 2. The purpose of this summary is to concisely report on the evaluation process and results contained in Volumes 2 and 3.

Introduction

The Detroit River International Crossing Study (DRIC) involves application of a structured process to evaluate Illustrative Alternatives that is consistent with laws and regulations guiding such analyses and past experiences on comparable projects. This process was used to determine which of the Illustrative Alternatives would be subject to more in-depth analysis to be documented in the Draft Environmental Impact Statement (DEIS). The DEIS is to be published by the end of 2007 (Figure F-4).

The evaluation process began when the Border Partnership Steering Committee, with input from the Working Group and its consultants,¹ identified options that would meet the project's purpose and need.

Project Purpose

The Purpose of the Detroit River International Crossing Project is to: (for the foreseeable future, i.e., at least 30 years):

- *Provide safe, efficient and secure movement of people and goods across the Canadian-U.S. border in the Detroit River area to support the economies of Michigan, Ontario, Canada and the U.S.*
- *Support the mobility needs of national and civil defense to protect the homeland.*

Project Need

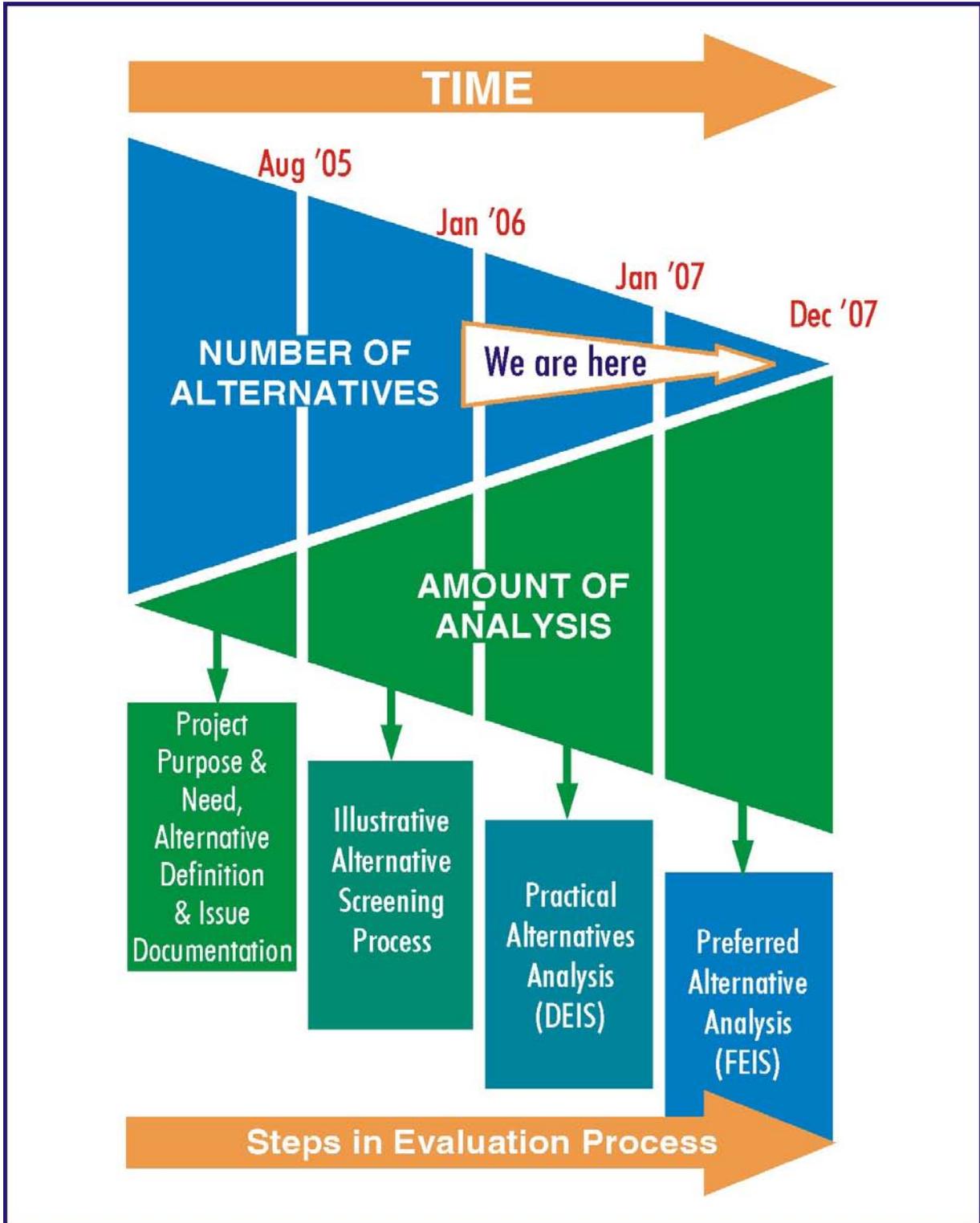
To address future mobility requirements across the Canada-U.S. border, there is a need to:

- *Provide new border crossing capacity to meet increased long-term demand;*
- *Improve system connectivity to enhance the seamless flow of people and goods;*
- *Improve operations and processing capability; and,*
- *Provide reasonable and secure crossing options in the event of incidents, maintenance, congestion or other disruptions.*

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¹ The Partnership Steering Committee is comprised of representatives of the Federal Highway Administration, Transport Canada, the Ministry of Transportation Ontario and the Michigan Department of Transportation. The staff members of these organizations comprise the Working Group. The Consultant teams are led by URS Canada (Canadian Team) and The Corradino Group of Michigan (U.S. Team).

Figure F-4
Evaluation Process



Source: The Corradino Group of Michigan, Inc.

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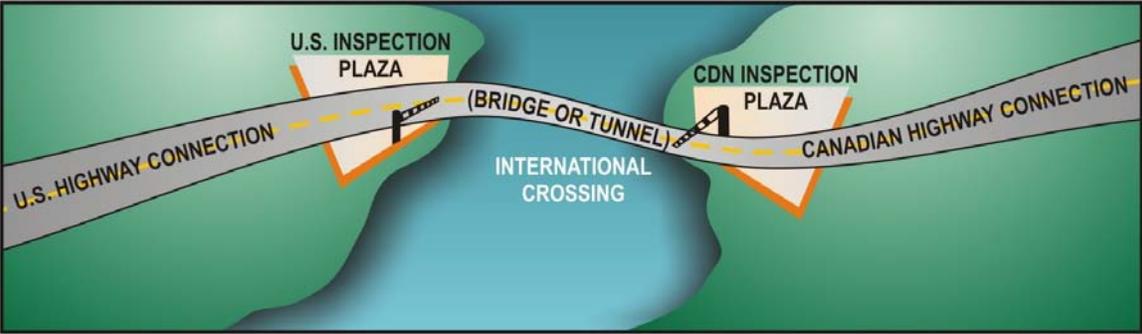
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1. Introduction

This document is Volume 3 of a three-volume set of reports to support the Detroit River International Crossing Study Evaluation of Illustrative Alternatives on the U.S. side of the border. This volume includes maps and listings of key issues like wetlands, floodplains, etc., used in assessing the performance of the Illustrative Alternatives as reported in Volume 2. Volume 1 summarizes the evaluation process.

Volume 3 is divided into three sections consistent with the components of a new or expanded international crossing of the Detroit River as shown on Figure 1-1. These are plazas, crossings and routes. This document covers the roadway route component of the crossing systems.

Figure 1-1
Components of New or Expanded International Crossing



Source: The Corradino Group of Michigan, Inc.

2. Methodologies

The data in this report supports the evaluation of the Illustrative Alternatives on the U.S. side of the border. The evaluation process follows the overall methodology incorporated in the scoping information document,² which is summarized in Table 2-1. The evaluation factors are:

- Protect Community/Neighborhood Characteristics
- Maintain Consistency with Local Planning
- Protect Cultural Resources
- Protect the Natural Environment
- Improve Regional Mobility
- Maintain Air Quality
- Assess How Project Can Be Built (Constructability)

A definition of these evaluation factors and the associated performance measure categories and performance measures is provided below.

2.1 Protect Community/Neighborhood Characteristics

Six different performance measure categories are involved in this area.

To determine neighborhood **traffic impacts**, the volume change on links in the local roadway system that would be affected by connecting to a border crossing is analyzed. Those streets that would be closed during construction (temporarily) as well as permanently have been listed. Likewise, those streets that would remain open but crossed or rerouted are also listed to determine the degree to which the community's basic street network would be modified. Lastly, if there are mainline railroads that may be rerouted because of the plaza's location, they are listed as well.

The number of dwelling units has been calculated within 150 feet of each component of the border crossing system that would have front line (unblocked) exposure to **noise**. Additionally, any significant sensitive receptors such as churches, parks, historic sites and the like, within the 150-foot band are also cited.

² The Detroit River International Crossing Study Draft Environmental Impact Statement Scoping Information prepared by MDOT in partnership with FHWA, July 2005.

Table 2-1
Detroit River International Crossing Study
Evaluation Factors and Performance Measures
Illustrative Alternatives Phase

Evaluation Factor	Performance Measure Category		Performance Measures	
			Description/Units	Data Source
Protect Community/ Neighborhood Characteristics	Traffic Impacts	Volume Change – Key Links	Figures 5-3 to 5-9	
		Streets Closed (permanently)	Number	GIS/Field Review
		Streets Closed (temporarily)	Number	GIS/Field Review
		Streets Crossed	Number	GIS/Field Review
		Streets Rerouted	Number	GIS/Field Review
		Streets with Interchange	Number	GIS/Field Review
		Mainline Raillines Rerouted	Number	GIS/Field Review
	Noise	Frontline Exposure	Number of dwelling units exposed	Transportation Noise Model (TNM) Version 2.5
		Significant Receptors Exposures	Number/Specify	Field Review, TNM
	Community Cohesion/Character	Change from No Action	Positive/Negative/Neutral	Professional Judgment
	Potential Acquisition	Residential Units	Occupied	GIS/Field Review
			Vacant	GIS/Field Review
		Residential Population	Number	GIS/Field Review
			Business Units	Active
		Estimated Employees in Affected Census Blocks	Vacant Buildings	GIS/Field Review
			Number	Tetrad Computer Applications, Inc.
		Other Land Uses Affected	Schools	GIS/Field Review
			Senior Service Facilities	GIS/Field Review
			Government Facilities	GIS/Field Review
			Places of Worship	GIS/Field Review
			Medical Facilities	GIS/Field Review
			State/Federal Government Facilities	GIS/Field Review
			Community Services	GIS/Field Review
		Vacant	GIS/Field Review	
	Environmental Justice/Title VI	EJ Populations in Affected Census Block Groups	EJ Population (non poverty)	U.S. Census Data
			Population Groups Affected	U.S. Census Data
		Title VI Groups in Census Tracts	% Households in Poverty/Above or Below 9.9% Regional Threshold	U.S. Census Data
			Households in Poverty	U.S. Census Data
	Public Safety/Security (Plaza Only)	Proximity to Industry	Presence of Regionally Prominent Ancestral Groups	U.S. Census Data
			Number of heavy industry businesses within 1/2 mile	GIS/Field Review
			Number of medium industry businesses within 1/2 mile	GIS/Field Review
		Proximity to Residential/Retail	Number of light industry/office businesses within 1,000 ft/300m	GIS/Field Review
Number of residences within 500 ft/150m			GIS/Field Review	
Proximity to Hazardous Materials		Number of retail businesses within 500 ft/150m	GIS/Field Review	
		Number of EPA Licensed Hazmat TSD Facilities within one-half mile		
Emergency Response		Number of MDEQ Licensed TSD Facilities within one-half mile		
		Distance to nearest fire station (mi)	GIS/Field Review	
		Distance to nearest police station (mi)	GIS/Field Review	
		Number of streets closed (perm.)	GIS/Field Review	
		Number of streets closed (temp.)	GIS/Field Review	
Mainline Raillines Rerouted	GIS/Field Review			
Maintain Consistency with Local Planning	Official Plans	Consistency	YES/NO	Professional Judgment
	Other Plans	Consistency	YES/NO	Professional Judgment
		Environmental Sites Affecting Plan Implementation (single sites may have multiple designations)	Leaking Underground Storage Tanks	Number
	EPA/DEQ Licensed Hazmat TSD Facility		Number	Web-based EPA files
	National DEQ Priority List (Superfund)		Number	Web-based MDEQ/EPA files
	RTK Cerclis (Superfund)		Number	Web-based MDEQ/EPA files
Michigan Contaminated Site	Number	Web-based MDEQ files		

Table 2-1 (cont'd)
Detroit River International Crossing Study
Evaluation Factors and Performance Measures
Illustrative Alternatives Phase

Evaluation Factor	Performance Measure Category		Performance Measures			
			Description/Units	Data Source		
Protect Cultural Resources	Above Ground Historic Resources	Historic Districts	Number	Web-based SHPO files		
		Listed NRHP Sites/Structures	Number	Web-based SHPO files		
		Listed SHRS Sites/Structures	Number	Web-based SHPO files		
		Locally Listed Sites/Structures	Number	Local Historic Groups		
		Potentially Eligible Sites/ Structures	Number	Field Review		
	Archaeology	Previously Recorded Sites	Number	Web-based SHPO files		
	Below Ground Resources	Potential to Find/Record	High/Medium/Low	Field Review		
	Parkland	All Public Parks	Number/Acres	Municipal Web sites/Field Review		
	6(f) Parks	Number/Specify	Web site – National Park Service			
	Coastal Zone Management Projects	Number of Project/Specify	MDEQ and Grant Applications			
Protect the Natural Environment	Surface Water	Floodplain	Number/Acres	GIS/Field Review		
		Surface Run Off	Acres	Calculation		
		Primary Steams	Number/Specify	GIS/Field Review		
		Secondary Streams	Number/Specify	GIS/Field Review		
		Other Water-crossings	Number/Specify	GIS/Field Review		
	Groundwater	Municipal Wells	Number	Contact with Municipalities		
		Water In-takes	Number/Specify	Contact with Municipalities		
	Significant Habitat	Wetlands	Acres	Field Review		
		Fens/Bogs	Number/Acres	Field Review		
		Endangered Species	Potential Species	U.S. Fish & Wildlife/MDEQ		
		Designated Wildlife Refuges	Number/Acres	U.S. Fish & Wildlife/MDEQ		
	Prime/Unique Farmland	Farmland	Acres	GIS		
Mineral Resources	Salt/Limestone	Type/Specify	Field Review/Industry sources			
Improve Regional Mobility	Highway Network Effectiveness	VMT (int'l traffic only, PM Peak Hour for 2035)	No Action	SEMCOG Travel Demand Model		
			With New Crossing	SEMCOG Travel Demand Model		
			Difference from 2035 – No Action	SEMCOG Travel Demand Model		
			Percent Difference	SEMCOG Travel Demand Model		
			No Action	SEMCOG Travel Demand Model		
		VHT (int'l traffic only, PM Peak Hour for 2035)	With New Crossing	SEMCOG Travel Demand Model		
			Difference from 2035 – No Action	SEMCOG Travel Demand Model		
			Percent Difference	SEMCOG Travel Demand Model		
		V/C (total traffic)	Table 5-10, Figure 5-11	SEMCOG Travel Demand Model		
		Diversion due to disruption at crossing	Difference of Int'l VMT with Ambassador Bridge Closed and New Crossing Open	SEMCOG Travel Demand Model		
Difference of Int'l VHT with Ambassador Bridge Closed and New Crossing Open	SEMCOG Travel Demand Model					
Detour of Local Arterials	Number of SEMCOG Network Links Rerouted	SEMCOG Travel Demand Model				
Maintain Air Quality	Regional Burden	Change from No Action	VOC	lbs. in PM peak hour	EPA MOBILE6.2 & model runs	
			CO	lbs. in PM peak hour	EPA MOBILE6.2 & model runs	
			NOX	lbs. in PM peak hour	EPA MOBILE6.2 & model runs	
			PM2.5	lbs. in PM peak hour	EPA MOBILE6.2 & model runs	
			PM10	lbs. in PM peak hour	EPA MOBILE6.2 & model runs	
	Hotspot	Carbon Monoxide (CO)	Parts Per Million	Benzene	lbs. in PM peak hour	EPA MOBILE6.2 & model runs
				1,3 Butadiene	lbs. in PM peak hour	EPA MOBILE6.2 & model runs
				Formaldehyde	lbs. in PM peak hour	EPA MOBILE6.2 & model runs
				Acetaldehyde	lbs. in PM peak hour	EPA MOBILE6.2 & model runs
				Acroline	lbs. in PM peak hour	EPA MOBILE6.2 & model runs
				Approved Federal Model (CALQ3HC)		

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Table 2-1 (cont'd)
Detroit River International Crossing Study
Evaluation Factors and Performance Measures
Illustrative Alternatives Phase

Evaluation Factor	Performance Measure Category		Performance Measures		
			Description/Units	Data Source	
Assess How Project Can Be Built	Traffic Maintenance	Streets closed during construction	Number	GIS/Field Review	
		Adjacent businesses affected by construction	Number within 500 ft/150m	GIS/Field Review	
		Adjacent schools or public use facilities affected by construction	Number within 500 ft/150m	GIS/Field Review	
	Site constraints limiting access to the plaza for the river crossing or the roadway connections.	Plaza proximity to crossing landing	Distance (ft/m)	GIS/Field Review	
		Raillines adjacent to or through plaza site	Number	GIS/Field Review	
		Utilities adjacent to or through plaza site	Number	GIS/Field Review	
		Presence of heavy industry adjacent to or on plaza site	Yes/No	GIS/Field Review	
		Contaminated sites/hazardous materials within 500 ft/150m (single sites may have multiple designations)	EPA Licensed Hazmat TSD Facilities		Web-based EPA files
			National Priority List (Superfund)		Web-based MDEQ files
			RTK Cerclis (Superfund)		Web-based MDEQ files
			Michigan Contaminated Sites		Web-based MDEQ files
	DEQ Licensed TSD Facilities			Web-based MDEQ files	
	Geotechnical constraints – identify any unusual geotechnical features/issues that may be problematic for construction	Proximity to solution mining areas	Number within 1,000 ft/300m	GIS	
		Presence of poor soil conditions (e.g., compressible/expansive and organic)	Yes/No	GIS/Literature Review	
		Presence of noxious gases (e.g., Hydrogen Sulfide and Methane)	Yes/No	Literature Review	
Presence of artesian groundwater		Yes/No	Literature Review		
Relative risk of known site conditions (environmental, geotechnical, other physical/construction methodologies)	Engineering Consideration	High/Medium/Low	Professional Judgment		

Source: The Corradino Group of Michigan, Inc.

The professional assessment of whether a **community's cohesion/character** would be affected by a component of the crossing system is based upon an understanding of the characteristics of the affected neighborhood(s)/community(ies). The entirety of the information presented in this category is used to make that judgment.

The **potential acquisition** of residential units (single-family and apartments) and the number of inhabitants who may have to be relocated is included in the assessment by each component of the border crossing system. Similarly, the number of businesses potentially affected, along with an estimate of the number of direct jobs at those businesses that are expected to be relocated, have been identified. Lastly, other land uses that could be affected are incorporated into the analysis.

They include: schools, senior service facilities, city government facilities, places of worship, medical facilities, state/federal government facilities, and community service facilities, such as recreation centers, counseling centers, and the like.

Presidential Executive Order 12898 on **Environmental Justice** (EJ) sets out objectives and procedures: *to identify, address and avoid disproportionately high and adverse health and environmental effects on minority populations and low-income populations.* The population groups likely to be affected directly and/or indirectly by a component of the border crossing system have been defined by using Census data at the "block-group" level. In addition, the number of people potentially impacted have been estimated. It is noteworthy that this latter number may exceed those people potentially relocated because the block-group data are much broader than the in-field counts of dwelling units that could be acquired. Nonetheless, it serves as an estimate of EJ impacts.

Those social/cultural groups covered by **Title VI** of the Civil Rights Act of 1964 are also reviewed in this evaluation category. Title VI mandates that discrimination not occur on the basis of race, color or national origin in connection with programs and activities receiving federal financial assistance. To properly account for Title VI issues, all groups which comprise at least two percent of the SEMCOG region's population were chosen for analysis. These include Arab, Asian, Black or African-American, English, French, German, Hispanic/Latino, Irish, Italian, Polish and Scottish. Because the data to address Title VI ancestry issues are only available at the large Census tract level (as compared to the Census block-group level for minority populations), only the ancestral groups that could be potentially affected by a border crossing component are identified at this time, not the specific number of people. More detailed analysis of ancestry (and Environmental Justice) issues will be conducted for the Practical Alternatives analysis.

