*Final*

# Environmental Impact Statement for the Next NGA West Campus in the Greater St. Louis Metropolitan Area

Prepared for
**National Geospatial-Intelligence Agency**

April 1, 2016

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# Cover Sheet

## Final Environmental Impact Statement

## Next NGA West Campus in the Greater St. Louis Metropolitan Area

**Responsible Agencies:** The National Geospatial-Intelligence Agency (proponent), the U.S. Army Corps of Engineers, and the U.S. Air Force

**Proposed Action:** Construct and Operate

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**Report Designation:** Final Environmental Impact Statement

**Abstract:** The U.S. Army Corps of Engineers, Kansas City District, has developed an Environmental Impact Statement (EIS) for the National Geospatial-Intelligence Agency (NGA). The EIS analyzes the potential environmental impacts associated with siting, constructing, and operating the Next NGA West Campus in the metropolitan St. Louis, Missouri, area. NGA needs to construct the Next NGA West Campus because its current facilities at South 2nd Street in St. Louis are constrained and functionally obsolete. Four alternative locations for the Next NGA West Campus are under review, including the Fenton Site (St. Louis County, Missouri), Mehlville Site (St. Louis County, Missouri), St. Louis City Site (City of St. Louis, Missouri), and St. Clair County Site (St. Clair County, Illinois). Environmental resources and concerns considered in the EIS include socioeconomics, land use and community cohesion, health and safety, traffic and transportation, noise, hazardous materials and solid waste, utilities, cultural resources, visual resources, water resources, biological resources, geological and paleontological resources, air quality and climate change, and airspace.

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# Executive Summary

## ES-1 Introduction

The National Geospatial-Intelligence Agency (NGA) is investigating sites for the construction and operation of the Next NGA West Campus in the greater St. Louis metropolitan area. This effort is required to replace mission critical facilities at the current St. Louis facility (South 2nd Street facility), which have exceeded their service life and can no longer support the technology changes required for the NGA mission.

The Kansas City District of the U.S. Army Corps of Engineers (USACE) has developed the enclosed environmental impact statement (EIS) in accordance with the National Environmental Policy Act of 1969 (NEPA) to evaluate the social and environmental impacts associated with the construction and operation of the Next NGA West Campus. NGA is the proponent of this action and the U.S. Air Force (USAF) is a cooperating agency under NEPA because the USAF may be the ultimate property owner of the Next NGA West Campus. The Federal Aviation Administration (FAA) is a coordinating agency on this action because it participated in the purchase of the St. Clair County Site and has associated grant assurance obligations. The FAA is also acting as the airspace authority for this EIS.

The scope of this EIS includes the potential environmental impacts caused by the proposed construction and operation of the Next NGA West Campus in the St. Louis metropolitan area. The intent of the EIS is to inform the NGA decision makers of the potential project impacts through a complete and objective analysis of the alternatives. Four site alternatives that would meet the purpose and need of the project, as well as a No Action Alternative, are considered in the analysis.

The Agency Preferred Alternative was identified as the St. Louis City Site based on its ability to deliver a location that met the schedule, reduced costs, delivered a location that best served the mission and vision for NGA's future, and minimized impacts to the environment.

If NGA moves from its existing location, the current property owner, the USAF, in conjunction with the NGA and General Services Administration, will be responsible for addressing the future use of the vacated South 2nd Street facilities. Insufficient information is available to discuss possible future uses of the South 2nd Street facilities at this time; therefore, use of these facilities after NGA vacates is not part of this EIS. The General Services Administration will prepare the necessary NEPA documentation and conduct the National Historic Preservation Act Section 106 consultation for the future use of the South 2nd Street facilities when potential alternative uses have been identified.

## ES-2 Purpose and Need for Action

### ES-2.1 Purpose

The purpose of Next NGA West Campus is to enhance current and future missions, improve resiliency, and resolve security challenges associated with the South 2nd Street facilities. Challenges associated with the

South 2nd Street facilities include the proximity to floodplains and incompatible adjacent industrial activities, as well as the age and physical setting of the existing buildings, which limit NGA's ability to economically renovate the facilities to meet current facility standards. In addition, the South 2nd Street facilities cannot be made to meet post-9/11 requirements for protection of the workforce and mission.

### ES-2.2 Need

NGA needs a new campus capable of supporting current and future mission requirements at a location that complies with established standards for such facilities. Construction and operation of the campus needs to meet the following site location and facility requirements:

1. Allows for continuity and resiliency for existing and future NGA operations
2. Provides purpose-built facilities that are safe, secure, flexible, and efficient
3. Is conducive to recruiting and retaining top-quality employees
4. Stays within anticipated funding limits for construction, operation, and maintenance
5. Supports future changes to mission requirements
6. Provides necessary utilities, telecommunication, and transportation infrastructure
7. Contains a boundary that is a usable shape for necessary buildings and infrastructure and is outside a 100-year floodplain
8. Provides physical security and force protection with appropriate setbacks from adjacent roads, railroads, and property boundaries
9. Provides potential to use topography and landscape to enhance security
10. Site is available for acquisition and construction in early 2017
11. Meets or exceeds current building standards and codes, particularly those related to the design, detailing, and construction of structural and non-structural components, to resist the effects of seismic and other natural or human-made events

## ES-3 Description of the Proposed Action

The NGA's Proposed Action is to site, construct, and operate a purpose-built geospatial collection, analysis, and distribution campus. The purpose-built facility will provide an open and flexible work environment that is scalable, reconfigurable, and adaptive to changing mission requirements. The Next NGA West Campus would be designed to accommodate a workforce of approximately 3,150 government personnel and contractors. Construction activities are expected to begin the summer of 2017 and last for approximately 5 years.

For the purpose of this EIS, a full build-out of the construction area is assumed, and no existing buildings or infrastructure would remain. The following facilities would be constructed at the site:

- Main operations building

- Data center (may be constructed sometime in the future)
- Central utility plant
- Visitor control center
- Remote inspection facility
- Primary and secondary access control points
- Security fence or wall around the site perimeter
- Supporting infrastructure, such as parking, interior roads, and sidewalks

# ES-4 Description of the No Action Alternative

Under the No Action Alternative, the NGA would not construct or operate a new campus. NGA would remain at the South 2nd Street location and these facilities would not be renovated or upgraded. Further, it is assumed the current conditions at each of the proposed sites would continue. The No Action Alternative does not meet the purpose and need of the Proposed Action. The No Action Alternative analysis serves as the baseline for the comparison of environmental impacts.

# ES-5 Alternatives Carried Forward for Analysis

Siting, construction, and operation of the Next NGA West Campus at one of four alternative locations (Figure ES-1) are considered in the EIS. The alternative locations are described in detail in the following subsections.

## ES-5.1 Fenton Site

The Fenton Site (1050 Dodge Drive, Fenton, Missouri) is located in south St. Louis County, Missouri, on a 167-acre tract adjacent to Interstate 44/U.S. Route 50. This site is located within a larger 294-acre parcel proposed for redevelopment as mixed-use build to suit industrial/commercial use along the Meramec River. This property is the former location of a Chrysler automobile assembly plant that was demolished in 2009. The existing site is flat and covered almost entirely in concrete and asphalt, which would be removed under the Proposed Action. The property is unoccupied with the exception of a trailer used by the site developers as a sales office. The Fenton Site is owned by a private developer and is currently for sale.

## ES-5.2 Mehlville Site

The Mehlville Site (13045 Tesson Ferry Road, St. Louis, Missouri) encompasses a 101-acre tract in south St. Louis County, Missouri. The site is slightly graded with an existing 645,520-square-foot two-story office complex with interconnected buildings constructed for Metropolitan Life Insurance Company beginning in 1976. The Mehlville property has a well-maintained office setting and grounds with parking, infrastructure, and interior stormwater retention pond. Along the southern border of the Mehlville Site, the property contains natural forested conditions. Because of NGA’s unique requirements, the existing office complex cannot be renovated. The building, structures, and infrastructure would be removed as part of the Proposed Action. The Mehlville Site is owned by private interests.

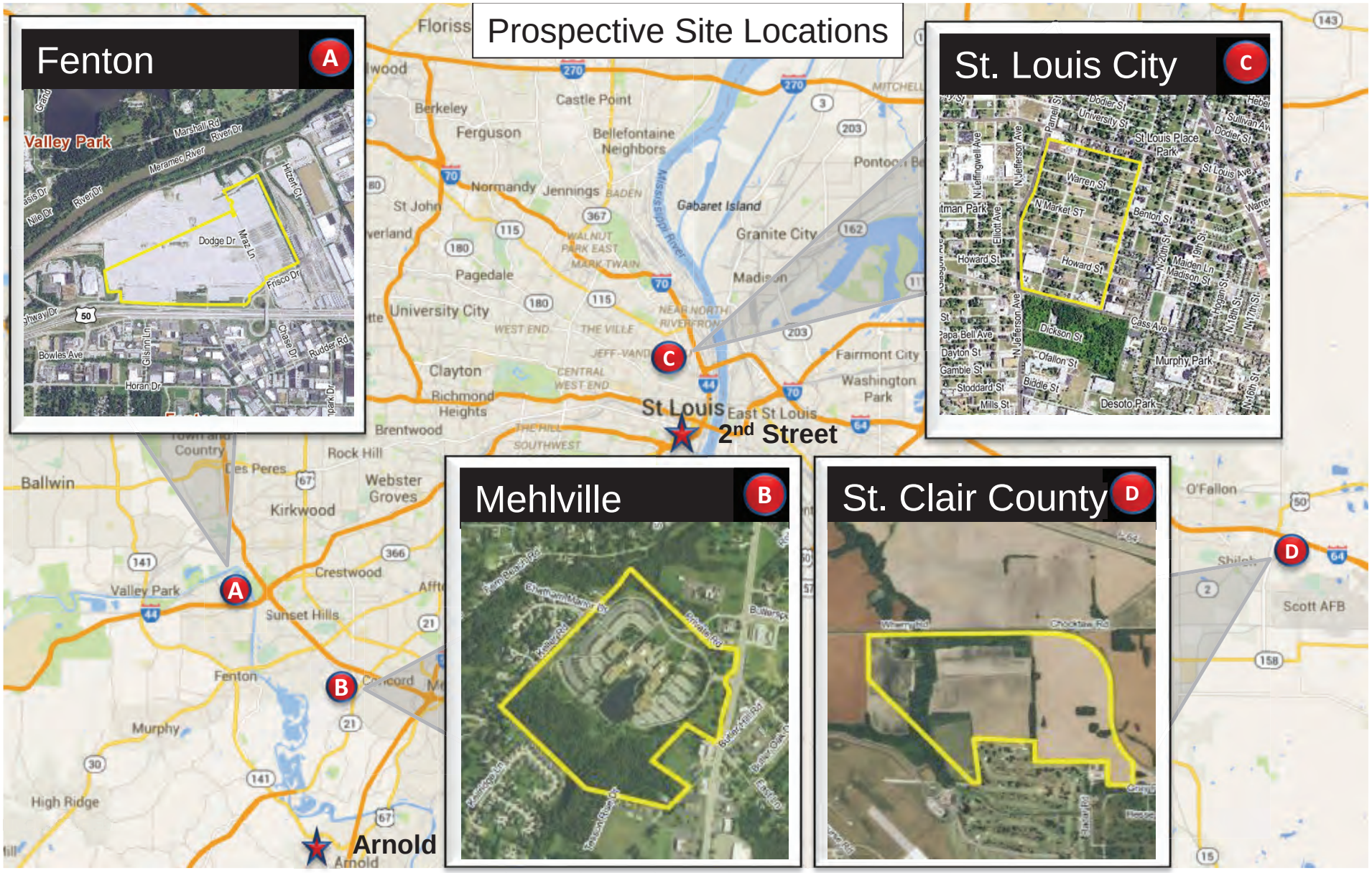


**Figure ES-1**
**Prospective Site Locations**

### ES-5.3 St. Louis City Site (Preferred Alternative)

The St. Louis City Site (Intersection of Cass and Jefferson Avenues, St. Louis, Missouri) is a 100-acre site located within the city limits of the City of St. Louis. This area is predominantly vacant land with some residential, light industrial, and commercial use. It is situated just north of the City of St. Louis' downtown at the intersection of Jefferson and Cass Avenues. The City of St. Louis recommended this site for review because it is part of an ongoing redevelopment effort by the City. Disinvestment has occurred over decades at the site, leading to an 85 percent vacancy rate as of December 2015. In total, the St. Louis City Site (which does not include the former Pruitt-Igoe Site) consists of 76 percent vacant land, 9 percent vacant residential lots (lots with vacant homes), and 13 percent owner or renter-occupied residences. The remaining 2 percent of the parcels are commercial (0.9 percent vacant, 0.5 percent owner occupied and 0.4 percent tenant occupied), churches (0.15 percent), and educational use (0.05 percent) (Halliday, 2015a, pers. comm.).

A limited number of community resources and homes remain within the Proposed Area footprint and vital components of a cohesive community are lacking. Many of the vacant residential lots are unmaintained and some have been converted into urban garden plots. As a result of the unmaintained lots, the City has designated the site a blighted community (Development Strategies, 2015a). The St. Louis City Site is within the proposed NorthSide Regeneration Project area (NorthSide Regeneration St. Louis, 2015) and within the U.S. Department of Housing and Urban Development's footprint for an Urban Promise Zone initiative for the City of St. Louis. The St. Louis City Site presently has multiple landowners, many of whom have entered into agreements of sale with the City of St. Louis.

### ES-5.4 St. Clair County Site

The St. Clair County Site (Wherry Road and Rieder Road) comprises 182 acres situated between Scott Air Force Base (AFB) and MidAmerica St. Louis Airport near Shiloh, Illinois. This site is undeveloped and relatively level, and approximately 80 percent of the location has been used as cultivated, agricultural land for the past century. Scott AFB and its Cardinal Creek Golf Course bound the site to the south. The St. Clair County Site is currently owned by St. Clair County.

## ES-6 Public Outreach and Involvement

A variety of public involvement activities, tools, and techniques were used to engage community members and government agencies during the EIS process, including a project website, formal public meetings, informal stakeholder phone calls and meetings, elected and public official briefings, media briefings, mailed announcements, emails, newspaper advertisements, and press releases. During NEPA scoping and Draft EIS (DEIS) public meetings, NGA sought input from government agencies, Native American tribes, elected officials, non-governmental organizations, and the public on the proposed construction and operation of a new campus. Input received during the scoping period and public comment period assisted NGA in identifying the concerns on which to focus on in the EIS. The public scoping and DEIS public comment meetings were held at the South 2nd Street facilities for NGA personnel and in community centers near each of the alternative

sites for the public and agencies. A detailed summary of the scoping and DEIS public comment meetings are presented in Appendices 1B, 1C, and 1D.

# ES-7 Environmental Justice

Each alternative site location was assessed in consideration of Executive Order (E.O.) 12898 *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. Section 5.0, *Environmental Justice*, presents a description of the community around each site, along with the comparative proportion of minority and low-income populations. U.S. Environmental Protection Agency's (USEPA) environmental justice screening and mapping tool (EJSCREEN) and Census data were used to determine whether there are environmental justice concerns present at each site.

The St. Louis City Site is the only site with substantial minority and low-income populations that may be affected by the Next NGA West Campus, based on the EJSCREEN tool results and Census data. If the St. Louis City Site is selected, the short-term impacts of relocation for residents and business would be borne primarily by minority and low-income populations. However, this impact is not high and adverse in light of the Missouri relocation statutes (Sections 523.200–215, RSMo, 2014), which also meet the requirements of the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Additionally, the Next NGA West Campus is consistent with the City of St. Louis' redevelopment plans for the area and may provide a stabilizing effect, indirectly leading development attraction and eventual momentum toward enhancing the NorthSide community resources.

E.O. 12898 calls for federal agencies to provide opportunities for stakeholders to obtain information and provide comment on federal actions. NGA is complying with E.O. 12898 by conducting a public involvement program that includes targeted efforts to engage, inform, and solicit input from minority and low-income populations as demonstrated through additional meetings in the St. Louis City Site neighborhood and added outreach to community leaders. Additional public outreach is being conducted as part of the cultural resources mitigation as described in Section ES-11.3, *St. Louis City Site*, and Section 4.8, *Cultural Resources*.

# ES-8 Selection of Preferred Alternative

NGA chose the preferred site after gathering information from agencies, the public, and others through the NEPA process and by performing the environmental impact analysis shown in this EIS. NGA considered the information gathered during the EIS, along with other critical factors such as its ability to perform its mission, maintain a secure environment, retain and recruit employees, and meet the construction schedule. The final selection process and decision is described in detail in Sections 2.7 and 2.8 of this FEIS and documented in the Record of Decision, which will be distributed after publication of the Final EIS (FEIS).

NGA has selected the St. Louis City Site as its Preferred Alternative.

# ES-9 Approach to Environmental Analysis

The direct, indirect, and cumulative impacts of implementing NGA's Proposed Action are evaluated in accordance with the CEQ's guidance for implementing NEPA (CEQ, 1983, 1997). The construction of the proposed project would occur over a 5-year period and would include direct and indirect effects on the human and natural environments. Direct effects are caused by the action and occur at the same time and place, whereas indirect effects are caused by the action, reasonably foreseeable, and occur later in time. Cumulative impacts result from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions, which may be undertaken by other private or public entities. Fourteen natural and human resource areas are analyzed in the EIS.

# ES-10 Comparison of Environmental Impacts by Alternative

Table ES-1 presents the direct/indirect impacts, cumulative impacts, and the environmental protection measures by resource area to illustrate the impact differences between the alternatives. Table ES-1 summarizes the areas where potential environmental impacts are present; impacts that were deemed no/negligible in the analysis are not described in detail.

There have been a number of revisions to the impact findings shown in this table since the publication of the DEIS. These revisions were based on analysis performed in response to input received from public and agency comments. For an explanation of changes made, please see the comment response summary provided in Appendix 1D.

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TABLE ES-1
**Summary of Impacts**

| Resource | No Action | Fenton Site | Mehlville Site | St. Louis City Site (Preferred Alternative) | St. Clair County Site |
|---|---|---|---|---|---|
| **Socioeconomics** | | | | | |
| **Direct/Indirect Benefits** | • Only **no/negligible** impacts | • **Minor to moderate, short-term benefit** from construction employment<br>• **Minor to moderate, short-term benefit** from construction employment (households and industry)<br>• **Minor to moderate short-term benefit** from increased spending during construction<br>• **Minor to moderate long-term benefit** induced employment | • **Minor to moderate, short-term benefit** from construction employment<br>• **Minor to moderate, short-term benefit** from construction employment (households and industry)<br>• **Minor to moderate short-term benefit** from increased spending during construction<br>• **Minor to moderate long-term benefit** induced employment | • **Minor to moderate, short-term benefit** from construction employment<br>• **Minor to moderate, short-term benefit** from construction employment (households and industry)<br>• **Minor to moderate short-term benefit** from increased spending during construction<br>• **Minor to moderate long-term benefit** induced employment | • **Minor to moderate, short-term benefit** from construction employment<br>• **Minor to moderate, short-term benefit** from construction employment (households and industry)<br>• **Minor to moderate short-term benefit** from increased spending during construction<br>• **Minor to moderate long-term benefit** induced employment |
| **Direct/Indirect Impacts** | • Only **no/negligible** impacts | • **Minor to moderate, negative, long-term** impact from loss of earnings tax to the City of St. Louis<br>• **Minor to moderate, negative, long-term** impact from loss of property tax | • **Minor to moderate, negative, long-term** impact from loss of earnings tax to the City of St. Louis<br>• **Minor to moderate, negative, long-term** impact from loss of property tax | • **Minor to moderate, negative, long-term** impact from loss of property tax | • **Minor to moderate, negative, long-term** impact from loss of earnings tax to the City of St. Louis |
| **Cumulative Impacts** | • Not applicable | • Not applicable | • Not applicable | • Not applicable | • Not applicable |
| **Environmental Protection Measures** | • Not applicable | • Not applicable | • Not applicable | • Not applicable | • Not applicable |
| **Land Use and Community Cohesion** | | | | | |
| **Direct/Indirect Benefits** | • Only **no/negligible** impacts | • **Minor to moderate, long-term benefit** to onsite land use<br>• **Minor to moderate, long-term benefit** to surrounding land use | • **Minor to moderate, long-term benefit** to surrounding land use | • **Minor to moderate, long-term benefit** to onsite land use.<br>• **Minor to moderate, long-term benefit** to surrounding land use<br>• **Minor to moderate, long-term benefit** from stabilizing influence in community<br>• **Minor to moderate long-term benefit** from NGA operations | • **Minor to moderate, long-term benefit** to surrounding land use |
| **Direct/Indirect Impacts** | • Only **no/negligible** impacts | • Not applicable | • Not applicable | • **Minor to moderate, negative, short-term** impact from displacement and relocation of current residents and businesses<br>• **Minor to moderate, negative, short-term** impact from construction | • **Minor to moderate, negative short-term** impact from construction |
| **Cumulative Impacts** | • Not applicable | • Not applicable | • Not applicable | • **Minor to moderate, negative, and short-term** cumulative impacts potential to community cohesion due to disruption from multiple ongoing construction projects | • **Minor to moderate, negative, and short-term** cumulative impacts potential to community cohesion due to disruption from multiple ongoing construction projects |
| **Environmental Protection Measures** | • Not applicable | • Preparation and approval of a site development plan<br>• Construction will occur primarily on weekdays and during normal working hours | • Preparation and approval of a site development plan<br>• Construction will occur primarily on weekdays and during normal working hours | • Preparation and approval of a site development plan<br>• All acquisitions will be in compliance with Missouri statutes governing acquisition and relocations<br>• Construction will occur primarily during weekdays and working hours<br>• Efforts will be made to not obstruct streets surrounding the site to the extent practical during construction | • Preparation and approval of a site development plan |

TABLE ES-1
**Summary of Impacts**

| Resource | No Action | Fenton Site | Mehlville Site | St. Louis City Site (Preferred Alternative) | St. Clair County Site |
|---|---|---|---|---|---|
| | | | | • Crosswalks could be installed at intersections with sidewalks and stop lights | |
| **Health & Safety** | | | | | |
| **Direct/Indirect Benefits** | • Only **no/negligible** impacts | • **Minor to moderate, long-term benefit** in reduction of crime | • Only **no/negligible** impacts | • **Minor to moderate, long-term benefit** on occupational health<br>• **Minor to moderate, long-term benefit** in reduction of crime<br>• **Minor to moderate, long-term benefit** to child safety | • Only **no/negligible** impacts |
| **Direct/Indirect Impacts** | • Only **no/negligible** impacts | • Not applicable | • Only **no/negligible** impacts | • **Minor to moderate, negative, long-term** impact on emergency response time and demand due to 3 minute increase in response time | • Only **no/negligible** impacts |
| **Cumulative** | • Not applicable | • No cumulative impacts | • No cumulative impacts | • **Minor to moderate, negative, and long-term** cumulative impacts to emergency response times | • No cumulative impacts |
| **Environmental Protection Measures** | • Not applicable | • Develop and implement a construction health and safety plan (HSP) as a best management practice (BMP)<br>• NGA personnel will comply with applicable Occupational Safety and Health Administration (OSHA) and U.S. Department of Defense (DoD)- and NGA-specific safety protocols as a BMP<br>• Avoid and minimize floodplain impacts as a BMP, and any infrastructure located within the floodplain will be designed and constructed in compliance with all applicable regulatory requirements pertaining to floodplains<br>• Fencing and signage will be installed around construction site as a BMP for protection of children | • Develop and implement a construction HSP as a BMP<br>• NGA personnel will comply with applicable OSHA and DoD- and NGA-specific safety protocols as a BMP<br>• Fencing and signage will be installed around construction site as a BMP for protection of children | • Develop and implement a construction HSP as a BMP<br>• NGA personnel will comply with applicable OSHA and DoD- and NGA-specific safety protocols as a BMP<br>• Fencing and signage will be installed around construction site as a BMP for protection of children<br>• NGA will coordinate its site plans with local emergency responders | • Develop and implement a construction HSP as a BMP<br>• NGA personnel will comply with applicable OSHA and DoD- and NGA-specific safety protocols as a BMP<br>• Fencing and signage will be installed around construction site as a BMP for protection of children |
| **Traffic & Transportation** | | | | | |
| **Direct/Indirect Impacts** | • Only **no/negligible** impacts | • **Minor to moderate, negative, and short term** due to construction traffic | • **Minor to moderate, negative, and long term** to existing year level of service (LOS)<br>• **Minor to moderate, negative, and short term** due to construction traffic | • **Minor to moderate, negative, and long term** to existing year LOS<br>• **Minor to moderate, negative, and long term** to future year LOS<br>• **Minor to moderate, negative, and short term** due to construction traffic | • **Minor to moderate, negative, and long term** to existing year LOS<br>• **Minor to moderate, negative, and long term** to future year LOS<br>• **Minor to moderate, negative, and short term** due to construction traffic |
| **Cumulative Impacts** | • No cumulative impacts | • **Minor to moderate, negative, short-term** cumulative impacts to traffic and transportation from construction activities | • **Minor to moderate, negative, short-term** cumulative impacts to traffic and transportation from construction activities | • **Minor to moderate, negative, short-term** cumulative impacts to traffic and transportation from construction activities | • **Minor to moderate, negative, short-term** cumulative impacts to traffic and transportation from construction activities |
| **Environmental Protection Measures** | • Not applicable | • Implement a Construction Management Plan | • Coordinate with Missouri Department of Transportation (MoDOT) to install a traffic signal<br>• Implement a Construction Management Plan | • NGA to coordinate with the City of St. Louis to install traffic signal<br>• Implement a Construction Management Plan | • Coordinate with Illinois Department of Transportation (IDOT) to create a right turn lane<br>• NGA will coordinate with St. Clair County to install traffic signals<br>• Implement a Construction Management Plan |

TABLE ES-1
**Summary of Impacts**

| Resource | No Action | Fenton Site | Mehlville Site | St. Louis City Site (Preferred Alternative) | St. Clair County Site |
|---|---|---|---|---|---|
| **Noise** | | | | | |
| **Direct/Indirect Impacts** | • Only **no/negligible** impacts | • **Minor to moderate, negative, and short-term** impact from construction noise | • **Minor to moderate, negative, and short-term** impact from construction noise | • **Minor to moderate, negative, and short-term** impact from construction noise | • Only **no/negligible** impacts |
| **Cumulative Impacts** | • Not applicable | • **Minor to moderate, negative, and short-term** cumulative impacts for construction-related noise | • **Minor to moderate, negative, and short-term** cumulative impacts for construction-related noise | • **Minor to moderate, negative, and short-term** cumulative impacts for construction-related noise | • Only **no/negligible** impacts |
| **Environmental Protection Measures** | • Not applicable | • Construction and operation activities will comply with the St. Louis Noise Ordinance | • Construction and operation activities will comply with the St. Louis Noise Ordinance | • Construction and operation activities will comply with the St. Louis Noise Ordinance | • Construction and operation activities will comply with local noise ordinances |
| **Hazardous Materials & Solid Waste** | | | | | |
| **Direct/Indirect Benefits** | • Only **no/negligible** impacts | • **Minor to moderate, long-term benefit**, commensurate with the severity of contamination to be remediated | • **Minor to moderate, long-term benefit**, commensurate with the severity of contamination to be remediated | • **Minor to moderate, long-term benefit**, commensurate with the severity of contamination to be remediated | • **Minor to moderate, long-term benefit**, commensurate with the severity of contamination to be remediated |
| **Direct/Indirect Impacts** | • Only **no/negligible** impacts | • **Minor to moderate, negative long-term** impact on area landfills from construction and demolition-related solid waste | • **Minor to moderate, negative long-term** impact on area landfills from construction and demolition-related solid waste | • **Minor to moderate, negative long-term** impact on area landfills from construction and demolition-related solid waste | • Only **no/negligible** impacts |
| **Cumulative Impacts** | • Not applicable | • **Minor to moderate, negative, and long-term** cumulative impacts to solid waste disposal | • **Minor to moderate, negative, and long-term** cumulative impact to solid waste disposal | • **Minor to moderate, negative, and long-term** cumulative impacts to solid waste disposal | • Not applicable |
| **Environmental Protection Measures** | • Not applicable | • Complete site characterization and removal or remediation of contamination will be completed as a mitigation measure prior to acquisition of the site<br>• Vapor intrusion (VI) assessment prior to construction and implementation of mitigation measures<br>• Hazardous materials and wastes will be used, stored, disposed of, and transported during construction in compliance with all applicable laws and regulations as BMP<br>• Spill response plan for accidental spills/releases during construction activities and operation as BMP<br>• Creation of a construction management plan, including hazardous materials protocols<br>• Secondary containment BMP for diesel storage<br>• When possible, demolition materials, such as soils from grading, will be used onsite as BMP<br>• Divert a large portion of the debris as BMP from landfills through reuse and recycling<br>• NGA will continue to implement solid waste management and waste reduction, including recycling programs, as BMP | • Complete site characterization and removal or remediation of contamination will be completed as a mitigation measure once government as acquires the site<br>• VI assessment prior to construction and implementation of mitigation measures<br>• Hazardous materials and wastes will be used, stored, disposed of, and transported during construction in compliance with all applicable laws and regulations as BMP<br>• Spill response plan for accidental spills/releases during construction activities and operation as BMP<br>• Creation of a construction management plan, including hazardous materials protocols<br>• Secondary containment BMP for diesel storage<br>• When possible, demolition materials, such as soils from grading, will be used onsite as BMP<br>• Divert a large portion of the debris as BMP from landfills through reuse and recycling<br>• NGA will continue to implement solid waste management and waste reduction, including recycling programs, as BMP | • Complete site characterization and removal or remediation of contamination will be completed as a mitigation measure prior to acquisition of the site<br>• VI assessment prior to construction and implementation of mitigation measures<br>• Hazardous materials and wastes will be used, stored, disposed of, and transported during construction in compliance with all applicable laws and regulations as BMP<br>• Spill response plan for accidental spills/releases during construction activities and operation as BMP<br>• Creation of a construction management plan, including hazardous materials protocols<br>• Secondary containment BMP for diesel storage<br>• When possible, demolition materials, such as soils from grading, will be used onsite as BMP<br>• Divert a large portion of the debris as BMP from landfills through reuse and recycling<br>• NGA will continue to implement solid waste management and waste reduction, including recycling programs, as BMP | • Complete site characterization and removal or remediation of contamination will be completed as a mitigation measure prior to acquisition of the site<br>• VI assessment prior to construction and implementation of mitigation measures<br>• Hazardous materials and wastes will be used, stored, disposed of, and transported during construction in compliance with all applicable laws and regulations as BMP<br>• Spill response plan for accidental spills/releases during construction activities and operation as BMP<br>• Creation of a construction management plan, including hazardous materials protocols<br>• Secondary containment BMP for diesel storage<br>• When possible, demolition materials, such as soils from grading, will be used onsite as BMP<br>• Divert a large portion of the debris as BMP from landfills through reuse and recycling<br>• NGA will continue to implement solid waste management and waste reduction, including recycling programs, as BMP |

TABLE ES-1
**Summary of Impacts**

| Resource | No Action | Fenton Site | Mehlville Site | St. Louis City Site (Preferred Alternative) | St. Clair County Site |
|---|---|---|---|---|---|
| **Utilities** | | | | | |
| **Direct/Indirect Impacts** | • Only **no/negligible** impacts | • **Minor to moderate, negative, and short-term** impacts to power supply and service<br>• **Minor to moderate, negative, and short-term** impacts to potable water supply and service<br>• **Minor to moderate, negative, and short-term** impacts to wastewater and stormwater service<br>• **Minor to moderate, negative, and short-term** impacts to natural gas supply and service<br>• **Minor to moderate, negative, and short-term** impacts to communication service | • **Minor to moderate, negative, and short-term** impacts to power supply and service<br>• **Minor to moderate, negative, and short-term** impacts to potable water supply and service<br>• **Minor to moderate, negative, and short-term** impacts to wastewater and stormwater service<br>• **Minor to moderate, negative, and short-term** impacts to natural gas supply and service<br>• **Minor to moderate, negative, and short-term** impacts to communication service | • **Minor to moderate, negative, and short-term** impacts to power supply and service<br>• **Minor to moderate, negative, and short-term** impacts to potable water supply and service<br>• **Minor to moderate, negative, and short-term** impacts to wastewater and stormwater service<br>• **Minor to moderate, negative, and short-term** impacts to natural gas supply and service<br>• **Minor to moderate, negative, and short-term** impacts to communication service | • **Minor to moderate, negative, and short-term** impacts to power supply and service<br>• **Minor to moderate, negative, and short-term** impacts to potable water supply and service<br>• **Minor to moderate, negative, and short-term** impacts to wastewater and stormwater service<br>• **Minor to moderate, negative, and short-term** impacts to natural gas supply and service<br>• **Minor to moderate, negative, and short-term** impacts to communication service |
| **Cumulative Impacts** | • Not applicable | • **Minor to moderate, negative, and short-term** cumulative impacts from increased utility needs | • **Minor to moderate, negative, and short-term** cumulative impacts from increased utility needs | • **Minor to moderate, negative, and short-term** cumulative impacts from increased utility needs | • **Minor to moderate, negative, and short-term** cumulative impacts from increased utility needs |
| **Environmental Protection Measures** | • Not applicable | • Outages will be avoided as a BMP, to the extent possible<br>• Prior to construction, public utilities within the potential impact area will be positively located as a BMP<br>• NGA will incorporate DoD energy policies and Leadership in Energy and Environmental Design (LEED) or Green Globes green building goals as BMPs | • Outages will be avoided as a BMP, to the extent possible<br>• Prior to construction, public utilities within the potential impact area will be positively located as a BMP<br>• NGA will incorporate DoD energy policies and LEED or Green Globes green building goals as BMPs | • Outages will be avoided as a BMP, to the extent possible<br>• Prior to construction, public utilities within the potential impact area will be positively located as a BMP<br>• NGA will incorporate DoD energy policies and LEED or Green Globes green building goals as BMPs | • Outages will be avoided as a BMP, to the extent possible<br>• Prior to construction, public utilities within the potential impact area will be positively located as a BMP<br>• NGA will incorporate DoD energy policies and LEED or Green Globes green building goals as BMPs |
| **Cultural Resources** | | | | | |
| **Direct/Indirect Impacts** | • Only **no/negligible** impacts | • Only **no/negligible** impacts | • Only **no/negligible** impacts | • **Major, negative, and long-term** from impacts (including visual) to known historic properties **Minor to moderate, negative, and long-term** impacts to unidentified archaeological resources from construction<br>• **Minor to moderate, negative, and long-term** impacts from indirect impacts to surrounding historic properties | • **Major, negative, and long-term impacts** to a known archeological site<br>• **Minor to moderate, negative, and long-term** impacts to unidentified archaeological resources from construction |
| **Cumulative Impacts** | • No cumulative impacts | • No cumulative impacts | • No cumulative impacts | • **Major, negative, and long-term** cumulative impacts to historic properties within the Area of Potential Effect (APE)<br>• **Minor to moderate, negative, and long-term** cumulative impacts to potential archeological resources | • **Major, negative, and long-term** cumulative impacts potential to archeological resources due to the impacts to known cultural resources within the APE |
| **Environmental Protection Measures** | • Not applicable | • Comply with Unintended Discovery Plan as a mitigation measure if prehistoric- or historic-period archaeological sites are encountered | • Comply with Unintended Discovery Plan as a mitigation measure if prehistoric- or historic-period archaeological sites are encountered | • Stipulations specified in the Programmatic Agreement with the Missouri State Historic Preservation Officer (SHPO)<br>• Comply with Unintended Discovery Plan as a mitigation measure if prehistoric- or historic-period archaeological sites are encountered | • Stipulations specified in the Programmatic Agreement with the Illinois SHPO<br>• Potential mitigation measures likely to include data recovery at archaeological site<br>• Comply with Unintended Discovery Plan as a mitigation measure if prehistoric- or historic-period archaeological sites are encountered |

TABLE ES-1
**Summary of Impacts**

| Resource | No Action | Fenton Site | Mehlville Site | St. Louis City Site (Preferred Alternative) | St. Clair County Site |
|---|---|---|---|---|---|
| **Visual Resources** | | | | | |
| **Direct/Indirect Benefits** | • Only **no/negligible** impacts | • **Major, beneficial, and long-term** impact by changing the overall visual quality of the site from low to high | • Only **no/negligible** impacts | • **Major, beneficial, and long-term** impact by changing the overall visual quality of the site from low to high | • Only **no/negligible** impacts |
| **Cumulative Impacts** | • Not applicable | • Not applicable | • Not applicable | • Not applicable | • Not applicable |
| **Environmental Protection Measures** | • Not applicable | • Design landscaping and architecture commensurate with viewer sensitivity and campus security as a BMP | • Design landscaping and architecture commensurate with viewer sensitivity and campus security as a BMP | • Design landscaping and architecture commensurate with viewer sensitivity and campus security as a BMP | • Design landscaping and architecture commensurate with viewer sensitivity and campus security as a BMP |
| **Water Resources** | | | | | |
| **Direct/Indirect Impacts** | • Only **no/negligible** impacts | • **Minor to moderate, negative, and long-term** impact to floodplains during construction | • **Minor to moderate, negative, and long-term** impact to wetlands during construction<br>• **Minor to moderate, negative, and long-term** impact to surface waters during construction | • Only **no/negligible** impacts | • **Minor to moderate, negative, and long-term** impact to surface waters during construction |
| **Cumulative Impacts** | • Not applicable | • **Minor to moderate, negative, and long-term cumulative impacts** to floodplains | • **Minor to moderate, negative, and long-term** cumulative impacts to wetlands<br>• **Minor to moderate, negative, and long-term** cumulative impacts to surface water | • Not applicable | • **Minor to moderate, negative, and long-term** to surface water |
| **Environmental Protection Measures** | • Not applicable | • Appropriate BMPs, such as silt fencing, will be implemented during construction to avoid and minimize potential indirect impacts (erosion, sedimentation, and pollution) to offsite wetlands and surface waters<br>• Obtain a Missouri State Operating Permit from Missouri Department of Natural Resources (MoDNR) for proposed project that would disturb 1 acre or more | • Require a Clean Water Act (CWA) Section 404 (Dredge and Fill) Permit from USACE and a CWA Section 401 Water Quality Certification from MoDNR because of impacts to jurisdictional wetlands and surface waters during construction<br>• Appropriate BMPs, such as silt fencing, will be implemented during construction to avoid and minimize potential indirect impacts (erosion, sedimentation, and pollution) to offsite wetlands and surface waters<br>• Obtain a Missouri State Operating Permit from MoDNR for proposed project that would disturb 1 acre or more | • Appropriate BMPs, such as silt fencing, will be implemented during construction to avoid and minimize potential indirect impacts (erosion, sedimentation, and pollution) to offsite wetlands and surface waters<br>• Obtain a Missouri State Operating Permit from MoDNR for proposed project that would disturb 1 acre or more | • Require a CWA Section 404 (Dredge and Fill) Permit from USACE and a CWA Section 401 Water Quality Certification from Illinois Environmental Protection Agency (IEPA) because of impacts surface waters during construction<br>• Avoid onsite wetlands<br>• Appropriate BMPs, such as silt fencing, will be implemented during construction to avoid and minimize potential indirect impacts (erosion, sedimentation, and pollution) to offsite wetlands and surface waters<br>• Requires a General National Pollutant Discharge Elimination System (NPDES) Permit for Stormwater Discharges from Construction Site Activities from IEPA |
| **Biological Resources** | | | | | |
| **Direct/Indirect Benefits** | • Only **no/negligible** impacts | • **Minor to moderate, long-term benefit** to the natural environment from management and removal of noxious weeds in landscaped areas | • **Minor to moderate, long-term benefit** to the natural environment from management and removal of noxious weeds in landscaped areas | • **Minor to moderate, long-term benefit** to the natural environment from management and removal of noxious weeds in landscaped areas | • **Minor to moderate, long-term benefit** to the natural environment from management and removal of noxious weeds in landscaped areas<br>• **Minor to moderate, long-term benefit** due to the reduced likelihood of Bird/Animal Aircraft Strike Hazard incidents |

TABLE ES-1
**Summary of Impacts**

| Resource | No Action | Fenton Site | Mehlville Site | St. Louis City Site (Preferred Alternative) | St. Clair County Site |
|---|---|---|---|---|---|
| **Direct/Indirect Impacts** | • Only **no/negligible** impacts | • Not applicable | • **Minor to moderate, negative, and long-term** direct and indirect impacts to native vegetation<br>• **Minor to moderate, negative, and long-term** impacts to wildlife during construction and operation<br>• **Minor to moderate, negative, and long-term** impact to wildlife habitat<br>• **Minor to moderate, negative, and short-term** impacts to federally listed species potential habitat<br>• **Minor to moderate, negative, and short-term** impact to migratory birds during construction activities | • **Minor to moderate, negative, and short-term** to migratory birds during construction activities | • **Minor to moderate, negative, and long-term** direct and indirect impacts to native vegetation due to mortality and loss of natural habitat during construction<br>• **Minor to moderate, negative, and long-term** impacts to wildlife during construction and operation<br>• **Minor to moderate, negative, and long-term** impact to wildlife habitat<br>• **Minor to moderate, negative, and long-term** impacts to federally listed species potential habitat<br>• **Minor to moderate, negative, and long-term** impacts to state-listed species potential habitat<br>• **Minor to moderate, negative, and short-term** impact to migratory birds during construction activities |
| **Cumulative Impacts** | • Not applicable | • Not applicable | • **Minor to moderate, negative, and long-term** cumulative impacts to biological resources | • **Minor to moderate, negative, and short-term** cumulative impacts to biological resources | • **Minor to moderate, negative, and long-term** cumulative impacts to biological resources |
| **Environmental Protection Measures** | • Not applicable | • No tree clearing after March 31 and prior to October 1<br>• NGA will coordinate with the U.S. Fish and Wildlife Service (USFWS) regarding the Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protection Act (BGEPA) to establish and implement appropriate mitigation<br>• Provide payment to in-lieu fee program to offset impacts to riparian forest at a 3:1 ratio | • No tree clearing after March 31 and prior to October 1<br>• Replace cleared riparian forest at a 3:1 ratio<br>• NGA will coordinate with USFWS under Section 7 of the Endangered Species Act (ESA) to determine if mitigation measures are required and how those measure are to be implemented<br>• NGA will coordinate with USFWS regarding the MBTA and BGEPA to establish and implement appropriate mitigation | • No tree clearing after March 31 and prior to October 1<br>• NGA will coordinate with USFWS regarding the MBTA and BGEPA to establish and implement appropriate mitigation | • No tree clearing after March 31 and prior to October 1<br>• Replace cleared riparian forest at a 3:1 ratio, cleared non-riparian forest at 2:1, and area cleared during St, Clair County selective harvest at 1:1. Selective harvest mitigation will be performed by St. Clair County<br>• NGA will coordinate with the FAA and Scott AFB to ensure that campus design features do not attract birds or other wildlife to the site<br>• NGA requested USFWS concurrence with its no affect determination to roosting habitat or hibernacula of three species of bats under Section 7 of the ESA<br>• NGA will coordinate with USFWS regarding the MBTA and BGEPA to establish and implement appropriate mitigation<br>• USACE will coordinate with IDNR regarding potential impacts to state-listed species |
| **Geological & Paleontological Resources** | | | | | |
| **Direct/Indirect Impacts** | • Only **no/negligible** impacts | • Only **no/negligible** impacts | • Only **no/negligible** impacts | • Only **no/negligible** impacts | • Only **no/negligible** impacts |
| **Cumulative Impacts** | • Not applicable | • Not applicable | • Not applicable | • Not applicable | • Not applicable |

TABLE ES-1
**Summary of Impacts**

| Resource | No Action | Fenton Site | Mehlville Site | St. Louis City Site (Preferred Alternative) | St. Clair County Site |
|---|---|---|---|---|---|
| **Environmental Protection Measures** | • Not applicable | • Appropriate BMPs such as silt fencing will be implemented during construction to minimize potential soil erosion and sedimentation<br>• NGA will follow all federal procedures pertaining to the management of the discovered resources in accordance with the Paleontological Resources Preservation Act of 2009 as a BMP | • Appropriate BMPs such as silt fencing will be implemented during construction to minimize potential soil erosion and sedimentation<br>• NGA will follow all federal procedures pertaining to the management of the discovered resources in accordance with the Paleontological Resources Preservation Act of 2009 as a BMP | • Appropriate BMPs such as silt fencing will be implemented during construction to minimize potential soil erosion and sedimentation<br>• NGA will follow all federal procedures pertaining to the management of the discovered resources in accordance with the Paleontological Resources Preservation Act of 2009 as a BMP | • Appropriate BMPs such as silt fencing will be implemented during construction to minimize potential soil erosion and sedimentation<br>• NGA will follow all federal procedures pertaining to the management of the discovered resources in accordance with the Paleontological Resources Preservation Act of 2009 as a BMP |
| **Air Quality & Climate Change** | | | | | |
| **Direct/Indirect Impacts** | • Only **no/negligible** impacts | • **Minor to moderate, negative, and short-term** impact to air quality from construction emissions<br>• **Minor to moderate, negative, and long-term** impact to air quality from operational emissions<br>• **Minor to moderate, negative, and long-term** impact from greenhouse gas emissions during operation | • **Minor to moderate, negative, and short-term impact** to air quality from construction emissions<br>• **Minor to moderate, negative, and long-term impact** to air quality from operational emissions<br>• **Minor to moderate, negative, and long-term** impact from greenhouse gas emissions during operation | • **Minor to moderate, negative, and short-term** impact to air quality from construction emissions<br>• **Minor to moderate, negative, and long-term** impact to air quality from operational emissions<br>• **Minor to moderate, negative, and long-term** from greenhouse gas emissions during operation | • **Minor to moderate, negative, and short-term** impact to air quality from construction emissions<br>• **Minor to moderate, negative, and long-term** impact to air quality from operational emissions<br>• **Minor to moderate, negative, and long-term** impact from greenhouse gas emissions during operation |
| **Cumulative Impacts** | • Not applicable | • **Minor to moderate, negative, and short-term** cumulative impacts from construction-related emissions<br>• **Minor to moderate, negative, and long-term** cumulative impacts from operation-related emissions | • **Minor to moderate, negative, and short-term** cumulative impacts from construction-related emissions<br>• **Minor to moderate, negative, and long-term** cumulative impacts from operation-related emissions | • **Minor to moderate, negative, and short-term** cumulative impacts from construction-related emissions<br>• **Minor to moderate, negative, and long-term** cumulative impacts from operation-related emissions | • **Minor to moderate, negative, and short-term** cumulative impacts from construction-related emissions<br>• **Minor to moderate, negative, and long-term** cumulative impacts from operation-related emissions |
| **Environmental Protection Measures** | • Not applicable | • NGA will implement a Dust Control Plan to control onsite and offsite fugitive dust emissions, as prescribed in the Missouri Code of State Regulations (CSR)<br>• NGA will implement a BMP to reduce onsite and offsite heavy-duty diesel vehicle emissions by limiting the time that vehicles can idle to no more than 5 minutes in any 60-minute period<br>• NGA will implement a BMP to reduce sulfur dioxide ($SO_2$) emissions into the atmosphere from industrial boilers, and thereby, also reducing emissions of fine particulate matter ($PM_{2.5}$)<br>• NGA will implement the USEPA's diesel emission reduction checklist | • NGA will implement a Dust Control Plan to control onsite and offsite fugitive dust emissions, as prescribed in the Missouri CSR<br>• NGA will implement a BMP to reduce onsite and offsite heavy-duty diesel vehicle emissions by limiting the time that vehicles can idle to no more than 5 minutes in any 60-minute period<br>• NGA will implement a BMP to reduce $SO_2$ emissions into the atmosphere from industrial boilers, and thereby, also reducing emissions of $PM_{2.5}$<br>• NGA will implement the USEPA's diesel emission reduction checklist | • NGA will implement a Dust Control Plan to control onsite and offsite fugitive dust emissions, as prescribed in the Missouri CSR<br>• NGA will implement a BMP to reduce onsite and offsite heavy-duty diesel vehicle emissions by limiting the time that vehicles can idle to no more than 5 minutes in any 60-minute period<br>• NGA will implement a BMP to reduce $SO_2$ emissions into the atmosphere from industrial boilers, and thereby, also reducing emissions of $PM_{2.5}$<br>• NGA will implement the USEPA's diesel emission reduction checklist | • NGA will implement Dust Control Plan for controlling onsite and offsite fugitive dust emissions, as prescribed in the Illinois Administrative Code<br>• NGA will implement BMP to reduce onsite and offsite heavy-duty diesel vehicle emissions by limiting the time that vehicles can idle to no more than 5 minutes in any 60-minute period<br>• NGA will implement BMP to limit photochemically reactive material in architectural coatings to no more than 20 percent by volume in containers having a capacity of more than 1 gallon<br>• NGA will implement the USEPA's diesel emission reduction checklist |
| **Airspace** | | | | | |
| **Direct/Indirect Impacts** | • Only **no/negligible** impacts | • Only **no/negligible** impacts | • Only **no/negligible** impacts | • Only **no/negligible** impacts | • **Minor to moderate, negative, and long-term** impacts to current airspace conditions |
| **Cumulative Impacts** | • Not applicable | • Not applicable | • Not applicable | • Not applicable | • **Minor to moderate, negative, and long-term** impacts to current airspace conditions |

TABLE ES-1
**Summary of Impacts**

| Resource | No Action | Fenton Site | Mehlville Site | St. Louis City Site (Preferred Alternative) | St. Clair County Site |
|---|---|---|---|---|---|
| **Environmental Protection Measures** | • Not applicable | • NGA will coordinate with the FAA during the design phase to avoid or minimize glint and glare through selection of building materials and modifying orientation and angles that could cause glint or glare | • NGA will coordinate with the FAA during the design phase to avoid or minimize glint and glare through selection of building materials and modifying orientation and angles that could cause glint or glare | • NGA will coordinate with the FAA during the design phase to avoid or minimize glint and glare through selection of building materials and modifying orientation and angles that could cause glint or glare | • NGA will perform an aeronautical feasibility study, through submittal of FAA Form 7460-1, "Notice of Proposed Construction or Alteration"<br>• NGA will coordinate with the FAA during the design phase to avoid or minimize glint and glare through selection of building materials and modifying orientation and angles that could cause glint or glare |

# ES-11 Summary of Findings by Site

Similar environmental impacts exist across the sites. For example, construction impacts such as noise generation and construction spending would be about the same regardless of the site chosen. However, disparate impacts also exist between the sites: floodplains would be impacted only at the Fenton Site, historic properties would be impacted only at the St. Louis City Site, and airspace would be impacted only at the St. Clair County Site. The impacts associated with each site are briefly summarized in the following subsections.

## ES-11.1 Fenton Site

The land uses surrounding the Fenton Site are largely commercial and industrial, which are compatible with the Proposed Action. No major negative environmental impacts would be expected from siting, constructing, and operating the Next NGA West Campus at the Fenton Site. Siting the Next NGA West Campus at the Fenton Site could result in major benefits from the change in visual character at the site.

Minor to moderate benefits may result from health and safety improvements, construction spending, induced employment, land use improvements, cleanup of existing hazardous contamination, and the reduction of weed species.

It is anticipated that the following minor to moderate, negative environmental impacts could occur if the Next NGA West Campus is located at the Fenton Site:

- Socioeconomics–Changing to federal ownership at this location would result in a loss of property tax paid to the City of Fenton (approximately $5,502) and St. Louis County (approximately $462,308). The City of St. Louis would lose approximately $2.19 million in City Total Earnings Tax through the loss of tax from NGA non-residents of St. Louis.
- Traffic and transportation–The surrounding road network would be affected during construction periods only. There would likely be no transportation infrastructure failures as a result of the increased traffic.
- Noise–Noise from construction activities would be noticeable, but construction activities would comply with state and local ordinances.
- Hazardous material and solid waste–This site would generate solid waste before re-use or recycling. This amount is a minute percent of the total permitted capacity of the three regional landfills that accept construction and demolition material.
- Utilities–Site development would require upgrades to utility infrastructure and new connections, including supply and service, potable water supply and services, wastewater and stormwater services, and communications.

- Water resources–No water resources or regulated waters would be impacted; however, construction activities could occur within the 500-year floodplain. Any infrastructure located within the 500-year floodplain would be designed and constructed in compliance with all applicable federal guidelines and regulatory requirements pertaining to floodplains.
- Air quality and climate change–An increase in National Ambient Air Quality Standards (NAAQS) criteria pollutant and carbon dioxide equivalents ($CO_2e$) emissions would occur. However, emission levels would be below regulatory thresholds.

Environmental protection measures, including standard best management practices (BMPs) as defined in Table ES-1 and summarized at the end of each resource section, would need to be implemented to ensure environmental impacts are maintained below defined thresholds.

## ES-11.2 Mehlville Site

The land uses surrounding the Mehlville Site are largely commercial along Tesson Ferry Road, which is compatible with the Proposed Action. No major benefits or negative environmental impacts would be expected from siting, constructing, or operating the Next NGA West Campus at the Mehlville Site. Minor to moderate benefits may result from construction spending, induced employment, surrounding land use improvements, reduction in weed species, and cleanup of any existing contamination.

It is anticipated that minor to moderate, negative environmental impacts could occur to the following resources:

- Socioeconomics–Changing to federal ownership at this location would result in a loss of property tax paid to St. Louis County (approximately $545,495). The City of St. Louis would lose approximately $2.19 million in City Total Earnings Tax through the loss of tax from NGA non-residents of St. Louis.
- Traffic and transportation–There would be an impact to the roadway network at the entrance to the Next NGA West Campus, along Tesson Ferry Road. NGA would work with MoDOT to install a traffic signal to reduce this concern.
- Noise–Noise from construction activities would be noticeable, but construction would comply with state and local ordinances.
- Hazardous material and solid waste–This site would solid waste before re-use or recycling. This amount is a minute percent of the total permitted capacity of the three regional landfills that accept construction and demolition material.
- Utilities–Site development would require upgrades to utility infrastructure and new connections, including supply and service, potable water supply and services, wastewater and stormwater services, and communications.

- Water resources–A single, forested wetland, approximately less than 0.10 acre in size, is located below an onsite retention pond. Under the Proposed Action, construction activities could displace surface waterbodies and the small wetland within the site. The maximum amount of surface water area/disturbance that would be displaced consists of 2,658 linear feet of intermittent stream and a 3.5-acre stormwater retention pond. Impacts to the surface waterbodies that qualify as waters of the United States would require a CWA Section 404 permit from USACE, St. Louis District and a Section 401 Water Quality Certification from Missouri Department of Natural Resources.
- Biological resources–Site development would impact present wildlife and vegetation. Sixteen acres of forest would be removed; these impacts would be mitigated through a replanting effort.
- Air Quality and Climate Change–An increase in NAAQS criteria pollutant and $CO_2e$ emissions would occur. However, emissions levels would be below regulatory thresholds.

Standard BMPs, as defined in Table ES-1 and summarized at the end of each resource section, would need to be implemented to ensure environmental impacts are maintained below defined thresholds.

## ES-11.3 St. Louis City Site (Preferred Alternative)

The City of St. Louis intends to redevelop the St. Louis City Site and offered this site as an option to evaluate for the EIS. The City has since amended the 2009 Redevelopment Master Plan to accommodate the NGA proposal. Granting opportunities through the U.S. Department of Housing and Urban Development and other federal initiatives have been advanced, making this project consistent with area future land use plans. There would be both major impacts and benefits associated with the St. Louis City Site.

Within the footprint of the St. Louis City Site, there are known historic properties listed on the National Register of Historic Places (NRHP). The construction of the project would require the demolition of the Buster Brown-Blue Ribbon Shoe Factory and buildings within the footprint of the St. Louis Place Historic District. NGA, USACE, USAF, and the City of St. Louis are in discussion with the Advisory Council on Historic Preservation, the Missouri State Historic Preservation Office, and local historic interest groups to determine the appropriate mitigation for impacts to NRHP-listed resources.

