

## 2 Affected Environment and Impacts

3 This section provides a discussion of the affected environment within the study area and a quantification of  
4 impacts — positive and negative. An understanding of the resources and impact was used in the  
5 development of the alternatives discussed in **Section 3**, leading to the Reasonable Alternatives and the  
6 Preferred Alternative. **Section 5** presents the study’s environmental commitments. The affected  
7 environmental impacts are arranged alphabetically, as follows:

- |                                      |                                      |
|--------------------------------------|--------------------------------------|
| 1. Air Quality                       | 13. Right-of-Way                     |
| 2. Community Resources               | 14. Secondary and Cumulative Impacts |
| 3. Construction Impacts              | 15. Section 4(f)                     |
| 4. Cultural Resources                | 16. Section 6(f)                     |
| 5. Demographics                      | 17. Socio-Economic Resources         |
| 6. Endangered and Threatened Species | 18. Travel Patterns                  |
| 7. Environmental Justice             | 19. Visual Resources                 |
| 8. Farmland                          | 20. Water – Floodplains              |
| 9. Geological Setting                | 21. Water – Streams and Watersheds   |
| 10. Hazardous Materials              | 22. Water – Wetlands                 |
| 11. Land Use                         | 23. Water – Water Quality            |
| 12. Noise                            |                                      |

8  
9 Both figures and exhibits are used in this text to help graphically depict the affected environment. Figures  
10 are graphics contained within the text. The figures generally show the resources across the entire study  
11 area. Exhibits are contained in **Appendix A**. Exhibits provide more detailed depictions of the study area,  
12 using a 13-sheet series. **Exhibit 1** covers natural resources. **Exhibit 2** covers human resources. **Exhibit 3**  
13 covers community resources. **Exhibit 4** covers the footprint and impacts associated with the Preferred  
14 Alternative, and **Exhibit 5** shows the footprint and impacts associated with the Reasonable Alternatives.  
15 **Exhibit 6** contains the detailed lane work and transportation improvements associated with the Reasonable  
16 Alternatives.

### 17 4.1 Air Quality

18 Air quality and pollution are general terms that refer to one or more chemical substances that degrade the  
19 quality of the atmosphere. Individual air pollutants degrade the atmosphere by reducing visibility. They can  
20 also damage property, reduce the productivity or vigor of crops or natural vegetation, or reduce human or  
21 animal health.

#### 22 4.1.1 Air Quality — Regulatory Background and Standards

23 Transportation can contribute to all of the nation’s regulated air pollutants. Transportation Conformity, as  
24 required under the Clean Air Act, ensures that federally funded or approved transportation plans, programs,  
25 and projects conform to the air quality objectives established in State Implementation Plans (SIPs). MoDOT  
26 implements the conformity regulation in nonattainment and maintenance areas.

27 The Clean Air Act, as amended by the Clean Air Act Amendments of 1990, and other rules and regulations,  
28 such as the Control of Hazardous Air Pollutants from Mobile Sources rule promulgated by the U.S.  
29 Environmental Protection Agency (EPA), specifies environmental policies and regulations to promote and  
30 ensure acceptable air quality. These policies and regulations were adopted in the Final Conformity Rule  
31 (40 *Code of Federal Regulations* [CFR] Parts 51 and 93). EPA delegates authority to the Missouri Department

1 of Natural Resources (MDNR) for monitoring and enforcing air quality regulations in Missouri. MDNR  
2 developed the Missouri SIP to ensure conformity with the rule.

3 The Clean Air Act defines conformity as the following:

4 *“Conformity to an implementation plan’s purpose of eliminating or reducing the severity and*  
5 *number of violations of the National Ambient Air Quality Standards (NAAQS) and achieving*  
6 *expeditious attainment of such standards; and that such activities (that is, approved*  
7 *transportation plans, programs, and projects in the state) will not:*

- 8 • Cause or contribute to any new violation of any NAAQS in any area;
- 9 • Increase the frequency or severity of any existing violation of any NAAQS in any area; or
- 10 • Delay timely attainment of any NAAQS or any required interim emission reductions or other milestones  
11 in any area.”

12 EPA established the NAAQS for the following major air pollutants, which are known as criteria pollutants:  
13 carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), particulate matter (PM) (PM less than 10 and  
14 2.5 microns in aerodynamic diameter [PM<sub>10</sub> and PM<sub>2.5</sub>]), sulfur dioxide (SO<sub>2</sub>), and lead. The “primary”  
15 standards have been established to protect the public health. The “secondary” standards are intended to  
16 protect the nation’s welfare and account for air pollutant effects on soil, water, visibility, materials,  
17 vegetation, and other aspects of the general welfare. Air quality in Missouri is defined with respect to  
18 conformity with the NAAQS. MDNR has adopted the standards for the criteria pollutants listed in **Table 4-1**  
19 in its air quality program.

**Table 4-1. Criteria Pollutant Emission Standards**

Pollutant	Period	Primary Standard	Secondary Standard
O <sub>3</sub>	8-hour	0.070 parts per million (ppm)	0.070 ppm
CO	1-hour	35 ppm	None
	8-hour	9 ppm	None
SO <sub>2</sub>	3-hour	None	0.5
	1-hour	75 parts per billion (ppb)	None
NO <sub>2</sub>	Annual	53 ppb	53 ppb
	1-hour	100 ppb	None
PM <sub>10</sub>	24-hour	150 micrograms per cubic meter (µg/m <sup>3</sup> )	150 µg/m <sup>3</sup>
PM <sub>2.5</sub>	Annual	12 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>
	24-hour	35 µg/m <sup>3</sup>	35 µg/m <sup>3</sup>
Lead	3-month	0.15 µg/m <sup>3</sup>	0.15 µg/m <sup>3</sup>

Source: MDNR, Missouri 10 CSR 10-6.010 Ambient Air Quality Standards, updated April 21, 2016,  
<http://www.dnr.mo.gov/env/esp/aqm/standard.htm>

## 1 4.1.2 Air Quality — Affected Environment

### 2 4.1.2.1 Attainment Status

3 EPA uses the term *attainment area* to describe those areas where air quality meets health standards for  
4 particular air borne pollutants. The area that includes the I-270 North EA corridor has been designated  
5 non-attainment for two pollutants—O<sub>3</sub> and PM<sub>2.5</sub>.

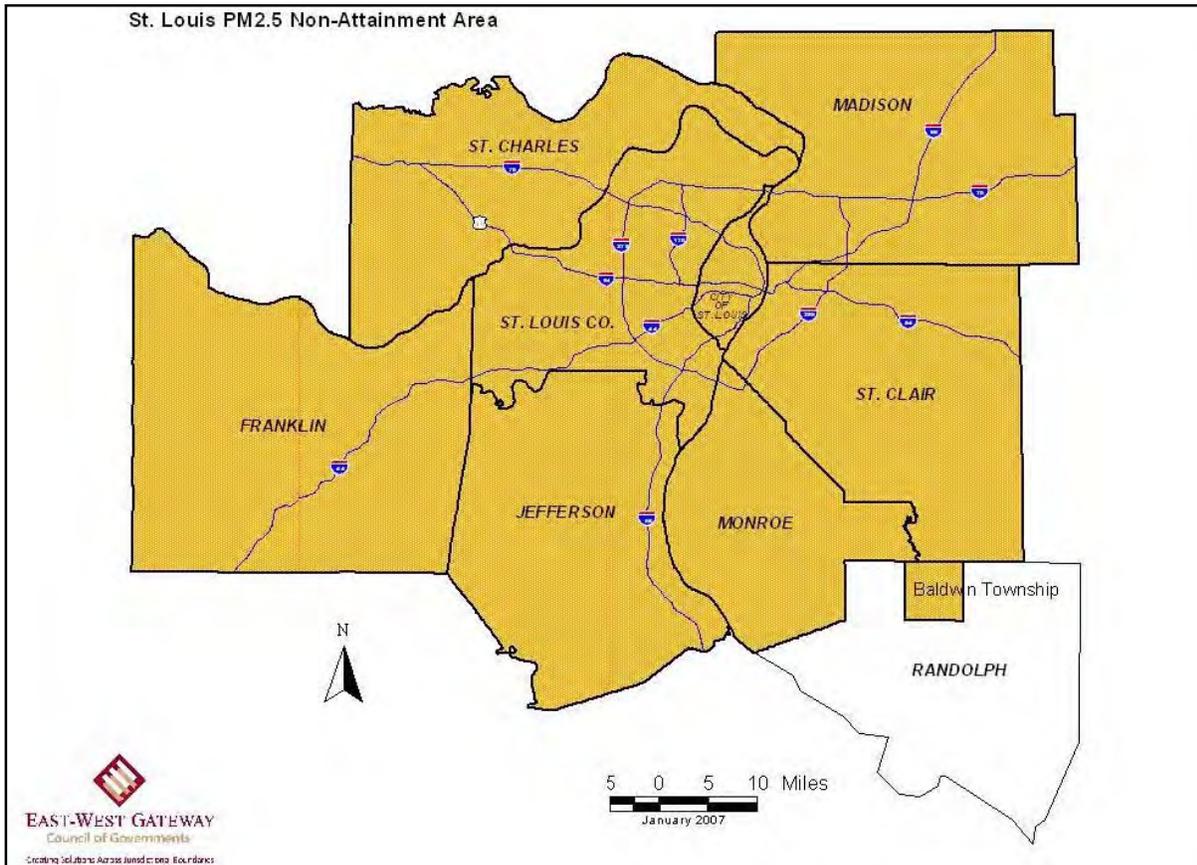
#### 6 **Ozone**

7 The entire eight-county Saint Louis region is now classified as a non-attainment area for the 8-hour O<sub>3</sub>  
8 standard and has been given a marginal non-attainment classification. The marginal non-attainment area  
9 includes Franklin, Jefferson, Saint Charles, and Saint Louis Counties and the City of Saint Louis in Missouri  
10 and Madison, Monroe, and Saint Clair Counties in Illinois.

#### 11 **Particulate Matter**

12 In April 2005, EPA designated the entire eight-county Saint Louis region as being in non-attainment for  
13 PM<sub>2.5</sub>. The PM<sub>2.5</sub> non-attainment area includes Franklin, Jefferson, Saint Charles, and Saint Louis Counties  
14 and the City of Saint Louis in Missouri and Madison, Monroe, and Saint Clair Counties in Illinois. Baldwin  
15 Township in Randolph County, Illinois, is also part of this non-attainment area. In February 2006, EWG  
16 conducted a Conformity Determination on the fiscal year 2006–2009 Transportation Improvement Program  
17 (TIP) (see **Figure 4-1**).

18 In 2006, the 24-hour (daily) standard was set at 35 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ). The standard is met  
19 whenever the 3-year average of the annual 98th percentile of values at designated monitoring sites is less  
20 than or equal to 35  $\mu\text{g}/\text{m}^3$ . In 2009, EPA found the Saint Louis area was in attainment of this standard.



21  
22 **Figure 4-1. Saint Louis PM<sub>2.5</sub> Non-Attainment Area (April 2005)**

1 In 2007, MDNR prepared a Saint Louis Transportation Conformity Rule and in 2010 MDNR proposed changes  
2 to the 2007 Transportation Conformity Rule. Until EPA approves this revision, the March 2007 Saint Louis  
3 Transportation Conformity Rule (approved December 2007) is still in effect.

4 In May 2011, EPA published a final rule stating that the Saint Louis PM<sub>2.5</sub> non-attainment area had attained  
5 the 1997 annual standard based on 2007 through 2009 quality assured monitor data. MDNR developed a  
6 maintenance plan and submitted it to EPA in August 2011, which is now under review.

7 On December 14, 2012, the EPA Administrator finalized the federal rule revising the annual PM<sub>2.5</sub> standard  
8 from 15 to 12 µg/m<sup>3</sup>. In response to this, MDNR submitted attainment recommendations for the 2012  
9 annual PM<sub>2.5</sub> standard. In its December 10, 2013 submission, it recommends an attainment/unclassifiable  
10 designation for St. Louis County and the entire multi-county region.

#### 11 4.1.2.2 Effects of Non-Attainment Pollutants

##### 12 Ozone

13 O<sub>3</sub> is a colorless, toxic gas found in both the Earth's upper and lower atmospheric levels. In the upper  
14 atmosphere, O<sub>3</sub> is a naturally occurring gas that helps to prevent the sun's harmful ultraviolet rays from  
15 reaching the earth. In the lower layer of the atmosphere, O<sub>3</sub> is human-made. Although O<sub>3</sub> is not directly  
16 emitted, it forms in the lower atmosphere through a chemical reaction between volatile organic compounds  
17 (VOCs) and nitrogen oxides (NO<sub>x</sub>), which are emitted from industrial sources and from automobiles.  
18 Substantial O<sub>3</sub> formations are generally a concern in the summer. O<sub>3</sub> is the main ingredient of smog.  
19 O<sub>3</sub> enters the blood stream through the respiratory system and interferes with the transfer of oxygen,  
20 depriving sensitive tissues in the heart and brain of oxygen.

##### 21 Particulate Matter

22 Particulate matter is composed of solid particles or liquid droplets that are small enough to remain  
23 suspended in the air. In general, particulate matter includes dust, soot, and smoke. These pollutants can be  
24 irritating but usually are not poisonous. Particulate matter can also include bits of solid or liquid substances  
25 that can be toxic. Of particular concern are PM<sub>2.5</sub>, which is roughly 1/28 the diameter of a human hair.  
26 A substantial proportion of the PM<sub>2.5</sub> in the atmosphere is attributable to the combustion of fossil fuels.  
27 PM<sub>2.5</sub> can be formed in the atmosphere from gases such as SO<sub>2</sub>, NO<sub>x</sub>, and VOCs. When inhaled, particulate  
28 matter can penetrate the human respiratory system's natural defenses and damage the respiratory tract.  
29 PM<sub>2.5</sub> are so tiny that they can penetrate deeper into the lungs and damage lung tissues.

#### 30 4.1.2.3 Conformity

31 In accordance with the Clean Air Act Amendments of 1990, the Transportation Conformity process is  
32 intended to ensure that the programs and activities proposed in long-range transportations plans conform  
33 to the purpose of the SIPs for Air Quality. The SIPs contain the benchmarks against which progress is  
34 measured in meeting national goals for cleaner and healthier air is set out.

35 The updated long-range transportation plan (*Connected2045*) was approved on June 24, 2015, by EWG's  
36 Board of Directors. All elements of the Preferred Alternative are included in the long-range plan and are  
37 included in the region's air quality conformity analysis. The various projects are summarized in **Table 4-2**.

38

**Table 4-2. I-270 Projects in the Long Range Plan**

Project #	Location	Year of Expenditure Costs*	Period
2045019	I-170 To Lindbergh Boulevard (from east of McDonnell Blvd. to west of Hanley/Graham Rd.)	\$93,000,000	2016-2025
2045018	Old Hall Ferry Road to Hanley/Graham Road (from east of Old Halls Ferry Rd. to west of Hanley/Graham Rd.)	\$289,000,000	2016-2025
2045022	MO 367 Interchange (from east of Old Halls Ferry Rd. to east of Bellefontaine Rd.)	\$107,000,000	2026-2035
2045020	Riverview Road to Lilac Avenue (from east of Bellefontaine Rd. to east of Riverview Dr.)	\$163,000,000	2026-2035
2045021	McDonnell Boulevard to MO 370 (from east of McDonnell Blvd. to west of MO 370)	\$86,000,000	2026-2035
2045023	Dorsett Road to MO 370 (from west of MO 370 to east of Dorsett Rd.)	\$211,000,000	2036-2045

\* Assumes 3% inflation per year

- 1 EWG, as the Metropolitan Planning Organization for the Saint Louis region, is the agency responsible for  
2 making the determination of conformity. The conformity finding relates to those pollutants produced by  
3 automobiles and other road transportation, generally described as mobile source emissions. The pollutants  
4 of concern in this region are the non-attainment pollutants — O<sub>3</sub> and PM.
- 5 For O<sub>3</sub>, conformity focuses on the precursors of O<sub>3</sub> — VOCs and NO<sub>x</sub>. The primary purpose of the conformity  
6 process is to ensure that predicted future mobile emissions resulting from planned and programmed  
7 transportation projects fall below the emission budget levels for both VOC and NO<sub>x</sub>. Based on the analysis,  
8 the projects and programs included in *Connected2045* are found to be in conformity with the requirements  
9 of the Clean Air Act Amendments of 1990, the relevant sections of the Final Conformity Rule 40 CFR Part 93,  
10 and the procedures set forth in the Missouri State Conformity Regulations 10 CSR 10-5.480 for the 2008  
11 eight-hour ozone standard. This Conformity Determination covers the St. Louis 2008 eight-hour ozone  
12 non-attainment area (Franklin, Jefferson, St. Charles, and St. Louis Counties and the City of St. Louis in  
13 Missouri and Madison, Monroe, and St. Clair Counties in Illinois).
- 14 For PM, conformity focuses on demonstrating that the predicted future mobile emissions resulting from  
15 planned and programmed transportation projects is less than the combined baseline emissions inventories  
16 developed for the PM<sub>2.5</sub> non-attainment area. Based on the analysis, the projects and programs included in  
17 *Connected2045* are found to be in conformity with the requirements of the Clean Air Act Amendments of  
18 1990, the relevant sections of the Final Conformity Rule 40 CFR Part 93 and the procedures set forth in the  
19 Missouri State Conformity Regulations 10 CSR 10-5.480 for the 1997 annual PM<sub>2.5</sub> standard. This Conformity  
20 Determination covers the entire St. Louis non-attainment area (Franklin, Jefferson, St. Charles, and St. Louis  
21 Counties and the City of St. Louis in Missouri and Madison, Monroe, and St. Clair Counties and Baldwin  
22 Township in Randolph County in Illinois).
- 23 Details of these findings are documented in the report, *Air Quality Conformity Determination and*  
24 *Documentation (8-Hour and PM<sub>2.5</sub>) for the 2045 Regional Transportation Plan.*

#### 1 4.1.2.4 Other Pollutants — Greenhouse Gases/Climate Change

2 Science continues to expand our understanding of the impacts of anthropogenic greenhouse gas (GHG)  
3 emissions. The Council on Environmental Quality (CEQ) referenced climate change in its first Annual Report  
4 in 1970. Since the publication of that report, it has been determined that human activities have caused the  
5 carbon dioxide content of the atmosphere to increase to its highest level in at least 800,000 years. It is now  
6 well established that rising global atmospheric GHG emission concentrations are substantially affecting the  
7 Earth's climate. The nature of how Federal Agencies address GHG and climate changes is an evolving area of  
8 research.

9 In 2007, the Supreme Court decided in *Commonwealth of Massachusetts versus EPA* that carbon dioxide is a  
10 pollutant, subject to regulation under the Clean Air Act. Since that time, the federal government has taken a  
11 number of steps to regulate carbon dioxide emissions as part of an overall program addressing greenhouse  
12 gases (GHGs). For example, EPA has adopted a GHG Monitoring, Recordkeeping, and Reporting Rule that  
13 requires certain suppliers of fossil fuels or industrial GHGs to report to EPA on emissions from particular  
14 facilities. That rule does not apply to the activities contemplated by the I-270 North EA study.

15 Also, a number of federal agencies concluded it is not possible to link a project's emissions to particular  
16 climatic effects in a NEPA review. In particular, the *2010 Draft Guidance on Consideration of the Effects of  
17 Climate Change and Greenhouse Gas Emissions*, authored by the Council on Environmental Quality (CEQ),  
18 states that "it is not currently useful for the NEPA analysis to attempt to link specific climatological changes,  
19 or the environmental impacts thereof, to the particular project or emissions, as such direct lineage is  
20 difficult to isolate and to understand."

21 In 2016, the CEQ issued Final Guidance for Federal Departments and Agencies on Consideration of  
22 Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews  
23 (Published in Federal Register on August 5, 2016). The guidance provides specific and substantive  
24 procedures for addressing project-related GHG issues. This guidance applies to all EAs and EISs that  
25 commence on or after August 5, 2016. For ongoing EAs and EISs, like the I-270N EA, the guidance suggests  
26 that "agencies should consider applying this guidance to projects in the EIS or EA preparation stage if this  
27 would inform the consideration of differences between alternatives or address comments raised through  
28 the public comment process...." As is discussed in **Section 3**, the alternatives for this project investigated  
29 reconfigurations of the existing system. These alternatives are intended to increase the efficacy of the  
30 system, rather than to increase the number of users. Relative to GHG, the differences among the  
31 alternatives is minor-focused on elements like interchange designs and outer road configurations. These  
32 elements are not expected to measurably affect the levels of GHG inputs, among the alternatives.  
33 Additionally, climate change did not emerged during any of the public/stakeholder outreach conducted for  
34 the project (**Section 6**).

#### 35 4.1.2.5 Mobile Source Air Toxics

36 In addition to the criteria pollutants discussed in **Section 4.1.1**, EPA also regulates air toxics. Most air toxics  
37 originate from human-made sources, including on-road mobile sources, non-road mobile sources  
38 (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries).

39 Mobile source air toxics (MSATs) are a subset of the 188 air toxics defined by the Clean Air Act. MSATs are  
40 compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in  
41 fuel and are emitted into the air when the fuel evaporates or passes through the engine unburned. Other  
42 toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air  
43 toxics also result from engine wear or from impurities in oil or gasoline.

44 EPA identified the following seven compounds from mobile sources that are among the national and  
45 regional-scale cancer risk drivers: benzene; acrolein; formaldehyde; 1,3-butadiene; diesel exhaust;  
46 naphthalene; and polycyclic organic matter. While FHWA considers these the priority MSATs, the list is

1 subject to change and may be adjusted in consideration of future EPA rules. MSATs were included in the  
2 construction phase analysis for NEPA purposes.

3 In accordance with the FHWA Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA (March  
4 2012), an MSAT analysis may be required for projects with sensitive land uses within 500 feet of the project  
5 area and create infrastructure/traffic changes that will negatively impact those land uses. While there are  
6 sensitive land uses in close proximity, the project changes will occur within the existing I-270 footprint. Very  
7 little new right-of-way will be acquired. Roadway lanes and interchanges will be altered to better  
8 accommodate the expected future traffic volumes. These changes are not intended to increase the number  
9 of users, but rather to better accommodate those who will inevitably use them. It is expected that the  
10 increased efficiency of the system will improve air quality. The project is expected to have no meaningful  
11 impact on traffic volumes or vehicle mix, thus the project is not expected to have a meaningful potential for  
12 MSAT effects. Consequently, the I-270 North EA does not require an MSAT analysis.

13 On October 18th, 2016 the Interim MSAT Guidance was updated. This update supersedes the December  
14 2012 Interim Guidance. The primary updates include 1) the incorporation of an updated version of the  
15 Motor Vehicle Emissions Simulator (MOVES) and 2) an update on the status of scientific research on air  
16 toxics.

- 17 • The new version of the model is called MOVES2014a. Based on FHWA's analysis using MOVES2014a,  
18 diesel particulate matter (diesel PM) remains the dominant MSAT of concern for highway projects.  
19 MOVES2014a adds new options for the input of local VMT, includes minor updates to the default fuel  
20 tables, and corrects an error in MOVES2014 brake wear emissions.
- 21 • Relative to air toxics, analysis continues on the assessment of overall health risks. However, the tools  
22 and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure  
23 remain limited. Nevertheless, it is confirmed that mobile sources are contributors of the MSAT  
24 compounds and that these are among the national and regional-scale cancer risk drivers or contributors.

25 The updated guidance continues to use the tiered approach with three categories for analyzing MSAT in  
26 NEPA documents, depending on specific project circumstances:

- 27 1. No analysis for projects with no potential for meaningful MSAT effects;
- 28 2. Qualitative analysis for projects with low potential MSAT effects; or
- 29 3. Quantitative analysis for projects with higher potential MSAT effects.

30 The exemption from analysis for projects with no meaningful impacts on traffic volumes or vehicle mix  
31 continues in the updated MSAT Guidance. Since the project is expected to have no meaningful impact on  
32 traffic volumes or vehicle mix, the conclusion that the I 270 North EA does not require an MSAT analysis is  
33 confirmed.

#### 34 4.1.2.6 Project-Level Particulate Matter Hot-Spot Conformity Determination

35 Within a particulate matter non-attainment or maintenance area, as part of the NEPA process, a  
36 transportation project sponsor has to determine if a proposed major transportation project would be  
37 considered a "project of air quality concern." A project of air quality concern involves the following:

- 38 1. New highway projects that have a substantial number of diesel vehicles and expanded highway projects  
39 that have a substantial increase in the number of diesel vehicles:
  - 40 • Pursuant to the I-270 North EA Access Justification Report (AJR), it is anticipated that diesel vehicles  
41 will increase at a rate of less than 1 percent per year, the same as general traffic growth.
- 42 2. Projects affecting intersections that are at Level-of-Service D, E, or F with a substantial number of diesel  
43 vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a  
44 substantial number of diesel vehicles related to the project:

- 1       • Pursuant to the I-270 North EA AJR, the percentage of heavy vehicles is less than 10 percent for all  
2       affected intersections.
- 3   3. New or expanded bus and rail terminals and transfer points that substantially increase the number of  
4       diesel vehicles congregating at a single location:
- 5       • The I-270 North EA doesn't involve expanding a bus or rail terminal. However, there is a new  
6       MetroBus Transit Center constructed at 3142 Pershall Road. Coordination with Metro Transit  
7       regarding the Reasonable Alternatives concluded that a one-way frontage road system would  
8       increase the total bus travel by approximately 300 miles per week.
- 9   4. Projects in or affecting locations, areas, or categories of sites which are identified in the SIP as sites of  
10       violation or possible violation:
- 11       • The I-270 North EA does not involve sites of violation or possible violation. On December 10, 2013,  
12       MDNR submitted attainment recommendations for the 2012 annual PM<sub>2.5</sub> standard; it recommends  
13       an attainment/unclassifiable designation for St. Louis County.

14   Based on these factors, a quantitative particulate matter hot-spot analysis is not required for the I-270  
15   North EA. To confirm this conclusion, coordination the Inter Agency Consultation Group (IACG) was initiated.  
16   The IACG is a peer group consisting of representatives from East-West Gateway and federal, state and local  
17   air and transportation agencies. The IACG oversees the Conformity Determination process and reaches  
18   consensus on planning assumptions, analysis years, tests to be performed and motor vehicle emissions  
19   budgets. At its January 27, 2015, meeting, the IACG concurred that the I-270 North EA does not require a  
20   hot spot analysis.

### 21   4.1.3   Air Quality — Impacts

#### 22   4.1.3.1   No-Build Alternative Impacts

23   The volume of traffic projected to occur as a result of the No-Build Alternative would contribute to increased  
24   emissions resulting in lower air quality within the study area. The volume of traffic projected within the  
25   study area would result in unacceptable levels of service, causing increased congestion and travel delay.  
26   Traffic congestion and delays contribute to the increase in idling times by vehicles at intersections and lower  
27   travel speeds along all roadways, which also result in lower air quality.

#### 28   4.1.3.2   Build Alternatives Impact Summary

29   According to the conformity analysis, the projects and programs included in the updated long-range  
30   transportation plan (*Connected2045*), which includes the proposed I-270 improvements, were found to be in  
31   conformity with the requirements of the Clean Air Act. Therefore, the I-270 North was determined to not  
32   have an effect on regional air quality. On the contrary, the removal of congestion on the roadway system is  
33   expected to improve local and regional air quality. By improving levels of service, reducing travel times and  
34   maximizing the capacity of the facility, the improvements associated with the I-270 North EA would  
35   contribute to lower emissions from transportation sources within the study area, thereby improving air  
36   quality.

37   Controlling air toxics emissions became a national priority with the passage of the Clean Air Act. In 2007,  
38   EPA published a rule on the Control of Hazardous Air Pollutants from Mobile Sources, identifying a number  
39   of compounds emitted from mobile sources, seven of which are considered priority mobile source air toxics  
40   (MSATs) by FHWA. The purpose of this project is to better accommodate those who will inevitably use I-270  
41   by re-constructing various elements of the existing roadway. This project has been determined to generate  
42   minimal air quality impacts for CAAA criteria pollutants and has not been linked with any special MSAT  
43   concerns. As such, this project will not result in changes in traffic volumes, vehicle mix, basic project  
44   location, or any other factor that would cause an increase in MSAT impacts of the project from that of the  
45   No-Build Alternative. Moreover, EPA regulations for vehicle engines and fuels will cause overall MSAT

1 emissions to decline substantially over the next several decades. Based on regulations now in effect, an  
 2 analysis of national trends with EPA's MOVES model forecasts a combined reduction of over 80 percent in  
 3 the total annual emission rate for the priority MSAT from 2010 to 2050 while vehicle-miles of travel are  
 4 projected to increase by over 100 percent. This will both reduce the background level of MSAT as well as the  
 5 possibility of even minor MSAT emissions from this project.

6 Construction activities may result in short-term impacts on air quality, including direct emissions from  
 7 construction equipment and trucks, fugitive dust emissions from site demolition and earthwork, and  
 8 increased emissions from motor vehicles and haul trucks on local streets. The Preferred Alternative is almost  
 9 entirely contained within the existing right-of-way. These impacts would be temporary and localized to the  
 10 area of construction and its immediate vicinity. Fugitive dust, suspended particulates, and emissions could  
 11 occur during ground excavation, material handling and storage, movement of equipment at the site, and  
 12 transport of material to and from the site. Fugitive dust could be a problem during periods of intense activity  
 13 and would be aggravated by windy and/or dry weather conditions. The amount of emissions would depend  
 14 on the type and number of equipment used. Contractors will be required to comply with all applicable local,  
 15 state, and federal air pollution regulations.

16 Standard MoDOT operating procedures associated with air quality includes steps to minimize emissions  
 17 from construction. Controlling construction emissions requires the development of a construction mitigation  
 18 plan for implementation during construction. This construction mitigation plan will adhere to current  
 19 MoDOT standards. The specific actions described in the construction mitigation plan may include the  
 20 following:

- 21 • Spraying exposed soil with water or other suppressant to reduce emissions of PM<sub>10</sub> and increase  
 22 deposition of particulate matter
- 23 • Phasing construction to keep disturbed areas to a minimum; using wind fencing to reduce disturbance  
 24 to soils
- 25 • Wetting down materials to be transported or using covered trucks to transport materials and wastes
- 26 • Promptly cleaning up spills of transported material on public roads
- 27 • Scheduling work tasks to minimize disruption of vehicle traffic on local streets
- 28 • Locating construction equipment and truck staging areas away from sensitive receptors, as practical,  
 29 and in consideration of potential effects on other resources
- 30 • Providing wheel washers to remove particulate matter that would otherwise be carried offsite by  
 31 vehicles to decrease deposition of particulate matter on area roadways

## 32 4.2 Community Resources

### 33 4.2.1 Community Resources — Regulatory Background and Standards

34 The legal definition of community and the human environment has undergone substantial modification as a  
 35 result of court decisions stemming from NEPA-related litigation. The Council on Environmental Quality's  
 36 (CEQ's) Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act  
 37 point-out that the human environment is to be interpreted comprehensively to include the natural and  
 38 physical environment and the relationship of people with that environment. Agencies need to assess not  
 39 only, direct effects, but also aesthetic, historic, cultural, economic, social, or health effects, whether direct,  
 40 indirect, or cumulative. The CEQ Regulations also contain provisions where economic or social and natural or  
 41 physical environmental effects are interrelated. Consequently, NEPA documents will discuss/disclose all of  
 42 these effects on the human environment. This section will discuss/disclose the municipal and public facilities  
 43 contained within this large study area.

## 1 4.2.2 Community Resources — Affected Environment

2 The I-270 North EA is located within the northern portion of St. Louis County. Known as North County, it  
 3 encompasses numerous municipalities and unincorporated areas and the northern city limits of Saint Louis.  
 4 Specifically, the study area encompasses portions of the following 16 municipalities (see **Figure 4-2**):

- Bellefontaine Neighbors
- Berkeley
- Black Jack
- Bridgeton
- Calverton Park
- Castle Point
- Champ
- Dellwood
- Ferguson
- Florissant
- Glasgow Village
- Hazelwood
- Maryland Heights
- Spanish Lake
- City of Saint Louis
- Unincorporated St. Louis County

5 Several municipalities in the study area are located entirely north or south of I-270, some with borders at  
 6 the I-270 corridor, such as Spanish Lake, Bellefontaine Neighbors, Ferguson, and Glasgow Village. However,  
 7 a number of others span the I-270 corridor through the study area, including Florissant, Hazelwood,  
 8 Bridgeton, Champ, Maryland Heights, City of Saint Louis, and unincorporated portions of St. Louis County.

9 Relative to transportation, North County is centrally located. It is near downtown Saint Louis, Saint Charles  
 10 County, West St. Louis County, and downtown Clayton. Earth City and Park 370 business parks are both  
 11 located in North County.

12 North County is also home to Lambert International Airport. Lambert is owned and operated by the City of  
 13 Saint Louis. The airport controls approximately 3,970 acres of land. Between Saint Charles Rock Road and  
 14 MO 370, land controlled by the airport is adjacent to I-270. Most of that land is in a former residential area  
 15 that has been razed and left largely vacant. It is known as the Airport Buyout Area (see Sheets 2 and 3 of  
 16 Exhibit 1 in **Appendix A**). To avoid impacts to the airport, no right-of-way acquisition is proposed in this area.  
 17 No major elevation changes are proposed. Further, no construction or operation impacts are expected to  
 18 the Lambert facilities or operations. However, the project lies within the applicable perimeters (10,000 feet  
 19 and 5 miles) for potential impacts regarding development and changes in proximity to airports.  
 20 Consequently, coordination with the Federal Aviation Administration has been underway throughout the  
 21 project. It is an environmental commitment of this project to continue coordination of the Preferred  
 22 Alternative with the Federal Aviation Administration to complete all necessary permitting.

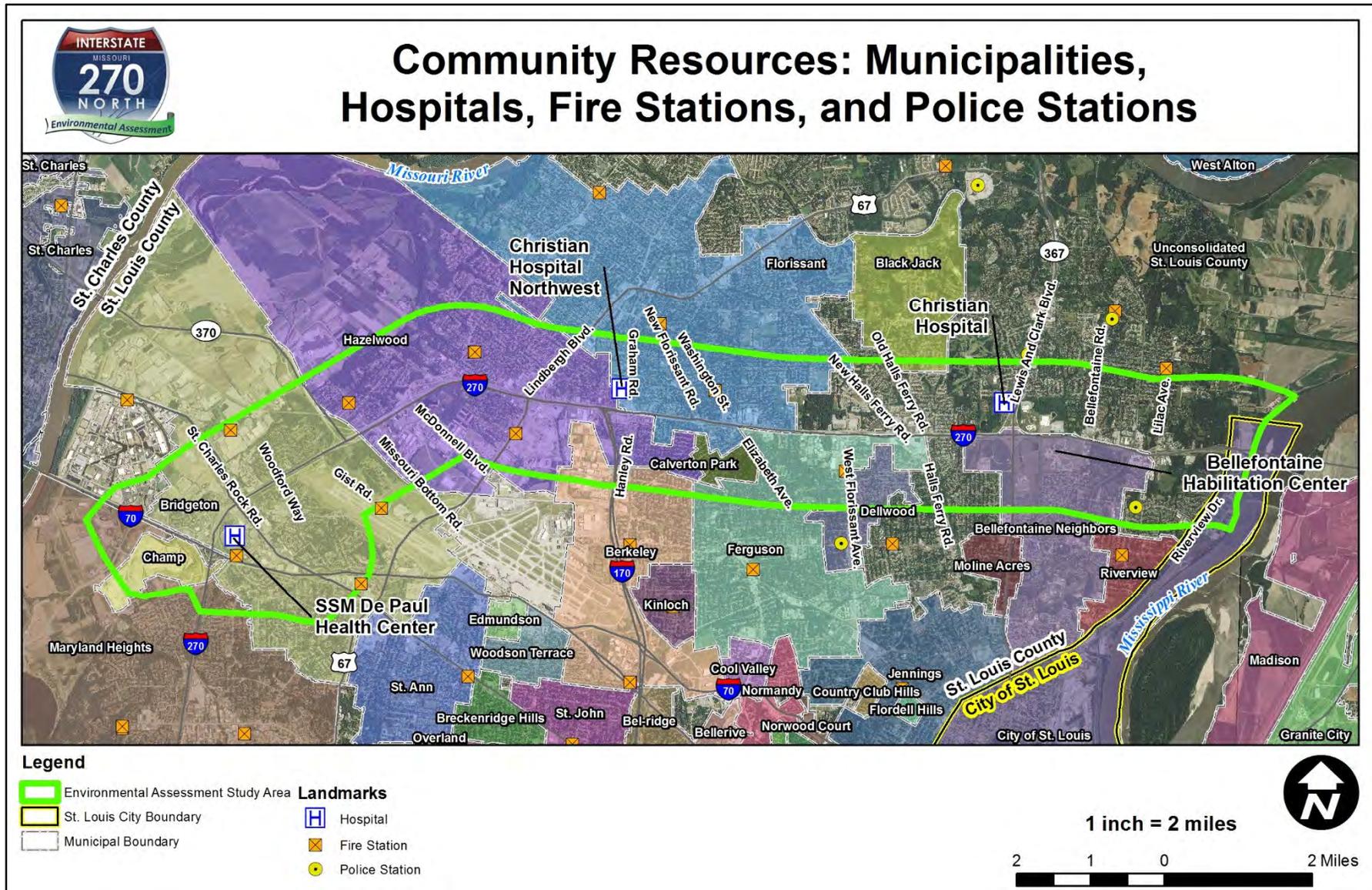
23 The Missouri and Mississippi rivers border North County, and offers the option of barge transportation to  
 24 area commerce. A number of sand and stone quarry docks are located along the Missouri River in North  
 25 County, near US 67 north of the study area, and near I-70 and MO 370 west of the study area.

26 Railroads also serve the region. The Burlington Northern Santa Fe line crosses the I-270 North EA area  
 27 between Lilac Avenue and Bellefontaine Road, and the Norfolk Southern line crosses between Missouri  
 28 Bottom Road and MO 370. The nearest intermodal facility is in the City of Saint Louis.

### 29 4.2.2.1 Public Facilities and Services

30 Public services are provided by a variety of local and county entities within the I-270 North EA corridor.  
 31 Some State of Missouri services are also present.

32 Fire protection is largely provided by St. Louis County through eight county fire districts that cross the study  
 33 area and do not follow municipal boundaries (**Figure 4-2**). Most of these districts span the I-270 corridor.  
 34 Three municipal fire departments (Hazelwood, Ferguson, and Berkeley) also provide fire protection for some  
 35 areas. Nine fire stations are located within 1 mile of the I-270 North EA study area (**Table 4-3**).



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Figure 4-2. Community Map — Municipalities, Hospitals, Fire Stations, and Police Stations

**Table 4-3. Fire Stations in the Study Area**

Department/Station	Address	City
St. Louis County Fire District/Florissant Valley	1955 Washington Street	Florissant
St. Louis County Fire District/Pattonville-Bridgeton Terrace Firehouse 1	4008 Fee Road	Bridgeton
St. Louis County Fire District/Pattonville-Bridgeton Terrace Firehouse 2	12219 St Charles Rock Road	Bridgeton
St. Louis County Fire District/Robertson Firehouse 1	12641 Missouri Bottom Road	Hazelwood
St. Louis County Fire District/Robertson Firehouse 2	3820 Taussig Avenue	Hazelwood
Robertson Fire Department	12195 Gist Road	Bridgeton
Ferguson City Fire Department/Station 2	10701 West Florissant Avenue	Ferguson
Hazelwood City Fire Department/Station 1	6100 North Lindbergh Boulevard	Hazelwood
Hazelwood City Fire Department/Station 2	6800 Howdershell Road	Hazelwood

1 The hospitals and large medical care facilities located within the study area are shown in **Table 4-4** and on  
2 **Figure 4-2**.