In order to determine the relationship of the plaza (and only the plaza) to the **security** of the neighborhood/community in which it may reside, and the effect of the surroundings on the plaza's security, several factors have been examined. A "proximity index" has been used to determine the

number of heavy³ industries and medium⁴ industries within one-half mile of the plaza's edge (not its center); this is a "risk-to-plaza" issue as the activities at these industries can affect the security of the plaza. Likewise, the number of light industry and office businesses within 1,000 feet/300 meters of the plaza's edge have been determined. The proximity index for residences and retail businesses is even more narrow at 500 feet/300 meters. These two latter proximity indices are associated with a plaza's potential risk to the community.

In order to determine the possible effect of the plaza on emergency services response, the plaza's distance to the nearest fire and police stations have been measured as well as a listing of the number of streets that may be closed temporarily during construction and permanently after the plaza is in operation. Likewise, the mainline railroads that would be crossed have also been defined because crossing a rail line may impede the responsiveness of emergency services.

The last issue in this category of public safety/security, as it relates to both the risk to the plaza and the plaza's potential risk on a community, is the number, within one-half mile of the plaza, of any Michigan Department of Environmental Quality/EPA-licensed Transfer/Storage/ Distribution (TSD) facility, which handles potentially hazardous materials.

³ Heavy industry is defined as those industrial land uses that present a potential for significant difficulty in demolition or removal as well as legacy issues that would affect construction such as environmental contamination. Such land uses may include chemical production facilities, hazardous waste processing facilities, foundries and blast furnaces, steel mills, etc.

⁴ Medium industry is considered a location of moderate manufacturing or industrial activity such as a distribution facility or a small (non-auto) assembly plant.

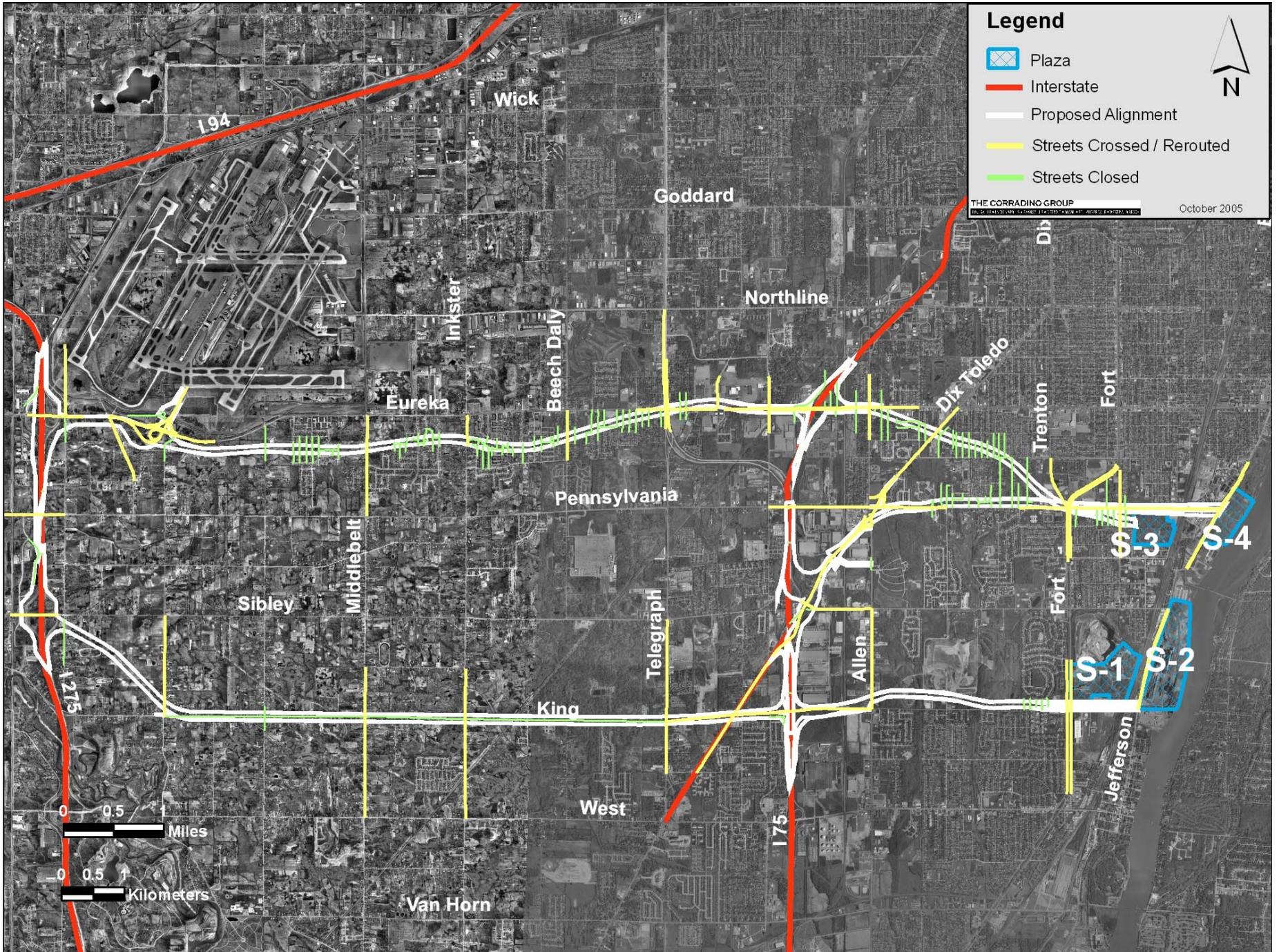
3. Supporting Data

3.1 Routes

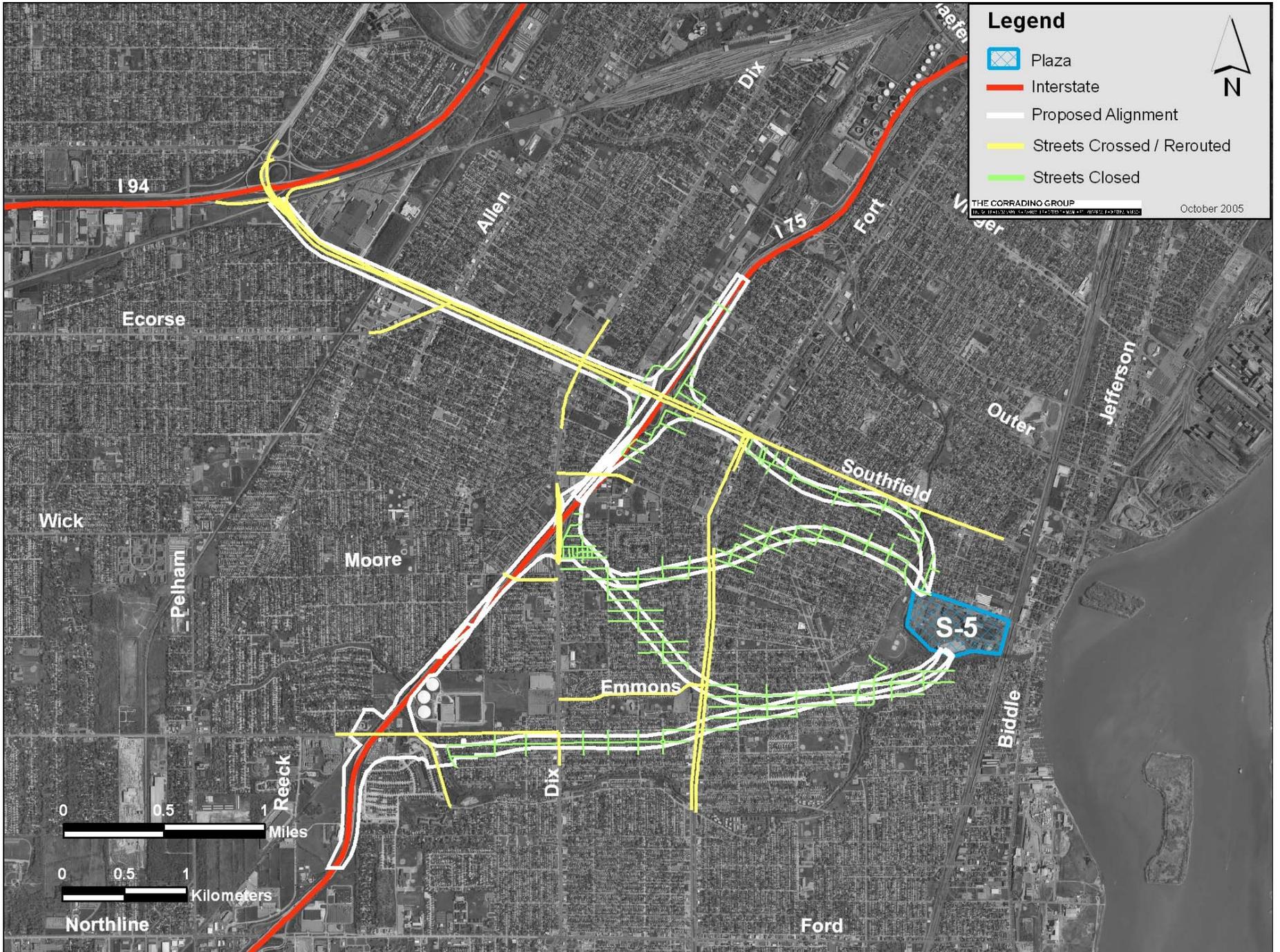
3.1.1 Protect Community/Neighborhood Characteristics

Streets Crossed/Rerouted or Closed

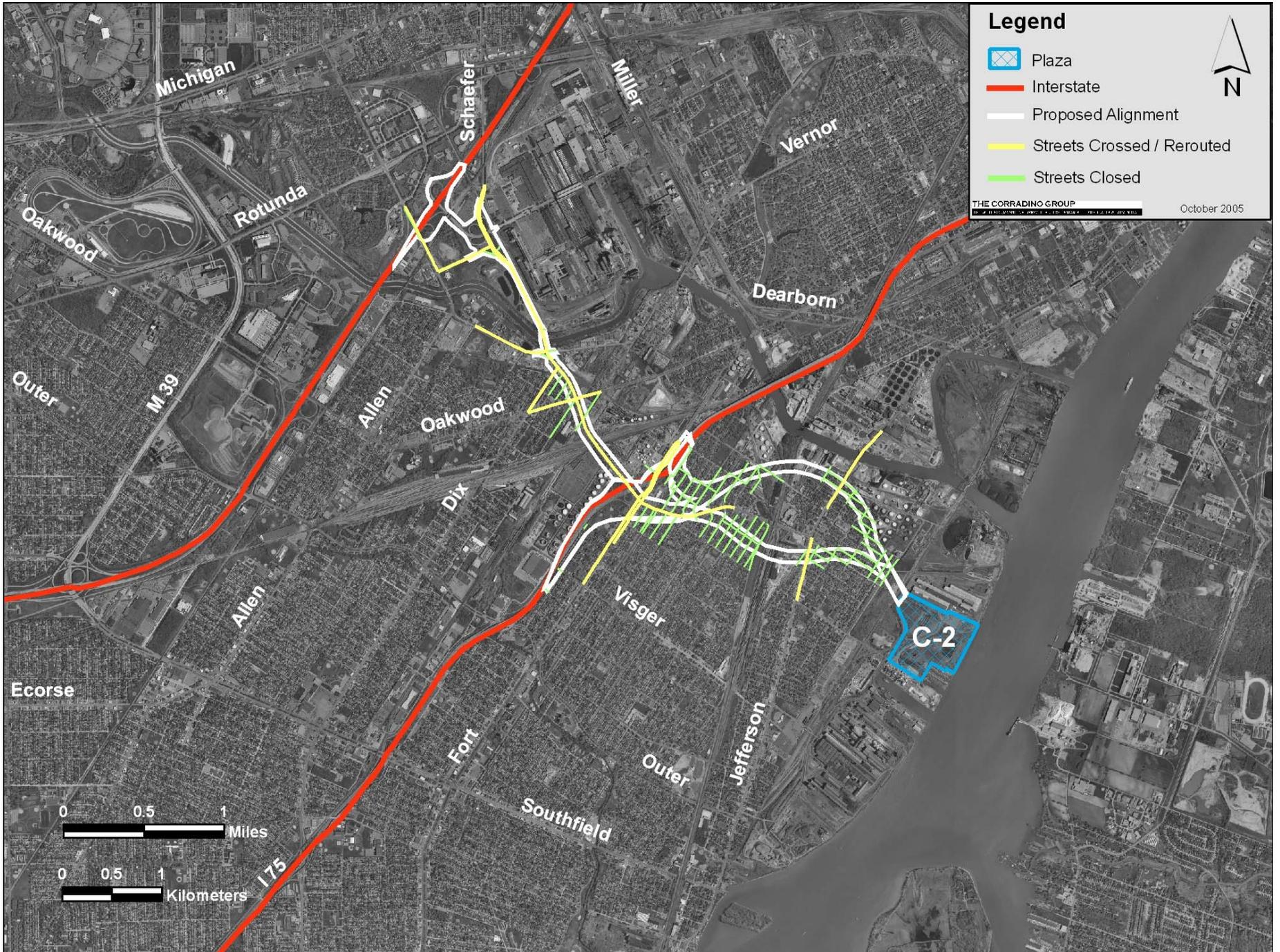
Streets Crossed/Rerouted or Closed
S-1 through S-4



Streets Crossed/Rerouted or Closed
S-5



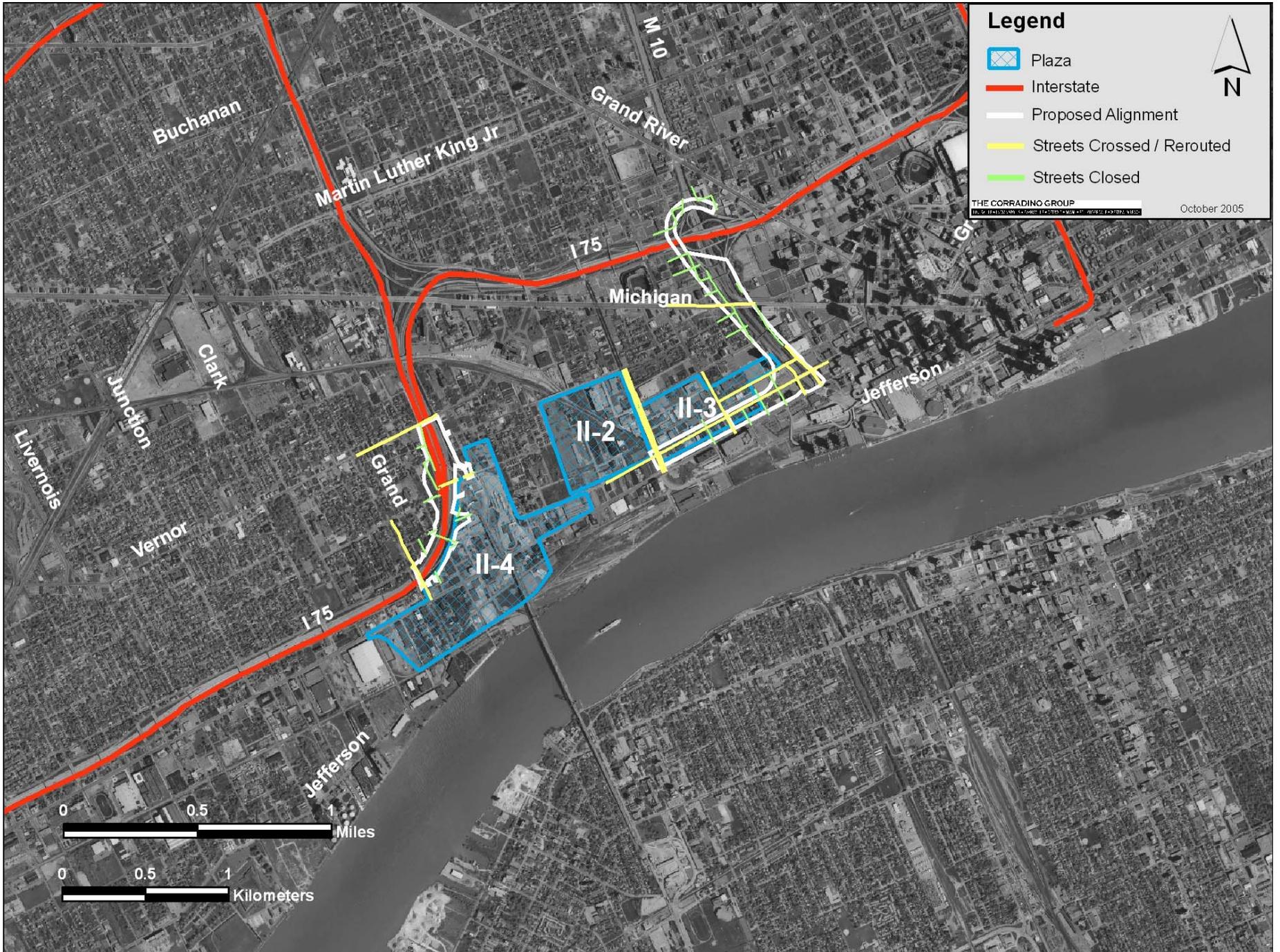
Streets Crossed/Rerouted or Closed
C-2



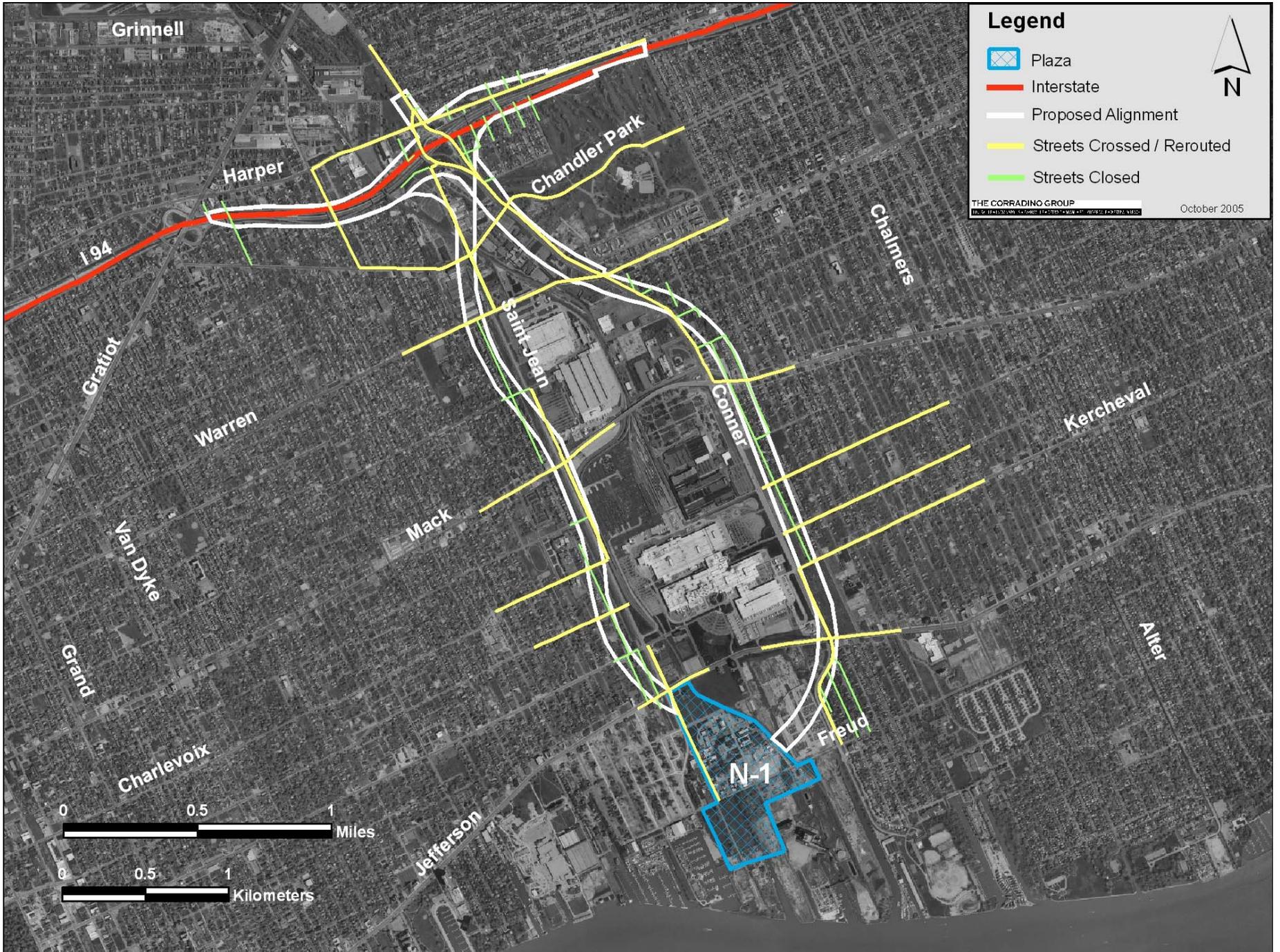
Streets Crossed/Rerouted or Closed
C-3 and C-4