The loss of these historic properties is an adverse effect under Section 106 and a major impact under NEPA. This adverse effect will be resolved through the stipulations in a Section 106 Programmatic Agreement. The agreement will be reached through the consultation process mandated under Title 36 of the *Code of Federal Regulations* (CFR) Part 800 (36 CFR 800), which includes providing an opportunity for the public to express their views on resolving the adverse effect, as described in more detail in Section 4.8, *Cultural Resources*, and Section 5.2, *Environmental Justice*. The formally documented significance of the properties that will be removed is not associated with current ethnicities or populations. However, the City of St. Louis and NGA have consulted with the neighborhood, including the Tillie's Corner Historical Project, and agree that it is important to involve neighborhood residents in the development of meaningful mitigation activities. As part

of the proposed Programmatic Agreement addressing impacts to cultural resources at each of the alternative sites, USACE conducted a Consulting Parties meeting on December 9, 2015, to review the proposed Programmatic Agreement. Representatives from the Tillie's Corner Historical Project (a local historical group interested in the St. Louis City Site and a Consulting Party to the Programmatic Agreement) participated in the meeting and suggested a number of potential cultural resources mitigation projects at the St. Louis City Site. These projects would document changes that have occurred in the North St. Louis area over the last 50 years. The City of St. Louis is continuing to work with representatives of the Tillie's Corner Historical Project and other community members to determine the appropriate cultural resources mitigation measures, which will be stipulated in the Programmatic Agreement. The consultation process is ongoing and mitigation solutions will be in the Final Programmatic Agreement, which is expected in April 2016. The Final Programmatic Agreement will be executed prior to the signature of the Record of Decision for the EIS and will be included as an appendix.

Siting the Next NGA West Campus at the St. Louis City Site could result in major benefits from the change in visual character at the site. Additional non-major benefits would include health and safety improvements, construction spending, induced employment, cleanup of existing hazardous contamination, improvements in services that result in a more sustainable community, and the reduction of weed species.

Following the analysis performed for the St. Louis City site, it is anticipated that other minor to moderate negative environmental impacts could occur to the following resources:

- Socioeconomics–Changing to federal ownership at this location would result in a loss of property tax paid to the City of St. Louis (approximately $64,180), but St. Louis would retain the City's earnings tax revenue from NGA personnel.
- Land use–The City of St. Louis is working on agreements with local community members for property purchases and relocations. All relocations are being conducted by the City of St. Louis and would comply with the Missouri relocation statutes (Sections 523.200–215, RSMo, 2014), which also meet the requirements of the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Both laws require fair compensation for relocated individuals.
- Health and safety–Road realignments could result in a minor impact to emergency response times in the area.
- Traffic and transportation–There would be an impact to the roadway network at the two entrances to the NGA campus without signals, which are located along Jefferson Avenue and Cass Avenue. NGA would coordinate with MoDOT to install actuated traffic signals to alleviate this issue.
- Noise–Noise during construction would be noticeable to nearby residences and businesses.

- Hazardous material and solid waste–This site would generate solid waste before re-use or recycling. This amount is a minute percent of the total permitted capacity of the three regional landfills that accept construction and demolition material.
- Biology–Migratory birds could be affected by the Proposed Action during construction.
- Utilities–Site development would require upgrades to utility infrastructure and new connections, including power supply and service, potable water supply and services, wastewater and stormwater services, and communications.
- Air quality and climate change–An increase in NAAQS criteria pollutant and $CO_2e$ emissions would occur. However, emission levels would be below regulatory thresholds.

Standard BMPs, as defined in Table ES-1 and summarized at the end of each resource section, would need to be implemented to ensure environmental impacts are maintained below defined thresholds.

## ES-11.4 St. Clair County Site

St. Clair County offered the St. Clair County Site as an option to be evaluated for the EIS. To accommodate the NGA proposal, a county zoning restriction of building heights has been lifted to allow for campus construction at this location. No major environmental benefits would be expected from siting, constructing, and operating the Next NGA West Campus at the St. Clair County Site; however, there is a potential major negative impact.

A previously identified archaeological site listed on the NRHP is located within the footprint of the St. Clair County Site. Because of the potential impacts to this archeological site, NGA, USACE, and St. Clair County have developed a mitigation plan, which has been approved by the Illinois State Historic Preservation Office and identifies the appropriate mitigation for impacts to this resource.

Minor to moderate benefits may result from the reduction of potential noxious weeds on the site, health and safety improvements, land use improvements.

Following the analysis performed for the St. Clair County site, it is anticipated that minor to moderate, negative environmental impacts could occur to the following resources:

- Socioeconomics–The City of St. Louis would lose approximately $2.19 million in City Total Earnings Tax through the loss of tax from NGA non-residents of St. Louis. There would be no change to the County's property tax revenue; the site is already exempt from property taxes because it is County-owned.
- Traffic and transportation–There would be an impact to the St. Clair County Site roadway network at the signalized intersection of Route 158 at Wherry Road. NGA would coordinate with IDOT to add an exclusive right turn lane to westbound Wherry Road to alleviate this issue.

- Utilities–Site development would require upgrades to utility infrastructure and new connections, including power supply and service, potable water supply and services, wastewater and stormwater services, and communications.
- Water resources–A single, forested wetland, approximately 2.1 acres in size, is located in the southwestern part of the site. This wetland would be fully avoided during construction and operation of the Next NGA West Campus. Other impacts to surface water would be to 194 linear feet of an onsite perennial stream. Impacts to the surface waterbodies that qualify as waters of the United States from the proposed infrastructure construction would require a CWA Section 404 permit from USACE, St. Louis District and Section 401 Water Quality Certification from IEPA.
- Biological resources–Site development would impact present wildlife and vegetation, including forested and riparian areas; these impacts would be mitigated through a replanting effort.
- Air quality and climate change–It is anticipated that an average roundtrip commute would increase from 26.4 miles to 58.2 miles based on current workforce zip codes. Despite the increase in commute distance, the annual operational emissions would be less than the federal *de minimis* thresholds for criteria pollutants and the 25,000-metric ton reporting threshold for $CO_2e$.
- Airspace–Because of the proximity to Scott AFB, NGA would coordinate with the FAA to perform an aeronautical study under 14 CFR 77 to determine the potential impacts to flight patterns and operations within the existing airspace. There should be minimal change to flight patterns if this site is selected.

Standard BMPs, as defined in Table ES-1 and summarized at the end of each resource section, would need to be implemented to ensure environmental impacts are maintained below defined thresholds.

SECTION 1.0

# Purpose and Need

## 1.1 Introduction

The National Geospatial-Intelligence Agency (NGA) is investigating sites for the potential relocation of its 2nd Street office facilities (Next NGA West Campus) in the greater St. Louis metropolitan area. This effort is required to replace mission-critical facilities in St. Louis that have exceeded their service life and can no longer support the technology changes required for the NGA mission.

The Kansas City District of the U.S. Army Corps of Engineers (USACE) is developing an environmental impact statement (EIS) in accordance with the National Environmental Policy Act of 1969 (NEPA) to evaluate the social and environmental impacts associated with construction of the Next NGA Campus. NGA is the proponent of this action and the U.S. Air Force (USAF) is a cooperating agency under NEPA because it will be the ultimate property owner of the NGA Campus. The Federal Aviation Administration (FAA) is a coordinating agency on this action because it participated in the purchase of the St. Clair County property and the land is bound by certain grant assurances until such time as the FAA releases the land from those obligations. The FAA is also acting as the airspace authority for this EIS.

## 1.2 Background

NGA's mission is to provide timely, relevant, and accurate geospatial intelligence in support of national security. NGA delivers geospatial intelligence that provides a decisive advantage to warfighters, policymakers, intelligence professionals, and first responders. Both an intelligence agency and combat support agency, NGA fulfills national security priorities in partnership with the intelligence community and U.S. Department of Defense (DoD). Many of those missions, such as global positioning system support, aeronautical safety of navigation, and precision targeting support, are accomplished at the NGA West Campus (South 2nd Street facility) in St. Louis, Missouri. NGA, along with its predecessor organizations, has been part of the St. Louis community since the 1950s.

## 1.3 EIS Study Area

The NGA facility being considered for relocation is the NGA West Campus located at 3200 South 2nd Street and Arsenal Street in St. Louis, Missouri. NGA has a second facility in Arnold, Missouri, approximately 20 miles from the South 2nd Street facility. The Arnold facility, however, is not included in the current effort. The study area for this EIS is the greater St. Louis metropolitan area, which includes St. Louis County in Missouri and St. Clair County in southern Illinois (Figure 1-1). The sites under consideration for the Next NGA West Campus include the following:

- Fenton: 1050 Dodge Drive, Fenton, Missouri (southwest of St. Louis)

- Mehlville: 13045 Tesson Ferry Road, St. Louis, Missouri (south of St. Louis)
- St. Louis City: near the intersections of Cass and North Jefferson Avenues in downtown St. Louis
- St. Clair County: along Interstate 64 (I-64), adjacent to Scott Air Force Base (AFB), Illinois (east of St. Louis)

# 1.4 Purpose and Need for Action

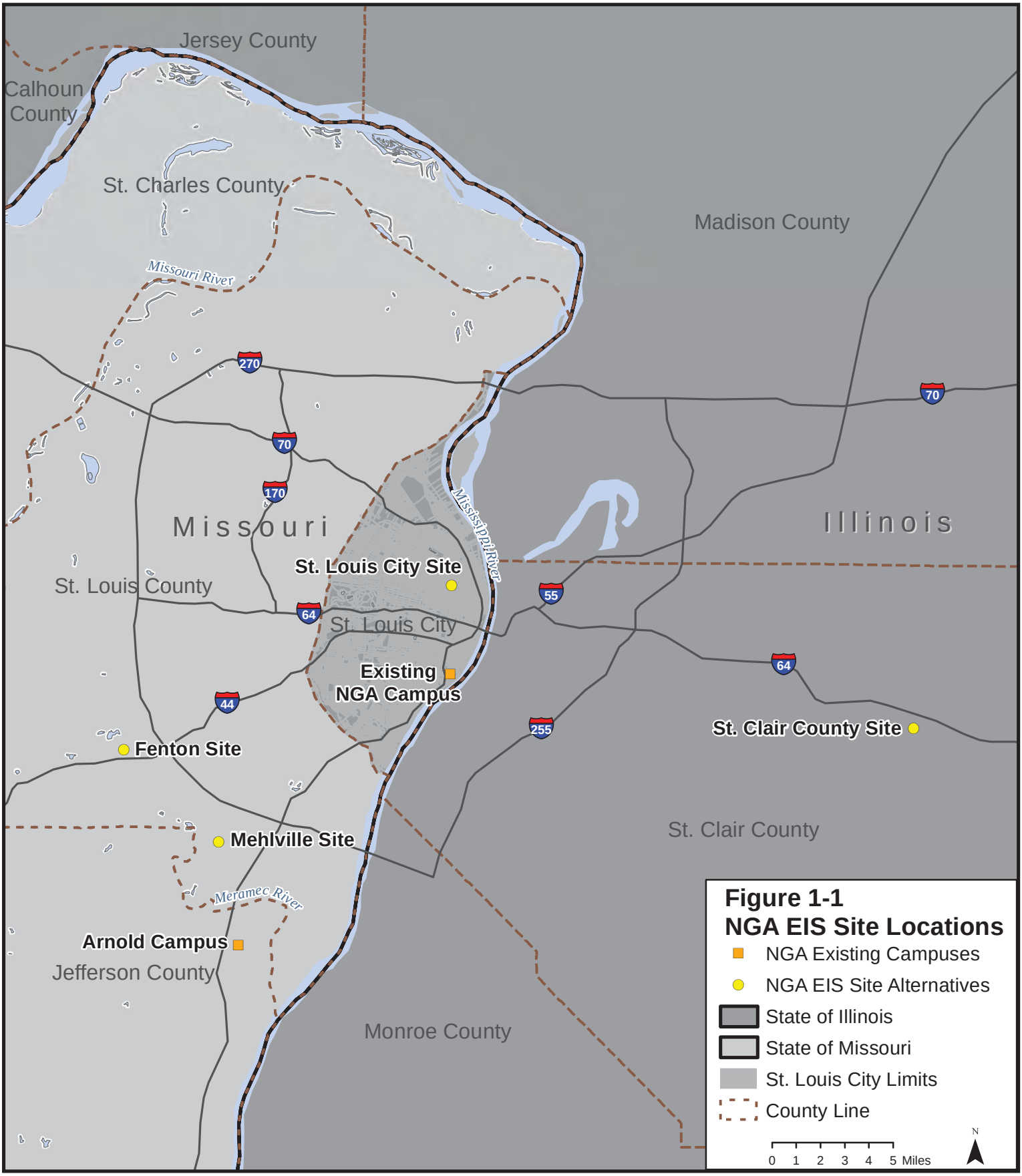
## 1.4.1 Purpose

The purpose of Next NGA West Campus is to enhance current and future missions, improve resiliency, and resolve the numerous risks associated with the South 2nd Street facility. Challenges associated with the South 2nd Street facility include the proximity to floodplains and incompatible industrial activities, as well as the age and physical setting of existing buildings, which limit their ability to be economically renovated to meet current facility standards. In addition, the South 2nd Street facility cannot be made to meet post-9/11 requirements for protection of the workforce and mission.

## 1.4.2 Need

NGA needs a new campus capable of supporting current and future mission requirements at a location that complies with established standards for such facilities. Construction and operation of the campus need to meet the following site location and campus requirements:

1. Allows for continuity and resilience for existing and future NGA operations
2. Provides purpose-built facilities that are safe, secure, flexible, and efficient
3. Is conducive to recruiting and retaining top-quality personnel
4. Stays within anticipated funding limits for construction, operation, and maintenance
5. Supports future changes to mission requirements
6. Provides necessary utilities, telecommunication, and transportation infrastructure
7. Contains a boundary that is a usable shape for necessary buildings and infrastructure, and outside of the 100-year floodplain
8. Provides physical security and force protection with appropriate setbacks from adjacent roads, railroads, and property boundaries
9. Provides potential to use topography and landscape to enhance security
10. Site is available for acquisition and construction in early 2017
11. Meets or exceeds current building standards and codes, particularly those related to the design, detailing, and construction of structural and non-structural components, to resist the effects of seismic and other natural or human-made events


Jersey County
Calhoun County
St. Charles County
Madison County
Missouri River
Mississippi River
Missouri
Illinois
St. Louis County
St. Louis City Site
St. Louis City
Existing NGA Campus
Fenton Site
St. Clair County Site
St. Clair County
Mehlville Site
Meramec River
Arnold Campus
Jefferson County
Monroe County
270
70
170
64
44
55
255
Figure 1-1
NGA EIS Site Locations
NGA Existing Campuses
NGA EIS Site Alternatives
State of Illinois
State of Missouri
St. Louis City Limits
County Line
0 1 2 3 4 5 Miles
N

## 1.5 Decision to be Made

NGA chose the preferred site after gathering information from agencies, the public, and others through the NEPA process and by performing the environmental impact analysis shown in this EIS. NGA considered the information gathered during the EIS, along with other critical factors, such as its ability to perform its mission, maintain a secure environment, retain and recruit employees, and meet the construction schedule. The final selection process and decision is documented in the Record of Decision, which will be distributed after publication of the Final EIS (FEIS).

## 1.6 Scope of the Analysis

The scope of this EIS includes the potential environmental impacts caused by the proposed construction and operation of the Next NGA West Campus in the St. Louis metropolitan area. The intent of the EIS is to inform the public and NGA decision makers of the potential project impacts through a complete and objective analysis of the alternatives. This analysis considers the No Action Alternative as well as four site alternatives that meet the project purpose and need (see Section 1.4, *Purpose and Need for Action*).

If NGA moves from the existing location, the USAF, as the agency with current real property accountability, in conjunction with NGA and the General Services Administration, will be responsible for addressing the use and disposition of the South 2nd Street facility after NGA has vacated. Insufficient information is available to discuss possible future use of the South 2nd Street facility at this time; therefore, use of the current NGA Campus after NGA vacates is not part of this EIS. Separate NEPA documentation, as necessary, would be prepared for the future use of the South 2nd Street facility.

The direct, indirect, and cumulative impacts of implementing NGA's Proposed Action are evaluated in accordance with the Council on Environmental Quality's (CEQ's) guidance for implementing NEPA (CEQ, 1983; CEQ, 1997). The construction of the proposed project would occur over a 5-year period and would include direct and indirect effects on the human and natural environment. Direct effects are caused by the action and occur at the same time and place, whereas indirect effects are caused by the action and occur later in time. Cumulative impacts result from the incremental effect of the Proposed Action when added to other past, present, and reasonably foreseeable actions, which may be undertaken by other private or public entities.

## 1.7 Summary of Key Environmental Compliance Requirements

This EIS was prepared in accordance with NEPA, the CEQ-implementing regulations (Title 40 of the *Code of Federal Regulations* [CFR] Parts 1500-1508 [40 CFR 1500-1508]), and U.S. Army NEPA-implementing regulations (32 CFR 651). The other statutes, regulations, orders, and required consultations that are most pertinent to the Proposed Action are listed in Table 1-1.

TABLE 1-1
**Summary of Statutes, Regulations, Orders, and Required Consultations Pertinent to the Proposed Action**

| Law or Regulation | Description |
|---|---|
| American Antiquities Act (16 United States Code [U.S.C.] 431 et seq.) | Requires the agency to protect historic and prehistoric ruins, monuments, and objects of antiquity, including vertebrate paleontological resources, on lands owned or controlled by the federal government. |
| American Indian Religious Freedom Act (AIRFA) (42 U.S.C. 1996) | Establishes federal policy to protect and preserve the right of American Indians to believe, express, and exercise their religions. Requires federal agencies to prepare a report evaluating how their actions might interfere with these beliefs, expressions, and actions. |
| Archaeological and Historic Preservation Act (AHPA) (16 U.S.C. 469 et seq.) | Authorizes all federal agencies to expand program or project funds to evaluate, protect, or recover archaeological and historic data jeopardized by their projects, and explicitly calls for analysis and publication of data. |
| Archaeological Resources Protection Act (ARPA) (16 U.S.C. 470aa et seq.) | Requires a permit for excavation or removal of archaeological resources from publicly held or Native American lands. |
| Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668 et seq.) | Consultations should be conducted to determine if any protected birds are found to inhabit the area. If so, the agency must obtain a permit that may be required because of construction and operation of project facilities before moving any nests. |
| Clean Air Act (CAA) (42 U.S.C. 7401 et seq.) | Requires sources to meet standards and obtain permits to satisfy National Ambient Air Quality Standards (NAAQS), State Implementation Plans (SIPs), New Source Performance Standards, National Emission Standards for Hazardous Air Pollutants (NESHAPs), and New Source Review (NSR). |
| Clean Water Act (CWA) [33 U.S.C. 1251 et seq. Sections 401 and 402] | Requires U.S. Environmental Protection Agency (USEPA) or state-issued permits, National Pollutant Discharge Elimination System (NPDES) permits, and compliance with provisions of permits regarding discharge of effluents to surface waters and additional wetland protection requirements. |
| CWA (33 U.S.C. 1313 Section 404) | Requires permits for discharge or fill placed in jurisdictional waters, including wetlands. Requires alternatives analysis, including practicable alternatives that avoid impacts [Section 404(b)(1) Guidelines]. |
| Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended | Establishes prohibitions and requirements concerning closed and abandoned hazardous waste sites. |
| Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.) | Requires consultation to identify endangered or threatened species and their habitats, assess impacts, obtain necessary biological opinion and, if necessary, develop mitigation measures to reduce or eliminate adverse effects of construction or operation. |
| Energy Independence and Security Act (EISA), Section 438 (42 U.S.C. 17094) | Requires new stormwater design requirements for federal construction projects that disturb more than the 5,000 square feet ($ft^2$) of land. |
| Executive Orders (E.O.) 11988: Floodplain Management<br>E.O. 13690: Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input<br>E.O. 11990: Protection of Wetlands Management | Requires that where there is no practicable alternative to development in floodplains and wetlands, federal agencies are required to prepare a floodplains and wetlands assessment, design mitigation measures, and provide for public review. For floodplain involvement, federal agencies must issue a Floodplain Statement of Findings. |
| E.O. 12898: Federal Action to Address Environmental Justice in Minority and Low-Income Populations | Directs federal attention to the environmental and human health effects of federal actions on minority and low-income populations with the goal of achieving environmental protection for all communities. |
| E.O 13045: Protection of Children from Environmental Health Risks and Safety Risk | Requires federal agencies to consider and avoid impacts to children. |

TABLE 1-1
**Summary of Statutes, Regulations, Orders, and Required Consultations Pertinent to the Proposed Action**

| Law or Regulation | Description |
|---|---|
| E.O. 13186: Responsibilities of Federal Agencies to Protect Migratory Birds (66 *Federal Register* (FR) 63349, December 6, 2001) | Requires federal agencies to avoid or minimize the negative impacts of their actions on migratory birds and to take active steps to protect birds and their habitats. |
| E.O. 13007: Indian Sacred Sites (61 FR 26771) | Directs federal agencies to avoid adverse effects to sacred sites, provide access to those sites for religious practices, and to plan projects to provide protection for and access to sacred sites. |
| E.O. 13175: Consultation and Coordination with Indian Tribal Governments | Directs federal agencies to establish regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications. |
| Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703 et seq.) | Requires consultation to determine whether construction or operation of project facilities has any impacts on migrating bird populations. |
| National Historic Preservation Act (NHPA), as amended (54 U.S.C. § 306108) | For a federal undertaking, Section 106 requires consultation with State Historic Preservation Officers (SHPO), federally recognized tribes, and other consulting parties to evaluate effects on historic properties (properties eligible for listing in the National Register of Historic Places (NRHP), and to consider ways to avoid effects or reduce effects to the level of no adverse effect. |
| Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. 3001) | Requires the development of procedures to address unexpected discoveries of Native American graves or cultural items during activities on federal or tribal land. |
| NEPA (42 U.S.C. 4321 et seq., 40 CFR 1500-1508) and ARs 200-1 and 200-4, 32 CFR 651 | Follows 40 CFR 1500-1508, which directs all federal agencies in the implementation of NEPA. |
| Noise Control Act (42 U.S.C. 4901 et seq.) | Requires facilities to maintain noise levels that do not jeopardize the health and safety of the public. Applicable to construction noise. |
| Protection of Historic Properties (36 CFR 800) | Lists implementing regulations that specify the process for the above-listed requirements of NRHP Section 106. |
| Resource Conservation and Recovery Act (RCRA) | Governs the disposal and cleanup of solid and hazardous waste. |
| Toxic Substances Control Act (TSCA) (15 U.S.C. 53) | Provides USEPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. |

## 1.8 Interagency Coordination

Throughout the development of the EIS, USACE and NGA have coordinated and continue to coordinate with various local, state, and federal agencies regarding the proposal to construct and operate the Next NGA West Campus (Proposed Action). Involvement activities to date included scoping, ad hoc agency meetings, distribution and review of the DEIS and DEIS public meetings. USACE sent scoping invitation letters to agencies, organizations, and tribal government representatives for the following agency coordination meetings:

- Missouri Governmental Agencies: Tuesday, December 9, 2014: St. Louis Gateway Classic Foundation, 2012 Dr. Martin Luther King, Jr. Drive, St. Louis, Missouri 63106

- Illinois Governmental Agencies: Wednesday, December 10, 2014: Katy Cavins Community Center, 308 East Fifth Street, O'Fallon, Illinois 62269

Agency representatives provided a number of comments that helped USACE and NGA to focus on the environmental concerns to be considered in this EIS as well as during conceptual master planning for the new sites.

USACE also engaged parties interested in potentially affected historic properties in accordance with Section 106 of the NHPA (see *Cultural Resources* in Sections 3.8 and 4.8). These agencies include the USAF, the Missouri State Historic Preservation Office (SHPO), Illinois SHPO, interested tribes, and the Advisory Council on Historic Preservation (ACHP).

Finally, USACE engaged the U.S. Fish and Wildlife Service (USFWS) in accordance with Section 7 of the Endangered Species Act.

A list of agencies and tribes contacted can be found in Section 7.0 of this EIS.

## 1.9 Public Outreach and Involvement

A variety of public involvement activities, tools, and techniques were used to engage community members during the EIS process, including:

- Project website (www.NextNGAWest.com), which includes information on public outreach, project alternatives, project documents, and an online comment form
- Formal public meetings (during scoping and the DEIS public comment period)
- Informal stakeholder phone calls, meetings, and e-mails
- Elected and public official briefings
- Media briefings (held the same days as the scoping)
- Announcements mailed to all residences and businesses within a 0.33-mile radius of the proposed site locations
- E-mails announcing meetings and general project information
- Newspaper advertisements announcing public meetings
- Press releases

Minority and low-income households could be affected by the Proposed Action. In accordance with E.O. 12898, additional efforts were made to engage these groups through phone calls to community leaders, direct mailings to homes, and follow-up meetings to identify project-related impacts that could disproportionately affect these populations.

### 1.9.1 Public Notices

NGA posted a Notice of Intent in the *Federal Register* (FR) on November 10, 2014, and published a Notice of Availability for the DEIS in the FR on October 9, 2015. Copies of these notices are presented in Appendix 1A.

### 1.9.2 Public Meetings

During preparation of the EIS, USACE hosted two rounds of public meetings. The first round, called scoping meetings, was held December 8-11, 2014, and introduced the project, provided an opportunity for the public to comment on the site locations or alternatives, and asked the public to identify potential environmental concerns, both positive and negative. During NEPA scoping, NGA sought input from affected government agencies, elected officials, non-governmental organizations, and the public on the proposed construction and operation of the Next NGA West Campus. Input received during the scoping period assisted NGA in identifying the concerns to focus on in the EIS. A number of businesses and residences within the boundaries of the St. Louis City Site did not receive scoping meeting notifications for the public meeting held on December 9, 2014, due to a mailing list error. Therefore, two additional meetings were held for the St. Louis City Site, the first on December 18, 2014, and the second on January 18, 2015.

The second round of public meetings occurred after publication of the DEIS on October 9, 2015. The meetings were held from October 26 to 29, 2015. The intent of these meetings was to receive comments on the DEIS from agencies and the public. The DEIS public meeting notices were published in local newspapers and other media outlets. Public comments were gathered during the meetings and during the 45-day public comment period. A summary of these comments is provided in Appendix 1D, and where appropriate, comments have been addressed in the Final EIS (FEIS).

#### 1.9.2.1 Meetings Held

The following public scoping meetings were held:

- December 8, 2014: NGA South 2nd Street facility (this meeting was open to NGA personnel only)
- December 8, 2014, December 9, 2014, and January 18, 2015: St. Louis Gateway Classic Foundation, 2012 Dr. Martin Luther King, Jr. Drive, St. Louis, Missouri 63106 (near the St. Louis City Site)
- December 10, 2014: Katy Cavins Community Center, 308 East Fifth Street, O'Fallon, Illinois 62269 (near the St. Clair County Site)
- December 11, 2014: Crestwood Community Center, 9245 Whitecliff Park Lane, Crestwood, Missouri 63126 (between the Fenton and Mehlville Sites)

The following DEIS public meetings were held:

- October 26, 2015: NGA South 2nd Street facility (this meeting was open to NGA personnel only)

- October 27, 2015: Crestwood Community Center, 9245 Whitecliff Park Lane, Crestwood, Missouri 63126 (between the Fenton and Mehlville Sites)
- October 28, 2015: Katy Cavins Community Center, 308 East Fifth Street, O'Fallon, Illinois 62269 (near the St. Clair County Site)
- October 29, 2015: St. Louis Gateway Classic Foundation, 2012 Dr. Martin Luther King, Jr. Drive, St. Louis, Missouri 63106 (near the St. Louis City Site)

#### 1.9.2.2 Public Comment Results

A detailed summary of the scoping meetings can be found in Appendix 1B, and a full list of comments received along with government responses is provided in Appendix 1C. A detailed summary of the comments received during the DEIS public meetings can be found in Appendix 1D. A brief synopsis of the primary attendee comments at the meetings is as follows:

- Comments from NGA personnel included the following:
  - Commuting impacts for personnel
  - Safety at the St. Louis City Site
  - Traffic concerns
  - NGA mission impacts, including security concerns
  - Employee support for not paying 1 percent city payroll tax
  - Relocation concerns
  - Proximity to amenities
- Comments during St. Louis City Site meetings included the following:
  - Community impacts (change of community composition, demographics)
  - Concerns regarding overall development of the North St. Louis area
  - Concerns about campus sprawl
  - Questions regarding local job creation
  - Support for potential economic development
  - Concerns about property acquisition (relocation of residents and businesses)
- Comments during St. Clair County Site meetings included the following:
  - Concerns regarding potential mission impacts to Scott AFB
  - Support of positive economic development for area
  - Concerns about traffic and commuting impacts
  - Concerns regarding security (especially given the nearby airports)
- Comments during Mehlville Site meetings included the following:
  - Support for potential economic development

  - Concerns regarding traffic and commuting impacts

- Comments during Fenton Site meetings included the following:
  - Support for potential economic development
  - Concerns regarding potential existing contamination
  - Security concerns due to proximity to highway
  - Concerns regarding proximity to floodplain
  - Concerns regarding traffic and commuting impacts

- Overall, people expressed specific concerns about the following:
  - Economic impacts
  - Environmental cleanup at proposed sites, including cost
  - Environmental impacts (floodplains, air quality)
  - Traffic and access concerns
  - Relocation of St. Louis City Site area residents
  - Security at all sites
  - Employee impacts (tax burden, mission support, distance from Arnold facility, commuting impacts, safety, proximity to amenities)

SECTION 2.0

# Description of Proposed Action and Alternatives

## 2.1 Introduction

This section describes the Proposed Action, which is to construct and operate a new National Geospatial-Intelligence Agency (NGA) Campus (Next NGA West Campus) in the St. Louis metropolitan area. Four action alternatives are presented for implementing the Proposed Action. This section also describes the No Action Alternative as the comparative baseline used in Section 4.0, *Environmental Consequences*, for assessing impacts.

## 2.2 Description of the Proposed Action

NGA proposes to site, construct, and operate a purpose-built geospatial collection, analysis, and distribution campus. The purpose-built campus would provide an open and flexible work environment that is scalable, reconfigurable, and adaptive to changing mission requirements. The campus would include the following components and support elements:

- Main operations building
- Data center (may be constructed sometime in the future)
- Central utility plant
- Visitor control center
- Remote inspection facility
- Primary and secondary access control points
- Security fencing around the site perimeter
- Supporting infrastructure such as parking, interior roads, and sidewalks

The Next NGA West Campus would be able to accommodate approximately 3,150 personnel, who would relocate from the existing South 2nd Street facility. It would be designed and operated to meet U.S. Department of Defense (DoD) policies and goals for energy planning, use, and management. Construction activities are expected to begin in the summer of 2017 and last for approximately 5 years.

## 2.3 Range of Alternatives Considered and Screening of Alternatives

The Next NGA West Campus selection process began in 2012. At that time, NGA confirmed with the General Services Administration and Scott Air Force Base (AFB) that no federally controlled property in the St. Louis metropolitan area existed that would meet the needs of NGA (see Section 1.4.2). NGA launched a Site Location Study (SLS) and reached out to local communities, regional development agencies, realtors, and other stakeholders to identify potential sites for the Next NGA West Campus. A total of 186 sites were identified, after which a filtering process was applied. The filters included the following:

- Sites had to be within a 25-mile area surrounding the South 2nd Street facility and be at least 50 acres in size
- Sites had to be within 2 miles of a state or interstate roadway, or a four-lane divided roadway
- Illinois sites had to be either along Interstate 255 (I-255)/Interstate 270 (I-270) or along Illinois Route 4/Interstate 64 (I-64) to Scott AFB

After applying these filters, 22 sites remained. These 22 potentially viable sites were evaluated and graded in the SLS using the following site selection criteria:

1. Overall Quality of Site Factors
    - Site configuration, size, and geometry allowing for flexible design and expansion with appropriate security cushion
    - Site topography
    - Site safeguards (natural existing or manufactured opportunities)
    - General site impressions
2. Development Suitability and Risk Factors
    - Development cost
    - Expansion capability/flexibility
    - Ease of procurement (number of owners, public or privately owned, etc.)
    - Geotechnical or environmental risks
3. Site Infrastructure Factors
    - Power: Adequate reliable power at site with diverse service
    - Traffic and Transportation: Adequate quality roadways, mass transit, low traffic volume, and multiple points of access
    - Utilities: Proximate water, natural gas, sanitary, and sewer services
    - Telecommunications: Adequate quality, diverse telecommunications infrastructure proximate to site
4. Site Location Factors
    - Neighborhood Quality: Commercial planned development, non-industrial neighbors
    - Staff commuting impact
    - Zoning: Current and planned development aligns with mission facility
    - Proximity to amenities (childcare facilities, service stations, eateries, and hospital)

Application of the site selection criteria narrowed the potential sites from 22 viable sites to six sites that warranted further consideration. NGA submitted a Land Acquisition Waiver to the Under Secretary of Defense Acquisition, Technology and Logistics to receive permission to study the alternative locations. In 2014, permission was granted and the sites were publicly announced.

The U.S. Army Corps of Engineers (USACE) and NGA determined that considerable time had elapsed since the initial SLS, and that a second and final site location study should be conducted. USACE posted advertisements in local newspapers stating the site criteria and received a total of 27 responses. Evaluation of these 27 additional sites reduced the number of viable sites to six. USACE and NGA held a consensus Technical Evaluation in September 2014 to evaluate the original six sites, the additional six sites, and a site proposed by Scott AFB. Each site was evaluated and given an adjectival score based on the above criteria, which was used to further screen the potential sites. The screening confirmed that the top sites were the six sites initially identified in the first SLS: Fenton, Mehlville, St. Louis City, St. Clair County, NorthPark, and Weldon Spring.

## 2.4 Alternatives Considered but Eliminated

### 2.4.1 Sites Originally Proposed

Two sites originally identified as potential alternatives during the siting studies were eliminated from detailed study. These sites were NorthPark and Weldon Spring. A portion of the NorthPark Site was sold after completion of the SLS, and the remaining land is not sufficient to meet NGA's requirements; therefore, the NorthPark Site was eliminated from detailed study in this environmental impact statement (EIS).

As the master planning analysis progressed, it was determined that the shape and topography of the Weldon Spring Site did not meet site requirements because it would not be possible to construct all the necessary structures within the property boundary configuration. As such, the Weldon Spring Site was also eliminated from detailed study in this EIS.

### 2.4.2 Renovation of Current Facilities

NGA initially considered renovating the South 2nd Street facility. Many of the structures at the current site date to the mid-1800s and would require extensive work to renovate; furthermore, the South 2nd Street facility cannot be made to meet post-9/11 requirements for protection of the workforce and mission. It was determined that building a new NGA Campus would be less costly and less disruptive to the NGA mission than renovation.

Operations would need to be relocated during building renovations; however, due to the classified nature of NGA activities, it is not feasible to acquire facilities in the St. Louis area that meet NGA's high security requirements without extensive, costly retrofitting, or new construction. Providing additional facilities and upgrading security would be costly and greatly impact the project schedule. The South 2nd Street facility is also within both the 100- and 500-year floodplain of the Mississippi River. This presents a significant flood

risk and could result in mission impacts if buildings are damaged or become unusable. Consequently, it was determined this alternative would not meet the purpose and need of the Proposed Action.

### 2.4.3 Upgrades to Arnold Facility

This alternative consisted of demolition and construction activities at the present NGA facility in Arnold, Missouri. However, this alternative would also require the temporary relocation of NGA personnel, which was deemed unfeasible (see Section 2.4.2). There were also concerns associated with geotechnical, physical, and logistical characteristics associated with the Arnold site. This alternative would not meet the purpose and need for the Proposed Action.

## 2.5 Description of Alternatives Carried Forward for Analysis

This EIS considers the siting, construction, and operation of the Next NGA West Campus at one of four alternative locations. The alternative locations are described in detail in the following subsections.

Construction activities are expected to begin in the summer of 2017 and would last approximately 5 years. During construction, existing structures within the construction boundaries of all sites would be demolished. Construction would also require the realignment of roads within and adjacent to the project boundary, adjustments to utility infrastructure (including water, energy, and communication lines), and removal of existing parking. For the purpose of this EIS, a full build-out of the construction area is assumed, and no existing buildings or infrastructure would remain. Current natural and vegetated areas within the construction boundary would also be removed or landscaped. NGA would strive to complement the architectural environment of the surrounding areas to the greatest extent possible and new buildings would be constructed to meet Leadership in Energy and Environmental Design (LEED) standards and requirements under E.O. 13693, *Planning for Federal Sustainability in the Next Decade*. The facilities listed in Section 2.2 would be constructed at the site.

Building infrastructure would require approximately 15 acres and another 15 acres would be required for hardscape (roadways, surface parking lots, sidewalks, and other impervious areas). A 60-foot security strip would be required around the buildings. The security strip would consist of a security feature (either a fence and/or wall), a 30-foot patrol strip inside the security feature, and a sidewalk outside the security feature. The site acreage for the alternative sites is larger than what is required for buildings (including the potential future data center), security, and the hardscape. NGA would obtain one of the four sites in its entirety, as described below. Any area that is not required for building infrastructure, security, or hardscape would be landscaped or restored to native vegetation. The impact analysis in Section 4.0 assumed disturbance within the full construction boundary, thus allowing flexibility for site layout.

Electric power generators would be used at the Next NGA West Campus. These diesel-fueled generators would be capable of supplying 100 percent of the power needs for the site. The generators would be used

primarily as a backup source of electricity, although NGA may enter into an agreement with the utility provider to run generators on standby for peak days in the summer when the need for energy is greatest.

### 2.5.1 Fenton Site

The Fenton Site (1050 Dodge Drive, Fenton, Missouri) is located in south St. Louis County, Missouri, on a 167-acre tract adjacent to Interstate 44 (I-44)/U.S. Route 50 (US 50) (Figures 2-1 and 2-2). This site was the former location of a Chrysler automobile assembly plant demolished in 2009 and is located within a larger 294-acre parcel proposed for redevelopment as industrial/commercial use along the Meramec River. The construction footprint encompasses the entire site, which is flat and covered almost entirely in concrete and asphalt. The site has a small (approximately 8-acre) area of grass extending along the former facility entrance that includes some large trees. The site is unoccupied with the exception of a trailer used by the site developer as a sales office. Nine other vacant structures remain on the site from its use as a Chrysler automobile assembly plant. A small network of unnamed roads, parking lots, and railroad tracks runs throughout the site. A 15-foot by 15-foot subsurface stormwater collection basin near the northern site boundary collects stormwater runoff and channels it offsite to the north.

The Fenton Site is currently for sale and owned by a private developer.

### 2.5.2 Mehlville Site

The Mehlville Site (13045 Tesson Ferry Road, St. Louis, Missouri) encompasses a 101-acre area in south St. Louis County, Missouri (Figures 2-3 and 2-4). The site is slightly graded with an existing 645,520-square-foot two-story office complex with interconnected buildings constructed for Metropolitan Life Insurance Company (MetLife) in 1976. The office building consists of eight modules with connecting hallways. Due to NGA's unique requirements, the existing office complex cannot be renovated. The construction footprint encompasses approximately 77 acres and includes the eight modules of office space used by MetLife and Cigna, a basement used for building maintenance, and a building entrance and cafeteria. All buildings and infrastructure would be removed as part of the Proposed Action.

The site also consists of associated parking lots containing nearly 1,900 parking spaces, a 3.5-acre stormwater pond, improved grounds with landscaping, and several constructed ephemeral drainages. A perennial stream flows through a small portion of the northern corner of the site, north of the office building. Approximately 30 acres of the site is a mature hardwood forest with a dense understory, perennial stream, and other intermittent and ephemeral drainages.

The Mehlville Site is owned by private interests.

### 2.5.3 St. Louis City Site (Preferred Alternative)

The St. Louis City Site (Intersection of Cass and Jefferson Avenues, St. Louis, Missouri) is a 100-acre site located within the city limits of the City of St. Louis. This area is predominantly vacant land with some residential, light industrial, and commercial use. It is situated just north of the City of St. Louis' downtown at

the intersection of Jefferson and Cass Avenues. The City of St. Louis recommended this site for review because it is part of an ongoing redevelopment effort by the City. Disinvestment has occurred over decades at the site, leading to an 85 percent vacancy rate as of December 2015. In total, the St. Louis City Site (which does not include the former Pruitt-Igoe site) consists of 76 percent vacant land, 9 percent vacant residential lots, and 13 percent owner or renter-occupied residences. The remaining 2 percent of the parcels are commercial (0.9 percent vacant, 0.5 percent owner occupied and 0.4 percent tenant occupied), churches (0.15 percent), and educational use (0.05 percent) (Halliday, 2015a, pers. comm.).

A limited number of community resources and homes remain within the Proposed Area footprint and vital components of a cohesive community are lacking. Many of the vacant residential lots are unmaintained and some have been converted into urban garden plots. As a result of the unmaintained lots, the City has designated the site a blighted community (Development Strategies, 2015a). The St. Louis City Site is within the proposed NorthSide Regeneration Project area (NorthSide Regeneration St. Louis, 2015) and within the U.S. Department of Housing and Urban Development's footprint for an Urban Promise Zone initiative for the City of St. Louis.

The St. Louis City Site presently has multiple landowners, many of whom have entered into agreements of sale with the City of St. Louis.

### 2.5.4 St. Clair County Site

The St. Clair County Site (Wherry Road and Rieder Road) comprises 182 acres, situated between Scott AFB and MidAmerica St. Louis Airport near Shiloh, Illinois (Figures 2-7 and 2-8). The site is 1 mile south of the I-64/Exit 19 interchange. The St. Clair County Site is relatively level and approximately 80 percent of the location has been used as agricultural land for the past century. The construction footprint encompasses approximately 157 acres of the site. Scott AFB and its Cardinal Creek Golf Course bound the site to the south. The golf course driving range, owned by St. Clair County and leased by Scott AFB, is included within the site boundary and would be removed as part of the Proposed Action. An approximately 1-acre freshwater pond is located near the northern boundary at Wherry Road. A perennial stream occurs in the western portion of the site. Forested areas are present along Wherry Road at the northern boundary, along the stream, and in a thin stand of trees separating agricultural plots.

The St. Clair County Site is currently owned by St. Clair County, Illinois.

## 2.6 Description of the No Action Alternative

Under the No Action Alternative, NGA would not build a new campus. NGA would remain at the South 2nd Street facility, and the facilities would be neither renovated nor upgraded. The No Action Alternative does not meet the purpose and need of the Proposed Action (see Section 1.4).

NEPA guidance states, "Where implementation of the No Action Alternative would result in predictable actions by others, the consequences of those predictable actions should be included in the analysis"

(CEQ, 1983). While there are a number of plans in place at some of the alternative sites, these plans are not sufficiently well defined to allow analysis and identification of potential impacts under the No Action Alternative. Therefore, the No Action Alternative is evaluated as a continuation of existing conditions and uses at each site. While none of the plans is considered predictable for the purpose of inclusion in the analysis of potential direct and indirect impacts of the No Action Alternative, these plans are given consideration in the discussion of cumulative impacts. The description of the affected environment, which is provided in Section 3.0, *Affected Environment*, for each resource at each site, identifies the baseline conditions that would be continued under the No Action Alternative and forms the basis for analysis of impacts for each of the considered alternatives.

## 2.7 Selection of the Environmentally Preferred Alternative

The findings of the EIS identified both adverse impacts and positive benefits to the human environment. The study team evaluated the environmental effects for each site using the information described in the Draft EIS (DEIS) and input obtained as a result of the public comment period. Short-term and long-term, direct and indirect, and cumulative effects were assessed. The Environmentally Preferred Alternative was based on an analysis of the lasting, long-term impacts to the environment. Relative differences between impacts of each alternative formed the basis for selection of the Environmentally Preferred Alternative.

The Fenton Site resulted in the fewest long-term, adverse impacts along with the greatest advantages when compared to the other alternatives. It provides opportunities associated with the redevelopment of a concrete-covered landscape. Specifically, redevelopment of this property would result in minor to moderate benefits through the remediation of environmental contamination from past operations of the former Chrysler automobile assembly plant. This would also represent a major visual benefit, as the site would be transformed into a new campus comprised of buildings and green space. The St. Louis City Site also possesses similar advantages associated with redevelopment, but includes the revitalization of a recognized blighted urban community. Redevelopment of the St. Louis City Site would also require the remediation of environmental contaminants, which was identified as a minor to moderate benefit. Locating the Next NGA West Campus at either the Fenton Site or St. Louis City Site would avoid impacts to aquatic and biologic resources. What distinguishes the Fenton Site from all other sites is that it resulted in no/negligible impacts to the long-term service levels on area roadways. Additionally, the Fenton Site does not require the major impacts to historic buildings or cultural resources as found with the St. Louis City Site.

Of the four alternatives considered, the Mehlville Site and St. Clair County Site were determined to have the greatest adverse impacts with fewest environmental advantages. Both of these sites were of concern to the U.S. Fish and Wildlife Service because of long-term impacts to habitat corridors supporting federally listed Threatened and Endangered Species. If the construction and operation of the Next NGA West Campus were to occur at either of these locations, the purchase/compensation of offsite habitat would be required as mitigation. Construction and operation of a Next NGA West Campus at the Mehlville and St. Clair County

Sites would impact regulated waters of the United States. In addition, a long-term major impact to a known cultural resources site would occur at the St. Clair County Site. While the adverse environmental impacts at either location could be mitigated, the impacts are nonetheless more significant than the impacts associated with other alternatives.

Overall, the Fenton Site would result in relatively fewer negative, long-term environmental impacts while providing the greatest advantages. It would avoid impacts to water resources, biological, and cultural resources, and would have long-term advantages associated with transforming the site into a campus with green space. The cleanup of existing hazardous contamination associated with the former Chrysler automobile assembly plant was identified as beneficial. For these reasons, the Fenton Site was selected as the Environmentally Preferred Alternative by the study team.

## 2.8 Selection of the Agency Preferred Alternative

In January 2016, a Site Selection Team (SST) was assembled to finalize the site evaluation process to select an Agency Preferred Alternative for the Next NGA West Campus. As described in Section 2.3, the site selection process was iterative and began with 186 sites following the initial SLS. This SST focused on and developed a framework to evaluate the last four sites. The team was comprised of members of the NGA Project Management Office and Office of General Counsel, technical members of the U.S. Air Force, members of USACE technical, legal and real estate teams, and A/E Contracting technical support. The SST prepared a process for narrowing the remaining four alternatives, evaluating all criteria necessary to make a site selection, and deliver findings to the Director of NGA (Director).

The SST relied on the Director to evaluate the team's process and findings, and to make the final conclusion. The following describes the process and findings used to select the Agency Preferred Alternative. Each of the four remaining sites met the Purpose and Need and master planning requirements to deliver a viable option for the construction and operation of the Next NGA West Campus in the greater St. Louis Metropolitan area. The SST considered the findings of the DEIS and public comments and provided information to the Director to identify an Agency Preferred Alternative. The Agency Preferred Alternative was identified as the St. Louis City Site based on its ability to best serve the mission and vision for NGA's future, meet the schedule at least cost, and minimize impacts to the environment.

### 2.8.1 Background

The final screening process incorporates information from several predecessor analyses, including an evaluation of agency mission and security needs, an evaluation of the findings contained within the DEIS and public comments, and an evaluation of individual schedule and cost analyses.

The selection of the Preferred Alternative is based upon the site's ability to best satisfy the Purpose and Need for Action. The SST took a hard look at the Purpose and Need Statement provided in the DEIS to create a

sound process for evaluation. The four sites were compared to how they delivered the Purpose and Need. This was identified as Round One.

### 2.8.2 Round One – Site Screening based on Purpose and Need

Once the SST convened and assembled all pertinent data, the team continued to dissect the Purpose and Need Statement, which included 17 elements. These elements were further refined by recognizing commonalities and combining elements under five major headings for continued evaluation. Referred to as "Refining Criteria", they were: 1) Cost, 2) Schedule, 3) Security, 4) Mission Efficiency and Expansion (later recast as Mission Efficiency and Mission Flexibility), and 5) Environmental Considerations. The SST concluded that all four site locations could meet the basic Purpose and Need using these criteria due to the following reasons:

- Mission Efficiency and Expansion – NGA's mission can be successfully performed at any of the four site locations.
- Security – All sites meet the minimum criteria for security as established in historical screening and master planning efforts.
- Environmental Considerations – None of the sites pose an insurmountable impact to the natural or human environment.
- Cost – Site acquisition and development costs were considered reasonable.
- Schedule – Two of four sites support planned land acquisition in Fiscal Year 2017 (FYI7) and the remaining two support land acquisition in FY18.

Following this evaluation, it was determined that there were varying gradations to how well each site could deliver the Purpose and Need. The degree to which the refining criteria were met was further explored in Round Two.

### 2.8.3 Round Two – Narrowing to St. Louis City and St. Clair County based on Cost and Schedule

Of the five Refining Criteria, schedule and cost demonstrated the greatest differentiation between sites. With regard to cost, the St. Louis City and St. Clair County sites presented the lowest cost, with both sites being formally offered at no cost to the federal government.

Schedule analysis took into consideration the activities necessary for the current owner to prepare the site for acquisition by the end of the government FY17. The Fenton Site and the Mehlville Site were evaluated to have higher schedule risk with site acquisition scheduled for FY18. The Mehlville site presented a measure of complexity that involved the need to relocate the current tenants (potentially at NGA expense) and then demolish the existing facility prior to the start of any site construction. For the Fenton Site, NGA requested that efforts such as a complete Phase II environmental site assessment and site remediation would need to be accomplished prior to purchase to meet Missouri Department of Natural Resources Brownfields/Clean Up

Program standards as described in Section 4.6.1. These remaining items for both Mehlville and Fenton posed a schedule delay, pushing the prospects of land acquisition into FY18.

The St. Louis City and St. Clair County sites presented the best opportunity to acquire and develop the real estate on time and at least cost. This is in contrast to the Mehlville and Fenton sites, which are substantially more expensive and present much greater risk to schedule to acquire and develop the real estate. Based upon these factors, the Mehlville and Fenton sites were dropped from consideration as the Agency Preferred Alternative, despite the Fenton Site being recognized as the Environmentally Preferred Alternative as identified in Section 2.7.

### 2.8.4 Round Three – Selection of the Agency Preferred Alternative Based on Final Refining Criteria

The SST further considered the degree to which the remaining two site locations, St. Louis City Site and St. Clair County Site, delivered all of the Refining Criteria. The SST Round Three analysis focused exclusively on the St. Louis City and St. Clair County sites to provide more in-depth information to the Director of NGA for his consideration in making the Agency Preferred Alternative selection.

General Counsel from both the NGA and USACE compiled and evaluated policies, Executive Orders (E.O.'s), and federal initiatives with a bearing on site selection and land acquisition. While many were considered, the SST determined six of these were most relevant. These directives, E.O.'s, and federal initiatives do not dictate or exclude one site over another; however, they were added to the Refining Criteria because they are required considerations and further demonstrate differences between alternatives. With this addition, the SST carried six Refining Criteria into the final analysis of two sites.

Some Refining Criteria possessed sub-criteria to help distinguish differences in the comprehensive analysis of the remaining two sites. Below is a final list of Refining Criteria and sub-criteria used and their definitions. This final list drew upon criteria/sub-criteria defined under previous analyses, as well as additional evaluation.

1. Mission Efficiency and Mission Flexibility
    a. Team GEOINT – Defined as the ability to attract and maintain industry partnerships. Assesses the positive or negative impact of the proposed site on partnerships with NGA customers, academia, and industry.
    b. Team NGA – Defined as the ability to attract and maintain quality staff. Assesses the positive or negative impacts of the proposed site on recruiting and retention of employees.
    c. Proximity to NGA Arnold Facility – Assesses the impact of the distance between the proposed site and the NGA Arnold facility.

2. Security
    a. Undetected Surveillance and Direct Fire Weapons – Assesses the level to which the site allows for unimpeded monitoring of the surrounding area in order to discover and address threats from surveillance and/or direct fire weapons.
    b. Violent Crime – Assesses violent crime statistics composed of four offenses: murder and non-negligent manslaughter, rape, robbery, and aggravated assault.
    c. Compatible Surroundings – Assesses surrounding area compatibility with the Next NGA West Campus.
3. Environmental Impact – Assesses the effect of the Agency's planned action on the human and natural environment.
4. E.O.'s, Regulations, and Policies
    a. Department of Defense Instruction (DoDI) 4165.71 – Real Property Acquisition – One aspect is that land acquisition requirements should be fulfilled at least cost, with preference for donated land before purchase.
    b. E.O. 12072 – Federal Space Management – Requires first consideration for federal agencies to locate in urban areas/central business districts.
    c. E.O. 12898 – Environmental Justice – E.O. expresses desire that consideration be given to environmental justice communities.
    d. E.O. 13693 – Planning for Federal Sustainability – E.O. and Unified Facilities Criteria express that consideration be given to brownfield and infill development as well as sites that avoid agricultural land.
    e. E.O. 13062 – Strong Cities, Strong Communities (SC2) – Provides local government access to resources to facilitate redevelopment of targeted locations.
    f. Promise Zones – Presidential initiative that provides local government access to resources to facilitate redevelopment of targeted locations.
5. Schedule – Assesses the schedule to begin construction.
6. Cost – Assesses the cost of real estate and site development costs.

Of these factors, the Director identified Mission Efficiency and Mission Flexibility and Security to be the highest priority to NGA. Other factors considered include Environmental Considerations, medium priority; Key Regulations, Directives, and Orders, medium priority; and Schedule and Cost, low priority. While all four sites were determined to be able to fulfill the mission and met minimum security requirements, these two final sites were reviewed closely for how effectively they could enhance mission and security. The Director

further prioritized the four other Refining Criteria and the team completed the final assessment. The summary assessment of the sites by the SST in relation to the refining criteria and their priority is as follows:

1. **Mission Efficiency and Flexibility – High Priority:** Team GEOINT – From an industry partner perspective, St. Louis is receiving national attention in its success as a city for technology industry startups. The relationships NGA has established with the TREX incubator in downtown St. Louis and the firms in the CORTEX Innovation Community in midtown are promising in terms of future technology supporting GEOINT. While industry relationships can be maintained on either side of the river, there is an infusion of energy that is apparent in locating in the midst of incubators and innovation. NGA currently enjoys strong relationships with Washington University and St. Louis University, both located in the City of St. Louis. The Aeronautical Office has a longstanding relationship with St. Louis University, which reflects the university's commitment to aeronautical engineering and the strong history of St. Louis in aviation. This relationship provides a strong recruitment pool for NGA. The proximity of the St. Louis City Site is helpful in making the most of student/faculty relationships with the agency. Additionally, NGA enjoys ongoing partnerships with the Federal Bureau of Investigation and the U.S. Coast Guard. Lastly, NGA maintains many partnering relationships with others outside the St. Louis area. Therefore, proximity to Lambert International Airport also was considered as an advantage to the St. Louis City Site.

   Two governmental partners, US TRANSCOM and Air Mobility Command (AMC), are located at Scott AFB. NGA currently maintains a 35-member support team co-located at US TRANSCOM. The Midwest Center of Cyber Excellence is being established in St. Clair County and could prove to be a valuable partner in the future. The potential connection to the computer science graduates from the University of Illinois was also recognized. However, at present, Washington University and St. Louis University are the only local research universities partnered with NGA.

   Team NGA – From a retention standpoint, approximately 70 percent of the current NGA South 2nd Street workforce live in Missouri. The St. Louis City Site offers the least amount of disruption to the NGA workforce and reduces the need for families to relocate to a different portion of the metropolitan area. The St. Louis City Site also provides many access points and route options for commuters compared to the St. Clair County Site. However, both of the remaining two locations offer excellent opportunities for the workforce to utilize public and mass transportation.