3 De Paul Health Center is a Level II Trauma Center. It offers comprehensive medical care with 476-beds from  
4 its campus at the I-70-/I-270 interchange. Opened in 1828, it was the first hospital west of the Mississippi  
5 River and remains the oldest continuously existing business in St. Louis.

6 Bellefontaine Habilitation Center is one of six State-operated facilities to provide habilitation services to  
7 Missouri citizens with developmental disabilities and who have severe maladaptive behaviors or limited  
8 adaptive skills. Its campus immediately abuts the Bellefontaine Conservation Area.

9 Christian Hospital has more than 600 physicians on staff and a workforce of more than 2,500 health care  
10 professionals. Located on the northwest corner of the I-270/MO 367 interchange, it is a leader among  
11 hospitals in the St. Louis region. In particular, for its excellence in heart services and lifesaving cardiothoracic  
12 surgery, emergency medicine, neurosurgery, cancer treatment, radiology, urology, pulmonology, and  
13 radiation oncology.

14 Christian Hospital Northwest is 6 miles west of Christian Hospital on Graham Road in Florissant. It offers  
15 24-hour emergency care and a variety of outpatient services and physician practices.

**Table 4-4. Hospitals and Medical Care Facilities Located along the I-270 within the Study Area**

Facility	Address	City
Bellefontaine Habilitation Center	10695 Bellefontaine Road	Bellefontaine Neighbors
Christian Hospital	11133 Dunn Road	St. Louis
Christian Hospital Northwest	1225 Graham Road	Florissant
De Paul Health Center	12303 De Paul Drive	Bridgeton

16 The First and Second St. Louis County Police precincts cover the study area. As shown in **Table 4-5**, local  
17 police from a number of municipalities cover portions of the study area. Only one station, the Glasgow  
18 Neighborhood Police station at 607 Shepley Drive, is within 1 mile of the I-270 North EA.

**Table 4-5. Police Departments that Serve the Study Area**

Department/Station	Address
St. Louis County Police, First Precinct	11815 Benham Road
St. Louis County Police, Second Precinct	1333 Ashby Road
City of Black Jack Police	12500 Old Jamestown Road
City of Dellwood Police	1415 Chambers Road
Glasgow Neighborhood Police	607 Shepley Drive
Spanish Lake Neighborhood Police	12131 Bellefontaine Road
St. Louis Metropolitan Police, Sixth District, North Patrol Division	4014 Union Boulevard

#### 1 4.2.2.2 Schools and School Districts

2 North County is home to eight accredited public school districts. The study area crosses four of these school  
3 districts (Hazelwood, Riverview Gardens, Ferguson-Florissant, and Pattonville), plus a section of the St. Louis  
4 City School District. Four public schools and one outdoor laboratory (Little Creek Nature Area) are located  
5 along the I-270 corridor or along one of the frontage roads or intersecting roadways near interchanges  
6 (**Table 4-6**). McCluer High School fronts I-270 between Route N/New Florissant Road and Washington  
7 Street/Elizabeth Avenue. Hazelwood East High School and Hazelwood East Middle School are both located in  
8 the northeast quadrant of the I-270/MO 367 (Lewis and Clark Boulevard) interchange. Garrett Elementary  
9 School borders I-270 near MO 370 (Missouri Bottom Road). In addition to these public schools, the Saint  
10 Louis Community College — Florissant Valley campus is located at 3400 Pershall Road, west of West  
11 Florissant Avenue, and the North County Christian School is located along Dunn Road west of New Florissant  
12 Road (see **Exhibit 2** in **Appendix A**).

**Table 4-6. Schools Located along the I-270 Corridor**

School	Address (Nearest Crossroad)
<b>Hazelwood School District</b>	
Garrett Elementary	1400 Ville Rosa Lane, Hazelwood (McDonnell Boulevard)
Hazelwood East Middle School	1865 Dunn Road, Hazelwood (MO 367)
Hazelwood East High School	11300 Dunn Road, Hazelwood (MO 367)
<b>Ferguson-Florissant School District</b>	
Little Creek Nature Area (Special Purpose Area)	2295 Dunn Road, Hazelwood (West Florissant Avenue)
McCluer High School (and District Transportation Department)	1896 S New Florissant Road, Florissant (New Florissant Road)
<b>Others</b>	
North County Christian School	845 Dunn Road, Florissant (New Florissant Road)
St. Louis Christian College	1360 Grandview Drive, Florissant (Washington/Elizabeth)
St. Louis Community College, Florissant Valley Campus	3400 Pershall Road, Florissant (West Florissant Avenue)

## 1 4.2.3 Community Resources — Impacts

### 2 4.2.3.1 No-Build Alternative Impact Summary

3 The No-Build Alternative would have no direct effect on fire stations, police stations, hospitals, or schools  
4 identified within the study area. No construction would occur on or in proximity to the properties that  
5 would directly affect these community services.

6 The traffic congestion currently experienced in the study area would continue, and travel efficiency will  
7 continue to decline. In this way, the No-Build Alternative could have a negative impact on the movement of  
8 emergency vehicles and school buses in the study area.

### 9 4.2.3.2 Build Alternatives Impact Summary

10 No fire stations or police stations will be directly affected by the proposed improvements.

11 The Reasonable Alternatives and the Preferred Alternative have been configured to avoid impacts to  
12 hospitals and schools located along the corridor.

13 All work in the area of the medical centers will remain within the existing right-of-way. In the area of  
14 Christian Hospital, Dunn Road will remain two-way under both Reasonable Alternatives, and existing  
15 driveways will remain open. Bellefontaine Road will not be modified at the entrance to the Bellefontaine  
16 Habilitation Center, and work along I-270 will remain within the existing right-of-way. In the area of De Paul  
17 Health Center, the St. Charles Rock Road interchange will be modified, including the intersection of  
18 Mareschall Lane, which is one of three access points to the medical center complex. The roadway is  
19 expected to remain open during construction, but travel patterns will likely be modified at times. Full  
20 movement, alternative access is available to the medical center from De Paul Drive, approximately 0.25 mile  
21 south along St. Charles Rock Road, and from McKelvey Road. Therefore, the project is expected to have  
22 minimal impacts to access to the medical center.

23 Improvements to I-270 in the area of Garrett Elementary will require a narrow strip of right-of-way, but will  
24 not affect any school facilities. All work in the area of Hazelwood East Middle School and High School will  
25 remain within the existing right-of-way. Dunn Road in the area of the Hazelwood schools will remain two-  
26 way for both Reasonable Alternatives, and the current access from Dunn Road will be maintained.

27 Pershall Road will be modified near McCluer High School for both Reasonable Alternatives. A retaining wall  
28 is proposed along Pershall Road to minimize impacts at McCluer High School for both Reasonable  
29 Alternatives. All work would remain within the existing right-of-way, affecting no school property, under the  
30 Preferred Alternative. A narrow strip of right-of-way would be needed for Alternative 2, which would include  
31 modifying some of the parking area north of the school buildings, but otherwise would affect no school  
32 facilities. Access to the school from New Florissant Road will not be modified.

33 At North County Christian School, Dunn Road will be modified to one-way with the Preferred Alternative,  
34 and would remain two-way with Alternative 2. For both alternatives, the existing driveways to the school  
35 will remain. Given its convenient location between Graham Road and New Florissant Road, the modification  
36 of traffic flow to one-way would not meaningfully impact access to the school.

37 A small amount of permanent right-of-way is expected from the Little Creek Nature Center, an outdoor  
38 laboratory for the Ferguson-Florissant School District. The impact will be limited to acquiring a narrow strip  
39 of right-of-way along the Dunn Road frontage of the property. The existing driveway or other temporary  
40 access will remain open during construction. No permanent or temporary impact to the operation of this  
41 property is expected from either Reasonable Alternative. MoDOT has coordinated with the Ferguson-  
42 Florissant School District regarding this right-of-way acquisition. This impact is discussed further in  
43 **Section 4.15, Section 4(f).**

1 The Reasonable Alternatives and the Preferred Alternative are not anticipated to diminish the emergency  
 2 service coverage in the study area. However, some emergency response routes would be modified with the  
 3 Preferred Alternative, because sections of Dunn Road and Pershall Road would be changed from two-way to  
 4 one-way. Coordination with service providers uncovered that interchange ramp changes will also affect  
 5 routing. Nevertheless, access to all properties would be maintained. The Reasonable Alternatives could have  
 6 a positive effect on these services by generally improving the travel efficiency along the local roadways.

7 Similarly, the project will not permanently affect school transportation. Some school bus routes may be  
 8 modified to accommodate changes in traffic direction along some frontage roads.

9 Coordination with Metro Transit suggests, “A one-way outer road system could potentially add  
 10 approximately \$800,000 to Metro Transit’s annual operating costs and increase travel time and transfer  
 11 fares for customers living/working along the one-way road sections.” As discussed in **Section 6**, Metro staff  
 12 served on the study’s Technical Advisory Committee. As engaged members of the Committee, throughout  
 13 the study, Metro’s staff played an important role in helping to determine how best to minimize adverse  
 14 impacts to Metro’s bus operations on the corridor. Nevertheless, the analysis in support of Metro’s  
 15 operations in a converted one-way outer road system showed an impact of approximately \$800,000 to  
 16 Metro Transit’s annual operating costs and increase travel by 300 miles per day. As the project progresses,  
 17 MoDOT is committed to investigating any modifications that might improve the situation. Our  
 18 Environmental Commitments, relative of Metro Transit, is for construction coordination (#1), acquisition and  
 19 relocation assistance in accordance with the Uniform Act (#12) and impact minimization (#16).

## 20 4.3 Construction Operations

### 21 4.3.1 Construction — Regulatory Background and Standards

22 Construction impacts would result from utility relocations, building the proposed roadway improvements,  
 23 and other related construction activities, which are commonly short-term and temporary in nature. Typical  
 24 construction impacts may include air, water, and noise pollution and disposal of construction debris. Surface  
 25 transportation traffic patterns in the study area may also be altered during construction. MoDOT has  
 26 developed a series of Standard Specifications for Highway Construction. These specifications include, but are  
 27 not limited to, air, noise, and water pollution control measures to minimize construction impacts. The  
 28 Standard Specifications for Highway Construction also include traffic control and safety measures. MoDOT  
 29 would implement these standards as a part of the construction of the project.

### 30 4.3.2 Construction — Impacts

#### 31 4.3.2.1 Air Quality

32 Construction activity would cause temporary air quality impacts. These short-term effects would include  
 33 increased emissions from heavy diesel construction vehicles and equipment, and increased dust from  
 34 grading operations. Emissions from construction vehicles and equipment would be controlled in accordance  
 35 with emission standards prescribed under state and federal regulations. Dust generated by construction  
 36 activities would be minimized by the implementation of dust control measures, such as water sprinkling and  
 37 applications of calcium chloride to control dust and other airborne particulates. Contractors would be  
 38 required to comply with Missouri’s statutory regulations regarding air pollution control and adherence to  
 39 construction permit and contract conditions.

#### 40 4.3.2.2 Water Quality

41 Water quality impacts during construction activities could include increased sediments to stormwater due to  
 42 runoff from erodible material exposed during construction. Stormwater runoff is addressed by MoDOT’s  
 43 Sediment and Erosion Control Program, which would be included within the contract specifications to  
 44 address temporary erosion and sedimentation during construction. MoDOT’s best management practices

1 (BMPs) reduce impacts to the aquatic environment to minimal levels. BMPs cover most activities needed to  
2 restore the construction area to an acceptable condition. This would include cleanup, shaping, replacing  
3 topsoil, and establishing vegetative cover on all disturbed bare areas, as appropriate.

4 MoDOT will adhere to the conditions of the TS4 permit applicable at the time of construction.

#### 5 **4.3.2.3 Noise**

6 Noise from heavy construction equipment and haul trucks would result in unavoidable short-term impacts.  
7 Residents adjacent to the roadway would be most impacted by construction noise. Contractors may be  
8 required to equip and maintain muffling equipment for trucks and other machinery to minimize noise  
9 emissions. Operations with high temporary noise levels, such as pile driving, may require abatement  
10 restrictions placed upon it such as work hour controls and maintenance of muffler systems.

#### 11 **4.3.2.4 Waste Disposal**

12 Specifications and procedures for the disposal of wastes resulting from construction activity would be  
13 developed with consideration given to the MDNR Solid Waste Management Program. This program  
14 emphasizes the need to develop uses and markets for recycled and recyclable materials in construction  
15 activities. These materials could include waste tires, rubberized asphalt, ground glass subgrade, structural  
16 steel, plastic lumber, and paints that use recycled glass. Further, any potential hazards in the right-of-way  
17 would be identified and handled in accordance with all applicable regulations. In addition, the construction  
18 specifications would include requirements to prohibit the contractor from inappropriately disposing of any  
19 pollutants, such as fuels, lubricants, raw sewage, or other harmful substances.

20 Impacts would be mitigated by adherence to construction permit and contract conditions. Materials  
21 resulting from clearing and grubbing, demolition, or other operations (except materials to be retained)  
22 would be removed from the project, or otherwise properly disposed of by the contractor. It is anticipated  
23 there would not be excess fill for the project that would need to be disposed of. Fill material or borrow  
24 needed for project construction would be determined by the contractor, including the source and  
25 disposition of borrow, as well as any environmental requirements. Construction impacts would be more fully  
26 known when more detailed design plans have been completed. MoDOT will continue to work with the  
27 public and other stakeholders to address construction-related concerns.

#### 28 **4.3.2.5 Utility Disruptions**

29 Phone, cable, water, and wastewater/stormwater facilities, are all types of utility-related disruptions that  
30 are leading causes of delay that occur during the construction phase of highway projects, according to the  
31 National Cooperative Highway Research Program. It is well known that uncoordinated utility relocation  
32 activities cause expensive delays and disruptions. When utility relocations cannot be avoided, early and  
33 frequent coordination, cooperation, and communication result in more timely and efficient relocation  
34 activities. MoDOT pursues techniques to reduce utility-related disruptions, minimize costs, and accelerate  
35 construction. No discernible differences among the Reasonable Alternatives, relative to utility disruptions,  
36 have been identified to date.

37 Environmental commitments relative to utility relocation issues include the commitment for a MoDOT-  
38 approved maintenance of traffic plan. Construction schedules, road closures, and detours will be  
39 coordinated with police forces and emergency services to reduce impact to response times of these  
40 agencies. Further, the design process will include periodic consultation with utility owners to ensure  
41 compatibility of the roadway design with continued service, proper design of any utilities requiring  
42 relocation, construction techniques, and timing and technical assistance during construction.

43 Several rail crossings exist with the project corridor. Early and frequent coordination, cooperation, and  
44 communication with the representative of the railroads is an environmental commitment of this project.  
45 Similarly, when utility relocations cannot be avoided, early and frequent coordination, cooperation, and  
46 communication is an environmental commitment of this project.

## 1 4.4 Cultural Resources

2 The term “cultural resource” is not defined in NEPA. However, NEPA does require that agencies consider the  
 3 effects of their actions on all aspects of the “human environment.” Humans relate to their environment  
 4 through their culture. Important elements of the human/cultural environment are preserved to retain a  
 5 community’s sense of history. Thus, the term “cultural resources” has come to encompass historic  
 6 properties under NEPA. Historic properties typically encompass districts, sites, buildings, structures, and  
 7 objects included in or eligible for the National Register of Historic Places (NRHP). For ease of discussion, this  
 8 subsection will focus on cultural resources in terms of architectural resources and archaeological resources.

### 9 4.4.1 Cultural Resources —Regulatory Background and Standards

10 Federal approvals associated with the I-270 North EA are subject to compliance with the National Historic  
 11 Preservation Act (NHPA) and its implementing regulations (36 CFR 800). NHPA Section 106 requires that the  
 12 federal agency responsible for an undertaking consider the effects of its actions on historic properties.  
 13 Historic properties are those listed on or determined eligible for listing on the NRHP. Historic properties  
 14 could include historic-period resources (e.g., existing buildings or structures), as well as below  
 15 ground archeological resources of historic (e.g., early American) or pre-historic (e.g., pre-contact Native  
 16 American) origins. In addition, registered graves are protected by Missouri Statute 214.131-132, and  
 17 unmarked human graves and burial mounds are protected by Missouri Statute RSMO 194.400-401 and the  
 18 Native American Graves Protection and Repatriation Act of 1990.

19 Section 106 regulations require consultation with MDNR, the State Historic Preservation Office (SHPO), with  
 20 consulting parties (those persons with interests in historic properties) and the federal Advisory Council on  
 21 Historic Preservation (ACHP). These entities are provided opportunities to comment on the proposed project  
 22 and its effects on historic properties, and the federal agency must consider these comments and seek ways  
 23 to avoid, minimize, or mitigate adverse effects. If the agency officials, SHPO, and ACHP agree on how the  
 24 adverse effect will be resolved, they develop a Memorandum of Agreement (MOA) or Programmatic  
 25 Agreement (PA). The MOA or PA stipulates the measures to be taken to avoid, minimize, or mitigate the  
 26 adverse effect.

### 27 4.4.2 Cultural Resources — Affected Environment

28 In accordance with current practice, a series of evaluations was conducted to investigate cultural resources  
 29 in the vicinity of the I-270 North EA corridor. The evaluations started with an Archival Review (a review of  
 30 the existing literature). The Archival Review covered a broad area. Based on the results and the Reasonable  
 31 Alternatives, a Phase I Architectural Study was conducted. Finally, a Phase I Archaeological Survey was  
 32 conducted for the Preferred Alternative.

#### 33 4.4.2.1 Resources Identified during the Archival Review

34 The complete Archival Review (and all cultural reports) for the I-270 North EA is available upon request. The  
 35 Archival Review was conducted at SHPO in Jefferson City, Missouri. The area of potential effect (APE) is  
 36 identical to the I-270 North EA study area depicted on **Figure 4-3A**.

37 The archival review identified a number of NRHP-listed properties and districts, bridges, and culverts in the  
 38 study area.

#### 39 Architectural Resources

##### 40 **National Register of Historic Places Listed Properties**

41 The archival review revealed nine NRHP-listed properties and districts are present in the I-270 North EA  
 42 study area. The closest properties to I-270 and in the general vicinity of the Reasonable Alternatives include  
 43 the following:

- 1 • The Utz-Tesson House
- 2 • The Taille de Noyer House
- 3 • The John B. Meyer House and Barn
- 4 • The Gittemeier House

5 These resources are shown on **Figure 4-3A** and **Appendix A (Exhibit 2)**.

6 The Utz-Tesson House, originally located at 615 Utz Lane, was listed on the NRHP in 1973. The house was  
7 nominated to the NRHP for architecture as a “relatively refined country house” that “survives in nearly  
8 original condition and integrity.” The period of significance of the house was the 19th century. In 1997, the  
9 house was purchased by the City of Hazelwood and, in 2003, moved to its present location in Brookes Park.

10 In 1980, the Taille de Noyer House was listed on the NRHP. It was considered significant as the only  
11 remaining building in the area associated with John Mullanphy. The Ferguson-Florissant R-2 School District  
12 obtained the land. In 1960, the home was moved 200 yards west to make room for the school district’s  
13 expansion. It resides on the McCluer High School campus.

14 The John B. Myers House is located at 180 Dunn Road. It was added to the NRHP in 1974 and the boundary  
15 was expanded into a district in 1977 to include the barn and grounds. The home was significant for  
16 architecture as one of the few remaining Classical Revival style houses from the Victorian Era that survived  
17 in a relatively unaltered state. It is also listed as a Historic Landmark in Florissant.

18 The Gittemeier House located at 1067 Dunn Road, while not being listed on the NRHP, was determined to  
19 be eligible for listing by MoDOT. It also is considered a Local Historic Landmark in Florissant. Restoration of  
20 the home began in 1990. Today the building is home to Historic Florissant, Inc. and contains an office, book  
21 store, and resource center.

## 22 **Bridges and Culverts**

23 Two bridges and five culverts are located in the study area (**Figure 4-3A**). The closest to I-270 and in the  
24 general vicinity of the Reasonable Alternatives include the following:

- 25 • Bridge J0493 (1931), reinforced concrete deck girders for the I-270/Burlington Northern Santa Fe  
26 railroad crossing
- 27 • Culvert J0513 (1931), triple-cell box culvert for Watkins Creek at I-270
- 28 • Culvert J0522 (1931), triple-cell box culvert for Watkins Creek at I-270
- 29 • Culvert J0888 (1931), double-cell box culvert for Maline Creek at I-270

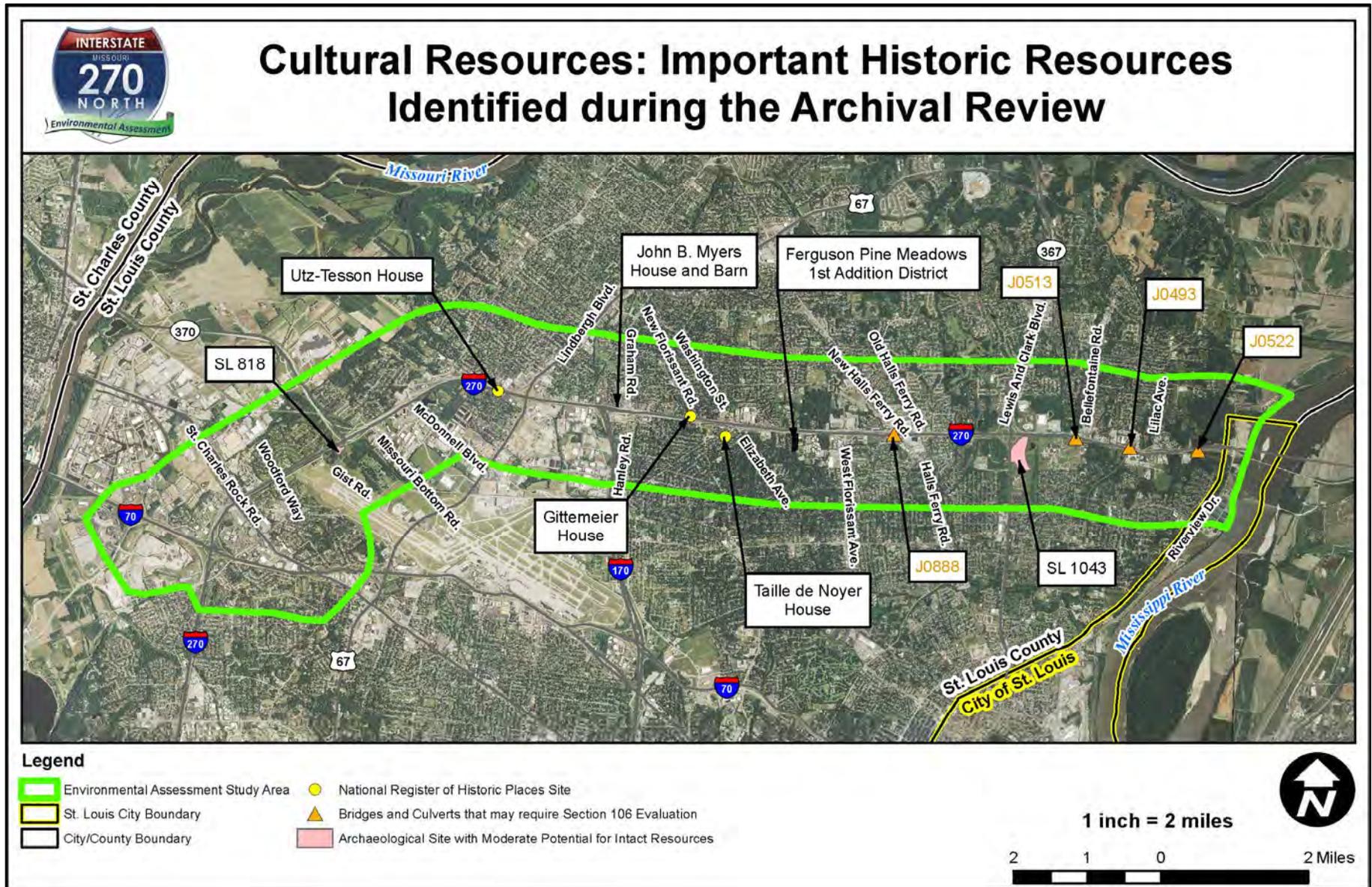
30 Pursuant to coordination with MoDOT’s Historic Preservation staff, it is their opinion that these pre June 30,  
31 1956 structures do not meet the VI-III-b exemption and as such are covered by the Interstate Exemption.  
32 (Federal Register Vol 70 No 46, March 10, 2005, 11928).

## 33 **Burial Areas**

34 The study area contains both recorded historic and prehistoric burial areas that are protected by Missouri  
35 Statutes. None are in proximity to the Reasonable Alternatives.

### 36 **4.4.2.2 Archaeological Resources**

37 A records and literature search of the I-270 North EA study area was conducted at the SHPO in Jefferson  
38 City. The search revealed 79 archaeological sites within the study area from 63 archaeological surveys.



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Figure 4-3A. Cultural Resources — Important Historic Resources

1 Relative to the potential for intact cultural resources, the highest rating was moderate (77 percent were low,  
 2 very low, or destroyed). Of the 18 sites rated moderate, only the following two are in the general vicinity of  
 3 the Reasonable Alternatives:

- 4 • SL 0818 is located on the Lambert Airport. It was identified as part of the airport’s master plan. It was  
 5 identified as a habitation site — both prehistorically and in the 18th century.
- 6 • SL 1043 is located at the Bellefontaine Conservation Area (southeast quadrant of the I-270/MO 367  
 7 interchange). It was identified as part of an improvement project for the conservation area. It was  
 8 identified as a historic farmstead.

9 Overall, there appears to be low potential for intact cultural resources in the study area. There are a few less  
 10 developed portions of the study area where a moderate potential exists. This is particularly the case where  
 11 park areas have been set aside and minimal disruption has taken place — in addition to the areas  
 12 surrounding the NRHP properties and districts (that remain at that their original locations). Overall, the  
 13 remains of privies, wells, and cisterns are the most probable types of historic features to still exist. These  
 14 features are typically deep and therefore most likely to remain intact over time despite land use changes.

#### 15 4.4.2.3 Phase I Architectural Study

16 The objective of the I-270 architectural study was to identify, assess effects, and document all architectural  
 17 resources (i.e., buildings, structures, objects, bridges, districts, and landscapes) within the architectural APE  
 18 associated with the Reasonable Alternatives and the Preferred Alternative. In cooperation with the Historic  
 19 Preservation staff of MoDOT, the architectural APE is defined as the property parcels that touch the I-270  
 20 North EA footprint, where the footprint is outside the existing Interstate right-of-way and where there are  
 21 buildings within 100 feet of the new right-of-way.

22 The architectural study of the I-270 North APE resulted in the identification of 353 parcel properties. All  
 23 properties within the APE were assessed for NRHP eligibility.

24 The Architectural Study confirmed the following findings of the Archival Review regarding the NRHP  
 25 properties in the immediate vicinity of the Reasonable Alternatives for the I-270 North EA:

- 26 • **The Myers residence**, located at 180 Dunn Road, was placed on the NRHP on December 3, 1974, and in  
 27 1978, the house and barn were designated as a NRHP district. This two-story, masonry residence with a  
 28 limestone foundation, brick walls, and two-story double portico porch was constructed beginning in  
 29 1869. The Myers property is eligible under Criteria C for architecture with the period of significance  
 30 being 1869–1870, the duration of construction. Parcel lines are the significant boundary.
- 31 • **The Taille de Noyer** is located on the McCluer High School property. The boundary is the fence that  
 32 surrounds the Taille de Noyer and separates it from the school. It was placed on the NRHP in 1979 for  
 33 social and humanitarian significance under Criteria B. The northern log portion is one-and-one-half  
 34 stories and the southern balloon frame portion is two stories with the entire building clad in  
 35 weatherboard.
- 36 • **The Gittemeier House** is recommended for the NRHP. According to Gretchen Crank, of Historic  
 37 Florissant, Inc., they are in the process of nominating the Gittemeier House to the NRHP (personal  
 38 communication). This two-story German vernacular residence has a limestone basement, brick walls,  
 39 and a side-gabled asphalt roof. It is eligible for the NRHP under Criteria C for architecture with its  
 40 significant boundaries being the parcel lines. The period of significance is ca.1860, the approximate date  
 41 of construction.
- 42 • **The Utz-Tesson House** was listed on the NRHP in 1973. The house was nominated to the NRHP for  
 43 architecture as a “relatively refined country house” that “survives in nearly original condition and  
 44 integrity.” Because of configuration of the APE, the Utz-Tesson House was excluded from the

1 Architectural Study. The Utz-Tesson House is located within Brookes Park and is outside the study area  
2 for the Preferred Alternative.

3 The architectural study also identified a historical district eligible for the NRHP. **The Ferguson Pine Meadows**  
4 **1st Addition District** is located along Starlight Drive in Ferguson (see **Figure 4-3B** and **Appendix A, Exhibit 2**).  
5 The boundaries of the district are Pershall Avenue to the north, Moonlight Drive to the west, and the St.  
6 Louis Community College-Florissant valley campus to the east. The district is recommended as eligible under  
7 Criterion C, for architecture as an example of Contemporary style of architecture. It contains 12 contributing  
8 houses and four non-contributing houses. The district as a whole retains a high degree of integrity within  
9 this post-World War II style.

10 The architectural study also identified two public schools, one church, 25 subdivisions, 21 commercial  
11 buildings, and 114 residential buildings constructed prior to 1969 within the APE. Included in the  
12 114 residential buildings are 108 single-family, five multi-family, and one condominium. The majority of  
13 these properties are altered and many have additions. All of these properties lack integrity and the  
14 significance of any association to historic event, any important persons, and physical characteristics or  
15 design, therefore, they are not recommended for the NRHP. No bridges and culverts located in the APE are  
16 recommended for the NRHP.

#### 17 4.4.2.4 Phase I Archaeological Survey

18 The archaeological survey focused on the Preferred Alternative (Reasonable Alternative 1 with variation 1a)  
19 Much of this area had been previously disturbed. Most of this disturbance was caused by the original  
20 construction of the Interstate, but commercial and residential development along the corridor has added to  
21 the disruptions.

22 One new archaeological site was identified. Site 23SL2379 was represented by three chert flakes found  
23 within shovel tests. The small scatter of artifacts at site 23SL2379 could indicate that this site was used for  
24 only short durations. It is unlikely that intact cultural features exist at this location, therefore, the site is not  
25 eligible for the NRHP. No further work is recommended at site 23SL2379.

26 Re-evaluation of seven previously recorded archaeological sites (SL0101, SL546, SL549, SL607, SL818, SL1043  
27 and SL2228) uncovered no evidence of these sites within the current construction easement and revealed  
28 that past construction activities would have destroyed the sites, so no further work is recommended in  
29 these areas. The survey was unable to safely access sites SL545, SL547, and SL548. All three sites are located  
30 with the northeast portion of the I-270/MO 370 interchange and it is likely construction in the area has  
31 destroyed these remains. However, it is recommended that construction proceed with caution at this  
32 location, especially near site SL545 where historic burials were reported.

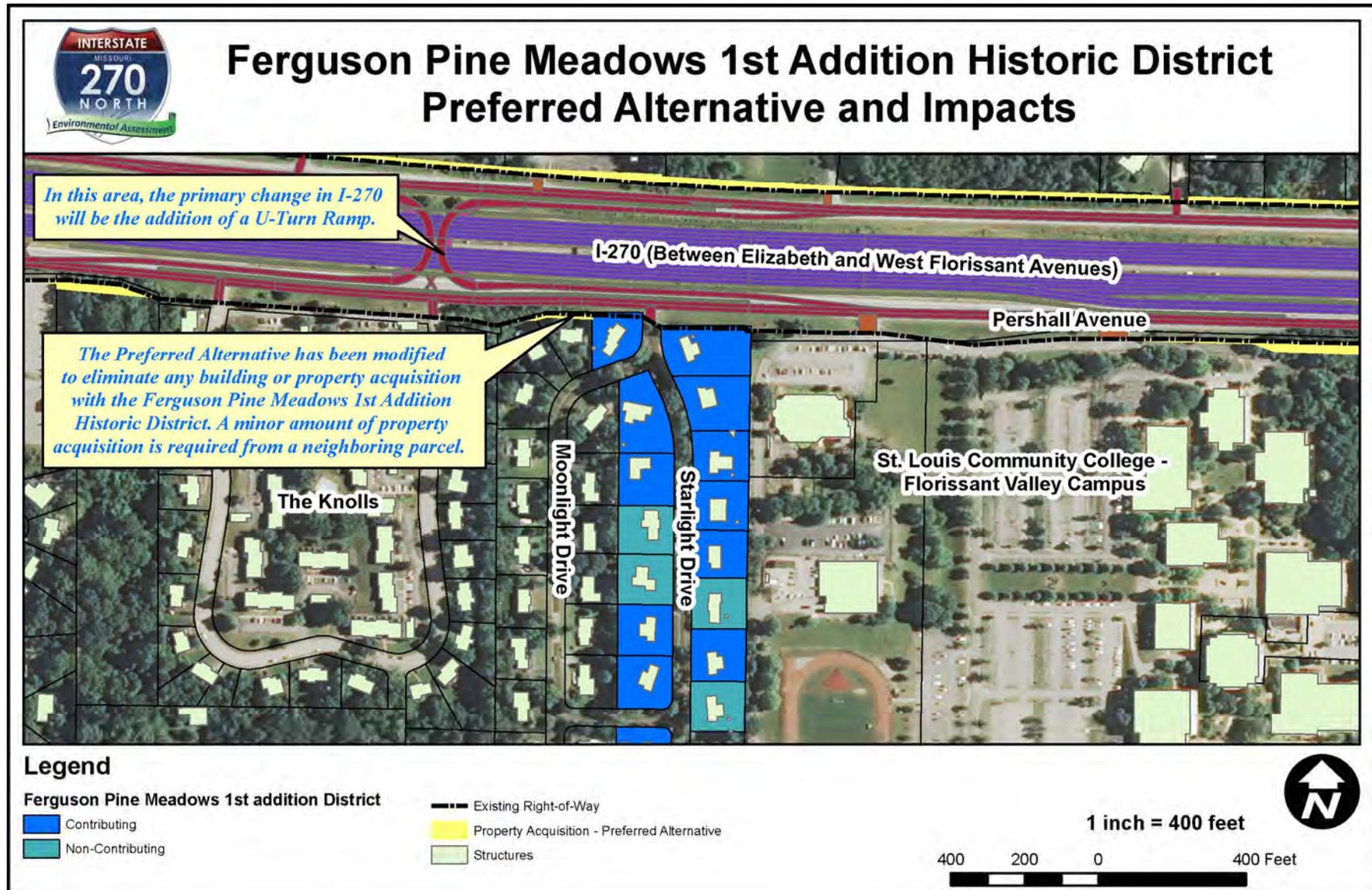
33 No other archaeological resources were identified during the archaeological survey.

### 34 4.4.3 Cultural Resources — Impacts

35 Pursuant to coordination with the MDNR SHPO, the Preferred Alternative was determined to have No  
36 Adverse Effect on historic properties. The SHPO project number is 078-SL-14. The SHPO concurrence letter is  
37 contained in **Appendix D**.

#### 38 4.4.3.1 No-Build Alternative Impact Summary

39 The No-Build Alternative would have no direct effect on the eligible cultural resources identified within the  
40 study area. No construction would occur on or in proximity to the properties that would directly affect  
41 the resources.



1  
2

Figure 4-3B. Ferguson Pine Meadows 1st Addition Historic District Preferred Alternative and Impacts

### 1 4.4.3.2 Build Alternatives Impact Summary

2 The Reasonable Alternatives have been configured to avoid known cultural resources.

3 Relative to the NRHP architectural parcels, impacts are minimal:

- 4 • For the Myers residence, the parcel lines are the significant boundary. The Reasonable Alternatives  
5 avoid acquisition of new right-of-way. Therefore, the proposed improvements to I-270 North may cause  
6 only indirect erosion effects on the area of the property adjacent to Dunn Road.
- 7 • The Taille de Noyer is located on McCluer High School property. The boundary is the fence that  
8 surrounds the Taille de Noyer and separates it from the school and I-270. Consequently, improvements  
9 to I-270 will have no adverse effects on this property.
- 10 • For the Gittemeier House, the parcel lines are the significant boundary. Reasonable Alternative 2 would  
11 create a loop ramp around the house. This would have an adverse effect on the property by impeding  
12 public access and causing erosion. Reasonable Alternative 1 (the Preferred Alternative) will avoid  
13 acquisition of new right-of-way. Consequently, it will only cause indirect erosion effects on the south  
14 and east sides of the property.
- 15 • The Utz-Tesson House is currently located in Brookes Park. Consequently, improvements to I-270 will  
16 have no adverse effects on this property.

17 Relative to the Ferguson Pine Meadows 1st Addition District, the Preferred Alternative was modified to  
18 avoid property acquisitions. The revisions allowed for the Preferred Alternative to qualify for a No Adverse  
19 Effect determination. The approach used was to implement cross-section reductions outside of mainline  
20 I-270. This would preserve the possibility of a full-build along mainline I-270 without additional design  
21 exceptions. The following summarizes how the Preferred Alternative will avoid the Ferguson Pine Meadows  
22 1st Addition District (see **Figure 4-3B**):

- 23 • There are no building acquisitions in this area.
- 24 • There's just a small amount of property acquisition, from an adjacent parcel outside of the district.
- 25 • At the nearest contributing structure in the historic district, there will be no property acquisition.
- 26 • The distance between the nearest contributing structure in the historic district and the right-of-way line  
27 is approximately 15 to 20 feet.
- 28 • The primary change to I-270 is the addition of a U-Turn ramp.
- 29 • In the vicinity of the historic district, the U-Turn ramp is elevated, which creates a barrier between I-270  
30 and the historic district.
- 31 • The U-Turn ramp will be approximately 10 feet high in relationship to the new location of Pershall Road.
- 32 • Pershall Road will be a two-lane, one-way road.
- 33 • Pershall Road will be relocated approximately 20 feet closer to the historic district.
- 34 • The centerline of existing Pershall Road is approximately 56 feet from the existing right-of-way line.
- 35 • The centerline of proposed Pershall Road is approximately 36 feet from the existing right-of-way line.
- 36 • Pershall Road will be near or just above existing grade.

37 The approximately 18 feet between the edge of the shoulder on Pershall Road and the right-of-way line will  
38 be used for construction easements, utility lines, and possible pedestrian/bicycle facilities.

## 1 4.5 Demographics

### 2 4.5.1 Demographics — Regulatory Background and Standards

3 Demographics are the quantifiable characteristics of a population. This subsection discusses population size  
4 and housing. Other statistics relating to race, income, age, disabilities, employment, and transportation are  
5 discussed in other sections.

6 Several distinct geographies of U.S. Census data were used to describe the demographic conditions. St. Louis  
7 County, Saint Charles County, and St. Louis City are the largest regional units used to compile regional  
8 indicators. For the immediate study area (that area within at least 1 mile on either side of the portion of  
9 I-270, between I-70 and Chain of the Rocks Bridge), the data from census tracts was used to provide the  
10 demographic profile.

### 11 4.5.2 Demographics — Affected Environment

#### 12 4.5.2.1 Population

13 In the 2010 census, a total of 147,000 people were recorded within the census tracts that intersect the I-270  
14 North EA study area. The population in the area has been declining over the past several decades. The area  
15 experienced a 5 percent decrease in population from 1990 to 2000, and another 5 percent decrease  
16 between 2000 and 2010. **Table 4-7** summarizes total population numbers in the study area.

17 Many demographic indicators in St. Louis City and the study area followed the same patterns—overall  
18 reductions in population. With a relatively stable regional population, the trend was movement to outer  
19 portions of St. Louis County and to adjacent counties, such as Saint Charles County. **Figure 4-4** shows the  
20 location of the census tracts within the I-270 North EA study area and the 2010 population for those  
21 30 tracts.