Streets Crossed/Rerouted or Closed
II-2 through II-4

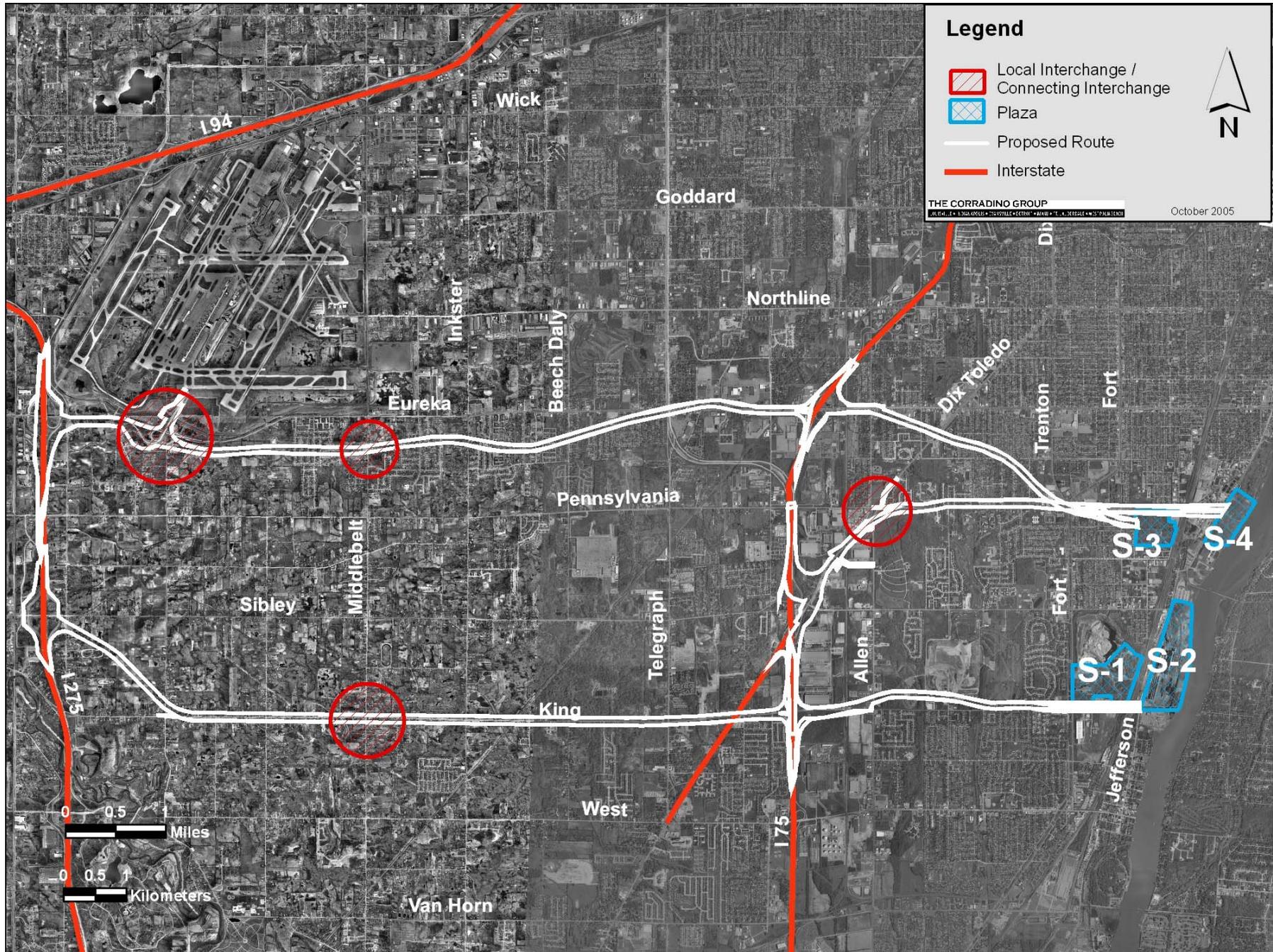


Streets Crossed/Rerouted or Closed
N-1



Streets with Interchange

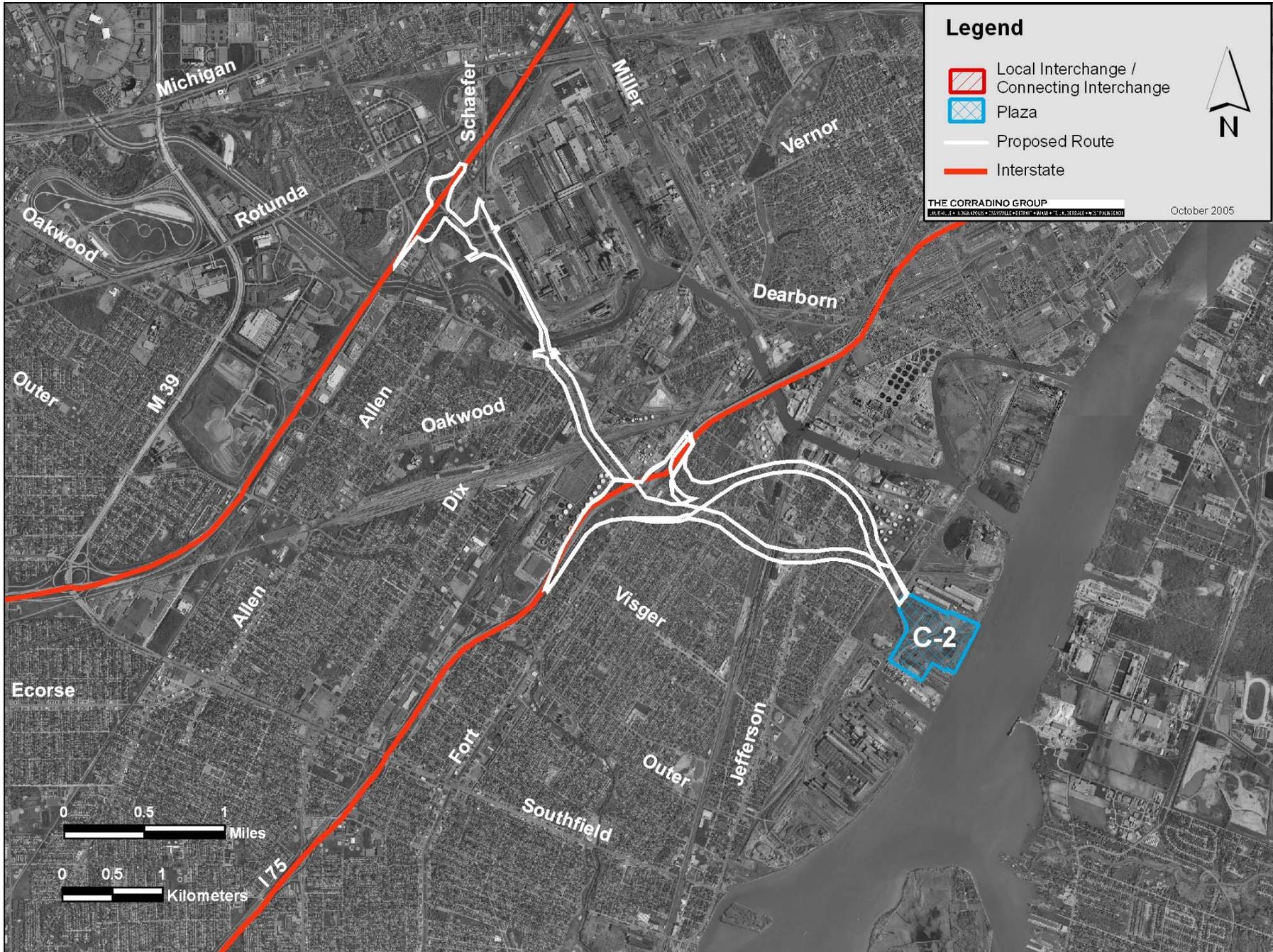
Non-Freeway Interchanges S-1 through S-4