   From a recruitment standpoint, many studies indicate that newer college graduates prefer urban environments. The large size of the millennial generation, and its preference for urban living, has been a driver for population growth in cities in recent years. NGA conducted its own survey of 152 students who are currently in the hiring pipeline regarding their employment preferences. Sixty-seven responded to the survey. Only those who were familiar with the Next NGA West Campus project (48 respondents) were asked to respond to questions specifically regarding the four sites.

When asked about the specific sites and ranking them 1 through 4, 42 percent ranked the St. Louis City Site as their top choice, while 25 percent ranked St. Clair County Site as their top choice. Conversely, 25 percent of the respondents ranked St. Louis City Site as their least desirable site, and 50 percent ranked St. Clair County Site as their least desirable site.

Proximity to NGA Arnold Facility – The relationship to the existing NGA Arnold facility is of importance to NGA. There are shared police resources between the existing South 2nd Street facility and the Arnold facility. Because the St. Louis City Site would only slightly increase the distance between the new facility and the NGA Arnold facility (21 miles), it was determined to have an advantage over the St. Clair County Site (42 miles).

While advantages in mission efficiency and flexibility exist for both sites, the overall results indicate an advantage for the St. Louis City Site.

2. **Security – High Priority:** Location of the Next NGA West Campus at the St. Clair County Site would not be a consolidation of existing military operations, so benefits to operational readiness are minimal. However, as previous assessments have shown, an improved security posture due to adjacency with a military base and the current open landscape would be achieved at the St. Clair County Site and is a strong benefit of that location.

3. **Environmental Considerations as depicted in the EIS – Medium Priority:** As described in Section 2.7, the environmental advantages were compared between all sites including the St. Louis City Site and the St. Clair County Site. The final selection of an environmentally preferred alternative was based on the total environmental advantages an individual site could deliver. As a result of this process, the Fenton Site was identified as the alternative that yielded the greatest number of advantages, with the St. Louis City Site, Mehlville Site, and St. Clair County Site following respectively. From an environmental standpoint, neither of the remaining sites presented insurmountable considerations, but the St. Louis City Site was identified as the option that yielded greater environmental advantages between the two. The EIS recognized that this alternative has the opportunity to create a strong aesthetic improvement to this area, remediate environmental contamination, and have negligible to no adverse impact to biological or water resources.

   All projects involving fill in waters of the United States or wetlands are required to evaluate practicable alternatives that would have less impact on the aquatic ecosystem. The selected site must meet the intent of fulfilling a 404(b)(1) alternatives analysis review under Section 404 of the Clean Water Act. If the St. Clair County Site is chosen, proposed construction must be adjusted to avoid onsite wetlands and minimize impacts to an onsite perennial tributary. While impacts were considerably minimized, the St. Clair County Site could not altogether avoid impacts to waters of the United States. The St. Louis City Site does not possess any regulated wetlands or waters of the United

States within the project boundaries. Between the two remaining alternatives, the St. Louis City Site is considered as the least environmentally damaging alternative.

The St. Clair County site would utilize undeveloped land but impact water resources under Section 404 of the Clean Water Act and forest habitat that is deemed to provide habitat for migratory birds and potential foraging habitat for Threatened and Endangered species. Additionally, it does not offer the relative benefits described for the St. Louis City Site. Therefore, the St Louis City Site is more environmentally preferred.

4. **Key Regulations, Directives and Orders – Medium Priority:** While there are many regulations and directives offering guidance to federal agencies in land acquisition, targeting differing government policy initiatives, none direct selection of a particular site. Overall, the St. Louis City Site offers an advantage to meet the intent of many federal priorities. As an example, E.O. 13693, Planning for Federal Sustainability, expresses that consideration be given to brownfield and infill development and calls for a reduction of greenhouse gas emissions. While carbon dioxide emissions were found to be within the reporting thresholds for both the St. Clair County Site and the St. Louis City Site, the EIS does identify a contrast between the emissions generated from the 31.8 mile average commute increase to the St. Clair County Site versus a 0.2 mile increase to the St. Louis City Site in Section 4.13. The St. Louis City Site demonstrates greater compatibility with the E.O. 13693 signed in March of 2015.

   E.O. 12072, Federal Space Management, requires that first consideration be made for federal agencies to locate in urban areas/central business districts. The DoDI 4165.71 for Real Property Acquisition further supports E.O. 12072 by instructing DoD agencies to conserve existing urban resources and encourage the development and redevelopment of cities. The St. Louis City Site is best suited to fulfill both E.O. 12072 and the DoDI as it relates to redevelopment of urban/central business district criteria.

   The St. Clair County Site would spur future development for St. Clair County much in line with the development plans for the area. However, new development along metropolitan edges meets neither brownfields nor urban/central business district criteria, reduce greenhouse gas emissions, nor does it support other initiatives such as Promise Zones or the E.O. 13062 for SC2.

   SST assessment assigned the advantage to the St Louis City Site.

5. **Schedule – Low Priority:** Analysis of the proposed schedules and associated risks resulted in a slight advantage for the St. Clair County Site. The extent and future risk of additional litigation surrounding St. Louis' enforcement of eminent domain, and the potential degree of environmental cleanup required at the site to meet cleanliness standards, represent risks to the schedule that do not exist at

the St. Clair County Site. Thus, St. Clair County Site was assessed to have a slight advantage in schedule.

6. **Cost – Low Priority:** The estimate to acquire and develop the St. Clair County Site is almost 20 percent more, which provides a slight advantage to the St. Louis City Site.

### 2.8.5 Agency Preferred Alternative

Based upon the Agency's adherence to the NEPA process and an evaluation of all of the information available, NGA has determined the Agency Preferred Alternative for the Next NGA West Campus facility to be the St. Louis City Site. NGA's highest priority is to develop a campus that supports mission efficiency and flexibility. The St. Louis City Site provides an opportunity to develop and maintain relationships with industry partners that is consistent with the Agency's future vision. The opportunity to cultivate and foster relationships with academia, industry and governmental partners, and technological incubators emerging near the St. Louis City Site outweighed the opportunities at the St. Clair County Site. Additionally, the St. Louis City Site better addresses the recruitment and retention of the future NGA workforce.

The St. Louis City Site was identified as the option that yielded greater environmental advantages between the two sites. This project location contains no biological habitat beyond what supports urban species. It would not impact any habitat for migratory birds, listed species, or impact any water resources. The project includes the opportunity to transform aesthetics in the area and remediate environmental contamination.

While the St. Clair County Site presents a stronger security posture than an urban environment, it is anticipated that a strong security presence, security management system, onsite parking and careful site planning and building design features can be implemented at the St. Louis City Site location. Close coordination with the local authorities will be planned to develop security strategies with the City of St. Louis law enforcement and to gain concurrent jurisdiction.

Overall, the St. Louis City Site offers an advantage to meet the consideration requirements for many federal priorities. All of the applicable guidance favors the St. Louis City Site, especially the most current directives found in E.O. 13693, Planning for Federal Sustainability, which favors the redevelopment of brownfield locations, and E.O. 12072, which favors development in central business districts.

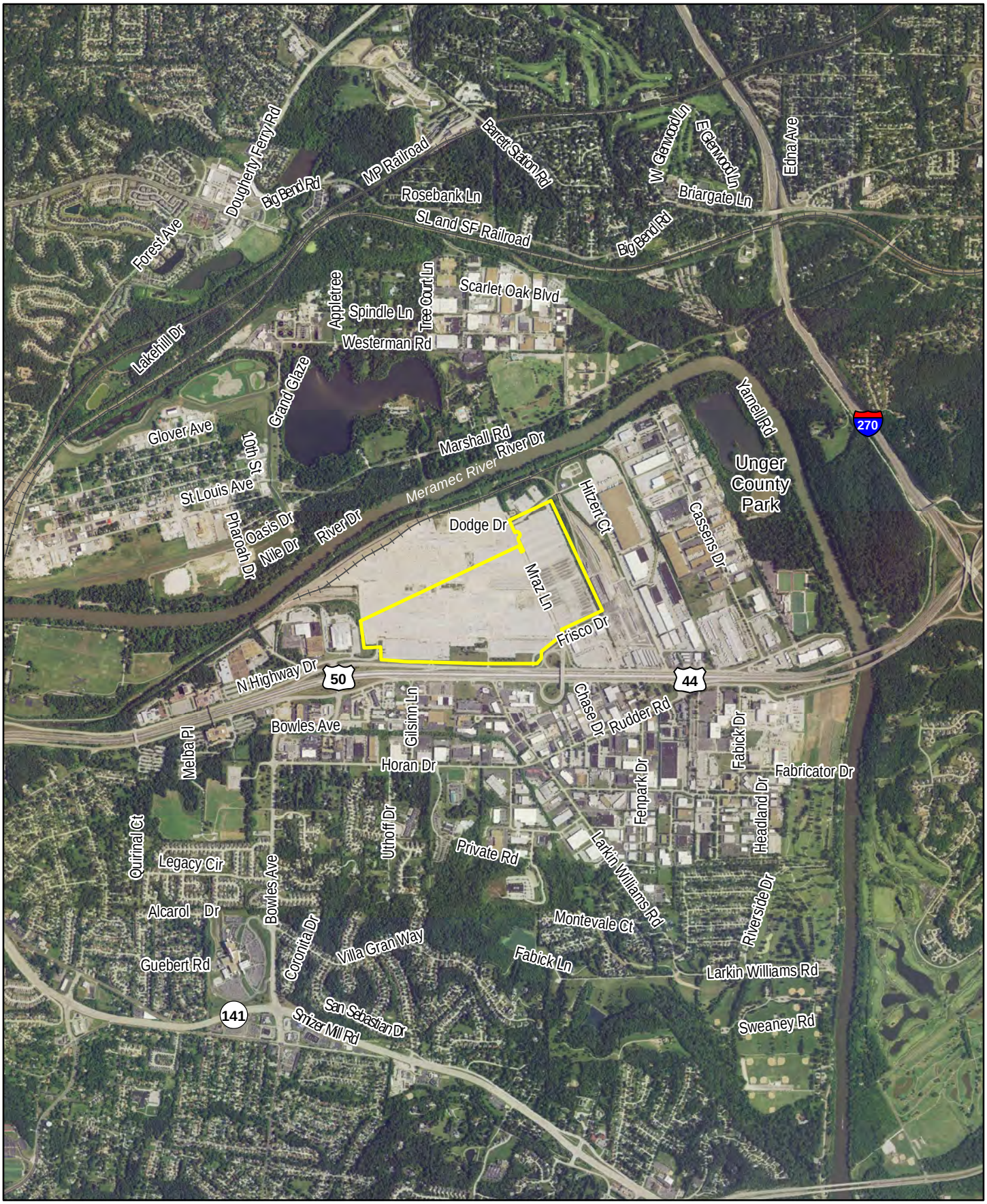



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Image Source: National Agriculture Imagery Program (NAIP) 2014

**Figure 2-1**
**Fenton Site**
NGA EIS
St. Louis County, Missouri
167 Acres

# Figure 2-2 Fenton - Construction Limits

## NGA - Next NGA West
## Fenton - Construction Limits

- Property Boundary
- Limits of EIS Scope
- Non-Developed Area
- Expected Fence Security Strip
- Expected Construction Limit

The construction limits are based on a compilation of all provided and gathered data regarding this site. The master planning team expects demolition of all subgrade utilities and mitigation of any and all environmental contamination to be required for the entire Fenton site. Massive rough grading and final grading within the construction limits of the site is also expected.

**Non-Developed Area**
It is determined that it is not feasible for any non-developed area on this site.

**Fence Security Strip**
A ~60' security strip will be required at the security fence. This includes a 30' patrol strip inside the fence plus a 20' clear strip and sidewalk outside the fence. The illustrated Fence Security Strip is based on one potential design option for the site and is likely to change with the final design.

**Construction Limit**
The master planning team anticipates that 100% of the Fenton site will be disturbed within the construction limits. Within the expected construction limits, the master planning team anticipates 9-12% hardscape (approx. 15-20 acres) and 9% footprint (approx. 15 acres) development of the site. The hardscape percentage of development includes roadways, surface parking lots, and any other horizontal imperveous areas. The footprint percentage of development is based on all initial vertical construction and planned future growth.

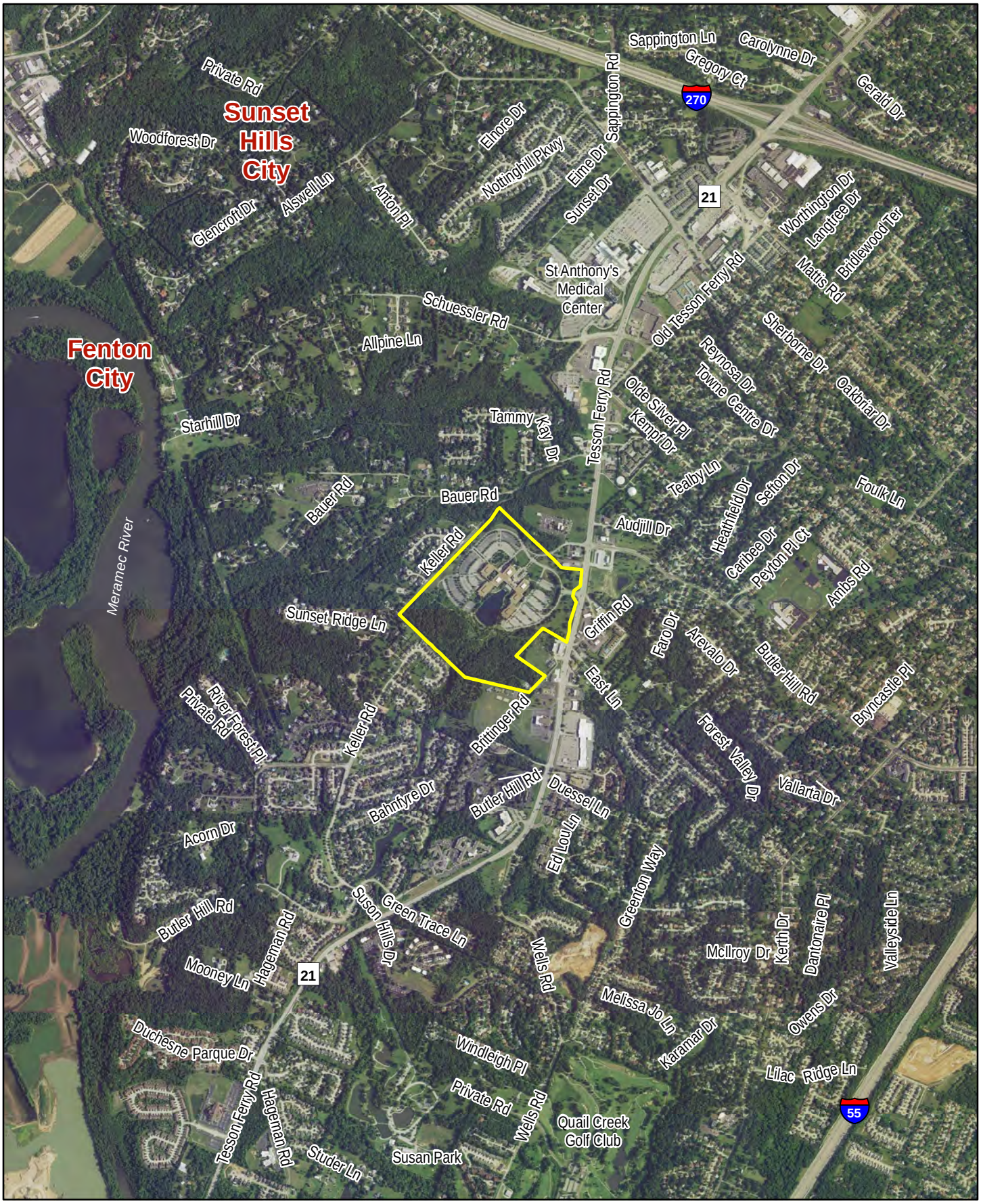


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Image Source: National Agriculture Imagery Program (NAIP) 2014

**Figure 2-3**
**Mehlville Site**
NGA EIS
St. Louis County, Missouri
101 Acres

# Figure 2-4 Mehlville - Construction Limits

## NGA - Next NGA West
## Mehlville - Construction Limits

- Property Boundary
- Non-Developed Area
- Expected Fence Security Strip
- Expected Construction Limit

The construction limits are based on a compilation of all provided and gathered data regarding this site. The master planning team expects demolition of all subgrade utilities and mitigation of any and all environmental contamination to be required for portions of the Mehlville site. Massive rough grading and final grading within the construction limits of the site is also expected.

**Non-Developed Area**
The master planning team anticipates roughly 23% (approx. 23 acres) non-developed area of the site. Development of forested area and stream with adjacent area will be kept to a minimum. Culverts with man bars will be required where a stream meets the property boundary.

**Fence Security Strip**
A ~60' security strip will be required at the security fence. This includes a 30' patrol strip inside the fence plus a 20' clear strip and sidewalk outside the fence. The illustrated Fence Security Strip is based on one potential design option for the site and is likely to change with the final design.

**Construction Limit**
The master planning team anticipates that 77% (approx. 77 acres) of the Mehlville site will be disturbed within the construction limits. Within the expected construction limits, the master planning team anticipates 15-20% hardscape (approx. 15-20 acres) and 15% footprint (approx. 15 acres) development of the site. The hardscape percentage of development includes roadways, surface parking lots, and any other horizontal imperveous areas. The footprint percentage of development is based on all initial vertical construction and planned future growth.

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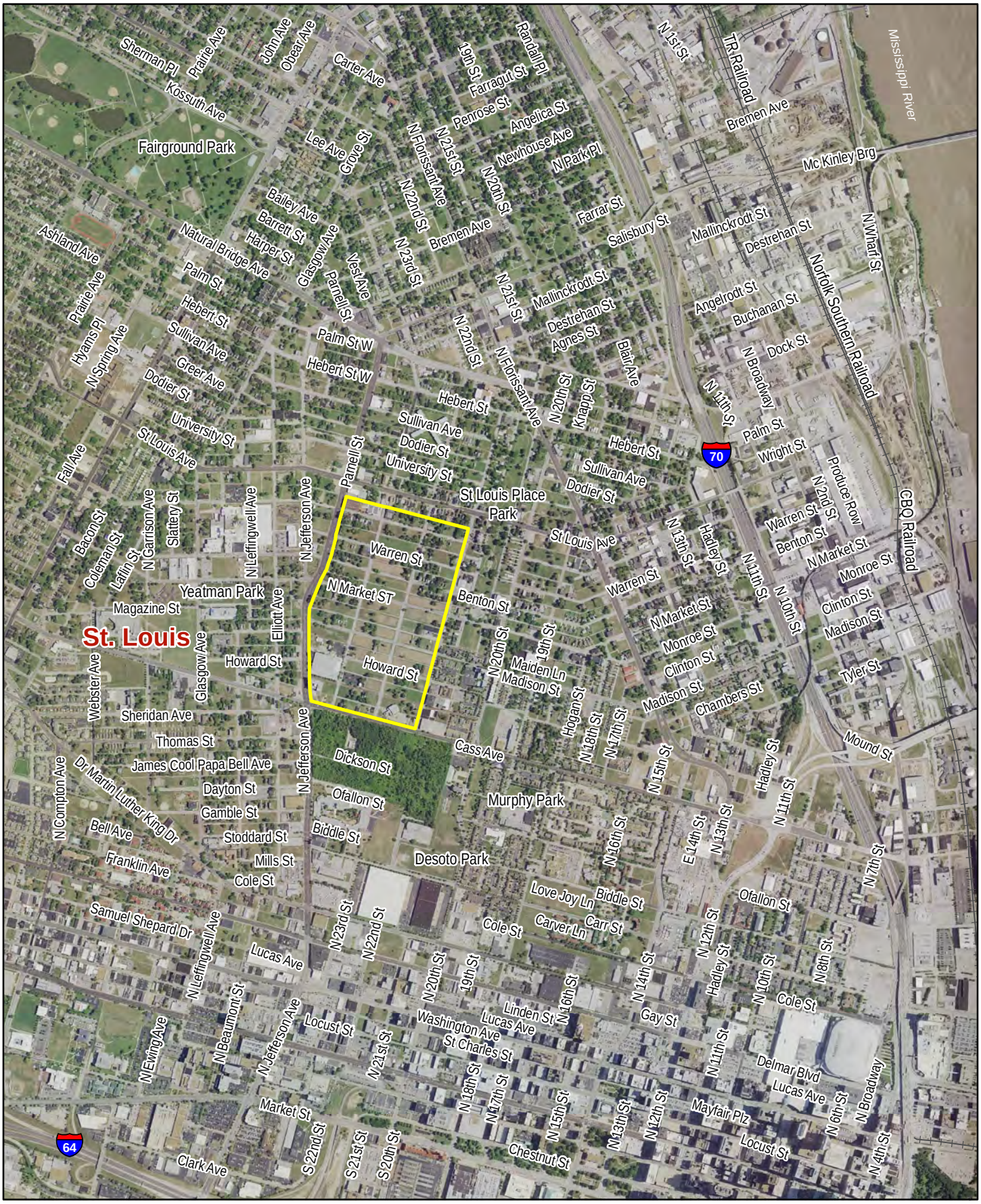
SCALE: 1" = 400'-0"

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0 500 1,000 2,000 Feet

Image Source: National Agriculture Imagery Program (NAIP) 2014

**Figure 2-5**
**St. Louis City Site**
NGA EIS
St. Louis City, Missouri
100 Acres

# Figure 2-6 St. Louis City - Construction Limits

## NGA - Next NGA West
## St. Louis City - Construction Limits

- Property Boundary
- Limits of EIS Scope
- Expected Fence Security Strip
- Expected Construction Limit

The construction limits are based on a compilation of all provided and gathered data regarding this site. The master planning team expects demolition of all subgrade utilities and mitigation of any and all environmental contamination to be required for the entire St. Louis City site. Massive rough grading and final grading across the entire site is also expected.

**Fence Security Strip**
A ~60' security strip will be required at the security fence. This includes a 30' patrol strip inside the fence plus a 20' clear strip and sidewalk outside the fence. The illustrated Fence Security Strip is based on one potential design option for the site and is likely to change with the final design.

**Construction Limit**
The master planning team anticipates that 100% of the St. Louis City site will be disturbed within the construction limits. Within the expected construction limits, the master planning team anticipates 15-20% hardscape (approx. 15-20 acres) and 15% footprint (approx. 15 acres) development of the site. The hardscape percentage of development includes roadways, surface parking lots, and any other horizontal imperveous areas. The footprint percentage of development is based on all initial vertical construction and planned future growth.

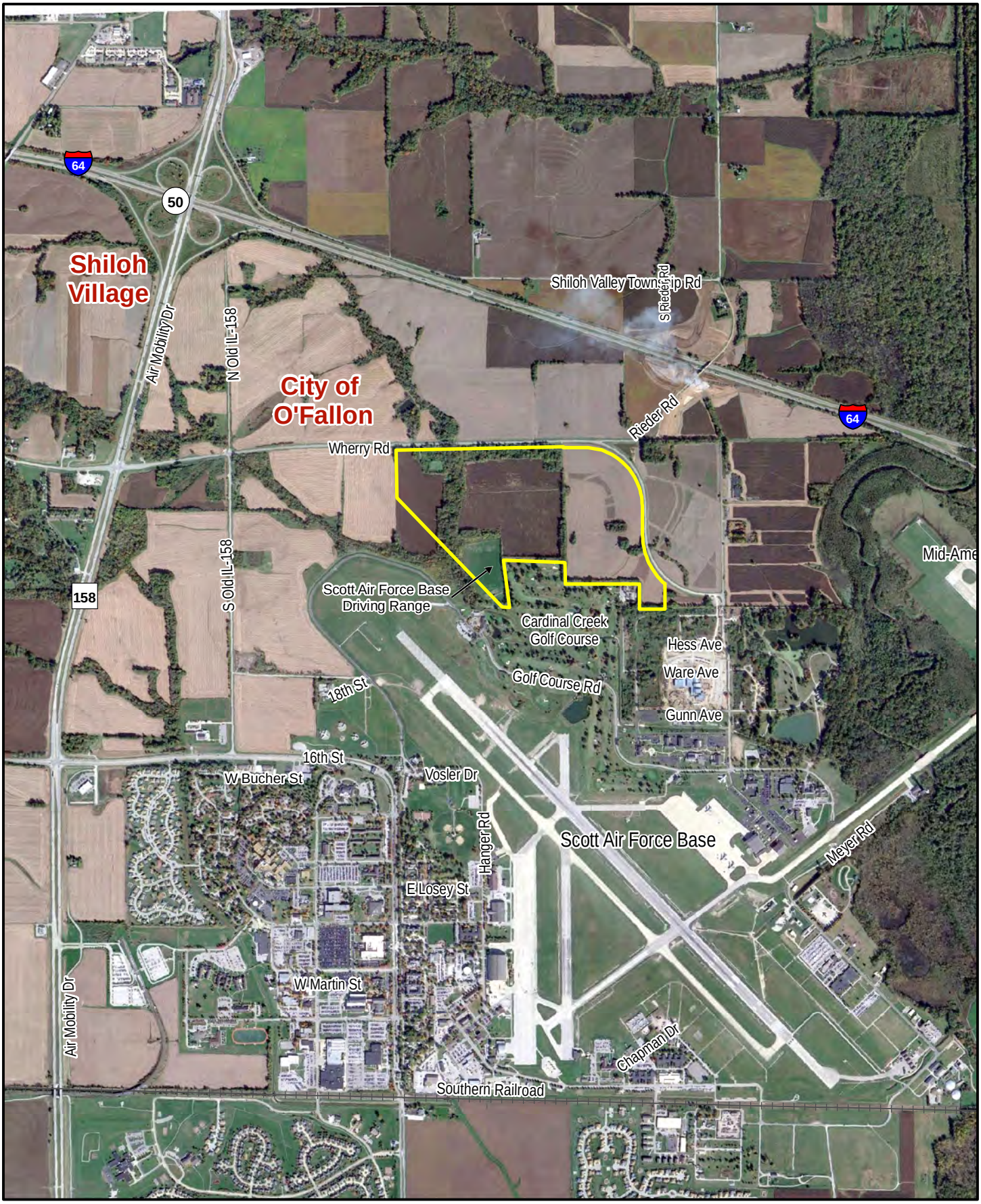


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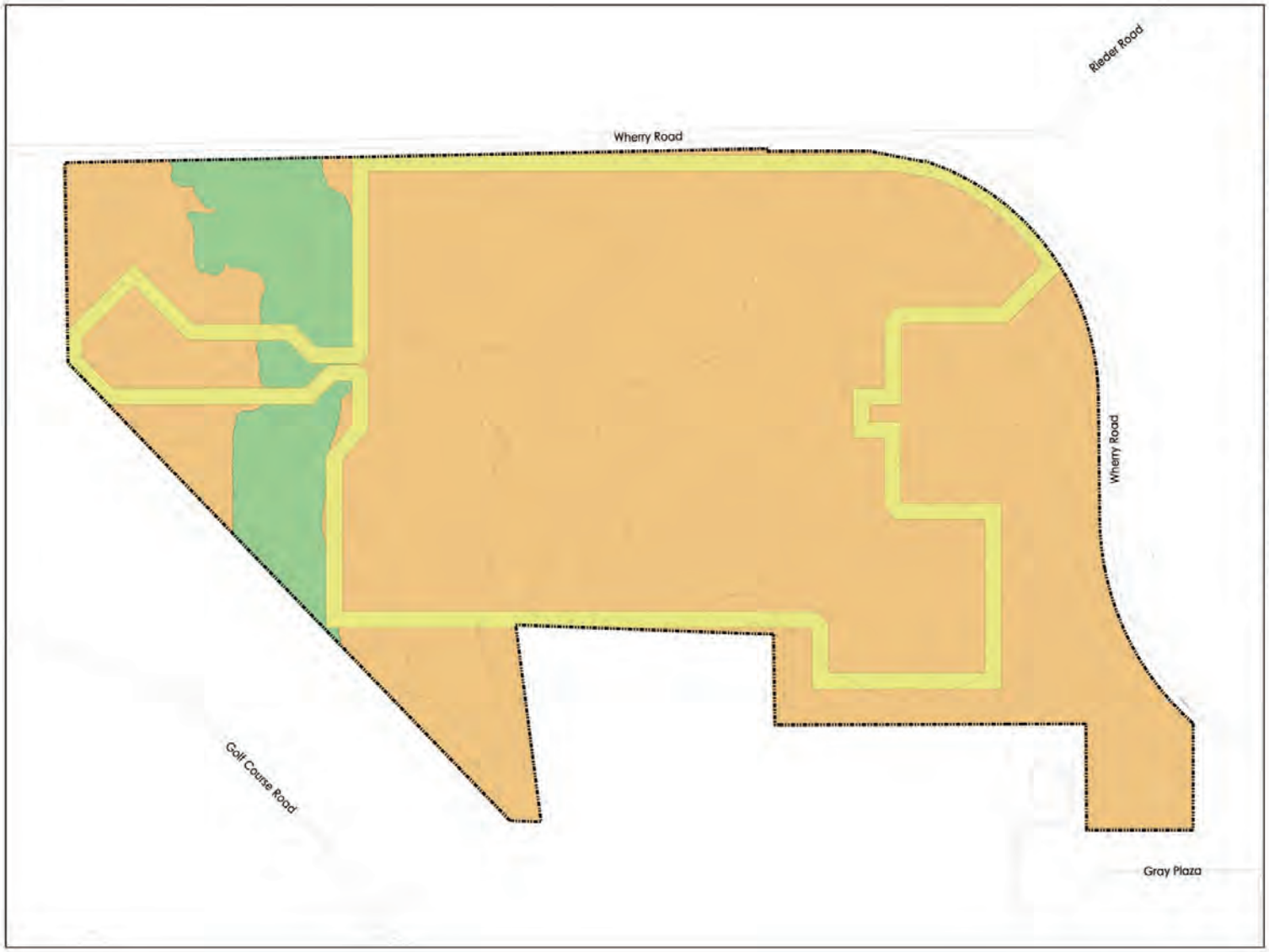
Image Source: Google Earth Pro,
Modified by CH2MHill, Image Flown 10/21/2014

**Figure 2-7**
**St. Clair County Site**
NGA EIS
St. Clair County, Illinois
182 Acres

# Figure 2-8 St. Clair County - Construction Limits




## NGA - Next NGA West
## St. Clair County - Construction Limits

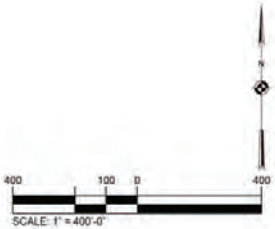
- Property Boundary
- Non-Developed Area
- Expected Fence Security Strip
- Expected Construction Limit

The construction limits are based on a compilation of all provided and gathered data regarding this site. The master planning team expects mitigation of any and all environmental contamination to be required for portions of the St. Clair County site. Massive rough grading and final grading within the construction limits of the site is also expected.

**Non-Developed Area**
The master planning team anticipates roughly 9% (approx. 15 acres) non-developed area of the site. Development of the stream and adjacent area will be kept to a minimum: a bridge crossing to accommodate a roadway will be required. Culverts with man bars will be required where the stream meets the property boundary.

**Fence Security Strip**
A ~60' security strip will be required at the security fence. This includes a 30' patrol strip inside the fence plus a 20' clear strip and sidewalk outside the fence. The illustrated Fence Security Strip is based on one potential design option for the site and is likely to change with the final design.

**Construction Limit**
The master planning team anticipates that 91% (approx. 157 acres) of the St. Clair County site will be disturbed within the construction limits. Within the expected construction limits, the master planning team anticipates 9-12% hardscape (approx. 15-20 acres) and 9% footprint (approx. 15 acres) development of the site. The hardscape percentage of development includes roadways, surface parking lots, and any other horizontal imperveous areas. The footprint percentage of development is based on all initial vertical construction and planned future growth.



SECTION 3.0

# Affected Environment

This section describes the existing socioeconomic and physical conditions that occur within the alternative sites for the Next National Geospatial-Intelligence Agency (NGA) West Campus (Next NGA West Campus). In compliance with the National Environmental Policy Act (NEPA) and U.S. Army NEPA-implementing regulations (Title 32 of the *Code of Federal Regulations* [CFR] Part 651 [32 CFR 651]), the description of the affected environment focuses on those resources and conditions potentially affected by the Proposed Action.

This section is organized by resource area and identifies the region of influence (ROI) for each resource. The ROI is defined as the area in which environmental impacts could occur as a result of implementing the Proposed Action.

## 3.1 Socioeconomics

This subsection discusses socioeconomic conditions in the St. Louis Metropolitan Statistical Area (MSA), which is the ROI for the socioeconomic analysis of the Proposed Action. The MSA was chosen as the ROI for socioeconomics because of the linkages and interdependencies in the region's economy.

Socioeconomic conditions are presented for population, housing, employment, and income and are described for the region and local jurisdictions to provide a context for evaluating impacts associated with the Proposed Action (see Section 4.1). These socioeconomic resources are important because there could be effects on local governments, businesses, and individuals resulting from increases (or decreases) in local expenditures or taxes associated with the Proposed Action.

For the purpose of this evaluation, socioeconomic factors are defined as follows:

Population is characterized by the magnitude and distribution of people from 2000 to 2013, with population projections to 2020. Population data are provided for the entire St. Louis MSA and for cities or counties with alternative project locations.

Housing is described as the quantity and availability of housing options and includes regional housing data for the St. Louis MSA, the part of the MSA in Missouri, and the part of the MSA in Illinois. Housing data are provided for rental and owner-occupied options.

Employment and Income are described by the size of the labor force (defined as the civilian non-institutionalized population, ages 18 to 64), unemployment rate, and median household income. These data are provided for the St. Louis MSA, for cities or counties with alternative project locations, for St. Louis County, Missouri, and for Illinois. For Mehlville, which is not legally incorporated, employment data are provided for the nearest Census-Designated Places (CDPs), Concord and Sappington. CDPs are the statistical counterparts of incorporated places like cities and towns and provide the best available data for comparison

purposes. Concord CDP is located on the east of Tesson Ferry Road immediately north of the Mehlville Site and Sappington CDP is located west of Tesson Ferry Road, immediately north of the site. Employment data are supplemented with information on the top employers and business sectors in the region.

Tax Revenue information is used as a basis for evaluating potential local impacts associated with the Proposed Action being sited in different local municipalities. Sources of tax revenue include sales, property, and earnings taxes (for the City of St. Louis) and may include utility taxes or commercial surcharges. Other revenue, such as agricultural lease payments, that may be specific to an alternative site and affected by the Proposed Action is included. Tax revenue information is provided by the local government levying the taxes. City and municipal budgets are provided for comparison purposes.

Regional Context Metropolitan Statistical Area

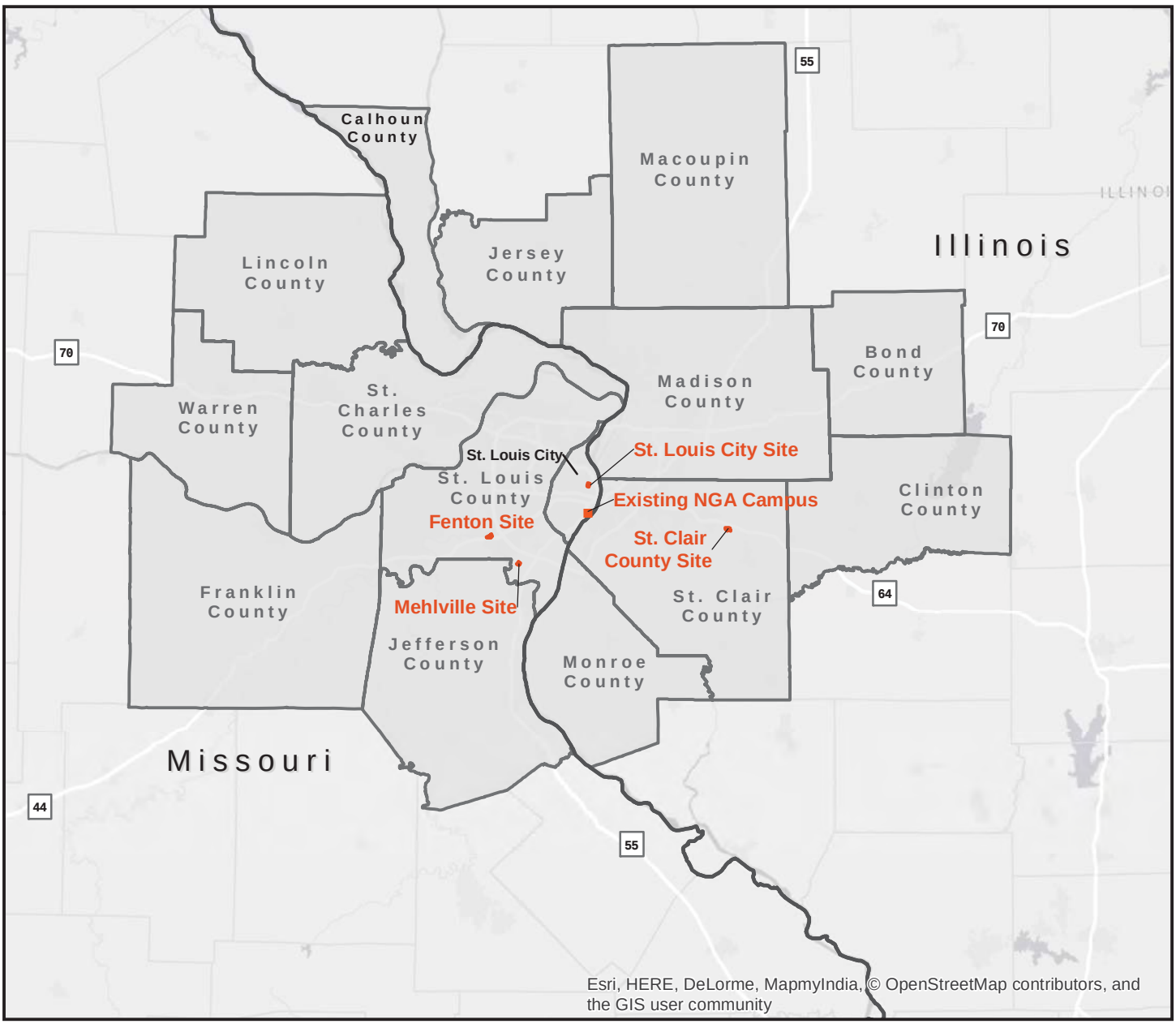
The ROI for socioeconomic impacts associated with the Proposed Action is the St. Louis MSA (Figure 3.1-1), which consists of the following:

| | |
|---|---|
| Bond County, Illinois | Macoupin County, Illinois |
| Calhoun County, Illinois | Madison County, Illinois |
| Clinton County, Illinois | Monroe County, Illinois |
| Crawford County, Missouri (the part within the City of Sullivan) | St. Charles County, Missouri |
| Franklin County, Missouri | St. Clair County, Illinois |
| Jefferson County, Missouri | St. Louis City, Missouri |
| Jersey County, Illinois | St. Louis County, Missouri |
| Lincoln County, Missouri | Warren County, Missouri |

The reference populations against which to compare the population of the St. Louis MSA are the states of Missouri and Illinois.

Population Trends

The population of the St. Louis MSA has been increasing gradually (Table 3.1-1). The estimated population of the St. Louis MSA in 2013 was 2,792,127. From 2000 to 2010, the population of the St. Louis MSA increased by 209,289, or 8 percent, which is higher than the rate of population increase for the states of Missouri (7.0 percent) and Illinois (3.3 percent) during the same period. The projected 2020 population of the St. Louis MSA is 2,956,040, an increase of 143,144, or 5.0 percent, from 2010 (Table 3.1-1). Population projections from 2010 to 2020 for Missouri and Illinois show anticipated increases of 6.7 and 11.6 percent, respectively. Table 3.1-1 also shows historical and projected population changes for each of the proposed project locations: City of Fenton, Mehlville (as represented by the Concord and Sappington CDPs), St. Louis City, and St. Clair County sites.




Existing NGA Campus

NGA EIS Site Locations

Missouri and Illinois State Line

Regions of Influence (Counties)

N

0 10 20 30 40 Miles

**Figure 3.1-1**
**Region of Influence**
**St. Louis, Missouri-Illinois**
**Metropolitan Statistical Area**

TABLE 3.1-1

**ROI and Local Populations from 2000, 2010, Estimated 2013, and Projected 2020**

| | 2000 | 2010 | 2013 | 2020 | % Population Increase from 2000 to 2010 |
|---|---|---|---|---|---|
| City of Fenton | 4,360 | 4,022 | 4,035 | NA | -7.8% |
| Concord CDP | 16,689 | 16,421 | 16,750 | NA | -1.6% |
| Sappington CDP | 7,287 | 7,580 | 7,426 | NA | 4.0% |
| St. Louis City | 348,189 | 319,294 | 318,955 | 350,385 | -8.3% |
| St. Clair County | 256,082 | 270,056 | 268,939 | 253,924 | 5.5% |
| St. Louis MSA | 2,603,607 | 2,812,896 | 2,792,127 | 2,956,040 | 8.0% |
| Missouri | 5,595,211 | 5,988,927 | 6,007,182 | 6,389,850 | 7.0% |
| Illinois | 12,419,293 | 12,830,632 | 12,848,554 | 14,316,487 | 3.3% |

Notes:

CDP = Census-Designated Places (CDPs) are the statistical counterparts of incorporated places and are delineated to provide data for settled concentrations of a population that are identifiable by name but are not legally incorporated under the laws of the state in which they are located (USCB website [https://www.census.gov/geo/reference/gtc/gtc_place.html]).

The Concord and Sappington CDPs are the closest populated areas to the Mehlville Site alternative. The Concord CDP represents zip code 63128, which is where the Mehlville Site is located. The Concord CDP is located on the east side of Tesson Ferry Road, immediately north of the Mehlville Site and the Sappington CDP is located on the west side of Tesson Ferry Road immediately north of the Mehlville Site.

St. Louis MSA 2020 population projections calculated by combining data of MSA cities and counties from Missouri Office of Administration (2008) and IDOCE (2015) and excludes Crawford County, Missouri (part-City of Sullivan).

Sources: U.S. Census Bureau (USCB), 2015a, 2015b, 2016a; Missouri Office of Administration, 2008; IDOCE, 2015

Population trends within the region show that the City of St. Louis has experienced a long-term decline in population, whereas the St. Louis MSA population is increasing. The population of the City of St. Louis has decreased 63 percent since 1950, when it stood at 856,796 (USCB, 2015a), and fell 8.3 percent between 2000 and 2010 (Table 3.1-1). The population in the surrounding suburban counties within the St. Louis MSA has experienced rates of growth higher than the City of St. Louis and St. Louis County, a trend that is expected to continue for the foreseeable future (Missouri Office of Administration, 2015).

Before the 2010 census data were released, the Missouri Office of Administration projected that the City of St. Louis population would increase 9.7 percent from 2010 to 2020, reversing the long-term population decline (Table 3.1-1). However, other, more recent projections using the 2010 census data have the 2020 population of the City of St. Louis decreasing during the same period, albeit at a slower rate, with declines from 2010 to 2020 of 2.0 percent or less (Linneman and Saiz, 2006; East-West Gateway Council of Governments [EWG], 2004). More recent data showed an 8.3 percent decrease in the population of the City of St. Louis between 2000 and 2010 (Table 3.1-1). These more recent projections are based on assumptions that future births, deaths, and migration trends will persist. The populations of the City of Fenton and the Concord CDP (representing the Mehlville Site), both of which are in St. Louis County, decreased 7.8 and 1.6 percent, respectively, from 2000 to 2010, while the Sappington CDP (also representing the Mehlville Site) increased by 4.0 percent (Table 3.1-1).

Housing

Housing is analyzed for the overall St. Louis MSA as well as for relevant parts within Missouri and Illinois. The analysis assessed American Community Survey (ACS) 2009–2013 data at the MSA level because it is common for individuals to live in one area of the MSA and commute to work in another area (USCB, 2015c). The population of the St. Louis MSA is expected to be mobile, with residents commuting to work outside their neighborhoods. Table 3.1-2 identifies the number of housing units in the Missouri and Illinois parts of the St. Louis MSA and distinguishes whether they are vacant. Approximately 10 percent (122,672 units) of the total housing units in the MSA are vacant. Of those, approximately 20.6 percent (25,250 units) are available for rent.

TABLE 3.1-2
**Housing Units and Available Housing for the St. Louis MSA**

| | Housing Units | Vacant Housing Units[a] | Percent Vacant | Vacant—for Rent | Vacant—for Sale | Total Vacant Units for Rent or for Sale |
|---|---|---|---|---|---|---|
| St. Louis MSA | 1,227,072 | 122,672 | 10.0 | 25,250 | 18,558 | 43,808 |
| Missouri Portion of MSA | 922,761 | 91,481 | 9.9 | 20,871 | 14,618 | 35,489 |
| Illinois Portion of MSA | 304,311 | 31,191 | 10.2 | 4,379 | 3,940 | 8,319 |

Notes:

[a] Total vacant housing includes the following units: 1) for rent, 2) rented, not occupied, 3) for sale only, 4) sold, not occupied, 5) for seasonal, recreational, or occasional use, 6) for migrant workers, and 7) other vacant. (USCB, 2015c). Data associated with the "vacant—for rent" and "vacant—for sale only" categories are shown to best represent housing available for temporary residence by construction workers.

Employment and Income

Table 3.1-3 provides employment and income information for the ROI and corresponding local governments associated with the project sites. ACS 2009–2013 data provided comparable labor, median household income, and unemployment estimates across most of the project geographic extents. Because the ACS data were averaged over a 5-year period starting in 2009, these values include the end of the 2007–2009 recession and thus reflect higher unemployment rates than those reported more recently (Bureau of Labor Statistics [BLS], 2012). For comparison, more recent unemployment data (May 2015) from BLS and the Federal Reserve Bank (FRB) of St. Louis are also provided.

The combined (Illinois and Missouri) labor force of the St. Louis MSA is approximately 1.4 million, with a May 2015 unemployment rate of 5.5 percent, which is comparable to both St. Louis and St. Clair counties but lower than the 7 percent rate observed in the City of St. Louis (USCB, 2015d, 2015e; BLS, 2015). Approximately 1.1 million members of the St. Louis MSA workforce, representing 37 percent of the total state workforce, are located in Missouri. The 2013 estimated median household income in the St. Louis MSA was $39,019, which is lower than the median for both states (Table 3.1-3) (USCB, 2015f).

TABLE 3.1-3
**Labor Force, Unemployment Rate, and Median Household Income for ROI**

| 2009–2013 American Community Survey 5-Year Estimates | | | | |
|---|---|---|---|---|
| | **Labor Force[a]** | **Unemployment Rate Estimate (%)[b]** | **Median Household Income ($)[c]** | **May 2015 Unemployment Rate (%)** |
| St. Louis MSA | 1,383,576 | NA | 39,019 | 5.5[d] |
| Missouri | 2,848,267 | 8.8 | 47,380 | 5.8[d] |
| Illinois | 6,325,676 | 10.5 | 56,797 | 6.0[d] |
| St. Louis County, Missouri | 496,662 | 8.6 | 58,910 | 5.5[e] |
| City of Fenton, Missouri | 2,020 | 6.7 | 96,420 | NA |
| Concord CDP, Missouri | 8,603 | 5.2 | 66,148 | NA |
| Sappington CDP, Missouri | 3,596 | 6.7 | 51,195 | NA |
| City of St. Louis, Missouri | 162,549 | 14.3 | 34,582 | 7.0[d] |
| St. Clair County, Illinois | 123,075 | 9.5 | 50,578 | 5.7[e] |

Notes:
[a]USCB, 2015d.
[b]USCB, 2015e.
[c]USCB, 2015f.
[d]BLS, 2015.
[e]FRB, 2015a.

Table 3.1-4 shows the top employers in the St. Louis MSA. The largest employers by sector are healthcare and social assistance, manufacturing, education services, and retail trade. Scott Air Force Base (AFB) is the fourth largest employer in the St. Louis MSA. The NGA is the 51st largest employer in the St. Louis MSA and the 32nd largest employer within the City of St. Louis (St. Louis Regional Chamber, 2015a). Seven of the top 10 employers are within the City of St. Louis (Table 3.1-4).

TABLE 3.1-4
**Top 10 Employers in the St. Louis MSA and the Current NGA Ranking**

| Name | Type | Location | Number of Employees |
|---|---|---|---|
| BJC HealthCare | Healthcare and Social Assistance | St. Louis, Missouri | 25,200 |
| Boeing Defense, Space and Security | Manufacturing | Hazelwood, Missouri | 15,129 |
| Washington University in St. Louis | Educational Services | St. Louis, Missouri | 14,248 |
| Scott Air Force Base (AFB) | Public Administration | Scott AFB, Illinois | 13,002 |
| Mercy Health | Healthcare and Social Assistance | St. Louis, Missouri | 12,489 |
| SSM Health Care | Healthcare and Social Assistance | St. Louis, Missouri | 11,898 |
| Walmart Stores, Inc. | Retail Trade | St. Louis, Missouri | 11,600 |
| Schnuck Markets, Inc. | Retail Trade | St. Louis, Missouri | 10,919 |
| Archdiocese of St. Louis | Educational Services | St. Louis, Missouri | 9,826 |
| McDonald’s | Accommodation and Food Services | Metro Area, Missouri | 9,455 |
| National Geospatial-Intelligence Agency | Public Administration | St. Louis, Missouri | 2,400 |

Source: St. Louis Regional Chamber, 2015a

Healthcare, which employs approximately 200,000 people (FRB, 2015b), is one of the primary components of the regional economy in the St. Louis area (St. Louis Regional Chamber, 2015b). Emerging businesses in the St. Louis area include financial service centers, technology, and life sciences (St. Louis Regional Chamber, 2015b). The St. Louis MSA had the third-highest concentration of investment advisors, with St. Louis posting the highest growth in the securities industry from 2007 to 2012 (St. Louis Regional Chamber, 2015b). The financial services sector employs approximately 90,000 people in the St. Louis area (FRB, 2015b).

The following sections summarize employment and income, housing, and tax revenue by the geography of each of the proposed sites. Population trends are not repeated for each site.

### 3.1.1 Fenton Site

This site is in the City of Fenton in St. Louis County, Missouri. The area surrounding the site is predominantly industrial, with a mix of commercial and educational buildings. This site is bounded by the Meramec River and a railroad to the north, a railroad yard to the east, Interstate 44 (I-44) to the south, and a distribution center and the St. Louis College of Health Careers to the west (USACE, 2015a).

#### 3.1.1.1 Housing

There are 1.2 million housing units in the St. Louis MSA, some 10 percent (122,672) of which are vacant (Table 3.1-2). Of the total vacant housing units available for rent or purchase (43,808), more than 80 percent (35,489) are located in Missouri. Fifty-nine percent (20,871) of the vacant housing units in Missouri are available for rent (USCB, 2015a, 2015c). Site-specific housing data for the City of Fenton are not provided because personnel can commute to this location and would not necessarily relocate, as described in Section 4.1, *Socioeconomics*.

#### 3.1.1.2 Employment and Income

Table 3.1-3 shows employment and income data for the City of Fenton. The labor force was estimated at 2,020 based on the ACS 2009–2013 data (USCB, 2015d, 2015e, 2015f). To compare regions, this table includes data from ACS for the labor force and more recent data from the FRB of St. Louis for 2015. Neither the BLS nor the St. Louis FRB track estimated unemployment rates for smaller cities and other geographies, such as the Fenton CDP. Additionally, the numbers reported by ACS are an average of a 5-year period starting in 2009, which includes the end of the recession that lasted from December 2007 to June 2009 (BLS, 2012). As a result, the ACS data referenced for the Fenton CDP (6.7 percent) are higher than current conditions (USCB, 2015f). However, the employment rate reported by ACS is comparable to the same ACS 2009–2013 data for St. Louis County (8.6 percent) and the State of Missouri (8.8 percent). The ACS survey also reported the median household income as $96,420, which is significantly higher than that for the St. Louis MSA ($39,019) and the State of Missouri ($47,380) (Table 3.1-3) (USCB, 2015f). This higher median income reflects on the appeal of Fenton's location, schools, and types of employment, such as real estate, manufacturing, and science and technology (City of Fenton, 2015a).

### 3.1.1.3 Tax Revenue

Table 3.1-5 presents the 2014 budget and tax revenue information for the City of Fenton and St. Louis County. The City of Fenton total budget was approximately $3.4 million, with tax revenue totaling $5.3 million. A majority of the City of Fenton revenue, 77 percent, comes from sales taxes and utility taxes, which totaled $2.77 million and approximately $1.4 million, respectively, in 2014 (City of Fenton, 2014a). Except for a percent allocation to the City of Fenton to fund fire protection, St. Louis County provides the balance of the local services in Fenton. There are no municipal property taxes (real property or personal property) on residential or commercial property; thus, the City of Fenton does not collect property tax revenue from the site except for the revenue related to fire protection, which in 2014 amounted to $5,502, or 0.1 percent, of the City's total revenue of $5.3 million (City of Fenton, 2014a). The City of Fenton and St. Louis County do not collect earnings tax.

TABLE 3.1-5
**City of Fenton and St. Louis County Tax Information**

| Budget Item | Amount |
|---|---|
| City of Fenton Property Tax | N/A[a] |
| City of Fenton Sales Tax—2014 Midyear | $2,771,000[b] |
| City of Fenton Utility Tax—2014 Midyear | $1,356,000[b] |
| City of Fenton Total Revenue—2014 Midyear | $5,339,900[b] |
| City of Fenton Total Budget—2014 Midyear | $3,352,328[b] |
| St. Louis County Total Property Tax Revenue—2014 | $107,868,671[c] |
| St. Louis County 2014 Adjusted Budget[d] | $772,644,977[c] |

Notes:

[a]City of Fenton, 2015a.

[b]City of Fenton, 2014a.

[c]St. Louis County, Missouri, 2015a.

[d]Includes approximately $105,340,068 in revenue from the Public Mass Transit Fund Revenue (0.50-cent sales tax).

The Fenton Site was sold in November 2014 for $16.4 million, and the land (acreage only) was appraised in 2015 for $18,915,900 (St. Louis County, Missouri, 2015a). The total 2014 property tax rate for the Fenton Site was 8.403 percent, based on its commercial use (Table 3.1-6). The majority of the property tax is dedicated to supporting educational or cultural (for example, museum, zoo) institutions and other St. Louis County or state services, with just less than 1 percent going to the City of Fenton, primarily for the fire department. The property taxes on its 2014 appraised value of $17,196,300 were $555,856, of which $93,548 was a commercial surcharge ($1.70 per $100 of assessed value) (St. Louis County, Missouri, 2015b).

TABLE 3.1-6
**City of Fenton and St. Louis County Property Tax Information**

| Tax Element | Value |
|---|---|
| Fenton Site Sale Price, November 2014 | $16,400,000[a] |
| Fenton Site Property Tax Rate 2014 | 8.403 percent[b] |
| Fenton Site Appraised Value 2014 | $17,196,300[a] |
| **City of Fenton** | |
| Property Tax Payment (Fire Protection Only) to Fenton | $5,502 |
| Property Tax Payment (Fire Protection Only) to Fenton as a Percentage of the City's Total Tax Revenue ($5,502/$5,339,900) | 0.103% |
| Fenton 2014 Midyear Total Budget | $3,352,328[c] |
| **St. Louis County** | |
| 2014 Property Tax Payment to St. Louis County | $462,308[b] |
| 2014 Commercial Surcharge | $93,548[b] |
| 2014 Total Tax Payment to St. Louis County | $555,856[b] |
| St. Louis 2014 County Property Tax Revenue | $ 107,868,671[d] |
| Percentage of St. Louis County Property Tax Revenue ($462,308/ $107,868,671) | 0.43% |
| St. Louis County 2014 Adjusted Operating Budget | $631,604,909[d] |
| Percentage of Total St. Louis County Budget ($555,856/$631,604,909) | 0.09% |

Sources:
[a]St. Louis County, Missouri, 2015a
[b]St. Louis County, Missouri, 2015b
[c]City of Fenton, 2014a
[d]St. Louis County, Missouri, 2015c

The general sales tax rate for a majority of the City of Fenton, including the Fenton Site, is 7.613 percent (see Table 3.1-7). While not applicable to the site, the exceptions to this rate, for reference, are for the two Transportation Development Districts (TDDs) (Dierbergs Fenton Crossing and Gravois Bluffs shopping centers) in the City of Fenton, which have established a separate 1 percent sales tax. As shown Table 3.1-7, the general sales taxes for the Fenton Site include 4.225 percent for the State of Missouri, 2.888 percent for St. Louis County, and 0.5 percent for the City of Fenton to fund parks and stormwater management (City of Fenton, 2015a).