**Table 4-7. Total Populations**

Population	1990	2000	2010	Percent Change
St. Louis County	993,529	1,016,315	998,954	0.5%
St. Louis City	396,685	348,189	319,254	-19%
St. Charles County	212,907	283,883	360,485	69%
I-270 North EA Study Area	163,210	155,609	147,015	-10%

Source: Missouri 2010 TIGER Census Data (MSDIS)

#### 22 4.5.2.2 Households and Housing

23 The average household size in the study area is two to three people. This number is consistent with St. Louis  
24 County as a whole.

25 In the census tracts that comprise the study area, approximately 77 percent of the housing units are single-  
26 family houses, and nearly all of the rest are duplexes, townhouses, or apartment buildings. Mobile homes  
27 comprise a very small percentage of the housing in the study area and St. Louis County as a whole.

28 Owners occupy approximately two thirds of the housing units in the I-270 North EA study area (**Table 4-8**).  
29 The median value of owner-occupied units is approximately \$122,000. The remainder of the housing units  
30 are occupied by renters. The ratio of owners to renters in the study area is very near the ratio for St. Louis  
31 County as a whole.

Table 4-8. Percentage Population by Housing

Population	Owner Occupied	Renter Occupied	Single-Family Residences	Two to Four Units per Building	More than Four Units per Building	Mobile Homes
St. Louis County	72.1%	27.9%	76.8%	6.4%	16.5%	0.3%
St. Louis City	45.4%	54.6%	46.8%	30.1%	22.8%	0.3%
St. Charles County	80.6%	19.4%	81.2%	4.6%	11.0%	3.2%
I-270 North EA Study Area	69.1%	30.9%	76.9%	5.3%	17.1%	0.7%

Source: U.S. Census Bureau, American Fact Finder, 2014, <http://factfinder2.census.gov>

## 1 4.5.3 Demographics — Impacts

### 2 4.5.3.1 No-Build Alternative Impact Summary

3 The No-Build Alternative would have no direct impact on the population in the study area. However, the  
4 forces tending to cause emigration from the area will remain. Based on historical trends, it is expected that  
5 the population may continue to decrease.

### 6 4.5.3.2 Build Alternatives Impact Summary

7 The Reasonable Alternatives are not expected to have a direct impact on the local population, except for the  
8 relocation of a number of residents and businesses. Acquisition and relocation of affected residential and  
9 commercial properties will be in accordance with the relocation procedures established in the Uniform Act  
10 (**Section 4.13, Right of Way**).

11 Assuming most residents and businesses will elect to remain in the vicinity, the project will have no  
12 appreciable negative impact on the size of the local population. With the improvement to traffic LOS on  
13 local roadways, it is possible that the project would encourage new residents and businesses to relocate into  
14 the project area and have a positive impact on the local population.

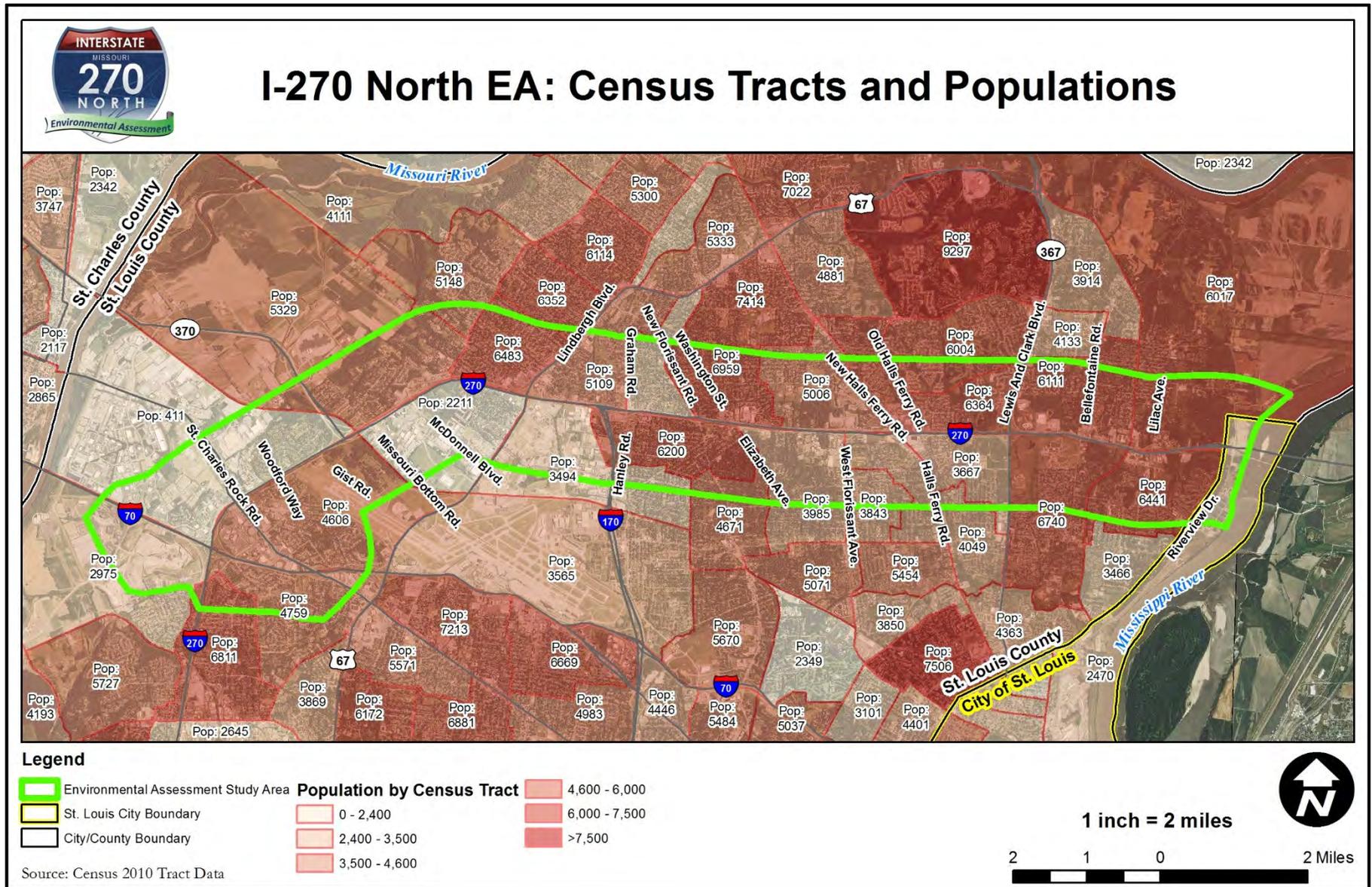
## 15 4.6 Endangered and Threatened Species

### 16 4.6.1 Regulatory Background

17 Under Section 7 of the Federal Endangered Species Act, FHWA is required to consult with the U.S. Fish and  
18 Wildlife Service (USFWS) to ensure that any action authorized, funded, or carried out by the agency is not  
19 likely to jeopardize the continued existence of any endangered or threatened species or result in the  
20 destruction or adverse modification of critical habitat.

21 The State of Missouri also protects state-listed species under Rule 3 CSR 10-4.111 of the Missouri Wildlife  
22 Code. The rule prohibits the importation, transportation, sale, purchase, taking, or possession of listed  
23 species.

24



1  
2

Figure 4-4. Demographics Map — Census Tracts and Populations

## 1 4.6.2 Affected Environment

2 Much of the project corridor is in a highly developed and ecologically disturbed area of St. Louis County.  
 3 There is little forested area and most trees are located along streets in adjacent suburban areas and in  
 4 patches along the interstate and associated interchanges in un-mowed and unmanaged areas. Invasive non-  
 5 native species such as callery pear (*Pyrus calleryana*) and bush honeysuckle (*Lonicera sp.*) are common. In  
 6 fact, nearly the entire understory of treed areas within the project corridor is dominated by bush  
 7 honeysuckle. These areas would be expected to support common fauna that are adapted to fragmented and  
 8 urbanized areas (opossum, raccoon, coyote, small rodents, European starling, house sparrow, and American  
 9 crow).

10 East of Highway 367, tree cover adjacent to the project corridor is more extensive. Although not forested,  
 11 the 133-acre Bellefontaine Conservation Area owned by the Missouri Department of Conservation is  
 12 southeast of the I-270/Hwy 367 interchange. The area is mainly used for urban fishing. Common mammals  
 13 such as those listed above, in addition to waterfowl and mourning dove would likely be found in this area.

14 Between Lilac Avenue and Riverview Drive (Rte. H), adjacent tree cover reaches the highest densities along  
 15 the project corridor. Watkins Creek winds through this area, flowing from southwest to northeast before  
 16 emptying into the Mississippi River about a half mile north of I-270. The understory of the riparian area of  
 17 this creek is densely covered with *Lonicera sp.* In this area, subdivisions near Hwy 367 and scattered houses  
 18 and roads both north and south of the project corridor create varying degrees of fragmentation. Near the  
 19 interstate, invasive bush honeysuckle is the exclusive understory plant, outcompeting native vegetation and  
 20 preventing natural ecological succession. While there are no records of sensitive species in these areas  
 21 according to the MDC Natural Heritage Database (current as of September 2016), the wooded areas away  
 22 from the interstate would be expected to contain a wider range of species than would be found in much of  
 23 the western corridor. Red fox, deer, red and gray squirrels, blue jay, garter snakes, and green frogs are  
 24 examples of likely inhabitants in this area.

25 The USFWS online Information and Planning for Conservation (IPaC) database was accessed to obtain an  
 26 official species list (Consultation Code 03E14000-2016-SLI 2103) on 8/31/2016. The list identified five species  
 27 that may occur within Saint Louis County, Missouri, that need to be considered in an effects analysis for this  
 28 project. There are no federally designated critical habitats within the project corridor. **Table 4-9** summarizes  
 29 the listed species and their associated habitat.

30 **TABLE 4-9. Federally Listed Threatened, Endangered, and Proposed Species**

Species	Status	Typical Habitat
<u>Gray bat</u> ( <i>Myotis grisescens</i> )	Endangered	Caves, stream corridors near caves.
<u>Indiana bat</u> ( <i>Myotis sodalis</i> )	Endangered	Hibernacula: caves and mines; summer habitat: Indiana bats can occur in forested areas of the state where they may utilize suitable summer roost trees with exfoliating bark.
<u>Northern long-eared bat</u> <i>Myotis septentrionalis</i>	Threatened	Hibernacula: caves and mines; summer habitat: similar to Indiana but will also use trees with cavities, cracks, and splits.
<u>Pallid sturgeon</u> ( <i>Scaphirhynchus albus</i> )	Endangered	Mississippi and Missouri rivers
<u>Decurrent false aster</u> ( <i>Boltonia decurrens</i> )	Threatened	Disturbed alluvial soils

1 Correspondence with the Missouri Department of Conservation (MDC) yielded a Natural Heritage Review  
2 Report that showed no existing records of state or federally listed endangered species within one mile of the  
3 project area. Field investigations did not identify high quality potential habitats for state or federally listed  
4 species. The project's field investigations confirm this conclusion. The Natural Heritage Review Report is  
5 contained in **Appendix D**.

### 6 4.6.3 Effects of Proposed Action

7 Section 3.3.5 contains a complete description of the preferred reconfiguration of the corridor. Both  
8 reasonable alternatives are similar, but there are some differences in tree clearing amounts due to  
9 differences in interchange design and outer road configurations. Since tree clearing within the corridor is the  
10 main component of the action that may affect federal trust species, the details of this portion of the action  
11 are described below in the discussion of the effects on Indiana and northern long-eared bats.

#### 12 **Pallid Sturgeon**

13 Pallid sturgeons are mainly bottom feeders that extract their food (primarily small fishes and invertebrates)  
14 from river bottoms. They occur mainly within the Missouri and Mississippi rivers. These rivers contain strong  
15 currents in the main river channels, along with firm sand substrates. According to the US Fish and Wildlife  
16 Service, reasons for pallid sturgeon decline are the creation of impoundments and deep uniform channels.  
17 Pallid sturgeons prefer a diversity of depths and velocities. A determination of No Effect has been made for  
18 the pallid sturgeon because neither of the project alternatives will have an impact on either the Missouri or  
19 Mississippi Rivers.

#### 20 **Decurrent False Aster**

21 Decurrent false aster is a perennial plant that occasionally reaches heights of over 6 feet. Historically, this  
22 plant was found in wet prairies, marshes, and along the shores of some rivers and lakes. Current habitats  
23 include riverbanks, old fields, roadsides, mudflats, and lake shores. Conservation efforts include wetland  
24 protection, low-intensity agriculture, and avoidance of herbicide use. It is currently listed as Endangered by  
25 the Missouri Department of Conservation and as Threatened by the U.S. Fish and Wildlife Service. It is  
26 declining due to loss of historic river floodplains and wetland habitat, which is caused by the construction of  
27 levees and locks and dams along the Illinois and Mississippi rivers, which have prevented flooding in many  
28 areas. Disturbance in the form of flooding is required for this species to persist in an area. Presently it is  
29 known to occur only in St. Charles County. The nearest record is approximately 3 miles to the northeast from  
30 the I-270/Rte. H (Riverview Dr.) interchange. This record is in Columbia Bottom Conservation Area and there  
31 are other records within the boundaries of that resource. The I-270 project corridor is outside of the  
32 floodplain. A determination of No Effect has been made for decurrent false aster because neither of the  
33 project alternatives impact any known populations of this species, and suitable habitat is not present within  
34 the project corridor.

#### 35 **Gray Bat**

36 Gray bats utilize caves and mines during all seasons. They use these features to hibernate during the winter,  
37 migrate between them during the spring and fall, and rear their young in suitable caves and mines during  
38 the summer. However, they do not use the same underground habitats throughout the year. There are no  
39 caves or mines in the project corridor according to the Missouri Speleological Society Cave Database (MSS,  
40 current as of February 2016). The nearest known cave is approximately 3 miles to the north (Coldwater  
41 Creek Cave). According to the MSS Cave Database and the Missouri Natural Heritage Database (current as of  
42 September 2016) there are no records for any federal or state listed species at that cave, or any other cave  
43 within a 10-mile radius of the project area. The nearest gray bat records are approximately 17 miles to the  
44 southwest. Because no suitable habitat for gray bats will be impacted by either of the project alternatives, a  
45 no effect determination has been made for this species.

## 1 **Indiana and Northern Long-eared Bat**

2 Indiana and northern long-eared bats also use caves and mines to hibernate during the winter. However,  
3 both species roost and raise their young in trees with suitable characteristics during the summer. Suitable  
4 trees contain loose and sloughing/peeling bark, cavities, snags, or splits where bats can hide and seek  
5 protection from the elements. Isolated trees and those near major highways are usually not considered  
6 good habitat.

7 The nearest Indiana bat and northern long-eared bat records in Missouri are approximately 16 and 17 miles  
8 to the southwest, respectively according to the MDC Natural Heritage Database. The Illinois Natural History  
9 Survey conducted presence/absence surveys using mist nets in August 2016 for a future project involving  
10 the I-270 bridge over the Mississippi (Chain of Rocks Bridge). Surveys were conducted on both the Illinois  
11 and Missouri sides of the river. Those conducted on the Missouri side were between the east end of the I-  
12 270 project corridor and the river so the results are relevant to the portion of this project near Rte.  
13 H/Riverview Drive. During two nights of netting on the Missouri side, only two big brown bats were  
14 captured. No listed bats were detected. An emergence survey was also conducted at the existing bridge to  
15 determine if any bats are roosting on the bridge. None were observed. The area where the surveys were  
16 conducted contains mature trees adjacent to the river. Additionally, the US Army Corps of Engineers  
17 conducted mist netting on Chouteau Island in the Mississippi approximately 5 years ago. No federally listed  
18 species were captured but Northern long-eared bats may have been detected acoustically (J. Mengelkoch,  
19 INHS, personal communication).

20 Woodland habitat is limited in the vicinity of I-270 within the project corridor. The dominance of non-native  
21 and immature tree species in undeveloped areas, and the sparse/ patchy nature of the urban landscape  
22 make it unlikely that substantial summer roosting habitat exists within much of the project area. However,  
23 even in this highly urbanized area adjacent to a major interstate, there are blocks of trees containing  
24 individuals that have suitable roosting characteristics, with larger blocks of forest at the east end of the  
25 project compared to the rest of the project.

26 Approximately 79 acres of trees could be cleared as a worst-case scenario in the preferred alternative (see  
27 the potential habitat map in **Appendix D**). Both alternatives clear much of the same treed areas. However,  
28 there are small (<1/2 acre) differences in clearing at most interchanges, but larger differences associated  
29 with the locations of the north outer road in several areas. At the West Florissant Interchange and the north  
30 outer road, Alternative 2 could require as many as 10 acres of additional clearing beyond what is required  
31 for the Preferred. At the Riverview Drive Interchange and the north outer road, Alternate 2 would require  
32 approximately two acres more clearing than the Preferred Alternate. However, at Bellefontaine, the location  
33 of the north outer road in the Preferred Alternate results in approximately 1 acre more than Alternative 2. In  
34 summary, the Preferred Alternate would result in less tree clearing (approximately 79 acres) than  
35 Alternative 2 (approximately 90 acres).

36 MoDOT Environmental Specialists conducted a preliminary reconnaissance for suitable habitat along the  
37 entire corridor in March 2015. The survey revealed areas where suitable habitat was present (approximately  
38 49 acres), but no quantitative assessments (counts of suitable roost trees) were conducted at that time.  
39 Because the project will be constructed in phases beginning in 2016 and conclude in 2045 (see phasing map  
40 in **Appendix D**), assessments of suitable trees in areas that will not be impacted for 10 - 20 years are not  
41 biologically relevant since habitat changes over time. Trees that are currently suitable can fall rendering  
42 them unusable to bats. Conversely, currently healthy trees can die and develop suitable characteristics as  
43 they deteriorate. Therefore, it is unknown exactly how many trees within the 49 acres of suitable habitat  
44 would qualify as suitable roost or maternity trees. **Table 4-10** illustrates the amount of tree clearing by  
45 phase that could take place.

1 **Table 4-10. Tree clearing by phase for the Preferred Alternative**

Phase	Potential Habitat	No Potential Habitat (at this time)
2016 – 2025	2.4 acres	1.2 acres
2016 – 2035	254 acres	2.1 acres
2026 – 2035	34.3 acres	22.1 acres
2036 – 2045	10.4 acres	4.0 acres
Total	49.6 acres	29.4 acres

2

3 A second reconnaissance survey to areas previously determined to contain potential habitat was conducted  
4 on November 3, 2016. The purpose of this survey was to photograph those areas (See photographs in  
5 **Appendix D**) to provide a rough picture of suitable trees and to assess the level of disturbance and  
6 ecological function within the treed areas. The survey confirmed that all areas containing mature trees have  
7 a thick, nearly impenetrable understory of bush honeysuckle. This cover prevents recruitment of native tree  
8 and understory species. Native forest floor plant species are largely absent. Mature trees are in varying  
9 states of health. Some areas (i.e., southeast of Bellefontaine, west of the welcome center at Riverview)  
10 contain mature oaks and pines that are in good health but contain a few suitable roost characteristics for  
11 bats (Photos 7, 9; **Appendix D**). Others (i.e., southwest of Lindbergh, southwest quadrant of the Riverview  
12 interchange) contain scattered, individual trees in decline that contain some suitable roost characteristics  
13 (Photos 3 – 5, 11 – 14; **Appendix D**). Cottonwood, sycamore, and Siberian elm are common in these areas.

14 All areas of tree clearing are between 50 and 425 feet from the interstate or other road. As such, these areas  
15 are exposed to continuous traffic noise, lights, and exhaust. Even the areas farthest from the interstate at  
16 the east end of the project are exposed to the constant drone of large trucks. Bats can become habituated  
17 to noise and vibrational disturbances, but large paved roads with high traffic counts can result in a barrier  
18 effect for bats, preventing them from crossing or roosting close by. If bats are using the wooded areas to the  
19 north and south, they may not enter into the proposed clearing areas to roost or forage. Clearing these  
20 areas is not likely to adversely affect bats that may be inhabiting areas of forest farther from the interstate.  
21 On the north side of Dunn Road east of Riverview Drive, only a narrow strip (approximately 50 feet) of tree  
22 clearing may take place. This leaves the majority of the forested area to the north untouched. On the south  
23 side, in the largest area of proposed tree clearing on the project, the hillside faces the interstate and does  
24 not contain many suitable roosts (see Photos 11 – 13; **Appendix D**).

25 Farther west at the Bellefontaine interchange, proposed clearing to the southeast would take place on a  
26 hillside dominated by large mature oaks. Much of the hillside faces the interstate and would be exposed to  
27 the same disturbances previously mentioned (Photo 7; **Appendix D**). To the south, tree cover is relatively  
28 thick but is fragmented by subdivisions and local streets. The treed areas around Bellefontaine are basically  
29 islands with only tenuous connections to the rest of the urban forest via narrow and disturbed riparian  
30 corridors along Watkins Creek and its tributaries.

31 As previously mentioned, the rest of the corridor contains isolated strips of trees adjacent to the interstate  
32 with little or no connection to larger treed areas farther away. These areas are unlikely to support any bats,  
33 even in trees that contain suitable roost characteristics. Their proximity to the interstate and the highly  
34 developed landscapes surrounding them would likely prevent bats from utilizing these areas.

35 The removal of trees in some areas of this project would likely result in no effect on listed bat species. At the  
36 east end, given the more extensive treed areas associated with the Watkins Creek watershed and greater  
37 number of identified potentially suitable summer roost trees, if clearing is conducted during the winter  
38 months when Indiana and northern long-eared bats would be hibernating in caves, tree clearing is not likely  
39 to adversely affect bats. However, the lengthy timeline of the project phasing warrants re-evaluation of bat  
40 habitat status prior to the construction of each phase. Habitat conditions change over time and new

1 locations for bats are discovered as surveys are conducted and opportunistic observations are made and  
 2 reported to resource and regulatory agencies. Currently the first phase, which extends from west of  
 3 Hazelwest Dr. to Sugartrail Drive, contains a few narrow strips of trees adjacent to the Interstate where  
 4 some trees with suitable characteristics were noted in March 2015 and November 2016. Even though their  
 5 proximity to the interstate and highly developed areas severely limits their efficacy as suitable habitat, tree  
 6 clearing for this phase of the project will be restricted to winter months (November 1 to March 31) as an  
 7 added conservation measure to protect bats. Construction on the first phase is not likely to begin until  
 8 sometime in 2017. Subsequent phases will be re-evaluated during the project development process. Winter  
 9 clearing of suitable roost trees will be employed as a conservation measure for all phases of the project.  
 10 Coordination with the USFWS and the MDC will take place during all phases of the project to ensure that the  
 11 determination of “not likely to adversely affect” is still valid and to ensure all appropriate conservation  
 12 measures are employed to remove adverse effects to bats. In summary, considering the total area of habitat  
 13 potentially impacted by this project, determinations of “may effect, not likely to adversely affect” have been  
 14 made for Indiana and northern long-eared bats. FHWA is asking for concurrence from the USFWS for these  
 15 determinations. Environmental commitments regarding endangered species include:

- 16 1. All tree clearing will be conducted in the winter months when bats are in hibernation (November 1 –  
 17 March 31)
- 18 2. During the project development process for each phase, potential impacts to threatened and  
 19 endangered species will be re-evaluated, and coordination with both MDC and the USFWS will take  
 20 place to verify that the “not likely to adversely affect” determinations for listed bats remain valid.

## 21 4.7 Environmental Justice

### 22 4.7.1 Environmental Justice — Regulatory Background and Standards

23 Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income*  
 24 *Populations*, signed on February 11, 1994, requires federal agencies to take appropriate and necessary steps  
 25 to identify and address disproportionately high and adverse human health or environmental effects of their  
 26 actions on minority and low-income communities or populations. EO 12898 seeks to ensure that the  
 27 proposed transportation activity will do the following:

- 28 • Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental  
 29 effects, including social and economic effects, on minority populations and low-income populations
- 30 • Ensure the full and fair participation by all potentially affected communities in the transportation  
 31 decision-making process
- 32 • Prevent the denial of, reduction in, or substantial delay of, the receipt of benefits by minority and  
 33 low-income populations

34 EO 12898 does not define the terms “minority” or “low income.” However, guidance provided by CEQ  
 35 describes these terms in the context of an EJ analysis. The following definitions taken from CEQ guidance  
 36 are unique to EJ analysis and were used to identify minority and low-income populations living near the  
 37 study area:

38 **Minority Individual:** A minority individual is classified by the U.S. Census Bureau as belonging to one of the  
 39 following groups: American Indian or Alaskan Native, Asian or Pacific Islander, Black (not of Hispanic Origin),  
 40 and Hispanic. Minority populations, according to the CEQ guidelines, should be identified where either  
 41 (1) the minority population of the affected area exceeds 50 percent, or (2) the minority population  
 42 percentage of the affected area is meaningfully greater than the minority population percentage in the  
 43 general population or other appropriate unit of geographic analysis.

1 **Low-income Population:** Low-income populations are identified where individuals have incomes below the  
 2 U.S. Department of Health and Human Services poverty guidelines. A low-income population is either a  
 3 group of low-income individuals living in proximity to one another or a set of individuals who share common  
 4 conditions of environmental exposure or effect.

5 Therefore, the following criteria were developed to identify EJ populations in the study area:

- 6 • Census block groups where the minority population or the population below the poverty level in the  
 7 block group equals or exceeds 50 percent of the population in that census block group
- 8 • Census block groups where the percentage of the minority or below poverty population is at least  
 9 10 percent higher than the minority or below poverty population percentage for St. Louis County

10 4.7.2 Environmental Justice — Affected Environment

11 4.7.2.1 Minority Populations

12 Impacts to racial minorities are an essential component of an EJ  
 13 analysis. The non-white population comprises just over half of the  
 14 St. Louis City population and approximately one third of the St.  
 15 Louis County population. Minorities comprise more than half of the  
 16 population in the census tracts in the I-270 North EA study area  
 17 (Table 4-11).

18 The percentage of the St. Louis County population that consists of  
 19 minorities is around 29.7 percent. The threshold for the EJ analysis  
 20 is 10 percent higher than the county average, or approximately  
 21 32.7 percent. As seen on Figure 4-5, numerous block groups along  
 22 the I-270 corridor exceed the threshold, and several exceed  
 23 50 percent minorities. These populations are more heavily  
 24 distributed in the eastern two-thirds of the study area.

25



**EJ Populations and I-270 North**

The poverty level threshold for the EJ analysis is 11.5 percent. Census data show few block groups that exceed this EJ threshold.

The minority population threshold for the EJ analysis is 32.7 percent. Numerous block groups along the I-270 corridor exceed the threshold, and several exceed 50 percent. These populations are most heavily distributed in the eastern two-thirds of the study area.

Table 4-11. Percentage of Population by Ethnic Background

Population	White	Black or African-American	Asian	Other	Two or More Races
St. Louis County	70.3%	23.3%	3.5%	1.0%	1.9%
St. Louis City	43.9%	49.2%	2.9%	1.6%	2.4%
St. Charles County	90.7%	4.1%	2.2%	1.2%	1.8%
I-270 North EA Study Area	45.8%	49.9%	1.2%	1.0%	2.1%

Source: U.S. Census Bureau, American Fact Finder, 2014, <http://factfinder2.census.gov>

1 **Low-Income Populations**

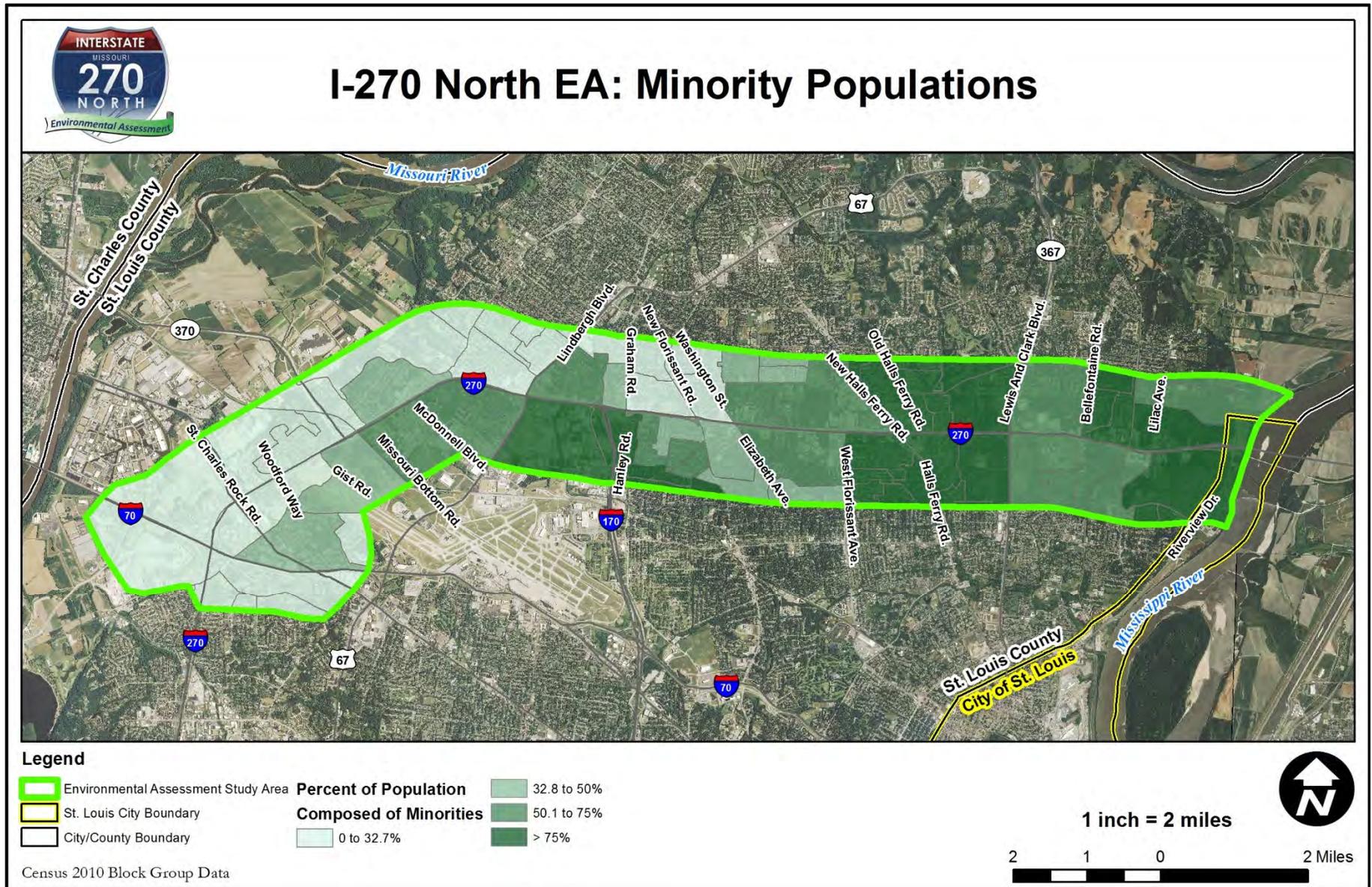
- 2 Overall, the percentage of the population within the study area below the poverty level is less than either St.  
3 Louis County or St. Louis City (**Table 4-11a**).

**Table 4-11a. Percentage of Population with Income below Poverty Levels**

<b>Population</b>	<b>Median Income</b>	<b>Average Income</b>	<b>Percent of Population below Poverty Level</b>
St. Louis County	\$58,485	\$84,081	10.5%
St. Louis City	\$34,384	\$49,735	27.0%
St. Charles County	\$71,416	\$84,007	5.4%
I-270 North EA Study Area	\$45,917	\$54,275	7.0%

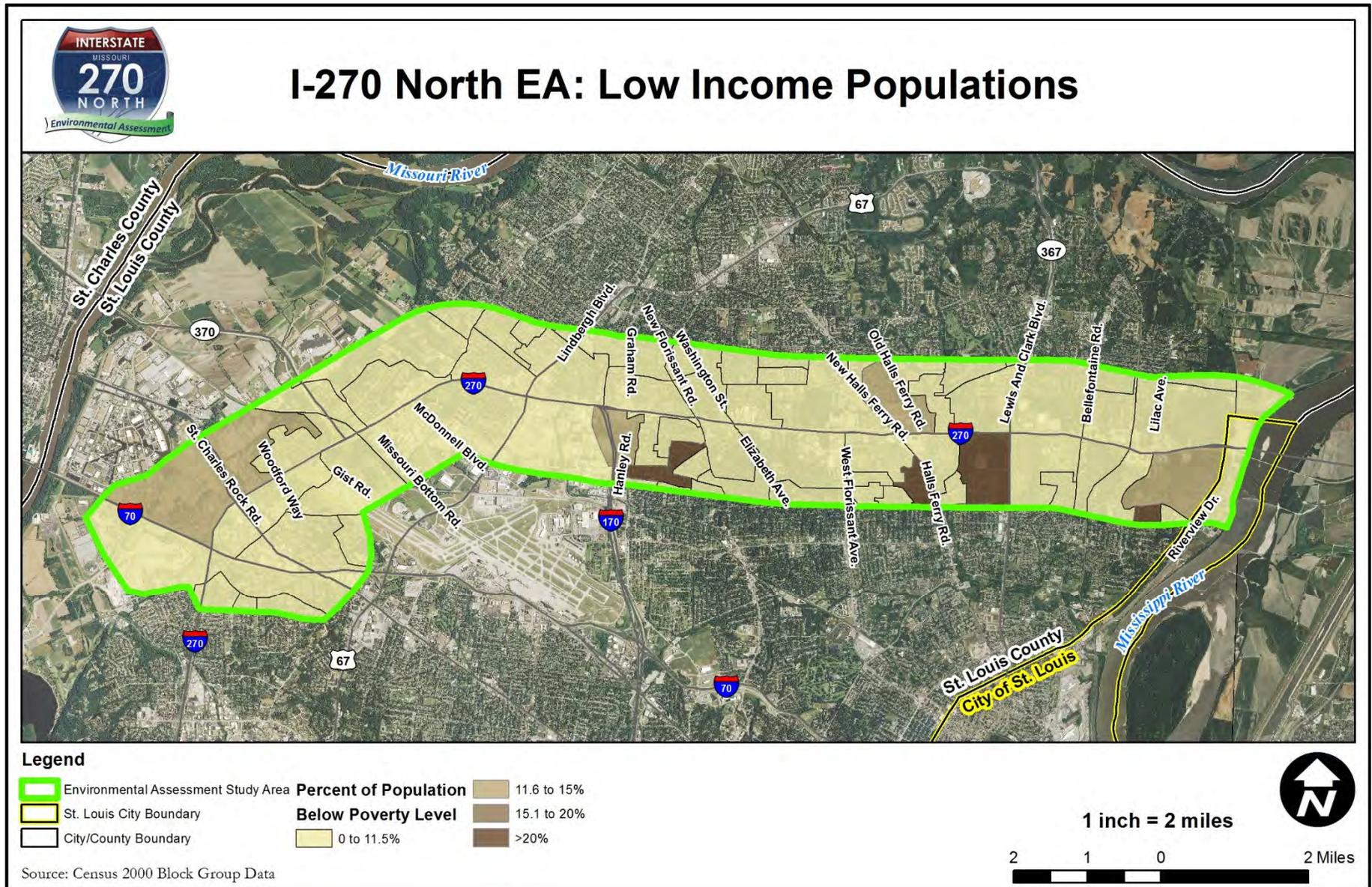
Source: U.S. Census Bureau, American Fact Finder, 2014, <http://factfinder2.census.gov>

- 4 The percentage of the St. Louis County population below the poverty level is around 10.5 percent. The  
5 threshold for the EJ analysis is 10 percent higher than the county average, or approximately 11.5 percent.  
6 For the block groups in the study area, the most recent poverty data available is from Census 2000. These  
7 block group data show few block groups that exceed the EJ threshold (**Figure 4-6**).



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Figure 4-5. Minority Populations (by Block Group)



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Figure 4-6. Low Income Populations (by Block Group)

### 1 4.7.2.2 Age

2 Age plays an important role in transportation planning and the assessment of EJ impacts. Householders  
3 without cars (including young people) and the elderly are two age categories that are particularly  
4 susceptible to negative impacts as a result of projects like the improvement of I-270 North. They are more  
5 likely to rely on others for transportation. They may use transit more. Bicycles and walking are often  
6 important modes of transportation. As shown in **Table 4-12**, the I-270 North EA study area has populations  
7 in line with the applicable benchmarks. Roughly one in seven residents are over 65. Roughly one in four  
8 residents is under 18.

**Table 4-12. Percentage of Population under 18 and over 65**

Population	Under 18	Over 65
St. Louis County	23.5%	14.9%
St. Louis City	21.5%	11.2%
St. Charles County	24.9%	12.6%
I-270 North EA Study Area	24.3%	13.9%
Missouri	23.5%	14.3%

Source: Missouri 2010 TIGER Census Data (MSDIS)

### 9 4.7.2.3 Disabled Populations

10 Approximately 11.6 percent of the population of St. Louis County as a whole has a disability, including  
11 hearing, vision, cognitive, ambulatory, or self-care disability. For the census tracts that comprise the study  
12 area, the range is from approximately 5 to 32 percent. Tracts toward the center of the study area and tracts  
13 northwest of the I-70 interchange have the higher percentage of the population with disabilities, although  
14 tracts with percent disabled populations greater than the St. Louis County average are distributed along  
15 nearly the entire corridor.

### 16 4.7.2.4 Zero-Vehicle Households

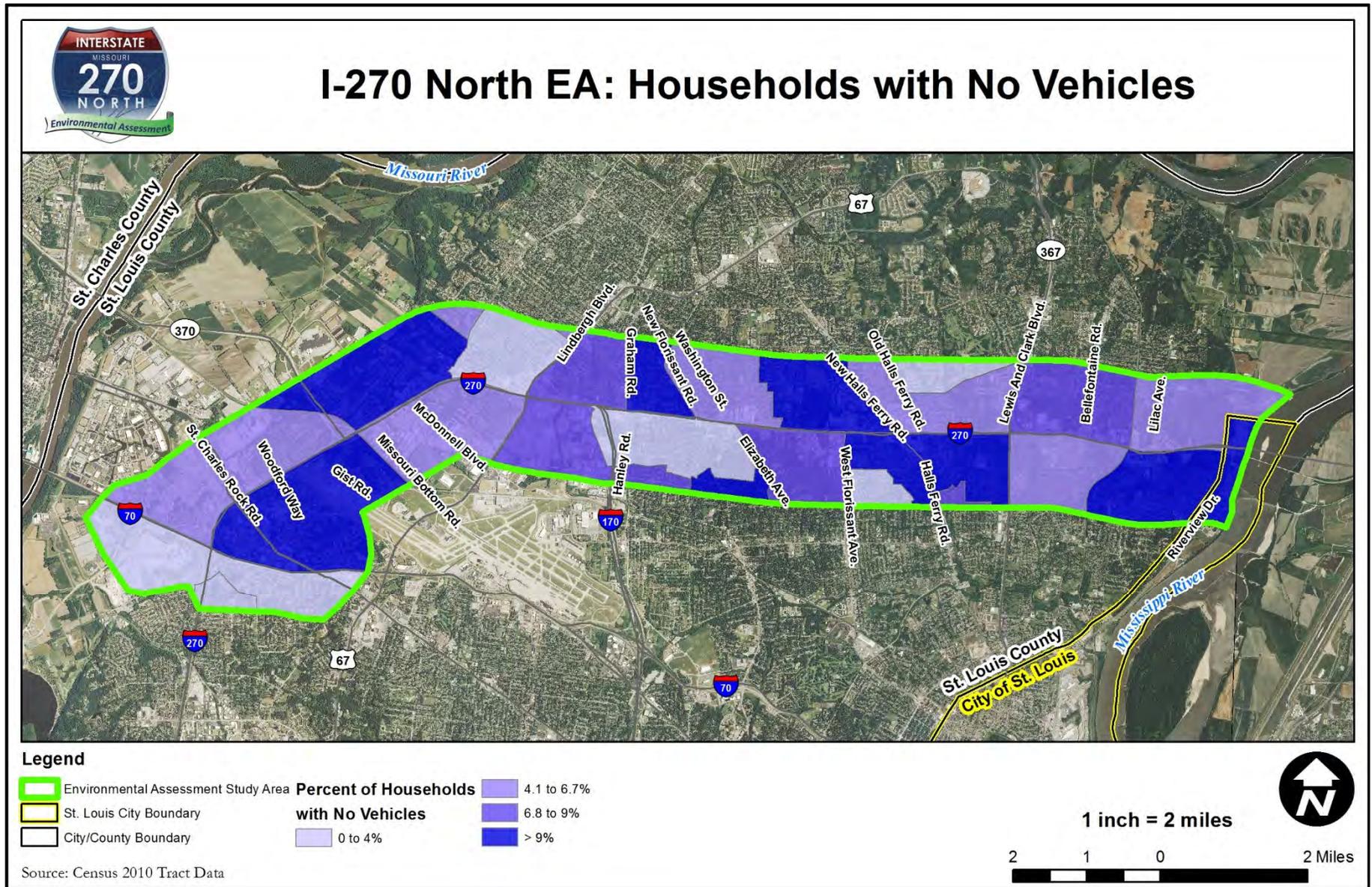
17 On average, 6 to 7 percent of the households in the I-270 North EA study area have no personal vehicles  
18 available (**Table 4-13**). The range across the census tracts in the study area is as low as 0.4 percent to as high  
19 as 18 percent.