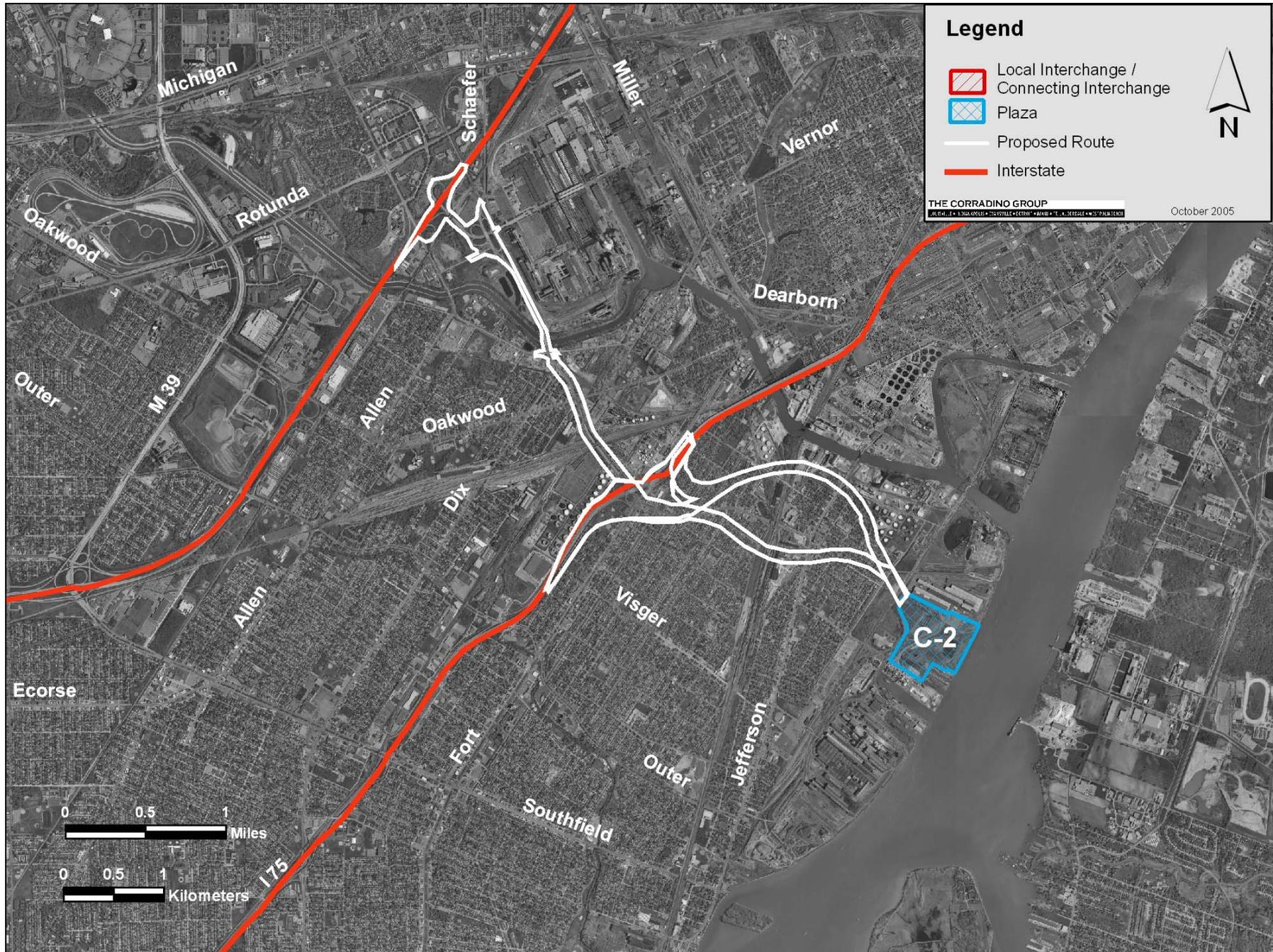
Non-Freeway Interchanges S-5



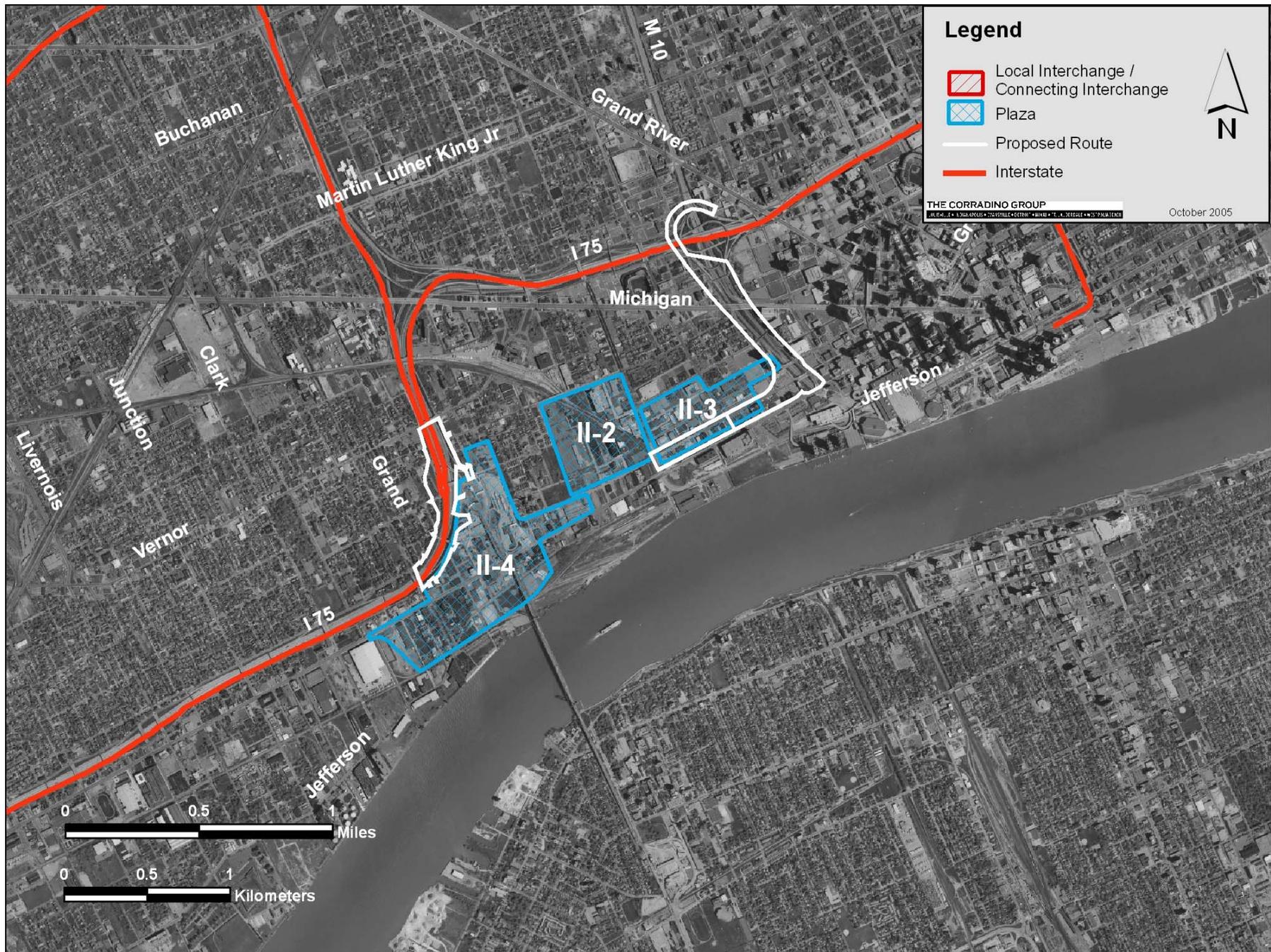
Non-Freeway Interchanges C-2



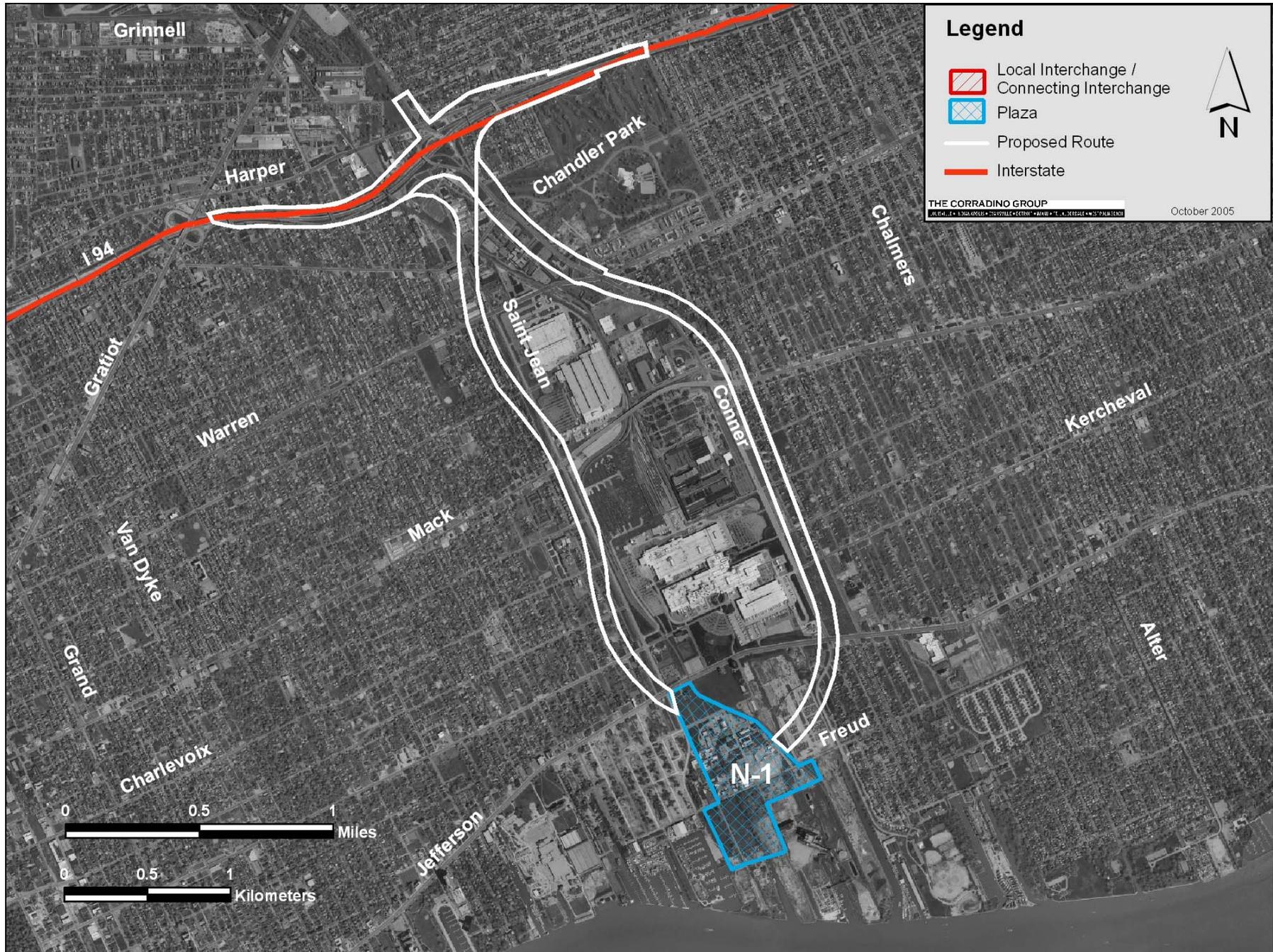
Non-Freeway Interchanges C-3 and C-4



Non-Freeway Interchanges II-2 through II-4

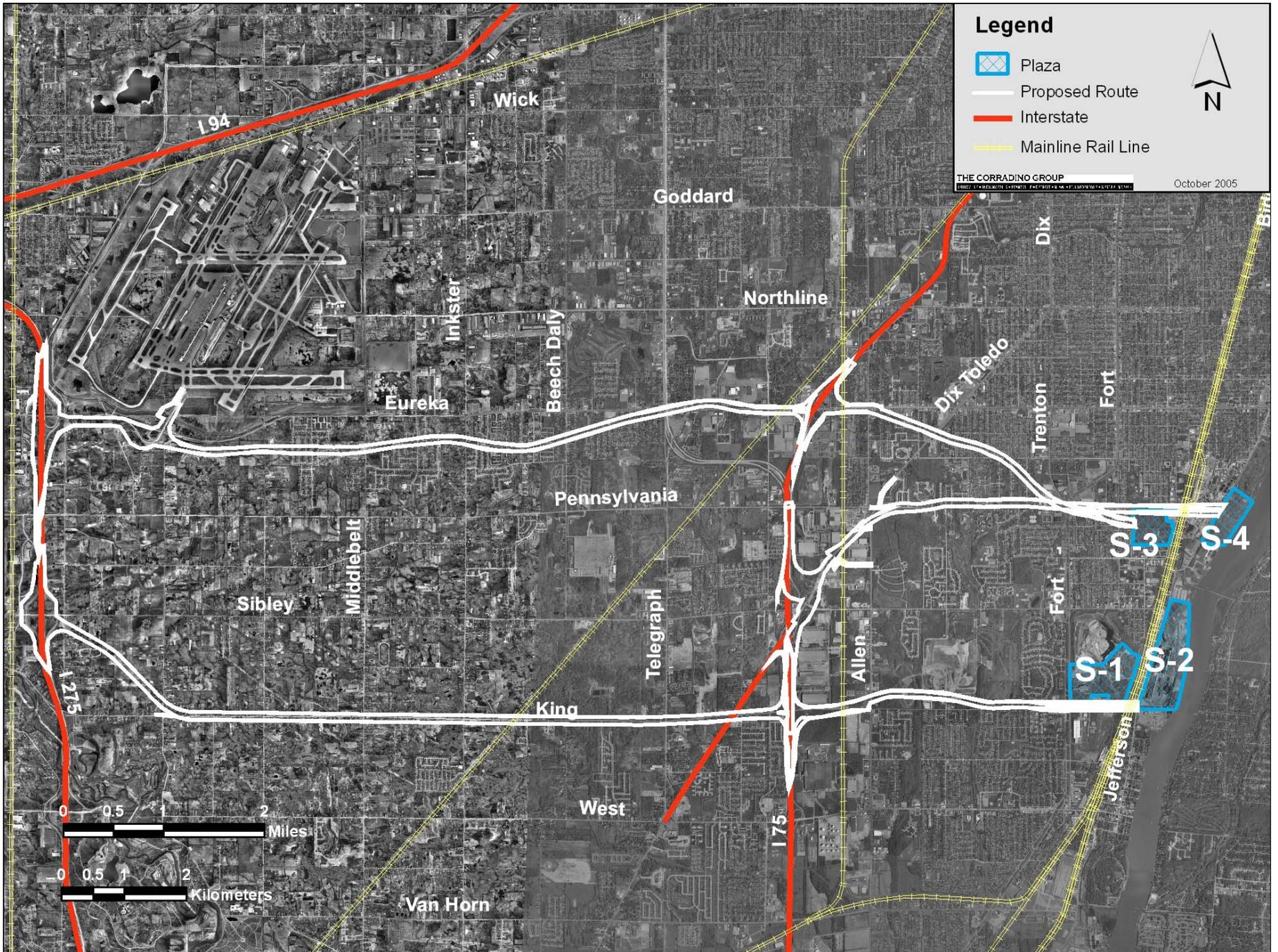


Non-Freeway Interchanges N-1

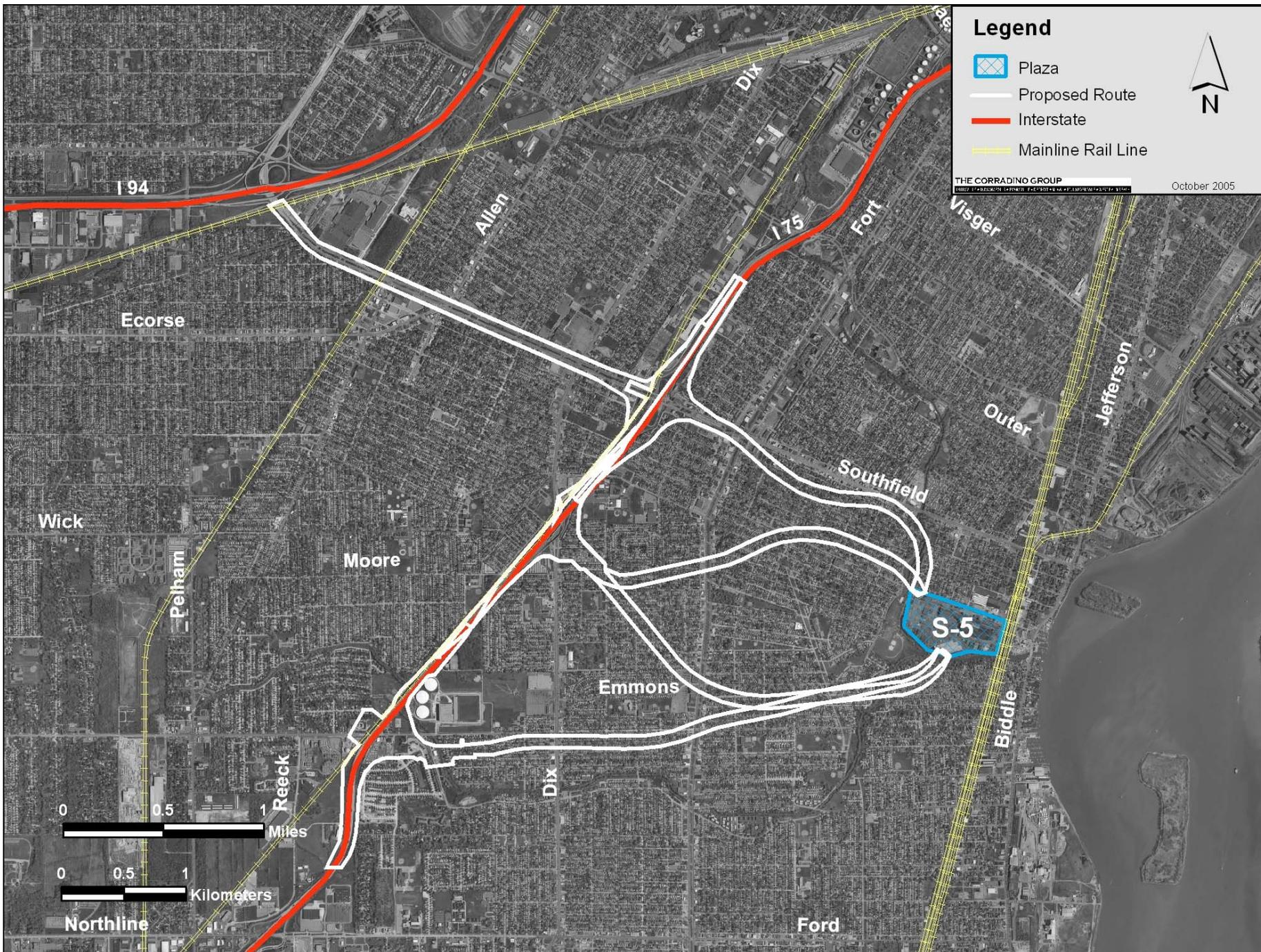


Mainline Rail Lines

Mainline Rail Lines S-1 through S-4