TABLE 3.1-7
**Sales Tax Rates for Fenton Site**

| General Sales Tax | Rate |
|---|---|
| City of Fenton | 0.5% |
| St. Louis County | 2.888% |
| State of Missouri | 4.225% |
| Total Sales Tax Rate | 7.613% |

Note:
[a]City of Fenton, 2015a

## 3.1.2 Mehlville Site

The Mehlville Site is in an unincorporated area near the Concord and Sappington CDPs of St. Louis County, Missouri. This site is a developed office park, now partially occupied by Metropolitan Life Insurance Company (MetLife) and Cigna. The surrounding area is a mix of mostly commercial and residential buildings.

### 3.1.2.1 Housing

Approximately 1.2 million housing units are located in the St. Louis MSA, about 10 percent of which are vacant (Table 3.1-2). Of the total vacant housing units available for rent or purchase (43,808), more than 80 percent (35,489) are located in Missouri. Fifty-nine percent (20,871) of the vacant housing units in Missouri are available for rent (USCB, 2015a, 2015c). Site-specific housing data for the Concord and Sappington CDPs are not provided because personnel can commute to this location and would not necessarily relocate, as described in Section 4.1, *Socioeconomics*.

### 3.1.2.2 Employment and Income

Table 3.1-3 shows employment and income data for the Concord and Sappington CDPs in unincorporated St. Louis County. Based on the ACS 2009–2013 5-Year Estimates, the combined labor force in the Concord and Sappington CDPs was estimated at 12,199 (USCB, 2015d). To provide regional comparisons, Table 3.1-3 includes data from ACS estimates and more recent data from the FRB of St. Louis for 2015. Neither the BLS nor the St. Louis FRB track estimated unemployment rates for smaller cities and other geographies, such as the Concord and Sappington CDPs. The numbers reported by ACS (5.2 percent for the Concord CDP and 6.7 for the Sappington CDP) are an average of a 5-year period starting in 2009, which includes the end of the recession that lasted from December 2007 to June 2009 (BLS, 2012). In contrast, the unemployment rate reported by ACS is lower than the same ACS 2009–2013 5-Year Estimates for St. Louis County (8.6 percent) and the State of Missouri (8.8 percent). The ACS survey also reported the median household income as $66,148, which is higher than the median household income of the St. Louis MSA ($39,019) and of the State of Missouri ($47,380), as shown in Table 3.1-3 (USCB, 2015f).

### 3.1.2.3 Tax Revenue

The Mehlville Site is located in an unincorporated area of St. Louis County; therefore, the County provides the majority of services to the site. Table 3.1-8 provides information on the St. Louis County budget and revenue for 2014. The total 2014 adjusted budget for the County was $772.6 million, which results in an adjusted operating budget of $631.6 million (St. Louis County, Missouri, 2015c). Much of the revenue (nearly 70 percent in 2014) used to fund the County budget comes from property taxes and sales taxes, which totaled $107.8 million and $328.4 million, respectively, in 2014. The projected revenue for St. Louis County for 2014 is $672.4 million (St. Louis County, Missouri, 2015a). St. Louis County does not collect earnings tax.

TABLE 3.1-8
**St. Louis County Tax Information**

| Budget Item | Amount |
|---|---|
| St. Louis County 2014 Adjusted Grand Total Budget[a] | $772,644,977[b] |
| St. Louis County 2014 Adjusted Operating Budget | $631,604,909 |
| **St. Louis County 2014 Total Revenue** | **$672,381,623** |
| St. Louis County Total Property Tax Revenue—2014 | $107,868,671[b] |
| St. Louis County Total Sales Tax Revenue—2014 | $328,446,903 |

Notes:
[a]Includes approximately $105,340,068 in revenue from the Public Mass Transit Fund Revenue (0.50-cent sales tax).
[b]St. Louis County, Missouri, 2015b.

The total appraised value for the Mehlville Site was $23.9 million (see Table 3.1-9), which resulted in $675,440 in total taxes being paid for the site in 2014, $129,945 of which was a commercial surcharge (St. Louis County, Missouri, 2015b). The $545,495 property tax portion of the payment reflects 0.5 percent of the total property tax revenue received by St. Louis County in 2014 (Table 3.1-9).

TABLE 3.1-9
**Melville Site and St. Louis County Property Tax Information**

| Tax Element | Value |
|---|---|
| Mehlville Site Property Tax Rate, 2014 | 7.1364 percent[a] |
| Mehlville Site Appraised Value, 2014 | $23,887,000[a] |
| 2014 Property Tax Payment to St. Louis County | $545,495[a] |
| 2014 Commercial Surcharge | $129,945[a] |
| 2014 Total Tax Payment to St. Louis County | $675,440[a] |
| Property Tax Payment to St. Louis County as a percentage of Total County Property Tax Revenue ($545,495.01/$107,868,671) | 0.51% |
| 2014 Total Tax Payment to St. Louis County as a percentage of the Total County Budget ($675,440/$631,604,909[a]) | 0.01% |

Note:
[a]St. Louis County, Missouri, 2015a

As noted previously, sales tax revenue is not collected for the Mehlville Site area and local services are not provided, because the area is not incorporated. Table 3.1-10 summarizes the total sales tax rate for St. Louis County, which includes a 2.888 percent tax for the County and a 4.225 percent tax from the State of Missouri (Missouri Department of Revenue [MoDOR], 2015).

TABLE 3.1-10
**St. Louis County Sales Tax Rates for Mehlville Site**

| General Sales Tax | Rate |
|---|---|
| St. Louis County | 2.888% |
| State of Missouri | 4.225% |
| Total Sales Tax Rate | 7.113% |

Source: MoDOR, 2015.

### 3.1.3 St. Louis City Site (Preferred Alternative)

The St. Louis City Site is located in North St. Louis on the northeast corner of the intersection of North Jefferson Avenue and Cass Avenue. The site includes a mix of occupied residential, commercial/light industrial properties, institutional, and vacant/abandoned properties. The area surrounding the St. Louis City Site has comparable land use types, but the primary land use is residential. The area immediately south of the site (Cass Avenue) is the former Pruitt-Igoe housing complex, which is now vacant.

#### 3.1.3.1 Housing

Approximately 1.2 million housing units are present in the St. Louis MSA, some 10 percent of which are vacant (Table 3.1-2). Of the total vacant housing units potentially available for rent or purchase (43,808), more than 80 percent (35,489) are located in Missouri. Fifty-nine percent (20,871) of the vacant housing units in Missouri are available for rent (USCB, 2015a, 2015c). Site-specific housing data for the City of St. Louis are not provided because personnel can commute to this location and would not necessarily relocate, as described in Section 4.1, *Socioeconomics*.

#### 3.1.3.2 Employment and Income

Table 3.1-3 shows employment and income data for the City of St. Louis. The labor force was estimated at 162,549, based on the ACS 2009–2013 5-Year Estimates, (USCB, 2015d). To compare regions, this table also includes more recent data from the FRB of St. Louis for 2015. Additionally, the numbers reported by ACS are an average of a 5-year period starting in 2009, which includes the end of the recession that lasted from December 2007 to June 2009 (BLS, 2012). The ACS data referenced for the City of St. Louis (14.3 percent) are higher than more recent data (USCB, 2015e). However, the employment rate reported by ACS is comparable to the same ACS 2009–2013 5-Year Estimates for St. Louis County (8.6 percent) as well as the State of Missouri (8.8 percent). More recent data from May 2015 indicate that the unemployment rate for the City of St. Louis has dropped to 7 percent but it is still higher than that in the St. Louis MSA (5.5 percent) and the State of Missouri (5.8 percent) (USCB, 2015d, 2015e; BLS, 2015). The ACS survey also reported the median household income as $34,582, which is lower than that in the St. Louis MSA ($39,019) and for the State of Missouri ($47,380) (USCB, 2015f). Approximately five active businesses are located within the site; some own their property and others rent space (Development Strategies, 2015).

The 100-acre St. Louis City Site is part of the larger NorthSide Redevelopment Area[1], which was designated blighted in 2009[2] and encompasses more than 1,500 acres of North St. Louis (1,103 acres excluding rights-of-way [ROWs]) (see Appendices 3.2A and 3.2B; Development Strategies, 2009a, 2009b). The NorthSide

[1]Development Strategies. 2009b. (2009 NorthSide Redevelopment Plan) *Redevelopment Plan for the NorthSide Tax Increment Financing (TIF) Redevelopment Area*. September 16.

[2]Development Strategies. 2009a. (2009 Blighting Study) *Data and Analysis of Conditions Representing a "Blighted Area" for the NorthSide Tax Increment Financing (TIF) Redevelopment Area.* September 2.

Redevelopment Area is officially designated as the NorthSide Regeneration Tax Increment Financing (TIF) Redevelopment Area. The purpose of the TIF is to encourage residential and economic growth in North St. Louis. In January 2015, the City of St. Louis completed a Blighting Study[3] that analyzed the current conditions within the St. Louis City Site and the former Pruitt-Igoe site (Development Strategies, 2015a). In February 2015, the City designated the area blighted, as defined in Section 99.320 of the Revised Statutes of Missouri, 2000 and approved the "Cass and Jefferson Redevelopment Area" and the Cass and Jefferson Redevelopment Area Plan[4] (Board Bill 263, Ordinance 69977), (Development Strategies, 2015a, 2015b). The 2015 Blighting Study summarizes existing conditions in the Cass and Jefferson Redevelopment Area, which include high vacancy rates, low home ownership rates, and a 7.4 percent unemployment rate. It also notes that there are approximately 200 jobs generated by industrial and institutional uses operating in the Cass and Jefferson Redevelopment Area (Development Strategies, 2015a).

#### 3.1.3.3 Tax Revenue

The City of St. Louis's planned budget for fiscal year 2016 is slightly more than $1 billion, a 1 percent increase from 2015 (City of St. Louis, 2015a). The general fund contributes the largest proportion, 48 percent, followed by Enterprise Funds, 22 percent, and Special Revenue (such as public safety sales tax, excess use tax), 12 percent. Grant funds, debt service funds, capital improvement funds, and internal service funds provide the balance of the budget. In 2015, one of the primary sources of revenue for the general fund, 33 percent, is the earnings tax, which is estimated to total $161 million. The earnings tax is projected to grow by 2 percent in 2016 to $164.3 million. The total payroll tax generated approximately $37.6 million in 2015 and is projected to increase by 1.5 percent in 2016. Property and sales taxes are expected to total $57.4 million and $53.6 million, respectively, for 2015 (City of St. Louis, 2015b). Table 3.1-11 shows City of St. Louis tax revenue for 2014 as well as total 2014 City of St. Louis budget numbers.

The City of St. Louis earnings tax is a 1 percent tax on employee gross compensation and business net profits. NGA is exempt from the earnings tax on business net profits because it is a federal entity; however, the tax is applicable to NGA personnel. All residents of the City of St. Louis, regardless of where they work, must pay the tax. The earnings tax also applies to non-residents who work in the city.

The Next NGA West Campus main operations building is sized to accommodate 3,150 employees, but the NGA workforce fluctuates. For the purpose of obtaining economic impacts for this analysis, the number used was 2,927, the total of NGA personnel at the South 2nd Street facility as of August 11, 2015 (Berczek, 2015, pers. comm.). These 2,927 personnel (government and contractors) earn an average annual income of

[3]Development Strategies. 2015a. (2015 Blighting Study) *Data and Analysis of Conditions Representing a "Blighted Area" for the Cass Avenue, Jefferson Avenue/Parnell Street, Montgomery Street, and North 22nd Street Redevelopment Area*. January 8.

[4]Development Strategies. 2015b. (2015 Cass and Jefferson Redevelopment Plan) *Blighting Study & Redevelopment Plan for the Cass Avenue, Jefferson Avenue/Parnell Street, Montgomery Street, and North 22nd Street Redevelopment Area*. January 13.

$82,424. Of this number, approximately 273 (about 9 percent) live in the City of St. Louis and pay $225,018 in earnings tax, while 2,654 (about 91 percent) live outside the city limits and pay $2,187,533 in earnings tax (Table 3.1-11). This amounts to approximately $2.4 million in revenue for the City of St. Louis each year for all NGA employees regardless of place of residence. This revenue is 1.6 percent of the $153.3 million in annual earnings tax revenue received by the City of St. Louis in 2014.

TABLE 3.1-11
**City of St. Louis City Tax Information**

| Budget Item | Amount |
|---|---|
| 2014 Total City Budget | $985,213,411 |
| 2014 Property Tax Revenue | $56,500,000 |
| 2014 Sales Tax (portion paid to the City) | $49,100,000 |
| 2014 Earnings Tax | $153,300,000 |
| 2014 Earnings Tax per NGA Resident Personnel | $225,018 |
| 2014 Earnings Tax per NGA Non-Resident Personnel | $2,187,533 |
| Total 2014 Earnings Tax from NGA Personnel | $2,412,551 |
| NGA Earnings Tax (Non-Resident Personnel) as a % of City's Total 2014 Earnings Tax | 1.43% |
| NGA Earnings Tax (Non-Resident Personnel) as a % of City's Total 2014 Revised Budget | 0.22% |
| NGA Earnings Tax (All Personnel) as a % of City's Total 2014 Earnings Tax | 1.57 % |
| NGA Earnings Tax (All Personnel) as % of City's Total 2014 Revised Budget | 0.24% |

Source: City of St. Louis, 2014

The City of St. Louis received property tax revenue totaling $64,180 in 2014 for the St. Louis City Site (Halliday, 2015b, pers. comm.). This reflects a fraction of a percent of the $56.5 million in property tax revenue received by the City of St. Louis in 2014 (Table 3.1-12) (City of St. Louis, 2014).

TABLE 3.1-12
**City of St. Louis Property Tax Information**

| Budget Item | Amount |
|---|---|
| Total 2014 City of St. Louis Property Tax Revenue | $56,500,000 |
| 2014 Property Tax Paid for North St. Louis Site | $64,180 |
| Percentage of City's Property Tax Revenue | 0.11% |
| Percentage of City's Budget | 0.01% |

Source: CSL, 2014

Table 3.1-13 summarizes the sales tax rates for the City of St. Louis, which total 8.679 percent. Of this, 4.225 percent is for the State of Missouri and 4.454 percent for the City of St. Louis (MoDOR, 2015).

TABLE 3.1-13
**Sales Tax Rates for the St. Louis City Site**

| General Sales Tax | Rate |
|---|---|
| City of St. Louis | 4.454% |
| State of Missouri | 4.225% |
| Total Sales Tax Rate | 8.679% |

Source: MoDOR, 2015

### 3.1.4 St. Clair County Site

The St. Clair County Site is in an undeveloped agricultural area adjacent to Scott AFB. Most land in the analysis area is in row crop production for commercial farming. A part of the St. Clair County Site, 129 acres total, is leased from the County for agricultural production. The Scott AFB golf course is the only business within the analysis area. The area north of Scott AFB has been designated for proposed development by the City of O'Fallon as MidAmerica Commercial Park.

#### 3.1.4.1 Housing

Approximately 1.2 million housing units are located in the St. Louis MSA, some 10 percent of which are vacant (Table 3.1-2). Of the total vacant housing units available for rent or purchase (43,808), approximately 19 percent (8,319) are in Illinois, and of those, approximately 53 percent (4,379) are available for rent (USCB, 2015a, 2015c). Site-specific housing data for St. Clair County are not provided because any potential relocation decisions are not expected to affect the housing stock, as described in Section 4.1, *Socioeconomics*.

#### 3.1.4.2 Employment and Income

Table 3.1-3 shows employment and income data for St. Clair County, Illinois. Based on the ACS 2009–2013 5-Year Estimates, the labor force was estimated at 123,075 (USCB, 2015d). For regional comparisons, this table includes data from ACS for the labor force and more recent data from the FRB of St. Louis for 2015. Additionally, the numbers reported by ACS are an average of a 5-year period starting in 2009, which includes the end of the recession that lasted from December 2007 to June 2009. As a result, the ACS data referenced are higher than the USCB's 9.5 percent unemployment rate for St. Clair County and 10.5 percent rate for Illinois (USCB, 2015e). These numbers decreased to a 5.7 percent unemployment rate for St. Clair County in 2015 (USCB, 2015d, 2015e; FRB, 2015b). More recent 2015 data indicate that the unemployment rate of St. Clair County is comparable to that for the St. Louis MSA (5.5 percent) and lower than that for the State of Illinois (6.0 percent). ACS data also reported the median household income within the county as $50,578, which is higher than that for the St. Louis MSA ($39,019) and lower than the medium household income for the State of Illinois ($56,797) (USCB, 2015f).

#### 3.1.4.3 Tax Revenue

The St. Clair County Site is in an unincorporated area of southern Illinois' St. Clair County. The anticipated revenue for the county in 2014 was $38.9 million (St. Clair County, Illinois, 2013). Property taxes in the county contributed $9.5 million to the general fund in 2014, while the county sales tax contributed $8.6 million (Table 3.1-14) (St. Clair County, Illinois, 2015a). St. Clair County does not collect earnings tax.

TABLE 3.1-14
**St. Clair County, Illinois, Tax Information**

| Budget Item | Amount |
|---|---|
| Total 2014 St. Clair County General Fund Budget | $34,952,429 |
| Total 2014 Revenue | $38,839,113 |
| 2014 Property Tax Revenue | $9,520,000 |
| Sales Tax Revenue | $8,622,459 |
| Property Tax for St. Clair County Site | N/A owned by County, exempt |

Source: St. Clair County, Illinois, 2013

As shown in Table 3.1-15, the sales tax rate for St. Clair County is 7.35 percent, which includes a 6.25 percent tax for the State of Illinois and a 1.1 percent tax for St. Clair County (Illinois Department of Revenue [IDOR], 2015a). The St. Clair County Site is owned by St. Clair County and therefore is exempt from property tax and does not contribute to the County budget.

TABLE 3.1-15
**Sales Tax Rates for St. Clair County Site**

| General Sales Tax | Rate |
|---|---|
| St. Clair County | 1.1% |
| State of Illinois | 6.25% |
| Total Sales Tax | 7.35% |

Source: IDOR, 2015b

Non-tax revenue is derived from the two agricultural leases managed by MidAmerica St. Louis Airport (St. Clair County), which currently generate approximately $250 per acre, or $32,250 total, on average each year in revenue for MidAmerica St. Louis Airport. These leases also generate crop production income for the two farmers leasing the property (Collingham, 2015a, pers. comm.).

## 3.2 Land Use and Community Cohesion

This subsection discusses the land use and community cohesion concerns at and surrounding each proposed site.

Land Use

Land use describes how land is developed for different uses. Land use can be categorized as urban, suburban, rural, or undeveloped. Land uses that fall within these categories include residential, commercial, office, institutional (churches and schools), industrial, agricultural, and parks and open space.

Land use is guided by the plans and policies of local governments such as cities and counties and implemented by adopting and enforcing local zoning codes and land use plans. Land use plans guide the type and extent of allowable land use in an effort to plan for the growth needs of the community and ensure compatibility among adjacent uses. Land use plans and zoning also help maintain and improve social, cultural, and physical amenities; promote a stable economy; preserve agricultural lands; maintain scenic areas; supply adequate housing; ensure the availability of necessary public services and utilities; and protect specially designated or environmentally sensitive areas.

The ROI for the land use analysis includes each proposed site and adjacent lands within 0.5 mile of the site boundary (Figures 3.2-1, 3.2-3, 3.2-6, and 3.2-12). This ROI was chosen because land use changes are likely to impact properties within 0.5 mile of a development project, and the perceived impacts would dissipate as the distance increases.

The methodology for analyzing land use consisted of reviewing current land use, future land use plans, and zoning for consistency with the Proposed Action. Infrastructure needs, such as roads, water, and sewer, are addressed in Section 3.4, *Traffic and Transportation*, and Section 3.7, *Utilities*.

Farmland Regulations

Preservation of agricultural lands is managed through the Farmland Protection Policy Act (FPPA) (7 CFR 658). FPPA is intended to minimize unnecessary and irreversible impacts by the federal government to farmland, which for FPPA purposes includes prime farmland, unique farmland, and land of statewide or local importance; this includes cropland and pastureland but does not include land identified as “urbanized area” (UA) on the Census Bureau Map, as “urban built-up” on U.S. Department of Agriculture (USDA) Important Farmland maps, or as “urban area” on U.S. Geological Survey (USGS) topographical maps (7 CFR 658.2).

Urbanized areas include areas of 50,000 people or more and urban clusters of at least 2,500 and less than 50,000 people (USCB, 2015g). As such, all three Missouri sites are within a Census urban boundary (USCB, 2015h) and therefore by definition have no potential for prime, unique, or important farmlands. However, the St. Clair County Site is in an undeveloped portion of St. Clair County and may be subject to FPPA; the ROI

for the FPPA analysis is St. Clair County. FPPA requirements for the St. Clair County Site are discussed further in Section 3.2.4.1, *Current Land Use*.

Community Cohesion

A community is often defined as a subarea of a town or city containing residences supported by community gathering locations (churches, cafes, and parks), services (clinics, parks, and schools), and areas where routine life activities are met (grocery stores and pharmacies). Not every community contains all of these support networks, but each community typically contains enough to facilitate living needs and conveniences. Community cohesion involves factors that contribute to the "sense of community" within an area and includes access and linkages to areas that provide opportunities for residents to gather and interact. There are no regulations that define or guide changes to community cohesion. Nonetheless, alterations to access and linkages, and the displacement of individuals, businesses, and community resources can adversely affect daily activities and how individuals interact.

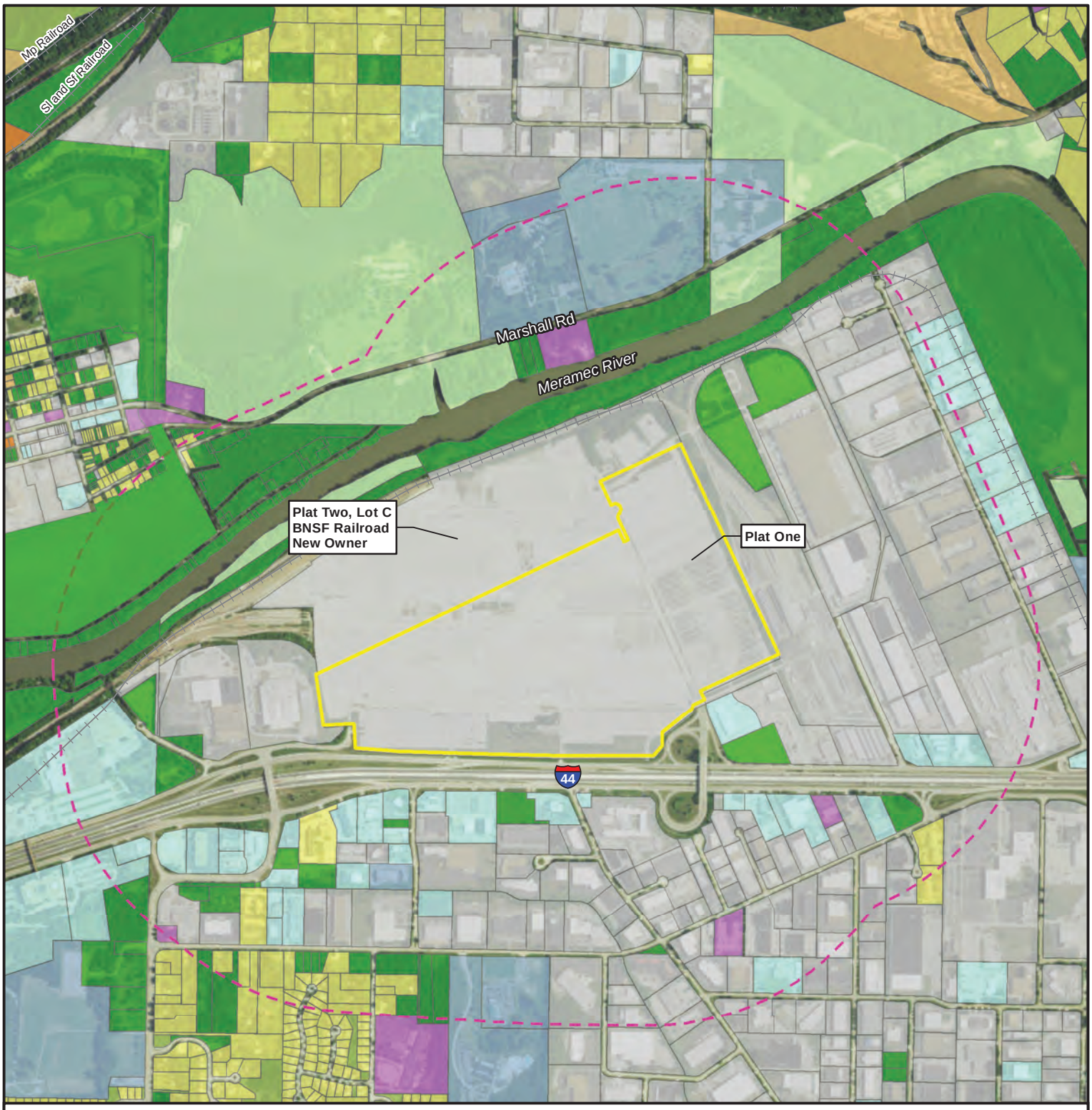
The ROI for community cohesion is the area within the site boundaries of each alternative plus the areas within 0.5 mile of each site boundary. This distance was used because impacts to community cohesion would not be expected to occur beyond that distance, and it is consistent with the ROI used for similar resources. The community setting includes existing land uses, access and linkages, general uses of each site by the local community, and community resources on and near each of the proposed sites. The community setting is described in this section for each of the four alternative sites. Information about the proposed relocation efforts is provided in Section 4.2, *Land Use and Community Cohesion*, and Section 5.0, *Environmental Justice*.

## 3.2.1 Fenton Site

The following subsections describe the current and planned land use for the 167-acre Fenton Site and surrounding area and address community cohesion around the Fenton Site.

### 3.2.1.1 Current Land Use

A Chrysler automobile assembly plant occupied the Fenton Site until 2009 (USACE, 2015a). The parcel is currently undeveloped and covered almost entirely in concrete and asphalt. The City of Fenton land use classification for this site is Industrial/Utility (Figure 3.2-1). The current zoning for the site, Planned Industrial Development (PID), provides for varying intensities of high-quality industrial services and complementary business/commercial services (City of Fenton, 2014b, 2015b). The purpose of a PID zoning district is to facilitate a mixture of high-quality industrial and business services that cannot be accomplished in a single zoning district (City of Fenton, 2015b).




Proposed Site

0.5-Mile Region of Influence (ROI)

**Current Land Use**

- Single-Family
- Multi-Family
- Duplex/Townhome
- Commercial
- Industrial/Utility
- Institution
- Common Ground
- Park
- Recreation
- Vacant/Agriculture

Figure 3.2-1
Fenton Site Current Land Use
NGA EIS

N

0 0.25 0.5 0.75 Miles

Data Source: Louis County GIS Service Center
Image Source: Esri, Microsoft, Image Flown 2/2/2012

#### 3.2.1.2 Surrounding Land Use

As shown on Figure 3.2-1, land uses immediately surrounding the Fenton Site include commercial, industrial/ utility, park, and vacant/agriculture. The site is bounded by the Meramec River and a railroad to the north, a railroad yard to the east, I-44 to the south, and a distribution center and the St. Louis College of Health Careers to the west (Figure 3.2.-2). The nearest residential land use within the ROI is in Valley Park, located across the Meramec River. Additionally, some residential land use is present south of I-44.

Except for one institutional land use across the Meramec River from the site and three institutional land uses south of I-44, the balance of the ROI is designated as either vacant/agriculture or park land. The closest parks within 0.5 mile of the site boundary include a portion of Buder Park to the west (which is designated vacant/agricultural land) and Meramec Landing Park to the north. The Meramec Landing Park's southern portion is adjacent to the Fenton Site; however, this portion of the park does not offer access or amenities and is primarily open space with a utility line easement. Additionally, a portion of Unger Park (which includes the Meramec River Greenway Trail) is immediately east of the Fenton Site, just outside the 0.5-mile ROI. Access to the Fenton Site from nearby parks and open space is limited by physical barriers, including the river and the adjacent railroad corridor. Community resources within 0.5 mile of the site boundary are shown on Figure 3.2-2.

#### 3.2.1.3 Future Development

Following the closure of the Chrysler automobile assembly plant in 2009, the City of Fenton rezoned the site to a PID in accordance with Ordinance 3081. This ordinance has been amended several times to accommodate potential redevelopment, and the site is still currently zoned PID (City of Fenton, 2015a). Various concept plans for site redevelopment that have been considered but not pursued include relocating the St. Louis Rams football stadium (in 2013), building a multi-purpose arena (in the summer of 2015), and building an alternative and renewable energy business park (St. Louis Post-Dispatch, 2013; KP Development, 2015).

In November 2014, KP Development purchased the Fenton Site and afterward submitted a plan to the City of Fenton to develop the site as Fenton Logistics Park, a business park that would house industrial, office, manufacturing, and distribution centers, and similar uses (KP Development, 2015). On April 23, 2015, the City approved its future development in phases (City of Fenton Community Development Department, 2015). As of January 2016, the City of Fenton had approved Subdivision Plats for Fenton Logistics Park Plat One (Lots A and B-40 acres) and for Fenton Logistics Park Plat Two (Lot C-105 acres) (as shown on Figure 3.2-3) (Finkbiner, 2016, pers. comm.). Recent information indicates that Lot C of Plat Two, between the site and the Meramec River, was sold to BNSF Railroad (Finkbiner, 2016, pers. comm.). There is currently no other proposed development or redevelopment in the ROI (Finkbiner, 2015, 2016, pers. comm.).

Proposed Site

0.5-Mile Region of Influence (ROI)

Church

College

School

Daycare Center

Child Development Center

Park

**Description of Community Resources:**

| Number | Name |
|---|---|
| 1 | Team Activities for Special Kids (TASK) |
| 2 | Windsor Crossing Community Church |
| 3 | St. Louis College of Health Careers |
| 4 | First Academy Child Care |
| 5 | Simpson Park |
| 6 | Meramec Landing Park |
| 7 | Kirkwood Athletic Association |
| 8 | Family Golf and Learning Center |
| 9 | Treecourt Unleashed Dog Adventure Park |
| 10 | Buder Park Entrance |
| 11 | Apprende Private School |
| 12 | Unger Park |

N

0 0.25 0.5 0.75 Miles

Image Source: Esri, Microsoft, Image Flown 2/2/12

Figure 3.2-2
Fenton Site Community Resources
NGA EIS

#### 3.2.1.4 Community Cohesion

The nearest housing is location in Valley Park, which is north of the Meramec River. Other residential areas are located south of I-44. Buder Park and Meramec Landing Park are located within the ROI but physically separated from the Fenton Site by the Meramec River and railroad tracks (Figure 3.2-2). Public access to Meramec Landing Park is provided in the portion of the park north of the Meramec River, limiting use of the park area adjacent to the Fenton Site. While the boundary of Buder Park is within the ROI of the Fenton Site, the amenities offered by this park are farther removed and outside the ROI.

Other community resources in the ROI include Simpson Park, an athletic association, golf center, a dog park, and a private school (pre-kindergarten through high school), which are located north of the Meramec River. Other community resources within 0.5 mile include two daycare/child development centers and one college (Figure 3.2-2). Windsor Crossing Community Church is within the ROI of the Fenton Site, but south of I-44. The nearest schools are more than 0.25 mile away and north of the Meramec River. Additionally, Meramec River Greenway Trail currently extends to Unger Park, which is located immediately east of the ROI.

Given its industrialized nature and the separation from non-industrial areas provided by the Meramec River and I-44, the site has a limited sense of community cohesion with the surrounding area and affords little interaction with community areas south and north of the Meramec River and east of I-44.

### 3.2.2 Mehlville Site

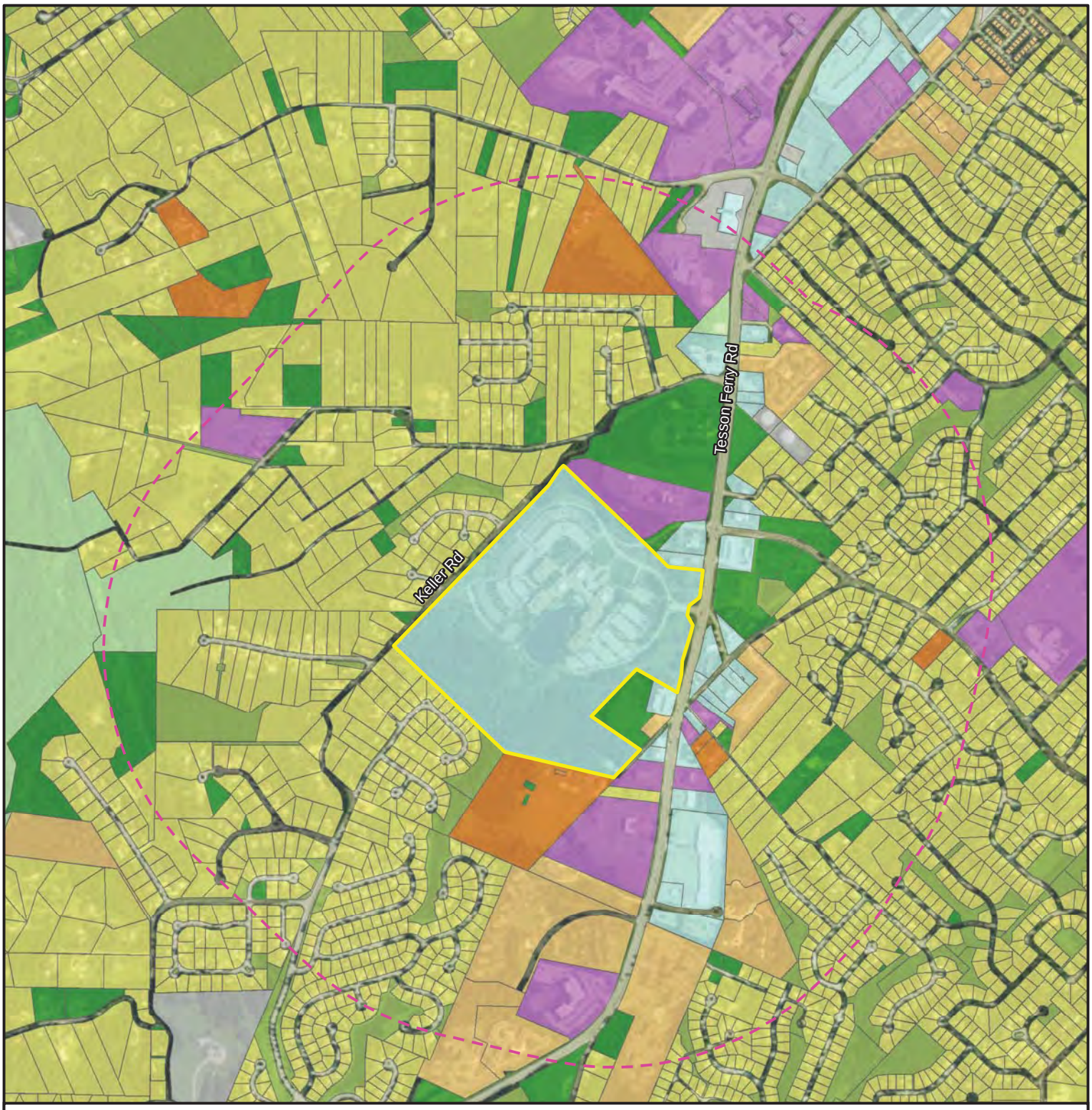
The following subsections describe the current and planned land use for the Mehlville Site and surrounding area and address community cohesion around the Mehlville Site.

#### 3.2.2.1 Current Land Use

The 101-acre Mehlville Site is located west of Tesson Ferry Road, approximately 1.5 miles south of its intersection with Interstate 64 (I-64), in unincorporated St. Louis County. Current land use at the Mehlville Site consists of a suburban office park. It is designated for commercial land use by St. Louis County, as shown on Figure 3.2-3 (St. Louis County, Missouri, 2015a.). The site has an existing two-story office building constructed for MetLife and Cigna in 1976 and renovated in 1992 (USACE, 2015b).

#### 3.2.2.2 Surrounding Land Use

As shown on Figure 3.2-3, land uses surrounding the Mehlville Site are largely residential (single-family, multi-family, and duplex/townhome) to the west and south, with commercial and institutional uses along Tesson Ferry Road, including shopping centers, restaurants, churches, banks, gas stations, and healthcare facilities.




Proposed Site

0.5-Mile Region of Influence (ROI)

**Current Land Use**

- Single-Family
- Multi-Family
- Duplex/Townhome
- Commercial
- Industrial/Utility
- Institution
- Common Ground
- Park
- Vacant/Agriculture

Figure 3.2-3
Mehlville Site Current Land Use
NGA EIS

N

0 0.25 0.5 Miles

Data Source: St. Louis County GIS Service Center
Image Source: Esri, Microsoft, Image Flown 2/2/2012

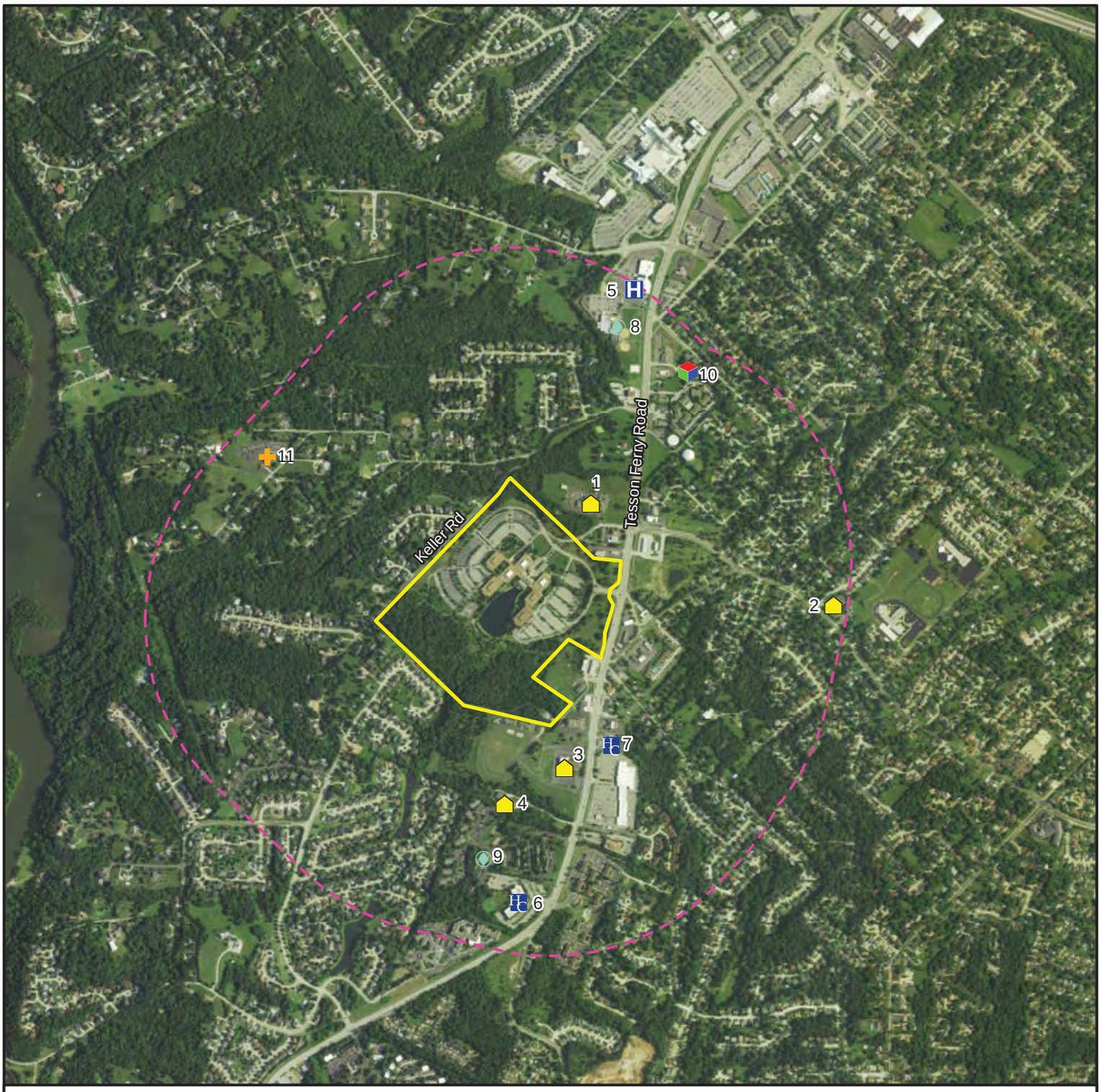
#### 3.2.2.3 Future Development

The future land use map for the Mehlville Site defines this area as a Planned Commercial District, and the area is zoned as such (C-8) (St. Louis County, Missouri, 2015a). As of January 2016, Tesson Gardens Villas, a 43-unit single family townhome development, was under construction to the south of the site on the western side of Tesson Ferry Road. Additionally, zoning and site plans have been approved for a McDonald's restaurant directly east, across Tesson Ferry Road. However, as of January 2016, the McDonald's restaurant was not under construction (Choate, 2016, pers. comm.). No land use plan changes or rezoning requests have been identified, and other than the Proposed Action, no potential development or redevelopment plans for the site have been identified.

#### 3.2.2.4 Community Cohesion

The Mehlville Site is a business park with residences to the west and south, and commercial- and institutional-related uses to the east and north. The residential developments consist of newer single-family homes located primarily on cul-de-sacs. Businesses in the ROI are concentrated along Tesson Ferry Road and consist primarily of medical facilities.

Community resources within the ROI include four churches, a hospital and medical office complex, two recreation centers, an Elks Lodge, and a daycare facility (Figure 3.2-4). South County Baptist Church is immediately north of the Mehlville Site. Access to the church is provided via Butlerspur Road, which merges into the main access road for the current office park. The Mehlville Site can also be accessed by Old Tesson Road, located further south of Tesson Ferry Road. The Mehlville Site community setting and its surroundings are suburban, and residential and commercial areas are divided from each other by roads or separated by fences. The community cohesion is typical of a suburban environment, where travel between uses is by automobile, and users operate independently of one another.




Proposed Site

0.5-Mile Region of Influence (ROI)

Church

Daycare Center

Hospital

Hospital/Clinic

Recreation Center

Community Service

**Description of Community Resources:**

| Number | Name |
|---|---|
| 1 | South County Baptist Church |
| 2 | First Unity Church of St. Louis |
| 3 | Gospel Assembly Church |
| 4 | Congregation of the Mission Church |
| 5 | St. Anthony's Medical Center |
| 6 | South County Pediatric Associates |
| 7 | Fresenius Medical Care Tesson Ferry |
| 8 | YMCA |
| 9 | Mehlville Activity Center |
| 10 | La Petite Academy |
| 11 | Elks Lodge |

N

0 0.25 0.5 0.75 1 Miles

Image Source: Esri, Microsoft, Image Flown 2/2/12

Figure 3.2-4
Mehlville Site
Community Resources
NGA EIS

### 3.2.3 St. Louis City Site (Preferred Alternative)

The following subsections describe the current and planned land use for the St. Louis City Site and surrounding area and also address community cohesion around the site.

#### 3.2.3.1 Current Land Use

The St. Louis City Site is located in North St. Louis on the northeast corner of the intersection of North Jefferson Avenue and Cass Avenue (Figure 3.2-5). The site comprises approximately 100 acres which was historically residential. The site straddles what is referred to by the City as the St. Louis Place and Carr Square neighborhoods (City of St. Louis Planning and Urban Design Agency [PUDA], 2013).

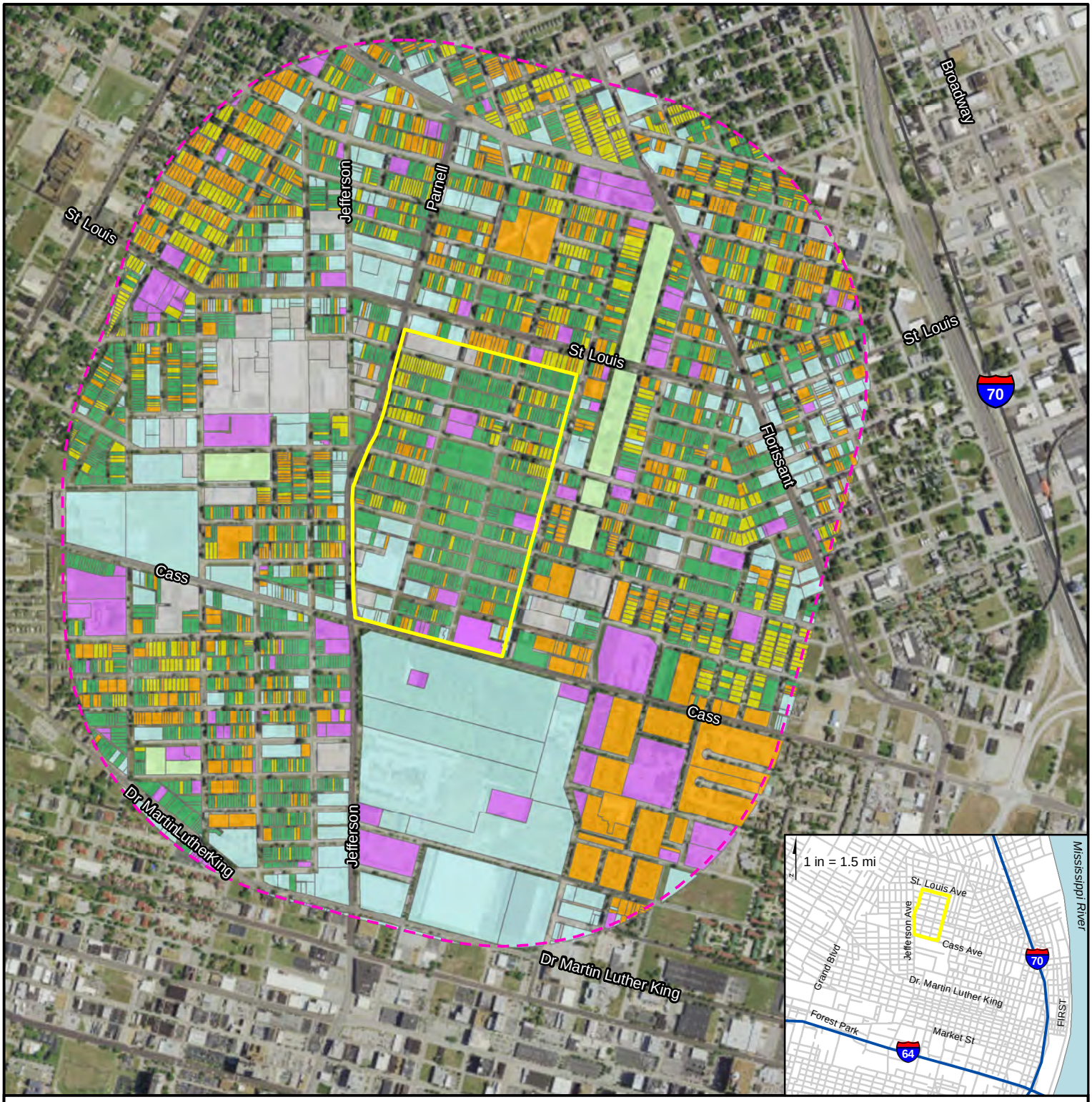
Land within the site boundary is primarily vacant, with some residential (single- and multi-family residences) and industrial use, and limited institutional, utility, commercial, and manufacturing uses (Figure 3.2.5). Many homes within the ROI have been abandoned or demolished, leaving large blocks of vacant land as shown on Figure 3.2-6 and Figure 3.2-7 (Development Strategies, 2015a). The entire St. Louis City Site (as well as the adjacent Pruitt-Igoe property) is included in the Cass and Jefferson Redevelopment Area[5] and was designated as blighted in the January 2015 Blighting Study. This study reported 78 percent of the land area being vacant and 6 percent of the land area having vacant buildings at the time of the blighting designation, for a total of 84 percent vacancies[6]. The 2015 Blighting Study designated the area blighted based on factors such as high vacancy rates, deteriorated and inadequate site improvements and street layouts, unsafe and unsanitary conditions, and conditions that endanger life or property by fire or other causes (Development Strategies, 2015a). On February 14, 2015, the City of St. Louis Planning Commission amended the St. Louis Strategic Land Use Plan (City of St. Louis, 2015a) and designated the area as an Opportunity Area.

Per the January 2015 Blighting Study (Development Strategies, 2015a), the buildings remaining on the 100-acre St. Louis City Site include the following:

- 52 vacant structures
- 61 single-family residences
- 13 two-family residences
- 3 four-family residences
- 5 businesses
- 3 institutional uses—the Howard Branch Grace Hill Head Start Center, Rhema Baptist Church, and Grace Baptist Church

[5]Development Strategies. 2015b. Development Strategies. 2015b. (2015 Cass and Jefferson Redevelopment Plan) *Blighting Study & Redevelopment Plan for the Cass Avenue, Jefferson Avenue/Parnell Street, Montgomery Street, and North 22nd Street Redevelopment Area*. January 13.

[6]Development Strategies. 2015a. (2015 Blighting Study) *Data and Analysis of Conditions Representing a "Blighted Area" for the Cass Avenue, Jefferson Avenue/Parnell Street, Montgomery Street, and North 22nd Street Redevelopment Area*. January 8.




Proposed Site

0.5-Mile Region of Influence (ROI)

**Current Land Use**

- Single-Family Residential
- Multi-Family Residential
- Commercial
- Industrial and Manufacturing
- Institutional and Utilities
- Parks and Open Space
- Vacant/Residential

N

0 0.25 0.5 Miles

Data Souce: City of St. Louis, MO. Assessor Dataset: Parcels (Land Records), Updated: 06/22/2015
Image Source: Esri, Microsoft, 2/2/2012

Figure 3.2-5
St. Louis City Site Current Land Use
NGA EIS

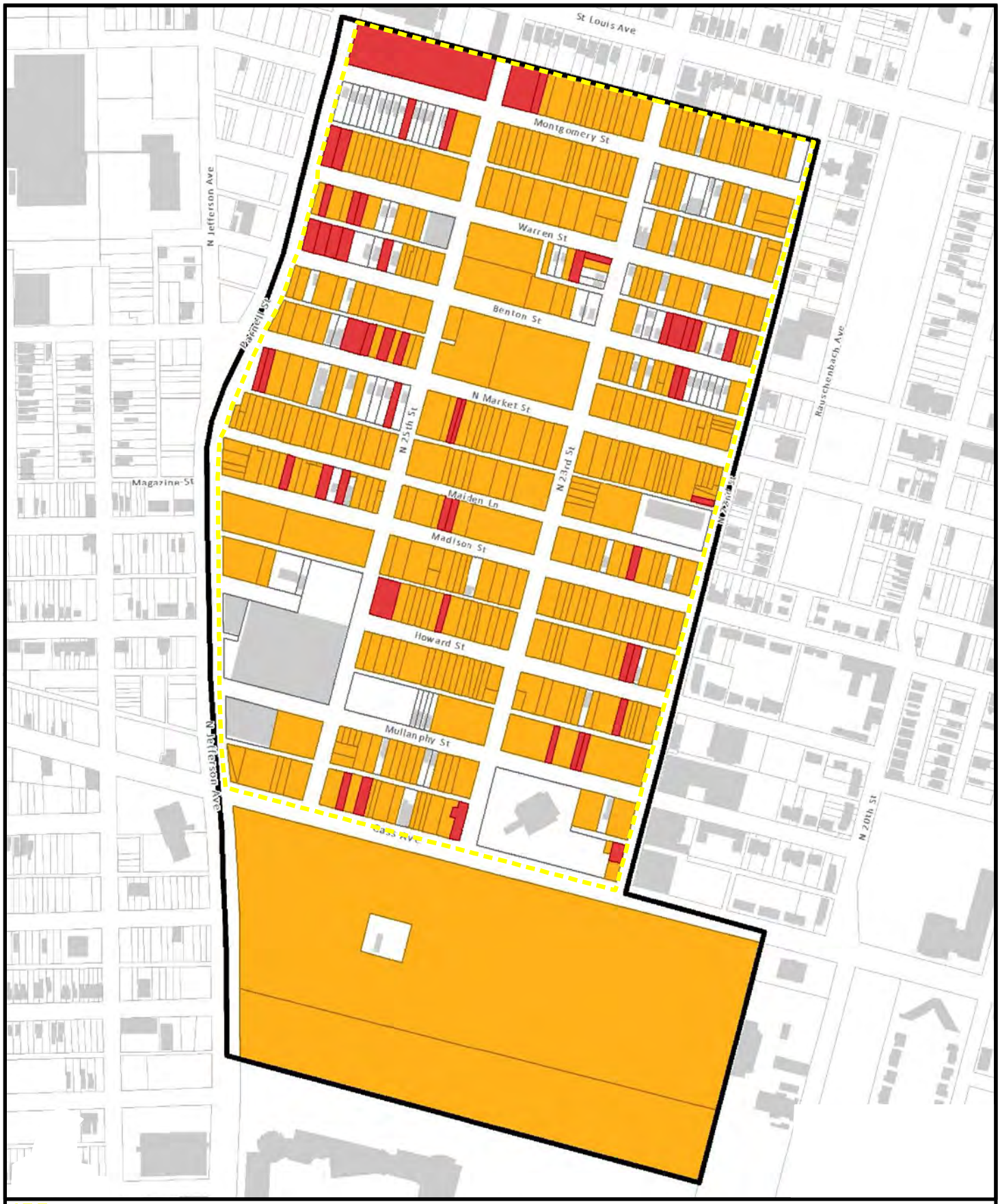



Figure 3.2-6
2015 Existing Vacant Land and Vacant Buildings – St. Louis City Site
NGA EIS

Data Source: Development Strategies 2015b

Proposed Site

Redevelopment Area

0.5-Mile Region of Influence (ROI)

N

0 250 500 750 1,000 Feet

Image Source: National Agriculture Imagery Program (NAIP) 2014
Data Source: : Development Strategies 2015a

Figure 3.2-7
2015 Cass and Jefferson Redevelopment Area
NGA EIS

The St. Louis City Site also includes a small children's play lot on the northwest corner of 22nd Street and Montgomery Street that is owned by the Grace Hill Neighborhood Services.

The St. Louis City Site, illustrated by the blue dashed line on Figure 3.2-8, is part of the larger 2009 NorthSide Redevelopment Area,[7] which includes four Redevelopment Project Areas (RPAs A, B, C, and D) totaling 1,500 acres (including streets/ROWs) in North St. Louis. The 100-acre St. Louis City Site is located in RPA D area (468 acres) and represents 21 percent of RPA D and 6 percent of the NorthSide Redevelopment Area. In February 2015, the Cass and Jefferson Redevelopment Area[8] was adopted by Board Bill 263 Ordinance 69977 (see Figure 3.2-7 and Appendix 3.2B) (Development Strategies, 2015b).The Cass and Jefferson Redevelopment Area includes the 100-acre St. Louis City Site and the 36-acre former Pruitt-Igoe site. Both of these redevelopment areas are discussed further in Sections 3.2.3.2, *Surrounding Land Use*, and 3.2.3.3, *Future Development*, with supporting documents provided in Appendices 3.2A and 3.2B.