**Table 4-13. Percent Households with Zero Vehicles**

Population	Percent with Zero-Vehicles
St. Louis County	6.8%
St. Louis City	21.4%
St. Charles County	3.4%
I-270 North EA Study Area	6.4%

Source: U.S. Census Bureau, American Fact Finder, <http://factfinder2.census.gov>

20 The lack of personal transportation indicates people in these households rely on other transportation, likely  
21 transit, but may also include walking and biking. The zero-vehicle households are distributed widely across  
22 the study area (**Figure 4-7**).



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Figure 4-7. Zero Vehicles Households

1 The ability to access public transportation is essential to those living along the corridor. The Bi-State  
 2 Development Agency (Metro Transit) provides public transit bus service throughout the study area.  
 3 MetroBus routes extend along each major cross road, as well as sections of Dunn Road and Pershall Road  
 4 parallel to I-270. Several routes also travel portions of I-270, I-170, and I-70 (**Figure 4-10**). Many MetroBus  
 5 routes connect to MetroLink light rail stations. The MetroLink light rail service provides rapid access from  
 6 North County to downtown Saint Louis and to western Illinois.

7 Metro Transit completed a new transit center and bus garage in North County on Pershall Road, between  
 8 West Florissant Avenue and New Halls Ferry Road.

9 Based on the percentages of the population classified as young (less than 16), older (age 65 or above), low  
 10 income, or who have disabilities, the North Corridor Study (2012) determined the Transit Needs Index,  
 11 developed by Metro Transit, to identify areas with higher public transit needs. According to that analysis,  
 12 most of the study area is considered to have low or average transit need. However, there are three areas of  
 13 high need within 1 mile of the I-270 North EA, along New Florissant Road (Calverton Park/Hazelwood), West  
 14 Florissant Avenue (Dellwood), and between Halls Ferry Road and Lewis and Clark Boulevard (Castle Point).

### 15 4.7.3 Environmental Justice — Impacts

16 The analyses of potential impacts to EJ populations focus on the following three major areas:

- 17 1. Direct Acquisition of Property/Real Estate from EJ Populations
- 18 2. Disruptions to EJ Populations from Construction Activities
- 19 3. Travel Pattern Alterations that Particularly Affect EJ Populations

#### 20 4.7.3.1 Direct Acquisition of Property/Real Estate from Environmental Justice Populations

21 Much of the work associated with the Reasonable Alternatives will be conducted within the existing right-of-  
 22 way. However, some new right-of-way acquisition is expected, as follows:

- 23 • Property acquisitions vary from a low of 35.5 acres from 233 parcels for the Preferred Alternative to a  
 24 high of 78.9 acres from 275 parcels for Reasonable Alternative 2. Most of this acquisition is from narrow  
 25 strips along the interface between the highway right-of-way and the adjacent parcels. The impacts of  
 26 these acquisitions are not expected to be substantial.
- 27 • Structure displacements vary from a low of 23 residences and 9 commercial operations for the Preferred  
 28 Alternative to a high of 28 residences from residences and 31 commercial structures for Reasonable  
 29 Alternative 2/2a.

30 The acquisition of entire residential properties will largely take place along Dunn Road and Pershall Road  
 31 between Hanley/Graham Road and New Florissant Road, and are nearly evenly distributed north and south  
 32 of the I-270 corridor. A few other residential acquisitions would occur along Pershall Road between  
 33 Elizabeth and West Florissant Roads, on Dunn Road east of Old Halls Ferry Road, and on a residential street  
 34 near Missouri Bottom Road. Most total-take commercial and industrial properties are near the New  
 35 Florissant, New Halls Ferry, and Bellefontaine Roads.

36 Relative to poverty populations, the majority of the properties that would be wholly or partially acquired fall  
 37 in block groups below the threshold for EJ poverty populations. Only three properties that would be totally  
 38 acquired, two residential properties along Landseer Drive at Dunn Road and one commercial property, fall  
 39 into a block group above the threshold (approximately 12 percent). One residence would be acquired for all  
 40 alternatives, the other two only for Alternative 2a. This impact represents less than 10 percent of all of the  
 41 total acquisitions of the alternatives. Therefore, no alternatives appear to have a disproportionately high  
 42 and adverse effect on low-income populations (**Figure 4-8**).

43 Relative to minority populations, numerous block groups along the I-270 corridor exceed the threshold, and  
 44 several exceed 50 percent minorities. The block groups where most total acquisitions would occur for either

1 Alternatives 1 or 2, between Graham Road and New Florissant Road, range from less than 14 percent  
2 minorities (north of I-270) to greater than 45 percent minorities (south of I-270). Acquisitions are nearly  
3 equally distributed in this area along both sides of I-270.

4 Where other residential and commercial total acquisitions would occur, near New Halls Ferry Road,  
5 Bellefontaine Road, and near Missouri Bottom Road, minority populations exceed the threshold along both  
6 sides of I-270. Based on this data, any improvement beyond the existing right-of-way would potentially  
7 affect these populations. Therefore, while Reasonable Alternative 1, with a smaller footprint, would have  
8 less right-of-way impact on neighboring properties and require fewer relocations, impacts to minorities  
9 could occur no matter which alternative is selected because of the prevalence of these populations in the  
10 study area. There are no Reasonable Alternatives that would meet the project's Purpose and Need and  
11 avoid impacts to neighboring properties. Therefore, it is concluded that the impact of the project is not  
12 disproportionately high or adverse to minority populations (**Figure 4-9**).

#### 13 4.7.3.2 Disruptions to Environmental Justice Populations from Construction Activities

14 The potential construction impacts associated with the Reasonable Alternatives and the methods to  
15 minimize any impacts using mitigation measures are discussed in **Section 4.3**. This analysis applies to the  
16 potential impacts of construction of both of the Reasonable Alternatives on minority and low-income  
17 populations.

18 Construction impacts would result from utility relocations, building the proposed roadway improvements,  
19 and other related construction activities, which are commonly short-term and temporary in nature. Typical  
20 construction impacts may include air, water, and noise pollution and disposal of construction debris. Surface  
21 transportation traffic patterns in the study area may also be altered during construction. MoDOT has  
22 developed a series of Standard Specifications for Highway Construction. These specifications include, but are  
23 not limited to, air, noise, and water pollution control measures to minimize construction impacts. The  
24 Standard Specifications for Highway Construction also include traffic control and safety measures. MoDOT  
25 would implement these standards as a part of the construction of the project to minimize health and safety  
26 concerns for residents and others in the construction area.

27 Impacts would be minimized by adherence to construction permit and contract conditions. Materials  
28 resulting from clearing and grubbing, demolition, or other operations (except materials to be retained)  
29 would be removed from the project, or otherwise properly disposed of by the contractor. It is anticipated  
30 that there would not be excess, excavated earth materials from the project that would need to be disposed  
31 of. Fill material or borrow needed for construction of the project would be determined by the contractor,  
32 including the source and disposition of borrow, as well as any environmental requirements. Construction  
33 impacts would be more fully known when more detailed design plans have been completed. MoDOT will  
34 continue to work with the public and other stakeholders to address construction-related concerns.

35

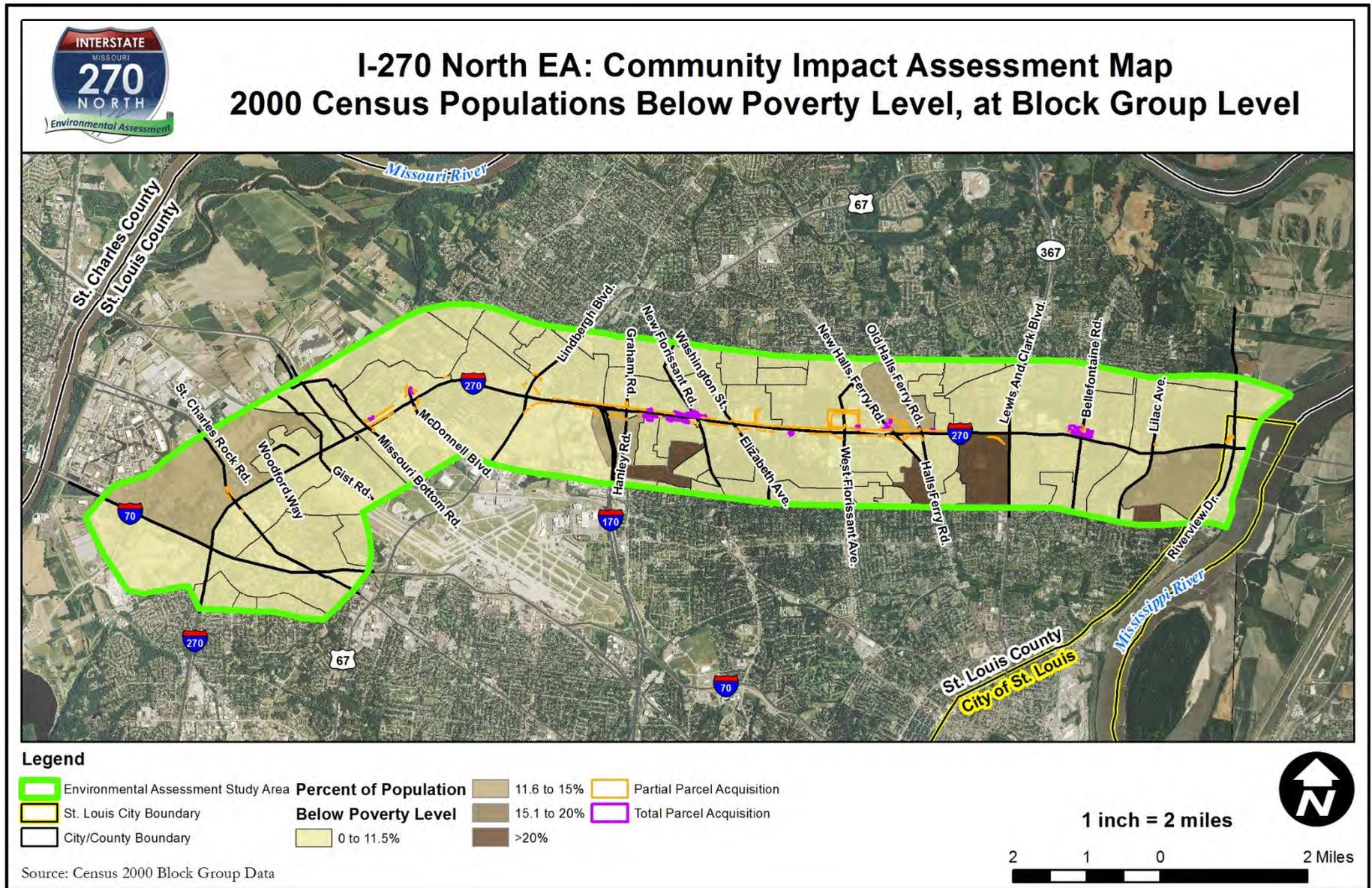
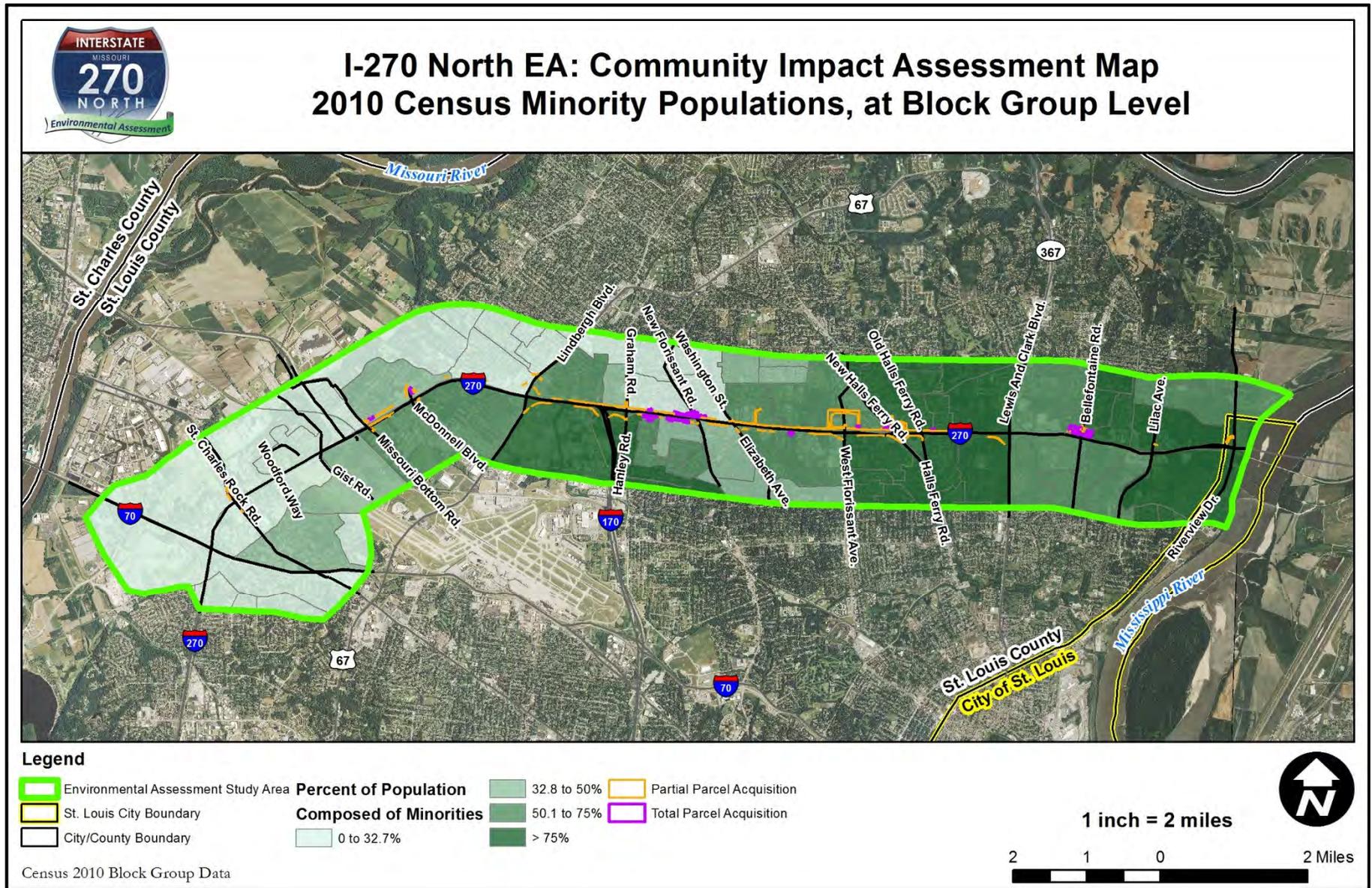


Figure 4-8. Community Impact Assessment Map, 2000 Census Populations Below Poverty Level, at Block Group Level

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Figure 4-9. Community Impact Assessment Map, 2010 Census Minority Populations, at Block Group Level

### 4.7.3.3 Travel Pattern Alterations that Particularly Affect Environmental Justice Populations

An AJR was completed in compliance with federal policy on modifications in access to the Interstate system. Within the AJR, the analysis of operations and safety concludes that the proposed changes to the Interstate system will not have substantial adverse impact on the mainline lanes, ramps, ramp intersections, or on the local street network. Relative to the Preferred Alternative, the AJR addressed the following:

- The one-way outer road system between Hanley/Graham Road and Old Halls Ferry Road best improves the traffic operations and safety of the corridor.
- The Preferred Alternative does not have a substantial adverse impact on the safety and operation of the Interstate facility or on the local street network based on both the current and the planned future traffic projections.
- Freeway and intersection LOS, network delay and speeds, and number of crashes are all anticipated to improve compared to the No-Build Alternative.

Based on these findings, it has been concluded that disproportion impacts to EJ populations are unlikely. The complete AJR is available upon request. Travel pattern impacts are discussed more expansively in

#### **Section 4.18.**

Another resource traditionally important to EJ populations is access to transit. Coordination with Metro Transit suggests that a one-way outer road system could potentially increase travel time and transfer fares for customers living/working along the one-way road sections. As discussed in **Section 6**, Metro staff served on the study's Technical Advisory Committee. As engaged members of the Committee, throughout the study, Metro's staff played an important role in helping to determine how best to minimize adverse impacts to Metro's bus operations on the corridor. Nevertheless, the analysis in support of Metro's operations in a converted one-way outer road system showed an impact of approximately \$800,000 to Metro Transit's annual operating costs and increase travel by 300 miles per day. As the project progresses, MoDOT is committed to investigating any modifications that might improve the situation. Our Environmental Commitments, relative of Metro Transit, is for construction coordination (#1), acquisition and relocation assistance in accordance with the Uniform Act (#12) and impact minimization (#16).

One-way operation at New Florissant and Washington is primarily within the existing corridor. Important exceptions include the creation of a connection between Dunn Road and Waterford Drive, behind the Grandview Plaza Shopping Center, and the possible mid-block crossover at Grandview Drive. This may increase traffic in these neighborhoods.

**Figure 4-10** depicts the Metro system in the vicinity of the study.

### 4.7.3.4 Environmental Justice and Standard MoDOT Operating Procedures

Many standard MoDOT operating procedures include steps that will minimize impacts to Environmental Justice populations. During the design and implementation of the Preferred Alternative, MoDOT is committed to obtaining necessary permits and performing other actions that would minimize and mitigate the impacts of the project on the environment. Many will also benefit local residents and businesses, including EJ populations, such as:

- Relocation assistance will be provided for all businesses, non-profit organizations, and residents that must be relocated. Assistance would be provided by MoDOT in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act. Relocation assistance under the program will be made available without discrimination to all who will be relocated.
- Improvements included as a part of this project will comply with ADA.

- 1 • A MoDOT-approved maintenance of traffic plan will be developed and implemented for the construction  
2 phases of the project. Construction schedules, road closures, and detours will be coordinated with police  
3 forces and emergency services to reduce impact to response times of these agencies.
- 4 • The design process will include periodic consultation with utility owners to ensure compatibility of the  
5 roadway design with continued service, proper design of any utilities requiring relocation, construction  
6 techniques, and timing and technical assistance during construction.
- 7 • During the final design process, MoDOT will consider options to minimize new right-of-way acquisition.  
8 The potential minimization of right-of-way acquisitions will not impact the ability of the project to satisfy  
9 the Purpose and Need approved by NEPA.
- 10 • BMPs will be implemented to minimize soil erosion and sedimentation. Methods for stormwater  
11 management, during and after construction, will be in accordance with the MoDOT's Standard  
12 Specifications Book for Highway Construction and the project's National Pollutant Discharge Elimination  
13 System stormwater permit.
- 14 • If encountered during construction, appropriate study and remediation of hazardous waste sites will be  
15 performed, as needed, to minimize exposure of construction workers and the public to hazardous  
16 wastes and to ensure proper disposal of contaminated earth and other substances. This includes proper  
17 disposal of demolition debris in accordance with Missouri state law.
- 18 • Dust control during construction will be performed in accordance with MoDOT's standard methods,  
19 which require application of water or approved dust control measures on haul roads and during grading.  
20 Pavement material batch plants will be situated in accordance with MoDOT's Standard Specifications  
21 Book for Highway Construction or any special provisions developed during coordination with MDNR  
22 regarding air quality standards and emissions. Portable material plants will be operated in accordance  
23 with MDNR air quality requirements/guidelines. A permit must be obtained from MDNR to open burn or  
24 open burn with restrictions.
- 25 • To reduce the impacts of construction noise, MoDOT has special provisions in construction contracts  
26 that require all contractors to comply with all applicable local, state, and federal laws and regulations  
27 relating to noise levels permissible within and adjacent to the project construction site. Construction  
28 equipment would be required to have mufflers constructed in accordance with the equipment  
29 manufacturer's specifications. Further, MoDOT would monitor project construction noise and require  
30 noise abatement in cases where the criterion is exceeded.
- 31 • MoDOT's Noise Policy will be used to address permanent traffic noise impacts. Where appropriate,  
32 possible noise abatement types and locations are discussed in this document. In accordance with  
33 established procedure, the traffic noise analysis will be updated during the design phase.
- 34 • MoDOT is committed to minimizing unnecessary lighting impacts. Efficient lighting and equipment will  
35 be installed, where appropriate, to optimize the use of light on the road surface while minimizing light  
36 intruding on adjacent properties.
- 37 • MoDOT will continue to work with representatives of EJ populations, especially as the specifics of  
38 access, non-motorized users, sidewalks, paved shoulders, lighting, and mass transit are developed."

#### 39 4.7.3.5 Coordination with EJ Population Representatives

40 As part of the study's effort to reach out to EJ populations, it was decided to discuss the study with  
41 influential spokespeople for the low income/minority populations. This resulted in a series of in-person  
42 interviews. The following interviews were held:

- 43 • May 5, 2016            Matt Unrein, Assistant City Manager, City of Ferguson
- 44 • August 17, 2016      Kimberly Lackey, Staff Attorney, Paraquad

- 1 • August 22, 2016 Vanessa Garcia, Assistant Director, Hispanic Chamber of Commerce of Greater  
2 St. Louis
- 3 • August 23, 2016 Ella M. Jones, Councilwoman, City of Ferguson
- 4 • August 23, 2016 Delrish Moss, Police Chief, City of Ferguson
- 5 • August 23, 2016 Hazel Erby, Councilwoman, St. Louis County
- 6 • August 26, 2016 Heather Navarro, Executive Director, Missouri Coalition for the Environment
- 7 • August 29, 2016 Reverend Susan Sneed, Metro Congregations United

8 The interviews were largely freeform. The study team presented basic background facts about the study,  
9 including its status and completion. The presentation discussed the study's goals, its recommendations,  
10 public involvement efforts to date, funding, and the anticipated public hearing. Invitations were issued for  
11 the public hearing and to review the I-270 North EA. Questions about the study were fielded. Among the  
12 most common issues that would affect low income and minority populations were the following:

- 13 • Accommodations for non-motorized users
- 14 • Concerns with existing slip ramps to and from Dunn Road
- 15 • The importance of access and its effect on neighboring communities
- 16 • Pedestrian use in the area and safety along and across I-270
- 17 • Sidewalks, paved shoulders, and lighting
- 18 • How the one-way system accommodates pedestrians
- 19 • Business impacts as a result of access alterations

20 These concerns and needs were acknowledged, and plan details were explained. The importance of  
21 developing safe accommodations was noted. The study team offered assurances that these will be  
22 examined more thoroughly when a project is selected for construction and detailed design is initiated.  
23 Continued coordination will be a component of the project.

## 24 4.8 Farmland

### 25 4.8.1 Farmland — Regulatory Background and Standards

26 In accordance with the Farmland Protection Policy Act (FPPA), the impact of a federally funded project is  
27 coordinated with the Natural Resources Conservation Service (NRCS) to determine whether agricultural  
28 resources and support services are substantially affected.

### 29 4.8.2 Farmland — Affected Environment

30 The I-270 North EA is located in a highly urbanized area. Active farms or commercial agricultural production  
31 are limited to isolated areas in the study area. It is expected that conversions will occur as soon as viable  
32 development projects emerge. **Exhibit 1 (Appendix A)** shows the limited agricultural parcels along I-270.

33 Because the study area falls almost entirely within the urban areas on the U.S. Geological Survey (USGS)  
34 topographic mapping and the Census 2010 mapping formal coordination relative to the FPPA is not required  
35 (**Figure 4-11**). The small portions of the study area outside of the USGS urban area are not located in  
36 agricultural use zones and will not require right-of-way acquisition.

37 Agricultural resources are very limited within the I-270 North EA study area.

38 Based on a review of the Reasonable Alternatives, the following conditions exist:

- 39 • The alternatives follow existing roads and highways in an urban developed area.

- 1 • The study area falls almost entirely within an urban area as defined by the USGS topographic map or  
2 census map.
- 3 • The small portion of the study area outside of the USGS urban area will not experience right-of-way  
4 acquisition for any area in agricultural use.
- 5 • No loss of prime or statewide important farmland will occur.
- 6 • Encroachment on land currently in some form of nominal agricultural use is very limited. The  
7 Reasonable Alternatives (including the Preferred Alternative) are expected to have limited direct  
8 impacts to currently cultivated farmlands. Right-of-way acquisition of agricultural lands is expected to be  
9 less than 0.5 acre for any Reasonable Alternative — all within the urban developed area.
- 10 • A No-Build Alternative would have no direct impact on farmlands or farm services.

### 11 4.8.3 Farmland — Impacts

12 The FPPA does not apply to this project, and a Farmland Conversion Impact Rating was not prepared. NCRS  
13 is included as a contact agency in the Agency Collaboration Plan (**Section 6.5**). The submission of this  
14 document will conclude FPPA coordination.

## 15 4.9 Geological Setting

### 16 4.9.1 Geological Setting — Regulatory Background and Standards

17 The evaluation of available geologic and geotechnical information for the study area focused on key  
18 construction considerations and potential construction risks. That data is summarized in this subsection.

19 MoDOT has developed a series of Standard Specifications for Highway Construction. These specifications  
20 include accommodation of geological features. MoDOT would implement these standards as a part of the  
21 design and construction of the project.

### 22 4.9.2 Geological Setting — Affected Environment

23 According to the U.S. Department of Agriculture Soil Survey, onsite soils are generally well drained,  
24 moderately permeable silt loams. The surficial soil in the study area are primarily alluvium consisting of  
25 gravel, sand, and silt on flood plains of major rivers and smaller streams. These alluvium deposits are  
26 typically 10 to 215 feet thick. The uppermost bedrock unit in the eastern portion of the corridor is primarily  
27 the Middle Pennsylvanian-age Marmaton Group. The formation is composed of mainly intercalated shale,  
28 limestone, clay, and coal. This formation is up to 80 feet thick.

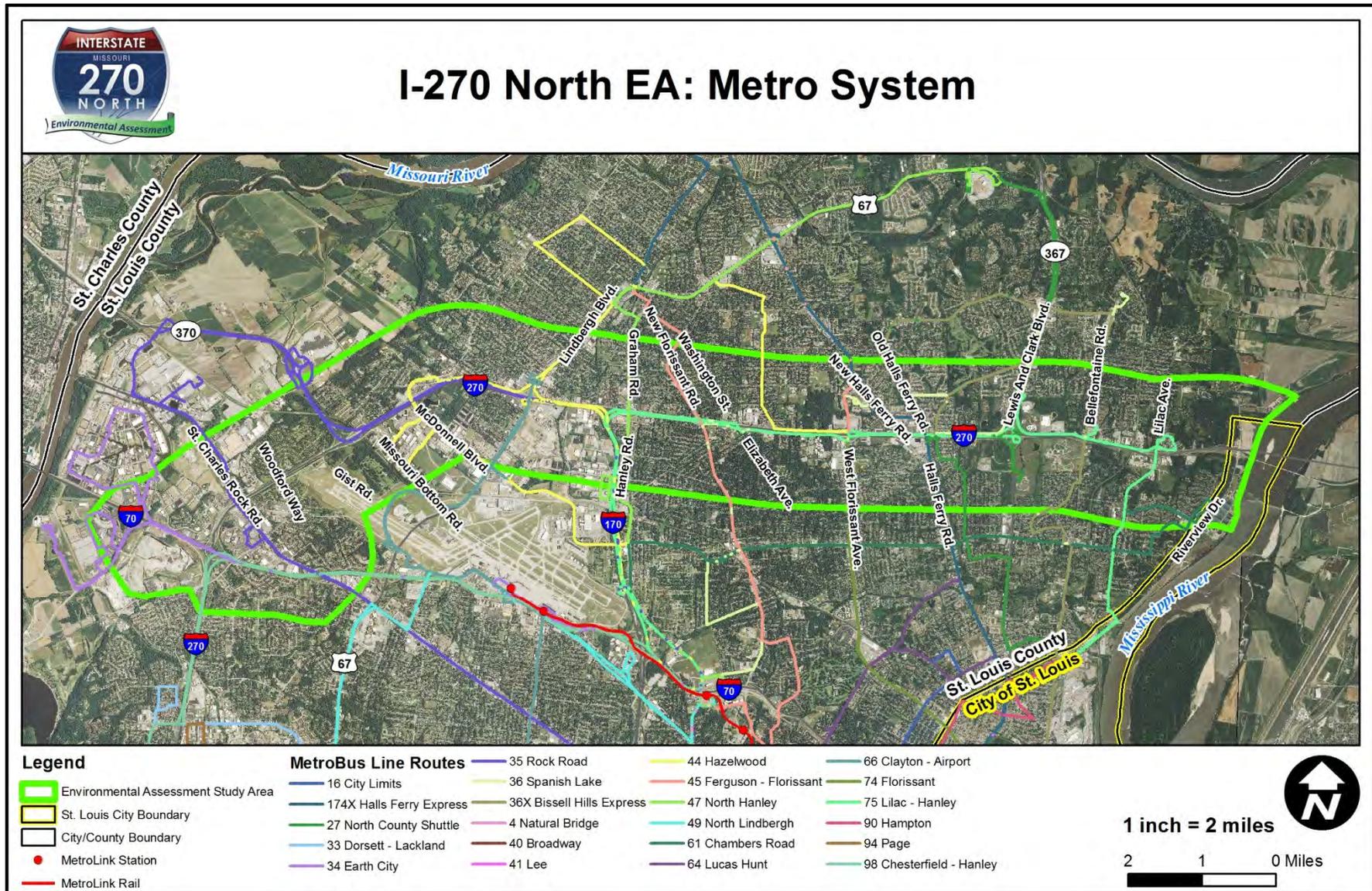
29 In a project funded by the Missouri State Emergency Management Agency, major geotechnical hazards were  
30 identified for the Saint Louis area. The hazards include collapse potential, landslide potential, and  
31 liquefaction potential. These are depicted on **Figure 4-12**.

### 32 4.9.3 Geological Setting — Impacts

33 Collapse potential correlates with locations of underground mines and sinkholes

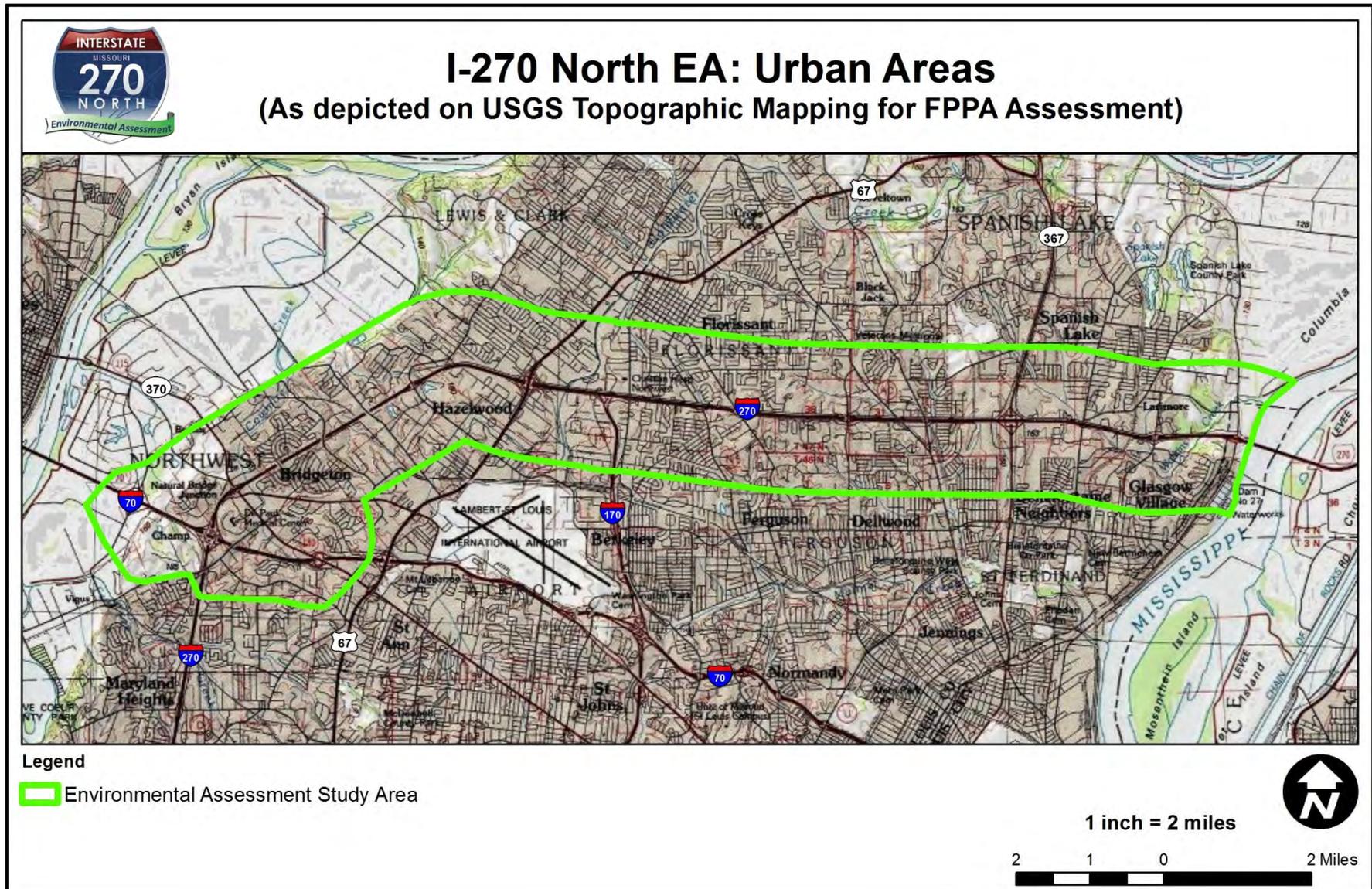
34 Landslide potential is based on slope and lithology. Landslide is considered probable if the slope is  
35 12 percent or greater and correlated with a formation known to contain shale, unconsolidated sediments, or  
36 surficial materials greater than or equal to 20 feet thick, and if the slope is greater than 20 percent.

37 Soil liquefaction potential was determined using existing surficial materials and floodplain alluvium maps.  
38 Alluvium deposits and artificial deposits are generally loose and unconsolidated and have liquefaction  
39 potential. The exception is alluvium in losing streams, which are indicative of a lower water table, thus  
40 reducing the potential for liquefaction in the area.



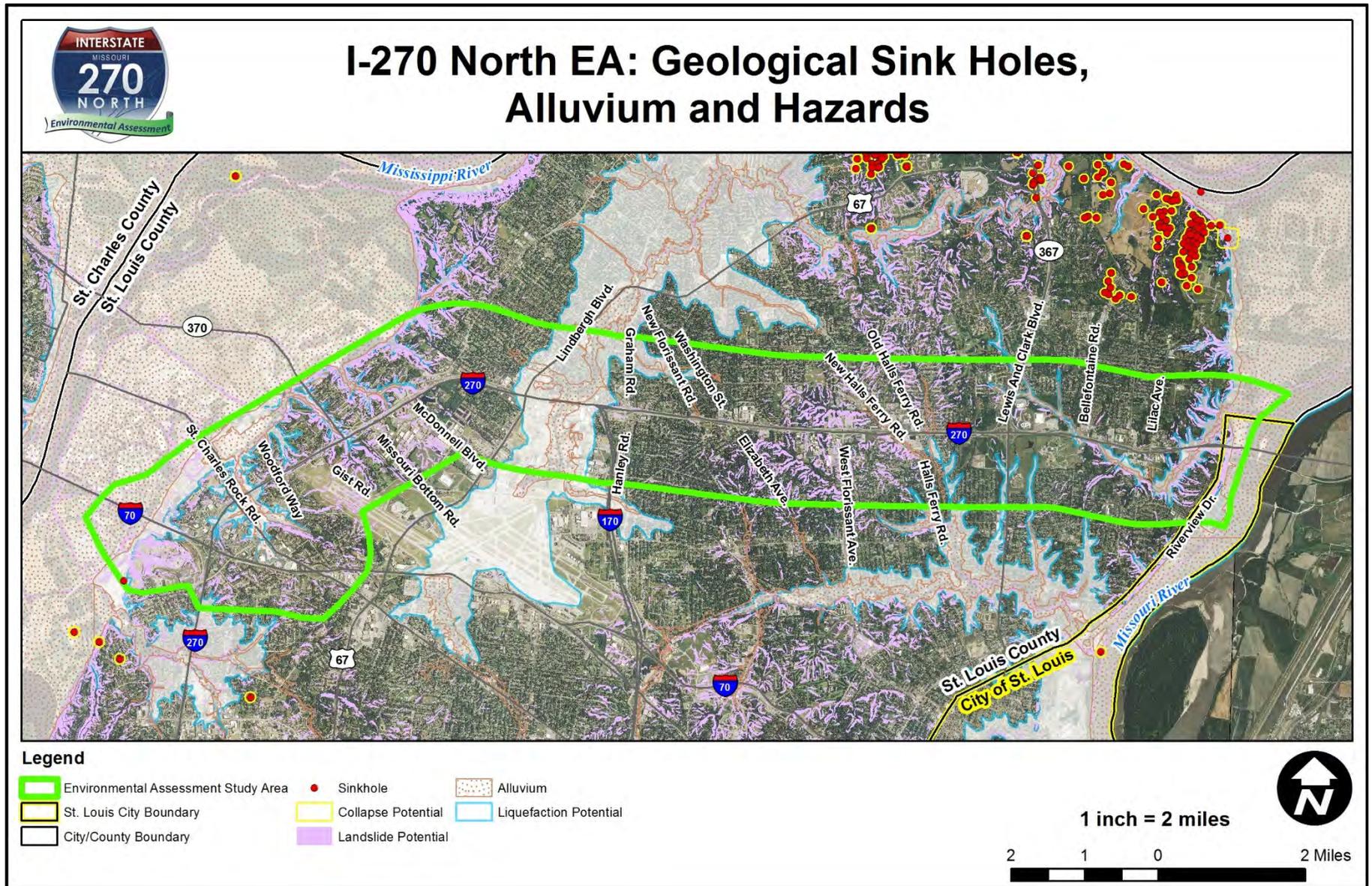
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Figure 4-10. Metro Transit System



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Figure 4-11. Urban Areas for Farmland Protection Policy Act Assessment



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Figure 4-12. Geological Sink Holes, Alluvium, and Hazards

## 1 4.10 Hazardous Materials

### 2 4.10.1 Hazardous Materials — Regulatory Background and Standards

3 Hazardous substances, defined in various ways under a number of regulatory programs, are dangerous or  
 4 potentially harmful to human health or the environment when not managed properly. Hazardous wastes  
 5 may be generated from specific industrial or manufacturing processes or from commercial businesses. Solid  
 6 wastes comprise a broad range of materials that include garbage, refuse, sludge, non-hazardous industrial  
 7 waste, municipal wastes, and hazardous waste. Both hazardous and solid waste can be solid, liquid, or gas.