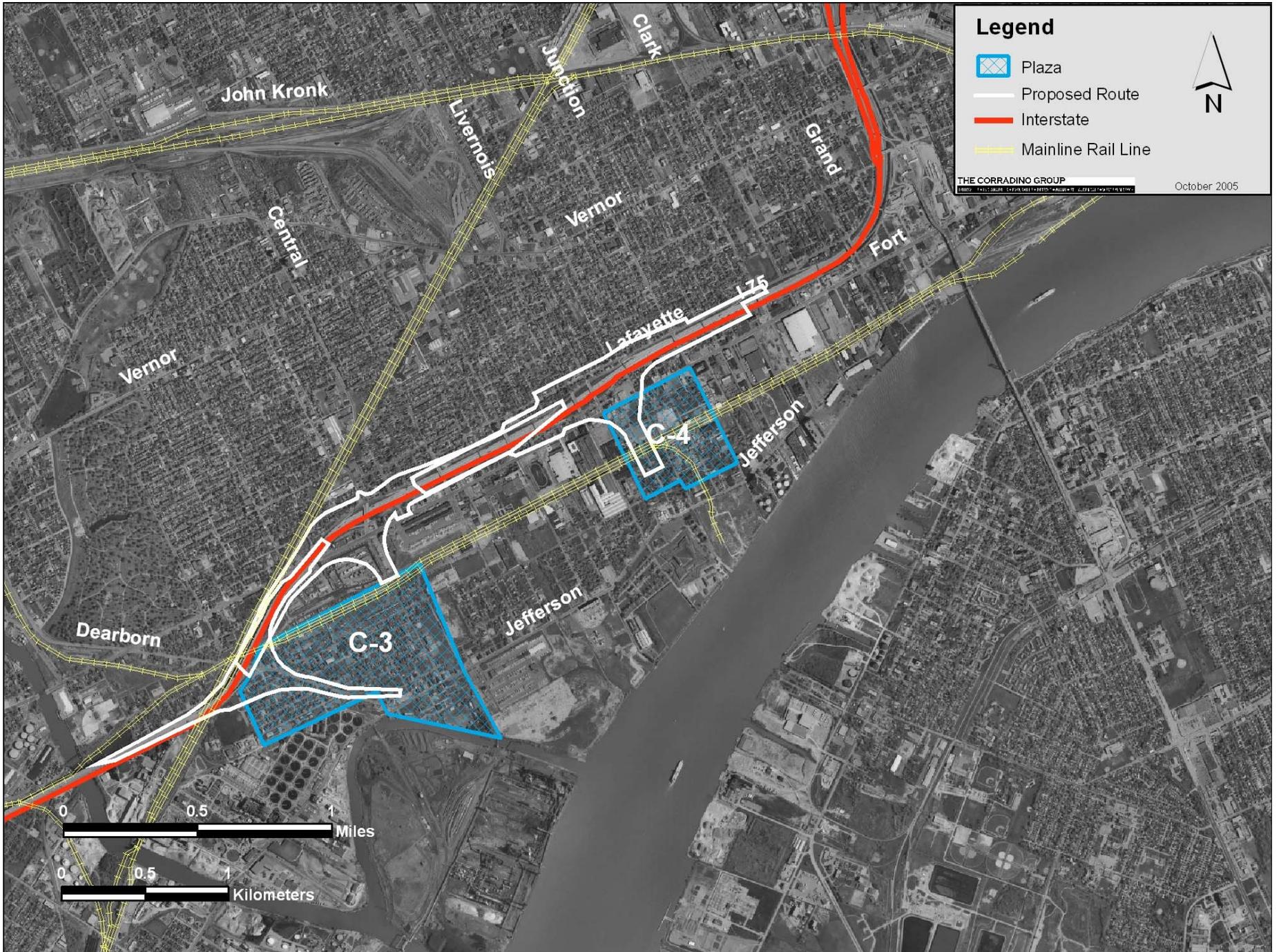
Mainline Rail Lines S-5



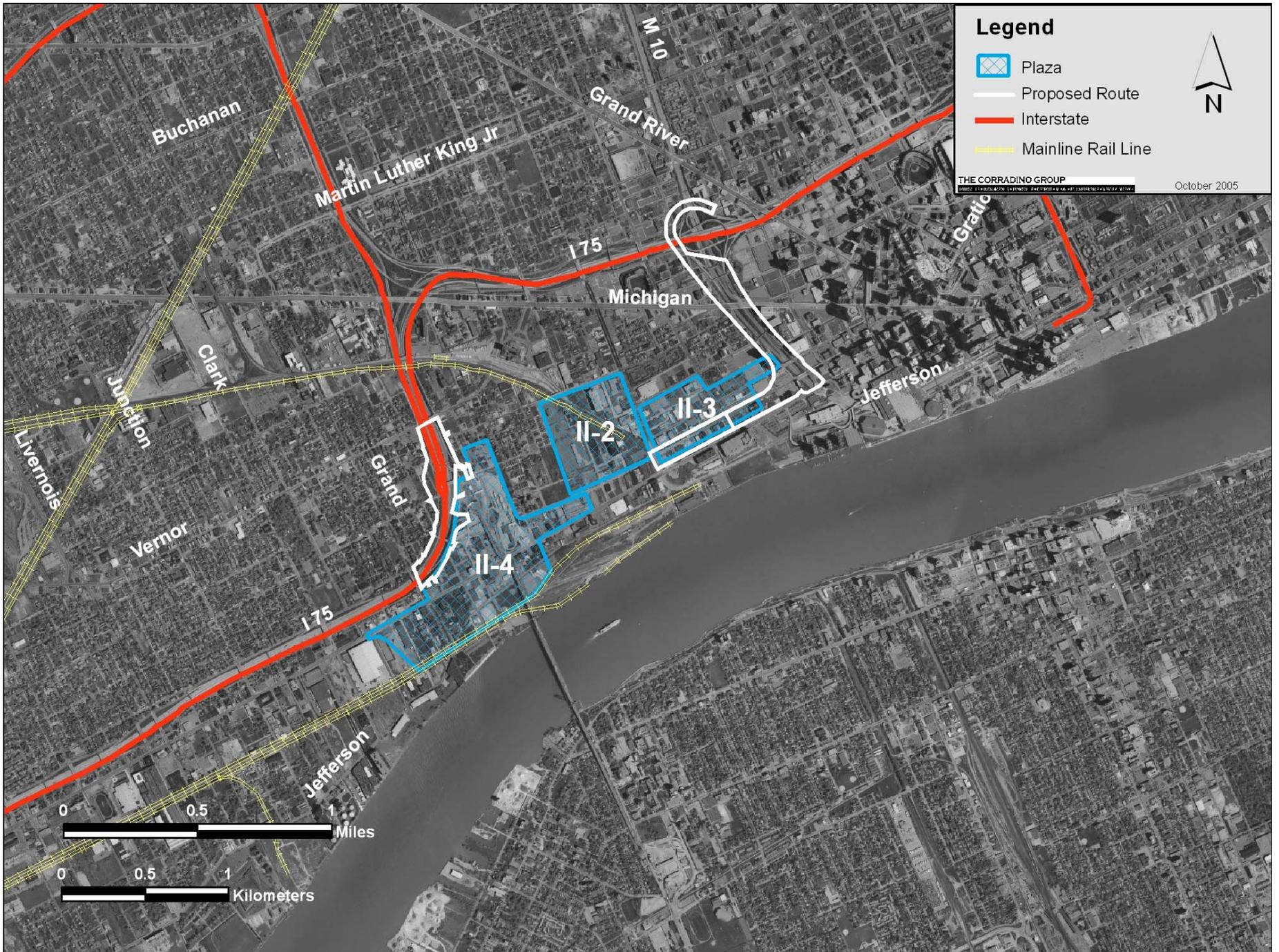
Mainline Rail Lines
C-2



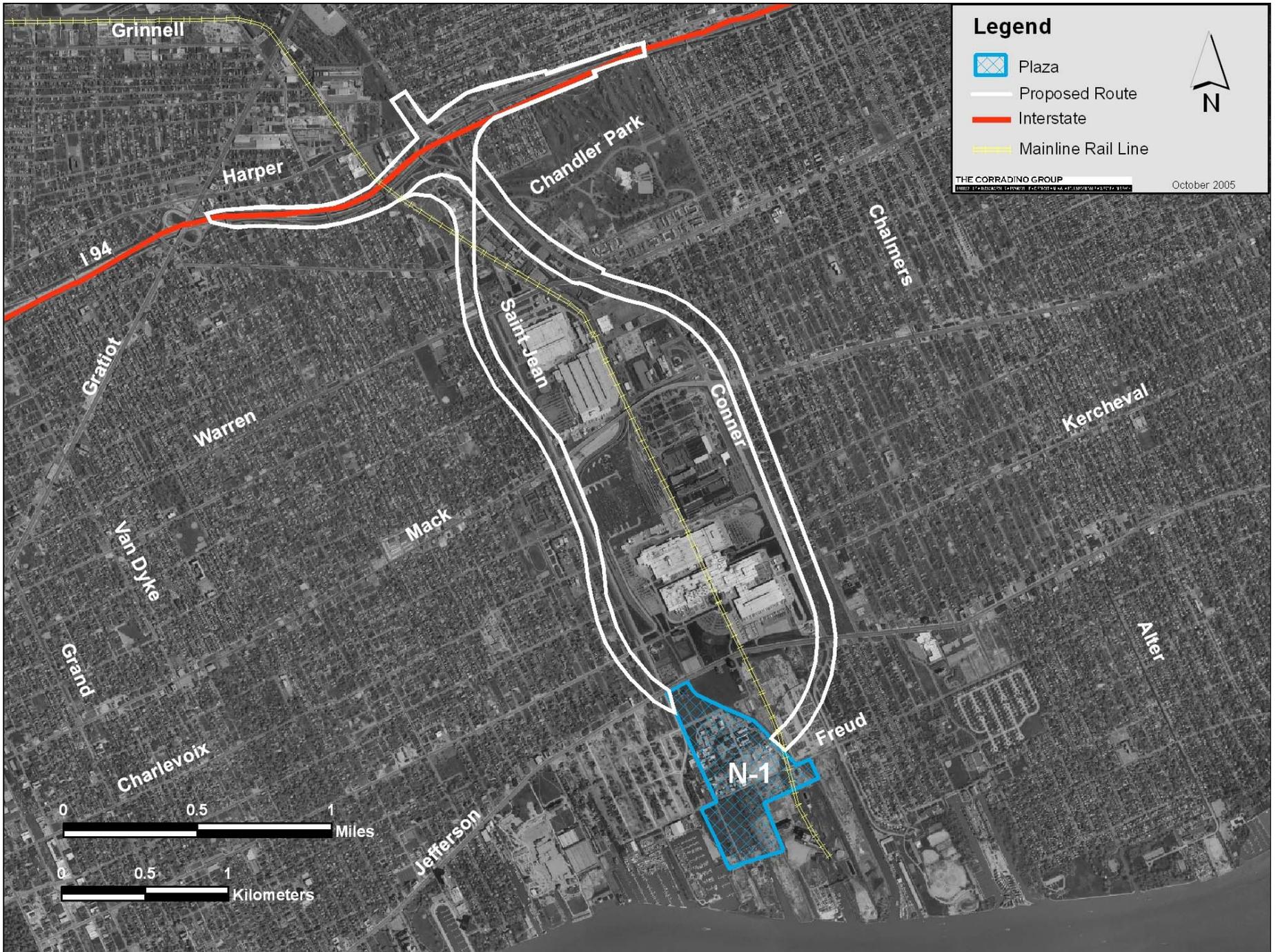
Mainline Rail Lines C-3 and C-4



Mainline Rail Lines II-2 through II-4

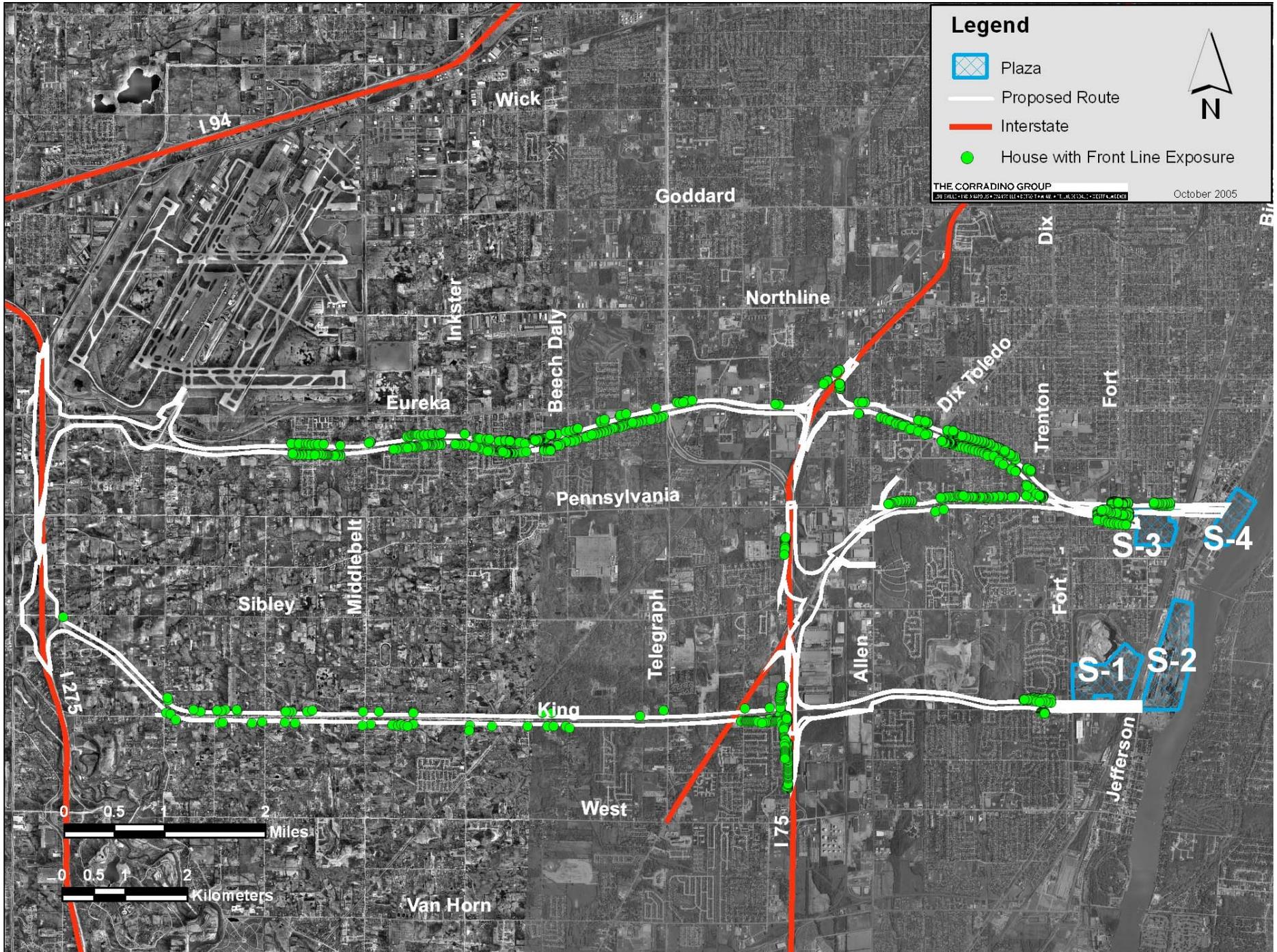


Mainline Rail Lines N-1



Noise – Front Line Exposure

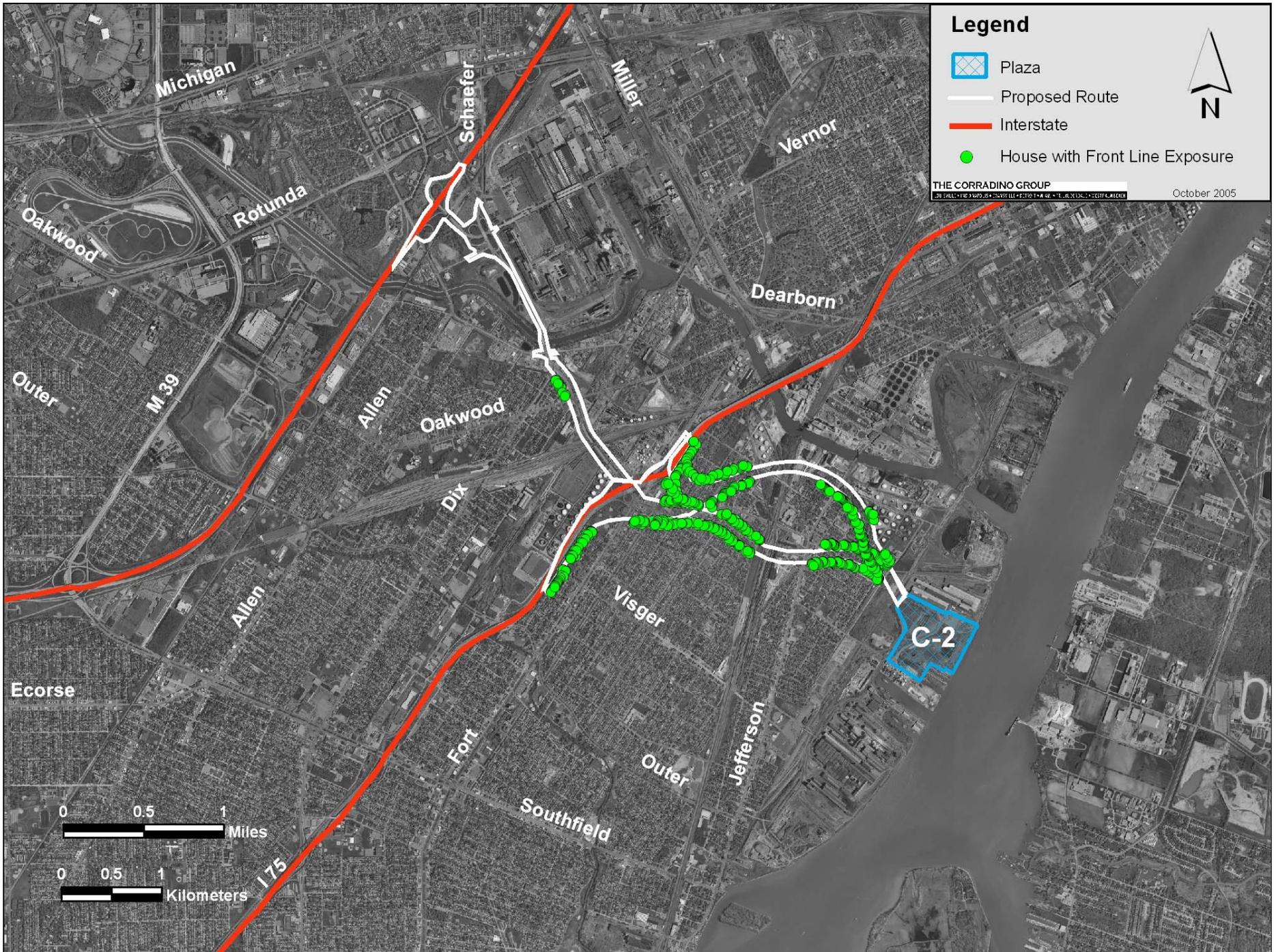
Noise – Front Line Exposure
S-1 through S-4