According to the St. Louis Citywide Zoning District Map, the St. Louis City Site includes two primary zoning districts. Most of the site is designated a Single-Family Dwelling District, while the southern portion of the site is designated an Industrial District (City of St. Louis PUDA, 2015). On February 4, 2015, the City passed an amendment to the 2005 Strategic Land Use Plan of the St. Louis Comprehensive Plan, designating the St. Louis City Site an Opportunity Area (City of St. Louis, 2015c). An Opportunity Area is a strategic land use category that allows for flexibility in redevelopment. Zoning modifications are expected to be made on a case-by-case basis so as not to limit the potential for redevelopment. An Opportunity Area is defined as:

> …*Key underutilized locations where the use of the land is in transition. Location and site characteristics of these areas offer particular challenges/opportunities that could be advantageous to a range of development activity. This designation is intended to be flexible and specific development proposals will be entertained as they present themselves* (City of St. Louis, 2015c).

Since the completion of the Blighting Study in January 2015, the City has conducted a more detailed analysis (excluding the former Pruitt-Igoe site), refined the land use/vacancy categories, and further updated classifications of some of the lots. Based on the revisions as of December 2015, 85 percent of the St. Louis City Site consists of vacant lots or lots with vacant residential buildings (Halliday, 2015a, pers. comm.). In total, as of December 2015, 76 percent of the St. Louis City Site are vacant land, 9 percent are vacant residential lots, and 13 percent of the parcels are owner or renter-occupied residences. The remaining 2 percent of the parcels are commercial (0.9 percent vacant, 0.5 percent owner occupied and 0.4 percent tenant occupied), churches (0.15 percent), and educational use (0.05 percent).

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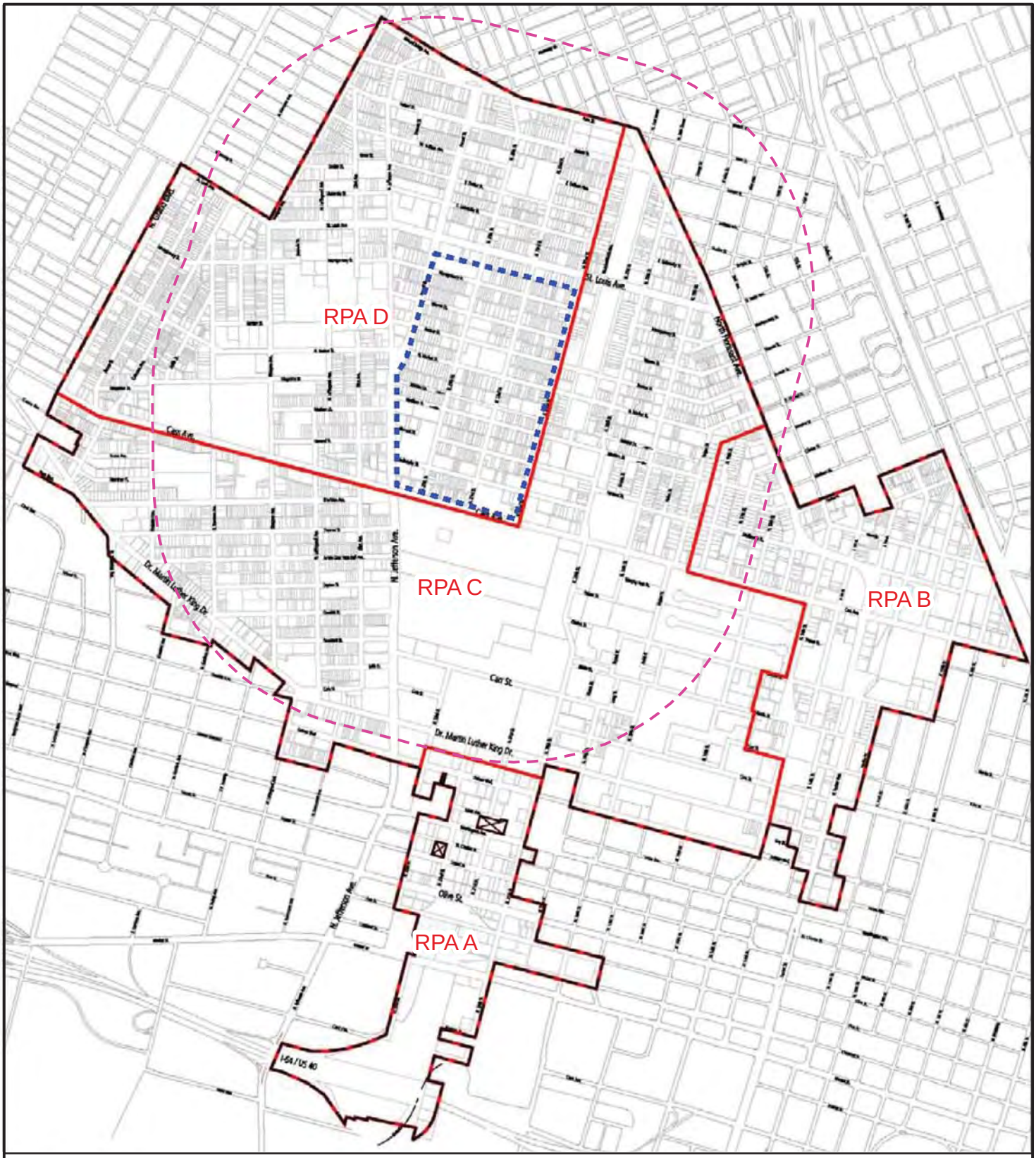
[7]Development Strategies. 2009b. (2009 NorthSide Redevelopment Plan) *Redevelopment Plan for the NorthSide Tax Increment Financing (TIF) Redevelopment Area*. September 16.

[8]Development Strategies. 2015b. (2015 Cass and Jefferson Redevelopment Plan) *Blighting Study & Redevelopment Plan for the Cass Avenue, Jefferson Avenue/Parnell Street, Montgomery Street, and North 22nd Street Redevelopment Area*. January 13.




Proposed Site
NorthSide Redevelopment Area
Redevelopment Project Area (RPA)
0.5-Mile Region of Influance (ROI)

N

0 500 1,000 1,500 2,000 Feet

Data Source: Development Strategies 2009

Figure 3.2-8
St. Louis City Site Location within
2009 NorthSide Redevelopment Area
NGA EIS

### 3.2.3.2 Surrounding Land Use

Conditions within the 0.5-mile ROI of the St. Louis City Site remain largely unchanged from those documented in the 2009 Blighting Study[9] (Development Strategies, 2009a). Land uses south and west of the site tend to be a mix of commercial, institutional, and multi-family residential areas, with some vacant land (Figure 3.2-7). The former Pruitt-Igoe site, south of Cass Avenue, is currently vacant. Residential uses include former residences that have been demolished or abandoned, active residences (including affordable housing projects), and vacant residential lots. Surrounding areas to the east and southwest include portions of residential neighborhoods (St. Louis Place and Old North St. Louis), with commercial, industrial, and institutional uses along the major thoroughfares. The land uses designated by the City's Strategic Land Use Plan include a mix of uses, such as Neighborhood Development and Preservation Areas, Neighborhood Commercial Areas, Business/Industrial Development and Preservation Areas, Institutional Preservation Development Areas, Special Mixed-Use Areas, and Opportunity Areas (Development Strategies, 2015b).

Approximately 60 community resources are located within the ROI. Fifty-six of these are outside the St. Louis City Site and include churches, parks and recreational centers, schools, and health services (Table 3.2-1 and Figure 3.2-9). The neighborhood parks include St. Louis Park Place, DeSoto Park, Murphy Park, Norman Seady Park, Yeatman Park, and Garrison-Brantner-Webster Park. The four community resources within the St. Louis City Site include the Rhema Baptist Church, the Howard Branch Grace Hill Head Start Center, the Grace Baptist Church, and a small children's play lot on the northwest corner of 22nd Street and Montgomery Street.

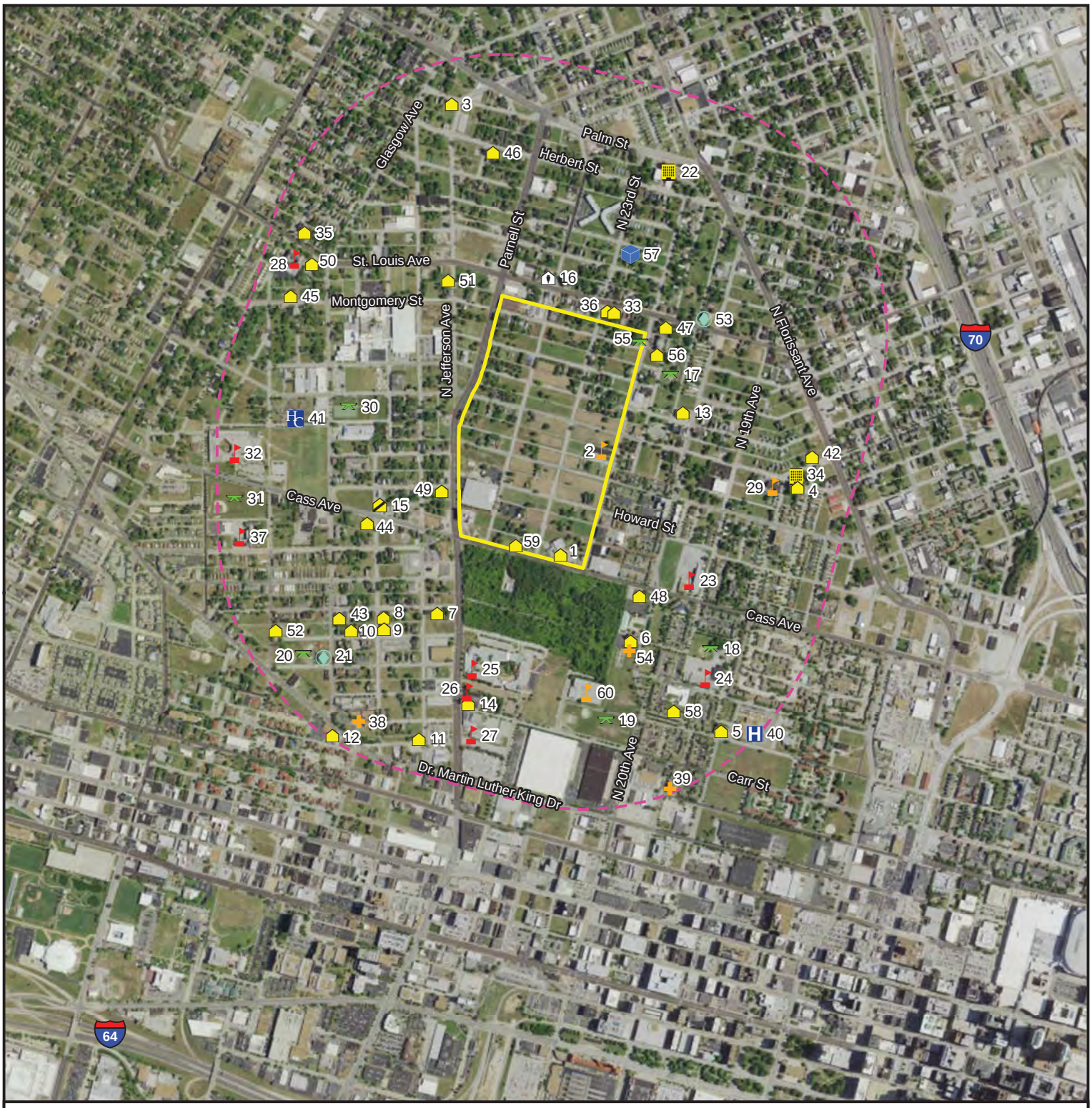
TABLE 3.2-1
**Community Resources within the St. Louis City Site and ROI**

| Name | Type |
|---|---|
| 1. Rhema Baptist Church | Church |
| 2. Howard Branch Grace Hill Head Start Center | Youth Center/School |
| 3. Star Bethel Missionary Baptist Church | Church |
| 4. St. Liborius Church | Church |
| 5. Transfiguration Lutheran Church | Church |
| 6. Saint Stanislaus Church | Church |
| 7. Morning Star Missionary Baptist | Church |
| 8. Faith Temple Church | Church |
| 9. Spirit of Love Church | Church |
| 10. Bethesda Mennonite Church | Church |
| 11. Southern Union Baptist Church | Church |
| 12. Calvary Missionary Baptist Church | Church |
| 13. Zion Lutheran Church | Church |
| 14. St. Bridget of Erin Church | Church |
| 15. Church at TCFS | Church/closed |
| 16. The Griot Museum of Black History | Museum |

[9]Development Strategies. 2009a. (2009 Blighting Study) *Data and Analysis of Conditions Representing a "Blighted Area" for the NorthSide Tax Increment Financing (TIF) Redevelopment Area*. September 2.

TABLE 3.2-1
**Community Resources within the St. Louis City Site and ROI**

| Name | Type |
|---|---|
| 17. St. Louis Place Park | Park |
| 18. Murphy Park | Park |
| 19. DeSoto Park | Park |
| 20. Norman Seay Park | Park |
| 21. Gamble Center | Recreational Center |
| 22. Little Sisters of the Poor | Community Outreach |
| 23. Innovative Concept Academy Blewett Middle School | School |
| 24. Jefferson Elementary School | School |
| 25. Gateway Middle School | School |
| 26. Central Catholic St. Nicholas School | School |
| 27. Carr Lane VPA Middle School | School |
| 28. Columbia Elementary School | School |
| 29. Hogan Street Regional Youth Center | Youth Center/School |
| 30. Yeatman Park | Park |
| 31. Garrison-Brantner-Webster Park | Park |
| 32. Vashon High School | School |
| 33. St. Johns United Church of Christ | Church |
| 34. Karen House Catholic Worker | Community Outreach |
| 35. Eastern Star Baptist Church | Church |
| 36. Greely Memorial Church | Church |
| 37. Dunbar Elementary School | School |
| 38. Jeff Vander-Lou Social Services | Community Service |
| 39. Gateway Homeless Services | Community Service |
| 40. Grace Hill Murphy-O'Fallon Health Center | Hospital |
| 41. Garrison Health Center | Hospital/Clinic |
| 42. Medinah Temple | Church |
| 43. True Light Missionary Baptist Church | Church |
| 44. Renaissance Temple | Church |
| 45. North Galilee Baptist Church | Church |
| 46. St. Augustine Church | Church |
| 47. Abyssinian Baptist Church | Church |
| 48. Church of the Living God | Church |
| 49. D B Deborah Church | Church |
| 50. Mount Olive Baptist Church | Church |
| 51. Starlight Missionary Baptist Church | Church |
| 52. Union Missionary Baptist Church | Church |
| 53. Polish Falcons of America Gymnastic Home | Recreational Center |
| 54. Polish Heritage Center | Community Service |
| 55. Play lot | Park |
| 56. St. Louis Park Baptist Church | Church |
| 57. Nubian Kings & Queens | Daycare Center |
| 58. Jesus One Positive | Church |
| 59. Grace Baptist Church | Church |
| 60. KIPP Inspire Academy (Formerly Pruitt School) | Youth Center/School |




Proposed Site
0.5-Mile Region of Influence (ROI)

Church
Church/Closed
Community Outreach
Community Service
Daycare Center
Hospital

Hospital/Clinic
Museum
Park
Recreational Center
School
Youth Center/School

Figure 3.2-9
St. Louis City Site Community Resources
NGA EIS

N

0 0.1 0.2 0.3 0.4 0.5 Miles

Image Source: Esri, Microsoft, Image Flown 2/2/2012

As mentioned, the 100-acre St. Louis City Site is part of the larger 2009 NorthSide Redevelopment Area. This approximately 1,500-acre area of North St. Louis has experienced disinvestment, decline, and blighted conditions since the 1960s. The 2009 Blighting Study chronicles the history of conditions in this area and summarizes a number of blighting factors for the area (Development Strategies, 2009a). These factors include defective or inadequate street layout, unsanitary or unsafe conditions, deteriorated or inadequate site improvements, improper subdivisions or obsolete plats, and conditions that endanger life or property by fire or other causes. The 2009 Blighting Study found that 97 percent of the 4,608 parcels in the study area had at least one blighting factor and 89 percent of the parcels had multiple blighting factors, as follows:

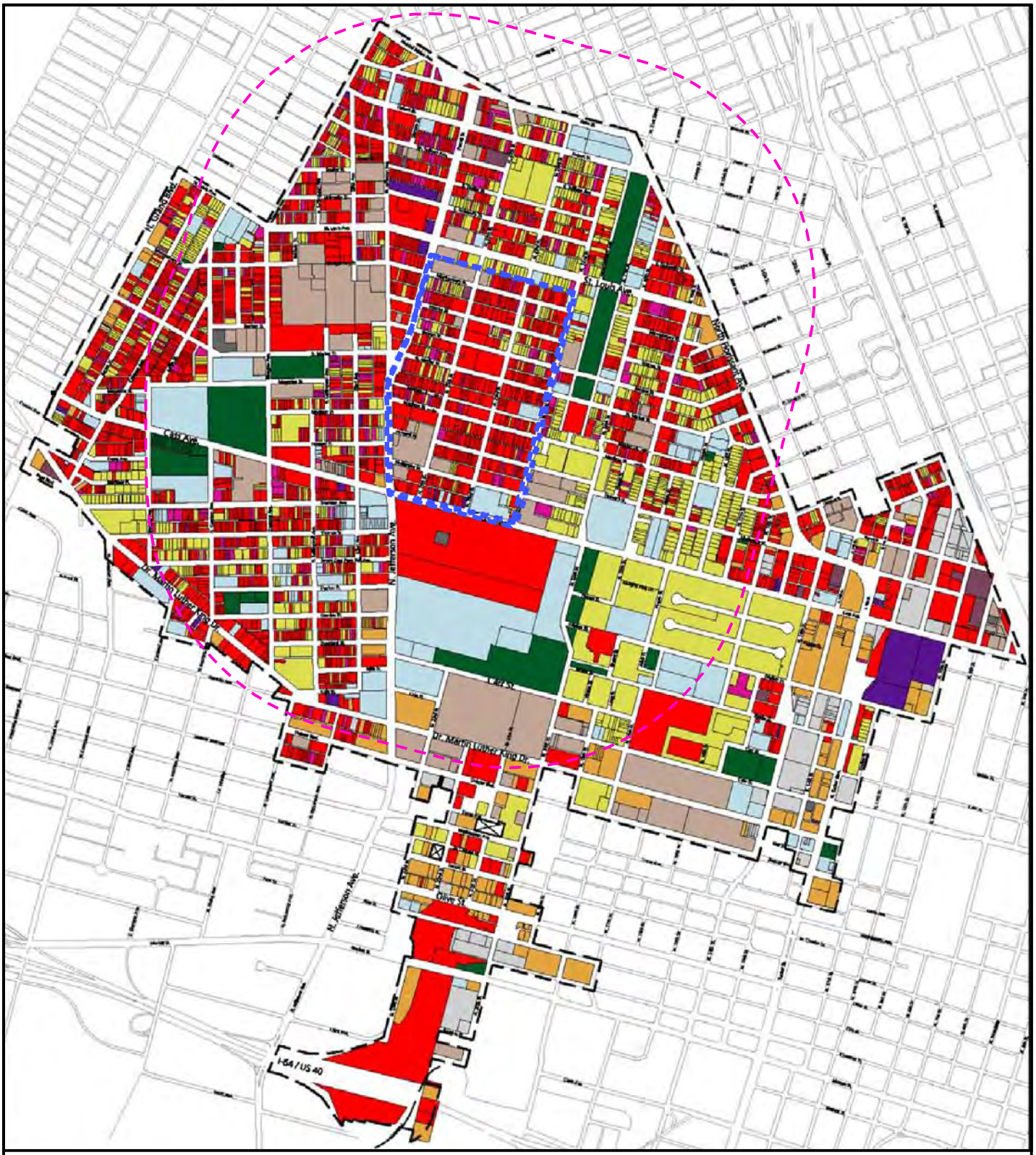
- 27 percent of the parcels had illegal dumping or were overgrown
- 40 percent of the parcels were likely to have environmental issues
- 69 percent of the buildings were constructed prior to 1960 and likely to have asbestos
- 79 percent of the buildings were constructed prior to 1980 and likely to have lead-based paint (LBP)
- 65 percent (435) of the 664 buildings in the area were classified as “poor” or “dilapidated”

In December 2009, the City of St. Louis approved the NorthSide TIF Redevelopment Area (2009 NorthSide Redevelopment Area) and adopted the 2009 NorthSide Redevelopment Plan, which designated the North St. Louis as a redevelopment area and confirmed the area as “blighted” per Section 999.805 of the Real Property Tax Increment Allocation Redevelopment Act (Development Strategies, 2009a, 2009b). Areas designated as redevelopment areas have not been able to achieve growth and development through investment by private enterprise and are not expected to be developed without the adoption of TIF.[10]

The 2009 NorthSide Redevelopment Plan includes RPAs A, B, C, and D (Figure 3.2-5) (Development Strategies, 2009b). The St. Louis City Site is located in RPA D area (468 acres) and represents 21 percent of RPA D. RPAs A and C are located to the south, and RPA B is to the east. Existing land uses in the NorthSide Redevelopment Area are shown on Figure 3.2-10 and described as follows:

- RPA A includes large parcels of vacant, industrial, and commercial lands just north of I-64 with some limited multi-family residential uses near Martin Luther King Drive; approximately half of this RPA is vacant land or land with vacant buildings.

[10]As part of a redevelopment area designation, a redevelopment agency of a city (in the case of St. Louis, the Land Clearance for Redevelopment Agency [LCRA]) takes responsibility for consolidating properties and updating utilities in the redevelopment area, thus making it easier to attract investment. To balance redevelopment objectives with fiscal constraints, the LCRA must show that its investment of acquiring property and updating utilities will eventually be reimbursed through increases in property tax as a result of higher property value (that is, TIF) or repayment by the developer. To reduce risk, large expenditures are sometimes delayed until a development opportunity is received.




Proposed Site
NorthSide Redevelopment Area
Residential
Commercial
Industrial
Institutional
Open Space/Recreation
Residential Vacant
Commercial Vacant
Industrial Vacant
Vacant Land
Utilities
Transportation/Parking
0.5-Mile Region of Influence (ROI)

N
0 1,000 2,000 Feet

Data Source: Development Strategies 2009

Figure 3.2-10
2009 Existing Land Use Map
NorthSide Redevelopment Area
NGA EIS

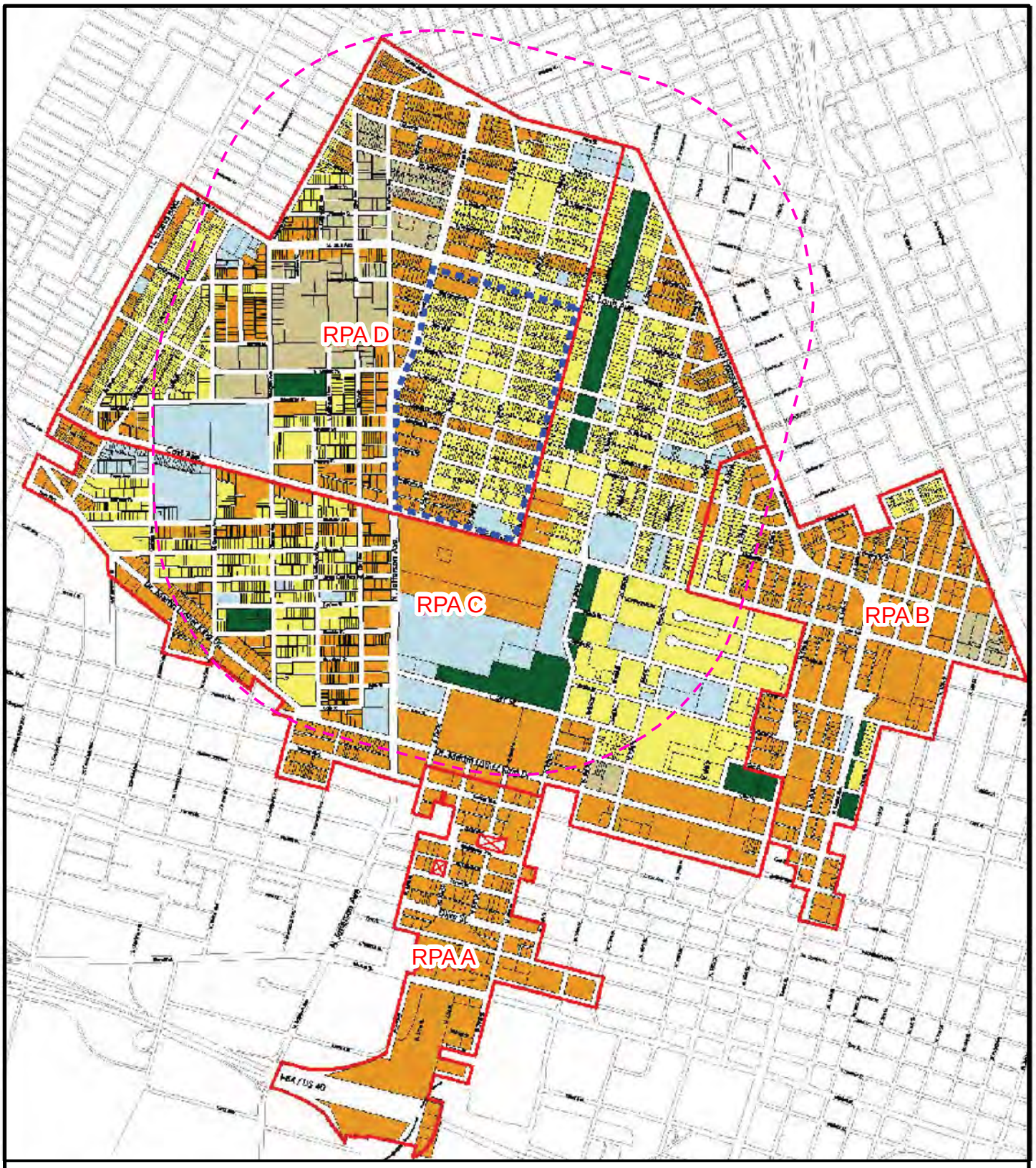
- RPA B consists of mostly commercial, industrial, and institutional land uses with some single-family residences in its northwestern extent, which is associated with the Old North St. Louis neighborhood; less than a third of this RPA is vacant land or land with vacant buildings.
- RPA C, the largest RPA, includes a dense mix of uses on smaller parcels; the southeastern portion of this area includes large parcels of industrial, institutional, and multi-family residential uses. At least a third of this RPA is vacant land or land with vacant buildings.
- RPA D is a dense mix of industrial, institutional, and residential uses, with more than half of this RPA vacant land or land with vacant buildings.

The intent of the 2009 NorthSide Redevelopment Plan was to provide each RPA with a mix of employment, housing, and retail (Development Strategies, 2009b). As shown on Figure 3.2-11, areas in orange were targeted for mixed use, yellow for residential, blue for civic/institutional, tan for business/industrial, and green for recreational/open space. The following text summarizes the proposed land use for each RPA:

- RPA A was envisioned as a major new employment hub with associated retail and residential space that would create a new terminus to the Gateway Mall.
- RPA B would include a major new employment hub with several new office buildings and some commercial service uses, with limited residential areas to the north and northwest.
- RPA C would include a mix of commercial, residential, retail, and mixed use on the Pruitt-Igoe property, with the exact mix of uses to be based on market demand and conditions.
- RPA D which includes the St. Louis City Site, was envisioned as having a wide range of potential uses, such as a new medical campus and accompanying medical offices with commercial services, retail space, and residential uses.

#### 3.2.3.3 Future Development

Over the years, multiple concept plans have been considered for the redevelopment of the St. Louis City Site and adjacent areas, particularly following demolition of the Pruitt-Igoe complex in the mid-1970s. These plans included a 1996 proposal for a 180-acre golf course and subdivision on the former Pruitt-Igoe site; solicitation of proposals in 2000 at the same location for a mixed-use development, including residential, a grocery store, and school; and a plan in 2002 for the neighborhoods of the 5th Ward (which include the St. Louis City Site). The 2009 NorthSide Redevelopment Plan established a vision for a larger redevelopment area (see Appendix 3.2A and Section 4.15, *Cumulative Impacts*; Development Strategies, 2009b). Through these efforts, the City has attempted to be flexible and adaptive in establishing a future land use plan to best attract infill investment for the area.




Proposed Site
0.5-Mile Region of Influance (ROI)
Redevelopment Project Area (RPA)
Residential
Mixed Use Area
Business/Industrial
Civic/Institutional
Open Space/Recreation

Figure 3.2-11
2009 Proposed Land Use
NGA EIS

N
0 1,000 2,000 Feet

Data Source: Northside Regeneration LLC 2009

In January 2015, the City, under the auspices of the St. Louis Development Corporation (SLDC) and Land Clearance for Redevelopment Agency (LCRA), began actively pursuing redevelopment of the St. Louis City Site for the Next NGA West Campus. The 2015 Blighting Study, published on January 13, 2015, reanalyzed the conditions within the St. Louis City Site (and Pruitt-Igoe) and designated the area as blighted (Figure 3.2-6) (Development Strategies, 2015a).

In February 2015, Board Bill 263 Ordinance 69977 (Cass and Jefferson Redevelopment Plan) was passed, adopting the results of the 2015 Blighting Study (Development Strategies, 2015a) and confirming its consistency with other city plans. In addition, an amendment to the 2005 Strategic Land Use Plan of the St. Louis City Comprehensive Plan was adopted (City of St. Louis, 2015c). This amendment designated the site as an Opportunity Area, which is defined as an underused area for which a broad range of development opportunities will be considered. This designation allows for greater flexibility in redevelopment and was adopted specifically to allow for the Next NGA West Campus site. The amendment also provides for LCRA to acquire parcels in the redevelopment area to prepare the St. Louis City Site for possible NGA development.

In December 2015, Resolution Number 142-AA was passed to allow LCRA to acquire seven identified parcels through eminent domain if it is unable to reach an agreement of sale. The resolution also allows LCRA to acquire parcels through eminent domain that are currently under contract, if other circumstances delay purchase of a parcel. The resolution was passed in accordance with Section 8 of Ordinance 69977, which required that specific parcels be identified and approved by the Board of Alderman before LCRA took action.

#### 3.2.3.4 Community Cohesion

The St. Louis City Site and Cass and Jefferson Redevelopment Area are lacking vital components of a cohesive community, such as grocery stores, pharmacies, and clinics. Supporting community resources, such as schools, churches, and parks, are largely absent, unlike in surrounding areas. Within the ROI, only 4 community resources/services are located within the St. Louis City Site (two churches, one school, and a children's play lot), as described in Section 3.2.3.1, *Current Land Use*, and 56 community resources outside the St. Louis City Site (Figure 3.2-9). As described previously, the St. Louis City Site area consists primarily of vacant lots or vacated buildings. In comparison, only 54 percent of the parcels are vacant in adjacent neighborhoods. The approximately 77 remaining onsite residential units (single- and multi-family) are scattered over the 100-acre area and do not support a cohesive sense of community. The gridded roadway network provides access around and through the site, but many roads and sidewalks do not meet current city safety design standards.

The lack of basic needs and the disinvestment in the area has compromised the quality of life and led the City to designate the St. Louis City Site as a blighted community and part of a larger blighted area. This has been documented in community outreach discussions, in developer agreements (with Northside Regeneration, LLC), in city ordinances (Opportunity Area designation and Strategic Land Use Plan amendment), and in the following plans and blighting studies: the 5th Ward Plan (St. Louis. 2002), 2009 Blighting Study (Development Strategies, 2009a), the 2009 NorthSide Redevelopment Plan (Development Strategies, 2009b),

the 2015 Blighting Study (Development Strategies, 2015a), and 2015 Cass and Jefferson Redevelopment Plan (Development Strategies, 2015b).

In coordination with the City and in conjunction with the 2009 NorthSide Redevelopment Plan, the developer, Northside Regeneration, LLC, has been consolidating property in these areas to attract development opportunities to the NorthSide Area (Halliday, 2015c, pers. comm.). Additionally, the City of St. Louis, under the auspices of the SLDC and LCRA, has been negotiating options to purchase the remaining properties with the St. Louis City Site. As a result, most properties within the 100-acre site have existing or pending agreements of sale. As of December 2015, agreements of sale have been reached on 94 percent of the properties, with contracts signed on 30 percent of the properties (163 properties with 88 owners) and 64 percent pending signatures (351 properties with 3 owners) (Halliday, 2015d, pers. comm.). Of the remaining 6 percent of the properties where eminent domain is being considered, 1 percent have title issues (7 properties with 4 owners). The City is continuing negotiations with the remaining 5 percent of the property owners (30 properties with 15 owners) (Halliday, 2015d, pers. comm.).

The Cass and Jefferson Redevelopment Area and the larger NorthSide Redevelopment Area exemplify City efforts to reestablish investment and a sense of community cohesion in the area. Original planning envisioned chiefly residential infill development for the St. Louis City Site. After 5 years of planning and consolidating properties, these plans were not realized because of a lack of market demand.

Current efforts have led to a new vision for the area. The City of St. Louis is a recent recipient of several federal programs targeting community development in distressed areas. In 2014, St. Louis was designated under the Strong Cities, Strong Communities (SC2) Initiative sponsored by the U.S. Department of Housing and Urban Development (HUD). SC2 is a partnership between the White House and 14 federal agencies to help cities facing long-term challenges build capacity and more effectively use federal funds and investments. In St. Louis, the SC2 team works with City leadership and community organizations to implement the City's Sustainability Plan, which includes the NorthSide Regeneration Project (White House Council on Strong Cities, Strong Communities, 2014).

In January 2015, the City was a recipient of a $500,000 Choice Neighborhood Planning Grant from HUD to develop a strategic Near NorthSide Transformation Plan (Urban Strategies, 2015). The goal of this planning grant is to create a comprehensive, stakeholder- and resident-based plan to transform the Near NorthSide area, which includes the Preservation Square housing development and the former Pruitt-Igoe property. The Preservation Square housing development is located south of Cass Avenue immediately adjacent to the St. Louis City Site.

The Near NorthSide Transformation Plan, once completed, will outline opportunities for people, housing, and the neighborhood, including ways to improve access to education, health, and economic development. As part of the transformation plan, Urban Strategies, a St. Louis-based not-for-profit corporation, is leading

community and stakeholder meetings to engage the community (Near NorthSide St. Louis, 2015). Once completed, the neighborhood will be eligible for a follow-on grant to implement the transformation plan.

In addition, the St. Louis City Site and all of North St. Louis were named one of eight Urban Promise Zones, a federal designation that creates an opportunity to obtain federal assistance to address high levels of poverty for the next 10 years. This designation provides local communities with technical assistance, coordinated federal staff support, and preferential access to certain existing federal funding streams (St. Louis Post-Dispatch, 2015).

Finally, the American Federation of Labor and Congress of Industrial Organization Housing Investment Trust has issued a letter of interest (as of July 27, 2015) to invest in the first 242 units of market rate housing adjacent to the St. Louis City Site (Trumpka, 2015). These actions are evidence that a host of federal, local, and private entities are focusing on improving the community and the quality of life within the NorthSide neighborhoods.

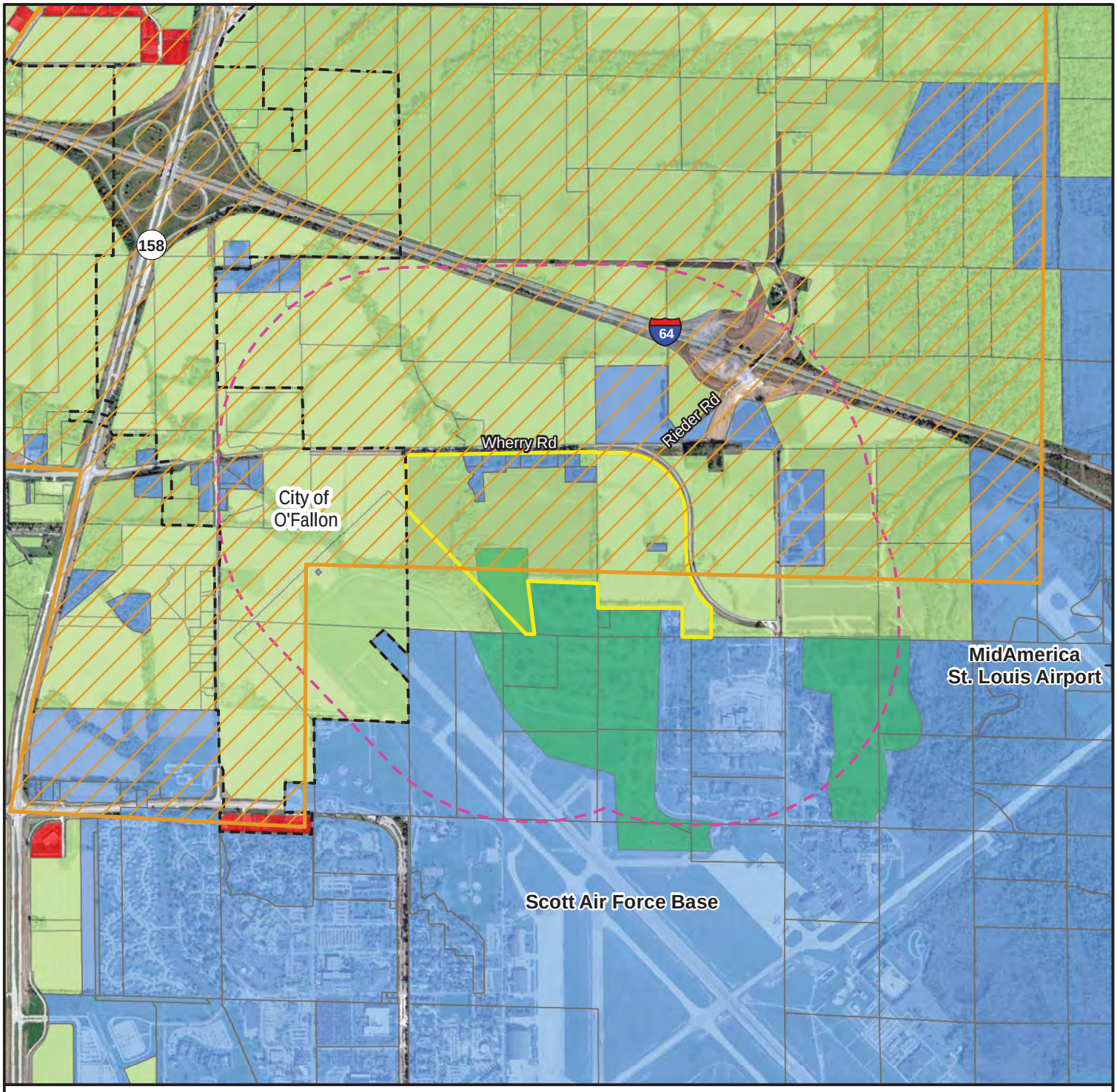
## 3.2.4 St. Clair County Site

The following subsections describe the current and planned land use for the 182-acre St. Clair County Site and surrounding area and address community cohesion around the St. Clair County Site.

### 3.2.4.1 Current Land Use

The 182-acre St. Clair County Site consists of active crop land, a natural area, and the Scott AFB golf course driving range. The driving range is owned by St. Clair County (MidAmerica St. Louis Airport) and leased by Scott AFB. The crop land is leased by two farmers through the MidAmerica St. Louis Airport agricultural lease program. As shown on Figure 3.2-12, land use classifications are agriculture for the undeveloped areas and government land use for MidAmerica St. Louis Airport (St. Clair County) and Scott AFB (St. Clair County, Illinois, 2011). Figure 3.2-12 also shows the part of the City of O'Fallon that extends south of I-64 and east of the Old Illinois 158 to Seibert Road (Scott Drive).

The St. Clair County Site and surrounding land were acquired by St. Clair County as part of a 1991 joint-use agreement with the Department of the Air Force using Federal Aviation Administration (FAA) grant funds. Most of the site is a buffer for the MidAmerica St. Louis Airport and Scott AFB (Scott AFB, 2008). MidAmerica St. Louis Airport is co-located with Scott AFB and they share airfield facilities under the joint-use agreement. Airport safety areas have been established to minimize conflicting land uses and the potential for accidents. Figure 3.2-13 illustrates the airport safety areas for MidAmerica St. Louis Airport and Scott AFB, including two Accident Potential Zones, a Clear Zone, and a Runway Protection Zone. A portion of the Clear Zone for Scott AFB Runway 14R-32L is adjacent to the southwestern boundary of the St. Clair County Site.




Proposed Site

0.5-Mile Regional of Influence (ROI)

City of O'Fallon Municipal Boundary

**Current Land Use**

Agriculture

Government

Commercial

Park/Open Space

MidAmerica Commercial Park

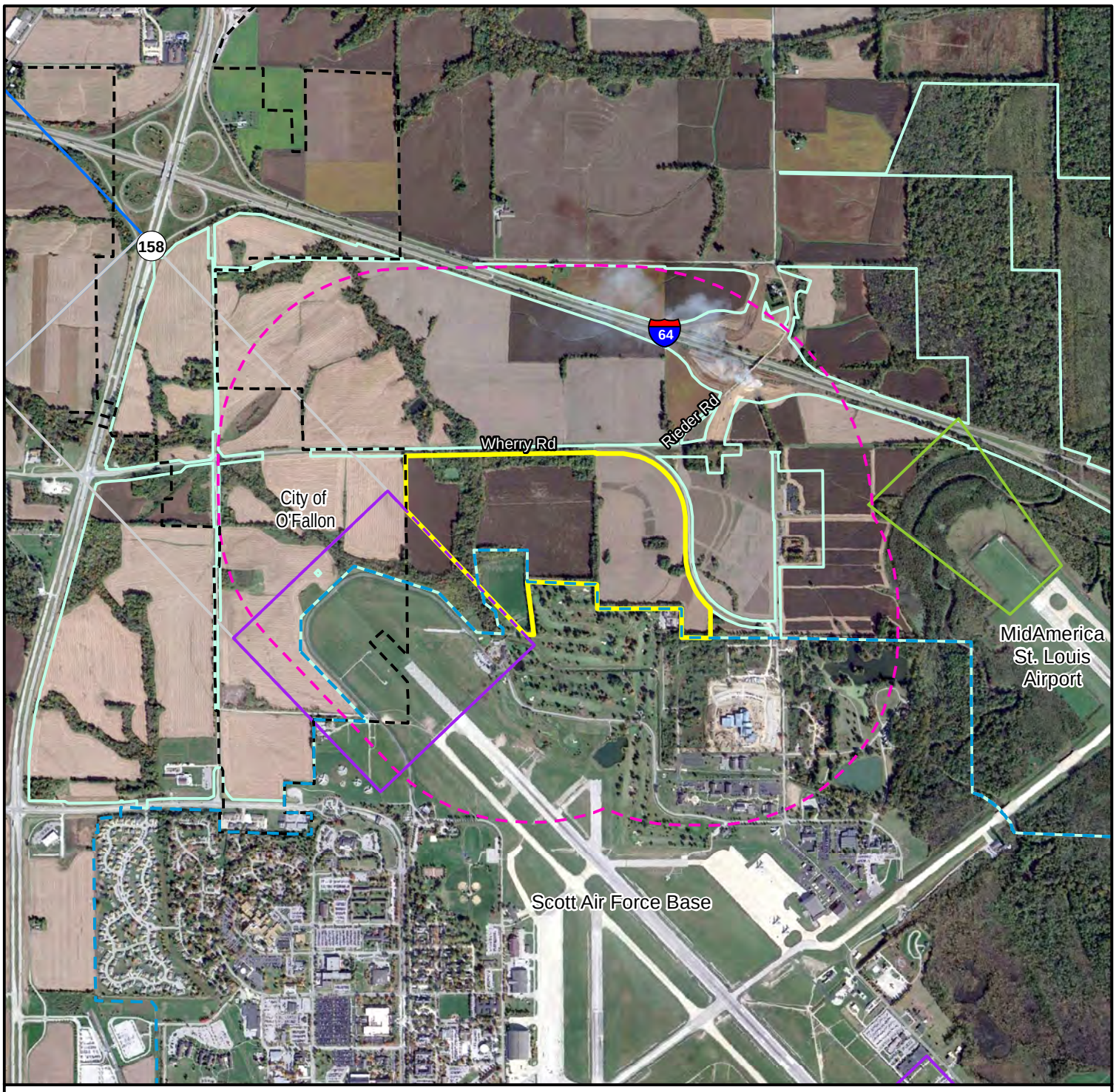
Figure 3.2-12
St. Clair County Site Current Land Use
NGA EIS

Image Source: Google Earth Pro, Modified by CH2MHill,
Image Flown 10/21/2014

N

0 0.25 0.5 0.75 1 Miles

Data Sources: 2011 Existing Land Use St. Clair County
Comprehensive Plan, St. Clair County GIS
Scott AFB Installation Development Plan
City of O'Fallon Comprehensive Plan 2006, City of O'Fallon GIS Services




Proposed Site

0.5-Mile Regional of Influence (ROI)

City of O'Fallon Municipal Boundary

**Accident Potential Zones**

APZ I

APZ II

Clear Zone

Runway Protection Zone

Scott Air Force Base Installation Boundary

MidAmerica St. Louis Airport Boundary

Note: The Scott Air Force Base Driving Range is leased from St. Clair County

Figure 3.2-13
St. Clair County Site Airport Safety Areas
NGA EIS

Image Source: Google Earth Pro, Modified by CH2MHill,
Image Flown 10/21/2014

N

0 0.25 0.5 0.75 1 Miles

Data Sources:
Scott AFB- St. Louis Mid America Airport Joint Land Use Study,
St. Clair County GIS
Citizen's Brochure for Scott AFB, 2010
City of O'Fallon GIS Services

The site is in the St. Clair County Airport Overlay (AO) District, which was created to protect the long-term mission and operation of MidAmerica St. Louis Airport and Scott AFB from incompatible uses and to promote proper land use and development (St. Clair County, Illinois, 2015a). The zoning of all lands in the AO District is agricultural/industrial district (Scott AFB, 2008). The AO District includes four defined areas, some of which overlap each other. The St. Clair County Site is within two AOs: AO-1, Planning Influence Area, and AO-3, Height Restriction Area. In August 2015, St. Clair County approved amendments to Chapter 40, Zoning Ordinance, Division XVII, AO District and to Article III, Section 40-3-7, which remove height restrictions for government buildings within the overlay zone (Trapp, 2015a, pers. comm.). In the future, if the St. Clair County Site is selected, an airspace study would be conducted to ensure compatibility with the airport safety areas.

The USDA has determined that 109.0 acres or 59 percent of the St. Clair County Site consists of prime and unique farmland and 46.3 acres or 25 percent of the site consists of statewide and locally important farmland (Appendix 3.2C).

#### 3.2.4.2 Surrounding Land Use

The surrounding land uses within the site ROI include Scott AFB, undeveloped agricultural lands, and approximately 1 mile of the I-64 corridor (Figure 3.2-12). Scott AFB borders the southern and southwestern edges of the St. Clair County Site. Scott AFB's golf course driving range is within the southwest corner of the site boundary. The golf course itself (Cardinal Creek Golf Course) and Scott AFB Runway 14R-32L are adjacent to the site. The edge of Runway 14R-32L is approximately 0.27 mile from the site boundary at its closest location. The Scott Lake Area, also associated with Scott AFB, is to the southeast and offers recreational opportunities, such as recreational vehicle (RV) camping, fishing and hunting opportunities, and access to a garden plot. The balance of the surrounding lands to the north and west are used for agriculture and are also within the proposed MidAmerica Commercial Park.

#### 3.2.4.3 Future Development

The planned future land use at the St. Clair County Site is identified in the St. Clair County Comprehensive Plan as government/institutional and industrial (St. Clair County, Illinois, 2011). The site is within the proposed MidAmerica Commercial Park, which is planned for the land northwest of Scott AFB and MidAmerica St. Louis Airport for light industry, office, and warehouse uses compatible with operations of the Base and the airport. A new interchange (Exit 21) at I-64 and Rieder Road is currently under construction and is expected to facilitate development of the proposed MidAmerica Commercial Park. MidAmerica Commercial Park development represents the extent of estimated future development associated with the new interchange (City of O'Fallon, 2014; Randall, 2016, pers. comm.).

Other projects include a new north entrance to Scott AFB (Cardinal Creek Gate); however, this project is not designed or funded at this time. MidAmerica Commercial Park is within the airport zoning overlay, and development would need to be consistent with the AO District requirements. No current or near-term projects

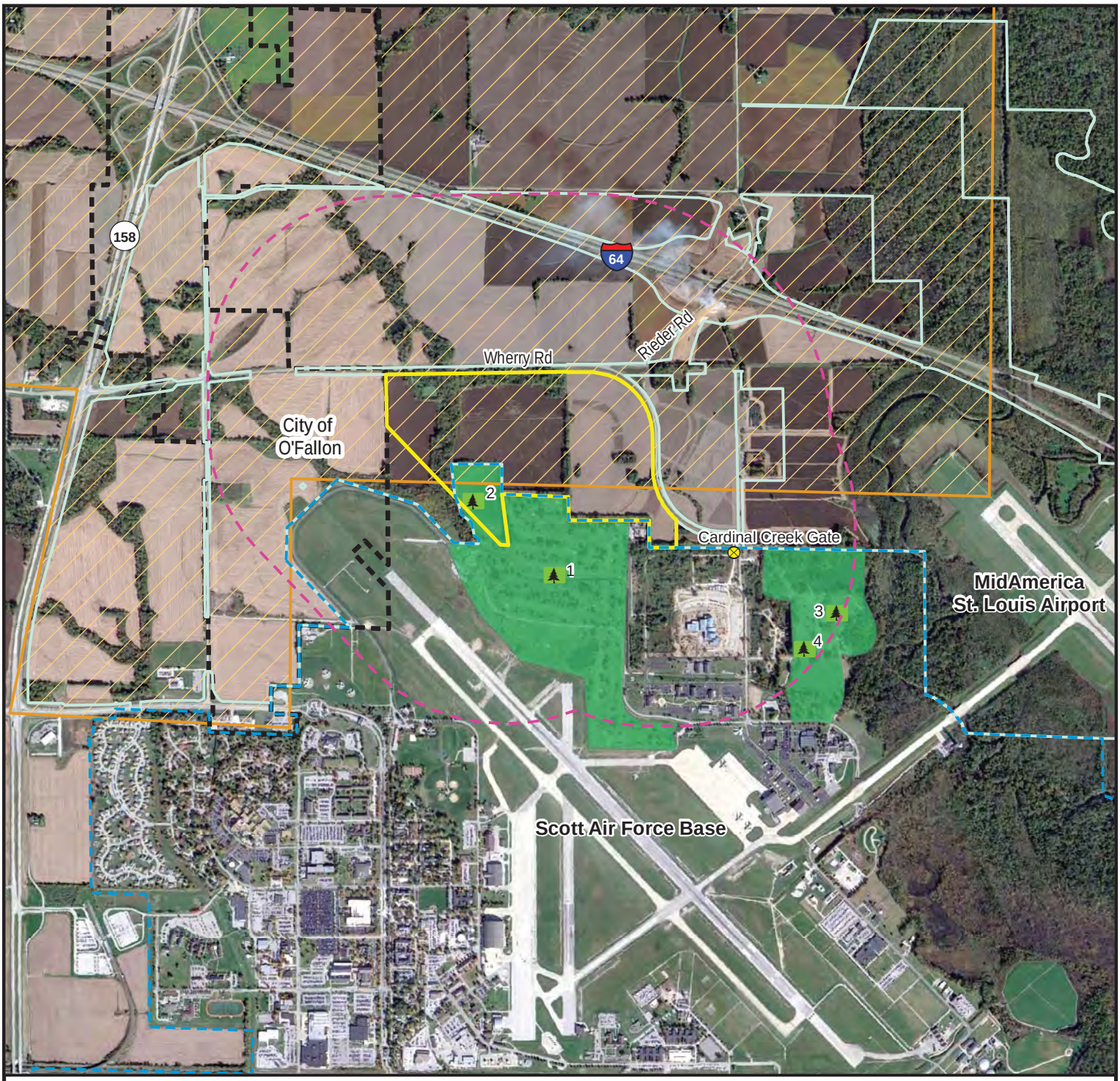
are being discussed for MidAmerica Commercial Park. Long-term plans for St. Clair County may include infrastructure improvements, such as providing light rail to the area (Cantwell, 2015, pers. comm.). Currently, the City of O'Fallon has no active development projects pending in this area (City of O'Fallon, 2015a).

The St. Clair County Site is entirely within the MidAmerica Enterprise Zone (Randall, 2015, pers. comm.) and the Foreign Trade Zone, also known as the Tri-City Regional Port District. The Foreign Trade Zone is a public/private sector venture in Granite City, Illinois, just to the west (City of O'Fallon, 2014). The area northwest of the site is part of the Illinois 158 Corridor TIF (O'Fallon TIF No. 1) (City of O'Fallon, 2015b).

The MidAmerica Enterprise Zone allows local incentives, including the abatement of property taxes on new improvements, homesteading, and shopsteading programs; waiver of business licensing and permit fees; streamlined building code and zoning requirements; and special local financing programs and resources (City of O'Fallon, 2015a). The City of O'Fallon administers the Illinois 158 Corridor TIF (O'Fallon TIF No. 1), covering approximately 475 acres along Route 158 and Scott Troy Road; to date, this TIF is associated with the development of Williamsburg Center (a nine-building office park) and Lakepointe Centre (an office park and retail/service center) (City of O'Fallon, 2015b).

#### 3.2.4.4 Community Cohesion

The St. Clair County Site is in an undeveloped agricultural area adjacent to Scott AFB. No residential developments or private businesses are present in the ROI. The only community resources within the ROI are the Scott AFB golf course driving range (within the site boundary), the golf course (adjacent to the site boundary), and a recreation area (straddling the site boundary to the southeast). A garden plot and portion of the RV campground within this recreation area are near the southeastern boundary of the ROI (Collingham, 2015a, pers. comm.) (Figure 3.2-14). Given the site's agricultural nature and limited community resources, it has a limited sense of community cohesion.




Proposed Site

0.5-Mile Regional of Influence (ROI)

City of O'Fallon Municipal Boundary

MidAmerica Commercial Park Development

Scott Air Force Base Installation Boundary

MidAmerica Airport Boundary

Cardinal Creek Gate - Scott AFB Entry Control Point

Recreation Areas

Recreation Location

Note: The Scott Air Force Base Driving Range is leased from St. Clair County

**Description of Community Resources:**

| Number | Name |
|---|---|
| 1 | Cardinal Creek Golf Course |
| 2 | Scott AFB Driving Range |
| 3 | RV Campground |
| 4 | Garden Plots |

N

Image Source: Google Earth Pro,
Modified by CH2MHill, Image Flown 10/21/2014

0 0.25 0.5 0.75 1 Miles

Data Sources: Scott AFB Installation Development Plan
St. Clair County GIS

Figure 3.2-14
St. Clair County Site Community Resources
NGA EIS

## 3.3 Health and Safety

This subsection discusses health and safety, which includes occupational health, crime, emergency response, and protection of children. The methodology for the analysis of each topic is discussed herein.

Occupational Health

Occupational health risks are defined as risks arising from physical, chemical, and other workplace hazards that interfere with establishing and maintaining a safe and healthy working environment. Hazards could include chemical agents, physical agents, such as loud noise or vibration, physical hazards, such as slip, trip, and fall hazards, electricity, or dangerous machinery, and natural hazards, such as flooding, botanical hazards (poison ivy and thorned plants), or wildlife hazards (stinging insects, poisonous spiders, venomous snakes, and ticks and tick-borne pathogens). The ROI for occupational health risks is defined as the project site boundaries. These risks are evaluated for their impact on construction personnel, NGA personnel, and visitors.