8 Hazardous materials and wastes fall under the following regulatory programs:

- 9 • Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) governs cleanup of  
 10 contaminated sites. These sites have been reported to EPA by states, municipalities, private companies,  
 11 and private persons, pursuant to Section 103 of CERCLA. Sites evaluated under CERCLA that pose serious  
 12 threats to human health and the environment are placed on the National Priorities List and are  
 13 commonly referred to as Superfund sites.
- 14 • Resource Conservation and Recovery Act (RCRA) governs hazardous wastes and handlers of hazardous  
 15 wastes subject to reporting requirements (Threshold Planning Quantities) under Sections 311, 312, and  
 16 313 of the Superfund Amendment and Reauthorization Act (SARA). These sites generate, transport,  
 17 store, treat, and/or dispose of hazardous waste as defined by RCRA.
- 18 • Emergency Response Notification System is a national database published by EPA that lists sites where  
 19 reported releases of hazardous substances and petroleum have occurred.
- 20 • Other federal and state programs—MDNR also maintains databases in accordance with federal  
 21 regulations that provide information on facilities with underground storage tanks (USTs), leaking  
 22 underground storage tanks (LUSTs), spills reported under MDNR's Environmental Emergency Response  
 23 Section, and dry cleaning facilities.

### 24 4.10.2 Hazardous Materials — Affected Environment

25 To identify the current environmental conditions within the I-270 North EA study area, a database search  
 26 was conducted by EDR, Inc. The databases searched conform to the ASTM International (ASTM)  
 27 Standard E 1527-00 and included the appropriate federal and state databases. In addition to the database  
 28 search, field reconnaissance was conducted within the corridors identified by the Reasonable Alternatives to  
 29 verify the database information retrieved and to identify any other properties of potential environmental  
 30 concern. A copy of the Hazardous Material Site Inventory is available upon request.

31 Using this information, the potential facilities of concern were identified. To assess these facilities, the best  
 32 professional judgment standard was used. The focus of the assessment of potential facilities of concern  
 33 focused on (1) the contaminants that could be present, (2) the toxicity and mobility of these contaminants,  
 34 and (3) geological factors that could influence the migration of possible contaminants.

#### 35 4.10.2.1 Sites of Potential Concern

36 Based on a review of the Hazardous Material Site Inventory, 20 facilities were identified that pose a  
 37 potential for environmental concern and possible contamination within, adjacent, or near the study area.

38 The facilities are identified in **Table 4-14**. Their locations are shown on **Exhibit 2 (Appendix A)**.

**Table 4-14. Sites of Potential Concern**

Site Name	Address	Status	Actions	Material(s)	Map Location _ of 13
Former Sweeny Sunoco	3063 McKelvey	Empty Lot	MDNR legal review	Petroleum	1
One Hour Cleaner	8482 Pershall Road	Active	No reported releases	Chlorinated solvents	6
Bernadette Print Group and Bernadette Business Forms	8950 Pershall Road	Closed	Former smaller quantity generator with past violations	VOCs	6
Interlock Pharmacy Systems LLC	345 Dunn	Active	Large quantity generator and hazardous waste biennial reporter	Heavy metals, ignitable hazardous waste, others	7
Allied Systems and Metro Truck	9050 A and B Pershall Road	Closed	Closed site with active aboveground gasoline pumps	Petroleum	6
One Hour Cleaner	8410 Pershall Road	Active	Conditionally exempt small quantity generator	Chlorinated solvents	7
Paramount Dry Cleaners	62 Grandview Plaza	Closed	No reported releases	Chlorinated solvents	8
Shell/Circle K Gas Station	1545 New Florissant	Active	Active groundwater monitoring program	Petroleum and chlorinated solvents	7
Ryder Truck	12655 Pennridge	Active	Reported LUST	Petroleum	2
Former Grandview Texaco	1625 Dunn Road	Empty Lot	Historic gas station	Petroleum	12
Gateway Cleaners	11294 Florissant	Empty Lot	No reported releases	Chlorinated solvents	9
Dunn Road ZX	3555 Dunn Road	Active	Active groundwater monitoring program	Petroleum	9
GEM Cleaner	1795 Dunn Road	Empty Lot	USTs removed and No Further Action issued	Chlorinated solvents	8
Former Circle K	11011 Bellefontaine	Empty Lot	LUST and MDNR action	Petroleum	12
MO Cigarette and Liquor Outlet	1375 Dunn Road	Active	Historic LUST and MDNR action	Petroleum	12
Production Products	1285 Dunn Road	Active (new use)	Former international paper company facility	Paper-making chemicals	12
Bellefontaine BP	10846 and 10844 Bellefontaine	Active	Leaking UST reported	Petroleum	12
Former Zephyr Service Station	1173 Dunn Road	Empty Lot	No cleanup or closure records	Petroleum	12
Former Airfield Improvement & Repair	801 Dunn Road	Empty Lot	No cleanup or closure records	Undetermined	7
Jomico Metal Fabricators	1194 Pershall Road	Active	Large quantity generator	Multiple chemicals, corrosive waste and wastewater sludge	12

### 1 4.10.2.2 Superfund Sites

2 Two Superfund sites are located in the vicinity of I-270.

#### 3 **Westlake Landfill Superfund Site**

4 Westlake Landfill is located on a 200-acre parcel about 1 mile north of the I-70 interchange within the city  
5 limits of Bridgeton, Missouri (<http://westlakelandfill.com/History.aspx>). The site contains a mixture of  
6 radiological-contaminated soils, municipal refuse, and construction/demolition debris. The portions of the  
7 Westlake Landfill closest to I-270 are visible on Sheet 2 of 13 of **Exhibit 2 (Appendix A)**.

#### 8 **Saint Louis Airport/Hazelwood/Futura Coatings Co. Site/Coldwater Creek**

9 The Saint Louis Airport/Hazelwood Interim Storage/Futura Coatings Co. site consists of three areas used for  
10 storing radioactive and other wastes from uranium processing operations conducted in Saint Louis by the  
11 Atomic Energy Commission (AEC) and its successor, the U.S. Department of Energy. Radioactive metal scrap  
12 and drums of waste were stored in the airport area in uncovered and unstabilized piles from 1947 to the  
13 mid-1960s, when they were transferred 0.5 mile northeast to AEC's Hazelwood Interim Storage (HIS) area.  
14 Buildings in the airport area were razed, buried, and covered with clean fill after 1967. In 1969, the land was  
15 conveyed to the Lambert Saint Louis Airport Authority. HIS and the Futura Coatings Co. plant cover 11 acres  
16 adjacent to Latty Avenue, Coldwater Creek, and Hanley Avenue. In 1966, Continental Mining and Milling Co.  
17 acquired the property and recovered uranium from wastes purchased from AEC's Saint Louis operations. In  
18 1967, the company sold the property, and by 1973 most processing residues had been removed. Under the  
19 direction of the Nuclear Regulatory Commission, the present owner excavated contaminated soil and is  
20 storing it in two large piles in the eastern portion of the 11 acres. Since the 1970s, the Futura Coatings Co., a  
21 manufacturer of plastic coatings, has leased the western portion. The chemicals of concern include uranium,  
22 thorium, and radium in sediment and soil. Investigations and removals are ongoing at this site  
23 (<http://www.epa.gov/superfund/sites/npl/nar1244.htm>). In 2005, a Record of Decision was finalized to  
24 outline the cleanup of this site (also known as the St. Louis Airport Sites). The cleanup is being administered  
25 by the U.S. Army Corps of Engineers (USACE) under the Formerly Utilized Sites Remedial Action Program  
26 (FUSRAP).

27 EPA conducted a radiological survey in 2013 to identify areas of elevated gamma radiation in the Coldwater  
28 Creek area. The study showed surface gamma emissions consistent with background levels throughout the  
29 Coldwater Creek survey area (<http://www.epa.gov/superfund/sites/npl/nar1244.htm>). Coldwater Creek  
30 passes under I-270 in the corridor.

31 The portions of the Saint Louis Airport/Hazelwood Interim Storage/Futura Coatings Co. site closest to I-270  
32 are visible on Sheet 6 of 13 of **Exhibit 2 (Appendix A)**.

### 33 4.10.2.3 Wells

34 There are numerous wells within the area. These are primarily monitoring wells, private wells, and oil/gas  
35 test wells. It is likely that most of the private wells are no longer in use as the area has municipal water  
36 supply; however, additional investigation will be necessary (during detailed design/construction) to  
37 determine if the wells are still present and active. If the work will encroach on any of these wells, they will  
38 need to be properly abandoned in accordance with Missouri Well Construction Rules  
39 (<http://www.dnr.mo.gov/pubs/pub2175.pdf>), and an alternate source of water (such as connection to the  
40 municipal water supply) provided, as needed. The well data is contained in the Hazardous Material Site  
41 Inventory.

### 1 4.10.3 Hazardous Materials — Impacts

#### 2 4.10.3.1 No-Build Alternative Impact Summary

3 The No-Build Alternative would have no additional impacts on these sites. Because no new right-of-way  
4 would be required, no new encroachments would occur. Maintenance of existing bridges, culverts, parking  
5 areas, and multi-use trails would continue and could potentially affect these sites.

#### 6 4.10.3.2 Build Alternatives Impact Summary

##### 7 Sites of Potential Concern

8 All 20 facilities that pose a potential for environmental concern are close enough to the Reasonable  
9 Alternatives to assume to be affected by the construction of either alternative. Site-specific Phase I  
10 and Phase II testing would need to be conducted in the areas of planned construction to evaluate whether  
11 contamination was actually present, and at what concentrations.

12 Several identified sites have known contamination. It is believed there is a moderate to high (likely) risk that  
13 these six facilities may adversely impact a construction project.

- 14 • Former Sweeny Sunoco, 3063 McKelvey Road: Located outside the Preferred Alternative footprint, this  
15 is currently an empty lot. According to records, this site was formerly a gas station called Sweeny  
16 Sunoco. It has been in a groundwater monitoring program and the groundwater plume is stable and the  
17 site is under legal review for activity use and limitation by MDNR. Given its location, impacts are  
18 unlikely.
- 19 • Shell /Circle K Gas Station, 1545 New Florissant: Records indicate that groundwater monitoring is  
20 currently being performed due to groundwater contamination from a leaking UST. This location was  
21 previously a dry cleaner in 1961. There is a risk from soil and groundwater contamination from historic  
22 and current site activities. A narrow strip of right-of-way acquisition is expected along Dunn Road.  
23 Disposal of contaminated soils are the expected limits of project impact.
- 24 • Dunn Road ZX, 3555 Dunn Road: Currently, an active gas station with a groundwater monitoring  
25 program due to a leaking UST. According to records, MDNR requested additional groundwater  
26 monitoring and noted that soil contamination may not be fully delineated and that site chemicals may  
27 be impacting a nearby surface water body, Maline Creek. There is a potential risk of exposure from soil  
28 or groundwater. Project work is contained within the existing right-of-way, but disposal of contaminated  
29 soils is possible.
- 30 • Former Circle K, 11011 Bellefontaine Road: Currently a Shell gas station, records dealt with a former  
31 Circle K gas station with a leaking UST. Records show that MDNR has not approved closure of this site,  
32 requiring additional groundwater and surface water sampling of Watkins Creek. The potential impacts to  
33 site soil and groundwater from this UST have not been delineated. The Preferred Alternative will re-  
34 route Dunn Road around the Bellefontaine interchange; Dunn Road will be abandoned adjacent to the  
35 gas station. No right-of-way acquisition is expected. Consequently, impacts seem unlikely.
- 36 • MO Cigarette and Liquor Outlet, 1375 Dunn Road: A gas station operates on this site. Records suggest a  
37 historic leaking UST. MDNR has contacted the site owners notifying them that the extent of soil and  
38 groundwater impacts have not been delineated and that additional investigation is required. Project  
39 work is contained within the existing right-of-way, but disposal of contaminated soils is possible.
- 40 • Bellefontaine BP, 10846 and 10844 Bellefontaine Road: There are three records for this area. Currently,  
41 there is an active gas station at this property. The reports suggest soil contamination, possibly  
42 associated with a leaking UST. There is no record of cleanup activities, so there is a potential for  
43 exposure to petroleum products in soil or groundwater at this location. Project work is contained within  
44 the existing right-of-way, but disposal of contaminated soils is possible.

1 The remainder of the 20 sites are believed to constitute a low to moderate (unlikely) risk to be adversely  
2 impacted by the Reasonable Alternatives.

3 Phase I Environmental Site Assessments will be conducted, by the contractor (in coordination with MoDOT  
4 and prior to construction) for the properties to be acquired in accordance with ASTM Method E1527- 05  
5 and/or 40 CFR Part 312 to satisfy the "all appropriate inquiry" requirement for CERCLA liability. An "all  
6 appropriate inquiries" assessment is a necessary component for persons seeking to establish CERCLA's  
7 innocent landowner defense in 42 USC 9607(b)(3), the bona fide prospective purchaser defense in 42 USC  
8 9607(r), or the contiguous property owner defense in 42 USC 9607(q).

9 If contamination is known or suspected, construction workers should be notified, by the contractor, so that  
10 precautions can be taken to protect the workers and minimize potential exacerbation of the contamination.  
11 During construction activities, any excess contaminated soil or groundwater should be handled, managed,  
12 and disposed of in accordance with appropriate local, state, and/or federal rules and regulations, by the  
13 contractor in coordination with MoDOT.

14 If encountered during construction, appropriate study and remediation of hazardous waste sites will be  
15 performed by the contractor, as needed, to minimize exposure of construction workers and the public to  
16 hazardous wastes and to ensure proper disposal of contaminated earth and other substances. This includes  
17 proper disposal of demolition debris in accordance with Missouri state law.

### 18 **Superfund Sites**

19 The known Superfund sites (Westlake Landfill and the Saint Louis Airport/Hazelwood/Futura Coatings Co.  
20 site/Coldwater Creek complex) are also believed to constitute a moderate to high risk to adversely impact  
21 the construction of the Reasonable Alternatives. Coordination with the FUSRUP was part of this study. The  
22 utility support component of the 2005 Record of Decision will remediate areas where the project will  
23 conduct earthwork within the FUSRAP ROD boundary (basically between Lindbergh and I-170). Coordination  
24 with the USACE will continue as the project progresses.

25 Prior to any earthwork within the St. Louis Airport Sites FUSRAP Record of Decision boundary (between  
26 Lindbergh and I-170) will be coordinated, by MoDOT, with the USACE (Department of the Army, St. Louis  
27 District, Corps of Engineers, 8945 Latty Avenue, Berkeley, Missouri 63134). Earthwork plans, volumes of  
28 materials, timing and construction limits are important elements needed for the utility support component  
29 of the 2005 Record of Decision.

### 30 **Wells**

31 There are numerous wells within the area. These are primarily monitoring wells, private wells and oil/gas  
32 test wells. It is likely that most private wells are no longer in use as the area has municipal water supply;  
33 however, the contractor shall conduct additional investigation as necessary (during detailed  
34 design/construction) to determine if the wells are still present and active. If the work will encroach on any  
35 wells, they will need to be properly abandoned, by the contractor, in accordance with Missouri Well  
36 Construction Rules (<http://www.dnr.mo.gov/pubs/pub2175.pdf>), and alternate sources of water (such as  
37 connection to the municipal water supply) provided, as needed.

38 There are also currently groundwater use restrictions for portions of the study area. If construction is  
39 required in these areas, the contractor (in coordination with MoDOT) will obtain additional information  
40 regarding depth to groundwater to insure construction workers are properly equipped to work under these  
41 conditions.

## 1 4.11 Land Use

### 2 4.11.1 Land Use — Regulatory Background and Standards

3 The Council on Environmental Quality's (CEQ's) Regulations for Implementing the Procedural Provisions of  
 4 the National Environmental Policy Act point-out that the human environment is to be interpreted  
 5 comprehensively to include the natural and physical environment and the relationship of people with that  
 6 environment. The CEQ Regulations also contain provisions where economic or social and natural or physical  
 7 environmental effects are interrelated. Consequently, NEPA documents will discuss/disclose all of these  
 8 effects on the human environment. This section will discuss/disclose the land uses contained within this  
 9 large study area.

### 10 4.11.2 Land Use — Affected Environment

#### 11 4.11.2.1 Land Uses

12 According to the parcel data provided by St. Louis County and recent aerial photography, about 44 percent  
 13 of the I-270 North EA study area comprises residential properties, including both single- and multi-family  
 14 housing (**Table 4-15**). Commercial, industrial, and institution (including schools, churches, and hospitals)  
 15 comprise another 33 percent. Vacant or agricultural ground comprises about 17 percent. Parks and other  
 16 open spaces cover the remaining 6 percent.

**Table 4-15. Land Use in the Study Area**

Land Use	Percentage of Study Area
Single-Family	38.8%
Vacant/Agriculture	17.0%
Industrial/Utility	12.7%
Commercial	10.6%
Institution	9.2%
Multi-Family	5.2%
Park/Recreation	3.4%
Common Ground/Open Space	3.1%

17 Residential land uses are spread across the study area (**Figure 4-13**). Institutional, industrial, and commercial  
 18 land uses are somewhat concentrated around the interchanges.

#### 19 4.11.2.2 Zoning

20 As the large majority of the land in the study area is developed, the zoning designations are generally  
 21 consistent with the existing land uses. There are a few large undeveloped parcels within the study area. The  
 22 larger vacant lands in the western half of the study area are associated with industrial parks near Lambert  
 23 Saint Louis International Airport. In the eastern half of the study area, larger vacant parcels are zoned  
 24 residential or commercial in anticipation of future development, excluding the Bellefontaine Conservation  
 25 Area and nearby agricultural land at the Lewis and Clark Boulevard interchange.

#### 26 4.11.2.3 Terrestrial Habitats

27 Undeveloped land adjacent to I-270 is rare. The structure of terrestrial habitats is largely dependent upon  
 28 the date of last disturbance/clearing. Fragments of grassland, scrub/shrub habitat and hardwood forest are

1 present. Most areas have large edges, exposing most of the fragments to the sun — little deep shade is  
 2 present. These fragments are limited in utility to most wildlife. **Exhibit 1 (Appendix A)** is sufficiently detailed  
 3 to identify the nature, location, and configuration of terrestrial habitats.

### 4 4.11.3 Land Use — Impacts

#### 5 4.11.3.1 No-Build Alternative Impact Summary

6 The No-Build Alternative would have no direct impact on any land uses in the study area.

#### 7 4.11.3.2 Build Alternatives Impact Summary

8 The total impacts vary between the Reasonable Alternatives. Overall, Reasonable Alternative 2 would have a  
 9 greater total impact. Based on the land uses recorded for each parcel in St. Louis County, nearly half of the  
 10 land affected by both alternatives would be to commercial properties, although the actual commercial land  
 11 area affected by Reasonable Alternative 2 would be twice that of Reasonable Alternative 1 (**Table 4-16**).

12 Proportionately, Reasonable Alternative 1 would have a greater impact on residential property (single-family  
 13 and multi-family combined), but actually less total impact than Reasonable Alternative 2. Reasonable  
 14 Alternative 2 would have a considerably larger impact on institutional and recreational properties. The  
 15 majority of those impacts are on currently vacant properties.

16 It is important to note that much of the total acquisition for each alternative is comprised of narrow strip  
 17 takes along the frontage of properties. The predominant use of these properties is not expected to change  
 18 because of the acquisition. Only those properties that will be acquired in their entirety (**Section 4.13, Right  
 19 of Way**) will actually change from their current use.

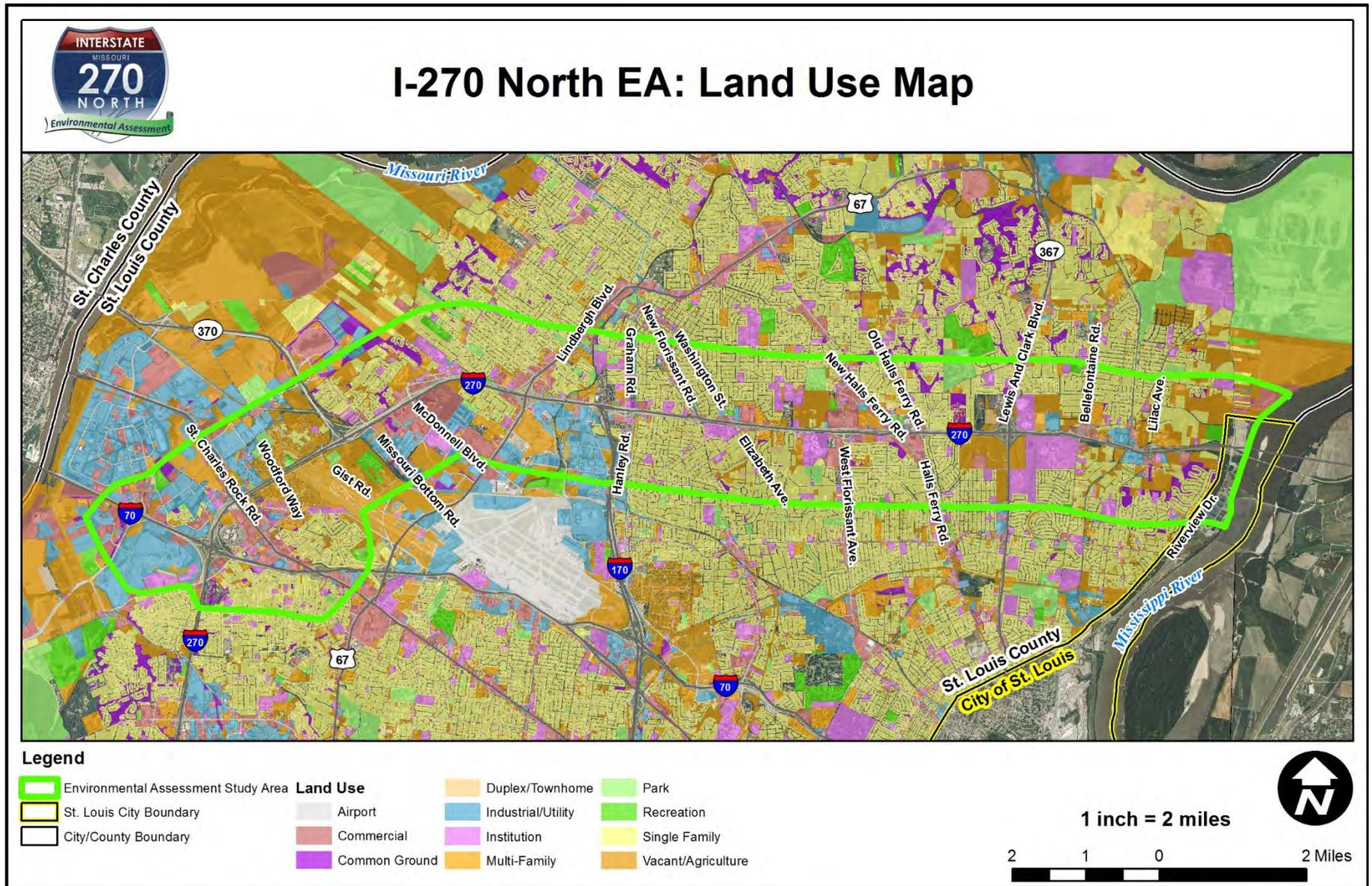
20 Localized changes in land use of adjacent properties could accompany either Reasonable Alternative, as a  
 21 result of changes in traffic patterns. However, the predominant commercial, industrial, and residential land  
 22 uses in the study area are not expected to change because of the project.

**Table 4-16. Land Use Impacts**

Land Use	Reasonable Alternative 1 (excluding 1a)		Reasonable Alternative 2 (excluding 2a)	
	Impact (acres)	Percentage of Total Impacted Area	Impact (acres)	Percentage of Total Impacted Area
Commercial	16	43%	33	43%
Single Family	7	20%	8	11%
Industrial/Utility	6	16%	4	5%
Vacant/Agriculture	4	12%	4	5%
Institution	2	7%	20	26%
Multi Family	1	2%	3	4%
Recreation	<1	<1%	6	8%
Common Ground/Open Space	<1	<1%	1	1%
Total	36		79	

## 23 4.12 Noise

24 Noise is typically defined as unwanted sound. Noise and sound are physically the same, but the difference is  
 25 in the opinion of the receiver. A sound is produced by a source that has induced vibrations in the air. The  
 26 vibration produces alternating bands of relatively dense and sparse particles of air, spreading outward in all  
 27 directions from the source — much like ripples after a stone is thrown into a pool of water. The result of the  
 28 air movement is sound waves that radiate in all directions and may be reflected and scattered.



1  
2

Figure 4-13. Land Use Map

1 Sound is measured by its pressure or energy in terms of decibels (dB). The dB is based on a logarithmic scale  
 2 and therefore not directly additive as in a linear scale. For example, if a sound of 60 dB is added to another  
 3 sound of 60 dB, the total is a 3 dB increase to 63 dB, not a doubling to 120 dB. The human ear can perceive a  
 4 wide range of sound. At the low end of the dB scale, very faint sounds of less than 10 dB can be heard, yet at  
 5 the high end of the dB scale, extremely loud sounds of more than 100 dB can also be heard. Except in  
 6 carefully controlled laboratory experiments, a 1-dB change in sound levels cannot be perceived by humans.  
 7 Outside the laboratory, a 3-dB change in sound levels is considered a just-perceivable difference.  
 8 An increase of 10 dB is usually perceived as being twice as loud. Traffic-noise levels are typically calculated in  
 9 A-weighted decibels (dBA). A-weighting deemphasizes lower-frequency sounds below 1,000 hertz  
 10 (1 kilohertz [kHz]) and higher-frequency sounds above 4 kHz. A-weighting is the measure most used for  
 11 traffic and environmental noise throughout the world, as it provides a high degree of correlation with  
 12 human annoyance and health effects.

13 The actual impact of sound is not a function of loudness alone. The time of day during which sound occurs  
 14 and the duration of the sound are also important. In addition, most sound that lasts for more than a few  
 15 seconds is variable in its intensity. The sound descriptor used for this study is the Leq. The Leq is the  
 16 equivalent steady-state sound level that, in a stated period, contains the same acoustical energy as the time-  
 17 varying sound level during the same period. The Leq (h) is the energy-average of the A-weighted sound  
 18 levels occurring during a 1-hour period, in decibels (i.e., a 1-hour Leq).

#### 19 4.12.1 Noise — Regulatory Background and Standards

20 The I-270 North EA is a Type I project that requires a noise analysis. Type I projects include the physical  
 21 alteration of a highway such that the topography between the traffic noise sources and noise receptors is  
 22 altered, potentially affecting the traffic noise environment. FHWA procedures for highway noise analysis and  
 23 abatement contained in 23 CFR 772, *Procedures for Abatement of Highway Traffic Noise and Construction*  
 24 *Noise*, were used to identify and evaluate potential noise impacts associated with the I-270 North EA.  
 25 Evaluation of the traffic-noise impacts expected from construction of a road involves the following:

- 26 • Identification of existing activities and developed lands that may be affected by traffic noise from  
 27 the roadway
- 28 • Prediction of traffic-noise levels with and without construction of the proposed project
- 29 • Determination of existing noise levels
- 30 • Determination of traffic-noise impacts
- 31 • Feasibility and reasonableness of noise abatement measures for reducing or eliminating noise impacts

32 FHWA has determined Noise Abatement Criteria (NAC) for different land uses (i.e., activity categories) as  
 33 described in **Table 4-17**. For the purpose of traffic noise analysis, the use of a property adjacent to a  
 34 transportation improvement is classified according to the human activities that occur or are expected to  
 35 occur within the property boundaries. Noise abatement is considered when a traffic noise impact is  
 36 predicted. Traffic noise impacts occur when the predicted existing or future highway traffic noise levels  
 37 approach or exceed the NAC, or when predicted existing or future highway traffic noise levels substantially  
 38 exceed the existing highway traffic noise level, even though the predicted level may not exceed the NAC.  
 39 The term “approach” is considered to be 1 dBA less than the appropriate NAC. Therefore, a sensitive noise  
 40 receptor is considered affected if the noise level is predicted to be 66 dBA or higher for exterior areas of  
 41 residential land uses. MoDOT defines a “substantial increase” as an increase of 15 dBA or more above the  
 42 existing noise level.

**Table 4-17. Noise Abatement Criteria**

Activity Category	Activity Criteria <sup>1</sup>		Evaluation Location	Activity Description
	L <sub>eq(h)</sub>	L <sub>10(h)</sub>		
A	57	60	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B <sup>2</sup>	67	70	Exterior	Residential
C	67	70	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings
D	52	55	Interior	Auditoriums, daycare centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios
E <sup>2</sup>	72	75	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F
F	-	-	-	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, and electrical), and warehousing
G	-	-	-	Undeveloped lands that are not permitted for development

## Notes:

<sup>1</sup> The L<sub>eq(h)</sub> and L<sub>10(h)</sub> Activity Criteria values are for impact determination only, and are not design standards for noise abatement measures.

<sup>2</sup> Includes undeveloped lands permitted for development for this activity category.

## 1 4.12.2 Noise — Affected Environment

### 2 4.12.2.1 Study Areas and Noise Measurements

3 For the noise analysis, a study area of approximately 500 feet from I-270, between I-70 and Chain of the  
4 Rocks Bridge, was established. Within that area, Noise Study Areas were established. Existing noise  
5 measurements were made at these locations. A technical memorandum outlining this process is contained  
6 in **Appendix D**.

7 Twenty-eight Noise Study Areas were established. In each Noise Study Area, the Reasonable Alternatives will  
8 add capacity, involve roadways on new locations, result in changes in vehicle mix, alter the existing vertical  
9 or horizontal roadway alignments, move travel lanes closer to the receptors, add auxiliary lanes, or alter  
10 existing shielding. Those areas that will not experience those changes were not evaluated further.  
11 Additionally, if there are no outdoor areas of frequent human use, the land use was not considered a Noise  
12 Study Area.

13 The Noise Study Areas underwent initial noise monitoring. This data will primarily be used for  
14 validating/calibrating the Traffic Noise Model, but also provides useful background data for the conditions  
15 within the study area. The monitoring data is summarized in the technical memorandum (**Appendix D**). As  
16 might be expected, unshielded areas in proximity to I-270 experience noise levels that generally exceed the  
17 NAC for residential uses. Noise levels as high as 72 dBA were encountered during monitoring.

18 **Figure 4-14** shows the location of the Noise Study Areas and the noise levels encountered during  
19 2014 measurements.

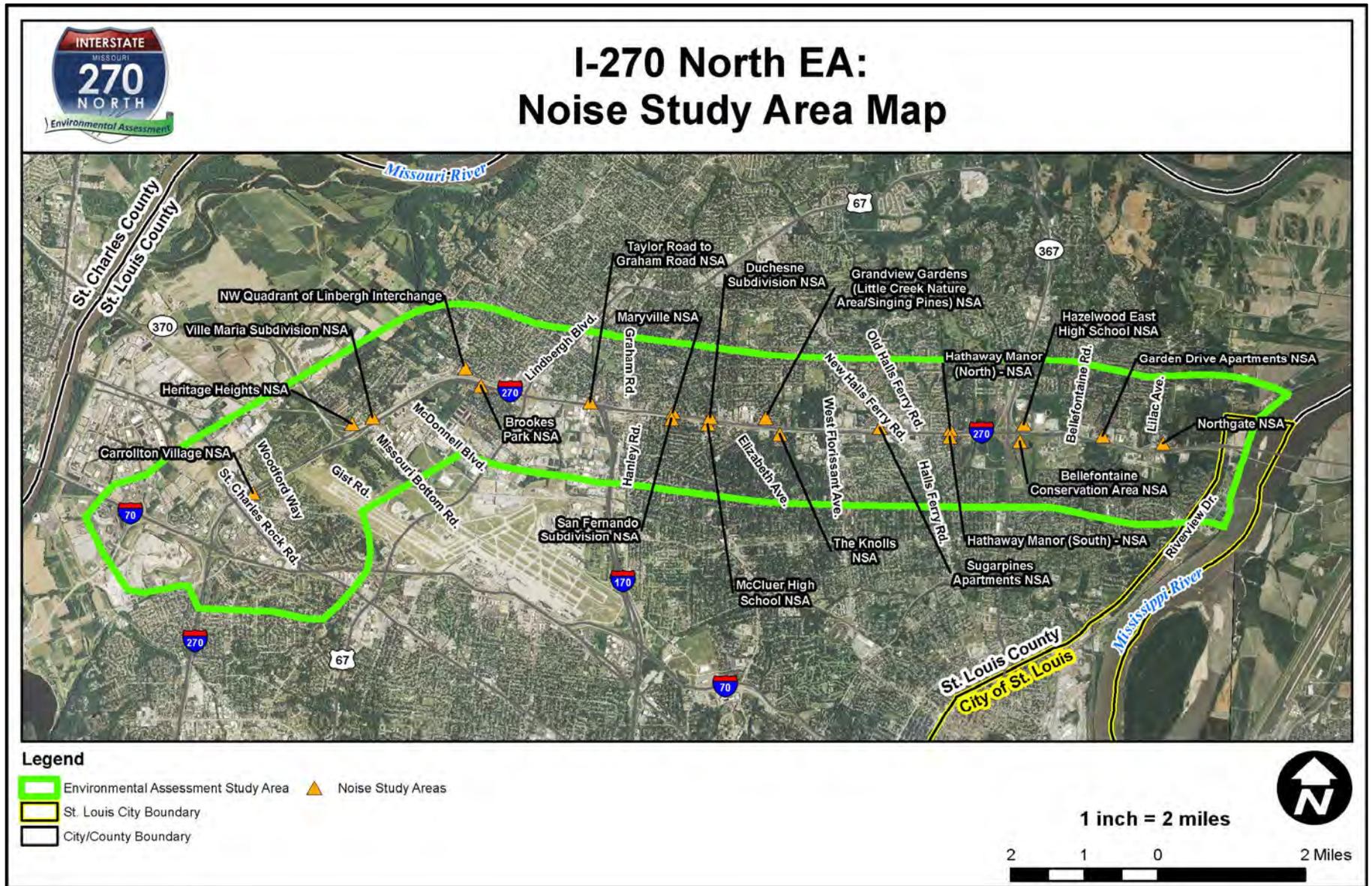


Figure 4-14. Noise Study Area Map

1  
2

1 **4.12.2.2 Modeled Peak-Hour Noise Levels and Traffic Noise Impacts**

2 Existing and Future (2040) conditions were modeled for all Noise Study Areas. These noise receptor  
 3 locations were selected to provide full coverage and representation of all sensitive receptors within the  
 4 study area. **Table 4-18** summarizes the 2040 traffic noise levels at the selected receptor locations.

**Table 4-18. Predicted Existing/Future Peak-Hour Noise Levels**

Noise Study Area	Existing Noise Levels (dBA)	Future (2040) Noise Levels (dBA)	Traffic Noise Impact?
Carrollton Village Condominiums	57.3 – 62.6	64.9 – <b>71.7</b>	<b>YES</b>
Heritage Heights	53.3 – 59.4	58.6 – <b>69.9</b>	<b>YES</b>
Ville Maria Subdivision	59.3 – 65.0	63.6 – <b>77.3</b>	<b>YES</b>
Northwest Quadrant of Lindbergh Boulevard Interchange	57.9 – 65.0	63.8 – <b>76.9</b>	<b>YES</b>
Brookes Park	59.7 – 63.0	<b>66.2 – 78.5</b>	<b>YES</b>
Taylor Road to Graham Road	59.3 – <b>66.5</b>	69.3 – <b>74.8</b>	<b>YES</b>
Maryville Subdivision	61.1 – 63.8	62.4 – <b>75.5</b>	<b>YES</b>
San Fernando Subdivision	62.9 – <b>69.0</b>	<b>74.3 – 78.6</b>	<b>YES</b>
Duchesne Subdivision	63.4 – <b>68.1</b>	<b>74.1 – 75.7</b>	<b>YES</b>
McCluer High School	60.0 – 64.5	<b>69.1 – 74.8</b>	<b>YES</b>
Grandview Gardens	62.7 – <b>68.5</b>	65.3 – <b>77.9</b>	<b>YES</b>
The Knolls	61.2 – 64.6	62.6 – <b>78.8</b>	<b>YES</b>
Sugarpines Apartments	55.9 – 60.4	59.9 – <b>71.9</b>	<b>YES</b>
Grandview Gardens and Little Creek Nature Area/Singing Pines	62.7 – <b>68.5</b>	<b>68.3 – 71.1</b>	<b>YES</b>
Hathaway Manor (N)	55.9 – 65.3	57.1 – <b>77.2</b>	<b>YES</b>
Hathaway Manor (S)	57.7 – 63.8	60.8 – <b>76.9</b>	<b>YES</b>
Bellefontaine Conservation Area	62.7	65.8	NO
Hazelwood East High School	53.0	55.9	NO
Garden Drive Apartments	57.6 – 59.4	54.0 – 59.5	NO
Northgate Apartments	64.2 – 64.6	68.8 – <b>73.7</b>	<b>YES</b>

5 Based on the modeled traffic noise conditions, a traffic noise impact was identified for most Noise Study  
 6 Areas. Noise abatement is examined in the following subsections. The Noise Study Report is **available upon**  
 7 **request.**

## 1 4.12.3 Noise — Impacts

### 2 4.12.3.1 No-Build Alternative Impact Summary

3 The No-Build Alternative maintains the existing roadway configuration. Noise changes associated with traffic  
4 conditions associated with the No-Build Alternative are considered nominal.

### 5 4.12.3.2 Build Alternatives Impact Summary

6 A barrier analysis was conducted for the receptors that would experience a traffic noise impact. A barrier  
7 must be both feasible and reasonable to be recommended for further consideration.

#### 8 **Noise Barrier Feasibility**

9 MoDOT defines feasibility as follows:

10 *Feasibility is the ability to provide abatement in a given location considering the acoustic and*  
11 *engineering limitations of the site. Acoustic feasibility refers to noise abatement measure(s)*  
12 *ability to achieve the minimum noise reduction at impacted receptors. MoDOT requires at*  
13 *least a 5 dBA insertion loss for a minimum of 67 percent of first-row, impacted receivers for*  
14 *noise abatement to be considered feasible. Engineering feasibility refers primarily to physical*  
15 *constraints and other constructability constraints, such as topography, access, drainage,*  
16 *safety, maintenance, and presence of other noise sources. In general, if these factors are too*  
17 *extreme or cannot be accommodated in providing the minimum noise reduction, noise*  
18 *abatement will be deemed unfeasible. For reasons of safety (primarily wind load and clear*  
19 *space concerns), a noise wall's height is limited to 20 feet. This criterion alone cannot be*  
20 *used to consider noise abatement unreasonable.*

21 The noise analysis identified the first-row receivers and evaluated if a 20-foot noise barrier could achieve a  
22 5-dBA insertion loss for 67 percent of the impacted first-row receivers (approaching/exceeding NAC). The  
23 summary of the feasibility analysis, for the Preferred Alternative, is contained in **Table 4-19**. All but three  
24 Noise Study Areas were able to achieve the minimum feasibility requirements. The feasible barriers will be  
25 examined further for reasonability.

#### 26 **Noise Barrier Reasonability**

27 For the receptors that could achieve the feasibility standard, the barrier analysis was continued to  
28 investigate reasonability. MoDOT defines reasonability as follows:

- 29 • Noise abatement measures shall not exceed 1,300 square feet per benefitted receptor.
- 30 • Noise abatement measures must provide a benefit of a minimum of 7 dBA for 67 percent of first-  
31 row receptors.