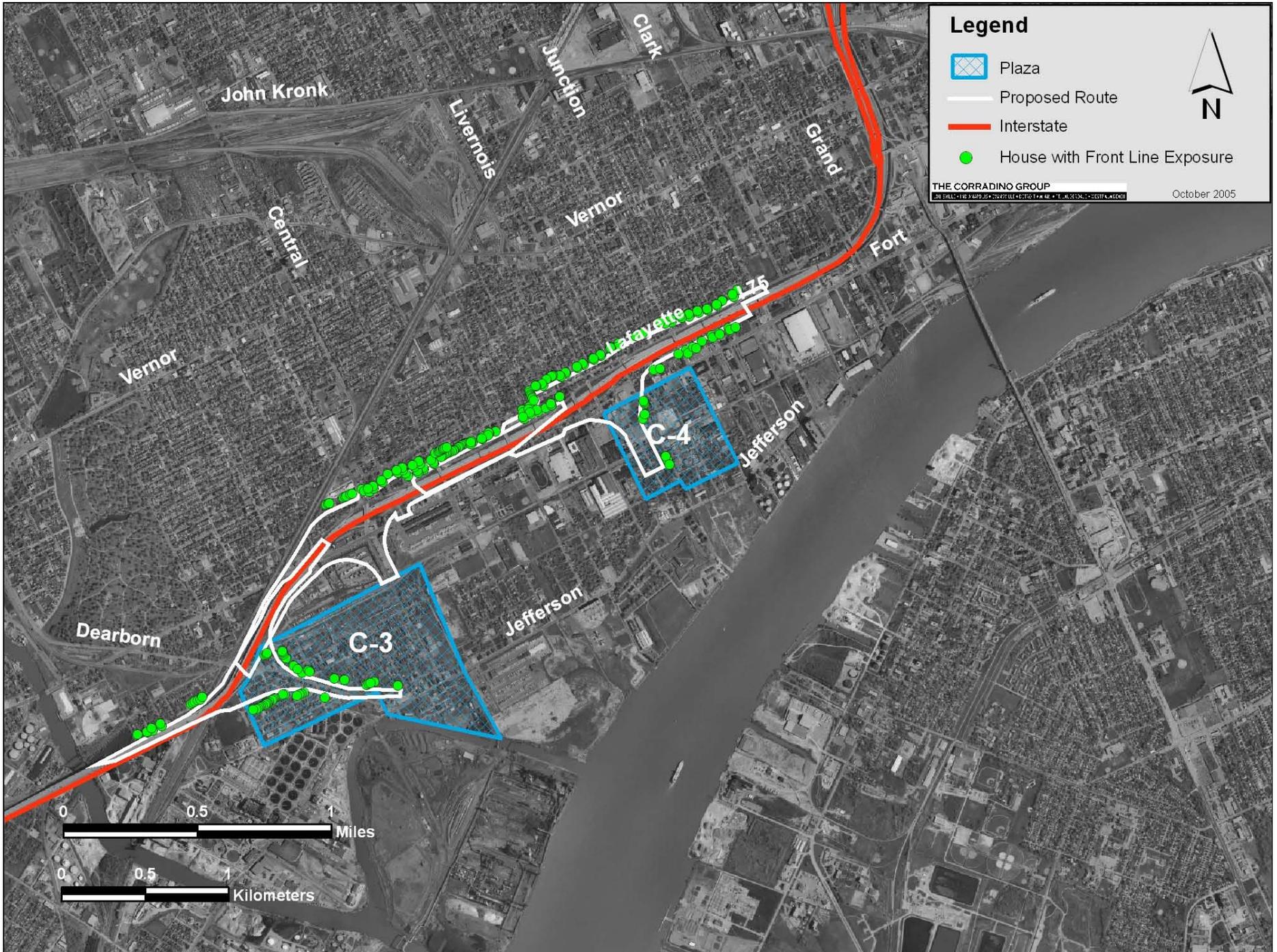
Noise – Front Line Exposure
S-5



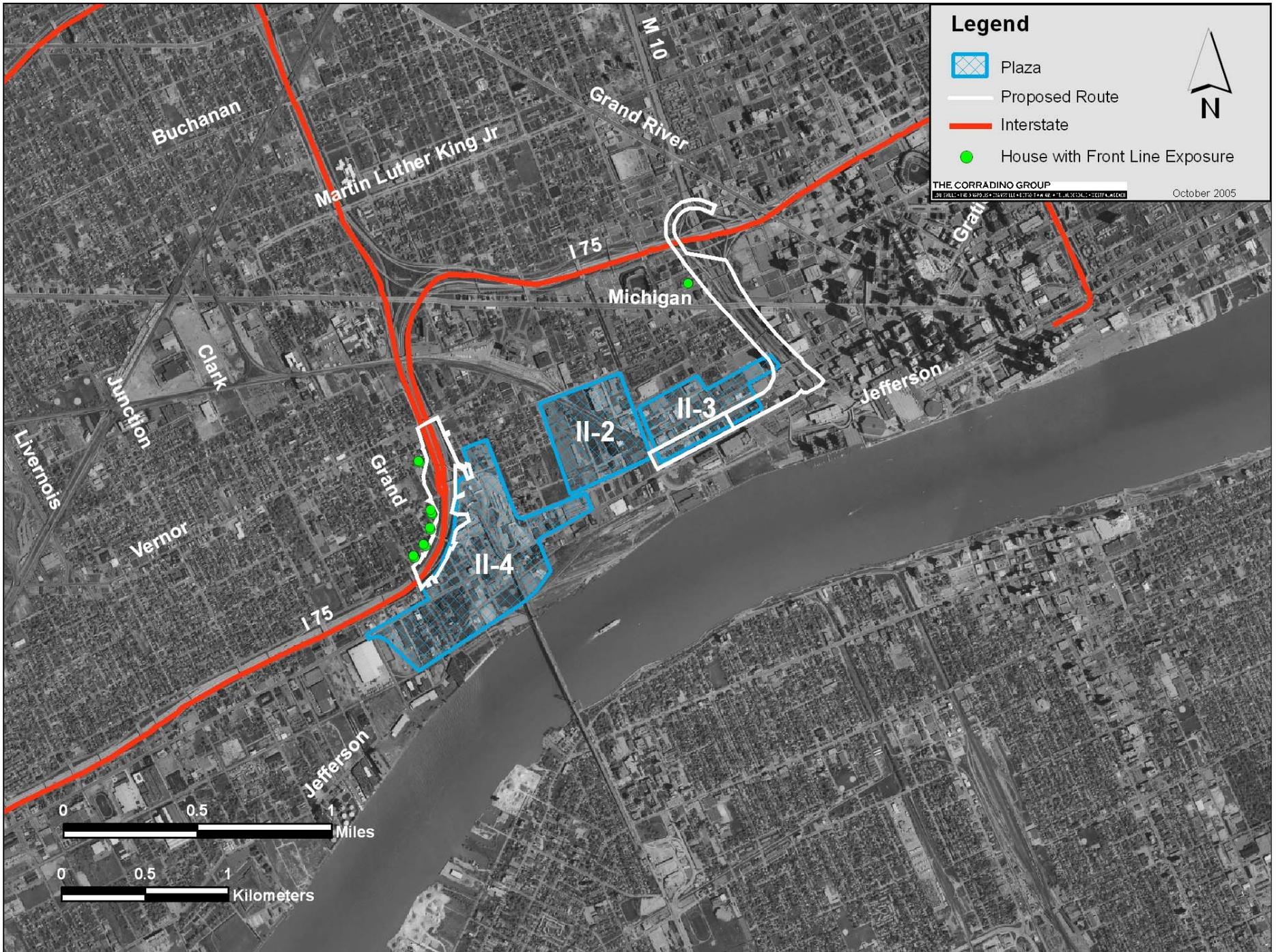
Noise – Front Line Exposure
C-2



Noise – Front Line Exposure
C-3 and C-4



Noise – Front Line Exposure
II-2 through II-4

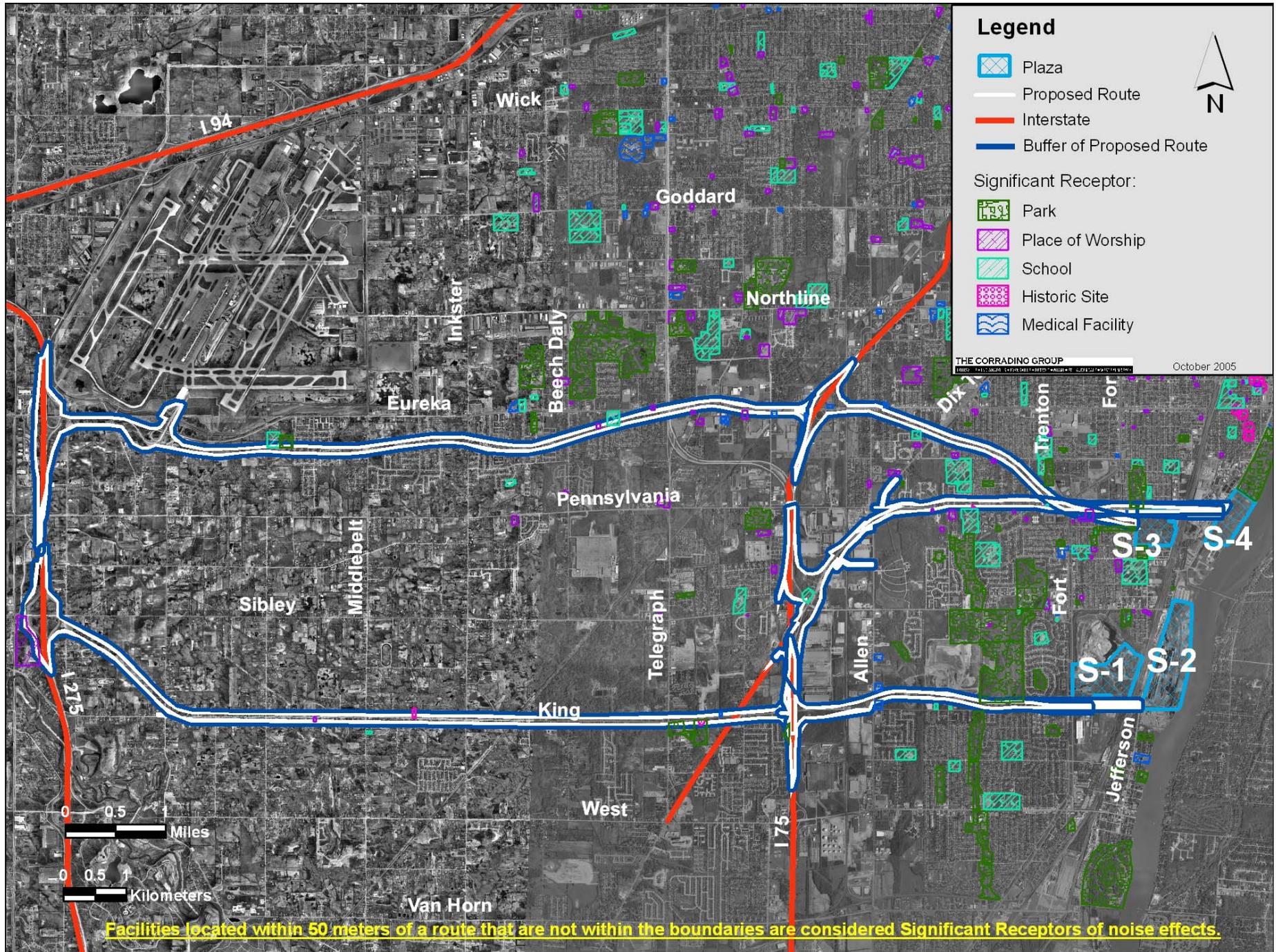


Noise – Front Line Exposure N-1

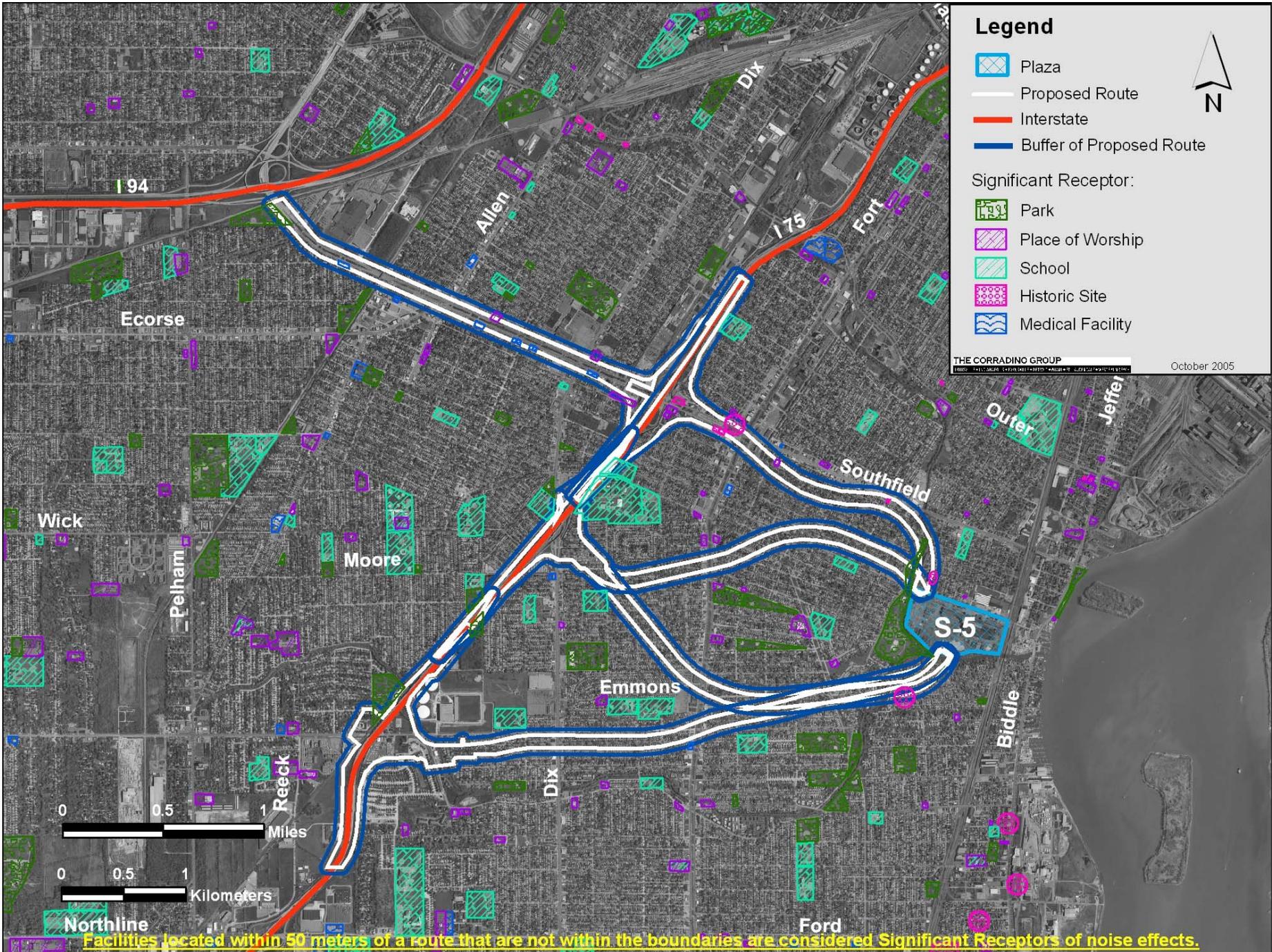


Noise – Significant Receptors Exposure

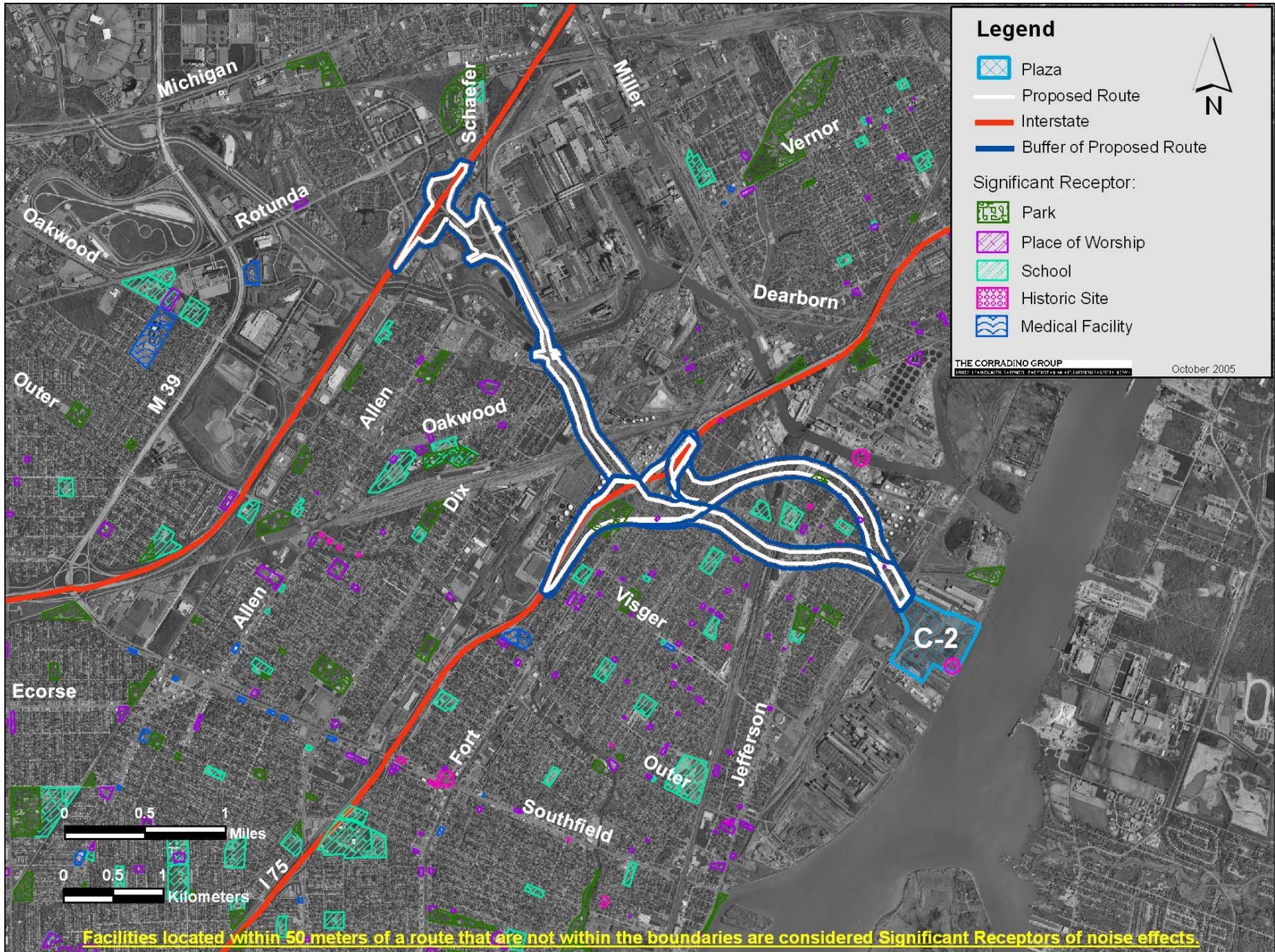
Noise – Significant Receptors
S-1 through S-4