Crime

Crime statistics are presented per capita (per 100,000 persons) using Uniform Crime Reporting (UCR) index crime data. Crimes per 100,000 persons is used as a way to normalize the data regardless of the size of municipality/jurisdiction. A number of the municipalities encompassing and surrounding the project sites have populations that are less than 100,000 persons, which makes the crime statistics appear high. For instance, if there are 5 crimes in a year and the population is 25,000, the indexed crime rate would be 20. Indexed crime statistics along with populations are identified below.

Violent crime is composed of four offenses: murder and non-negligent manslaughter, rape, robbery, and aggravated assault. Violent crimes are defined in the UCR Program as those offenses that involve force or threat of force.

Property crime includes the offenses of burglary, larceny-theft, motor vehicle theft, and arson. The object of the theft-type offenses is the taking of money or property, but there is no force or threat of force against the victims (Federal Bureau of Investigation, 2014).

UCR index crime statistics include only the crimes that are reported to the police. Many factors influence crime rates, which can impact the relatability of the data sets. Some conditions affecting the type and volume of crime are:

- Population density and degree of urbanization
- Variations in composition of the population, particularly youth concentration
- Stability of population with respect to residents' mobility, commuting patterns, and transient factors
- Economic conditions, including median income, poverty level, and job availability
- Cultural factors and educational, recreational, and religious characteristics

- Crime reporting practices of citizens (Federal Bureau of Investigation, 2014)

Despite the potential discrepancy in data, UCR index data are provided in the following section to present crime conditions surrounding each site. Each potential site is located within a different police jurisdiction; thus, the ROI for each site varies for each location as follows:

- Fenton Site: The ROI is the jurisdictional boundaries of the St. Louis County Police Department, 5th Precinct (City of Fenton)
- Mehlville Site: The ROI is the jurisdictional boundaries of the St. Louis County Police Department, 3rd Precinct (Affton Southwest)
- St. Louis City Site: The ROI is the jurisdictional boundaries of the St. Louis Metropolitan Police Department, 4th District
- St. Clair County Site: The ROI is the jurisdictional boundaries of the Lebanon Police Department, O'Fallon Police Department, Scott AFB, and the Shiloh Police Department

Emergency Response

The name and location of the emergency response providers (medical and firefighting) nearest to each alternative site are identified. The ROI for this resource is defined by the service area boundaries of the identified emergency responders.

Protection of Children

Executive Order (E.O.) 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, requires federal agencies to identify and assess environmental health and safety risks that may disproportionately affect children. The ROI for protection of children includes each of the proposed site boundaries and encompasses the land within a 0.5-mile planning area of each site.

## 3.3.1 Fenton Site

### 3.3.1.1 Health and Safety

Occupational Health

Physical hazards at the Fenton Site include those typical of an abandoned industrial facility, such as slip, trip, and fall hazards and underfoot hazards caused by uneven pavement and onsite railroad tracks. Abandoned buildings present health and safety risks, including the presence of molds and a loss of structural integrity associated with weather exposure and lack of maintenance. Because there is limited natural habitat onsite, there is little appreciable potential for botanical hazards or hazardous wildlife. The Fenton Site is adjacent to the Meramec River and a portion of the site falls within the 500-year floodplain (discussed further in Section 3.10, *Water Resources*).

Crime

The Fenton Site is in the suburban St. Louis metropolitan area, southeast of the City of St. Louis. The site is within the jurisdiction of the St. Louis County Police Department, 5th Precinct (City of Fenton), approximately 4 miles from the nearest in-precinct police station at 625 New Smizer Mill Road, Fenton. The annual crime rate (per 100,000 persons) during 2011 to 2013 for the 5th Precinct is presented in Table 3.3-1.

TABLE 3.3-1
**2011-2013 Annual Crime Rate (per 100,000 persons)[a] St. Louis County Police Department 5th Precinct – Fenton Site**

| | Property Crime | | | | | Violent Crime | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Year** | **All Property Crimes** | **Burglary** | **Larceny Theft** | **Motor Vehicle Theft** | **Arson** | **All Violent Crimes** | **Homicide** | **Rape** | **Robbery** | **Aggravated Assault** |
| 2013 | **9,768** | 321 | 9,077 | 370 | 0 | **123** | 0 | 49 | 49 | 25 |
| 2012 | **11,224** | 173 | 10,533 | 518 | 0 | **345** | 0 | 0 | 49 | 296 |
| 2011 | **13,270** | 493 | 12,333 | 444 | 0 | **198** | 0 | 25 | 74 | 99 |

Note:

[a] Population size is 4,054

Source: St. Louis County, Missouri, 2015a, 2015b.

Emergency Response

Emergency response to the site is provided by the Fenton Fire Protection District, located approximately 1.5 miles away at 1385 Horan Drive in Fenton. The nearest hospital is SSM Health St. Clare Hospital - Fenton, located approximately 2.5 miles away at 1011 Bowles Ave., Fenton.

Protection of Children

Ten community resources where children may congregate are located within 0.5 mile of the Fenton Site, including parks, a school, child development center, church, and daycare center (see Figure 3.2-2 in Section 3.2, *Land Use and Community Cohesion*). There are no community resources onsite that serve children. The majority of the child-centered resources are either north of the Meramec River or south of I-44, and none offers direct road or pedestrian access to the Fenton Site. Two parks, Meramec Landing Park and Buder Park, are located on the south side of the Meramec River. Meramec Landing Park has components on both sides of the Meramec River. The southern portion of the park is adjacent to the Fenton Site, but this part of Meramec Landing Park does not offer access or amenities. The nearest amenities in Meramec Landing Park are approximately 850 feet from the Fenton Site. The closest residential areas to the proposed site are more than 0.25 mile from the Fenton Site across the Meramec River. It is assumed that the Meramec River and I-44 would serve as barriers that restrict potential access of children to the site.

## 3.3.2 Mehlville Site

### 3.3.2.1 Health and Safety

Occupational Health

Physical hazards at the Mehlville Site include hazards associated with a typical office environment, including slip, trip, and fall hazards. Natural hazards in the undeveloped wooded portions of the site include poison ivy, thorny plants, stinging insects, poisonous spiders, and ticks and tick-borne pathogens. The site is not located within a floodplain and any flooding risk would be localized in nature.

Crime

The Mehlville Site is in the suburban St. Louis metropolitan area, southeast of the City of St. Louis. The site is within the jurisdiction of the St. Louis County Police Department, 3rd Precinct (Affton Southwest), approximately 5.5 miles from the nearest in-precinct police station at 9928 Gravois Road in St. Louis.

The annual crime rate (per 100,000 persons) during 2011 to 2013 for the 3rd Precinct is presented in Table 3.3-2.

TABLE 3.3-2
**2011-2013 Annual Crime Rate (per 100,000 persons)[a] St. Louis County Police Department 3rd Precinct – Mehlville Site**

| | Property Crime | | | | | Violent Crime | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Year** | **All Property Crimes** | **Burglary** | **Larceny Theft** | **Motor Vehicle Theft** | **Arson** | **All Violent Crimes** | **Homicide** | **Rape** | **Robbery** | **Aggravated Assault** |
| 2013 | **1,362** | 217 | 1,038 | 99 | 8 | **134** | 0 | 14 | 27 | 93 |
| 2012 | **1,444** | 265 | 1,069 | 105 | 5 | **116** | 1 | 13 | 29 | 73 |
| 2011 | **1,656** | 333 | 1,181 | 135 | 7 | **151** | 8 | 16 | 33 | 94 |

Note:

[a] Population size is 76,523

Source: St. Louis County, Missouri, 2015a, 2015b, 2015d.

Emergency Response

Emergency response to the site is provided by the Mehlville Fire House No. 4, approximately 0.5 mile away at 13117 Tesson Ferry Road in St. Louis. The nearest hospital is St. Anthony's Medical Center, located approximately 1.2 miles away at 10010 Kennerly Road, St. Louis.

Protection of Children

Children are located in the residential areas within the 0.5-mile planning area. These residential areas are separated by roads, such as Tesson Ferry Road or Keller Road, which border the site. There are no children-related community facilities within the Mehlville Site; however, 10 community resources where children may congregate are located within 0.5 mile of the site. These include churches, medical facilities, recreation centers,

and a daycare center. Two churches are located adjacent to the site where children may congregate for services or other functions and activities (see Figure 3.2-4 in Section 3.2, *Land Use and Community Cohesion*).

## 3.3.3 St. Louis City Site (Preferred Alternative)

### 3.3.3.1 Health and Safety

Occupational Health

Physical hazards at the St. Louis City Site include those typical in abandoned buildings, such as slip, trip, and fall hazards, and underfoot hazards caused by uneven pavement or missing sidewalks. Abandoned buildings present health and safety risks, including the presence of molds and a loss of structural integrity associated with weather exposure and lack of maintenance. The site is not within a floodplain and any flooding risk would be localized in nature (discussed further in Section 3.10, *Water Resources*). The City of St. Louis Blighting Study (Development Strategies, 2015a) cites localized street flooding as a health and safety risk caused by inadequate stormwater drainage.

Crime

The St. Louis City Site is an urban site located in the City of St. Louis just north of downtown. The site is located within the 4th District of the St. Louis Metropolitan Police Department, approximately 5.5 miles from the nearest in-district police station at 919 N. Jefferson Ave., St. Louis.

The annual crime rate (per 100,000 persons) during 2011 to 2013 for the 4th District is presented in Table 3.3-3. The City of St. Louis Blighting Study (Development Strategies, 2015a) cites high crime rates, compared to the city as a whole, as one of the supporting factors for identifying the site as "blighted."

TABLE 3.3-3
**2011-2013 Annual Crime Rate (per 100,000 persons)[a] St. Louis Metropolitan Police Department 4th District – St. Louis City Site**

| | Property Crime | | | | | Violent Crime | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Year** | **All Property Crimes** | **Burglary** | **Larceny Theft** | **Motor Vehicle Theft** | **Arson** | **All Violent Crimes** | **Homicide** | **Rape** | **Robbery** | **Aggravated Assault** |
| 2013 | **10,378** | 1,134 | 7,809 | 1,342 | 93 | **2,857** | 75 | 173 | 855 | 1,754 |
| 2012 | **11,189** | 1,572 | 7,943 | 1,615 | 59 | **3,225** | 64 | 108 | 1,023 | 2,030 |
| 2011 | **11,952** | 2,043 | 8,316 | 1,523 | 70 | **3,369** | 59 | 85 | 1,252 | 1,973 |

Note:

[a] Population Size is 38,815

Source: City of St. Louis Metropolitan Police Department, 2015; City of St. Louis, 2015d

Emergency Response

Emergency fire response to the site is provided by St. Louis Fire Department Engine House No. 5, 2123 N. Market St., in the St. Louis Place neighborhood, one block east of the proposed site. Several hospitals are situated in proximity to the site, including the Department of Veteran Affairs John Cochran Medical Center,

located approximately 1.5 miles away at 915 N. Grand Blvd., St. Louis; St. Louis University Hospital, located approximately 3 miles away at 3635 Vista Ave., St. Louis; and Barnes-Jewish Hospital, located approximately 4 miles away at 400 S. Kingshighway Blvd., St. Louis.

Protection of Children

Sixty-seven community resources where children may congregate are within 0.5 mile of the site, including churches, schools, daycare centers, community and youth centers, medical facilities, and museums. Four community resources are within the St. Louis City Site boundary, including Rhema Baptist Church, Grace Baptist Church, Howard Branch Grace Hill Head Start Youth Center/School, and a play lot on the northwest corner of Montgomery Street and 22nd Street. The closest residential areas are immediately adjacent to the proposed site to the north, west, and east, as shown on Figure 3.2-6 in Section 3.2, *Land Use and Community Cohesion*.

## 3.3.4 St. Clair County Site

### 3.3.4.1 Health and Safety

Occupational Health

Potential natural hazards at the St. Clair County Site include poison ivy, thorny plants, stinging insects, poisonous spiders, ticks and tick-borne pathogens, and venomous snakes. Slip, trip, and fall hazards may exist due to the agricultural use of the site. The site is not within a floodplain and any flooding risk would be localized in nature.

Crime

The St. Clair County Site is in a rural area in St. Clair County, Illinois. Law enforcement at the site is provided by officers on patrol with the St. Clair County Sheriff's Department as well as by local police departments in surrounding municipalities. Because of its rural and unincorporated location, UCR crime data for the area directly surrounding the St. Clair County Site was not available. UCR data for the municipalities of Lebanon, Illinois (4 miles northeast), O'Fallon, Illinois (4 miles northwest), Shiloh, Illinois (2 miles west), and Scott AFB (adjacent to southern boundary) were evaluated and the annual crime rate (per 100,000 persons) during 2011 to 2013 is presented in Table 3.3-4.

TABLE 3.3-4
**2011–2013 Annual Crime Rate (per 100,000 persons)[a] Lebanon Police Department (PD), O'Fallon PD, Shiloh PD, Scott AFB – St. Clair County Site**

| | | Property Crime | | | | | Violent Crime | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Year** | **Municipality** | **All Property Crimes** | **Burglary** | **Larceny Theft** | **Motor Vehicle Theft** | **Arson** | **All Violent Crimes** | **Homicide** | **Rape** | **Robbery** | **Aggravated Assault** |
| 2013 | Lebanon PD | - | - | - | - | - | - | - | - | - | - |
| | O'Fallon PD | **1,950** | 196 | 1,712 | 39 | 4 | **121** | 0 | 21 | 14 | 85 |
| | Scott AFB | **814** | 25 | 789 | 0 | 0 | **458** | 0 | 0 | 0 | 458 |
| | Shiloh PD | **1,762** | 315 | 1,387 | 60 | 0 | **213** | 0 | 43 | 60 | 111 |

TABLE 3.3-4
**2011–2013 Annual Crime Rate (per 100,000 persons)[a] Lebanon Police Department (PD), O'Fallon PD, Shiloh PD, Scott AFB – St. Clair County Site**

| | | Property Crime | | | | | Violent Crime | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Year** | **Municipality** | **All Property Crimes** | **Burglary** | **Larceny Theft** | **Motor Vehicle Theft** | **Arson** | **All Violent Crimes** | **Homicide** | **Rape** | **Robbery** | **Aggravated Assault** |
| 2012 | Lebanon PD | - | - | - | - | - | - | - | - | - | - |
| | O'Fallon PD | **2,373** | 406 | 1,904 | 57 | 7 | **110** | 0 | 36 | 25 | 50 |
| | Scott AFB | **993** | 0 | 967 | 25 | 0 | **153** | 0 | 0 | 0 | 153 |
| | Shiloh PD | **1,872** | 511 | 1,362 | 0 | 0 | **196** | 0 | 68 | 26 | 102 |
| 2011 | Lebanon PD | **1,607** | 391 | 1,107 | 65 | 43 | **65** | 0 | 0 | 43 | 22 |
| | O'Fallon PD | **2,224** | 402 | 1,729 | 85 | 7 | **103** | 0 | 21 | 14 | 68 |
| | Scott AFB | **967** | 25 | 942 | 0 | 0 | **153** | 0 | 0 | 0 | 153 |
| | Shiloh PD | **1557** | 366 | 1115 | 68 | 9 | **179** | 0 | 34 | 26 | 119 |

Notes:

[a] Lebanon population is 4,606; O'Fallon population is 28,102; Scott AFB population is 3,929; Shiloh population is 11,750

- Data not available

Source: Illinois State Police, 2015a, 2015b.

Emergency Response

The site falls across multiple fire protection districts. Emergency response would most likely be provided by Scott AFB, located adjacent to the southern boundary of the proposed site. However, emergency fire response to the site could also be provided by the O'Fallon Fire Department, located approximately 2 miles away at 102 Oak Street in Shiloh, Illinois, or the Lebanon-Emerald Mound Volunteer Fire Department, located approximately 5 miles away at 312 W. Street, Lebanon, Illinois. Several hospitals are situated in proximity to the site, including Memorial Hospital, located approximately 10 miles away at 4500 Memorial Drive, Belleville, Illinois, and Hospital Sisters Health System St. Elizabeth's Hospital, located approximately 10 miles away at 211 S. 3rd St. in Belleville. St. Elizabeth's Hospital is expected to move to a new location in fall 2017 approximately 5.2 miles from the St. Clair County Site. In addition, a new hospital, Memorial Hospital East, is scheduled to open in spring/summer 2016 approximately 3.2 miles from the site.

Protection of Children

No residential areas where children may reside or congregate are within the ROI of the St. Clair County Site. The only resources within the ROI of the site that could attract children are the Scott AFB golf course and driving range, as shown on Figure 3.2-8 in the Section 3.2, *Land Use and Community Cohesion*.

# 3.4 Traffic and Transportation

This section addresses the affected traffic and transportation environment surrounding each of the alternative sites for the Next NGA West Campus. This includes a level of service (LOS) analysis for the regional and local road networks that provide the most direct paths to and from the site and to an interchange at an interstate roadway. The LOS analysis area also serves as the ROI for traffic and transportation. Each roadway network consists of a combination of freeway segments, ramp segments, and signalized and unsignalized intersections. LOS definitions and design thresholds as defined by the regulatory agency for each site are also discussed.

An LOS analysis is the standard transportation industry method for evaluating the operational performance of various types of roadway facilities. The *Highway Capacity Manual* defines LOS as "a quantitative stratification of a performance measure or measures that represent quality of service, measured on an A-F scale, with LOS A representing the best operating conditions from the traveler's perspective and LOS F the worst" (Transportation Research Board [TRB], 2010). A description of each letter grade of LOS is provided in Table 3.4-1.

TABLE 3.4-1
**Levels of Service**

| Level of Service | Description |
|---|---|
| A | Free flow with low volumes and high speeds |
| B | Reasonably free flow, but speeds beginning to be restricted by traffic conditions |
| C | In stable flow zone, but most drivers are restricted in the freedom to select their own speeds |
| D | Approaching unstable flow; drivers have little freedom to select their own speeds |
| E | Unstable flow; may be short stoppages |
| F | Unacceptable congestion; stop-and-go; forced flow |

Source: American Association of State Highway and Transportation Officials, 2011.

The LOS analysis was performed for both the existing year (2014) and the future year (2040). The analysis used 2014 as the existing year because this is the latest year that traffic data were available at the time the analysis was undertaken. The existing year analysis is used strictly as a baseline of the traffic operations as they currently exist. Transportation projects are analyzed at a point 20 years in the future (an industry standard) from the date of opening. This approach ensures that there is enough capacity for a new transportation system to last at least 20 years without becoming too congested. The initial assumption was that the Next NGA West Campus would open in 2020, thus making the design year 2040. These analyses evaluated the existing roadway network around each site, and served as a baseline for determining level of impact of the Proposed Action. The analysis of the existing roadway network at the proposed sites without the Next NGA West Campus is referred to as the No Action scenario, while the analysis of the existing roadway network with the Next NGA West Campus in place is referred to as the Proposed Action Scenario.

Different types of roadway facilities use different quantitative performance measures in order to determine LOS. Freeway facilities, ramps along freeway facilities, and freeway weaving segments all use the

performance measure of density, measured in passenger cars per hour per lane (pcphpl). A weaving segment is defined as the portion of a roadway between closely spaced interchanges in which vehicles must negotiate one another as they enter and/or exit the roadway. Signalized and unsignalized intersections use the performance measure of delay, measured in seconds. Tables 3.4-2 and 3.4-3 show the range of values for each of these performance measures that apply to each LOS grade. The greater the number of cars per hour (density), the lower the LOS.

TABLE 3.4-2
**Freeway and Ramp LOS Thresholds**

| Level of Service | Density Threshold Freeway (pcphpl) | Density Threshold Ramp (pcphpl) | Density Threshold Weave (pcphpl) |
|---|---|---|---|
| A | <= 11 | <=10 | <=10 |
| B | >11 - 18 | >10 - 20 | >10 - 20 |
| C | >18 - 26 | >20 - 28 | >20 - 28 |
| D | >26 - 35 | >28 - 35 | >28 - 35 |
| E | >35 - 45 | >35 | >35 |
| F | >45 | v/c > 1.0 | v/c > 1.0 |

Source: TRB, 2010.

TABLE 3.4-3
**Signalized and Unsignalized Intersection LOS Thresholds**

| Level of Service | Delay Threshold Signalized (s) | Delay Threshold Unsignalized (s) |
|---|---|---|
| A | <= 10 | <=10 |
| B | >11 - 20 | >10 - 15 |
| C | >20 - 35 | >15 - 25 |
| D | >35 - 55 | >25 - 35 |
| E | >55 - 80 | >35 - 50 |
| F | >80 | >50 |

Source: TRB, 2010.

Both the Missouri Department of Transportation (MoDOT) and the Illinois Department of Transportation (IDOT) provide guidance as to the desired LOS on roadways within their jurisdiction. St. Louis County, St. Clair County, and the City of St. Louis do not have LOS guidelines; therefore, MoDOT LOS guidelines were used as the standard for all roads located in Missouri, and IDOT LOS guidelines were used for all roads located in Illinois. The guidelines are summarized as follows:

**MoDOT-Recommended 20-Year LOS (*MoDOT Engineering Policy Guide*)**

- Rural corridors – D peak hour, C off-peak
- Urban corridors – E peak hour, D off-peak

**IDOT recommended design year Level of Service (*IDOT Bureau of Design and Environment*)**

- Freeways – rural B, urban C, major urban D can be considered

- Expressways – rural B, urban C
- Urban highways and streets – C
- Rural two-lane – principal arterials B, minor arterials C

Geological conditions, such as karst topography, can affect transportation infrastructure. Furthermore, geotechnical investigations will be done at the selected sight. If karst topography is found, a geotechnical solution will be developed to mitigate the condition.

## 3.4.1 Fenton Site

The Fenton Site roadway network is located in Missouri and consists of Interstate 44 (I-44) between Missouri Route 141 and Interstate 270 (I-270), North and South Outer Roads between Route 141 and I-270, the slip ramps to and from I-44 in the same area, and the signalized intersections along North and South Outer Roads at Valley Park Road and Bowles Avenue. The unsignalized intersection of Bowles Avenue and Larkin Williams Drive was also included.

### 3.4.1.1 Existing and Future Level of Service Results

Tables 3.4-4 through 3.4-8 summarize the results of the existing year LOS analysis for the Fenton Site roadway network.

TABLE 3.4-4
**Existing Year (2014) LOS for Freeway Segments in the Fenton Site**

| Freeway Segments (2014) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-44 EB west of Route 141 | 29.2 | D | 17.9 | B |
| I-44 EB between Route 141 and Bowles | 36.1 | E | 20.6 | C |
| I-44 EB at Bowles | 29.1 | D | 17.9 | B |
| I-44 EB between Bowles and Mraz | 27.1 | D | 17.0 | B |
| I-44 EB at Mraz | 37.9 | E | 21.3 | C |
| I-44 WB at Mraz | 19.2 | C | 32.1 | D |
| I-44 WB between Mraz and Bowles | 20.8 | C | 36.4 | E |
| I-44 WB at Bowles | 21.9 | C | 39.8 | E |
| I-44 WB between Bowles and Route 141 | 22.9 | C | 43.1 | E |
| I-44 WB west of Route 141 | 18.8 | C | 31.3 | D |

TABLE 3.4-5
**Existing Year (2014) LOS for Ramp Merge and Diverge in the Fenton Site**

| Ramp Merge (on-ramp) and Diverge (off-ramp) (2014) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-44 EB off-ramp at Route 141 | 22.1 | C | 13.3 | B |
| I-44 EB on-ramp at Route 141 (slip ramp) | 18.7 | B | 8.1 | A |
| I-44 EB off-ramp at Bowles (slip ramp) | 48.6 | E | 31.7 | D |
| I-44 EB off-ramp at Mraz (slip ramp) | 27.3 | C | 18.8 | B |
| I-44 EB on-ramp at Mraz (slip ramp) | 32.2 | D | 21.2 | C |
| I-44 WB on-ramp at Mraz (slip ramp) | 20.9 | C | 31.7 | D |

TABLE 3.4-5
**Existing Year (2014) LOS for Ramp Merge and Diverge in the Fenton Site**

| Ramp Merge (on-ramp) and Diverge (off-ramp) (2014) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-44 WB on-ramp at Bowles (slip ramp) | 26.2 | C | 41.5 | F |
| I-44 WB off-ramp at Route 141 (slip ramp) | 26.1 | C | 36.2 | E |
| I-44 WB on-ramp at Route 141 | 22.9 | C | 33.2 | D |

TABLE 3.4-6
**Existing Year (2014) LOS for Weaving Segments in the Fenton Site**

| Weaving Segments (2014) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-44 EB between Mraz and I-270 | --[a] | F | --[a] | F |
| I-44 WB between I-270 and Soccer Park/Mraz | 21.2 | C | -- | F |

Note:

[a] For weaving segments, density is no longer calculated once the threshold for LOS F is reached.

TABLE 3.4-7
**Existing Year (2014) LOS for Signalized Intersections in the Fenton Site**

| Signalized Intersections (2014) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| Route 141 at North Outer Road | 66.8 | E | 186.6 | F |
| Route 141 at South Outer Road | 69.1 | E | 43.8 | D |
| Valley Park Road at North Outer Road | 19.8 | B | 17.2 | B |
| Valley Park Road at South Outer Road | 18.2 | B | 14.1 | B |
| Bowles at North Outer Road | 33.8 | C | 33.0 | C |
| Bowles at South Outer Road | 22.4 | C | 33.6 | C |

TABLE 3.4-8
**Existing Year (2014) LOS for Unsignalized Intersections in the Fenton Site**

| Unsignalized Intersections (2014) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| Bowles at Larkin Williams Drive | 7.5 (NBL)<br>9.6 (EBTR)<br>11.5 (WBTL) | A (NBL)<br>A (EBTR)<br>B (WBTL) | 7.3 (NBL)<br>9.0 (EBTR)<br>9.6 (WBTL) | A (NBL)<br>A (EBTR)<br>A (WBTL) |

Note:

Because this is a three-way intersection with stop control for the eastbound and westbound movements and free flow for the northbound movements, only the eastbound and westbound movements and the northbound left turn will experience any delay. NBL=Northbound Left, EBTR=Eastbound shared Thru/Right, WBLT=Westbound shared Left/Thru.

These results show that all of the freeway segments analyzed are currently operating at an acceptable LOS based on the guidelines defined by MoDOT; however; one of the ramps and one signalized intersection are operating at an LOS worse than the guidelines defined by MoDOT. The weaving segments were also found to be operating at an LOS worse than what is recommended.

Future year (2040) traffic volumes were determined by reviewing the Regional Travel Demand Model provided by Metropolitan Planning Organization, the EWG. Traffic volumes provided in the model for 2040 showed that

most roadways in the Fenton network are expected to experience either flat or negative growth. The exception being Bowles Avenue. Because Bowles Avenue is the only roadway that is expected to experience growth, it was the only one analyzed for the future year (2040). The future year analysis found that all of the intersections on Bowles Avenue will continue to operate at LOS D or better. Tables 3.4-9 and 3.4-10 summarize the results of the future year LOS analysis for Bowles Avenue.

TABLE 3.4-9
**Future Year (2040) LOS for Signalized Intersections in the Fenton Site**

| Signalized Intersections (2040) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| Bowles at North Outer Road | 38.0 | D | 37.6 | D |
| Bowles at South Outer Road | 24.7 | C | 48.2 | D |

TABLE 3.4-10
**Future Year (2040) LOS for Unsignalized Intersections in the Fenton Site**

| Unsignalized Intersections (2040) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| Bowles at Larkin Williams Drive | 7.5 (NBL)<br>9.6 (EBTR)<br>11.5 (WBTL) | A (NBL)<br>A (EBTR)<br>B (WBTL) | 7.3 (NBL)<br>9.0 (EBTR)<br>9.6 (WBTL) | A (NBL)<br>A (EBTR)<br>A (WBTL) |

Note:

Because this is a three-way intersection with stop control for the eastbound and westbound movements and free flow for the northbound movements, only the eastbound and westbound movements and the northbound left turn will experience any delay. NBL=Northbound Left, EBTR=Eastbound shared Thru/Right, WBLT=Westbound shared Left/Thru.

## 3.4.2 Mehlville Site

The Mehlville Site roadway network is located in Missouri and consists of I-270 (in the vicinity of the Tesson Ferry Road interchange, Interstate 55 (I-55) in the vicinity of the Butler Hill Road interchange, the interchange ramps at the I-270/Tesson Ferry Road and I-55/Butler Hill Road interchanges, and the signalized intersections along Tesson Ferry Road between I-270 and Old Tesson Ferry Road and along Butler Hill Road between Tesson Ferry Road and I-55.

### 3.4.2.1 Existing and Future Level of Service Results

Tables 3.4-11 through 3.4-13 summarize the results of the existing year LOS analysis for the Mehlville Site roadway network.

TABLE 3.4-11
**Existing Year (2014) LOS for Freeway Segments in the Mehlville Site**

| Freeway Segments (2014) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-270 EB west of Tesson Ferry Road | 19.9 | C | 26.0 | C |
| I-270 EB east of Tesson Ferry Road | 18.6 | C | 23.9 | C |
| I-270 WB east of Tesson Ferry Road | 25.8 | C | 19.8 | C |
| I-270 WB west of Tesson Ferry Road | 26.1 | D | 20.0 | C |
| I-55 SB north of Butler Hill Road | 13.9 | B | 17.4 | B |

TABLE 3.4-11
**Existing Year (2014) LOS for Freeway Segments in the Mehlville Site**

| Freeway Segments (2014) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-55 SB south of Butler Hill Road | 15.4 | B | 19.3 | C |
| I-55 NB south of Butler Hill Road | 19.5 | C | 15.5 | B |
| I-55 NB north of Butler Hill Road | 17.7 | B | 14.2 | B |

TABLE 3.4-12
**Existing Year (2014) LOS for Ramp Merge and Diverge in the Mehlville Site**

| Ramp Merge (on-ramp) and Diverge (off-ramp) (2014) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-55 NB off at Butler Hill Road | 20.9 | C | 17.2 | B |
| I-55 SB on at Butler Hill Road | 14.2 | B | 17.6 | B |

TABLE 3.4-13
**Existing Year (2014) LOS for Signalized Intersections in the Mehlville Site**

| Signalized Intersections (2014) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| Tesson Ferry Road at I-270 ramp terminal WB | 25.9 | C | 22.9 | C |
| Tesson Ferry Road at I-270 ramp terminal EB | 29.6 | C | 23.1 | C |
| Tesson Ferry Road at Mattis Road | 20.9 | C | 17.3 | B |
| Tesson Ferry Road at Kennerly Road | 23.5 | C | 51.6 | D |
| Tesson Ferry Road at Schuessler Road | 9.3 | A | 27.5 | C |
| Tesson Ferry Road at Bauer Road | 8.6 | A | 5.5 | A |
| Tesson Ferry Road at Butler Hill Road | 10.4 | B | 13.8 | B |
| Tesson Ferry Road at Old Tesson Ferry Road | 6.3 | A | 16.9 | B |
| Butler Hill Road at Ambs Road | 6.1 | A | 7.9 | A |
| Butler Hill Road at Kerth Road | 12.2 | B | 34.5 | C |
| Butler Hill Road at Ozark Glen Drive | 21.3 | C | 38.4 | D |
| Butler Hill Road at I-55 ramp terminal SB | 22.0 | C | 21.9 | C |
| Butler Hill Road at I-55 ramp terminal NB | 31.8 | C | 18.6 | B |

These results show that all of the roadway facilities analyzed are currently operating at an acceptable LOS based on the guidelines defined by MoDOT.

Like the Fenton Site, traffic volumes provided in the EWG model for 2040 showed that most roadways in the Mehlville network are expected to experience either flat or negative growth. The exception is I-55 and the ramps to/from I-55 at Butler Hill Road. The future year analysis found that all of the I-55 freeway segments, ramps, and ramp terminal intersections continue to operate at LOS C or better. Tables 3.4-14 through 3.4-16 summarize the results of the future year LOS analysis for the I-55 Freeway segments.

TABLE 3.4-14
**Future Year (2040) LOS for Freeway Segments in the Mehlville Site**

| Freeway Segments (2040) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-55 SB south of Butler Hill Road | 15.5 | B | 19.8 | C |
| I-55 NB south of Butler Hill Road | 20.0 | C | 15.6 | B |

TABLE 3.4-15
**Future Year (2040) LOS for Ramp Merge and Diverge in the Mehlville Site**

| Ramp Merge (on-ramp) and Diverge (off-ramp) (2040) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-55 NB off at Butler Hill Road | 21.2 | C | 17.5 | B |
| I-55 SB on at Butler Hill Road | 16.1 | B | 19.7 | B |

TABLE 3.4-16
**Future Year (2040) LOS for Signalized Intersections in the Mehlville Site**

| Signalized Intersections (2040) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| Butler Hill Road at I-55 ramp terminal NB | 32.1 | C | 18.6 | B |

## 3.4.3 St. Louis City Site (Preferred Alternative)

The St. Louis City Site roadway network is located in Missouri, and consists of I-64 in the vicinity of the Jefferson Avenue interchange, Interstate 70 between 10th/11th Streets and Cass Avenue, the interchange ramps at the I-64/Jefferson and I-70/Cass Avenue interchanges, and the slip ramps to and from I-70 from 10th/11th Streets. It also includes the signalized intersections along Jefferson Avenue between I-64 and Cass Avenue, the signalized intersections along Cass Avenue between Jefferson Avenue and Broadway, and the signalized intersections along New Florissant Road between St. Louis Avenue and Cass Avenue. Note that the intersections along New Florissant Road and two of the intersections on Cass Avenue were only analyzed for the PM peak hour. These intersections are located along a section of the evening egress route likely taken by personnel desiring to access I-70 eastbound/I-44 westbound; however, because of the one-way nature of some of the roads in the vicinity, these intersections are not part of the corresponding morning ingress route. As a result, these intersections would only be affected by NGA commuter traffic during the evening egress and, therefore, were not included in the AM peak hour analysis.

### 3.4.3.1 Existing and Future Level of Service Results

Table 3.4-17 through 3.4-19 summarize the results of the existing year LOS analysis for the St. Louis City Site roadway network.

TABLE 3.4-17
**Existing Year (2014) LOS for Freeway Segments in the St. Louis City Site**

| Freeway Segments (2014) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-64 EB west of Ewing | 19.7 | C | 19.7 | C |
| I-64 WB west of Market | 17.5 | B | 17.5 | B |
| I-70 EB west of 11th Street | 41.3 | E | 28.1 | D |
| I-44 EB south of 10th Street | 43.3 | E | 28.2 | D |

TABLE 3.4-18
**Existing Year (2014) LOS for Weaving Segments in the St. Louis City Site**

| Weaving Segments (2014) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-64 EB between Ewing and Jefferson | 21.3 | C | 21.3 | C |
| I-64 WB between Jefferson and Market | 22.8 | C | 22.8 | C |
| I-70 EB between 11th Street and Cass Avenue | 38.6 | E | 23.9 | C |
| I-70 WB between 10th Street and Branch | 33.4 | D | 24.3 | C |

TABLE 3.4-19
**Existing Year (2014) LOS for Signalized Intersections in the St. Louis City Site**

| Signalized Intersections (2014) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| Jefferson Avenue at Cass Avenue | 13.4 | B | 12.6 | B |
| Jefferson Avenue at Drive Martin Luther King | 8.7 | A | 11.2 | B |
| Jefferson Avenue at Delmar | 8.7 | A | 8.1 | A |
| Jefferson Avenue at Washington Avenue | 16.0 | B | 13.9 | B |
| Jefferson Avenue at Locust | 9.4 | A | 9.8 | A |
| Jefferson Avenue at Olive | 16.0 | B | 19.3 | B |
| Jefferson Avenue at Pine | 20.6 | C | 14.9 | B |
| Jefferson Avenue at Market | 27.0 | C | 27.9 | C |
| Jefferson Avenue at I-64 WB on ramp | 1.6 | A | 13.2 | B |
| Jefferson Avenue at I-64 EB off ramp | 20.0 | B | 29.3 | C |
| Cass Avenue at 20th Street | 19.3 | B | 19.0 | B |
| Cass Avenue at 14th Street | 18.2 | B | 17.8 | B |
| Cass Avenue at North Florissant Avenue | 22.6 | C | 22.8 | C |
| Cass Avenue at I-70 ramp terminal | 10.5 | B | 24.5 | C |
| Cass Avenue at 9th Street | PM only | PM only | 17.1 | B |
| Cass Avenue at Broadway | PM only | PM only | 25.5 | C |
| North Florissant Avenue at St. Louis Avenue | PM only | PM only | 14.2 | B |
| North Florissant Avenue at North Market Street | PM only | PM only | 3.9 | A |
| North Florissant Avenue at Madison Street | PM only | PM only | 4.8 | A |
| North Florissant Avenue at 14th Street | PM only | PM only | 19.2 | B |

These results show that all of the roadway facilities analyzed are currently operating at an acceptable LOS based on the guidelines defined by MoDOT.

Traffic volumes for 2040 provided in the EWG model show that some of the roadways in the St. Louis City Site roadway network will experience growth in the future, while others will not. The roadways expected to experience growth were analyzed and the results are provided in Tables 3.4-20 through 3.4-22.

TABLE 3.4-20
**Future Year (2040) LOS for Freeway Segments in the St. Louis City Site**

| Freeway Segments (2040) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-70 EB west of 11th Street | 48.0 | F | 30.0 | D |
| I-44 NB/I-70 WB south of 10th Street | 46.2 | F | 29.3 | D |

TABLE 3.4-21
**Future Year (2040) LOS for Weaving Segments in the St. Louis City Site**

| Weaving Segments (2040) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-70 EB between 11th Street and Cass Avenue | -- | F | 27.0 | C |
| I-70 WB between 10th Street and Branch | 34.6 | D | 25.1 | C |

TABLE 3.4-22
**Future Year (2040) LOS for Signalized Intersections in the St. Louis City Site**

| Signalized Intersections (2040) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| Jefferson Avenue at Cass Avenue | 15.4 | B | 15.8 | B |
| Jefferson Avenue at Drive Martin Luther King | 8.5 | A | 11.3 | B |
| Jefferson Avenue at Delmar | 8.7 | A | 8.0 | A |
| Jefferson Avenue at Washington Avenue | 17.1 | B | 14.7 | B |
| Cass Avenue at 20th Street | 19.8 | B | 18.4 | B |
| Cass Avenue at 14th Street | 17.1 | B | 18.4 | B |
| Cass Avenue at North Florissant Avenue | 22.2 | C | 24.1 | C |
| Cass Avenue at I-70 ramp terminal | 25.0 | C | 58.2 | E |
| Cass Avenue at 9th Street | PM only | PM only | 16.0 | B |
| Cass Avenue at Broadway | PM only | PM only | 25.7 | C |

These results show that two of the freeway segments and one of the weaving segments will be operating at LOS F in 2040. All of the signalized intersections will continue to operate at an acceptable LOS based on the guidelines defined by MoDOT.

### 3.4.4 St. Clair County Site

The St. Clair County Site roadway network is located in Illinois, and consists of I-64 between U.S. Route 50 (US 50) and Rieder Road, the interchange ramps at the I-64/US 50 and I-64/Rieder Road interchanges, the signalized intersections along Rieder Road between I-64 and Wherry Road, the signalized intersection of

Illinois Route 158 at Wherry Road, and the unsignalized intersection of Wherry Road at the Wherry Road connection.

#### 3.4.4.1 Existing and Future Level of Service Results

Tables 3.4-23 through 3.4-26 summarize the results of the existing year LOS analysis for the St. Clair County Site roadway network.

TABLE 3.4-23
**Existing Year (2014) LOS for Freeway Segments in the St. Clair County Site**

| Freeway Segments (2014) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-64 EB west of US 50/IL 158 | 9.5 | A | 8.5 | A |
| I-64 EB west of Rieder Road | 4.5 | A | 7.3 | A |
| I-64 EB east of Rieder Road | 3.0 | A | 11.6 | B |
| I-64 WB east of Rieder Road | 13.6 | B | 14.3 | B |
| I-64 WB west of Rieder Road | 9.1 | A | 11.0 | A |
| I-64 WB west of US 50/IL 158 | 12.1 | B | 12.8 | B |

TABLE 3.4-24
**Existing Year (2014) LOS for Ramp Merge and Diverge in the St. Clair County Site**

| Ramp Merge (on-ramp) and Diverge (off-ramp) (2014) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-64 EB off at Rieder Road | 7.4 | A | 10.1 | B |
| I-64 EB on at Rieder Road | 5.9 | A | 15.8 | B |
| I-64 WB off at Rieder Road | 17.3 | B | 18.2 | B |
| I-64 WB on at Rieder Road | 12.3 | B | 14.7 | B |
| I-64 EB off to US 50 SB/IL 158 SB | 16.3 | B | 13.5 | B |
| I-64 WB on from US 50 NB/IL 158 NB | 13.8 | B | 15.9 | B |

TABLE 3.4-25
**Existing Year (2014) LOS for Signalized Intersections in the St. Clair County Site**

| Signalized Intersections (2014) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| Rieder Road at I-64 WB | 2.6 | A | 9.5 | A |
| Rieder Road at I-64 EB | 10.9 | B | 13.8 | B |
| Rieder Road at Wherry Road | Free Flow[a] | -- | Free Flow[a] | -- |
| IL 158 at Wherry Road | 9.6 | A | 22.4 | C |

Note:

[a] In 2014, this intersection had traffic volume for the southbound right and the eastbound left that are not in conflict and can operate in a free-flow condition. In the future, when construction of the south leg of the intersection is complete, a fully operational signal will be in place.

TABLE 3.4-26
**Existing Year (2014) LOS for Unsignalized Intersections in the St. Clair County Site**

| Unsignalized Intersections (2014) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| Wherry Road at Wherry Road Connection | 8.7 (WBL/T)<br>11.4 (NBL/R) | A (WBL/T)<br>B (NBL/R) | 4.9 (WBL/T)<br>11.0 (NBL/R) | A (WBL/T)<br>B (NBL/R) |

Note:

Because this is a three-way intersection with stop control for the northbound movement and free flow for the eastbound and westbound movements, only the northbound movements and the westbound shared thru/left turn will experience any delay.

These results show that all of the roadway facilities analyzed are currently operating at an acceptable LOS based on the guidelines defined by IDOT.

Traffic volumes for 2040 provided by IDOT and in the EWG model show that all of the roadways in the St. Clair County Site roadway network are expected to experience growth in the future. The results of the future year LOS analysis are provided in Tables 3.4-27 through 3.4-29.

TABLE 3.4-27
**Future Year (2040) LOS for Freeway Segments in the St. Clair County Site**

| Freeway Segments (2040) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-64 EB west of US 50/IL 158 | 18.2 | C | 12.8 | B |
| I-64 EB west of Rieder Road | 8.8 | A | 11.4 | B |
| I-64 EB east of Rieder Road | 5.2 | A | 19.2 | C |
| I-64 WB east of Rieder Road | 23.5 | C | 20.7 | C |
| I-64 WB west of Rieder Road | 12.4 | B | 16.1 | B |
| I-64 WB west of US 50/IL 158 | 18.6 | C | 21.7 | C |

TABLE 3.4-28
**Future Year (2040) LOS for Ramp Merge and Diverge in the St. Clair County Site**

| Ramp Merge (on-ramp) and Diverge (off-ramp) (2040) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-64 EB off at Rieder Road | 14.8 | B | 15.7 | B |
| I-64 EB on at Rieder Road | 8.3 | A | 24.0 | C |
| I-64 WB off at Rieder Road | 28.2 | D | 25.5 | C |
| I-64 WB on at Rieder Road | 16.7 | B | 21.2 | C |
| I-64 EB off to US 50 SB/IL 158 SB | 26.3 | C | 19.2 | B |
| I-64 WB on from US 50 NB/IL 158 NB | 19.5 | B | 23.4 | C |

TABLE 3.4-29
**Future Year (2040) LOS for Signalized Intersections in the St. Clair County Site**

| Signalized Intersections (2040) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| Rieder Road at I-64 WB | 19.7 | B | 14.5 | B |
| Rieder Road at I-64 EB | 29.8 | C | 14.1 | B |
| Rieder Road at Wherry Road | 18.2 | B | 28.7 | C |
| IL 158 at Wherry Road | 6.4 | A | 26.5 | C |

These results show that one of the ramp segments analyzed operates in 2040 at an LOS worse than desired based on IDOT guidelines. However, all of the freeway segments and signalized intersections continue to operate at an acceptable LOS. Note that due to future construction by others, the unsignalized intersection of Wherry Road at the Wherry Road Connector will no longer be in place and, therefore, was not analyzed.

# 3.5 Noise

Noise is defined as unwanted sound. This section addresses the potential for noise to affect the human environment. Noise impacts to wildlife are discussed in Section 4.11, *Biological Resources*. The most common metric for sound is the overall A-weighted noise sound level (dBA), which measures sound similar to the way a person perceives or hears sound. For typical environmental noise, the A-weighted sound level provides a good measure for evaluating acceptable and unacceptable sound levels in the human environment.

There are three general categories of how noise can affect people:

- Subjective effects: annoyance, nuisance, and dissatisfaction
- Interference with activities: speech, sleep, and learning
- Physiological effects: startling and hearing loss

Noise impacts were determined based on potential new and increased noise levels at noise-sensitive land uses. Noise-sensitive land uses are locations where unwanted sound would adversely affect the designated use. Noise-sensitive land uses typically include residential areas, hospitals, places of worship, libraries, schools, historic structures/districts, and wildlife preserves and parks.

The ROI for noise includes local access routes to the entrance of the Next NGA West Campus, adjacent properties, and within the boundaries of the proposed campus. The land uses surrounding the proposed project are discussed below.

## 3.5.1 Fenton Site

The land uses immediately surrounding the Fenton Site include commercial, industrial/utility, park, and vacant/agriculture (discussed further in Section 3.2, *Land Use and Community Cohesion*). The nearest noise-sensitive land uses are Meramec Landing Park, located approximately 800 feet north of the site, a residential area approximately 1,000 feet southwest of the site, and several hotels/motels approximately 700 feet south of the site.

The existing noise environment in the ROI consists primarily of traffic noise from I-44/US 50; traffic noise from North Highway Drive, Bowles Avenue, Larkin Williams Drive, and Mraz Lane; noise from nearby industrial facilities; and noise from the railroad located north and west of the site.

## 3.5.2 Mehlville Site

The land uses immediately surrounding the Mehlville Site include residential, commercial, and institutional (discussed further in Section 3.2, *Land Use and Community Cohesion*). The nearest noise-sensitive land uses are residential areas that border the site to the north, west, and south, and a church that is adjacent to the northeastern side of the site.

Missouri Route 21, located adjacent to the Mehlville Site's eastern boundary, extends north and south of the site and is used primarily by automobiles, with limited commercial traffic. The existing noise environment in

the ROI primarily consists of noise from Route 21, Keller Road, and local, residential roads. The area is primarily residential; therefore, the roads are used mostly by automobiles with some medium and heavy trucks.

### 3.5.3 St. Louis City Site (Preferred Alternative)

The land uses immediately surrounding the St. Louis City Site include residential, commercial, industrial, and institutional. The nearest noise-sensitive land uses are residential areas that border the site, and churches, schools, and parks located within 1,000 feet of the site.

The existing noise environment in the ROI consists primarily of noise generated by nearby industrial facilities; traffic noise from (Interstate 70 [I-70]), located 0.6 mile northeast of the site; and traffic from secondary roads, including North Jefferson Avenue/Parnell Street, Cass Avenue, and North Florissant Avenue.

### 3.5.4 St. Clair County Site

The land uses immediately surrounding the St. Clair County Site include Scott AFB, MidAmerica St. Louis Airport and undeveloped agricultural lands (discussed further in Section 3.2, *Land Use and Community Cohesion*). There are no noise-sensitive land uses near the site.

The existing noise environment in the ROI consists primarily of noise from air traffic from Scott AFB airfield and MidAmerica St. Louis Airport. The noise is generated by fixed-wing military and civil aviation aircraft (Scott AFB, 2008). Additional noise is generated by traffic on I-64 to the north, which includes automobiles as well as medium and heavy trucks. Secondary roads include Illinois Route 158, Wherry Road, Old Illinois Route 158, Rieder Road, and Radar Road.

# 3.6 Hazardous Materials and Solid Waste

This section discusses the hazardous materials contamination that may be present at each site and the hazardous materials and waste that may be used and generated, respectively, during both construction and operation of the Next NGA West Campus. This section also discusses impacts associated with solid waste, both from the demolition and operation of the Proposed Action. The following laws and executive orders regulate the management of hazardous materials and solid waste:

- The Resource Conservation and Recovery Act (RCRA) governs the disposal and cleanup of solid and hazardous wastes. RCRA defines hazardous wastes as materials that exhibit one of the following four characteristics: ignitability, corrosivity, reactivity or toxicity.
- The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulates cleanup at sites contaminated with hazardous substances and pollutants or contaminants. CERCLA established the National Priorities List (NPL) of contaminated sites and the "Superfund" cleanup program.
- E.O. 12088 Federal Compliance with Pollution Control Standards ensures that all necessary actions are taken for the prevention, control, and abatement of environmental pollution with respect to federal facilities and activities under the control of the agency.

<u>Existing Site Contamination</u>

Phase I environmental site assessments (ESAs) were prepared for the Fenton, Mehlville, and St. Clair County sites, and a preliminary environmental assessment (PEA)[11] was prepared for the St. Louis City Site (Appendix 3.6A) (USACE, 2015a, 2015b, 2015c, 2015d). The ESAs were conducted in conformance with 40 CFR 312.10 and ASTM International (ASTM) Standard Practice E1527-13 (ASTM E1527-13). The PEA was performed using the methodology for review of publicly available records as recommended by ASTM. A PEA rather than an ESA was conducted for the St. Louis City Site because a full site reconnaissance was not possible given that site access requests and owner interviews were not appropriate for this stage in the planning process. The discussion of potential contamination present at each site is based on the ESAs and PEA in Appendix 3.6A. The City of St. Louis conducted a partial Phase I and Phase II ESA for the St. Louis City Site, which was made available after publication of the DEIS. A copy of this Phase I ESA can be found in Appendix 3.6B, the Phase II ESA can be found in Appendix 3.6C.

The ROI for the hazardous materials and wastes analyses follows the requirements prescribed by ASTM E1527-13 and includes the area within the property boundaries for the alternatives (see Figures 2-1, 2-3, 2-5, and 2-7 in Section 2.0, *Description of the Proposed Action and Alternatives*), adjoining properties, and the

[11] The term preliminary environmental assessment is often associated with NEPA (programmatic environmental assessment). In this case, it is a hazardous material/hazardous waste assessment report, a substitute to a Phase I ESA.

approximate minimum search distances for select federal and state standard source environmental databases ranging from the subject property to 1.5 miles (Appendix 3.6A provides figures and additional details).

Solid Waste

The ROI for solid waste includes the alternative sites and the counties in which the sites are located (St. Louis and St. Clair counties). There are three main facilities within the ROI that would potentially receive solid waste generated from the Next NGA West Campus (see Table 3.6-1).

Solid wastes comprise a broad range of materials, including garbage, refuse, sludge, demolition and construction waste, non-hazardous industrial waste, municipal wastes, and hazardous waste. Solid waste is regulated by RCRA. The Missouri Department of Natural Resources (MoDNR) also regulates demolition and renovation projects for institutional, commercial, public, industrial, and residential structures. The Division of Land Pollution Control within the Illinois Environmental Protection Agency (IEPA) implements programs that govern proper management of solid and hazardous wastes (generation, transportation, and storage/treatment/disposal).

## 3.6.1 Fenton Site

### 3.6.1.1 Existing Site Contamination

There is no direct evidence of existing hazardous material contamination at the Fenton Site; however, due to the history of manufacturing at the site and a few visual indicators, the possibility of contamination exists (USACE, 2015a). These indicators include the following:

- Monitoring wells found onsite: No information was available regarding a permanent monitoring well and temporary monitoring well observed onsite. Monitoring wells are generally installed to monitor environmental impacts to groundwater from unauthorized releases, such as fuel, waste oil, or solvents.
- Current and past use of underground storage tanks (USTs) on the site: Numerous USTs have been used at the site over the years. Several USTs were installed in 1959 and removed in the mid-1990s. USTs installed in the mid- to late 1990s are listed as temporarily out of use. No records regarding contents, spill control, or integrity testing were available for review. The conditions of the USTs are unknown. No evidence was found to conclude that the USTs were abandoned in place in compliance with required protocols and it is unknown if they were maintained and monitored for releases. The documented presence of these USTs and the historical use of the site for industrial purposes indicate the potential for additional unreported USTs and the potential for related contamination.
- Fire department records: Fire department records showed numerous chemicals, such as gasoline, formaldehyde, tetrafluoroethane, and xylene, were used and stored onsite when the Chrysler automobile assembly plant was in operation. As a former industrial facility, contamination from spills

and releases of hazardous materials is possible. Historical hazardous material use and hazardous waste disposal records were not available for review.

TABLE 3.6-1
**Landfill Facility Summary for the ROI**

| Facility Name | Address | Estimated Annual Waste Received ($yd^3$) | Remaining Capacity ($yd^3$) | Wastes Accepted | Distance from Existing NGA Location and Alternative Sites (miles - one direction) | Estimated Permit Closure Date |
|---|---|---|---|---|---|---|
| Champ Landfill | Maryland Heights Expressway at North Riverport Drive, Maryland Heights, Missouri | 1,500,000 (2014) | 85,000,000 | Construction and Demolition Debris, Municipal Solid Waste | Fenton – 18<br>Mehlville – 22<br>St. Louis City – 20<br>St. Clair County – 40 | 2087 |
| Cottonwood Hills Landfill | 10400 Hillstown Road, Marissa, Illinois | 1,499,122 (2013) | 84,657,700 | Asbestos-Friable, Asbestos-Non-Friable, Auto Shredder Fluff, Biosolids, CERCLA Waste, Construction and Demolition Debris, Drum Management-Liquids, Drum Management-Solids, E&P Wastes, Industrial and Special Waste, Liquifix (Solidification Services), Municipal Solid Waste, NORM (Naturally Occurring Radioactive Material), and Yard Waste | Fenton – 50<br>Mehlville – 46<br>St. Louis City – 41<br>St. Clair County – 30 | 2070 |
| North Milam Landfill | 601 Madison Road, East St. Louis, Illinois | 121,710 (2013) | 44,300,700 | Asbestos-Friable, Asbestos-Non-Friable, Auto Shredder Fluff, Biosolids, CERCLA Waste, Construction and Demolition Debris, Drum Management-Liquids, Drum Management-Solids, E&P Wastes, Industrial and Special Waste, Liquifix (Solidification Services), Municipal Solid Waste, NORM (Naturally Occurring Radioactive Material), and Yard Waste | Fenton – 23<br>Mehlville – 21<br>St. Louis City – 7<br>St. Clair County – 20 | 2039 |
| Total Capacity: | | | 186,958,400 | | | |

Sources:

Stepro, 2015, pers. comm. (Champ Landfill).

Rosko, 2015, pers. comm. (Cottonwood Hills and North Milam Landfills).

IEPA, 2014a, 2014b.

U.S. Department of Defense, 2002.

### 3.6.1.2 Use of Hazardous Materials

The site is not currently used for manufacturing, industrial, or commercial purposes and no hazardous wastes or materials sources were identified during the site visit for the ESA (USACE, 2015a).

#### 3.6.1.3 Solid Waste

Solid waste generated at the Fenton Site is disposed of at one of the landfills identified in Table 3.6-1. The closest landfill to the Fenton Site is the Champ Landfill.