32 The reasonability noise analysis began by identifying the first-row receivers and evaluating if a 20-foot noise  
33 barrier could achieve a 7-dBA insertion loss for first-row receivers. If first-row receivers could achieve the  
34 7-dBA goal, the barrier would be optimized to determine if the 1,300-square-foot limit could be achieved.  
35 Noise barriers along I-270 are preferred (in the right-of-way between the outer roads and I-270). This can  
36 create gaps where the proposed ramps enter/exit the corridor. However, they were also evaluated in those  
37 areas where it was possible to examine a noise barrier placed along the outer road. Outer road barriers were  
38 limited by driveway and intersections. For non-residential land uses, equivalent dwelling unit calculations  
39 were developed based on the roadway frontage of the nearby residential properties.

40 The reasonability noise analysis identified the first-row receivers and evaluated if a 20-foot noise barrier  
41 could achieve a 7-dBA insertion loss for first-row receivers. If first-row receivers could achieve the 7-dBA  
42 goal, the barrier would be optimized to determine if the 1,300-square-foot limit could be achieved.

43 The summary of the reasonability analysis, for the Preferred Alternative, is contained in **Table 4-20**.

**Table 4-19. Feasibility Summary for Future Peak-Hour Noise Conditions (Preferred Alternative)**

Noise Study Area	First-Row Receivers (Dwelling Units or Equivalent)	First-Row Impacted Receivers (2040)	Impacted First-Row Receivers Receiving a 5-dBA Insertion Loss from a Maximum Height Barrier (20 feet)		Is a Noise Barrier Feasible?
			Number	Percentage	
Carrollton Village Condominiums	24	24	24	100%	YES
Heritage Heights	28	16	0	0%	NO
Ville Maria Subdivision	34	28	28	100%	YES
Northwest Quadrant of Lindbergh Boulevard Interchange	19	19	19	100%	YES
Brookes Park	24	24	24	100%	YES
Taylor Road to Graham Road	62	37	27	59%	NO
Maryville Subdivision (outer road barrier)	17	17	17	100%	YES
San Fernando Subdivision	20	20	18	90%	YES
Duchesne Subdivision (outer road barrier)	8	8	6	75%	YES
McCluer High School	10	10	10	100%	YES
Grandview Gardens and Little Creek Nature Area/Singing Pines	26	22	18	82%	YES
The Knolls	19	19	2	11%	NO
Sugarpines Apartments	13	8	6	75%	YES
Hathaway Manor (N)	33	31	30	97%	YES
Hathaway Manor (S)	34	32	30	94%	YES
Bellefontaine Conservation Area			No Traffic Noise Impacts		
Hazelwood East High School			No Traffic Noise Impacts		
Northgate Apartments	48	16	9	56%	NO
Garden Drive Apartments			No Traffic Noise Impacts		

**Table 4-20. Reasonability Summary for Future Peak-Hour Noise Conditions (Preferred Alternative)**

Noise Study Area	First-Row Receivers (Dwelling Units or Equivalent)	First-Row Receivers Receiving a 7-dBA Insertion Loss from a Maximum Height Barrier (20 feet)		Optimized Barrier:		Is a Noise Barrier Reasonable?
		Number	Percentage	Square Feet per Benefitted Receptor	Percentage of (first row) Benefitted Receptor	
Carrollton Village Condominiums	24	24	100%	932	67%	<b>YES</b>
Heritage Heights			Not Feasible			
Ville Maria Subdivision	34	34	100%	1,281	94%	<b>YES</b>
Northwest Quadrant of Lindbergh Boulevard Interchange	19	19	100%	1,312	100%	<b>YES</b>
Brookes Park	24	24	100%	1,308	100%	<b>YES</b>
Taylor Road to Graham Road			Not Feasible			
Maryville Subdivision (outer road barrier)	17	17	100%	1,147	100%	<b>YES</b>
San Fernando Subdivision	20	7	35%	N/A	N/A	<b>NO</b>
Duchesne Subdivision (outer road barrier)	8	5	63%	2,229	5	<b>NO</b>
McCluer High School	10	10	100%	5,804	100%	<b>NO</b>
Grandview Gardens (and Little Creek Nature Area/Singing Pines)	26	9	35%	N/A	N/A	<b>NO</b>
The Knolls			Not Feasible			
Sugarpines Apartments	13	6	46%	N/A	N/A	<b>NO</b>
Hathaway Manor (N) (outer road barrier)	33	20	61%	N/A	N/A	<b>NO</b>
Hathaway Manor (S)	34	30	88%	816	65%	<b>YES</b>
Bellefontaine Conservation Area			No Traffic Noise Impacts			
Hazelwood East High School			No Traffic Noise Impacts			
Northgate Apartments			Not Feasible			
Garden Drive Apartments			No Traffic Noise Impacts			

1 For the receptors that could achieve the feasibility standard, barrier analysis was continued to  
 2 investigate reasonability. To be recommended for further consideration, a barrier must be both feasible  
 3 and reasonable. MoDOT defines reasonability as the ability for noise barriers to achieve a maximum of  
 4 1,300 square feet per benefitted receptor and must provide a benefit of a minimum of 7 dBA for 67 percent  
 5 of first-row receptors.

6 The Noise Study Areas that are both feasible and reasonable include the following:

- 7 • Carrollton Village Condominiums
- 8 • Ville Maria Subdivision
- 9 • Brookes Park
- 10 • Northwest Quadrant of the Lindbergh Boulevard Interchange (Kindercare, Library and St. Martin De  
 11 Porres)
- 12 • Marysville (with an outer road barrier at St. Cornelius Lane)
- 13 • Hathaway Manor (South)

14 Each of these noise barrier assessments are summarized below.

#### 15 **Carrollton Village Condominiums**

16 Even with the adjoining disc golf course excluded from the analysis, a noise barrier protecting the  
 17 condominium buildings is reasonable. There are 48 apartment units (24 ground floor/24 second floor).  
 18 Twenty-four of these are first-row receivers. The area of frequent human use for the first-floor units was a  
 19 ground-level patio. The area of frequent human use for the second-floor units was an elevated balcony.  
 20 Using a 1,094-foot-long barrier, that averaged 13.63 feet tall, 16 first-row receivers achieved the 7-dBA  
 21 insertion loss. This results in an area per benefitted dwelling unit of 932 square feet.

#### 22 **Ville Maria Subdivision**

23 This area includes several apartments with ground-level areas of frequent human use, numerous single-  
 24 family homes, and a single equivalent dwelling unit for the Garrett Elementary school playground.  
 25 Fifty-seven dwelling units were accounted for in the model. With a 20-foot maximum barrier, all 34 first-row  
 26 receivers receive a 7-dBA insertion loss. Optimizing the barrier resulted in a 17-foot barrier (3,100 feet long)  
 27 that benefitted 32 of the first-row receivers and 10 second-row receivers. This results in an area per  
 28 benefitted dwelling unit of 1,281 square feet.

#### 29 **Brookes Park**

30 There are 24 equivalent first-row dwelling units in this area. This includes eight for Brookes Park and 16 for  
 31 the road-front single-family homes. Fifty-one dwelling units were accounted for in the model. With a 20-foot  
 32 maximum barrier, all 24 first-row receivers receive a 7-dBA insertion loss. Optimizing the barrier resulted in  
 33 an average 15.4-foot-tall barrier 3,473 feet long. This 53,633-square-foot barrier provides a 7-dBA insertion  
 34 loss at 41 equivalent dwelling units (1,308 square feet per benefitted receiver).

#### 35 **Northwest Quadrant of the Lindbergh Boulevard Interchange (Kindercare/Library and Saint Martin De 36 Porres)**

37 The Kindercare/Library NSA contains too few receivers to support a reasonable noise barrier. Consequently,  
 38 it was joined to the Saint Martin De Porres NSA. There are 19 equivalent first-row dwelling units for the  
 39 Kindercare, the Prairie Commons Library (outdoor garden), the La Petite Academy, and the fields at  
 40 Saint Martin De Porres. Fifty-three dwelling units were accounted for in the model. With a 20-foot maximum  
 41 barrier, all 19 first-row receivers receive a 7-dBA insertion loss, as do all of the other modeled receivers. It is  
 42 not possible to optimize the barrier with only first-row receivers. Optimizing the barrier using all receivers

1 can be done using a barrier that averages 14.5 feet tall and 4,542 feet long. This 65,612-square-foot barrier  
2 provides a 7-dBA insertion loss at 50 equivalent dwelling units (1,312 square feet per benefited receiver).

### 3 **Marysville (with an outer road barrier at St. Cornelius Lane)**

4 A noise barrier along I-270 is not reasonable. An outer road barrier protecting only St. Cornelius Lane is  
5 both feasible and reasonable. Using an 18-foot barrier, that is 1,100 feet long, all 17 first row receivers  
6 receive a 7 dBA insertion loss (1,165 square feet per receiver).

### 7 **Hathaway Manor (South)**

8 The Hathaway subdivision is located between Old Halls Ferry Road and the MO 367 interchange. Because of  
9 the unusual configurations, several different iterations were investigated to find a reasonable barrier  
10 configuration. There are 34 first-row dwelling units (32 receive a traffic noise impact). With a 20-foot  
11 maximum barrier (4,000 feet long), 30 of the 34 first-row receivers receive a 7-dBA insertion loss (88  
12 percent). With a 14-foot barrier, a total of 63 dwelling units will receive an insertion loss of 7 dBA.

## 13 4.13 Right-of-Way

### 14 4.13.1 Right-of-Way — Regulatory Background and Standards

15 Right-of-way defines the areas necessary to construct and maintain the main roadways and necessary outer  
16 roadways, entrances and crossroads. Areas for maintenance and utilities are also provided for. The  
17 minimum width of right-of-way established for each project is that necessary to accommodate construction  
18 and provide proper maintenance of the roadway. Right-of-way plans are developed together with the  
19 detailed construction plans.

20 Acquisition and relocation of affected residential and commercial properties will be in accordance with the  
21 relocation procedures established in the Uniform Act. The Uniform Act and Missouri state laws require that  
22 just compensation be paid to the owner(s) of private property taken for public use. The Uniform Act is  
23 carried out without discrimination and in compliance with Title VI (the Civil Rights Act of 1964), the  
24 President's EO on EJ, and ADA.

### 25 4.13.2 Right-of-Way — Affected Environment

26 The existing right-of-way within the I-270 North corridor stretches unbroken, north to south, from Dunn  
27 Road to Pershall Road. The development of alternatives will investigate how to contain alternatives within  
28 the existing right-of-way envelope. The configuration of the existing right-of-way is depicted on **Exhibit 2**  
29 **(Appendix A)**.

30 The majority of existing I-270 has inside shoulder widths of 4 feet or 5 feet. With the 2-foot concrete barrier  
31 along centerline, the resulting existing median width is 10 feet or 12 feet. In the development of the  
32 alternatives, it was assumed that the center median would be reconstructed with 12-foot, full-width inside  
33 shoulders in both directions of I-270. This results in a median width of 26 feet. This assumption was made  
34 with the intention of providing a conservative approach for the project cost estimates and maximizing  
35 flexibility by clearing a project footprint that can accommodate reconstruction with full-width inside  
36 shoulders. The assumption of reconstruction with full-width inside shoulders is not intended to exclude  
37 other treatments. The assumption of reconstruction with full-width inside shoulders should not be  
38 construed as project commitment.

39 Possession of the right-of-way is necessary before roadway improvement can begin. The acquisition of right-  
40 of-way for transportation improvements is a complex undertaking. All activities associated with this  
41 acquisition, including those applicable to title search, appraisal, negotiations, payments, closings,  
42 condemnation, possession, and other related activities, will be identical, and will be identically applied in all  
43 dealings with property owners from whom lands, property, or rights must be acquired for transportation

1 purposes without regard to the owner’s race, color, religion, national origin, sex, age, ancestry, or physical  
 2 ability. Federal regulations governing right-of-way acquisitions are found in the Uniform Relocation  
 3 Assistance and Real Property Acquisition Policies Act of 1970, as amended, along with accompanying federal  
 4 regulations 23 CFR Part 710 and 49 CFR Part 24. Compliance with these regulations are required if federal  
 5 funds are used to finance any portion of the improvement project.

### 6 4.13.3 Right-of-Way — Impacts

#### 7 4.13.3.1 Property Acquisition

8 The No-Build Alternative would not require additional right-of-way; therefore, there would be no residential  
 9 or business acquisitions, displacements, or relocations.

10 **Table 4-21** identifies the potential right-of-way acquisition impacts associated with the Reasonable  
 11 Alternatives. These acquisitions are based on planning-level engineering. The actual extent of acquisition will  
 12 change as design plans are completed. There may also be opportunities to use temporary or permanent  
 13 easements in lieu of acquisitions, which would be determined during the design phase.

14 **Table 4-21** also depicts right-of-way acquisition in terms of full and partial acquisitions. With full acquisition,  
 15 the entire tract or parcel would be acquired. With partial acquisition, a narrow strip taking is required along  
 16 the property’s frontage with the existing I-270 right-of-way. Partial acquisitions are considered only if the  
 17 primary structure could remain in place and the remainder of the property could function as a viable entity.

18 The cumulative property acquisitions can be summarized as follows:

- 19 • Reasonable Alternative 1: Total acquisition of 35.7 acres from 247 parcels
- 20 • Reasonable Alternative 1 with variation 1a: Total acquisition of 35.5 acres from 233 parcels
- 21 • Reasonable Alternative 2: Total acquisition of 78.9 acres from 275 parcels
- 22 • Reasonable Alternative 2 with variation 2a: Total acquisition of 46.4 acres from 256 parcels

23 The Preferred Alternative is Alternative 1 with variation 1a. It minimizes both the number of parcels affected  
 24 by acquisition, as well as the total amount of property that will need to be acquired to build the project.

#### 25 4.13.3.2 Structure Displacements

26 The No-Build Alternative would not require additional right-of-way; therefore, there would be no residential  
 27 or business acquisitions, displacements, or relocations.

28 **Table 4-22** identifies the residential and commercial displacements (structure removal) associated with the  
 29 Reasonable Alternatives. These acquisitions are based on planning-level engineering. In most cases, these  
 30 are coincident with full parcel acquisitions. As design plans are completed, there may be opportunities to  
 31 avoid some of the identified displacements.

32 The cumulative displacements can be summarized as follows:

- 33 • Reasonable Alternative 1: 23 residences 9 commercial operations
- 34 • Reasonable Alternative 1 with variation 1a: 23 residences 9 commercial operations
- 35 • Reasonable Alternative 2: 28 residences 31 commercial operations
- 36 • Reasonable Alternative 2 with variation 2a: 30 residences 27 commercial operations

37 The Preferred Alternative is Alternative 1 with variation 1a. It minimizes the number of displacements  
 38 required to build the project.

#### 39 4.13.3.3 Relocation Availability

40 Each Reasonable Alternative would require relocation of residential and commercial/industrial properties. A  
 41 review of available residential and commercial property in St. Louis County shows a broad range of types

1 and locations available. Based on the extent of available properties, the relocations are expected to be  
2 readily absorbed into the local market. It is not anticipated that there will be difficulty finding adequate  
3 replacement properties for those who are displaced. Relocation resources are available, without  
4 discrimination, to all residential properties and businesses impacted by the project.

5 Among the affected residential properties, there appears to be two primary types. Bungalows are smaller  
6 with living areas under 1,000 square feet. Built in the 1950s, the appraised values are in the \$50,000 range.  
7 The larger ranches vary in size between 1,300 and 2,100 square feet. Also built in the 1950s, their appraised  
8 values range upwards of \$122,000, more typically less than \$100,000. Searches for comparable single-family  
9 houses found numerous examples. For instance, in the 63135 zip code, over 100 examples were available.  
10 Similar levels of vacancies exist all along the I-270 corridor.

11 Among the affected commercial properties, similar searches found retail availability through the area. Just  
12 within Florissant, Bridgeton, and Hazelwood, 35 office sites are currently available and 102 retail sites are  
13 available. It appears that adequate replacement facilities would be available for those displaced because of  
14 the project. Redevelopment within the immediate area is also possible.

15

**Table 4-21. Potential Right-of-Way Acquisition Impacts Associated with the Reasonable Alternatives**

Alternative	Reasonable Alternative Description	Preliminary Property Acquisition Estimates				Acquisition Totals	
		Partial Acquisition (acres)	Parcels	Full Acquisition (acres)	Parcels	Area (acres)	Parcels
<b>AREA 1: I-70 TO MCDONNELL BOULEVARD</b>							
Reasonable Alternative 1	Diverging Diamond Interchanges at St. Charles Rock Road and McDonnell Boulevard	1.6	15	0	0	1.6	15
Reasonable Alternative 2	Diamond Interchange at St. Charles Rock Road and Partial Cloverleaf at McDonnell Boulevard	5.6	27	2.3	5	7.9	32
<b>AREA 2: EAST OF MCDONNELL BOULEVARD TO HANLEY ROAD/GRAHAM ROAD</b>							
Reasonable Alternative 1	Partial Cloverleaf Interchange at Lindbergh Boulevard	3.8	46	0.0	0	3.8	46
<b>AREA 3: HANLEY ROAD/GRAHAM ROAD TO OLD HALLS FERRY ROAD</b>							
Reasonable Alternative 1	Diamond and Split Diamond Interchanges with One-Way Dunn/Pershall (Split Diamond between West Florissant to Old Halls Ferry)	12.7	137	8.3	30	21.0	167
Reasonable Alternative 1a	Diamond and Split Diamond Interchanges with One-Way Dunn/Pershall (Split Diamond between West Florissant to New Halls Ferry)	12.6	123	8.3	30	20.8	153

**Table 4-21. Potential Right-of-Way Acquisition Impacts Associated with the Reasonable Alternatives**

Alternative	Reasonable Alternative Description	Preliminary Property Acquisition Estimates				Acquisition Totals	
		Partial Acquisition (acres)	Parcels	Full Acquisition (acres)	Parcels	Area (acres)	Parcels
Reasonable Alternative 2	Diamond and Split Diamond Interchanges with Two-Way Dunn/Pershall (Split Diamond between West Florissant to New Halls Ferry)	36.4	132	21.2	49	57.6	181
Reasonable Alternative 2a	Diamond and Split Diamond Interchanges with Two-Way Dunn/Pershall (Split Diamond between West Florissant to Old Halls Ferry)	33.3	111	20.2	51	53.5	162
<b>AREA 4: EAST OF OLD HALLS FERRY ROAD TO RIVERVIEW DRIVE</b>							
Reasonable Alternative 1	Partial Cloverleaf Interchange at MO 367 and Diamond Interchanges at Bellefontaine, Lilac, and Riverview	3.3	14	6.0	5	9.3	19
Reasonable Alternative 2	Partial Cloverleaf Interchanges at MO 367, Bellefontaine, Lilac, and Riverview	5.1	10	4.9	7	10.0	17

**Table 4-22. Residential and Commercial Displacements (Structure Removal) Associated with the Reasonable Alternatives**

<b>ALTERNATIVE</b>	<b>REASONABLE ALTERNATIVE DESCRIPTION</b>	<b>PRELIMINARY STRUCTURE ACQUISITION ESTIMATES</b>
<b>SAINT CHARLES ROCK ROAD AREA</b>		
Reasonable Alternative 1	Diverging Diamond Interchange	<ul style="list-style-type: none"> <li>• None</li> </ul>
Reasonable Alternative 2	Diamond Interchange	<ul style="list-style-type: none"> <li>• None</li> </ul>
<b>MCDONNELL BOULEVARD AREA</b>		
Reasonable Alternative 1	Diverging Diamond Interchange	<ul style="list-style-type: none"> <li>• None</li> </ul>
Reasonable Alternative 2	Partial Cloverleaf Interchange	<ul style="list-style-type: none"> <li>• Three single-family residences east of Missouri Bottom Road (Villa Teresa)</li> <li>• Arby's and Auto World, Inc. in the northeast quadrant of McDonnell Boulevard</li> </ul>
<b>LINDBERGH BOULEVARD AREA</b>		
Reasonable Alternative 1	Partial Cloverleaf Interchange	<ul style="list-style-type: none"> <li>• None</li> </ul>
<b>HANLEY ROAD/GRAHAM ROAD AREA</b>		
Reasonable Alternative 1	Diamond Interchange (One-Way Dunn/Pershall)	<ul style="list-style-type: none"> <li>• Two single-family residences at Pershall Road and Brackleigh Lane</li> </ul>
Reasonable Alternative 2	Diamond Interchange (Two-Way Dunn/Pershall)	<ul style="list-style-type: none"> <li>• Two single-family residences at Pershall Road and Brackleigh Lane.</li> <li>• Displacements at South Lafayette Street include Tires Wholesale, one Single-family residence, Life Smile Dental, One Hour Cleaning, and one vacant commercial building</li> </ul>
<b>NEW FLORISSANT ROAD TO WASHINGTON STREET/ELIZABETH AVENUE AREA</b>		
Reasonable Alternative 1	Split Diamond Interchange (One-Way Dunn/Pershall)	<ul style="list-style-type: none"> <li>• Twenty-one single-family residences: six at Santa Cruz Drive, and fifteen between DuBourg Lane and Jean Drive</li> <li>• Plaza Duchesne: Kwik Mart and five others and Gary's A+ Auto/Joe's Auto Mart</li> <li>• Creative Cuts: Pershall/Jean</li> </ul>

**Table 4-22. Residential and Commercial Displacements (Structure Removal) Associated with the Reasonable Alternatives**

<b>ALTERNATIVE</b>	<b>REASONABLE ALTERNATIVE DESCRIPTION</b>	<b>PRELIMINARY STRUCTURE ACQUISITION ESTIMATES</b>
Reasonable Alternative 2	Split Diamond Interchange (Two-Way Dunn/Pershall)	<ul style="list-style-type: none"> <li>• Twenty-two single-family residences: five at Santa Cruz Drive, fourteen between DuBourg Lane and Jean Drive, and three at New Florissant</li> <li>• BP, Circle K, one office complex (three operations), Kling Orthodontics, Boain Dental and one vacant commercial building</li> <li>• Creative Cuts: Pershall/Jean</li> </ul>
<b>WEST FLORISSANT AVENUE TO OLD HALLS FERRY ROAD AREA</b>		
Reasonable Alternative 1	Split Diamond Interchange (West Florissant to Old Halls Ferry — One-Way Dunn/Pershall)	<ul style="list-style-type: none"> <li>• None</li> </ul>
Reasonable Alternative 1a	Split Diamond Interchange (West Florissant to New Halls Ferry — One-Way Dunn/Pershall)	<ul style="list-style-type: none"> <li>• None</li> </ul>
Reasonable Alternative 2	Split Diamond Interchange (West Florissant to New Halls Ferry — Two-Way Dunn/Pershall)	<ul style="list-style-type: none"> <li>• Dobb's Tire at West Florissant</li> <li>• Applebee's, Crossings Shopping Center (five operations), ZX, Plumber's Supply, Mobil, and Donut Delite at New Hall's Ferry</li> </ul>
Reasonable Alternative 2a	Split Diamond Interchange (West Florissant to Old Halls Ferry — Two-Way Dunn/Pershall)	<ul style="list-style-type: none"> <li>• Two single-family residences at Landseer Drive</li> <li>• Dobb's Tire at West Florissant</li> <li>• Applebee's, Popeye's, ZX, Plumber's Supply, Mobil, and Donut Delite at New Hall's Ferry</li> </ul>
<b>MO 367 AREA</b>		
Reasonable Alternative 1	Partial Cloverleaf Interchange	<ul style="list-style-type: none"> <li>• None</li> </ul>
<b>BELLEFONTAINE ROAD AREA</b>		
Reasonable Alternative 1	Diamond Interchange	<ul style="list-style-type: none"> <li>• Pizza Hut restaurant</li> </ul>
Reasonable Alternative 2	Partial Cloverleaf Interchange	<ul style="list-style-type: none"> <li>• Shell gasoline station, National Rent-to-Own, Saullo's Pizza, and Larimore Food and Liquor and Laundromat</li> </ul>

**Table 4-22. Residential and Commercial Displacements (Structure Removal) Associated with the Reasonable Alternatives**

<b>ALTERNATIVE</b>	<b>REASONABLE ALTERNATIVE DESCRIPTION</b>	<b>PRELIMINARY STRUCTURE ACQUISITION ESTIMATES</b>
<b>LILAC AVENUE AREA</b>		
Reasonable Alternative 1	Diamond Interchange	• None
Reasonable Alternative 2	Partial Cloverleaf Interchange	• None
<b>RIVERVIEW DRIVE AREA</b>		
Reasonable Alternative 1	Diamond Interchange with Two-Way Dunn Road	• None
Reasonable Alternative 2	Partial Cloverleaf Interchange	• None

## 1 4.14 Secondary and Cumulative Impacts

### 2 4.14.1 Secondary and Cumulative — Regulatory Background and Standards

3 The CEQ defines cumulative impacts as the impacts on the environment that result from the incremental  
4 impact of the action when added to other past, present, and reasonably foreseeable future actions  
5 regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR 1508.7).  
6 Direct effects are caused by the project and occur at the same time and place. Indirect (secondary) effects  
7 are caused by the specific project and are later in time or further removed. The focus of this subsection is on  
8 the secondary and cumulative impacts.

### 9 4.14.2 Secondary and Cumulative — Affected Environment

10 As part of the development of the I-270 North EA, potential secondary impacts were identified early in the  
11 process. Originally, the study area for the North Corridor Study focused solely on the most congested areas  
12 of the corridor. The study area was expanded to include the entire area from I-70 to the Illinois border. This  
13 decision was made, in part, to allow the system to operate as intended and avoid unanticipated impacts  
14 outside of the NCS work area. Additionally, the work area is almost entirely contained within the  
15 existing footprint.

16 A cumulative impact, according to 40 CFR 1580.7, is defined as, “The impact on the environment which  
17 results from the incremental impact of the action when added to other past, present, and reasonably  
18 foreseeable future actions regardless of what agency or person undertakes such other actions.” According  
19 to FHWA, a cumulative impact includes the total effect on a natural resource, ecosystem, or human  
20 community, and the total of all impacts to a particular resource that have occurred, are occurring, and  
21 would likely occur as a result of past, present, and future activities or actions of federal, non-federal, public,  
22 and private entities.

### 23 4.14.3 Secondary and Cumulative — Impacts

#### 24 4.14.3.1 No-Build Alternative Impact Summary

25 The No-Build Alternative would maintain existing traffic patterns. The study’s AJR discusses the  
26 consequences of the No-Build Alternative. **Section 4.18.1** summarizes the major findings of the AJR.

#### 27 4.14.3.2 Build Alternatives Impact Summary

##### 28 **Secondary Impacts**

29 The Preferred Alternative will generally provide the same access as the existing conditions while  
30 substantially improving the operations and safety of the corridor. All access points connect to public roads  
31 and provide for all traffic movements, with the exception of Missouri Bottom Road, which is currently  
32 already a partial access interchange. Operations have been improved throughout the corridor and  
33 particularly at system-to-system interchanges located at Lindbergh Boulevard and MO 367. Safety has been  
34 improved from Hanley/Graham to Bellefontaine by the elimination of the existing slip ramps to and from the  
35 two-way outer road (Dunn Road). The proposed corridor will be designed to meet current federal and state  
36 design, operational and safety standards, where reasonable and feasible. Where this is not possible, the  
37 Preferred Alternative will minimally maintain the conditions represented by the existing corridor  
38 configuration. These will be detailed as part of the MoDOT design exception process. As a result of this  
39 comprehensive approach, the outer road system will be improved relative to traffic operation and safety.  
40 The Preferred Alternative does not have a substantial adverse impact on the safety and operation of the  
41 Interstate facility or on the local street network based on both the current and the planned future traffic

1 projections. Freeway and intersection LOS, network delay and speeds, and number of crashes are all  
2 anticipated to improve compared to the No-Build Alternative.

3 Consequently, secondary impacts are anticipated mostly from construction. Typical impacts would result  
4 from utility relocations, building the proposed roadway improvements, and other related construction  
5 activities, which are commonly short-term and temporary in nature. Typical construction impacts may  
6 include air, water, and noise pollution and disposal of construction debris. Surface transportation traffic  
7 patterns in the study area may also be altered during construction. MoDOT has developed a series of  
8 Standard Specifications for Highway Construction. These specifications include, but are not limited to, air,  
9 noise, and water pollution control measures to minimize construction impacts. The Standard Specifications  
10 for Highway Construction also include traffic control and safety measures. MoDOT would implement these  
11 standards as a part of the construction of the project.

## 12 **Cumulative Impacts**

13 The vast majority of project impacts would occur during construction, and therefore the cumulative impacts  
14 are shortened to that timeframe and restricted to specific areas. The cumulative impacts focused primarily  
15 on the construction period of the project because the project is essentially rebuilding existing transportation  
16 infrastructure. Other than the I-270 North EA, all projects identified in the AJR, the NCS, and the Purpose  
17 and Need Statement are considered reasonably foreseeable (these documents are available upon request).  
18 Discussion of the expected cumulative impacts as they relate to pertinent environmental issues is provided  
19 as follows.

## 20 **Transportation**

21 The I-270 North EA is a component of the TIP and long-range plan (*Connect2045*). Its completion will allow  
22 all other transportation projects to proceed in conformity with the region's goals. Post construction,  
23 operations will improve. During construction, the traffic impact analysis presented in the TIP and long-range  
24 plan have taken a cumulative perspective to predict traffic conditions during the construction. Micro-scale  
25 transportation issues can be addressed as the detailed designs are produced.

## 26 **Land Use**

27 Various land use plans apply across the I-270 North EA study area. These land use plans all assume a  
28 functional I-270 corridor. They are expected to continue regardless of whether or not the project proceeds.

## 29 **Socio-Economic Conditions**

30 There is no evidence that the construction of the I-270 North EA will have anything other than a temporary,  
31 site-specific impact on the socio-economic conditions of the study area. This may be in part due to the  
32 phasing that will be necessary to construct the entire project. While construction will disrupt traffic in one  
33 area, other nearby areas will be relatively unaffected. The project's maintenance of traffic plans will  
34 maintain mobility throughout the community during project construction.

## 35 **Air Quality**

36 The reconstruction of I-270 is identified in the TIP. The air quality impacts of those projects are cumulatively  
37 accounted for in the approved SIP, which includes the Air Quality Conformity Report, demonstrating that the  
38 mobile source emissions from the TIP projects adhere to all EPA emissions ceilings. The improved operation  
39 of the corridor is expected to be a net benefit. Construction activity would cause temporary air quality  
40 impacts. These short-term effects would include increased emissions from heavy diesel construction  
41 vehicles and equipment, and increased dust from grading operations. Emissions from construction vehicles  
42 and equipment would be controlled in accordance with emission standards prescribed under state and  
43 federal regulations. Dust generated by construction activities would be minimized by the implementation of  
44 dust control measures, such as water sprinkling and applying calcium chloride to control dust and other  
45 airborne particulates. Contractors would be required to comply with Missouri's statutory regulations  
46 regarding air pollution control and adherence to construction permit and contract conditions.

## 1 Noise

2 Noise from heavy construction equipment and haul trucks would result in unavoidable short-term impacts.  
3 Residents adjacent to the roadway would be most impacted by construction noise. Contractors may be  
4 required to equip and maintain muffling equipment for trucks and other machinery to minimize noise  
5 emissions. Operations with high temporary noise levels, such as pile driving, may need to have abatement  
6 restrictions placed upon it such as work hour controls and maintenance of muffler systems.

## 7 Water Resources

8 Water quality impacts during construction activities could include increased sediments to stormwater due to  
9 runoff from erodible material exposed during construction. Stormwater runoff is addressed by MoDOT's  
10 Sediment and Erosion Control Program, which would be included within the contract specifications to  
11 address temporary erosion and sedimentation during construction. MoDOT's BMPs reduce impacts to the  
12 aquatic environment to minimal levels. BMPs cover most activities needed to restore the construction area  
13 to an acceptable condition. That will include cleanup, shaping, replacing topsoil, and establishing vegetative  
14 cover on all disturbed bare areas, as appropriate.

## 15 Biological Resources

16 The area surrounding I-270 is primarily an urban environment, with no  
17 notable biological resources. The project would not change this  
18 condition and neither would any other project in the general vicinity.

## 19 Historic Resources

20 Historic resources are limited in the area surrounding the I-270. The  
21 project would not change this condition and neither would any other  
22 project in the general vicinity.

## 23 Visual and Aesthetic Resources

24 In general, construction is not expected to result in changes to the  
25 overall visual and aesthetic appearance of the area beyond that  
26 described in **Section 4.19**.

## 27 4.15 Section 4(f)

28 A Section 4(f) property is any publicly owned land of a public park,  
29 recreational area, or wildlife and waterfowl refuge of national, state,  
30 or local significance or land of an historic site of national, state, or  
31 local significance (public or private).

### 32 4.15.1 Section 4(f) — Regulatory Background and 33 Standards

34 As noted in 23 CFR 774.3, a transportation project approved by FHWA  
35 may not use a Section 4(f) property unless the following are  
36 determined:

- 37 1. There is no feasible and prudent avoidance alternative, as defined  
38 in 23 CFR 774.17, to the use of land from the property
- 39 2. The action includes all possible planning, as defined in 23 CFR  
40 774.17, to minimize harm to the property resulting from such use



### When is publicly owned land considered to be a park, recreation area, or wildlife and waterfowl refuge?

**Answer:** Publicly owned land is considered to be a park, recreation area or wildlife and waterfowl refuge when the land has been officially designated as such by a Federal, State or local agency, and the officials with jurisdiction over the land determine that its primary purpose is as a park, recreation area, or refuge. Primary purpose is related to a property's primary function and how it is intended to be managed. Incidental, secondary, occasional or dispersed activities similar to park, recreational or refuge activities do not constitute a primary purpose within the context of Section 4(f). Unauthorized activities, such as ad hoc trails created by the public within a conservation area, should not be considered as part of FHWA's determination of Section 4(f) applicability.

Source: SECTION 4(f) POLICY PAPER  
Office of Planning, Environment and Realty  
Project Development and Environmental Review  
Washington, DC 20590  
July 20, 2012

1 If it is determined that an action would result in the “use” of a Section 4(f) resource, then the lead federal  
2 agency, in this case FHWA, is required to prepare a Section 4(f) evaluation.

### 3 4.15.2 Section 4(f) — Affected Environment

4 Based on field investigations and records reviews, a number of potential Section 4(f) resources were  
5 identified.

#### 6 4.15.2.1 Recreational Resources

7 The recreational properties closest to I-270 and in the general vicinity to the Reasonable Alternatives include  
8 the areas discussed below.

##### 9 **Carrollton Disc Park (Section 4[f] Resource)**

10 Managed by the City of Bridgeton, this disc golf course is located on Lambert Airport buy-out land between  
11 St. Charles Rock Road and Woodford Way (south side of I-270). Located at an abandoned residential  
12 subdivision, the facility has 18 holes and limited signage to guide participants on a self-guided round of disc  
13 golf. It was developed using Land and Water Conservation Funds. Disc hole #8 is immediately adjacent to the  
14 I-270 right-of-way fence.

##### 15 **Bridgeton Airport Park (Non-Section 4[f] Resource)**

16 Located among the Lambert Airport buy-out land, this former park is now abandoned and used by the  
17 Bridgeton Road Department as a storage depot. It is near the Woodford Way overpass on the north side of  
18 I-270.

##### 19 **Freebourn Park (Non-Section 4[f] Resource)**

20 References to a Freebourn Park emerged during archival searches. The referenced site is located on Gist  
21 Road in the Lambert Airport buy-out zone (south side of I-270). An exact location was never determined.  
22 No areas in this region are open to the public, for any purpose.

##### 23 **Playground at Garrett Elementary School (Section 4[f] Resource)**

24 A typical children’s jungle gym-type set is located adjacent to the Garrett Elementary School (1400 Ville Rosa  
25 Lane, Hazelwood). The site serves substantial walk-on use during non-school hours. The extent of the  
26 Section 4(f) resource is limited to the immediate area of the school.

##### 27 **Gardens at Prairie Commons Library (Section 4[f] Resource)**

28 Located at 915 Utz Lane, Hazelwood, this public library has a public garden, a picnic area, and park benches.  
29 The Section 4(f) resource is limited to this area. The closest gardens are less than 100 feet from Dunn Road.  
30 Much of the garden is actually in MoDOT right-of-way.

##### 31 **Ball Field at St Martin de Porres (Non-Section 4[f] Resource)**

32 This large school/church complex includes numerous ball fields and other associated recreational facilities. It  
33 is not open to the public and is not a Section 4(f) resource.

##### 34 **Brookes Park (Section 4[f] Resource)**

35 Located in the southwestern quadrant of the I-270/Lindbergh Boulevard interchange, Brookes Park is  
36 3.4 acres with bathrooms, picnic pavilion and sites, playgrounds, and historic buildings. The Utz-Tesson  
37 House is located in Brookes Park. It is open to the public and administered by the City of Hazelwood.

##### 38 **Ball Fields at North County Christian School (Non-Section 4[f] Resource)**

39 This large school complex includes numerous ball fields and other associated recreational facilities. It is not  
40 open to the public and is not a Section 4(f) resource.

##### 41 **Ball Fields at McCluer High School (Non-Section 4[f] Resource)**

42 This large school complex includes numerous ball fields and other associated recreational facilities. It is not  
43 open to the public and is not a Section 4(f) resource.

1 **Little Creek Nature Area (Non-Section 4[f] Resource)**

2 The Little Creek Nature Area is administered by the Ferguson-Florissant School District. It is located at  
3 2295 Dunn Road (Florissant). The 97-acre outdoor facility has hiking trails. While the hiking trails are  
4 nominally open to the public, the primary use of the facility is education, not recreation. The facility's most  
5 important elements are the class rooms, agricultural demonstration displays and museum. In 2013, a total  
6 of 13,424 visitors were reported by the Ferguson-Florissant School District. All these groups were invited to  
7 the facility, and nearly all were school students. Ferguson-Florissant school students accounted for  
8 79 percent of the total. No records of non-group recreational users were available.

9 According to the materials provided by the Little Creek Nature Area (**Appendix D**), the instructional  
10 programs offered at the Nature Area provide a curriculum for pre-K to Grade 12 students. Programs provide  
11 students with a hands-on experience, which cultivates a life-long interest in the natural world. Little Creek is  
12 open Monday through Friday, from 9:00 a.m. to 4:00 p.m. The trails are not open to the public on weekends  
13 or after normal business hours, except by reservation or during special events. The nature area's mission  
14 statement as summarized in their management plan is:

15 *"In the forty years it has been in operation, Little Creek Nature Area has adapted its mission and*  
16 *focus to the changing needs of the school district and community it serves. As efforts to boost*  
17 *student achievement have intensified in recent years, the programs offered by the Nature Area have*  
18 *been refocused to meet this challenge for both students and their teachers. "*

19 The primary purpose of the Little Creek Nature Area is educational; all other activities are incidental.  
20 Consequently, the facility is not considered a Section 4(f) resource. This determination was made after  
21 coordination with the Officials with Jurisdiction. The meeting minutes from the in-person meetings are  
22 contained in **Appendix D**.

23 During an onsite meeting, the school district stressed its strong feelings relative to the importance of the  
24 facility. They consider it unique and sensitive. At the time of the meeting, the Reasonable Alternatives  
25 suggested that very minor property acquisition would occur. This would be limited to acquiring a narrow  
26 strip of right-of-way along the Dunn Road frontage of the property. The total acquisition is estimated at 0.5  
27 acre. There would be limited temporary construction-related impacts during the improvement of Dunn  
28 Road. The existing driveway or other temporary access will remain open during construction. Overall, the  
29 study team expected that enhancements would be beneficial to the users of the Little Creek Nature Area.  
30 The School District responded with sensitivity to noise and the loss of trees.