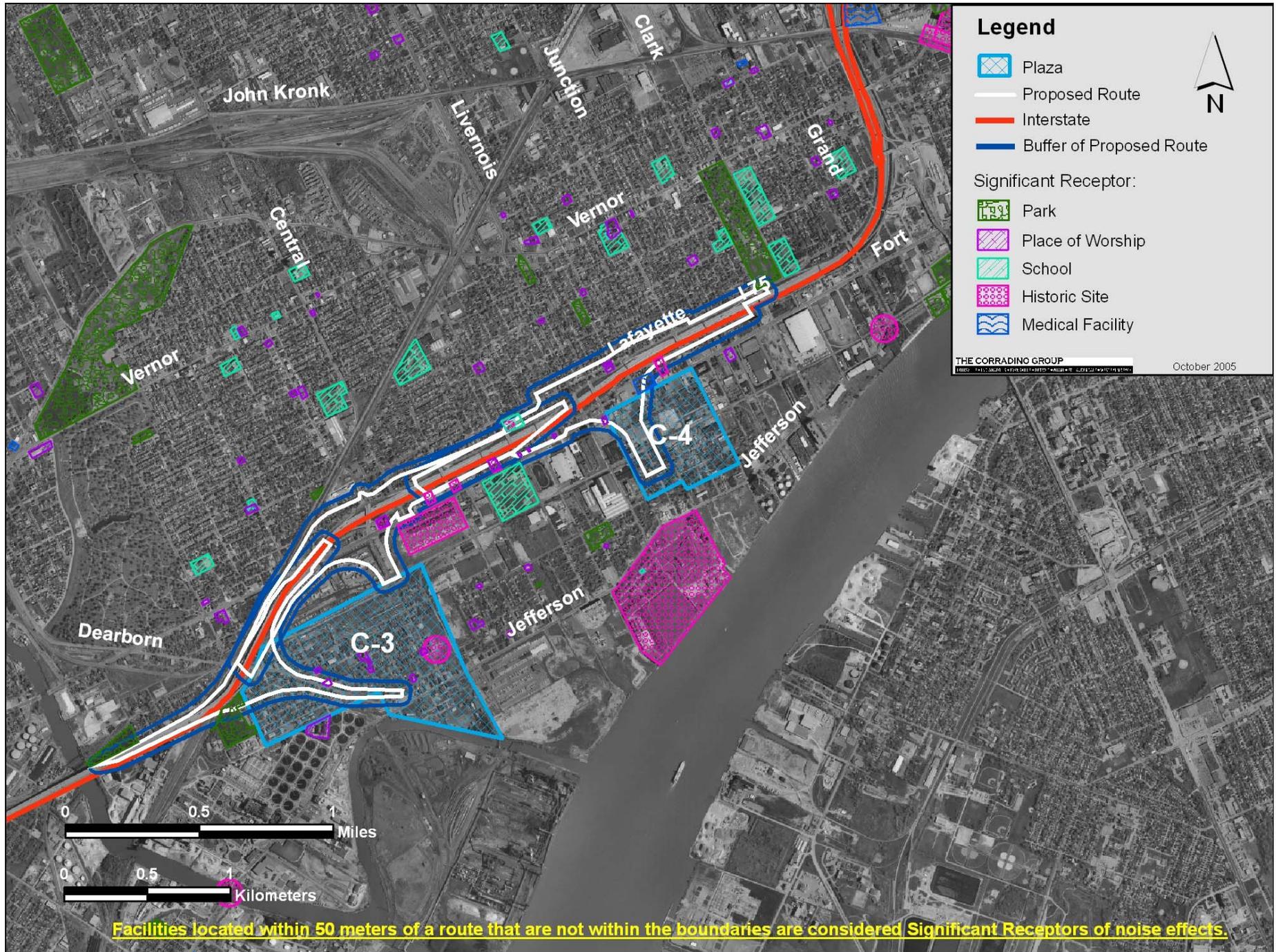
Noise – Significant Receptors
S-5



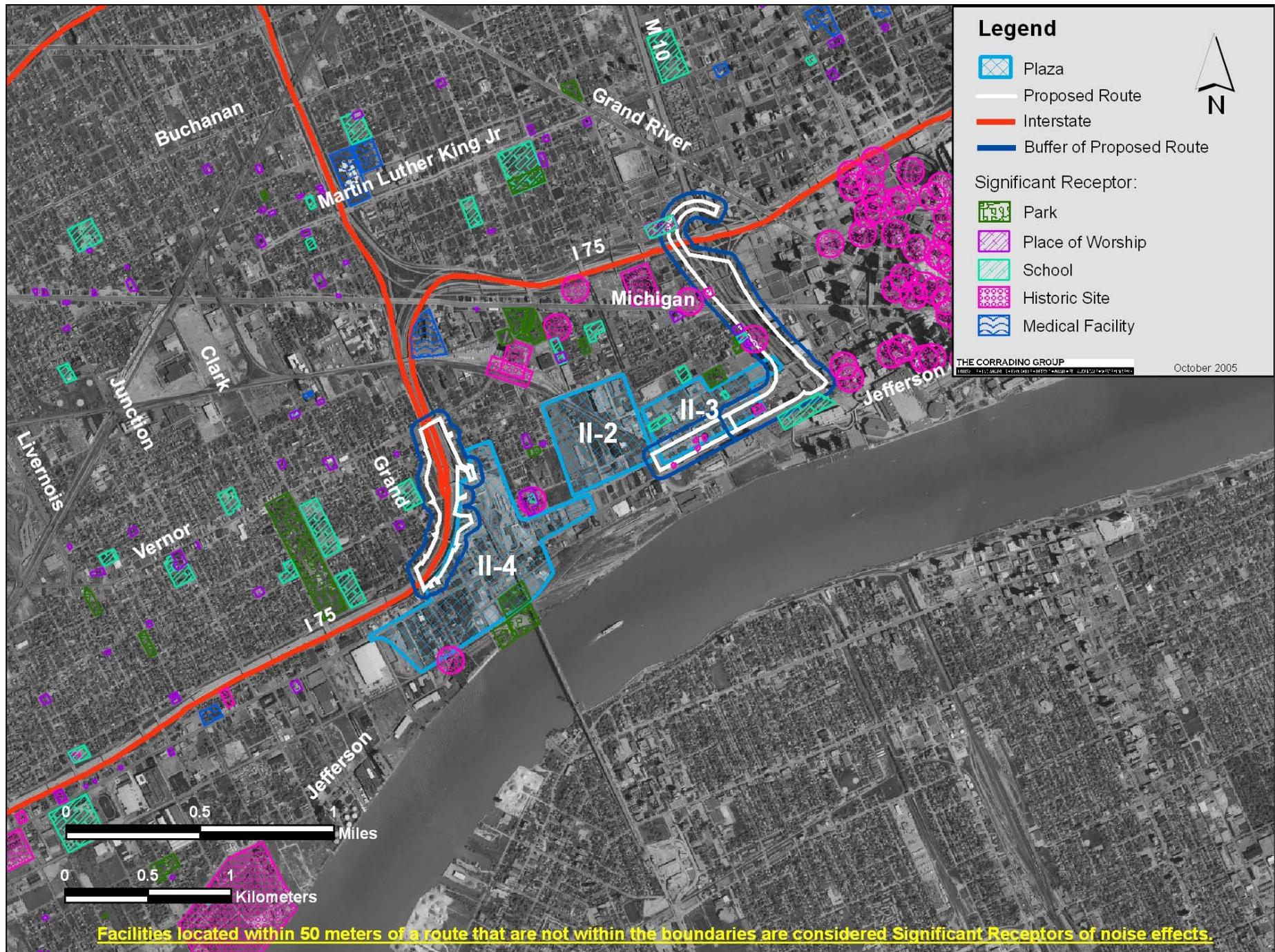
Noise – Significant Receptors
C-2



Noise – Significant Receptors
C-3 and C-4



Noise – Significant Receptors
II-2 through II-4

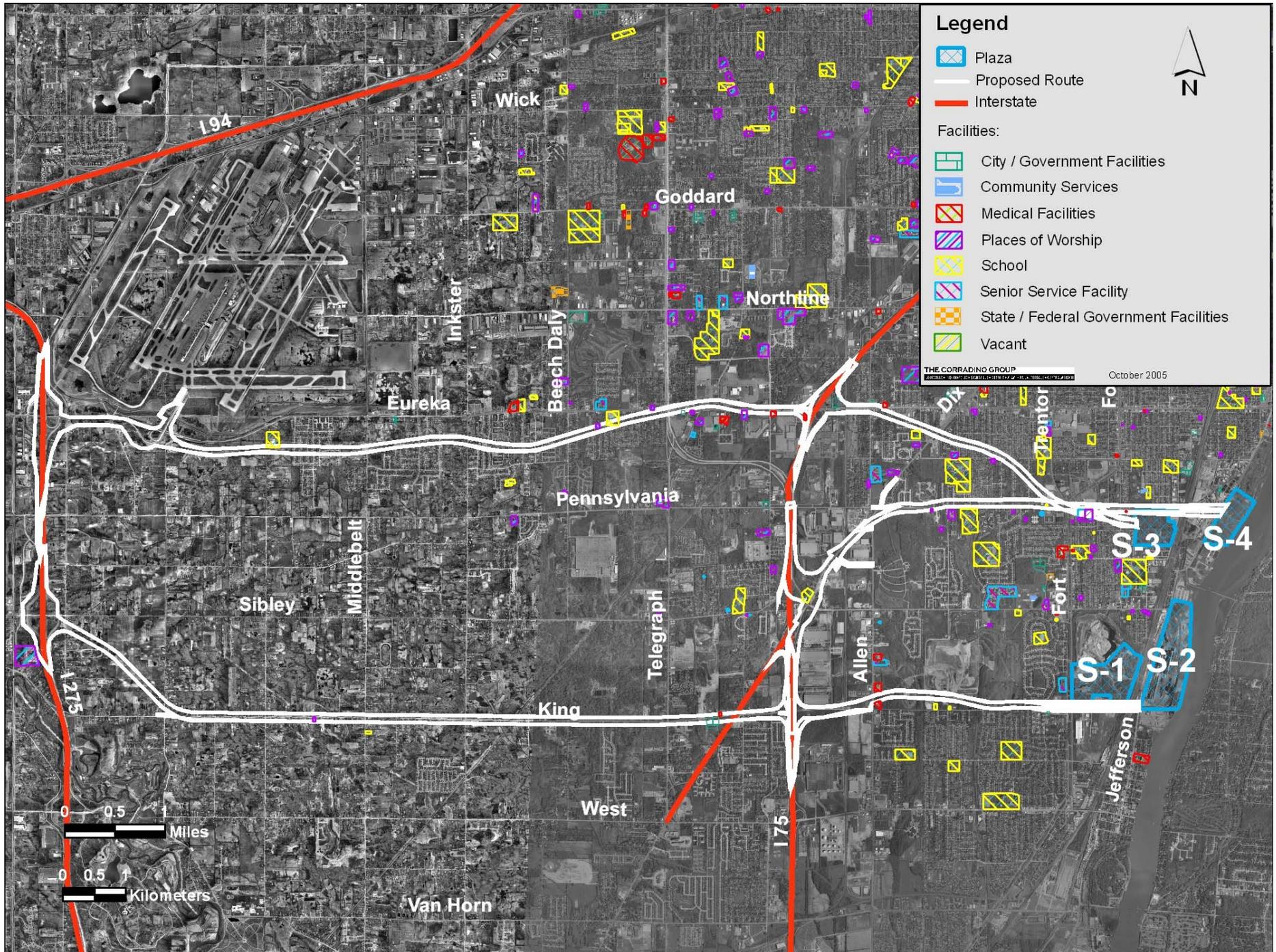


Noise – Significant Receptors N-1

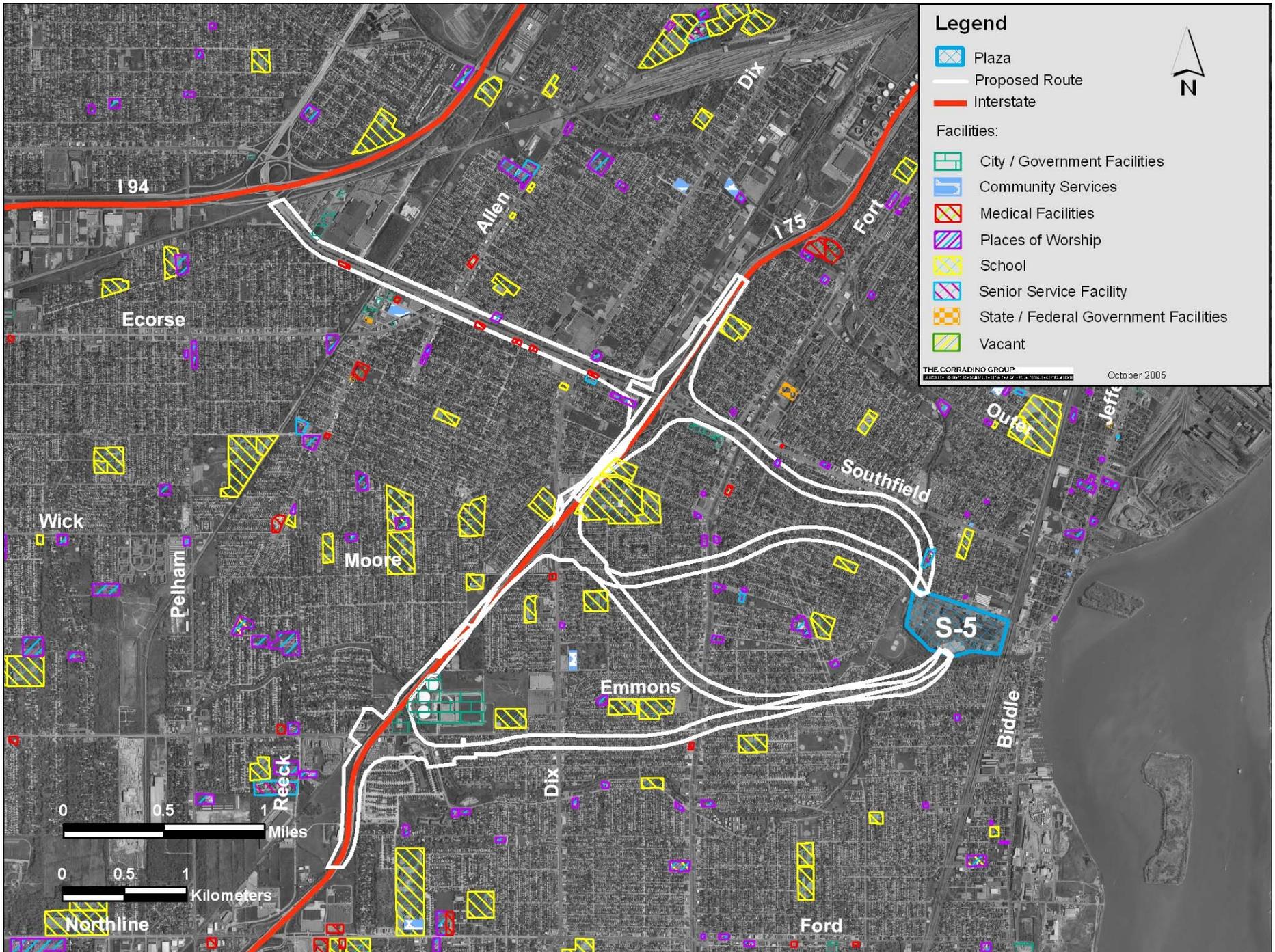


Potential Acquisition – Other Land Uses

Potential Acquisitions – Other Land Uses
S-1 through S-4



Potential Acquisitions – Other Land Uses
S-5



Potential Acquisitions – Other Land Uses

C-2



Potential Acquisitions – Other Land Uses C-3 and C-4



Potential Acquisitions – Other Land Uses II-2 through II-4

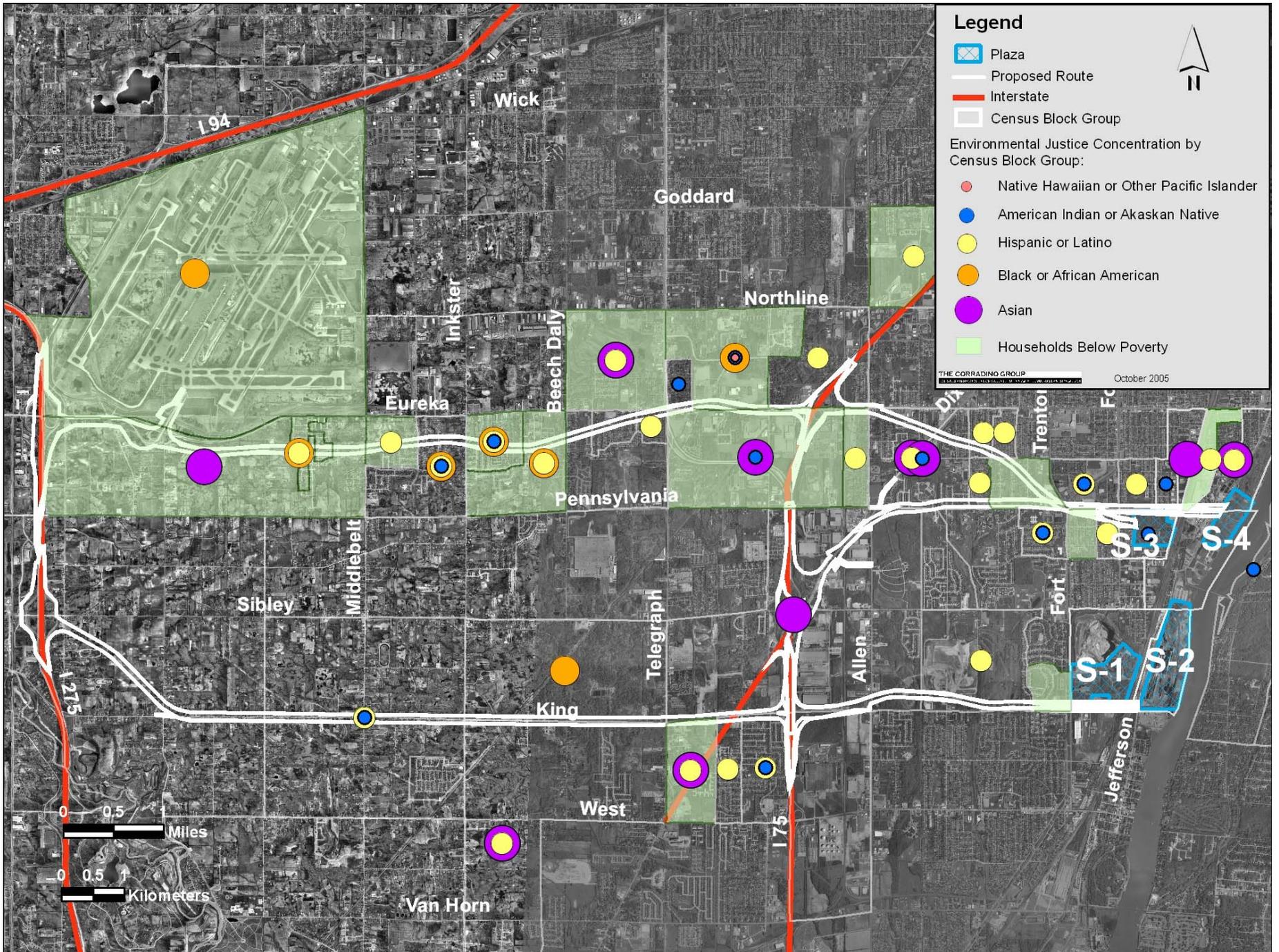


Potential Acquisitions – Other Land Uses N-1

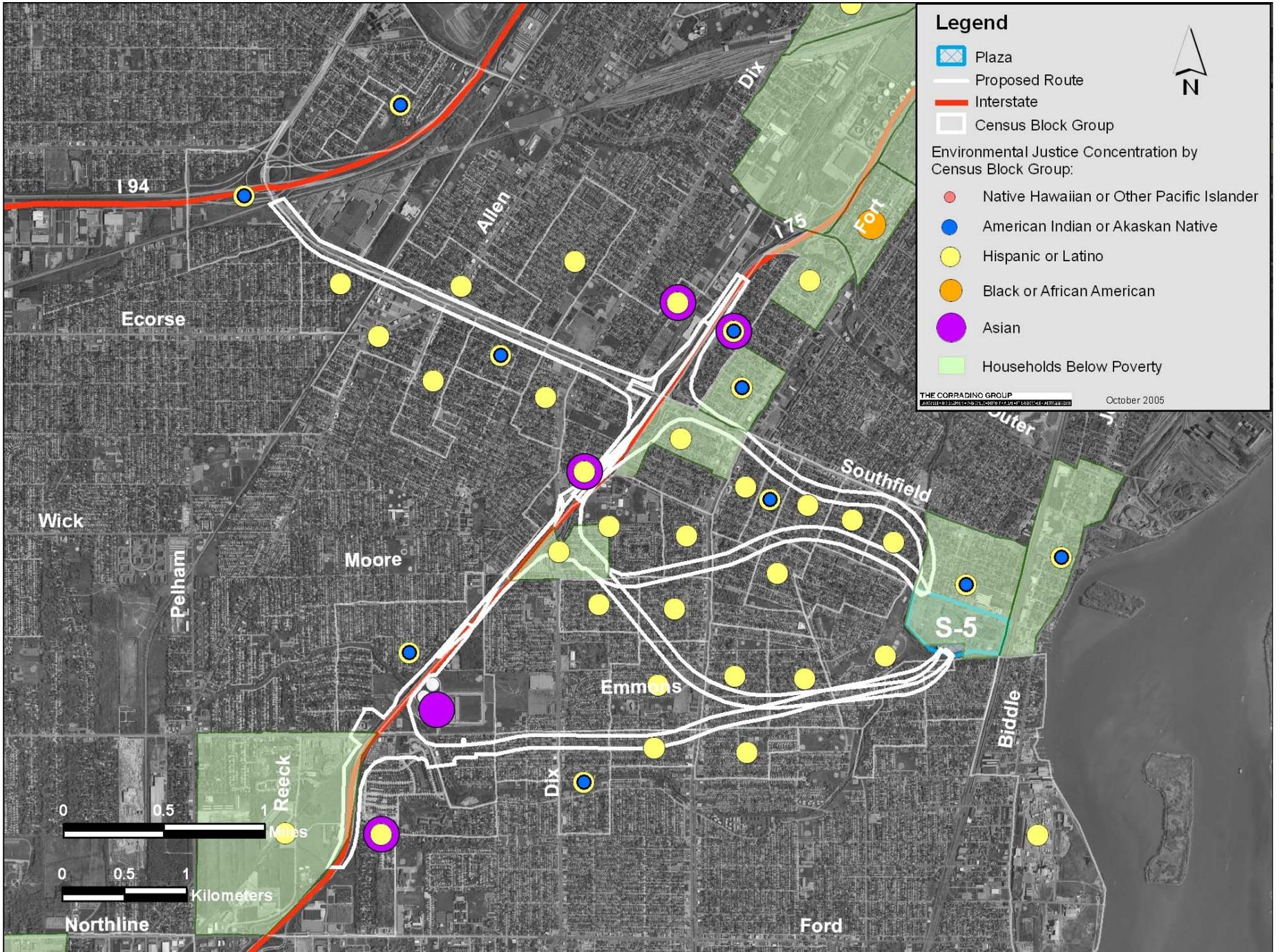


Environmental Justice

Environmental Justice Populations S-1 through S-4



Environmental Justice Populations S-5



Environmental Justice Populations C-2



Environmental Justice Populations C-3 and C-4