### 3.6.2 Mehlville Site

#### 3.6.2.1 Existing Site Contamination

The following were identified during the Phase I site surveys of the Mehlville Site and could be sources or indication of contamination (USACE, 2015b):

- Several oil-stained parking spaces observed on the site.
- An empty 55-gallon drum was found next to other metal debris in the wooded area at the northern site boundary. The drum appeared to be intact and no stained or stressed vegetation was observed.
- An unlabeled, empty, rusted 55-gallon drum was observed in the southern portion of the site. No staining or stressed vegetation was observed.
- Asphalt pieces were found dumped in a wooded area in the southwestern portion of the site.
- Asbestos-containing materials (ACM) are potentially present in five of the eight buildings and connecting hallways (constructed prior to 1978).
- LBP could be present in five of the eight buildings and connecting hallways (constructed prior to 1978).
- Polychlorinated biphenyls (PCBs) may be found in light ballasts. However, no PCB is expected in onsite transformers because all are labeled as “Non PCB.”

A more detailed discussion of existing contamination can be found in Appendix 3.6A.

#### 3.6.2.2 Use of Hazardous Materials

Hazardous materials typically used for offices and building maintenance may be used onsite. These include hydraulic fluids associated with the elevators, pesticides/herbicides, spray paint, lubricants, cleaners, and degreasers. Recycling storage/collection areas are provided for batteries, transformers, used light bulbs, and used ink cartridges. Lead-acid batteries are used for a backup power source. Water treatment chemicals may be stored and used onsite for the building cooling system.

#### 3.6.2.3 Solid Waste

Solid waste generated at the Mehlville Site is disposed of at one of the landfills identified in Table 3.6-1. The closest landfill to the Mehlville Site is the North Milam Landfill.

### 3.6.3 St. Louis City Site (Preferred Alternative)

#### 3.6.3.1 Existing Site Contamination

Due to the previous commercial and industrial facilities on and in proximity to the St. Louis City Site, soil and groundwater contamination is likely.

The PEA identified 44 (Appendix 3.6A) and the Phase I ESA identified 83 (Appendix 3.6B) potential sources of contamination releases for the St. Louis City Site. The PEA also found evidence of areas requiring additional evaluation on the site, including:

- Historical use of the site or surrounding areas for industrial, manufacturing, or other uses likely to involve hazardous materials or hazardous wastes.
- Fluorescent light ballasts from buildings older than 1980 could contain PCBs.
- Some heating, ventilating, and air conditioning units could contain chlorofluorohydrocarbons.
- Some radioluminescent exit signs could contain tritium.
- Thermostats could contain mercury.
- A 20-inch-diameter gas main located on the site under Howard Street may be lined with asbestos given its age.
- ACM and LBP could be present in the majority of existing residences and businesses given their age.

#### 3.6.3.2 Use of Hazardous Materials

Businesses currently operating on the site, including an ironworks and a kitchen and bath business, and residences currently occupied on the site, likely use and store hazardous materials. These may include hydraulic fluids associated with equipment, pesticides/herbicides, spray paint, lubricants, cleaners, and degreasers.

#### 3.6.3.3 Solid Waste

Solid waste at the St. Louis City Site is disposed of at one of the landfills identified in Table 3.6-1. The closest landfill to the St. Louis City Site is the North Milam Landfill.

### 3.6.4 St. Clair County Site

#### 3.6.4.1 Existing Site Contamination

Previous hazardous materials assessments identified the following potential areas of contamination at the St. Clair County Site:

- A previous Phase I ESA (Kuhlmann, 1993), reported oil-stained soil on the north-central portion of the site and recommended additional evaluation. The staining was later determined to be below regulatory thresholds (de minimis). According to the MidAmerica St. Louis Airport records, the stained soil was removed (MidAmerica St. Louis Airport, 2015a).
- Historical use of the site or surrounding areas for industrial, manufacturing, or other uses likely involved hazardous materials or hazardous wastes.
- Records indicate ACM was found in buildings that were previously located onsite. According to MidAmerica St. Louis Airport records, ACM was removed prior to demolition of buildings on parcels

in the central and north-central portions of the site (MidAmerica St. Louis Airport, 2015a, 2015b). A small, abandoned shed containing ACM was present in the eastern portion of the site, during the Phase I EBS survey. However, this shed has since been demolished and the asbestos removed per USEPA and Occupational Safety and Health Administration requirements on May 28, 2015 (Trapp, 2015b).

- Former buildings on the site that were constructed prior to 1978 may have had LBP, and it is unknown whether LBP surveys were conducted. If LBP existed, it is unknown whether it was abated prior to demolition or if precautions were taken to ensure there were no releases of LBP into the environment.

A more detailed discussion of existing contamination can be found in Appendix 3.6A.

#### 3.6.4.2 Use of Hazardous Materials

The site is currently used for agricultural purposes. While herbicides, fertilizers, and pesticides are used, they have not been stored on the site since it was purchased by St. Clair County. Based on the information in the 1993 Phase I ESA (Kuhlmann, 1993), no storage or production of listed biological agents, pesticides, fertilizers, or herbicides was reported or documented on the site. No other hazardous materials are used onsite.

#### 3.6.4.3 Solid Waste

The St. Clair County Site is undeveloped farmland and forest. No solid waste is generated at this site. The closest landfill to the St. Clair County Site is the North Milam Landfill.

# 3.7 Utilities

This subsection discusses utilities, including power, water, wastewater/stormwater, natural gas, and communications. Solid waste management is discussed in Section 3.6, *Hazardous Materials and Solid Waste*. Information on existing utility infrastructure was obtained through utility maps, interviews, and e-mail correspondence between USACE and the individual utility providers. Information obtained included the type, size, and location of existing and proposed utility infrastructure. The ROI for each of the utility types includes the area within the site boundaries as well as the potential surrounding areas that would require relocation or upgrades of the utility. The existing major utilities at each site are shown on Figures 3.7-1 through 3.7-4.

## 3.7.1 Fenton Site

The following is a description of the utilities currently found at the Fenton Site. See Figure 3.7-1 for a map of the current utilities.

### 3.7.1.1 Power

Ameren Missouri provides electrical service to the Fenton Site. The property has access to two 34-kilovolt (kV) three-phase circuits. The first 34-kV circuit originates from an existing substation located approximately 1 mile east of the site. The second 34-kV circuit originates from a substation located approximately 2 miles to the west.

### 3.7.1.2 Water

Missouri American Water supplies potable water to the Fenton Site. A 16-inch-diameter ductile iron pipe (DIP) runs along North Highway Drive near the south property line. At Larkin Williams Drive, this line is reduced in size to a 12-inch-diameter DIP toward the southeastern portion of the property. Another 12-inch-diameter DIP runs near the eastern edge of the property along Hitzert Court.

### 3.7.1.3 Wastewater/Stormwater

Metropolitan St. Louis Sewer District (MSD) provides wastewater and stormwater service to the Fenton Site. A wastewater line runs through the center of the site north/south, aligning with Larkin Williams Drive. This line connects to an onsite lift station, and then connects to an MSD pump station located just outside the northeast corner of the property. This pump station connects to the Grand Glaize Wastewater Treatment Plant (WWTP). No stormwater systems were found on the MSD maps for the site. One constructed stormwater detention basin measuring approximately 15-feet by 15-feet was identified near the northern boundary of the Fenton Site during a site visit on November 19, 2014 (see Appendix 3.11A; USACE, 2014a).

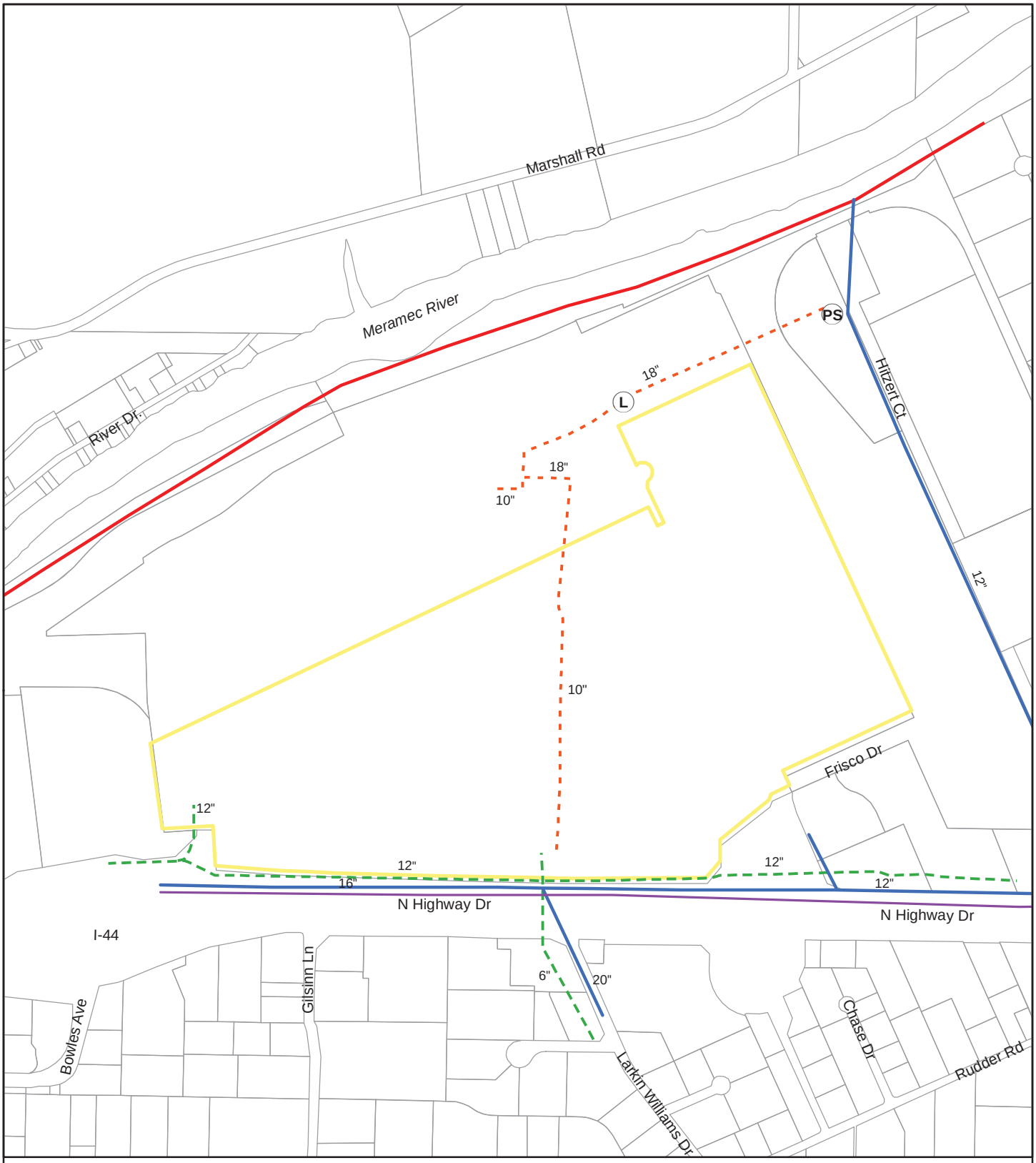
### 3.7.1.4 Natural Gas

Laclede Gas Company (Laclede) supplies natural gas to the Fenton Site. A 12-inch-diameter steel main runs just outside the south property line. Two service lines enter the site, one at the southwest corner and the other in the center of the property aligning near Larkin Williams Drive. The western service line is a

12-inch-diameter line, and the other line is an 8-inch-diameter steel main. The natural gas lines were originally used to support the former Chrysler automobile assembly plant.

#### 3.7.1.5 Communications

Multiple service providers capable of providing communication systems for this site are located along the south property lines.




Overhead Electric
Communication
Gas
Wastewater/Stormwater
Water

Lift Station
Pump Station
Parcels
Proposed Site

Note:
1) Utility Information Shown is Approximate
Data Sources:
Electric and Communication Provided by Google Earth
Gas Provided by Laclede Gas Company
Sewer Provided by MSD
Water Provided by Missouri American Water Company
Parcel Data Provided by St. Louis County GIS Services

N
0 250 500 750 1,000 Feet

Figure 3.7-1
Fenton Site Utilities
NGA EIS

## 3.7.2 Mehlville Site

The following is a description of the utilities currently found at the Mehlville Site. See Figure 3.7-2 for a map of the current utilities.

### 3.7.2.1 Power

Ameren Missouri provides electrical service to the Mehlville Site. The property has access to two 34-kV circuits located along the northwest and southeast sides of the property. Multiple overhead distribution lines run along Tesson Ferry Road as well as a single three-phase distribution circuit running overhead along Keller Road.

### 3.7.2.2 Water

Missouri American Water supplies potable water to the site. An 8-inch-diameter DIP main runs on the east side of Keller Road, which is where the existing service line to the site is located. An additional 12-inch-diameter DIP main runs along the west side of Tesson Ferry Road.

### 3.7.2.3 Wastewater/Stormwater

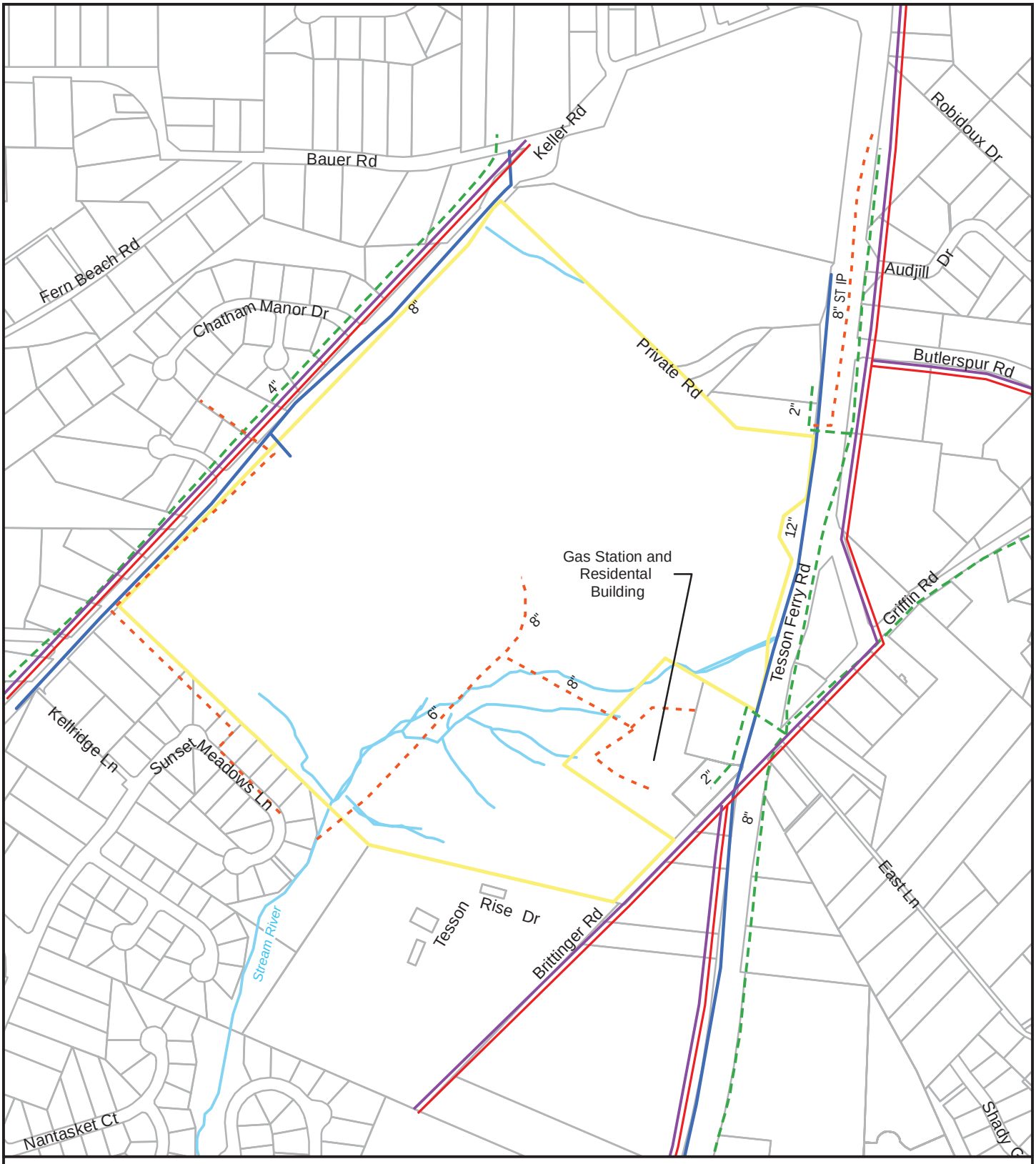
MSD provides separated wastewater and stormwater services for the site. An existing 8-inch-diameter vitrified clay pipe (VCP) wastewater service runs through the middle of the property. This wastewater service connects to the gas station and residential building adjacent to the property. These two wastewater lines merge and a 10-inch-diameter VCP exits the site on the south side of the property toward residences on Sunset Meadows Lane. A force main connects to this wastewater system behind the residences on Sunset Meadows Lane. The force main follows the west property line towards Keller Road and runs northeast along Keller Road to the properties behind Chatham Manor Court. Stormwater service is also present at the adjacent gas station and residential building site. This service has a 54-inch-diameter line that connects into the creek located just inside the site. An approximately 3.5-acre onsite stormwater retention pond receives stormwater drainage from the adjacent onsite developed area. This pond as well as the onsite culverts are discussed further in Section 3.10, *Water Resources*.

### 3.7.2.4 Natural Gas

Laclede supplies natural gas to the surrounding area. An 8-inch-diameter steel main is located on the east side of Tesson Ferry Road. The existing buildings, a gas station, and a residential building along Tesson Ferry Road, just outside the proposed site, are connected to the 8-inch-diameter steel main via a 2-inch-diameter line. There is also a 4-inch-diameter plastic main located at the back of the site on the west side of Keller Road for residential properties in the area.

### 3.7.2.5 Communications

Multiple communication lines capable of providing communication systems for this site run overhead along the power poles located along Tesson Ferry Road and Keller Road.




Overhead Electrical and Communication Lines
Gas
Wastewater/Stormwater
Water
Parcels
Streams
Proposed Site

Note:
Utility Information Shown is Approximate
Data Sources:
Electric and Communication Provided by Google Earth
Gas Provided by Laclede Gas Company
Sewer Provided by MSD
Water Provided by Missouri American Water Company
Parcel Data Provided by St. Louis County GIS Services

N
0 250 500 750 1,000 Feet

Figure 3.7-2
Mehlville Site Utilities
NGA EIS

## 3.7.3 St. Louis City Site (Preferred Alternative)

The following is a description of the utilities currently found at the St. Louis City Site. See Figure 3.7-3 for a map of the current utilities.

### 3.7.3.1 Power

Ameren Missouri provides electrical service to this area. Primary voltage is available on Cass and North Jefferson Avenues, and a substation is located adjacent to the southern boundary of the site. Three 13.8-kV feeders to this substation are present along North 22nd Street. Ameren provides three-phase service to several buildings on this property as well as service to a few traffic signal controllers and lighting substations. It is unknown if two independent 34-kV circuits are available for this site; this would be determined prior to construction.

### 3.7.3.2 Water

The City of St. Louis Water Division provides potable water service to this area of the city, including the St. Louis City Site. Several service lines exist for the multiple buildings that would be removed. There are 20-inch-diameter water mains located on Cass and North Jefferson Avenues as well as a 15-inch-diameter water main that runs along Cass Avenue and turns north at North 22nd Street. This 15-inch-diameter main is reduced to a 6-inch-diameter line at Madison Street. A 6-inch-diameter main runs along the remainder of the east side of the property as well as along the entire north side of the property.

### 3.7.3.3 Wastewater/Stormwater

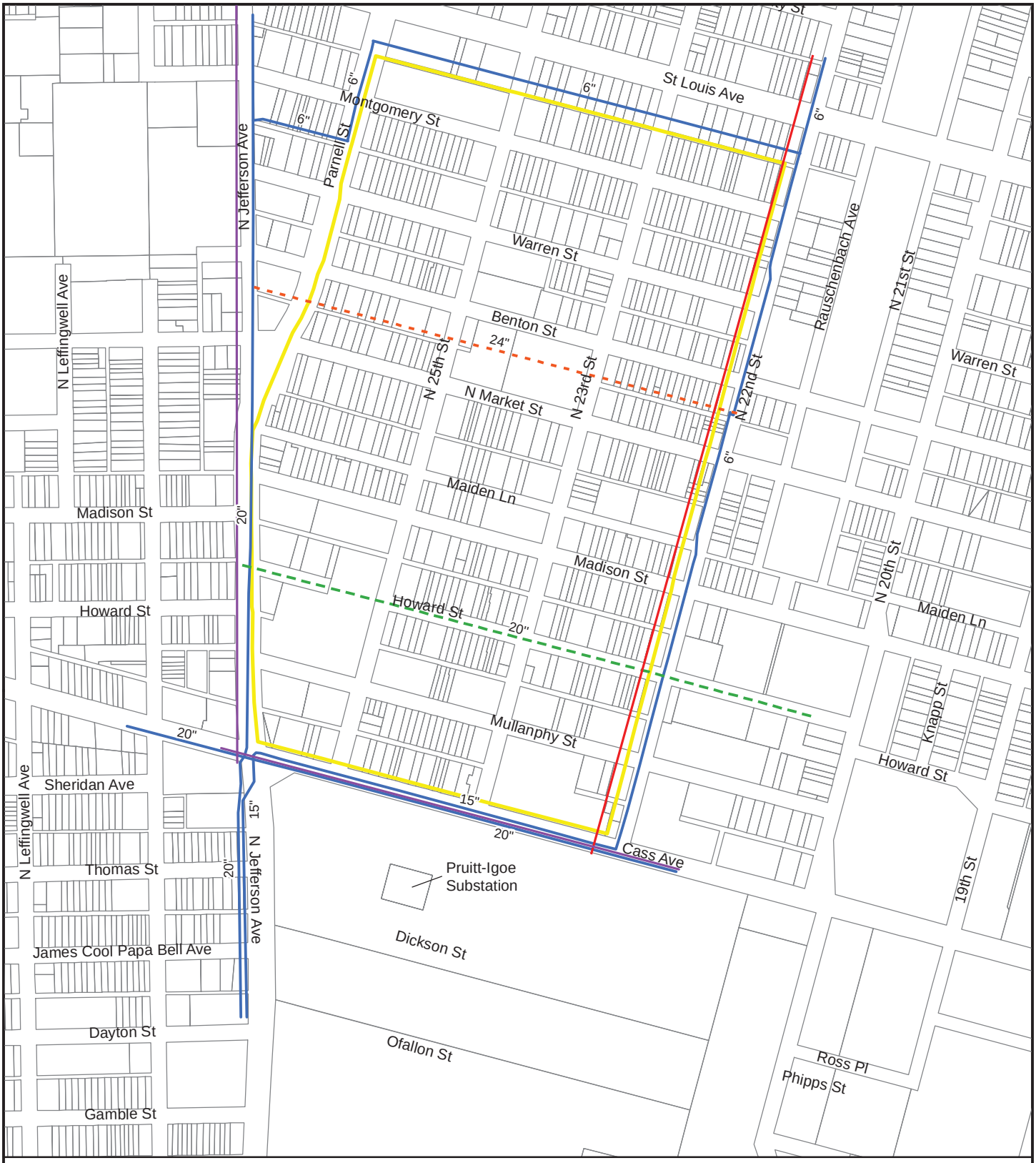
MSD has multiple wastewater services located in this area. These services only serve properties located within the proposed site; however, one 24-inch-diameter brick main located in the alley between North Market Street and Benton Street affects properties outside the site. The wastewater lines also provide stormwater service (combined system) throughout the general area (MSD, 2015).

### 3.7.3.4 Natural Gas

Laclede supplies low-pressure gas service to multiple buildings in the area along with medium-pressure distribution lines. The medium-pressure main line is a 20-inch-diameter steel line located on Howard Street (Laclede Gas Company, 2015).

### 3.7.3.5 Communications

Multiple service providers capable of providing communication systems for the St. Louis City Site are located along North Jefferson and Cass Avenues.




Note:
1) Utility Information Shown is Approximate
2) Service Lines for Multiple Properties are not shown on this Plan
Data Sources:
Electric Provided by Ameren
Communications Provided in Siting Study
Gas Provided by Laclede Gas Company
Sewer Provided by MSD
Water Provided by City of St. Louis Water Division
Parcel Data Provided by City of St. Louis GIS

Figure 3.7-3
St. Louis City Site Utilities
NGA EIS

## 3.7.4 St. Clair County Site

The following is a description of the utilities currently found at the St. Clair County Site. See Figure 3.7-4 for a map of the current utilities.

### 3.7.4.1 Power

Ameren Illinois provides electrical service to this area. A 34-kV three-phase distribution line is located on the north side of Wherry Road approximately 100 feet from the property line.

### 3.7.4.2 Water

American Water supplies potable water to the area. A 10-inch-diameter main is located adjacent to the site, near Scott School Road and Wherry Road.

### 3.7.4.3 Wastewater/Stormwater

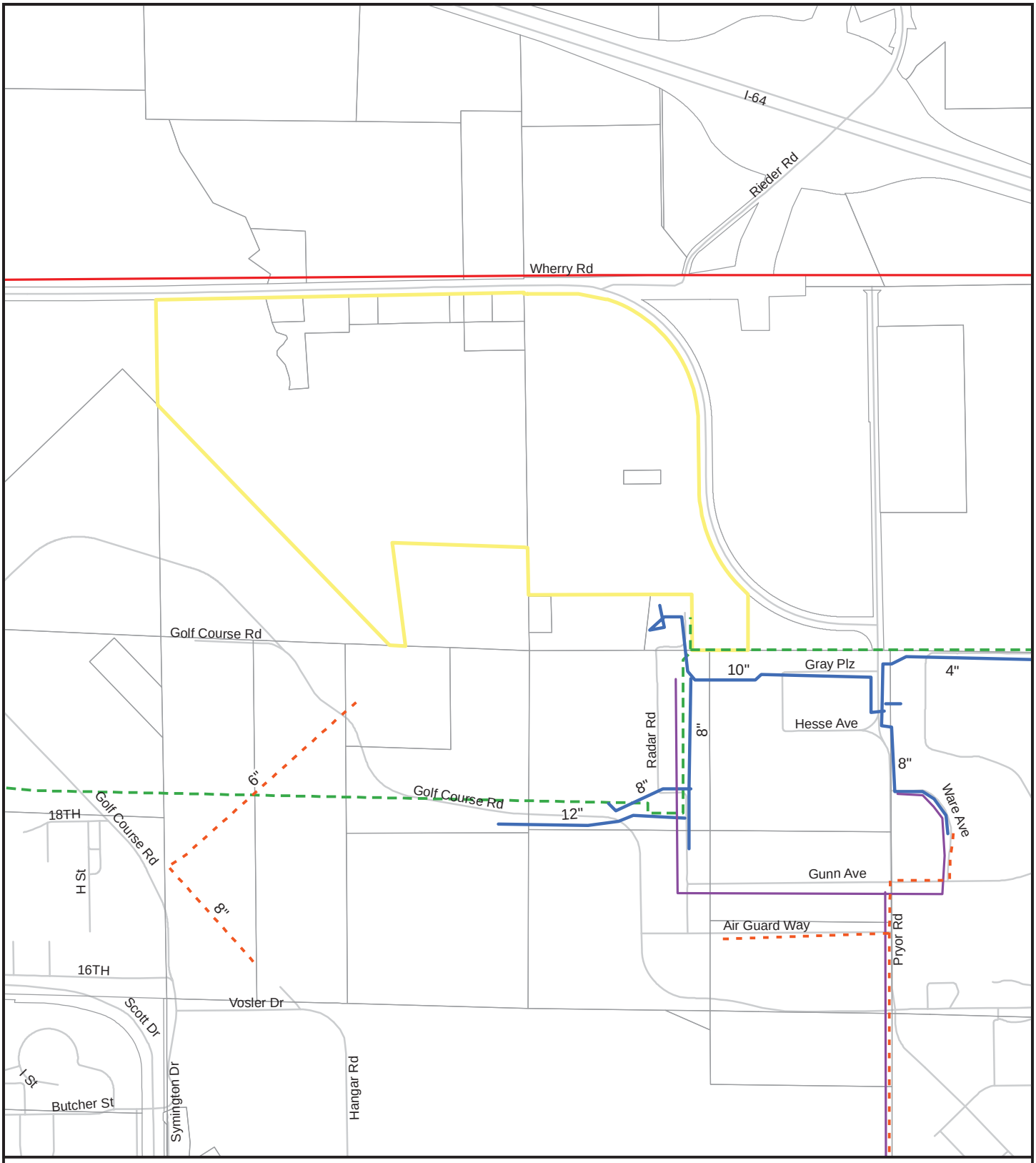
The nearest wastewater main is a USAF-owned/operated 6-inch-diameter concrete main that runs under the Scott AFB runway southwest of the site. Scott AFB has an onsite WWTP. The wastewater system located near the southeast corner of the site along Pryor Road has been abandoned. There is an 8-inch-diameter vitrified clay wastewater main that runs along Ware Avenue. Stormwater infrastructure does not currently exist on the site.

### 3.7.4.4 Natural Gas

Ameren Illinois supplies high-pressure natural gas to this area. A steel, high-pressure main passes through Scott AFB and through the middle of Cardinal Creek Golf Course, and makes a 90-degree turn to the north near Radar Road. This main line then turns east near the property line along Wherry Road.

### 3.7.4.5 Communications

Copper telephone lines run north and south along the west side of Gray Place, and east and west on the south side of Ware Avenue. The copper telephone lines have a few active lines along the west side of the northern and southern portions of Gray Place. Scott AFB also has 12-strand fiber optic service that extends along the east side of Pryor Road.




Overhead Electrical
Communication
Gas
Wastewater/Stormwater
Water
Parcels
Roads
Proposed Site

Note:
1) Utility Information Shown is Approximate
Data Sources:
Electric Provided by Google Earth
Communication Provided by Siting Study
Gas Provided by Ameren
Sewer and Water Provided by Scott AFB
Parcel and Road Data Provided by St. Clair County GIS

N
0 0.25 0.5 Miles

Figure 3.7-4
St. Clair County Site Utilities
NGA EIS

# 3.8 Cultural Resources

Cultural resources include historic architectural properties, prehistoric and historic archaeological sites, and traditional cultural properties (TCPs). Historic architectural resources consist of physical properties, structures, or built items resulting from human activities that occurred after European settlement. Prehistoric and historic archaeological resources are items or sites resulting from human activities that predate and postdate written records, respectively. TCPs are sites, areas, and materials associated with cultural practices or beliefs of a living community, such as Native American's, that are rooted in that community's history and are important in maintaining the continuing cultural identity of the community.

The two primary federal regulations that apply to cultural resources are NEPA and Section 106 of the National Historic Preservation Act of 1966 (NHPA) at 54 United States Code (U.S.C.) 306108. One of the mandates of NEPA is to "preserve important historic, cultural, and natural aspects of our national heritage" (Section 101 [42 U.S.C. 4331]). The implementing regulation for NHPA is the Protection of Historic Properties (36 CFR 800), which defines historic properties as any resource that is listed in or eligible for the National Register of Historic Places (NRHP) (36 CFR 800.16), including prehistoric or historic districts, sites, structures, and objects, historic buildings, and TCPs. As stated in 36 CFR 800.8(a)(1), NHPA encourages federal agencies to coordinate compliance with NEPA to maximize the timely and efficient execution of both statutes, and allows the federal agency, in this case USACE, to use its procedures for public involvement under NEPA to also fulfill the public involvement requirements for Section 106 (36 CFR 800.2(d)(3)). Please note that this is not equivalent to using NEPA to comply with Section 106 "in lieu of" the standard Section 106 process as described in 36 CFR 800.8(c).

<u>NHPA Section 106 Process</u>

The use of federal funding for the proposed project is considered an undertaking and triggers compliance with Section 106 of the NHPA. The undertaking, as described in Section 2.2, *Description of the Proposed Action*, is limited to constructing and operating a new purpose-built campus at one of the project alternatives. Section 106 is a procedural law and the regulations in 36 CFR 800 provide the step-by-step approach for satisfying the Section 106 process. The steps include initiating consultation with regulatory agencies; identifying concerned Native American tribes and other interested parties; identifying (inventory) and evaluating historic properties; identifying project effects, including application of the criteria of adverse effect; and consulting with affected parties to resolve adverse effects to historic properties, if necessary. Properties are evaluated and effects are identified in consultation with the State Historic Preservation Officer (SHPO). The investigation for the proposed project was designed to identify and evaluate historic architectural properties, historic and prehistoric archaeological sites, and TCPs. Because NGA is the proponent of this undertaking, it has been determined that NGA shall serve as the lead federal agency under Section 106 for this undertaking, in accordance with 36 CFR 800.2(a)(1). For this reason, NGA is responsible for compliance with Section 106 of the NHPA and its implementing regulations provided in 36 CFR 800, and it is a signatory to any associated

formal agreements, including the Programmatic Agreement. The USACE is coordinating Section 106 compliance on behalf of NGA. NGA has consulted with the Advisory Council on Historic Preservation, USACE, USAF, the Missouri and Illinois SHPOs, the City of St. Louis, St. Clair County, Native American tribes, and other consulting parties. USACE, on behalf of NGA, has invited the tribes to enter into consultation by soliciting information from them about the presence of any known archaeological sites, TCPs, or other cultural resources that might be affected by construction of the project. Cultural resources specialists prepared a methodology that was used to inventory and evaluate historic properties and to determine potential project effects.

Table 3.8-1 lists the steps included in the Section 106 process. Copies of correspondence appear in Appendix 3.8B, *Correspondence*, and Appendix 3.8C, *Tribal DEIS Comments*. For an in-depth cultural resources discussion and further information regarding the Section 106 process, refer to Appendix 3.8A, *Cultural Resources Technical Reports*.

TABLE 3.8-1
**Steps of Section 106 Process**

| Action | Date | Details |
|---|---|---|
| Initiate Section 106 Consultation | December 14, 2014<br>June 15, 2015 | USACE, on behalf of NGA, initiated Section 106 consultation with the Missouri and Illinois SHPOs and invited 28 Native American tribes to enter into consultation. Letters were prepared and sent to the SHPOs and the tribes that notified them of the undertaking, invited them to participate in the Environmental Review Process, and initiated Section 106 consultation. |
| Inventory | 2014–2015 | Literature review completed for all alternatives; pedestrian architectural survey completed for all alternatives; no further archaeological investigations required for St. Clair County Site; archaeological fieldwork complete for Fenton Site; archaeological fieldwork pending for Mehlville Site and St. Louis City Site. |
| Evaluation | 2014–2015 | Architectural evaluations complete for all alternatives; archaeological evaluations complete for St. Clair County Site; no archaeological evaluations needed for Fenton Site; archaeological evaluations pending for Mehlville Site and St. Louis City Site. |
| Continued Consultation with Native American tribes | January 2015 | Responses were received from The Osage Nation, the Peoria Tribe of Indians of Oklahoma, the Delaware Nation, the United Keetoowah Band of Cherokee Indians of Oklahoma, and the Kickapoo Tribe of Oklahoma. The Osage Nation and Peoria Tribe of Indians of Oklahoma elected to participate in consultation, which began once this EIS was submitted in draft. The Delaware Nation, Kickapoo Tribe of Oklahoma, and the United Keetoowah Band of Cherokee Indians of Oklahoma requested that they be notified if any archaeological sites are identified. |
| Request for Concurrence | June 15, 2015 | Cultural resources reports provided to SHPOs. Concurrence on determinations of eligibility requested. |
| Notification of Adverse Effect | June 19, 2015 | Advisory Council on Historic Preservation (ACHP) notified of finding of potential Adverse Effect and invited to participate in development of Programmatic Agreement. |
| Continued Consultation with SHPOs | July 1, 2015 | USACE, on behalf of NGA, formally invited SHPOs to participate in the Programmatic Agreement consultation meeting. |

TABLE 3.8-1
**Steps of Section 106 Process**

| Action | Date | Details |
|---|---|---|
| Continued Consultation with local agencies, consulting parties | July 1, 2015 | USACE, on behalf of NGA, invited additional consulting parties to participate in Programmatic Agreement consultation meeting. |
| Consultation on Programmatic Agreement | July 8, 2015 | NGA held a meeting with USACE, USAF, Missouri SHPO, Illinois SHPO, ACHP, City of St. Louis, St. Clair County, and other consulting parties to begin work on drafting the Programmatic Agreement. |
| Concurrence Received | August 20, 2015 | Concurrence received from Illinois SHPO. |
| Consultation with ACHP | December 8, 2015 | ACHP responded with an official letter of participation. |
| Consultation on Programmatic Agreement | December 9, 2015 | NGA held a meeting with USACE, USAF, Missouri SHPO, Illinois SHPO, ACHP, City of St. Louis, St. Clair County, and other consulting parties to continue work on drafting Programmatic Agreement. |
| Concurrence Received | December 22, 2015 | Concurrence received from Missouri SHPO. |
| Consultation on Programmatic Agreement | January 27, 2016 | NGA held a meeting with USACE, USAF, Missouri SHPO, Illinois SHPO, ACHP, City of St. Louis, St. Clair County, and other consulting parties to continue work on drafting the Programmatic Agreement. |
| Resolution of Adverse Effects | TBD | Completion of Programmatic Agreement is pending. The consulting parties are working on drafting the Programmatic Agreement and accepting public comments pursuant to 36 CFR 800.2(d)(2) from February 29, 2016, through March 21, 2016. |

Area of Potential Effects

The Area of Potential Effects (APE) is the maximum area where the alternatives could affect architectural or archaeological resources that are eligible for the NRHP. The APEs for the four project alternatives were determined through consultation with the Missouri and Illinois SHPOs. The architectural resources APEs include the areas surrounding the project alternative boundaries because the character of a historic building can be affected by changes to its setting. Therefore, it is important to consider the effects to the area surrounding the proposed project location that could be caused by the undertaking. The archaeological APEs have study areas designated around them for the literature review and background research. A study area includes the APE as well as a larger area surrounding it; the Missouri SHPO *Guidelines for Phase I Archaeological Surveys and Reports* state that a study area with a minimum radius of 1.6 kilometers (km) around the APE should be used for background research (MoDNR, 2015a). Accordingly, a 2-km radius was used for the study areas for the proposed project. Gathering information from this larger area as part of the literature review and background research provides a context for the history of the APE as well as further information for the type of archaeological resources that may be encountered.

The APEs for architectural and archaeological resources both encompass the boundary of each project alternative, including all areas of potential ground disturbance. The APE for architectural resources also includes an area extending approximately 1,000 feet from the project location boundary for the St. Clair County, Fenton, and Mehlville sites. The APE for architectural resources for the St. Louis City Site includes

immediately adjacent parcels, including the former Pruitt-Igoe property, because of the dense urban nature and specific historical context of this alternative (Figures 3.8-1, 3.8-3, 3.8-5, 3.8-7). When cultural resources investigations began on this project in 2014, the St. Louis City alternative included the former Pruitt-Igoe site. Therefore, the APE submitted to Missouri SHPO contained the former Pruitt-Igoe site within its boundaries, as well as historic properties adjacent to that site. As the project plan developed, Pruitt-Igoe was removed from consideration as part of the project footprint. However, the APE had already been submitted to the Missouri SHPO, all of the cultural resources identification and evaluation work had been completed for that area, and the subsequent cultural resources technical reports for the St. Louis City alternative had been finished and submitted to the SHPO. To remain consistent with the technical reports and the previous consultation efforts, the APE included in this environmental impact statement (EIS) shows the original APE boundaries and provides information on the historic properties that were identified as part of the original effort. Project effects were analyzed using the most current project footprint, shown as the "Proposed Site" on the figures.

The archaeological APEs are limited to the alternative project location boundaries because they are primarily concerned with areas of potential ground disturbance (Figures 3.8-2, 3.8-4, 3.8-6, 3.8-8).

Evaluation of NRHP Eligibility

Under the NHPA, a property is significant if it meets the following NRHP criteria listed in 36 CFR 60.4:

- Criterion A: Association with events that have made a significant contribution to the broad patterns of our history.
- Criterion B: Association with the lives of persons significant in our past.
- Criterion C: Embodiment of the distinctive characteristics of a type, period, or method of construction or representative of the work of a master or possessing high artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction.
- Criterion D: Yielding, or likely to yield, information important in prehistory or history.

In addition, properties must retain enough integrity to demonstrate their significance under the criteria. The NRHP recognizes seven aspects of integrity: setting, feeling, association, location, materials, design, and workmanship. Even if a property meets the criteria, it must retain sufficient integrity to convey that significance in order to be eligible for listing in the NRHP. The general standard for the NRHP is a resource threshold of at least 50 years old. Architectural resources that were evaluated for this project included buildings, structures, and objects that were built in or before 1965. Resources that are less than 50 years old can be eligible for the NRHP if they are proven to have exceptional importance. No resources that are less than 50 years old and are of exceptional importance have been identified in the APE.

Native American Consultation

Once a proposed alternative location is selected, USACE, on behalf of NGA, will formally enter into the consultation process with the participating Native American tribes. In all, USACE invited 28 tribes to enter into the consultation process, five of which sent responses. Three of the tribes that responded, the United Keetoowah Band of Cherokee Indians of Oklahoma, the Delaware Nation, and the Kickapoo Tribe of Oklahoma, requested that they be notified if any archaeological sites are identified. The other two tribes that responded, The Osage Nation and the Peoria Tribe of Indians of Oklahoma, wish to enter into formal consultation; USACE provided them with copies of the Cultural Resources Technical Reports on July 5, 2015. Part of the tribal consultation effort is to determine whether any TCPs or sacred sites are located near any of the project alternatives. Only The Osage Nation has identified any tribal cultural resources in or near the alternative APEs. The tribe identified the St. Louis City Site as the most sensitive site for tribal resources and requested that it be avoided. The tribe communicated that it believes the St. Louis City Site has the highest likelihood to encounter ancestral Osage sites because it is near the Osage Mississippi River Trail, a tribal cultural resource, and the Mississippi River itself. The tribe also noted the presence of the St. Louis Trail in the vicinity of both the Mehlville the Fenton sites. Background research and literature searches did not reveal the presence of any previously identified TCPs, Native American cemeteries, or known sacred sites near the project alternatives. During the January 27, 2016, Consulting Parties meeting to review the Programmatic Agreement, The Osage Nation raised concerns that all three proposed sites in Missouri were located in the vicinity of trails considered to be tribal cultural resources. Since this meeting, The Osage Nation has been actively working through a mitigation plan with the City of St. Louis, which includes monitoring. Details of mitigation will be included in the Programmatic Agreement to be completed in April 2016. USACE will continue to consult with the tribes once an alternative is selected. At that time, they will discuss monitoring and other requirements. Table 3.8-2 lists all Native American tribes that were contacted and details their respective responses.

TABLE 3.8-2
**Native American Tribal Consultation**

| Tribe Name | Response |
|---|---|
| Absentee-Shawnee Tribe of Indians of Oklahoma | No response |
| Eastern Shawnee Tribe of Oklahoma | No response |
| Shawnee Tribe | No response |
| Cherokee Nation | No response |
| United Keetoowah Band of Cherokee Indians of Oklahoma | Requested that they be notified if any archaeological sites are identified. |
| Delaware Nation, Oklahoma | Requested that they be notified if any archaeological sites are identified. |
| Delaware Tribe of Indians | No response |

TABLE 3.8-2
**Native American Tribal Consultation**

| Tribe Name | Response |
|---|---|
| Citizen Potawatomi Nation | No response |
| Forest County Potawatomi Community, Wisconsin | No response |
| Match-e-be-nash-she-wish Band of Pottawatomi Indians of Michigan | No response |
| Hannahville Indian Community | No response |
| Nottawaseppi Huron Band of Potawatomi, Michigan | No response |
| Pokagon band of Potawatomi Indians, Michigan and Indiana | No response |
| Prairie Band Potawatomi Nation | No response |
| Ho-Chunk Nation of Wisconsin | No response |
| Winnebago Tribe of Nebraska | No response |
| Iowa Tribe of Kansas and Nebraska | No response |
| Iowa Tribe of Oklahoma | No response |
| Kickapoo Traditional Tribe of Texas | No response |
| Kickapoo Tribe of Oklahoma | Requested that they be notified if any archaeological sites are identified. |
| Kickapoo Tribe of Indians of Kansas | No response |
| Sac & Fox Nation of Oklahoma | No response |
| Sac & Fox Nation of Missouri | No response |
| Sac & Fox Tribe of Mississippi | No response |
| Miami Tribe of Oklahoma | No response |
| The Osage Nation | Requested to be a consulting party. Received a copy of the Cultural Resources Technical Reports for archaeological and architectural resources on July 5, 2015. |
| Peoria Tribe of Indians of Oklahoma | Requested to be a consulting party. Received a copy of the Cultural Resources Technical Reports for archaeological and architectural resources on July 5, 2015. |
| Quapaw Tribe of Oklahoma | No response |

## Methodology

The methodology used to assess the affected environment included a cultural resources literature review for the project areas. For the three alternatives in Missouri, background research included a detailed records review conducted at the Missouri SHPO in Jefferson City, Missouri, and through the MoDNR interactive geographic information system (GIS) database. For the St. Clair County Site in Illinois, a detailed records review was conducted at the Illinois Division of Preservation Services and via the Illinois Historic Architectural and

Archaeological Resources GIS. GIS data in both states consist of shapefiles indicating the locations of previously conducted surveys and recorded resources. Survey forms associated with previously recorded sites were obtained and reviewed. The National Park Service (NPS) NRHP database was reviewed to identify architectural resources that were previously listed in the NRHP. Background research was conducted for the St. Clair County Site at the St. Clair/Belleville County Public Library in Belleville, Illinois, where county and local histories, cemetery books, and vertical files were reviewed. Additional online research was conducted to complete a historical context for each alternative. A pedestrian architectural survey was conducted at each alternative to identify potential historic properties (USACE, 2015e, 2015f, 2015g, 2015h).

Prior cultural resource surveys at the St. Clair County Site have satisfied the identification requirement of Section 106 for archaeological resources. At the Fenton Site, a geomorphological/geoarchaeological survey following Missouri SHPO guidelines was conducted in July 2015 and it was concluded that no further identification work was necessary at the Fenton Site. However, further archaeological fieldwork could be required if either of the other two alternatives are chosen for development. If the Mehlville or the St. Louis City Site is selected, additional archaeological surveys to identify the presence or absence of archaeological resources, following Missouri SHPO guidelines, could be required. The specifics of these identification efforts, including methodology and intensity, are being considered as part of the Section 106 consultation process and will be stipulated in the Section 106 Programmatic Agreement to be executed prior to the signing of the ROD.

Historical Context and Existing Conditions

Historical contexts were prepared for each of the four alternatives based on review of published materials, NRHP nomination forms, survey forms, reports, and online web pages. The contexts frame the understanding of the historical development and inform the evaluation of identified cultural resources. A general historical context is given below to provide an over-arching history of the City of St. Louis, common to all three Missouri alternatives. Specific contexts for each alternative, including the St. Clair County Site in Illinois, follow.

City of St. Louis Historical Context

St. Louis, Missouri, was founded as a fur trading post in 1764 by Pierre Laclède Liguest. Most of the early settlers in the village that grew around the post were French fur traders. The community became American after the Louisiana Purchase of 1803. The Lewis and Clark Expedition brought attention to St. Louis and attracted an increasing number of settlers from the East Coast. The City of St. Louis was incorporated in 1823, which marked the start of a significant period of growth for the city that lasted through the 19th century as the frontier city became an important hub for commercial activities and trading. A major population boom occurred between 1840 and 1860 as German and Irish immigrants flooded into the largely French city, fleeing the tribulations faced in their home countries as a result of the German Revolution and the Irish Potato Famine (City of St. Louis, 2011).

The late 19th century brought another wave of immigrants, this time including Italians, Serbians, Lebanese, Syrians, and Greeks: "By the 1890s, St. Louis was the nation's fourth largest city" (City of St. Louis, 2011). Manufacturing had become a dominant industry in St. Louis by the turn of the 20th century. By the mid-20th century, St. Louis had established a significant automobile manufacturing industry, rivaled only by Detroit. The population reached more than 800,000 people by 1940, many of whom were African Americans that had moved to the city after the end of World War I and before the start of World War II (City of St. Louis, 2011).

In 1876, St. Louis "voters approved separation from St. Louis County and establishment of a home rule charter," becoming the country's first "home rule city" (City of St. Louis, 2011). Growth within the city's limited boundaries did not become a problem until after World War II, when the city's population reached 856,000 people in 1950. Although new residents continued to arrive, the city had no room to physically expand; "Thus any new growth had to occur in the suburbs in St. Louis County, which St. Louis could not annex" (City of St. Louis, 2011). As a result, much of the earlier immigrant population moved outside of the city into suburban communities, including Fenton and Mehlville. Additionally, the construction of four interstate highways in the city "cut block-wide swaths through neighborhoods, facilitating the exodus to the suburbs" (City of St. Louis, 2011). The city's population had dropped to 450,000 people by 1980 (City of St. Louis, 2011).

## 3.8.1 Fenton Site

### 3.8.1.1 Historical Context

Fenton is located southwest of St. Louis, in St. Louis County. William Lindsay Long founded Fenton on March 23, 1818, although the town was not officially incorporated until 1874. In 1955, the city was reincorporated at which point it was "classified as a Fourth Class City and held its first election for a new mayor and other city officials" (Fenton Historical Society, 2014). The city annexed 1,500 acres of land to form the city of Fenton (Fenton Historic Society, 2014). In 1966, the Chrysler automobile assembly plant was constructed. The plant manufactured trucks, including B-series vans and wagons, and more than a million Dodge Ram trucks until 1980. On July 10, 2009, the Chrysler automobile assembly plant in Fenton closed (Zatz, 2015). The city of Fenton is still known for a strong commercial industry: "While the City has 4,360 residents, the population increases to between 25,000 and 30,000 individuals during the day thanks to the over 600 businesses who call Fenton their home" (Fenton Historical Society, 2014).

### 3.8.1.2 Architectural Resources

There are no previously recorded architectural resources within the Fenton Alternative APE. The Chrysler automobile assembly plant was located within the Fenton Site but most of the buildings associated with the plant were demolished after the plant closed in 2009 (USACE, 2015e; Zatz, 2015).

An architectural field survey was conducted within the APE for the Fenton Site on November 19–20, 2014. The survey involved a pedestrian inspection of all buildings that were 50 years of age or older (built in or

before 1965). No buildings were identified within the APE that were eligible for or listed in the NRHP. The buildings and structures remaining on the property were formerly associated with the Chrysler automobile assembly plant and include parking lots, a parking lot gate house, a metal-frame security office, and two utility buildings. The existing buildings and structures date from 1966 to 1970. Within 1,000 feet of the project boundary, architectural resources include commercial and light industrial developments constructed in the late 1960s and 1970s (USACE, 2015e). Therefore, there are no historic architectural properties within the Fenton Site (Figure 3.8-1).

#### 3.8.1.3 Archaeological Resources

There are no previously identified archaeological sites within the APE for the Fenton Site (Figure 3.8-2). A literature search indicated that 31 cultural resources surveys were conducted in the study area between 1976 and 2013, although none was within the APE. As a result of these surveys (none of which was conducted as part of the current proposed project), 57 archaeological sites have been identified within 2 km of the APE for the Fenton Site, eight of which are considered potentially eligible for listing in the NRHP. These include a variety of site types, such as prehistoric lithic scatters, prehistoric multicomponent habitations that include some historic features, Woodland period habitations, Archaic/Middle Woodland period lithic scatters, and Mississippian period habitations. The remaining 49 sites are not eligible for listing in the NRHP (USACE, 2015i). Sites that could occur would range from the Late Archaic through Mississippian and would most likely be represented by scatters of lithics and ceramics, as well as cultural features. Diagnostic lithics are likely in this bottomland setting and the general use of the bottomlands by prehistoric and historic peoples would suggest that a variety of occupations are possible. Based on the previous studies, one could expect up to one site per 4 acres, or roughly 70 sites. However, the entire project tract has undergone disturbance due to construction and demolition, and little remains that is undisturbed across the horizontal extents of the Fenton Site. The Fenton Site is along the Meramec River floodplain where deep alluvial deposits that can bury and protect archaeological sites are expected. Further archaeological fieldwork was recommended to assess the potential for deeply buried archaeological deposits (USACE, 2015i). A geo-archaeological survey was conducted in July 2015 within the APE as part of the current proposed project in order to assess the potential for deeply buried archaeological deposits. The APE is a former industrial site that is covered almost entirely by concrete and asphalt. Core segments were taken during the survey and no prehistoric cultural artifacts, features, or charcoal were identified. The associated summary report concludes: “Antiquity of the terrace sediment assemblage, coupled with the mostly truncated condition of the pre-industrial surface soil, point to a nil to extremely low geological potential for deeply buried, and low geological potential for shallowly buried intact prehistoric cultural deposits beneath the concrete” within the APE (USACE, 2015j). On November 3, 2015, the Missouri SHPO concurred with the findings of this report.

Proposed Site

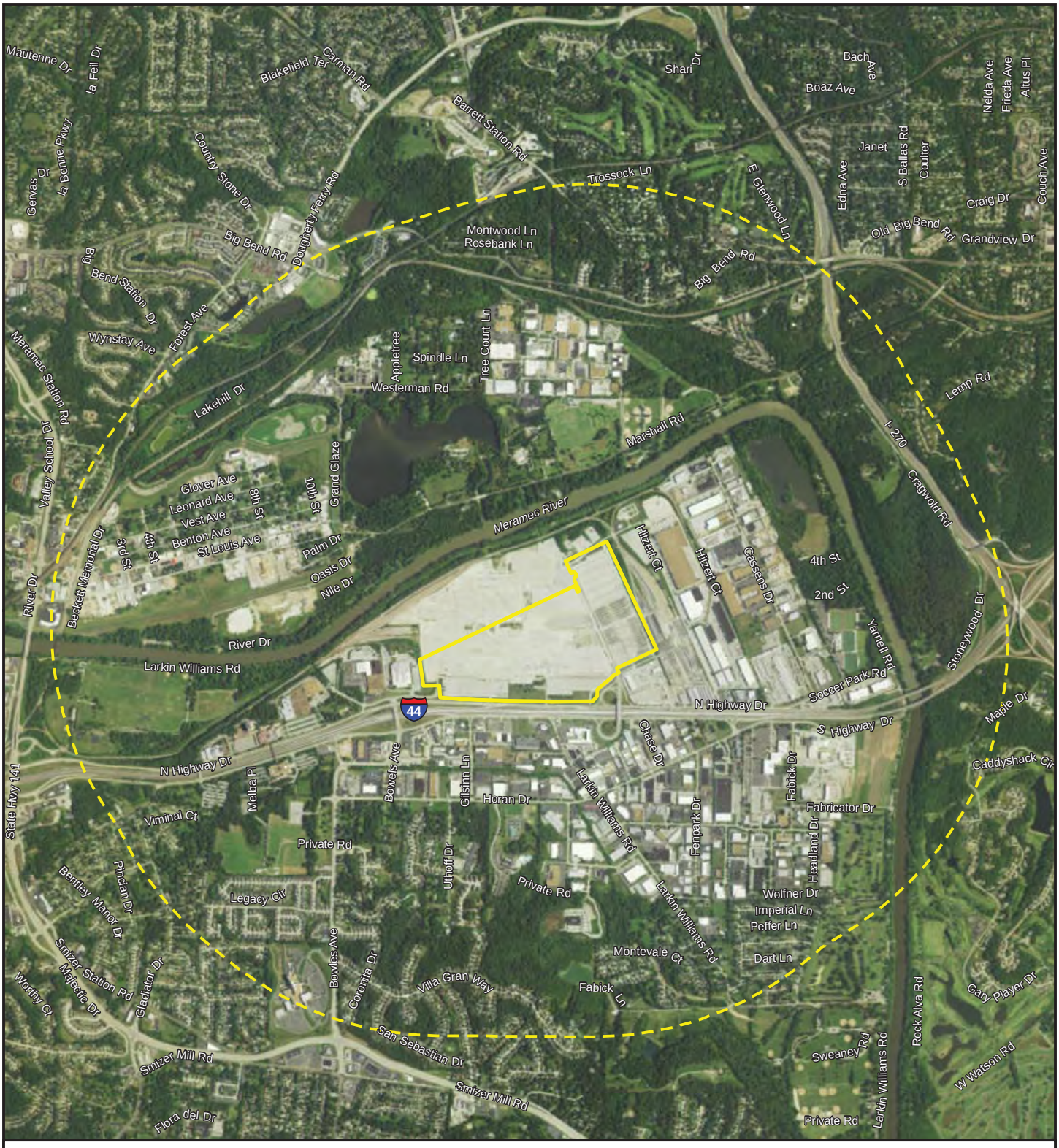
Area of Potential Effects (APE) for Architectural Resources

Figure 3.8-1
Architectural Resources within the Area of Potential Effects
Fenton Site
NGA EIS

N

0 0.25 0.5 Miles

Image Source: Esri, Microsoft, Image Flown 2/2/2012




Archaeological Area of Potential Effects (APE)

Study Area for Archaeological Resources (2 km)

Figure 3.8-2
Study Area and Area of Potential Effects
for Archaeological Resources
Fenton Site
NGA EIS

N

0 0.25 0.5 0.75 1 Miles

Image Source: Esri, Microsoft, Image Flown 2/2/2012

## 3.8.2 Mehlville Site

### 3.8.2.1 Historical Context

Mehlville, Missouri, is a southwestern suburb of the City of St. Louis within St. Louis County. The origins of the town date to the Civil War, when the new community emerged around a Union garrison known as Jefferson Barracks. After the Civil War ended, Jefferson Barracks remained an important training center for the U.S. Army. As a result of the Army's presence, the town's population would go through alternating periods of growth and decline. Such fluctuations were particularly apparent during and after World War I and World War II. During the mid-20th century, Mehlville began to attract military veterans, a trend that helped "stabilize" the town's population (CoStar Group, 2015). Throughout the late 20th century, the area became increasingly multicultural, with a surge in Asian, Hispanic, Bosnian, and Russian immigrants (CoStar Group, 2015).