31 While not a Section 4(f) site, MoDOT acknowledges the unique status of the Little Creek Nature Area.  
32 Consequently, an environmental commitment (**Section 5**, Commitment # 15) of this project is to ensure  
33 that appropriate avoidance efforts are incorporated into the final construction plans.

34 **Bellefontaine Conservation Area (Section 4[f] Resource)**

35 Bellefontaine Conservation Area is in the southeast quadrant of the I-270/MO 367 interchange within the  
36 city of Bellefontaine Neighbors. The site was previously owned by the Missouri Department of Mental  
37 Health and was transferred to the Conservation Department in 1995. The area is open daily from sunrise  
38 until 30 minutes after sunset.

39 **Ball Fields at Hazelwood East High School and Middle School (Non-Section 4[f] Resource)**

40 This large school complex includes numerous ball fields and other associated recreational facilities. It is not  
41 open to the public and is not a Section 4(f) resource.

42 **Dundee Park (Non-Section 4[f] Resource)**

43 References to a Dundee Park emerged during archival searches. The referenced site is located on the south  
44 side of I-270 nearest to Riverview Drive. An exact location was never determined. No areas in this region are  
45 open to the public, for any purpose.

1 **Watkins Estate (Non-Section 4[f] Resource)**

2 A large area is owned by the Metropolitan Parks and Recreation District on the north side of I-270 nearest to  
3 Riverview Drive. There is no public access.

4 These resources are shown on **Figure 4-15** and **Exhibit 1 (Appendix A)**.

5 **4.15.2.2 Historic Resources**

6 For the purposes of Section 4(f), a historic site includes any prehistoric or historic district, site, building,  
7 structure, or object included in, or eligible for inclusion in, the NRHP.

8 Initial planning was assisted by the Archival Review performed in compliance with the NHPA. The Archival  
9 Review showed that nine NRHP-listed properties and districts are present in the I-270 North EA study area.  
10 Following the development of the Reasonable Alternatives, an Architectural Study was conducted. The APE  
11 encompassed all property parcels that touch the I-270 North EA footprint. The APE also included where the  
12 footprint is outside the existing I-270 right-of-way and where there are buildings within 100 feet of the new  
13 right-of-way. The Architectural Study resulted in the evaluation of 353 property parcels. No previously  
14 unidentified historic resources were identified. Consequentially, there are no additional potential  
15 architectural Section 4(f) resources in the vicinity of the Reasonable Alternatives. The complete Architectural  
16 Study is available upon request.

17 An Archaeology Study was conducted for archaeological resources. For the Archaeological Study, the APE  
18 encompassed all of the property parcels that touch the I-270 North EA footprint. The APE also included  
19 where the footprint is outside the existing Interstate right-of-way and where there were areas of moderate  
20 potential, within 100 feet of the new right-of-way. The Archaeological Study concluded that there are no  
21 archaeological Section 4(f) resources in the vicinity of the Reasonable Alternatives.

22 Consequently, the following historic properties are of interest relative to Section 4(f):

23 **The Utz-Tesson House**

24 The Utz-Tesson House, originally located at 615 Utz Lane, was listed on the NRHP in 1973. In 1997, the house  
25 was purchased by the City of Hazelwood and in 2003, moved to its present location in Brookes Park.

26 **The Taille de Noyer House**

27 In 1980, the Taille de Noyer House was listed on the NRHP. It currently resides on the McCluer High  
28 School campus.

29 **The John B. Myers House**

30 The John B. Myers House is located at 180 Dunn Road. It was added to the NRHP in 1974 and the boundary  
31 was expanded into a district in 1977 to include the barn and grounds.

32 **The Gittemeier House**

33 The Gittemeier House is located at 1067 Dunn Road. According to Gretchen Crank of Historic Florissant, Inc.,  
34 they are in the process of nominating the Gittemeier House to the NRHP (personal communication). This  
35 two-story German vernacular residence has a limestone basement, brick walls, and a side-gabled asphalt  
36 roof. It is eligible for the NRHP under Criteria C for architecture with its significance boundaries being the  
37 parcel lines. The period of significance is ca.1860, the approximate date of construction. Reasonable  
38 Alternative 2, improvement to I-270 North, would have an adverse effect on the property by impeding  
39 public access and causing erosion. All other Reasonable Alternatives would only cause indirect erosion  
40 effects on the south and east sides of the property.

41 **The Ferguson Pine Meadows 1st Addition District**

42 The Architectural Study identified this residential subdivision as a historical district eligible for the NRHP.  
43 This district is located along Starlight Drive in Ferguson. See **Figure 4-3B** and **Appendix A (Exhibit 2)**. The  
44 boundaries of the district are Pershall Avenue to the north, Moonlight Drive to the west, and the Saint Louis  
45 Community College-Florissant Valley campus to the east. The district is recommended as eligible under

1 Criterion C, for architecture as an example of Contemporary style of architecture. It contains 12 contributing  
 2 houses and four non-contributing houses. The district as a whole retains a high degree of integrity within  
 3 this post-World War II style.

#### 4 4.15.2.3 Wildlife and Waterfowl Refuges

5 There are no wildlife or waterfowl refuges that meet the Section 4(f) definition in the I-270 North EA  
 6 study area.

### 7 4.15.3 Section 4(f) — Impacts

#### 8 4.15.3.1 No-Build Alternative Impact Summary

9 The No-Build Alternative would have no direct effect on the Section 4(f) properties identified within the  
 10 study area. No construction would occur on or in proximity to the properties that would directly affect  
 11 the resources.

#### 12 4.15.3.2 Build Alternatives Impact Summary

13 The Reasonable Alternatives and the Preferred Alternative have been configured to avoid Section  
 14 4(f) properties as noted below.

- 15 • **Carrollton Disc Park:** No right-of-way acquisition (see Sheet 2 of 13 of **Appendix A**).
- 16 • **Playground at Garrett Elementary School:** No right-of-way acquisition. The Preferred Alternative will  
 17 not alter the configuration of I-270 near the school (Reasonable Alternative 2 would have added an  
 18 outer road parallel to I-270 adjacent to the school and an underpass at Anglum Road) (see Sheet 4 of 13  
 19 of **Appendix A**).
- 20 • **Gardens at Prairie Commons Library:** No right-of-way acquisition (see Sheet 4 of 13 of Exhibit 6 -  
 21 **Appendix A**). However, it appears that much of the garden is actually in MoDOT right-of-way. Because  
 22 the roadway/intersection re-configuration in this area is minimal, it is not expected that the garden will  
 23 require disruption. If impacted, MoDOT has made it an environmental commitment to coordinate with  
 24 the library relative to appropriate relocation measures.
- 25 • **Brookes Park:** No right-of-way acquisition (see Sheet 5 of 13 of **Appendix A**). The mature trees within  
 26 the existing right-of-way may be cleared because of the project.
- 27 • **Bellefontaine Conservation Area:** No right-of-way acquisition (see Sheet 11 of 13 of **Appendix A**).
- 28 • **The Utz-Tesson House:** No right-of-way acquisition from Brookes Park (see Sheet 5 of 13 of  
 29 **Appendix A**). The mature trees within the existing right-of-way may be cleared because of the project.
- 30 • **The Taille de Noyer House:** No right-of-way acquisition from McCluer High School campus (see Sheet 7  
 31 of 13 of **Appendix A**).
- 32 • **The John B. Myers House:** No right-of-way acquisition (see Sheet 6 of 13 of **Appendix A**). In this area,  
 33 narrow right-of-way acquisition from Dunn Road frontage is common; the Reasonable Alternatives were  
 34 reconfigured to avoid this at the Myers House.
- 35 • **The Gittemeier House:** No right-of-way acquisition (see Sheet 7 of 13 of **Appendix A**). Reconfiguring the  
 36 New Florissant Road intersection required consideration of the Gittemeier House. The Preferred  
 37 Alternative maintains the existing configuration while avoiding right-of-way acquisition. Reasonable  
 38 Alternative 2 used a loop road around the Gittemeier House. No right-of-way acquisition is necessary,  
 39 but access to the building will change from existing Dunn Road to the loop ramp.
- 40 • **The Ferguson Pine Meadows 1st Addition Historic District:** The Preferred Alternative has been  
 41 reconfigured to avoid right-of-way acquisition. Coordination with the SHPO resulted in a No Adverse

1 Effect determination. Consequently, the project will have a de minimis impact. For historic sites, a de  
2 minimis impact means that FHWA has determined (in accordance with 36 CFR Part 800) that either no  
3 historic property is affected by the project or that the project will have "no adverse effect" on the  
4 historic property.

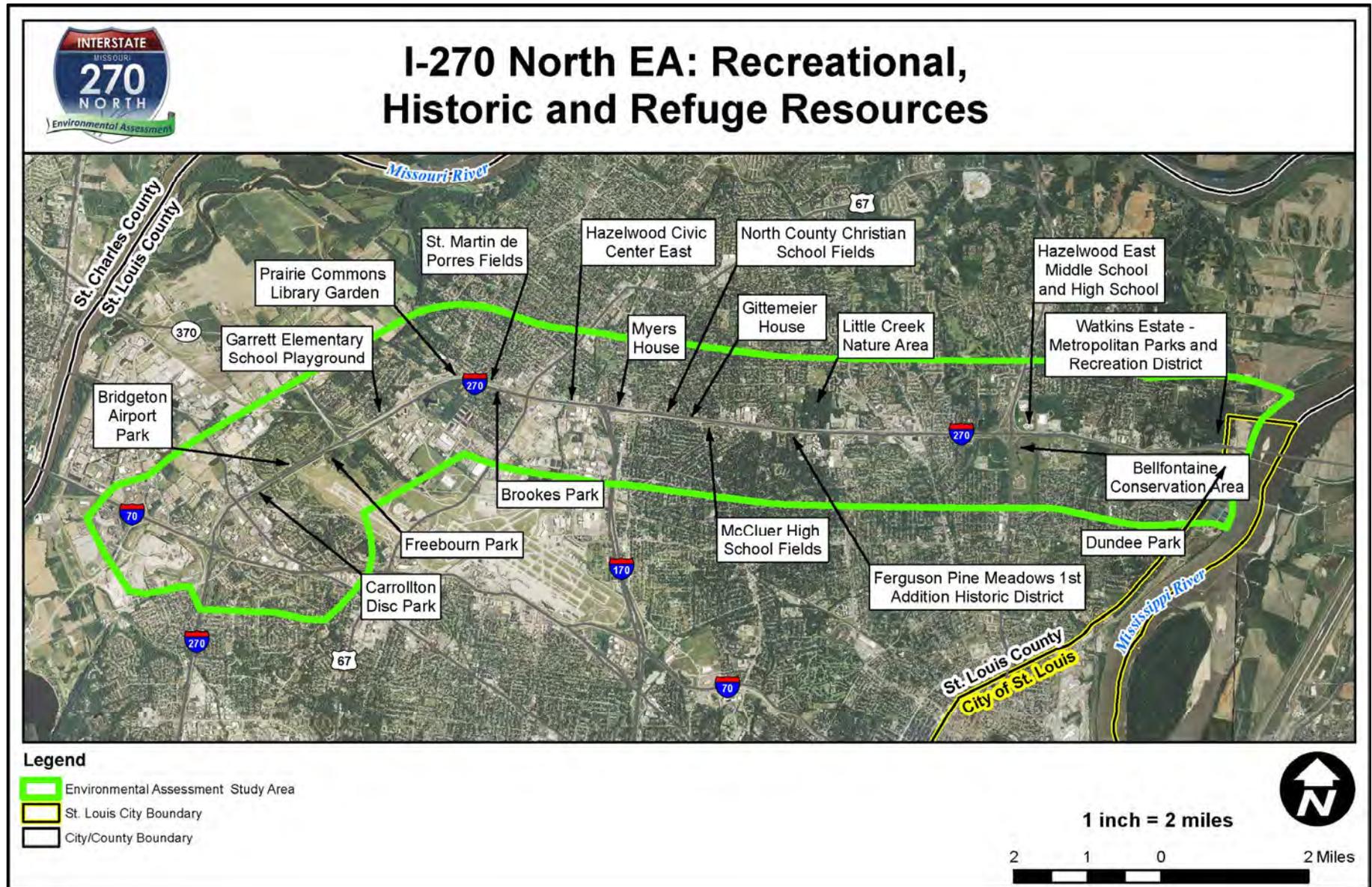
## 5 4.16 Section 6(f)

### 6 4.16.1 Section 6(f) — Regulatory Background and Standards

7 Section 6(f) of the Land and Water Conservation Fund (LWCF) Act of 1965 (16 U.S. Code [USC] 4601-4 to  
8 4601-11) protects recreational lands purchased or improved using funding from LWCF. Any conversion of  
9 Section 6(f) lands for highway right-of-way must be compensated with replacement lands of equal value,  
10 location, and usefulness.

11 State and local governments often obtain grants through the LWCF Act to acquire or make improvements to  
12 parks and recreation areas. Section 6(f) of this act prohibits the conversion of property acquired or  
13 developed with these grants to a non-recreational purpose without the approval of the U.S. Department of  
14 the Interior's (DOI's) National Park Service. Section 6(f) directs the DOI to ensure that replacement lands of  
15 equal value, location, and usefulness are provided as a condition of such conversions.

16



1  
2

Figure 4-15. Recreational, Historic and Refuge Resources

## 1 4.16.2 Section 6(f) — Affected Environment

2 Coordination with MDNR was used to identify Section 6(f) resources in proximity to the I-270 North EA  
3 study area.

4 Based on a review of the LWCF database, the only Section 6(f) property is the Carrollton Disc Golf course in  
5 Bridgeton. The facility is managed by the City of Bridgeton and is located on the Lambert Airport buy-out  
6 area. The location of the Carrollton Disc Golf course is visible on **Figure 4-16** and **Exhibit 1**, Sheet 2 of 13 in  
7 **Appendix A**. Hole #8 is closest to I-270. At this location, the course is immediately adjacent to the chain-link  
8 right-of-way fence.

9 No other Section 6(f) resources were identified in proximity to the I-270 North EA study area.



10

11 Figure 4-16. Typical Views of the Carrollton Disc Park — the Welcome Sign, the Land and Water Conservation Fund Funding  
12 Sign, and the Proximity of the Course to I-270

## 13 4.16.3 Section 4(f) — Impacts

### 14 4.16.3.1 No-Build Alternative Impact Summary

15 The No-Build Alternative would have no direct effect on the Section 6(f) properties identified within the  
16 study area. No construction would occur on or in proximity to the properties that would directly affect  
17 the resources.

### 18 4.16.3.2 Build Alternatives Impact Summary

19 Near the Carrollton Disc Golf course, the Reasonable Alternatives are contained within the existing I-270  
20 right-of-way. Consequently, the Reasonable Alternatives would have no direct effect on Section 6(f)  
21 properties. No construction would occur on or in proximity to the properties that would directly affect  
22 the resources.

## 23 4.17 Socio-Economic Resources

### 24 4.17.1 Socio-Economic Resources — Regulatory Background and Standards

25 The Council on Environmental Quality's (CEQ's) Regulations for Implementing the Procedural Provisions of  
26 the National Environmental Policy Act point-out that the human environment is to be interpreted  
27 comprehensively to include the natural and physical environment and the relationship of people with that  
28 environment. The CEQ Regulations also contain provisions where economic or social and natural or physical  
29 environmental effects are interrelated. Consequently, NEPA documents will discuss/disclose all of these  
30 effects on the human environment. This section will discuss/disclose the socio-economic conditions within  
31 this large study area.

## 1 4.17.2 Socio-Economic Resources — Affected Environment

### 2 4.17.2.1 Household Income

3 For the census tracts within the study area, the median household income (the value at the midpoint of the  
4 population, where half of the population is above and half is below) is around \$46,000 per year, ranging  
5 from around \$21,000 per year to \$63,000 per year by census tract (**Table 4-23**). The average household  
6 income is \$54,275 per year, and ranges from around \$29,000 to \$100,000 per year by tract. Both the median  
7 and average household income is notably less than St. Louis County as a whole.

**Table 4-23. Household Income**

Population	Median Income	Average Income
St. Louis County	\$58,485	\$84,081
St. Louis City	\$34,384	\$49,735
St. Charles County	\$71,416	\$84,007
I-270 North EA Study Area	\$45,917	\$54,275

Source: U.S. Census Bureau, American Fact Finder, <http://factfinder2.census.gov>

### 8 4.17.2.2 Employment Rates

9 Based on the 2008 through 2012 estimates in the U.S. Census Bureau, American Community Survey, the  
10 communities in the study area have a labor force that comprises approximately 67 percent of the total  
11 population aged 16 years or older. Approximately 9 percent of the labor force in these communities is  
12 unemployed, compared with approximately 5.6 percent for St. Louis County as a whole (**Table 4-24**).

### 13 4.17.2.3 Types of Employment and Notable Employers

14 Educational services and health care and social assistance industries employ the largest percentage of  
15 people in the affected communities (about 26 percent), followed by arts, entertainment, recreation, and  
16 accommodation and food services (12 percent); professional, scientific, and management, and  
17 administrative services (11 percent); retail (10 percent); and manufacturing (9 percent). Although at slightly  
18 different percentages, these same industries are the top employers for St. Louis County as a whole.

19 Healthcare is a leading-edge industry in the study area. The Christian Hospital in the northwestern quadrant  
20 of the I-270/MO 367 interchange employs more than 2,500 people. The DePaul Health Center in the  
21 northeastern quadrant of the I-270/I-70 interchange employs approximately 2,300 people. Other major  
22 employers in the study area include American Airlines, Boeing, Emerson, Ford, GKN, IBM, UPS, and Lambert  
23 Saint Louis International Airport, which employs more than 11,000 people.

24 Larger industrial and office parks, with a number of heavy and light industries are located near the  
25 interchanges at I-70, James McDonnell Boulevard, Lindbergh Boulevard, and I-170. Large retail centers are  
26 located near these same interchanges, as well as at the Washington Street, West Florissant Avenue, Halls  
27 Ferry Road, and Bellefontaine Road interchanges.

**Table 4-24. Employment in the Study Area**

	All Communities in Study Area		St. Louis County, Missouri	
	Total Persons in Category	Percentage of Total	Total Persons in Category	Percentage of Total
<b>EMPLOYMENT STATUS</b>				
Population 16 years and over	414,337		795,958	
In labor force	276,996	66.85%	533,564	67.0%
Civilian labor force	276,661	66.77%	532,730	66.9%
Employed	239,546	57.81%	487,834	61.3%
Unemployed	37,115	8.96%	44,896	5.6%
Armed Forces	335	0.08%	834	0.1%
Not in labor force	137,341	33.15%	262,394	33.0%
<b>INDUSTRY</b>				
Agriculture, forestry, fishing and hunting, and mining	774	0.32%	2,074	0.4%
Construction	10,099	4.22%	21,501	4.4%
Manufacturing	21,793	9.10%	49,753	10.2%
Wholesale trade	6,058	2.53%	15,540	3.2%
Retail trade	24,577	10.26%	54,740	11.2%
Transportation and warehousing and utilities	12,478	5.21%	21,857	4.5%
Information	6,230	2.60%	12,695	2.6%
Finance and insurance, and real estate, rental, and leasing	16,875	7.04%	45,414	9.3%
Professional, scientific, and management, and administrative and waste management services	26,416	11.03%	60,093	12.3%
Educational services and health care/social assistance	61,248	25.57%	122,242	25.1%
Arts, entertainment, and recreation, and accommodation and food services	28,631	11.95%	43,888	9.0%
Other services, except public administration	12,237	5.11%	22,897	4.7%
Public administration	12,130	5.06%	15,140	3.1%

Source: U.S. Census Bureau, American Fact Finder, 2014, <http://factfinder2.census.gov>

### 1 4.17.3 Socio-Economic Resources — Impacts

#### 2 4.17.3.1 No-Build Alternative Impact Summary

3 The No-Build Alternative would affect no employers and would have no direct impact on the local economy  
4 and household income.

#### 5 4.17.3.2 Build Alternatives Impact Summary

6 The Reasonable Alternatives will not directly affect any major employers identified in the study area. The  
7 reconstruction of some interchanges may have a temporary effect on commuters and freight delivery, but  
8 access to all major employers will remain open through construction.

9 Neither alternative would acquire large commercial facilities (such as shopping centers or department  
10 stores), so that most commerce will remain in the area. Roadway improvements will be designed to  
11 minimize impacts to access drives and traffic movement to and from the commercial operations along  
12 frontage roads and cross roads.

13 The Reasonable Alternatives will acquire select commercial properties. As described in **Section 4.13, Right of**  
14 **Way**, all commercial businesses will be relocated in accordance with the relocation procedures established  
15 in the Uniform Act, and there are ample properties for the relocation of these commercial businesses in the  
16 immediate vicinity. Searches for commercial properties similar to those that could be relocated found retail  
17 availability through the area. Within Florissant, Bridgeton, and Hazelwood, 35 office sites are currently  
18 available and 102 retail sites are available. It appears that adequate replacement facilities would be  
19 available for those displaced because of the project. Redevelopment within the immediate area is also  
20 possible. Based on the extent of available properties, the relocations are expected to be readily absorbed  
21 into the local market.

## 22 4.18 Travel Patterns

### 23 4.18.1 Travel Patterns — Regulatory Background and Standards

24 The Missouri Department of Transportation (MoDOT), in cooperation with the Federal Highway  
25 Administration (FHWA), proposes improving this portion of I-270. This portion of the I-270 corridor is vital to  
26 serving the greater St. Louis regional transportation demands including commuters, transit, and local and  
27 national freight movements.

28 I-270 is the primary ring road around Saint Louis, connecting many population and employment centers in  
29 the region. The I-270 North corridor is predominately an eight-lane Interstate facility with auxiliary lanes  
30 between interchanges. Beginning on the west end of the study area and progressing east, I-270 transitions  
31 from eight basic lanes to six lanes at Lindbergh Boulevard and then to four lanes at Lilac Avenue. It is a  
32 regional and national freight route as well as a heavily used commuter corridor. Trucks traveling from the  
33 west on I-70 to points east and north generally use I-270. From a commuter perspective, I-70 and MO 370  
34 bring commuters from Saint Charles County to the I-270 corridor; I-170 distributes commuters to Clayton  
35 and other points toward the City Center. MO 367 connects St. Louis City with Alton, Illinois. Other major  
36 roadways linked by I-270 include St. Charles Rock Road, McDonnell Boulevard/Howdershell Road,  
37 US 67/Lindbergh Boulevard, Hanley Road/Graham Road, New Florissant Road (Route N), West Florissant  
38 Avenue, and New Halls Ferry Road, which serve Bridgeton, Hazelwood, Florissant, and numerous other  
39 local municipalities. The predominant traffic flow is westbound in the morning and eastbound in  
40 the afternoon.

## 1 4.18.2 Travel Patterns — Affected Environment

### 2 4.18.2.1 Access Justification

3 In conjunction with the I-270 North EA, an I-270 North AJR was  
4 prepared. The investigation of the problems facing I-270 uncovered  
5 the need to modify or consolidate interchange operations to improve  
6 the corridor's operations and safety. The AJR was completed in  
7 compliance with federal policy on modifications in access to the  
8 Interstate system. The AJR is available upon request.

9 The purpose of the AJR is to request conceptual approval for  
10 modifications in interchange access on the I-270 corridor within the  
11 limits of the study area. There are 8 requirements for an AJR  
12 pursuant to the Federal Highway Administration's Policy and  
13 Procedures for New or Revised Interstate Access Approval in  
14 Missouri (August 2010). The eight requirements (and the major  
15 findings) include:

- 16 • Existing and Future No-Build Operational and Safety Analysis:  
17 Overall traffic will increase by just over 20 percent by the year  
18 2040. Over 13,000 total crashes with 243 fatalities or disabling  
19 injuries are predicted for the mainline I-270 corridor over a 20-  
20 year period.
- 21 • Transportation System Management and Alternatives Analysis:  
22 The Preferred Alternative meets the performance measures  
23 developed prior to the development of the project alternatives  
24 and performs better than other Reasonable Alternatives.
- 25 • Future Build Operational and Safety Analysis: The Level of Service on mainline I-270 is reported at LOS D  
26 or better. The Preferred Alternative is anticipated to have nearly 20 percent fewer crashes than the No-  
27 Build.
- 28 • Access Connections and Design: The Preferred Alternative will generally provide the same access as the  
29 existing conditions while improving the operations and safety of the corridor.
- 30 • Consistency with Transportation Plans: The Preferred Alternative will be planned and constructed  
31 consistent with local and regional planning efforts and land use plans for the state, the St. Louis region,  
32 St. Louis County and St. Louis City.
- 33 • Consistency with Future Access Plans: There are no proposed or committed plans to add any new  
34 interchange access to I-270 within the study area for the proposed project.
- 35 • Coordination with Future Development: Appropriate coordination has occurred between existing and  
36 planned development, area stakeholders and the proposed I-270 transportation system improvements.
- 37 • Coordination with the NEPA Process: The NEPA process is anticipated to be complete in December 2016.

### 38 4.18.2.2 Multi-Modal Resources

39 According to Metro Transit, transit ridership and demand in northern St. Louis County is high and growing.  
40 They also find it difficult to effectively serve the type of low-density residential neighborhoods that exist in  
41 North County. Potential customers often have to walk farther to access a bus stop and vehicles must travel  
42 farther to pick up fewer riders. However, Metro Transit believes that these communities are becoming  
43 increasingly more transit dependent, especially as older residents continue to age in place and fewer  
44 households own an automobile.



### Access Justification Report

An AJR was prepared in compliance with federal policy on modifications in access to the Interstate system. Relative to the Preferred Alternative:

- The one-way outer road system between Hanley/Graham Road and Old Halls Ferry Road best improves the traffic operations and safety of the corridor.
- The Preferred Alternative does not have an adverse impact on the safety and operation of the Interstate facility or on the local street network based on both the current and the planned future traffic projections.
- Freeway and intersection LOS, network delay and speeds, and number of crashes are all anticipated to improve compared to the No-Build Alternative.

1 Metro Transit also currently operates 14 routes dedicated to the North County service area. *Feeder routes*  
 2 collect riders from lower-density residential neighborhoods and move them to transfer points where they  
 3 can catch express routes or other direct routes to high-demand destinations, such as Downtown Saint Louis,  
 4 Clayton, or a MetroLink station. The feeder routes that directly affect I-270 include #27 North County  
 5 Shuttle, #36 Spanish Lake, #44 Hazelwood, #45 Ferguson-Florissant, and #75 Lilac-Hanley. *Corridor routes*  
 6 provide access to apartment complexes, jobs, shopping, schools, and other services that tend to be located  
 7 along major arterials. The corridor routes that directly affect I-270 include #35 Rock Road, #47 North Hanley,  
 8 and #74 Florissant. *Employer routes* are designed to specifically service regional employment centers or  
 9 other geographic job clusters. The #34 Earth City circulates between numerous job sites and crosses I-270  
 10 via I-70. *Express and limited-service routes* meet consumer demand for rush hour commuting with express  
 11 bus service. In the study area, these include #36X Bissell Hills Express, #174X Halls Ferry Express, and  
 12 #66 Clayton-Airport.



Figure 4-17. Metro North County Transit Center during Construction

In addition to the buses using the I-270 corridor, there are numerous bus stops. In general, these are along Dunn Road and Pershall Drive—often very close to the road. The extent of the bus stations within the study area are shown on **Exhibit 3 (Appendix A)**. Sidewalks along Dunn Road consist of a number of discontinuous segments. The majority of the sidewalks in place are set back from the edge of shoulder and provide no connection to the shoulders. Bus stops are located in some areas with offset sidewalk or no sidewalk. As a result, the transit riders must use the shoulder of Dunn Road as a place of refuge while they wait for the bus to arrive. Narrow shoulders providing the only service to accommodate pedestrian access to bus stops is a

29 problem along the corridor. There are no sidewalks along the road on either side of Pershall Drive. The  
 30 shoulders are being used to accommodate pedestrians.

31 To better serve the needs of this area of the region, Metro Transit purchased land for the Metro North  
 32 County Transit Center and Maintenance Facility. The site is located at 3140 Pershall Drive, between West  
 33 Florissant Avenue and New Halls Ferry Road. The 3-acre site is the seventh MetroBus center (**Figure 4-17**)  
 34 and the third with a climate-controlled waiting area. Amenities include the following:

- Indoor, climate-controlled waiting area
- Public restrooms
- Concession area
- Digital messaging boards
- Ten MetroBus bays
- Two Call-A-Ride bays
- Park-ride spaces for customers
- Bus maintenance area
- Dispatch center

### 35 4.18.3 Travel Patterns — Impacts

#### 36 4.18.3.1 No-Build Alternative Impact Summary

37 The No-Build Alternative would maintain existing traffic patterns. The study's AJR discusses the  
 38 consequences of the No-Build Alternative.

39 The No-Build Alternative would have no direct effect on the multi-modal operations within the study area.  
 40 No construction would occur on or in proximity to the properties that would directly affect the resources.

### 1 4.18.3.2 Build Alternatives Impact Summary

2 The AJR examines I-270 in several ways, including traffic operations, safety, access connections, and design.  
3 The AJR will be summarized in the following subsections.

#### 4 **Traffic Operational and Safety Analysis**

5 Within the AJR, the analysis of operations and safety must conclude that the proposed changes to the  
6 Interstate system will not have a substantial adverse impact on the mainline lanes, ramps, ramp  
7 intersections, or on the local street network. The analysis must be based on the current and the planned  
8 future traffic projections.

9 Within the analysis, each Reasonable Alternative considered the different interchange types and the  
10 different outer road system configurations. The committed Long-Range Transportation Plan projects were  
11 incorporated. The basic through-lane structure of four lanes in each direction from I-70 to MO 367 and three  
12 lanes in each direction from MO 367 to the east into Illinois was used (the use of auxiliary lanes varies).  
13 Traffic forecasts used an origin-destination matrix, with the starting and ending points of all future trips held  
14 constant among the alternatives. However, the path between these points could change based on changes  
15 to the roadway network. VISSIM software was used to analyze and compare alternatives.

16 Relative to AM Peak Hour Traffic Operations, both alternatives are able to fix the bottlenecks that exist in  
17 the current network by lengthening ramps, reconfiguring interchanges, eliminating or lengthening weaves,  
18 or adding lanes. Reasonable Alternative 1 is able to improve LOS to D or better for the freeway and for  
19 intersections throughout the study corridor. Reasonable Alternative 2 is able to achieve the same except at  
20 the westbound on-ramp from Missouri Bottom Road.

21 Relative to PM Peak Hour Traffic Operations, other than congestion at Washington and Derhake, along with  
22 New Halls Ferry and Pershall Road, both alternatives are able to improve the bottlenecks that exist in the  
23 current network by lengthening ramps, reconfiguring interchanges, eliminating or lengthening weaves, or  
24 adding lanes. Reasonable Alternatives 1 and 2 show some LOS F segments on I-70 and I-170, but these  
25 conditions are not congested enough to limit the traffic getting to I-270 for analysis. All LOS on mainline  
26 I-270 is reported at LOS D or better. Both Reasonable Alternatives show LOS F conditions at the Washington  
27 and Derhake intersection.

28 To determine the pros and cons of a one-way versus two-way outer road system, travel times were  
29 considered to and from 17 key locations. For each location, travel times were calculated to and from I-270 at  
30 Lindbergh Boulevard and at MO 367. This data shows that due to the one-way outer roads, there is some  
31 out direction travel evidenced by additional total distance, but only by about 4 percent. Despite the longer  
32 distance, however, the one-way outer roads have less total travel time and a higher average speed, due to  
33 better operations and less congestion on the one-way roads.

34 Network measures of effectiveness were collected from the VISSIM model for the two Reasonable  
35 Alternatives. According to the measures of effectiveness, Reasonable Alternative performance improves  
36 compared to the No-Build Alternative. The average speed for all roadways improved over the No-Build  
37 Alternative, but also improved over existing average speeds, even with 27 years of traffic growth.  
38 Reasonable Alternative 1 showed the best network-wide performance.

#### 39 **Access Connections**

40 Within the AJR, the analysis of access must conclude that the proposed changes to the Interstate system will  
41 provide for all traffic movements.

42 The Preferred Alternative offers modifications of interchanges along the corridor to improve capacity,  
43 safety, and accessibility, with the only substantial access modification occurring at Old Halls Ferry Road  
44 (consolidation of access with New Halls Ferry Road). The existing interchanges located from Hanley/Graham  
45 Road to Bellefontaine Road feature slip ramps on the north side to and from Dunn Road. The slip ramps  
46 onto the two-way outer road result in more conflict points than a one-way outer road that may impact

1 safety. The Preferred Alternative through this section of the corridor will feature one-way outer roads with  
 2 slip ramp access from Hanley/Graham Road to Old Halls Ferry Road to reduce conflict points and improve  
 3 safety and performance.

#### 4 **Multi-Modal Impacts**

5 Multi-modal impacts will fall into two broad categories—traffic pattern alterations affecting vehicles and  
 6 infrastructure alterations more directly affecting individuals.

#### 7 **Traffic Pattern Alterations**

8 The analysis of operations and safety concluded that the proposed changes to the Interstate system would  
 9 not have a substantial adverse impact on the mainline lanes, ramps, ramp intersections, or the local street  
 10 network.

11 To determine the pros and cons of a one-way versus two-way outer road system, travel times were  
 12 considered. This data shows that due to the one-way outer roads, there is some out direction travel  
 13 evidenced by additional total distance. The increased travel was considered low (about 4 percent). Despite  
 14 the longer distance, the one-way outer roads have a lower total travel time and a higher average speed, due  
 15 to better operations and less congestion on the one-way roads.

16 Coordination with Metro Transit suggests, “A one-way outer road system could potentially add  
 17 approximately \$800,000 to Metro Transit’s annual operating costs and increase travel time and transfer  
 18 fares for customers living/working along the one-way road sections.” As discussed in **Section 6**, Metro staff  
 19 served on the study’s Technical Advisory Committee. As engaged members of the Committee, throughout  
 20 the study, Metro’s staff played an important role in helping to determine how best to minimize adverse  
 21 impacts to Metro’s bus operations on the corridor. Nevertheless, the analysis in support of Metro’s  
 22 operations in a converted one-way outer road system showed an impact of approximately \$800,000 to  
 23 Metro Transit’s annual operating costs and increase travel by 300 miles per day. As the project progresses,  
 24 MoDOT is committed to investigating any modifications that might improve the situation. Our  
 25 Environmental Commitments, relative of Metro Transit, is for construction coordination (#1), acquisition and  
 26 relocation assistance in accordance with the Uniform Act (#12) and impact minimization (#16).

#### 27 **Infrastructure Alterations**

28 As discussed previously, the Reasonable Alternatives presented in this document are interchangeable. They  
 29 also represent the “worst-case” yet reasonable scenario for likely impacts of the project, and offer a  
 30 footprint within which any number of reasonable options might be proposed. The alternatives offered in this  
 31 document do not limit the specific design features that may be included in a Preferred Alternative. However,  
 32 the footprint used within the environmental analysis is expected to accommodate the alternatives that  
 33 future designers may propose.

34 Relative to multi-modal operations, the intersection types, sidewalk configurations, and pedestrian facilities  
 35 will greatly influence the operation of multi-modal movements. The detailed engineering will focus on how  
 36 this infrastructure will be configured to achieve the project’s relevant performance measures.

## 37 4.19 Visual Resources

### 38 4.19.1 Visual Resources — Regulatory Background and Standards

39 The methodology for the analysis of visual resources is governed by FHWA DOT-FH-11-9694 and American  
 40 Society of Landscape Architects visual assessment guidelines. Field investigations and photographic analysis  
 41 were the primary techniques used to assess visual resources. The analysis focused on viewers and the visual  
 42 resources that appear within their viewshed or angle of view.

1 The visual analysis of an environment is composed of two sections. First, the project setting is discussed.  
 2 This includes evaluating the regional landscape, the landscape units, and the project viewsheds. Second, the  
 3 existing visual resources, viewer groups and viewer responses are examined.

4 This subsection describes the existing visual resources and impacts that result from the construction,  
 5 operation, and maintenance of the study area. This subsection also describes the type and quality of  
 6 sensitive viewers located near the study area. Visual resource impacts were identified as they relate to  
 7 potentially sensitive viewpoints.

## 8 4.19.2 Visual Resources — Affected Environment

### 9 4.19.2.1 Introduction and Important Terms

10 The criteria used to determine visual quality ratings are vividness, intactness, and unity. None of these  
 11 criteria are individually equal to the visual quality and all three criteria must rate high to indicate high  
 12 visual quality:

- 13 • Vividness is the visual power of the landscape components as they combine to form distinctive  
 14 visual patterns.
- 15 • Intactness is the visual integrity of the landscape, natural or human-made, and its freedom from  
 16 encroaching elements.
- 17 • Unity is the ability of the landscape’s individual visual elements to combine in a coherent manner.

18 Visual impact is a function of the viewer’s response to the visual environment. Following are the two  
 19 primary groups of viewers for highway projects:

- 20 • Viewers who use the project facility (views from the road)
- 21 • People who have a view of the project facility from an adjacent viewpoint (views of the road)

### 22 4.19.2.2 Visual Resources in the Study Area

23 The visual landscape is a combination of various factors, including landform, land cover, vegetation, and  
 24 human-made developments. For this study, the landform is generally flat within the exception of the area  
 25 surrounding the four creeks found within the study area. The land cover varies depending on the location  
 26 within the study area. The vegetation in the study area is sporadic. The human-made developments vary  
 27 greatly throughout the study area. The blocky nature of urban development tends to limit views.

28 The visual impacts of a project can be varied because the areas are visually distinct. The study area can be  
 29 divided into several landscape units or “outdoor rooms” containing similar visual characteristics. The  
 30 boundaries of these landscape units occur where there is a change in the visual character of the area.  
 31 There are two main determinations of the visual boundaries of these landscape units—topography and  
 32 landscape components. Topography is the relief or the terrain of an area. Landscape components are  
 33 anything located above the surface of an area such as vegetation, streams, buildings, and roads.

34 The following landscape units were determined through the review of Digital Elevation Models, recent aerial  
 35 photography, and onsite surveys:

- 36 • **Lambert Airport Area**—Lambert Airport is located across a large area between St. Charles Rock Road  
 37 and MO 370. This area is characterized by a mix of commercial, light industrial, and abandoned  
 38 residential land uses. See **Figure 4-18**.
- 39 • **McDonnell Boulevard Industrial Park**—The Mallinckrodt Pharmaceuticals headquarters is in the  
 40 southeastern corner of the I-270/McDonnell Boulevard interchange. This area is a typical campus setting  
 41 with large buildings and broad lawns/ponds.

- 1 • **Brookes Park**—This community park is in the southwestern corner of the I-270/Lindbergh Boulevard  
2 interchange. This area is characterized by the park and adjacent residential areas.
- 3 • **Bellefontaine Conservation Area**—The area is in the southeastern corner of the I-270/MO 367  
4 interchange. The area is predominantly grassland and small ponds. The highways are clearly visible in  
5 the existing landscape.
- 6 • **Mississippi River**—At the eastern end of the study area is the Mississippi River. The river is over  
7 3,000 feet wide at this spot. The river is roughly at an elevation 400 feet above mean sea level. The river  
8 is bordered by a narrow and steep bluff, in some places exceeding 100 feet high.

### 9 4.19.3 Visual Resources — Impacts

#### 10 4.19.3.1 No-Build Alternative Impact Summary

11 The No-Build Alternative would not alter the visual environment within the study area.

#### 12 4.19.3.2 Build Alternatives Impact Summary

##### 13 Lambert Airport Area

14 Differences among the Reasonable Alternatives, relative to visual impacts, are minimal. This subsection  
15 summarizes the visual resource impacts that may result from the construction, operation, and maintenance  
16 of the study area.