Environmental Justice Populations II-2 through II-4

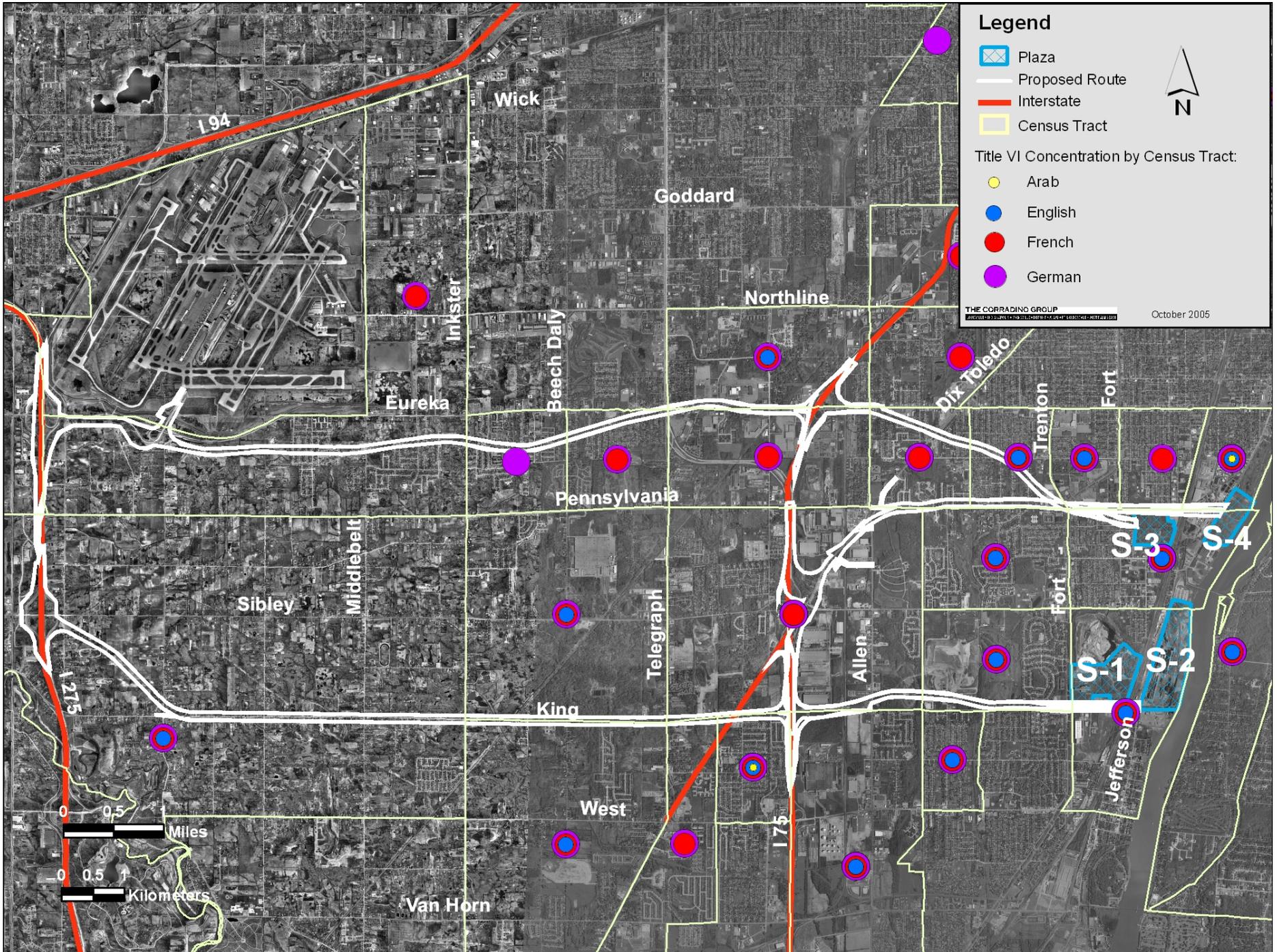


Environmental Justice Populations N-1

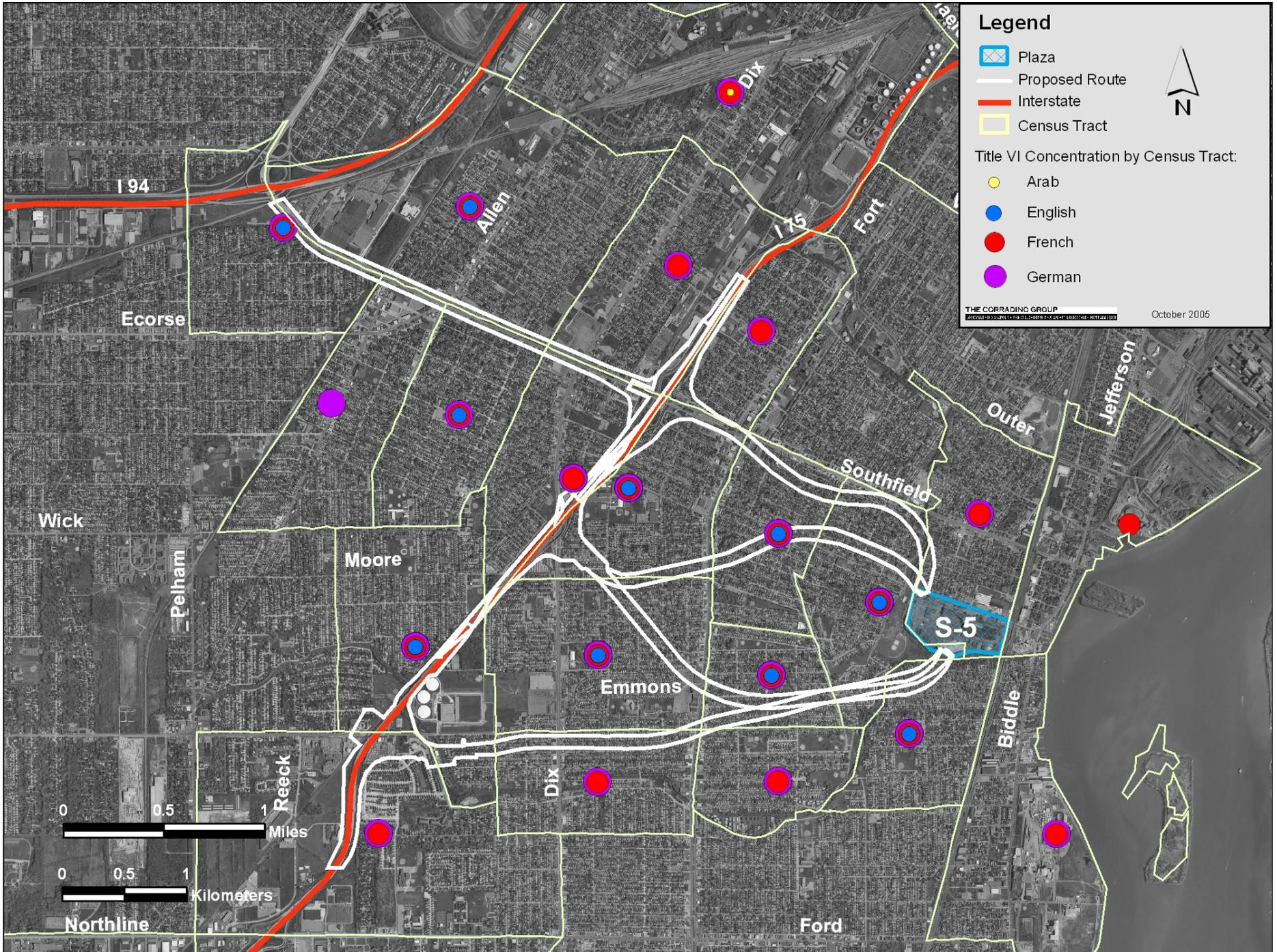


Title VI

Title VI Populations S-1 through S-4



Title VI Populations
S-5



Title VI Populations C-2



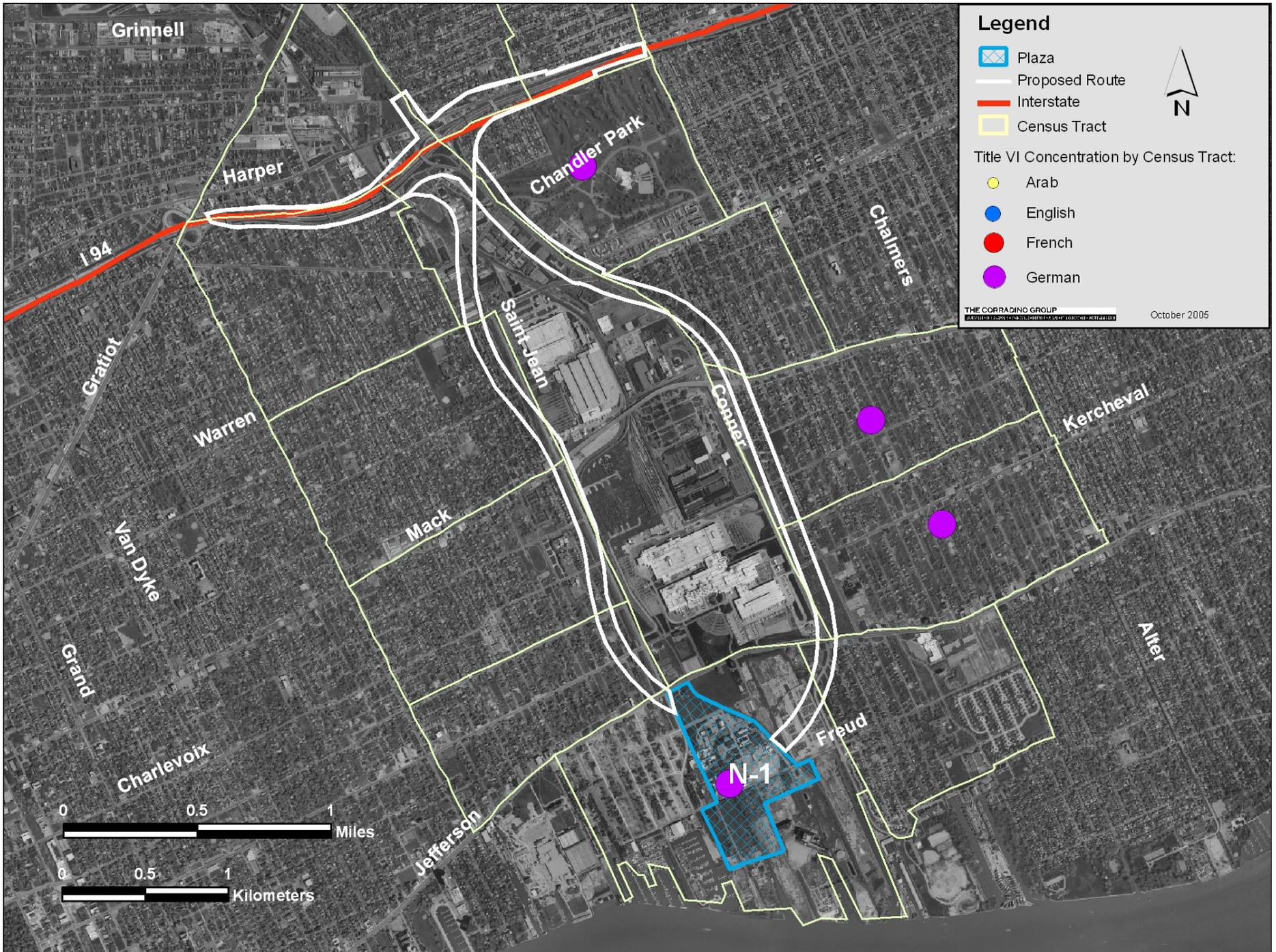
Title VI Populations C-3 and C-4



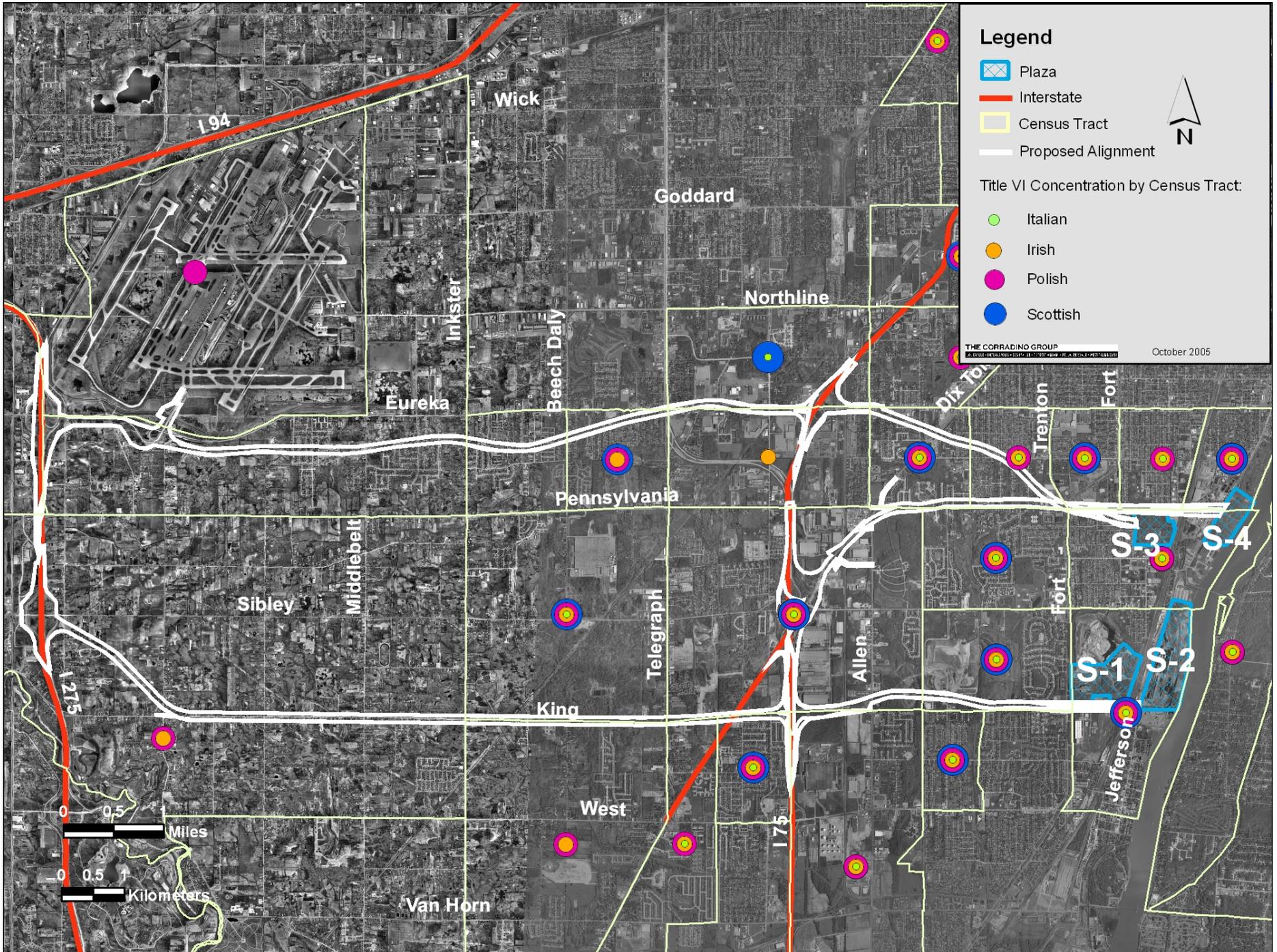
Title VI Populations II-2 through II-4



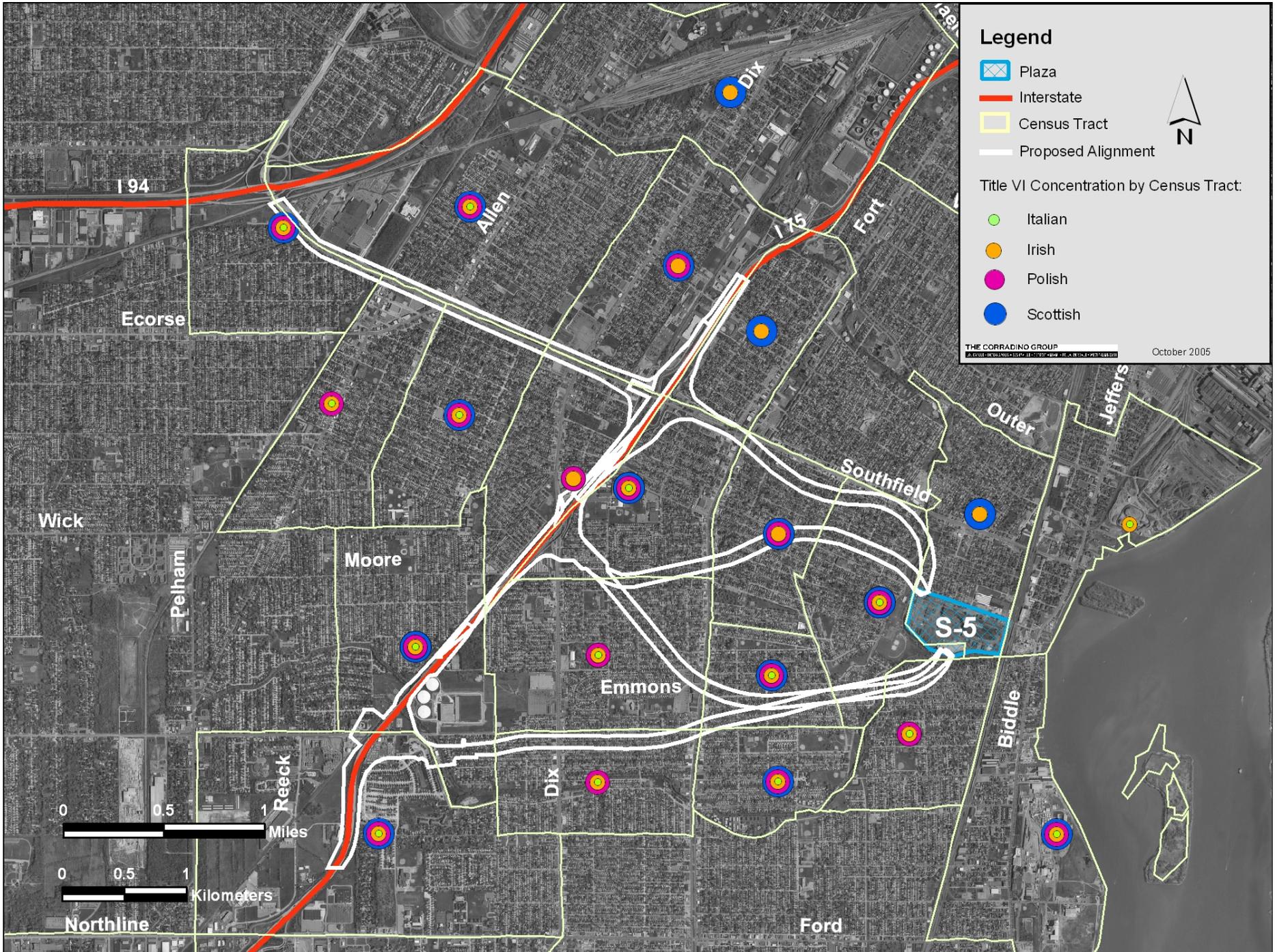
Title VI Populations N-1



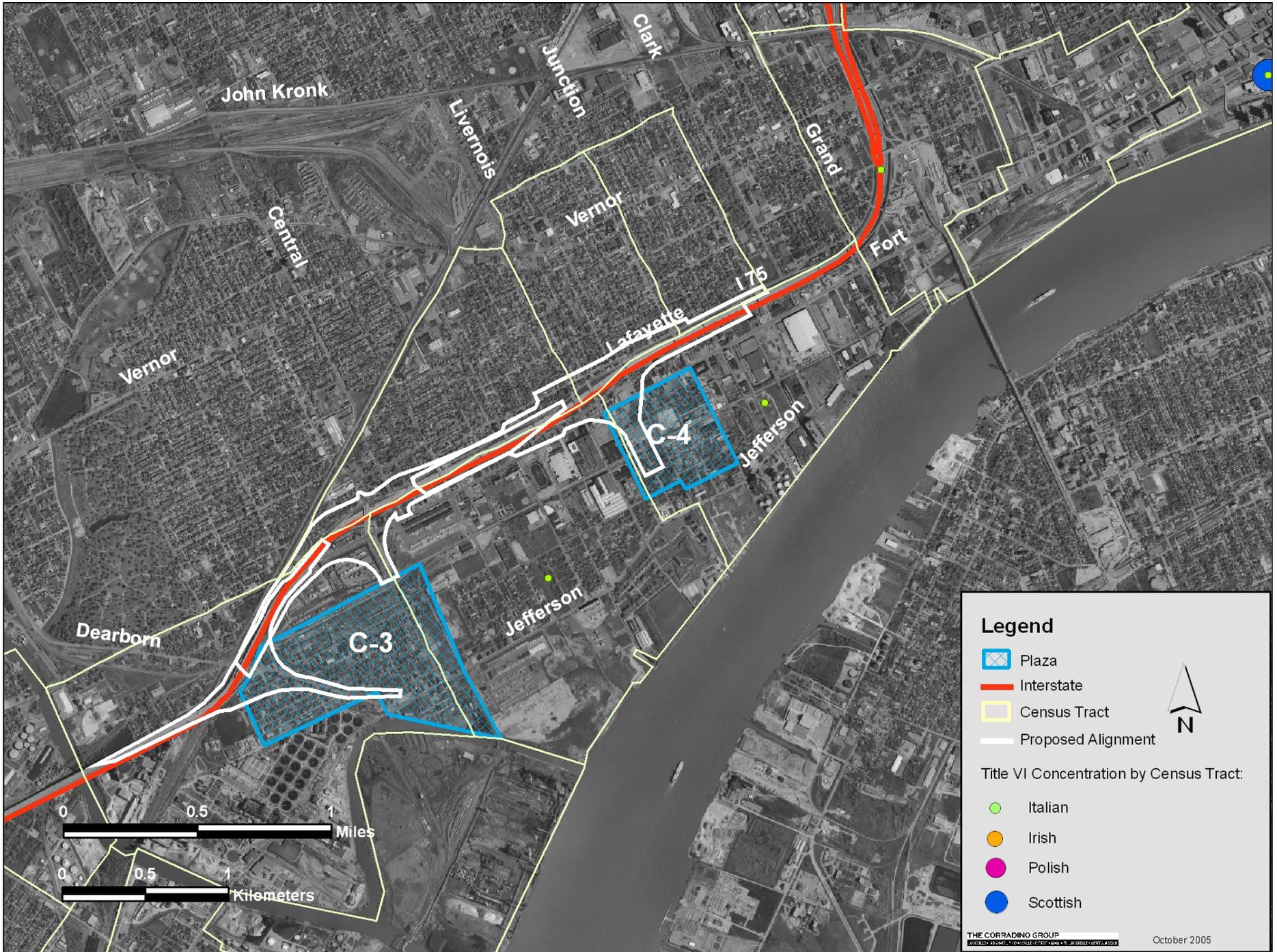
Title VI Populations
S-1 through S-4



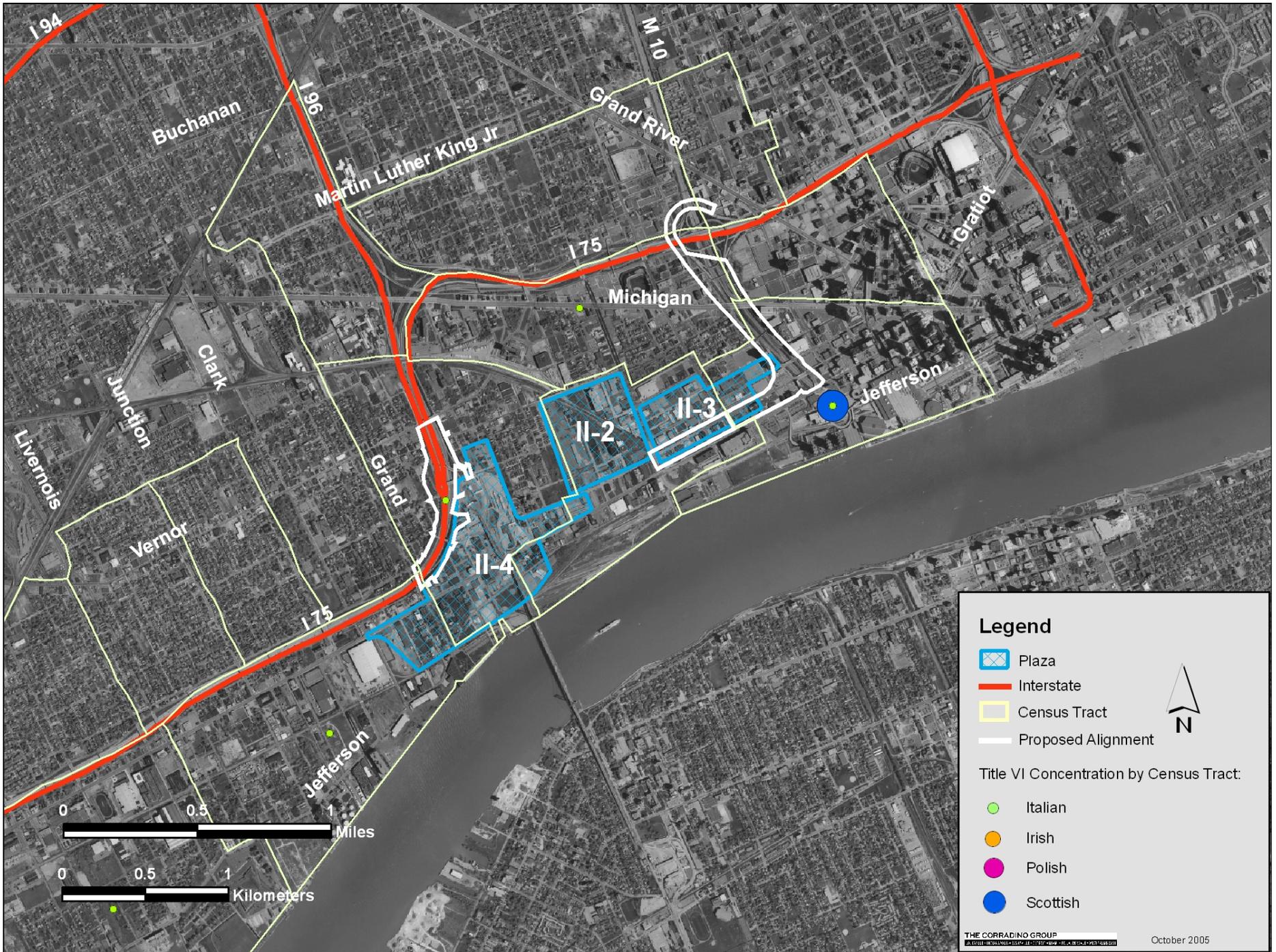
Title VI Populations
S-5



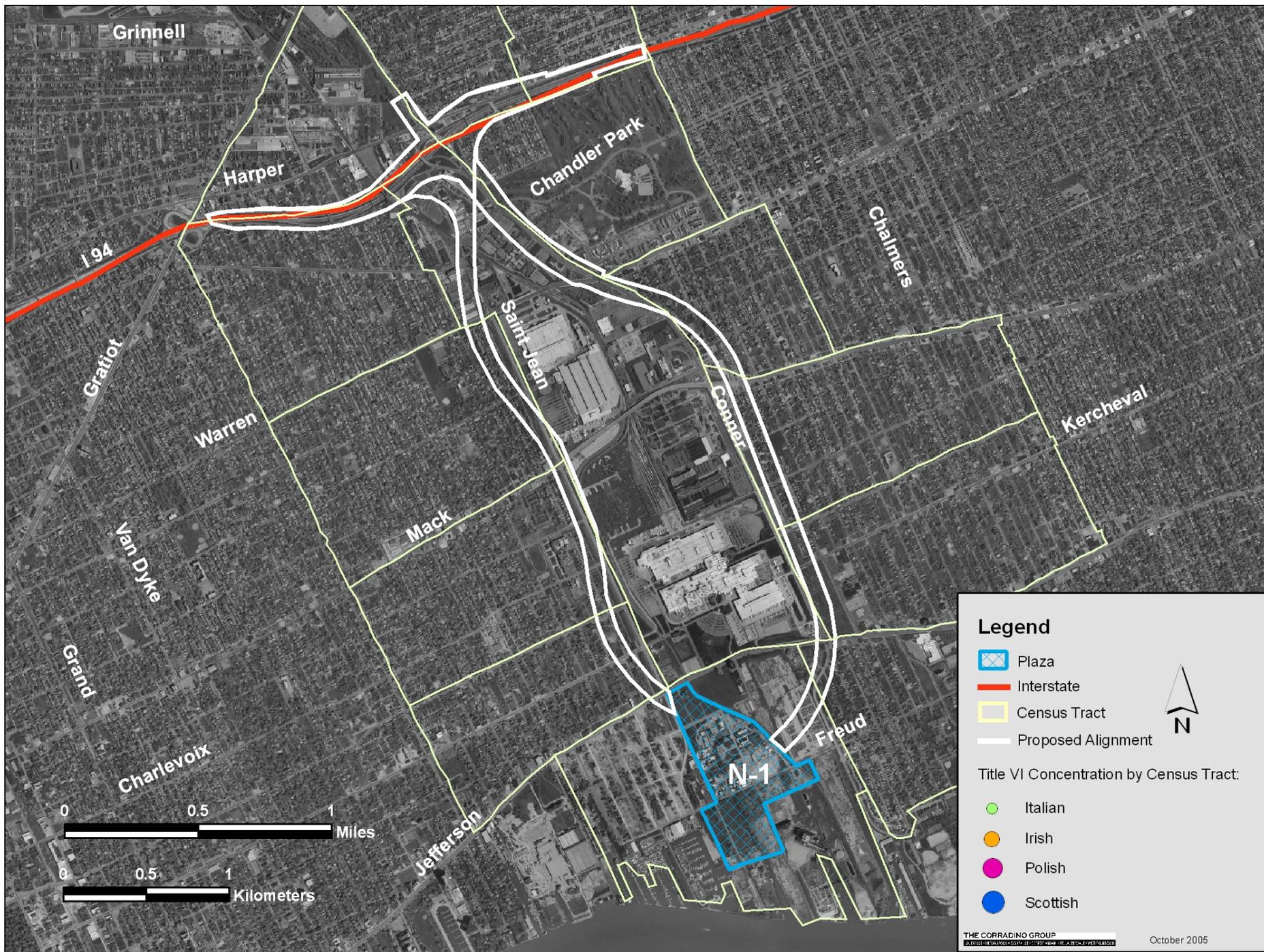
Title VI Populations
C-3 and C-4



Title VI Populations
II-2 through II-4



Title VI Populations N-1



Legend

-  Plaza
-  Interstate
-  Census Tract
-  Proposed Alignment


N

Title VI Concentration by Census Tract:

-  Italian
-  Irish
-  Polish
-  Scottish

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