- 17 • **Orientation:** Lambert Airport is located across a large area between St. Charles Rock Road and MO 370.  
18 This area is characterized by a sparse mix of commercial, light industrial, and abandoned residential land  
19 uses.
- 20 • **Existing Visual**  
21 **Quality/Character:** From this  
22 view (from the Gist Road  
23 overpass), few airport elements  
24 are visible. In the background of  
25 **Figure 4-19** is the border fence  
26 for the airport. A few pieces of  
27 infrastructure are visible.
- 28 • **Proposed Project Features:** At  
29 this location, I-270 work is  
30 limited to widening (adding  
31 through-lanes).
- 32 • **Change to Visual Quality/  
33 Character:** Views to and from  
34 I-270 and Lambert Airport are  
35 almost completely obscured by  
36 existing topography.
- 37 • **Viewer Response:** Viewers are  
38 extremely limited.
- 39 • **Resulting Visual Impact:** The Reasonable Alternatives will have almost no impact.



Figure 4-18. Lambert Airport Area

##### 40 McDonnell Boulevard Industrial Park

- 41 • **Orientation:** The Mallinckrodt Pharmaceuticals headquarters is located in the southeast corner of the  
42 I-270/McDonnell Boulevard interchange.

1 • **Existing Visual Quality/  
2 Character:** This area is a typical  
3 campus setting with large  
4 buildings and broad lawns/ponds  
5 **(Figure 4-19)**. There are direct  
6 and unobstructed views  
7 between the landscaped  
8 industrial park and I-270.



Figure 4-19. McDonnell Boulevard Industrial Park

9 • **Proposed Project Features:** The  
10 McDonnell interchange will be  
11 reconstructed. However, all  
12 Reasonable Alternatives will  
13 maintain the basic configuration  
14 on the southeastern quadrant.

15 • **Change to Visual Quality/  
16 Character:** Removal of  
17 vegetation, from within the  
18 right-of-way only, is expected.  
19 No new right-of-way acquisition  
20 is proposed. New elements will  
21 include standard roadway features such as fencing. New signage may be visible from some vantages.  
22 The roadway configuration will appear unaltered.

23 • **Viewer Response:** Viewers from the campus to the roadway are expected to be most sensitive to any  
24 project changes. Large-scale usage of the grounds was not in evidence. The few walker/joggers are not  
25 expected to find the changes disagreeable.

26 • **Resulting Visual Impact:** Overall, the visual quality impact on this view may be marginally negative. The  
27 visual qualities of intactness and unity may be affected by the additional elements (signs and fences)  
28 and by the removal of vegetation from within the existing I-270 right-of-way.

29 **Brookes Park**

30 • **Orientation:** Brookes Park is a community park in the southwestern corner of the I-270/Lindbergh  
31 interchange.

32 • **Existing Visual Quality/Character:** The park includes historic structures, grass lawns play areas, and a  
33 gazebo. It is bordered by I-270, large car dealerships, and single-family residences.

34 • **Proposed Project Features:** The Lindbergh Boulevard interchange will be reconstructed. However, all  
35 Reasonable Alternatives will maintain the basic configuration on the southwestern quadrant. No right-  
36 of-way acquisition is required.

- 1 • **Change to Visual**  
 2 **Quality/Character:** Removal of  
 3 vegetation, from within the right-  
 4 of-way only, is expected. As is  
 5 visible in **Figure 4-20**, the  
 6 vegetative hedge between the  
 7 park and I-270 is relatively  
 8 meager. Its removal may result in  
 9 a noticeable change to the visual  
 10 environment. I-270N may be  
 11 more visible to park users. It is  
 12 unlikely that attendant roadway  
 13 elements (fences and signs) will  
 14 be visible. The roadway  
 15 configuration will appear  
 16 unaltered. A noise barrier would  
 17 eliminate this change.

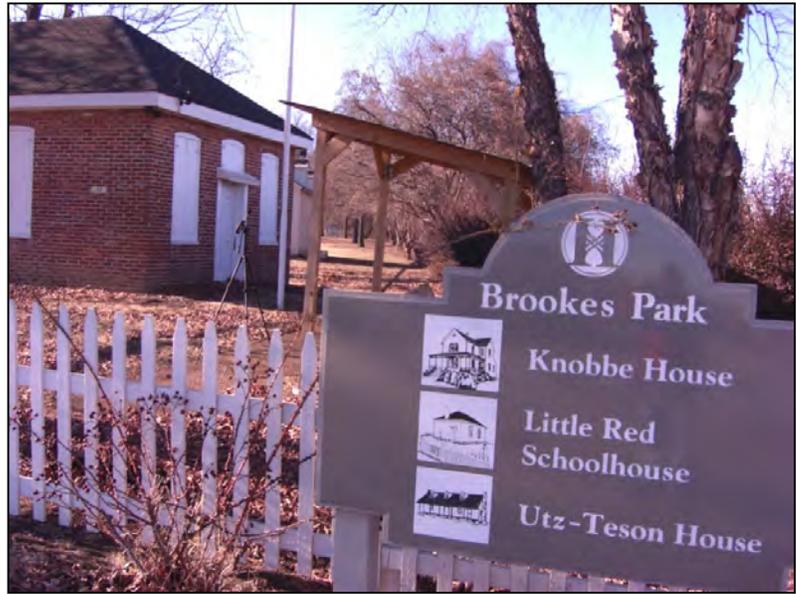


Figure 4-20. Brookes Park

- 18 • **Viewer Response:** Viewers from  
 19 the park are expected to be  
 20 sensitive to changes opening the views to the roadway. A fence/ visual barrier is expected to be  
 21 preferable.
- 22 • **Resulting Visual Impact:** Overall, the visual quality impact on this view may be marginally negative.

### 23 Bellefontaine Conservation Area

- 24 • **Orientation:** The Bellefontaine Conservation Area is in the southeastern corner of the I-270/MO 367  
 25 interchange.
- 26 • **Existing Visual**  
 27 **Quality/Character:** The area is  
 28 predominantly grassland and  
 29 small ponds. There are parking  
 30 lots and a limited amount of  
 31 walking trails. Access to  
 32 unimproved areas is difficult  
 33 because of the scrubby nature of  
 34 the vegetation. I-270 and  
 35 MO 367 are clearly visible in the  
 36 existing landscape. **Figure 4-21**  
 37 shows the nearest cloverleaf  
 38 ramp to the most remote area of  
 39 usage. The elevated portion of  
 40 the ramp is clearly visible.

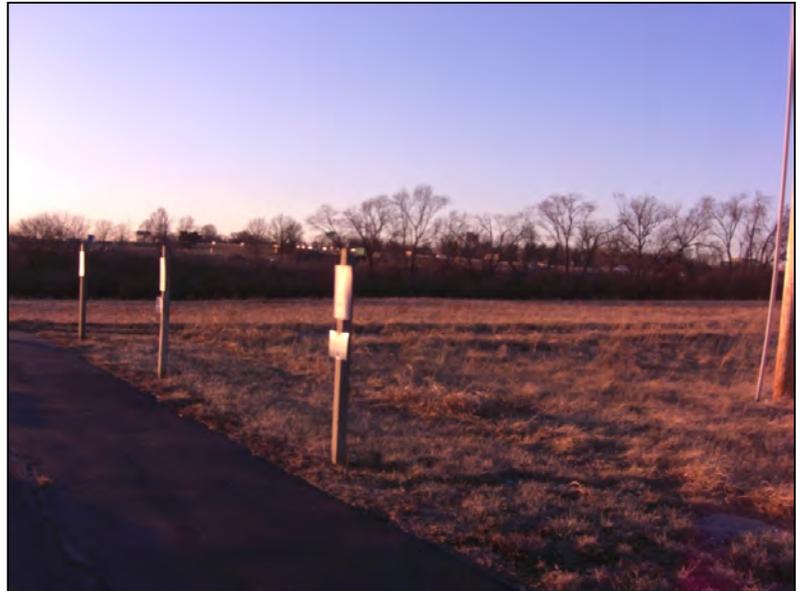


Figure 4-21. Bellefontaine Conservation Area

41 **Proposed Project Features:** The  
 42 MO 367 interchange will be  
 43 reconstructed. The existing  
 44 cloverleaf interchange will be altered. In the quadrant adjacent to the Bellefontaine Conservation Area, the  
 45 loop ramp will be replaced by a fly-over ramp. The fly-over ramp will have to be tall enough to cross over  
 46 both MO 367 and I-270. This will make it more visible. The nearest ramp to the Bellefontaine Conservation  
 47 Area, the ramp from northbound MO 367 to EB I-270, will remain unchanged.

- 1 • **Change to Visual Quality/Character:** The fly-over ramp will be more visible to park users. The distances  
2 involved makes its impact muted.
- 3 • **Viewer Response:** Viewers from the park are expected to be most sensitive to changes. Roadway views  
4 exist currently. The anticipated changes are not expected to be troublesome.
- 5 • **Resulting Visual Impact:** Overall, the visual quality impact on this view may be marginally negative.

6 **Mississippi River**

- 7 • **Orientation:** At the eastern end of the study area is the Mississippi  
8 River (**Figure 4-22**). The river is  
9 over 3,000 feet wide at this spot.  
10 The river is roughly at an elevation  
11 400 feet above mean sea level.  
12 The river is boarded by a narrow  
13 and steep buff, up to an elevation  
14 of over 500 feet.
- 15 • **Existing Visual Quality/ Character:**  
16 Views in this area vary greatly  
17 from roadway elements, river  
18 commerce infrastructure,  
19 floodway elements, and wooded  
20 bluffs.
- 21 • **Proposed Project Features:** At this  
22 location, I-270 work is limited to  
23 reconstructing the existing  
24 Riverview Drive interchange.



Figure 4-22. Mississippi River from I-270

- 25 • **Change to Visual**  
26 **Quality/Character:** The limitations imposed by the existing bridge limit the alterations possible to the  
27 roadway.
- 28 • **Viewer Response:** Viewers are extremely limited. The primary view will be from the Old Chain of  
29 Rocks Bridge.
- 30 • **Resulting Visual Impact:** Because of the limitations imposed by the existing bridge, the visual impacts  
31 are expected to be low.

33 **4.20 Water — Floodplains**

34 Floodplains are low-lying, flat, or nearly flat areas of land adjacent to rivers, streams, and other water  
35 courses, that are periodically inundated with water due to natural events.

36 **4.20.1 Floodplains — Regulatory Background and Standards**

37 The Federal Emergency Management Agency (FEMA) under the National Flood Insurance Program (NFIP)  
38 prepares Flood Insurance Rate Maps to identify areas that are prone to flooding. These maps show the limits  
39 of the regulatory floodway, the 100-year floodplain, and the 500-year floodplain. A regulatory floodway is  
40 defined as the channel of a river or other watercourse and the adjacent land areas that must be reserved to  
41 discharge the base flood (typically, the 100-year flood) without cumulatively increasing the water surface  
42 elevation by more than a designated height. A 100-year flood is defined as a flood that has a 1 percent  
43 chance of being equaled or exceeded in magnitude in any given year. The 100-year floodplain is any area  
44 that would be covered by water during a 100-year flood event. FEMA has mandated that projects can cause

1 “no rise” in the flow within the regulatory floodway, and no more than a 1-foot cumulative rise of the flood  
 2 elevation within the 100-year floodplain. For projects in an incorporated municipality, the local municipality  
 3 issues the floodplain development permits. In the case of projects proposed within regulatory floodways, a  
 4 “No Rise” certificate, if applicable, would be obtained prior to issuance of a floodplain development permit.

5 The State Emergency Management Agency (SEMA) is the agency that operates the flood buyout program in  
 6 the State of Missouri. The purpose of this program is to purchase property developed in the floodplain and  
 7 to remove all structures located on the property. This aids in restoring the floodplain and reducing the  
 8 amount of money paid out as a result of flood insurance claims. Federal money is used to fund the flood  
 9 buyout program, thus other federally funded projects may not be located on property that was purchased as  
 10 part of a FEMA/SEMA flood insurance buyout program. Correspondence with SEMA revealed that there  
 11 were no SEMA-buyout properties located within the I-270 North EA study area.

12 EO 11988, Floodplain Management, directs federal agencies to take action to reduce the risk of flood loss;  
 13 minimize the impact of floods on human safety, health, and welfare; and restore and preserve the natural  
 14 and beneficial values served by floodplains. Federal agencies must provide public notice of proposed actions  
 15 in floodplains and make a finding that there is no practicable alternative before taking action that would  
 16 encroach on a 100-year floodplain.

17 The FHWA floodplain encroachment policy requires the avoidance of longitudinal encroachments wherever  
 18 practicable. If longitudinal floodplain encroachments cannot be avoided, the degree of encroachment  
 19 should be minimized to the extent practicable. Generally, any increase in the 100-year water surface  
 20 elevation produced by a longitudinal encroachment on a NFIP floodplain should not exceed the 1 foot  
 21 allowed by the federal NFIP standards.

## 22 4.20.2 Floodplains — Affected Environment

23 Both St. Louis County and the City of Saint Louis participate in the NFIP and have adopted flood insurance  
 24 studies to identify flood hazards for floodplain management and flood insurance purposes. The current  
 25 100-year floodplain boundaries are shown on **Figure 4-23**. Floodplains that cross the existing portions of  
 26 I-270 are limited. The floodplain distribution can be summarized as follows:

- 27 • The Riverview Drive interchange is entirely within the Mississippi River floodplain.
- 28 • The Cowmire Creek floodplain crosses I-270 at several locations in the vicinity of the St. Charles Rock  
 29 Road interchange and the McDonnell Boulevard interchange.
- 30 • The Coldwater Creek floodplain crosses I-270 between the Lindbergh Boulevard interchange and I-170.
- 31 • The upper portion of the Maline Creek floodplain crosses I-270 in the vicinity of New Halls Ferry and  
 32 Old Halls Ferry Roads.
- 33 • The Watkins Creek floodplain (part of the Maline Creek/Mississippi River watershed—but directly  
 34 discharging to the Mississippi River) crosses I-270 at the Bellefontaine interchange and near  
 35 Riverview Drive.

## 36 4.20.3 Floodplains — Impacts

### 37 4.20.3.1 No-Build Alternative Impact Summary

38 The No-Build Alternative would have no additional impacts on floodplains or floodways. Because no new  
 39 right-of-way would be required, no new floodplain encroachments would occur. Maintenance of existing  
 40 bridges, culverts, parking areas, and multi-use trails within the floodplain would continue and would only  
 41 result in additional encroachments in the floodplain from compliance requirements.

1 **4.20.3.2 Build Alternatives Impact Summary**

2 The Reasonable Alternatives are primarily improvements to the existing infrastructure, thus floodplain  
 3 impacts are expected to be limited. **Table 4-25** summarizes the expected Reasonable Alternative impacts. In  
 4 terms of its ability to preserve the existing amount of floodplain storage, the Reasonable Alternatives are  
 5 considered roughly equivalent.

**Table 4-25. Stream and Floodplain Impact Table**

Reasonable Alternative		Floodplain Impacts
<b>ST. CHARLES ROCK ROAD</b>		
Reasonable Alternative 1	Diverging Diamond Interchange	Nearly identical Cowmire Creek crossings
Reasonable Alternative 2	Diamond Interchange	Nearly identical Cowmire Creek crossings
<b>MCDONNELL BOULEVARD</b>		
Reasonable Alternative 1	Diverging Diamond Interchange	None
Reasonable Alternative 2	Partial Cloverleaf Interchange	Larger footprint within MO 370 interchange will increase work within Cowmire Creek
<b>LINDBERGH BOULEVARD</b>		
Reasonable Alternative 1	Partial Cloverleaf Interchange	None
<b>HANLEY ROAD/GRAHAM ROAD</b>		
Reasonable Alternative 1	Diamond Interchange (One-Way Dunn/Pershall Road)	None
Reasonable Alternative 2	Diamond Interchange (Two-Way Dunn/Pershall Road)	None
<b>NEW FLORISSANT ROAD TO WASHINGTON STREET/ELIZABETH AVENUE</b>		
Reasonable Alternative 1	Split Diamond Interchange (One-Way Dunn/Pershall Road)	Limited culvert extensions for Fountain Creek
Reasonable Alternative 2	Split Diamond Interchange (Two-Way Dunn/Pershall Road)	Larger footprint at New Florissant Road may increase work within Fountain Creek
<b>WEST FLORISSANT AVENUE TO OLD HALLS FERRY ROAD</b>		
Reasonable Alternative 1	Split Diamond Interchange (to Old Halls Ferry — One-Way)	All alternatives have limited culvert extensions of existing culverts within Maline Creek tributaries at New Halls Ferry and Old Halls Ferry Roads; these alternatives have no other impacts
Reasonable Alternative 1a	Split Diamond Interchange (to New Halls Ferry — One-Way)	
Reasonable Alternative 2	Split Diamond Interchange (to New Halls Ferry — Two-Way)	This alternative has a new Dunn Road crossing of Maline Creek, near New Halls Ferry Road
Reasonable Alternative 2a	Split Diamond Interchange (to Old Halls Ferry — Two-Way)	New Dunn Road crossing of Maline Creek and a revised crossing of Maline Creek at Netherton Drive
<b>MO 367</b>		
Reasonable Alternative 1	Partial Cloverleaf Interchange	Limited culvert extensions of existing culverts for Maline Creek tributaries
<b>BELLEFONTAINE ROAD</b>		
Reasonable Alternative 1	Diamond Interchange	New crossing of Watkins Creek for relocated Dunn Road and replacement of existing culverts elsewhere
Reasonable Alternative 2	Partial Cloverleaf Interchange	New crossing of Watkins Creek for relocated Dunn Road and replacement of existing culverts elsewhere

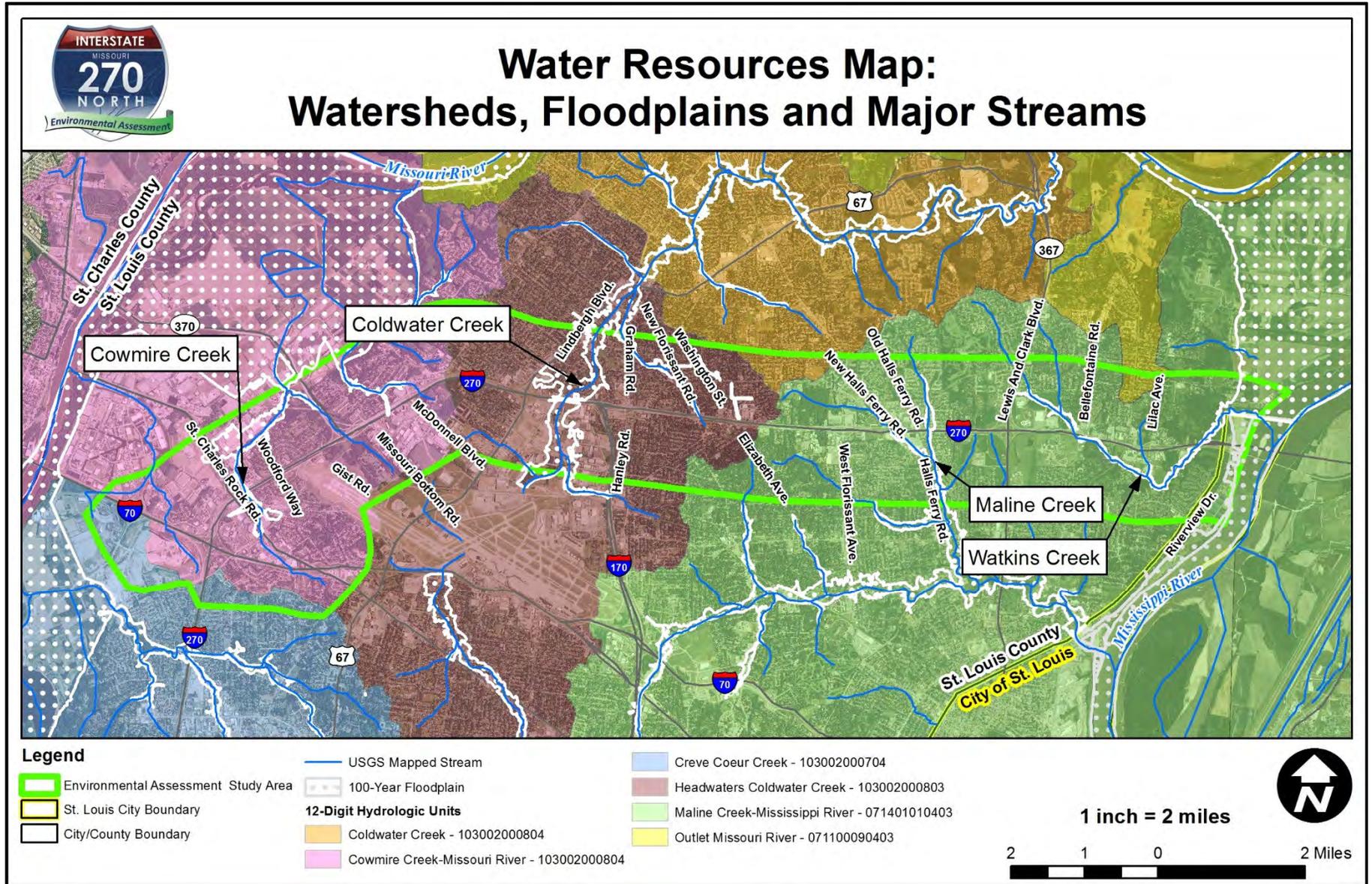
**Table 4-25. Stream and Floodplain Impact Table**

Reasonable Alternative		Floodplain Impacts
<b>LILAC AVENUE</b>		
Reasonable Alternative 1	Diamond Interchange	None
Reasonable Alternative 2	Partial Cloverleaf Interchange	None
<b>RIVERVIEW DRIVE</b>		
Reasonable Alternative 1	Diamond Interchange with Two-Way Dunn Road	Limited culvert extensions of existing culverts within Watkins Creek
Reasonable Alternative 2	Partial Cloverleaf Interchange	Limited culvert extensions of existing culverts within Watkins Creek

Obtaining appropriate floodplain permits is an environmental commitment of this project.

EO 11988 and the Federal-Aid Highway Guide (23 CFR 650 Subpart A) require federal agencies to avoid long- and short-term adverse impacts associated with the occupancy and modification of floodplains. In implementing EO 11988, it is FHWA's policy to do the following:

- Encourage prevention of uneconomic, hazardous, or incompatible use and development in the floodplain
- Avoid longitudinal or other significant encroachments where practicable
- Minimize impacts that adversely affect base floodplains
- Restore and preserve the natural and beneficial floodplain values
- Avoid support of incompatible floodplain development
- Be consistent with the intent of the Standards and Criteria of the NFIP and local floodplain management



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Figure 4-23. Watersheds, Floodplains, and Major Streams

1 The Preferred Alternative will minimize floodplain impacts. It adheres to EO 11988. The Preferred  
 2 Alternative will comply with “No-Rise” requirements and, if applicable, obtain appropriate floodplain  
 3 development permit. It will impact no SEMA-buyout properties. It adheres to the FHWA floodplain  
 4 encroachment policy.

## 5 4.21 Water — Streams and Watersheds

6 Waters of the United States include navigable waters, tributaries to navigable waters, interstate waters and  
 7 their tributaries, and all adjacent wetlands. This subsection addresses the water and tributary portion of  
 8 Waters of the United States.

### 9 4.21.1 Streams and Watersheds — Regulatory Background and Standards

10 Impacts to Waters of the United States in St. Louis County, including impacts from highway projects, are  
 11 regulated by the Saint Louis District of the USACE under Section 404 of the Clean Water Act. Any discharge  
 12 of fill requires permitting.

13 The streams in the study area exist within a highly urbanized environment. All waterways have been  
 14 substantially altered from pre-settlement conditions. The waterways have been channelized and generally  
 15 have limited natural floodplain area. The stream banks of these waterways are heavily armored throughout  
 16 the watershed, and the channels are connected to the combined sewer overflows of the Saint Louis  
 17 Metropolitan Sewer District. Despite their modification, however, their presence within the dense urban  
 18 environment offers some of the only refuge for wildlife in the study area.

### 19 4.21.2 Streams and Watersheds — Affected Environment

20 The I-270 North EA study area crosses several watersheds in the Missouri and Mississippi River basins. The  
 21 watersheds, from west to east, include the following:

- 22 • Creve Coeur Creek/Missouri River (HUC-12: 103002000703)
- 23 • Cowmire Creek/Missouri River (HUC-12: 103002000801)
- 24 • Headwaters of Coldwater Creek/Missouri River (HUC-12: 103002000802)
- 25 • Coldwater Creek/Missouri River (HUC-12: 103002000803)
- 26 • Outlet Missouri River (HUC-12: 103002000804)
- 27 • Maline Creek/Mississippi River (HUC-12: 071401010401)

28 The distribution of the watersheds is shown on **Figure 4-24**.

### 29 4.21.3 Streams and Watersheds — Impacts

#### 30 4.21.3.1 No-Build Alternative Impact Summary

31 The No-Build Alternative may cause negligible water quality impacts from erosion and sedimentation during  
 32 pavement and structure maintenance activities over and near waterways. Potential impacts associated with  
 33 highway operations (runoff) and maintenance activities (herbicide application and deicing) would be  
 34 unchanged from current conditions.

#### 35 4.21.3.2 Build Alternatives Impact Summary

36 The Reasonable Alternatives may cause temporary water quality impacts from erosion and sedimentation  
 37 during construction activities. Relative to stream impacts, the Reasonable Alternatives are very similar.  
 38 **Table 3-5** identifies the comparative impacts. Permanent impacts include new construction, which will  
 39 modify the stream banks. Detailed design will be necessary to determine whether lengthening or replacing  
 40 existing structures will be necessary, and to what extent. Nearly all stream encroachment will occur within  
 41 the existing right-of-way; exceptions include the following:

- 1 • **Fountain Creek at New Florissant Road:** In this area, Fountain Creek is contained within a concrete  
 2 sluice (**Figure 4-24**). The Preferred Alternative (Reasonable Alternative 1/1a) will require a minimal  
 3 amount of new right-of-way acquisition at this location. Reasonable Alternative 2 requires a  
 4 substantially larger footprint and will likely relocate the course of the waterway (**Sheet 7 of 13,**  
 5 **Exhibits 4 and 5 in Appendix A**).



6  
7 **Figure 4-24. Existing Fountain Creek Conditions**

- 8 • **Maline Creek at New Halls Ferry/Old Halls Ferry Roads:** In this area, tributaries to Maline Creek are  
 9 conveyed through the I-270 corridor by a number of structures (**Figure 4-25**). The Preferred Alternative  
 10 is expected to have impacts limited to culvert extensions. Reasonable Alternatives 2 and 2a will result in  
 11 a new Dunn Road crossing, near New Halls Ferry Road (**Sheet 9 of 13, Exhibit 5, Appendix A**). This  
 12 impact will be limited to a relatively small area before it crosses the I-270 corridor. Reasonable  
 13 Alternative 2a would have an additional crossing in the vicinity of Netherton Drive. Reasonable  
 14 Alternative 2a intends to route outer road traffic along existing Netherton Drive, and the crossing may  
 15 require work to accommodate roadway improvements. The tributary is contained within a  
 16 concrete swale.



17  
18 **Figure 4-25. Existing Maline Creek Conditions**

- 19 • **Watkins Creek at Bellefontaine Road:** In this area, Watkins Creek is conveyed through the I-270 corridor  
 20 by a number of structures (**Figure 4-26**). The Preferred Alternative is expected to result in a new crossing  
 21 of Watkins Creek for a relocated Dunn Road (**Sheet 12 of 13, Exhibit 4, Appendix A**). The new crossing  
 22 will occur behind the existing Shell gasoline station. Reasonable Alternative 2 will also result in a  
 23 different, but similar, new crossing (**Sheet 12 of 13, Exhibit 5, Appendix A**). The existing Shell gasoline  
 24 station will be relocated in Reasonable Alternative 2.



Figure 4-26. Existing Watkins Creek Conditions

Obtaining a jurisdictional determination from USACE is an environmental commitment of this project.

MoDOT will coordinate with USACE and MDNR/IEPA to ensure compliance with Sections 401 and 404 of the Clean Water Act. This will address impacts to streams, wetlands, and other Waters of the United States during the design process. Clean Water Act permits will require a detailed delineation and evaluation of waters and wetlands affected by the project and minimization of impacts. It is anticipated that this project will be processed as a Section 404 Individual Permit including an Individual Section 401 Water Quality Certification (WQC).

## 4.22 Water — Wetlands

USACE defines wetlands as “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.”

### 4.22.1 Wetlands — Regulatory Background and Standards

Impacts to wetlands and Waters of the United States in St. Louis County, including impacts from highway projects, are regulated by the Saint Louis District of the USACE under Section 404 of the Clean Water Act.

### 4.22.2 Wetlands — Affected Environment

There are few wetlands in the proximity of the study area due to the long history of urban development. The National Wetland Inventory maps produced by USFWS identified very few wetlands (**Figure 4-27**).

A field review during May 2014 encountered no wetlands within the footprint of any of the study’s Reasonable Alternatives.

### 4.22.3 Wetlands — Impacts

#### 4.22.3.1 No-Build Alternative Impact Summary

The No-Build Alternative would have no additional impacts on wetlands.

#### 4.22.3.2 Build Alternatives Impact Summary

A field review during May 2014 encountered no wetlands within the footprint of the Reasonable Alternatives.

Obtaining a jurisdictional determination from USACE is an environmental commitment of this project.

1 MoDOT will coordinate with USACE and MDNR/IEPA to ensure compliance with Sections 401 and 404 of the  
 2 Clean Water Act. This will address impacts to streams, wetlands, and other Waters of the United States  
 3 during the design process. Clean Water Act permits will require a detailed delineation and evaluation of  
 4 waters and wetlands affected by the project and minimization of impacts. It is anticipated that this project  
 5 will be processed as a Section 404 Individual Permit including an Individual Section 401 Water Quality  
 6 Certification (WQC).

## 7 4.23 Water — Water Quality

8 Water resources for the I-270 North EA study include named or unnamed streams, wetlands, and  
 9 floodplains. Each were discussed in separate sections of this document. Water quality is measured by the  
 10 ability of water resources to support beneficial uses, both by humans and wildlife. Waters of the State of  
 11 Missouri are classified for the protection of aquatic life, livestock and wildlife watering, and fish  
 12 consumption by humans.

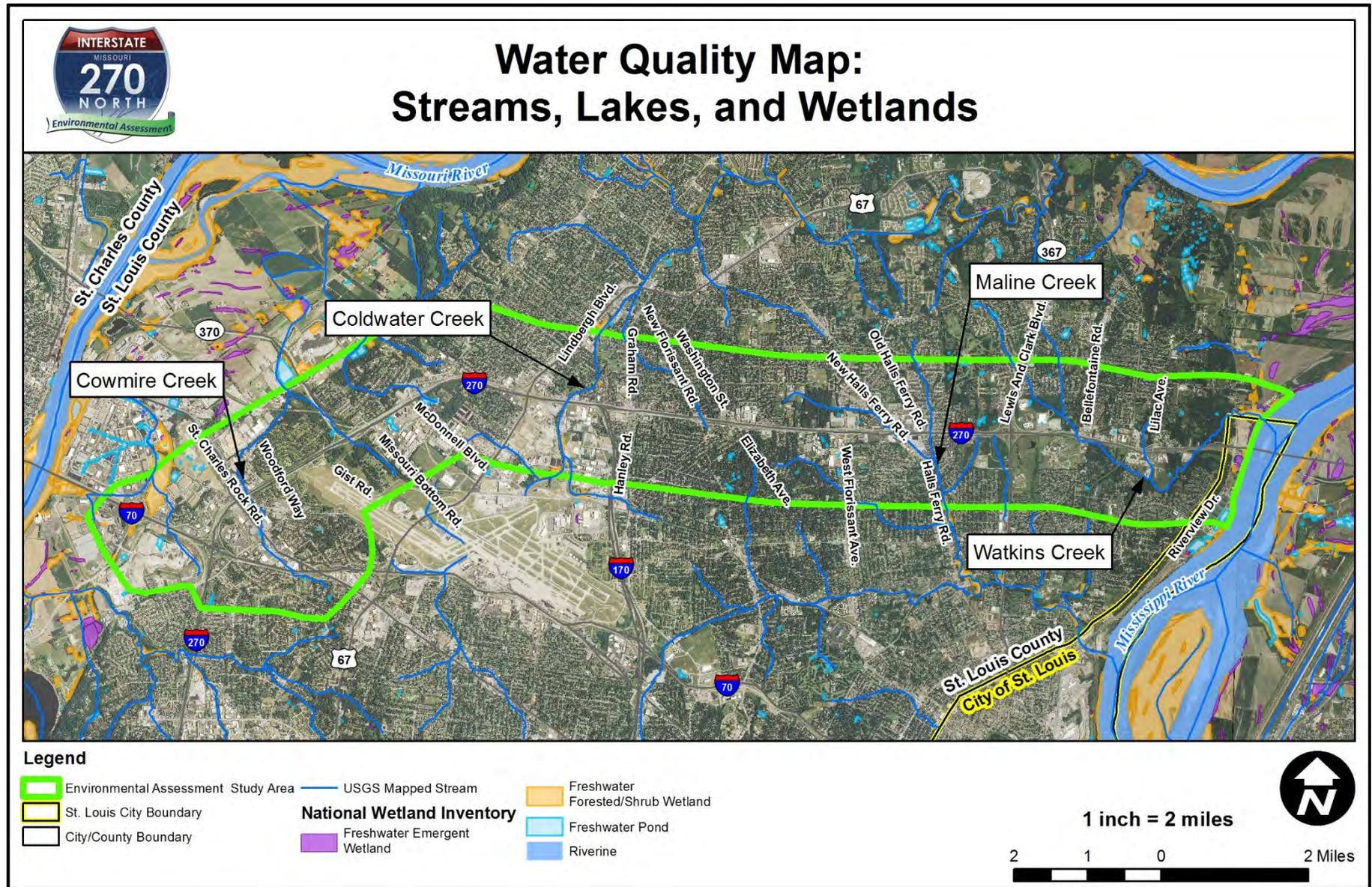
### 13 4.23.1 Water Quality — Regulatory Background and Standards

14 Section 305(b) of the Federal Water Pollution Control Act of 1972, generally referred to as the Clean Water  
 15 Act, requires states to report to the U.S. Congress and EPA on the quality of the surface and groundwater  
 16 resources of the state. The 305(b) report is submitted once every 2 years and must explain how the resource  
 17 quality of water is determined in terms of the degree to which predefined beneficial uses (i.e., designated  
 18 uses) of those waters are attained (i.e., supported). When any designated use for any water body is not fully  
 19 supported (i.e., impaired), the state must report potential reasons (causes and sources) for the impairment.  
 20 MDNR produces the biannual 305(b) report and 303(d) Impaired Waters Listings report. MDNR defines the  
 21 categories of designated/beneficial uses and establishes a set of water quality criteria for each use (10 CSR  
 22 20-7). Missouri has established 15 separate categories, and each body of water may have more than one  
 23 beneficial use associated with it. MDNR estimates that 60 percent of its stream miles and 90 percent of its  
 24 lakes have been assessed; the assessed water bodies are categorized as “Full Support of Uses” or “Non-  
 25 Supporting of Uses.” Of the amount assessed, approximately 17 percent of the stream miles and 48 percent  
 26 of the lakes are classified as Non-Supporting. In addition, under the state’s Water Quality Standards, water  
 27 resources are evaluated to determine if eligible for inclusion as an Outstanding National Resource Water or  
 28 Outstanding State Resource Water. These designated waters have been determined to contain national  
 29 recreational and ecological significance or as a high-quality water of the state with aesthetic, recreational, or  
 30 scientific value.

31 Provisions of the Clean Water Act and related state rules and regulations also require a TS4 permit when the  
 32 facility serves a population of 1,000 or more within an urbanized area or are located outside an urbanized  
 33 area serving a jurisdiction with a population of at least 10,000 and a population density of 1,000 people per  
 34 square mile or more. MoDOT has an TS4 general permit, obtained from MDNR. It requires MoDOT to  
 35 operate under a Storm Water Management Plan comprised of control measures, such as the following:

- 36 • Public Education and Outreach
- 37 • Public Participation and Involvement
- 38 • Illicit Discharge Detection and Elimination
- 39 • Construction Site Runoff Control
- 40 • Post Construction Runoff Control

41



1  
2

Figure 4-27. Streams, Lakes, and Wetlands

## 1 4.23.2 Water Quality — Affected Environment

2 The study area lies within several watersheds. None of the waterways are listed as an Outstanding National  
3 or State Resource Water.

4 Watkins Creek is identified on the 303(d) Impaired Waters list. Watkins Creek was listed for impairment due  
5 to chloride concentrations and *E. coli* bacteria. Beneficial uses include Livestock and Wildlife Watering,  
6 Protection of Warm Water Aquatic Life and Human Health-Fish Consumption, and Secondary Contact  
7 Recreation. The impairments triggered the need for a total maximum daily load (TMDL) report for the water  
8 body. The *E. coli* bacteria TMDL and Implementation Plan was approved by EPA on July 13, 2016. A TMDL  
9 report sets the pollutant reduction goal necessary to improve state-listed impaired waters.

10 Coldwater Creek and Maline Creek are listed on the 2014 proposed 303(d) list. These streams are  
11 designated for Livestock and Wildlife Watering, Protection of Warm Water Aquatic Life and Human Health-  
12 Fish Consumption, and Whole-Body Contact Recreation. Both streams are impaired for Whole-Body Contact  
13 Recreation because of coliform bacteria and for Protection of Warm Water Aquatic Life because of high  
14 chlorides from urban runoff/storm sewers. The *E. coli* bacteria TMDL and Implementation Plan for  
15 Coldwater Creek is in draft form.

16 Cowmire Creek does not have any use designations in the water quality standards.

## 17 4.23.3 Water Quality — Impacts

18 Water quality impacts could include increased sediments to stormwater due to runoff from erodible  
19 material exposed during construction. Stormwater runoff is addressed by MoDOT's Sediment and Erosion  
20 Control Program, which would be included within the contract specifications to address temporary erosion  
21 and sedimentation during construction. MoDOT's best management practices (BMPs) reduce impacts to the  
22 aquatic environment to minimal levels. BMPs cover most activities needed to restore the construction area  
23 to an acceptable condition. This would include cleanup, shaping, replacing topsoil, and establishing  
24 vegetative cover on all disturbed bare areas, as appropriate. MoDOT currently holds a general municipal  
25 separate storm sewer system (TS4) permit. MoDOT will adhere to the conditions of the TS4 permit  
26 applicable at the time of construction.

27 This project will result in the disturbance of more than 1 acre of total land area. Accordingly, it is subject to  
28 the requirement for a National Pollutant Discharge Elimination System permit for stormwater discharges  
29 from the construction sites. Requirements applicable to such a permit will be followed, including the  
30 preparation of a Stormwater Pollution Prevention Plan. Such a plan will identify potential sources of  
31 pollution that may reasonably be expected to affect the quality of stormwater discharges from the  
32 construction site and shall describe and ensure the implementation of practices that will be used to reduce  
33 the pollutants in discharges associated with construction site activity and to ensure compliance with the  
34 terms of the permit.

35 BMPs will be implemented to minimize soil erosion and sedimentation. Methods for stormwater  
36 management, during and after construction, will be in accordance with the MoDOT's Standard Specifications  
37 Book for Highway Construction and the project's National Pollutant Discharge Elimination System permit.  
38 BMPs to control sediment loss from the site during construction will be outlined in the Stormwater Pollution  
39 Prevention Plan. Additionally, permanent BMPs will be integrated into the Preferred Alternative to capture a  
40 portion of the roadway runoff during storm events for passive treatment and removal of contaminants  
41 flowing from the roadway to the waterways during precipitation. These BMPs have not been identified in  
42 preliminary design, but may include items such as bioswales or sand filters. The appropriate BMPs will be  
43 fully developed during final design.