### 3.8.2.2 Architectural Resources

The results of the literature search indicated that there were no previously recorded architectural resources within the APE for the Mehlville Site. A pedestrian survey was conducted within the APE on November 20, 2014, to identify potentially historic buildings. The only building within the APE is the Metropolitan Life Insurance Company (MetLife) campus, which was constructed in 1978. The campus, which is not yet 50 years old, is not of exceptional importance and does not meet the criteria for NRHP eligibility. Consideration was given to determine if the building would reach 50 years of age within an extended time frame for project implementation. However, even if the project takes 10 years to implement, the building still would not reach the 50-year mark. The architectural resources in the APE surrounding the project site are primarily residential and commercial developments built between circa 1985 and 2000 (USACE, 2015f). Therefore, no historic architectural properties are located within the APE for the Mehlville Site (Figure 3.8-3).

### 3.8.2.3 Archaeological Resources

No archaeological sites have been previously recorded within the APE for the Mehlville Site (Figure 3.8-4). Between 1979 and 2014, 11 cultural resources surveys were conducted within the 2-km study area, none of which was performed as part of the current proposed project. Additionally, none of the cultural surveys was conducted within the Mehlville Site APE. The literature search revealed 17 known archaeological sites are within the study area, including one (site 23SL349) considered eligible for listing in the NRHP and one (site 23SL951) recommended for additional investigations. Neither site has been formally evaluated for NRHP eligibility. The 15 remaining sites are not eligible for listing in the NRHP (USACE, 2015k).

Based on the background research, the Mehlville Site "retains a low to medium likelihood for hosting archaeological sites" (USACE, 2015k). Paleoindian through Protohistoric sites could be found and would likely consist of "spot finds or scatters of lithics and ceramics" (USACE, 2015k). It is unlikely that diagnostic lithics would be encountered in the project area. A limited number of tools have been identified during past surveys that indicate the possibility of Archaic occupations. The results of a study conducted by Diaz-Granados in 1981 defined the potential frequency for encountering such sites as one site per 11 acres, for a

potential total of about nine sites (Diaz-Granados, 1981). Approximately half of the project area is undisturbed woods; however, a significant portion of the property has been heavily disturbed by past construction projects. As a result of this prior disturbance, “it is not expected that more than five scatters of artifacts would be recovered if standard archaeological survey at 15-meter intervals was accomplished across the project tract [APE]” (Prichard, 2015b). Because the Mehlville Site falls in the dissected uplands above and to the east of the Meramec River, substantial alluvial deposits are not expected. Phase I archaeological investigations are recommended for the property if it remains in consideration for the Next NGA West Campus (USACE, 2015k).

Proposed Site

Area of Potential Effects (APE) for Architectural Resources

Figure 3.8-3
Architectural Resources within the Area of Potential Effects
Mehlville Site
NGA EIS

N

0 250 500 750 1,000 Feet

Image Source: ESRI, Microsoft, Image Flown 2/2/2012

Archaeological Area of Potential Effects (APE)

Study Area for Archaeological Resources (2 km)

Figure 3.8-4
Study Area and Area of Potential Effects
for Archaeological Resources
Mehlville Site
NGA EIS

N

0 0.25 0.5 0.75 1 Miles

Image Source: Esri, Microsoft, Image Flown 2/2/2012

## 3.8.3 St. Louis City Site (Preferred Alternative)

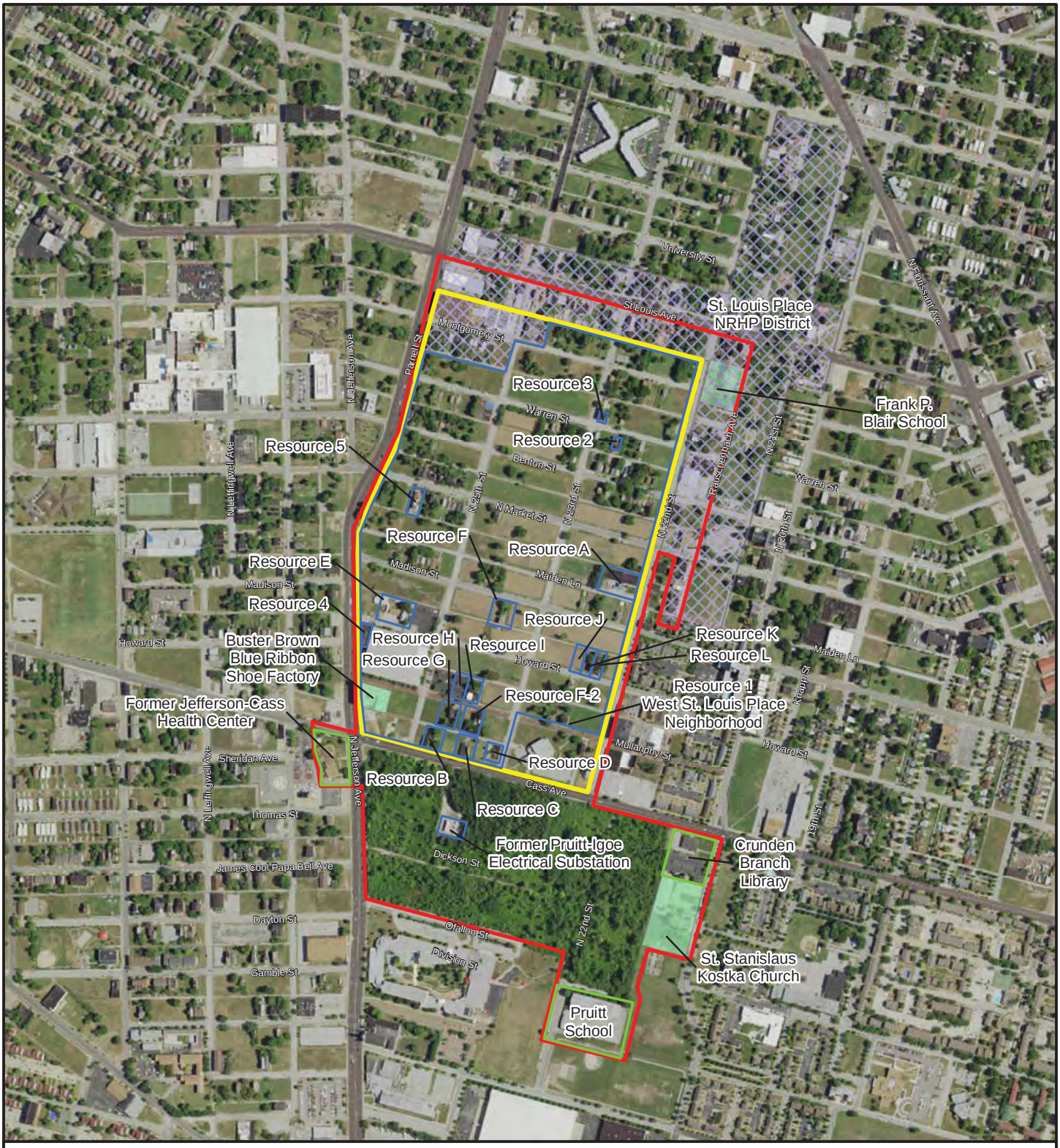
### 3.8.3.1 Historical Context

The St. Louis City Site is located in a neighborhood just northwest of downtown St. Louis. The Village of North St. Louis was founded by a group of settlers including William Christy in 1816, some 6 years before the City of St. Louis was incorporated. The City of St. Louis annexed the village in 1841. Between 1840 and 1880, German and Irish immigrants flooded into the area and established a number of neighborhoods, including "St. Louis Place" known for its "impressive Victorian-style homes [that] sprouted up…in the 1880s" (Medlin, 2009). Following the Civil War and through the 1870s (Wright, 2003), African Americans arrived in large numbers (Medlin, 2009).

As part of the urban renewal movement "to improve housing and attract more people to the city," a number of new public housing complexes were constructed in the mid-20th century, one of which was the Pruitt-Igoe housing complex built in 1956, just south of Cass Avenue (USACE, 2015g). While outside the project boundary, the Pruitt-Igoe site is located within the APE. Designed by architect Minoru Yamasaki, the segregated complex consisted of the Pruitt units for African American residents and the Igoe units for white residents. Few whites moved in, however, creating a primarily African American community. The housing complex encompassed 33 modernist style, high-rise apartment buildings. Lack of sufficient funding meant that the buildings were inadequately maintained, creating a poor living environment for residents where elevators and air-conditioning units often were not working. Occupancy reached 91 percent in 1957, but the tenancy numbers soon started to decline. With this, crime rates started to rise, further spurring additional residents to leave. Between 1972 and 1976, all housing units on the Pruitt-Igoe property were demolished (USACE, 2015g).

### 3.8.3.2 Architectural Resources

The project APE for the St. Louis City Site contains three buildings that are individually NRHP-listed, a section of one NRHP-listed historic district with 105 contributing buildings and 16 contributing objects, and three buildings eligible for listing in the NRHP (Figure 3.8-5). Table 3.8-3 includes all evaluated properties within the APE and lists their NRHP status.




Proposed Site

Area of Potential Effects (APE) for Architectural Resources

**National Register of Historic Places (NRHP):**

NRHP - Listed District

Individually NRHP - Listed

NRHP - Eligible

NRHP - Ineligible

Figure 3.8-5
Architectural Resources within the Area of Potential Effects
St. Louis City Site
NGA EIS

N

0 0.25 0.5 Miles

Image Source: Esri, Microsoft, Image Flown 2/2/2012

TABLE 3.8-3
**Architectural Resources within the Project APE for the St. Louis City Site**

| Name (Date) | Address | Description | NRHP Status |
|---|---|---|---|
| St. Louis Place NRHP District (1870-1930) | Roughly bounded by 21st, 22nd, 23rd, and 25th Streets, Benton Street, Montgomery Street, North Market Street, Rauschenbach Avenue, and St. Louis Avenue | Late 19th century to early 20th century residential urban historic district northwest of downtown St. Louis, Missouri; 105 contributing buildings and 16 contributing objects are located within the APE | NRHP Listed in 2011 |
| Buster Brown-Blue Ribbon Shoe Factory (1901) | 1526 N. Jefferson Ave. | Four-story red brick masonry building | NRHP Listed in 2005 |
| St. Stanislaus Kostka Church (1892) | 1413 N. 20th St. | Polish Romanesque church | NRHP Listed in 1979 |
| Frank P. Blair School (1882-1894; 1891) | 2707 Rauschenbach Ave. | Three-story brick masonry school | NRHP Listed in 1983; also located in the St. Louis Place NRHP District |
| Pruitt-Igoe Electrical Substation (1956) | Southeast of the intersection of Cass Avenue and North Jefferson Avenue | Brick electrical substation | NRHP ineligible |
| Resource A (1968) U.S. Post Office Annex | 2201 Maiden Lane | One-story, steel frame commercial building clad in brick veneer | NRHP ineligible |
| Resource B (1956) Delicatessen | 2411 Cass Ave. | One-story, concrete block commercial building clad in brick veneer | NRHP ineligible |
| Resource C (1956) Grace Baptist Church | 2319 Cass Ave. | One-story, concrete block church | NRHP ineligible |
| Resource D (circa 1955) (name unknown) | 2301 Cass Ave. | One-story, concrete block commercial building | NRHP ineligible |
| Resource E (1956) Warehouse | 2525 Howard St. | One-story, concrete block warehouse | NRHP ineligible |
| Resource F (1892) Flounder House | 2318 Madison Ave. | One-and-a-half-story “Flounder House” with brick walls and a shed roof | NRHP ineligible |
| Resource F-2 (circa 1875) Flounder House | 2314 Mullanphy St. | Two-and-a-half-story “Flounder House” with brick walls and a shed roof that is hipped on the front and rear | NRHP ineligible |
| Resource G (1887) | 2332-2334 Mullanphy St. | Three-story, masonry, Second Empire-style, multi-unit townhouse | NRHP ineligible |
| Resource H (1889) | 2227-2329 Mullanphy St. | Three-story, masonry, Second Empire-style, multi-unit townhouse | NRHP ineligible |
| Resource I (1887) | 2321-2323 Mullanphy St. | Three-story, masonry, Second Empire-style, multi-unit townhouse | NRHP ineligible |
| Resource J (1887) | 2215 Howard St. | Three-story, masonry, Second Empire-style, multi-unit townhouse | NRHP ineligible |

TABLE 3.8-3
**Architectural Resources within the Project APE for the St. Louis City Site**

| Name (Date) | Address | Description | NRHP Status |
|---|---|---|---|
| Resource K (1888) | 2211 Howard St. | Three-story, masonry, Second Empire-style townhouse | NRHP ineligible |
| Resource L (1888) | 2209 Howard St. | Two-story, masonry, vernacular-style townhouse | NRHP ineligible |
| Former Pruitt School (1956) | 1212 N. 22nd St. | School for the former Pruitt-Igoe housing complex | Determined NRHP eligible by SHPO in 2013 |
| Former Crunden Branch Library (1959) | 2008 Cass Ave. | Library for the former Pruitt-Igoe housing complex; now serves as a church | NRHP eligible |
| Former Jefferson-Cass Health Center (1968) | 1421 N. Jefferson Ave. | Health Center for the former Pruitt-Igoe housing complex; now serves as the Fire Station Headquarters | NRHP eligible |
| West St. Louis Place Neighborhood (Resource 1) | Roughly bounded by St. Louis Avenue, Cass Avenue, North 22nd Street, North Jefferson Avenue, and Parnell Place | Late 19th to early 20th century residential neighborhood | NRHP ineligible |
| Resource 2 (1893) | 2236 Warren St. | Second Empire-style townhouse | NRHP ineligible |
| Resource 3 (1890) | 2251 Warren St. | Second Empire-style townhouse | NRHP ineligible |
| Resource 4 (c. 1900) | 1620 N. Jefferson Ave. | Commercial building | NRHP ineligible |
| Resource 5 (1905) | 2530 N. Market St. | Richardsonian Romanesque townhouse | NRHP ineligible |

There are four previously recorded architectural resources within the project APE that are listed in the NRHP: the St. Louis Place NRHP District (listed in 2011); the Buster Brown-Blue Ribbon Shoe Factory (listed in 2005); the St. Stanislaus Kostka Church (listed in 1979); and the Frank P. Blair School (individually listed in 1983, also a contributing element to the St. Louis Place Historic District).

There are 105 buildings and 16 objects within the APE that contribute to the St. Louis Place NRHP District. The district is “a late 19th-century to early 20th-century residential urban historic district of moderate to high density located just northwest of downtown St. Louis, Missouri,” overlapping with the north and east sections of the APE (USACE, 2015g). Primarily composed of residential properties built between 1870 and 1930, the district also contains churches, warehouse buildings, commercial buildings, schools, a market, a recreational building and clubhouse, a funeral home, a park, and a collection of garages and outbuildings (Allen and Derrington, 2011). The historic district’s period of significance is 1850 to 1955 and it was listed in the NRHP under Criterion A in the area of Ethnic Heritage and under Criterion C in the areas of Architecture and Community Planning and Development (Allen and Derrington, 2011).

The Buster Brown-Blue Ribbon Shoe Factory, a four-story, red brick masonry building located at 1526 N. Jefferson Ave., was designed in 1901 by the architectural firm H.E. Roach and Son (USACE, 2015g). It is

listed in the NRHP under Criterion A in the area of Industry and under Criterion C in the area of Architecture (Sone et al., 2004). The St. Stanislaus Kostka Church, a Polish Romanesque building located at 1413 N. 20th St., was constructed in 1892 and is listed in the NRHP for its significance under Criterion A in the areas of Religion and Immigration and under Criterion C in the area of architecture (Broderick et al., 1979). The Frank P. Blair School, a three-story masonry school building located at 2707 Rauschenbach Ave., was constructed in three phases between 1882 and 1894. The building was designed by the architects H. William Kirchner and August H. Kirchner, with an addition in 1891 designed by Louis Kledus. Located in the St. Louis Place NRHP District, the school was individually listed in the NRHP in 1983 under Criteria A and C for its significance in the areas of Education and Architecture (Porter and Toft, 1982). It was converted to apartments in the 1990s.

Three resources are located in the APE that are eligible for listing in the NRHP. These include the Pruitt School, constructed in 1956 (determined NRHP-eligible in 2013), the former Crunden Branch Library, constructed in 1959, and the former Jefferson-Cass Health Center, constructed circa 1968 (Broderick et al., 1979; Peter Meijer Architect, PC., 2013). All three buildings were associated with the demolished Pruitt-Igoe housing complex and are eligible for listing in the NRHP under Criterion C for their architectural significance (USACE, 2015l).

There are 13 resources within the APE that were previously recorded in 2013 or 2014 but did not have previous individual NRHP evaluations: a 1968 U.S. Post Office Annex Building (Resource A), a 1956 commercial building (Resource B), a 1956 church (Resource C), a 1955 commercial building (Resource D), a 1956 warehouse (Resource E), and eight late-19th century residences (Resources F, F-2, G, H, I, J, K, and L). Resources A, B, C, D, E, F, F-2, G, H, I, J, K, and L are not eligible for listing in the NRHP (pending SHPO concurrence). The electrical substation for the former Pruitt-Igoe housing complex is also located within the APE. Since the Pruitt-Igoe housing complex was demolished between 1972 and 1976, the electrical substation has lost its contextualizing architectural environment and lacks integrity of setting and association; the building is not eligible for the NRHP.

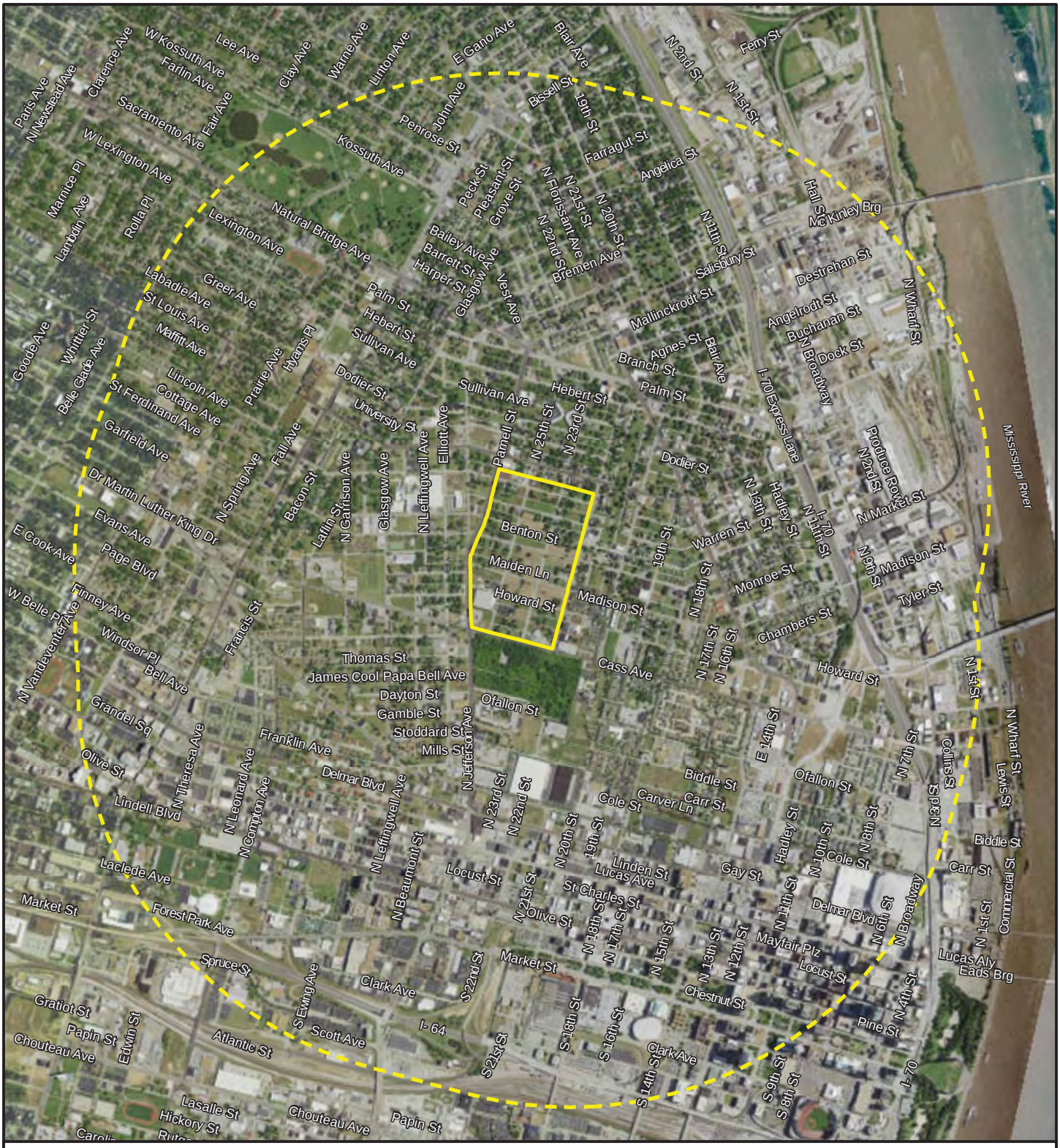
An architectural resources field survey was conducted for the St. Louis City Site on November 18-19, 2014. At that time, the entire APE for the current proposed project was surveyed for architectural resources, including the West St. Louis Place Neighborhood, which was evaluated as a potential historic district. In addition, several buildings within the potential historic district were individually evaluated for NRHP eligibility. Thus, a total of five additional resources were identified within the APE as part of the 2014 survey—the remains of the West St. Louis Place neighborhood (Resource 1), two Second Empire townhouses, one commercial building, and one Richardsonian Romanesque townhouse (Resources 2, 3, 4, and 5). The West St. Louis Place neighborhood lacks sufficient physical integrity overall and is not eligible for the NRHP as a district, as the majority of the parcels are vacant lots. Excluding the Buster Brown-Blue Ribbon Shoe Factory Building, there are 49 historic-period buildings scattered across the West St. Louis

Place neighborhood, including 42 residential buildings. Approximately 21 of these residences are vacant and derelict, and 17 are occupied. In addition, there are 52 townhouses that were built in the early 1970s located within the district boundaries. Some of these buildings are also vacant and deteriorated. The four resources located within the neighborhood that retained the greatest integrity, including an 1893 Second Empire-style townhouse, an 1890 Second Empire-style townhouse, a circa 1900 commercial building, and a 1905 Richardsonian Romanesque-style townhouse, were evaluated to determine if they were individually NRHP-eligible. However, the three townhouses lacked the significance required to be individually eligible, and the commercial building did not retain sufficient integrity (USACE, 2015l).

#### 3.8.3.3 Archaeological Resources

The APE for the St. Louis City Site has not been previously surveyed for archaeological resources and there are no previously recorded archaeological sites located within the APE (Figure 3.8-6). Twenty-four known archaeological sites are located within the 2-km study area: 15 are considered or assumed to be eligible for listing in the NRHP, two are not eligible, and seven have not been formally evaluated for NRHP-eligibility. Fifty-eight previous studies have occurred within the study area for the St. Louis City Site. Reports associated with three of these studies were used to "encapsulate the probability of archaeological remains and the type(s) of information that these sites contribute to the history of St. Louis City," and to extrapolate the likelihood of discovering archaeological resources within the APE for the St. Louis City Site (Harl, 2006; McLaughlin et al., 2009; Meyer, 2013; USACE, 2015l). The information gathered from these three investigations indicated that the St. Louis City Site "retains a high likelihood for hosting archaeological sites" and one could expect 12 to 50 historic site locations within the St. Louis City Site (USACE, 2015l). Sites could occur from the Paleoindian through the Historic periods. However, considering the data gathered during previous archaeological investigations, it appears that historic-era archaeological sites are expected to be the most prevalent type to be encountered at the St. Louis City Site. Such sites could consist of various types of features, including cisterns, privies, wells, or household and commercial materials including ceramics, glass, and metal artifacts. It is not likely that prehistoric archaeological resources and diagnostic lithics would be found within the APE for the St. Louis City Site. However, due to the site's position within the terraces of the Mississippi River and its location near the Osage Mississippi River Trail, it has some likelihood to contain ancestral Osage sites and has the potential for deeply buried deposits (USACE, 2015l).

Phase I archaeological investigations following the Missouri SHPO guidelines, potentially including archival research and mechanical excavations, are recommended if the St. Louis City Site remains in consideration for the Next NGA West Campus (USACE, 2015l).




Archaeological Area of Potential Effects (APE)

Study Area for Archaeological Resources

Figure 3.8-6
Study Area and Area of Potential Effects
for Archaeological Resources
St. Louis City Site
NGA EIS

N

0 0.25 0.5 0.75 1 Miles Image Source: Esri, Microsoft, Image Flown 2/2/2012

## 3.8.4 St. Clair County Site

### 3.8.4.1 Historical Context

St. Clair County is located in Illinois, southeast of St. Louis. After the Louisiana Purchase, the first European settler in the St. Clair County area was John Lively, a Swiss man who had traveled from South Carolina in 1805. Illinois was granted statehood in 1818, at which time St. Clair County was established, though its original borders encompassed significantly more land than its current jurisdiction. Throughout the 19th century, the County was continually divided up into smaller and smaller areas. A wave of new settlers arrived in the area in the 1830s, most of whom were German, Irish, and English. During this time, German immigrants in particular arrived in large numbers in St. Clair County. Many of them were well-educated individuals who worked as educators or skilled craftsmen and opposed the German government; "They saw the fertile land, the flowing rivers, and the mild climate of this area as an ideal place to start a free life in a democratic country" (Botterbusch, n.d.). The community of Shiloh, located in north St. Clair County, was established in 1807 and was originally referred to as "Three Springs" due to the prevalence of springs near the site where the community's church meetings occurred. In 1905, the community formally organized into the Village of Shiloh, primarily attracting farmers and miners (The Village of Shiloh, 2015).

Scott AFB is located directly south of the St. Clair County Site. The land for the Base was originally leased by the War Department in 1917 for training combat pilots. The land was formally acquired in 1919, at which time an airship and balloon station was established: "Scott AFB was a major airship and balloon facility until 1937, when the Air Corps changed its policy to favor heavier-than-air aircraft over lighter-than-air airships" (USAF, 1991). As a result, four new runways were subsequently constructed at Scott AFB. After World War II, during which time radio operators and mechanics were trained at the Base, several unit headquarters, starting with HQ Air Training Command, relocated to Scott AFB. Over the next few decades, other units arrived: HQ Military Air Transport Service arrived in 1957 and the 1405th Aeromedical Transport Wing arrived in 1964, although it was absorbed 2 years later by the 375th Aeromedical Airlift Wing. Most of the original buildings from the 1920s were demolished and replaced in the 1930s. During World War II, temporary wooden structures were built. Permanent construction started again after World War II and lasted until 1953. During the 1950s, housing areas were built along with the new Main Base area (USAF, 1991).

The St. Clair County Site is comprised of approximately 182 acres in the dissected uplands southeast of the town of Shiloh, Illinois, and northeast of Scott AFB.

### 3.8.4.2 Architectural Resources

Two previously identified architectural resources remain extant in the APE for the St. Clair County Site: Facility 5484 and Facility 1192 (Figure 3.8-7). They were recorded during an architectural survey conducted in 2011 as part of a Section 110 survey of Scott AFB that was not related to the Proposed Action. Both facilities were previously determined not eligible for listing in the NRHP. Between 1970 and 1975, a survey conducted in St. Clair County identified three architectural resources within the APE for the current project;

however, all three resources have since been demolished (USACE, 2015m). Since 1975, the St. Clair County APE has been surveyed several times for archaeological resources, including in 1989, 1993, 1994, 1995, and 2012. No archaeological sites have been identified that are associated with the previously demolished architectural resources. Thus, there is no evidence that the three demolished resources are associated with any related archaeological deposits of potential significance.

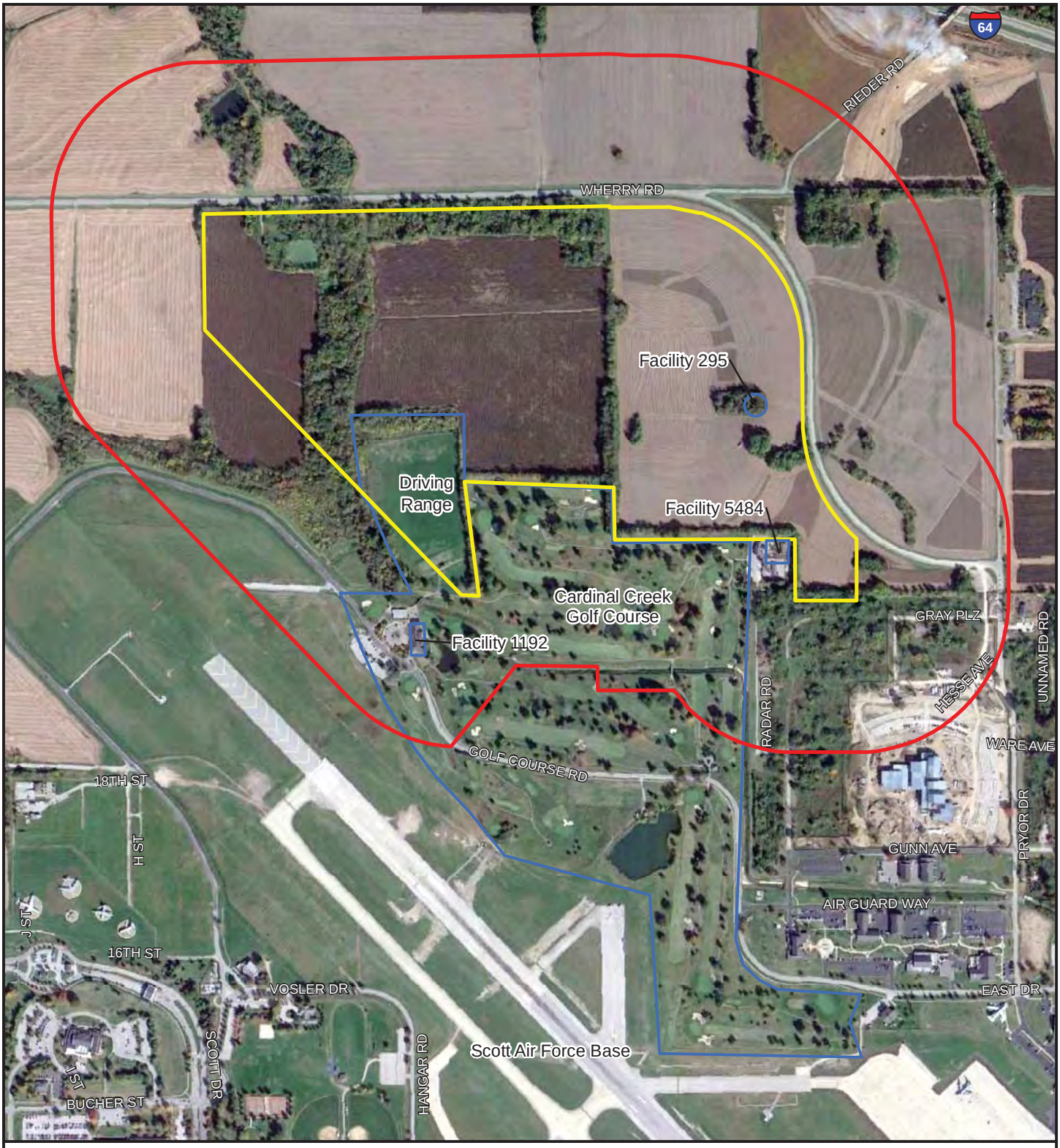
A pedestrian survey for the Proposed Action was conducted on November 17, 2014, in the APE for the St. Clair County Site. Two architectural resources were identified: Facility 295, an Integrated Logistics Support Marker Beacon Facility constructed circa 1952, and Cardinal Creek Golf Course, which was constructed between 1952 and 1965. Both properties were evaluated for NRHP eligibility as part of the proposed project. Cardinal Creek Golf Course, located at 1192 Golf Course Road, is located on Scott AFB property and is partially within the APE; however, only the driving range is located within the St. Clair County Site boundary. Facility 295 and Cardinal Creek Golf Course are not eligible for listing in the NRHP (see Table 3.8-4). SHPO concurred with this finding on August 20, 2015. In addition, the golf course is not considered a contributing resource to the NRHP-listed Scott Field/Scott AFB Historic District, which is entirely outside of the APE (USACE, 2015m).

TABLE 3.8-4
**Architectural Resources within the Project APE for the St. Clair County Site**

| Name (Date) | Address | Description | NRHP Status |
|---|---|---|---|
| Facility 5484 (1964)<br>Area Search Radar building | Just south of project boundary, between Wherry Road and Sherry Grove School Road | Equipment storage building with concrete block walls | Determined NRHP ineligible in 2011 |
| Facility 1192 (1952)<br>Scott AFB Cardinal Creek Golf Course Clubhouse | Just south of project boundary, within Cardinal Creek Golf Course | One-story, metal frame building | Determined NRHP ineligible in 2011 |
| Cardinal Creek Golf Course (1952-1965) | Just south of project boundary within the northern section of Scott AFB property | 18-hole golf course | NRHP ineligible |
| Facility 295 (circa 1952)<br>Integrated Logistics Support Marker Beacon Facility | East section of the project boundary, west of Wherry Road | Small, wood-frame shed | NRHP ineligible |

#### 3.8.4.3 Archaeological Resources

The literature search indicated that there are 10 previously identified archaeological sites located within the project APE for the St. Clair County Site (Figure 3.8-8). One of the 10 sites, site 11S825, is considered eligible for listing in the NRHP; the remaining nine sites are not eligible for listing in the NRHP, pending SHPO concurrence. Site 11S825, also referred to as the Hancock Site, is a prehistoric lithic scatter that also includes evidence from late-18th to early-20th century occupations. Limited archaeological testing of the site occurred in 2012 as part of a Phase II investigation that was unrelated to the current proposed project (Scheid et al., 2012). As a result of the testing, historic period artifacts associated with the Pioneer (circa 1781–1840), Frontier (circa 1841–1870), and Early Industrial (circa 1871–1900) periods in addition to a prehistoric component were identified. These results showed that the site had potential to yield significant information about mid-19th century settlement and landscape utilization in St. Clair County. A report by Scheid et al. produced in 2012 recommended site 11S825 as eligible for the NRHP under Criterion D (Scheid et al., 2012). No further archaeological work for survey, identification, or evaluation is necessary for the St. Clair County Site (USACE, 2015m).




Proposed Site

Area of Potential Effects (APE) for Architectural Resources

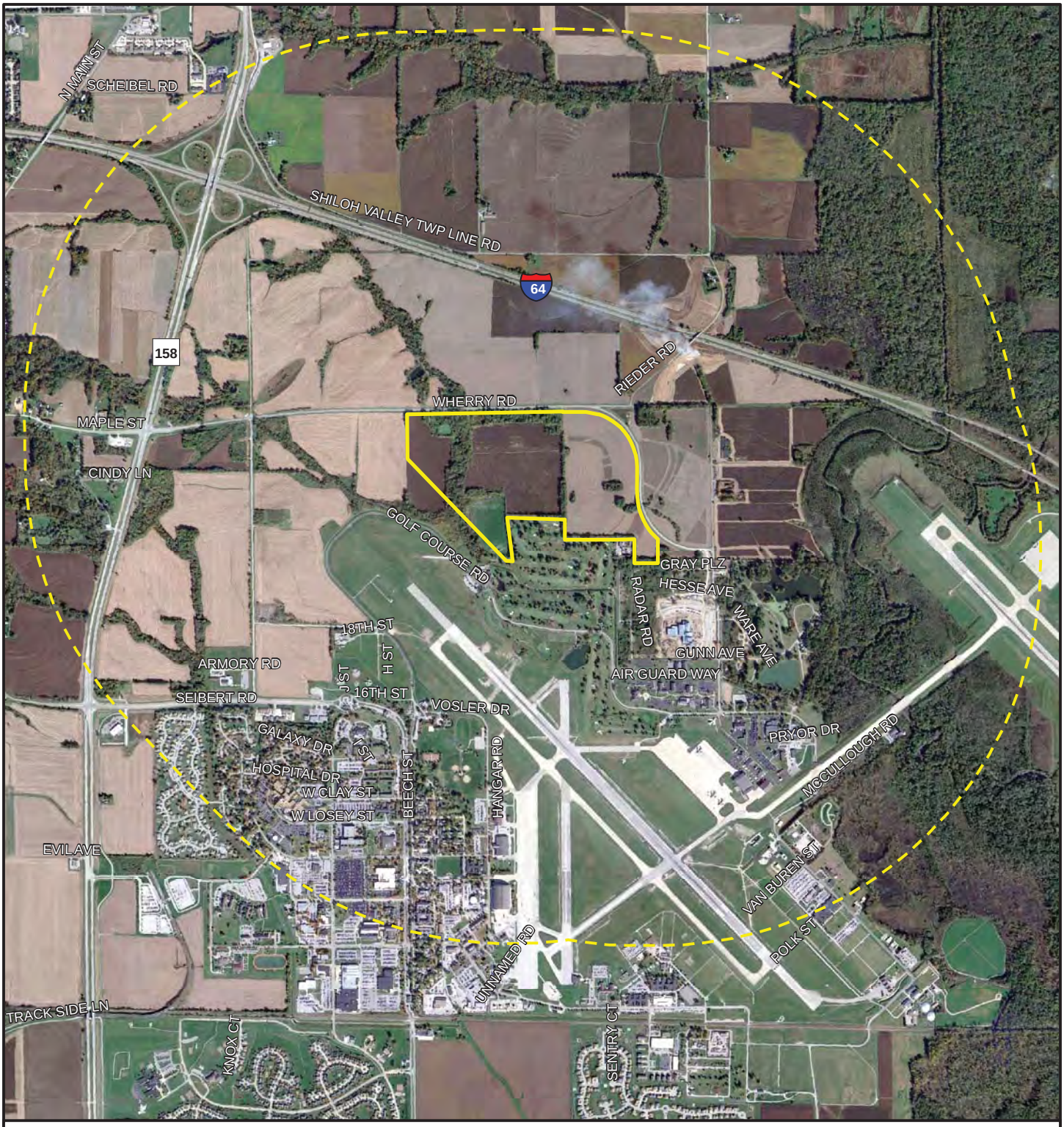
NRHP-Ineligible Property

Figure 3.8-7
Architectural Resources within the Area of Potential Effects
St. Clair County Site
NGA EIS

N

0 0.25 0.5 Miles

Image Source: Google Earth Pro, Modified by CH2MHill, Flown 10/21/2014




Archaeological Area of Potential Effects (APE)

Study Area for Archaeological Resources (2 km)

Figure 3.8-8
Study Area and Area of Potential Effects
for Archaeological Resources
St. Clair County Site
NGA EIS

N

0 0.25 0.5 0.75 1 Miles

Image Source: Google Earth Pro, Modified by CH2MHill, Flown 10/21/2014

# 3.9 Visual Resources/Aesthetics

The visual resource environment is composed of natural and built features that can be seen by the public and contribute to the public's appreciation and enjoyment of these features. These features can include solitary built and natural landmarks (such as buildings, trees, and bodies of water) or entire landscapes. Impacts to visual resources are defined in terms of the extent to which a proposed project's presence would change the aesthetic (or landscape) character and quality of the environment as seen by the public.

Visual character is defined by the relationships between the existing visible natural and built landscape features. These relationships are considered in terms of how objects in the viewed landscape relate to each other in terms of visual dominance, scale, diversity, and continuity. Elements that influence landscape character can include landforms, water bodies, vegetation, land use, open spaces, transportation facilities, utilities, buildings, and apparent upkeep and maintenance. Landscape character is non-evaluative, in that it is simply a description of the viewed environment and does not assign value or degree of attractiveness to a viewed environment.

Visual quality is an assessment of the composition of the character-defining features for selected views. For this assessment, visual quality is considered to be either high, average, or low. To determine the level of visual quality this assessment asks: Is this particular view common (average) or dramatic (high)? Is it a pleasing composition (with a mix of elements that seem to belong together) (high) or not (with a mix of elements that either do not belong together or are eyesores and contrast with the other elements in the surroundings) (low)?

The impact associated with changes to landscape character and visual quality as the result of implementing a proposed project depends upon the viewing sensitivity of people (viewers) who would see the changes. Viewers include types such as residents, business customers, workers, recreationists, pedestrians, and motorists. Different viewer types have different sensitivity, or levels of concern, regarding changes to a viewed landscape. For example, residents are considered viewers with high levels of sensitivity because they are familiar with a viewed landscape, view it frequently or for long periods, and would notice (and possibly be concerned with) changes. Business customers are considered viewers with moderate levels of sensitivity because they may have some degree of concern with the landscape they view while shopping or eating, but are generally engaged in other activities and, therefore, would not be particularly concerned about changes to a landscape. Commuters are considered viewers with low levels of sensitivity because they would either not notice changes to a landscape or not be concerned with changes.

The ROI consists of areas near the four alternative sites from which the public would potentially see changes to the sites if the proposed project was built. The following sections describe the physical attributes of the four alternative sites that influence the landscape character and visual quality of views of the sites.

### 3.9.1 Fenton Site

Most of the Fenton Site has the appearance of a large-scale former industrial facility (former Chrysler automobile assembly plant) that has been razed (see Figures 3.9-1 through 3.9-7). The site is generally void of structures or vegetation, with approximately 95 percent being covered in concrete or asphalt. Most of the remaining vegetation is located near the southern perimeter. The visual quality of the site is low, based on the rationale provided above.

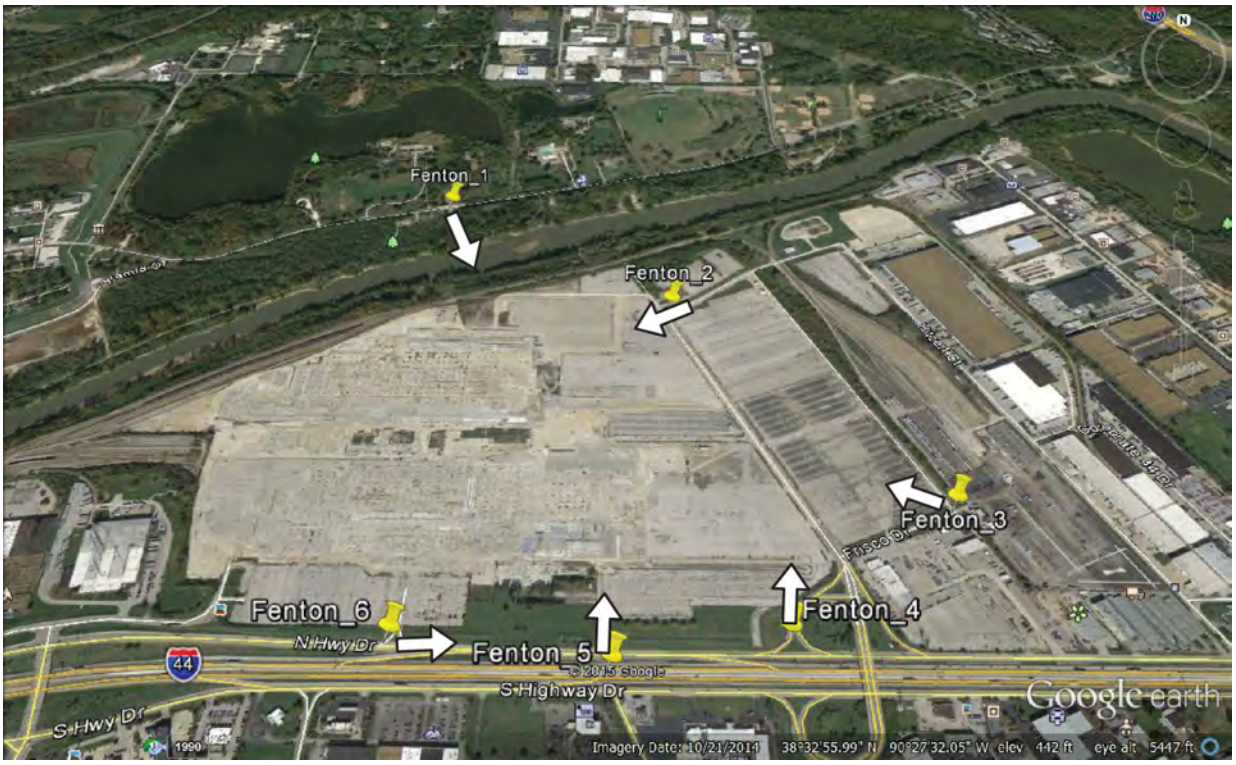



FIGURE 3.9-1
**Fenton Site Overview Map**

FIGURE 3.9-2
**Fenton Site, Location 1: Looking south toward site (and Meramec River) from one of the few places along Marshall Road where there is a break in vegetation. Site is located behind vegetation seen above the terminus of the creek and Meramec River, which follows the south bank of the river.**

FIGURE 3.9-3
**Fenton Site, Location 2: Looking southwest within the site from intersection of Mraz Lane and Hitzert Court.**

FIGURE 3.9-4
**Fenton Site, Location 3: Looking northwest at southeast edge of Site from east end of Frisco Drive.**

FIGURE 3.9-5
**Fenton Site, Location 4: Looking north at the site from I-44 off-ramp.**

FIGURE 3.9-6
**Fenton Site, Location 5: Looking north from South Highway Drive at I-44, the site, and an entrance to the former Chrysler automobile assembly plant (note remaining trees and landscaping).**

FIGURE 3.9-7
**Fenton Site, Location 6: Looking east from North Highway Drive at the site (note remaining trees and landscaping).**

### 3.9.2 Mehlville Site

The Mehlville Site is currently a business campus, and much of the landscaping around the perimeter and within portions of the site seen from the outside has a campus-like landscape character (see Figures 3.9-8 through 3.9-13); therefore, the visual quality can be described as high.

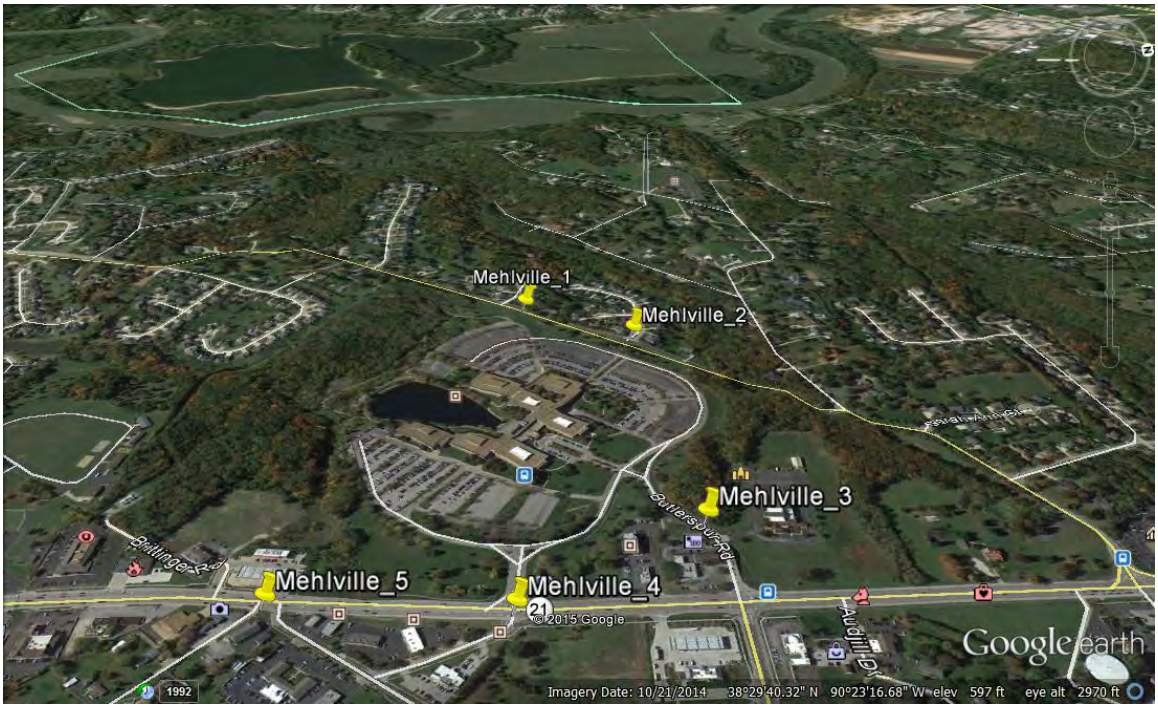



FIGURE 3.9-8
**Mehlville Site Overview Map**

FIGURE 3.9-9
**Mehlville Site, Location 1: Looking along northeast edge of the site (and edge of parking areas at top of slope) from northeast-bound Keller Road.**

FIGURE 3.9-10
**Mehlville Site, Location 2: Looking along northeast edge of the site (and adjacent residential area) from southwest-bound Keller Road.**

FIGURE 3.9-11
**Mehlville Site, Location 3: Looking southwest toward the site (buildings "above" end of road are existing buildings in the site) from southwest-bound Butlerspur Road.**

FIGURE 3.9-12
**Mehlville Site, Location 4: Looking toward east edge of the site and entrance from westbound Old Tesson Ferry Road and intersection with Tesson Ferry Road.**

FIGURE 3.9-13
**Mehlville Site, Location 5: Looking toward east edge of the site from northbound Tesson Ferry Road.**

### 3.9.3 St. Louis City Site (Preferred Alternative)

The St. Louis City Site is composed of multiple blocks formed by grid street patterns that are part of the St. Louis Place and Carr Square neighborhoods (see Figures 3.9-14 through 3.9-22). The proposed location for the Next NGA West Campus has numerous abandoned structures and open lots, often with remnants of foundations and slabs of concreate, resulting in a visual quality that is described as low.

FIGURE 3.9-14
**St. Louis City Site Overview Map**

FIGURE 3.9-15
**St. Louis City Site, Location 1: Looking south from intersection of North 25th Street and Montgomery Street at northern edge of the site.**

FIGURE 3.9-16
**St. Louis City Site, Location 2: Looking southwest from intersection of North 22nd Street and Montgomery Street at northeastern corner of the site.**

FIGURE 3.9-17
**St. Louis City Site, Location 3: Looking west from intersection of North 22nd Street and Benton Street at eastern edge of the site.**

FIGURE 3.9-18
**St. Louis City Site, Location 4: Looking north from intersection of North 22nd Street and Mullanphy Street along eastern edge of the site.**

FIGURE 3.9-19
**St. Louis City Site, Location 5: Looking west from Cass Street toward North 23rd Street and Site.**

FIGURE 3.9-20
**St. Louis City Site, Location 6: Looking east from intersection of Parnell Street and Benton Street at western edge of the site.**

FIGURE 3.9-21
**St. Louis City Site, Location 7: Example of interior of Site at North 25th Street north of Benton Street, looking south along North 25th Street.**

FIGURE 3.9-22
**St. Louis City Site, Location 7: Same location as Figure 3.9-21 but looking east.**

## 3.9.4 St. Clair County Site

This site is located north of Scott AFB's Cardinal Creek Golf Course. The site is in an area currently used for agricultural production and, except for the golf course to the south, surrounded by agricultural lands. The character of the site is rural and agricultural, and visual quality is high (see Figures 3.9-23 through 3.9-25).

FIGURE 3.9-23
**St. Clair County Site Overview Map**

FIGURE 3.9-24
**St. Clair County Site, Location 1: Looking southeast toward the site from eastbound Wherry Road.**

FIGURE 3.9-25
**St. Clair County Site, Location 2: Looking southwest at the site from westbound Wherry Road near intersection with Rieder Road.**

# 3.10 Water Resources

This subsection discusses water resources, which include existing wetlands, surface water, floodplains, and groundwater, at each alternative site. Water resources are protected under a number of laws, including the following:

- The Clean Water Act (CWA) is the primary federal law governing surface water protection. Its goal is to protect the chemical, physical, and biological integrity of the nation's waters. Section 404 of the CWA establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. USEPA and USACE have promulgated a number of regulations to implement the permitting program.
- E.O. 11988, Floodplain Management (as amended by E.O. 13690 Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input) requires federal agencies to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by floodplains. E.O. 11988 also directs federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.
- E.O. 11990, *Protection of Wetlands* requires federal agencies to minimize the destruction, loss, or degradation of wetlands.
- The Safe Drinking Water Act is the main federal law ensuring the quality of Americans' drinking water; under the Act, USEPA sets standards for drinking water quality.

The ROI for the water resources analysis is generally the area within the site boundaries. However, hydrological connections to offsite wetlands and surface waters are identified and the regional watershed and groundwater basin are broadly discussed to provide context. Onsite wetlands and surface waterbodies are described in terms of their type, specific location, size, hydrological connectivity, and expected federal jurisdictional status under Section 404 of the CWA. The potential presence of wetlands and surface waterbodies on the alternative sites was evaluated via review of the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping (USFWS, 2014a), USGS National Hydrography Dataset (NHD) mapping (USGS, 2014), and site visits conducted by a government contractor (see Appendix 3.11A; USACE, 2014a, 2014b, 2014c, 2014d) and USACE.

## 3.10.1 Fenton Site

### 3.10.1.1 Wetlands

No wetlands are present on the Fenton Site, based on USFWS NWI and USGS NGD mapping and site visits. On January 12, 2016, the USACE St. Louis District Regulatory Branch confirmed that there are no wetlands on the Fenton Site (Regulatory Branch File Number: MVS-2015-705, Appendix 3.10-A).

### 3.10.1.2 Surface Water

The Fenton Site is located in the Meramec River Watershed and the Meramec River is located directly north of the site. The river and its tributaries drain 2,149 square miles. The Meramec River flows from the lightly populated, rural upper watershed to the heavily populated, urbanized lower watershed below St. Louis. Pollution sources in the Meramec River Watershed include runoff from agricultural land in the upper and middle basin, and runoff from mining and urban areas in the lower basin (Missouri Department of Conservation [MDC], 2015a).

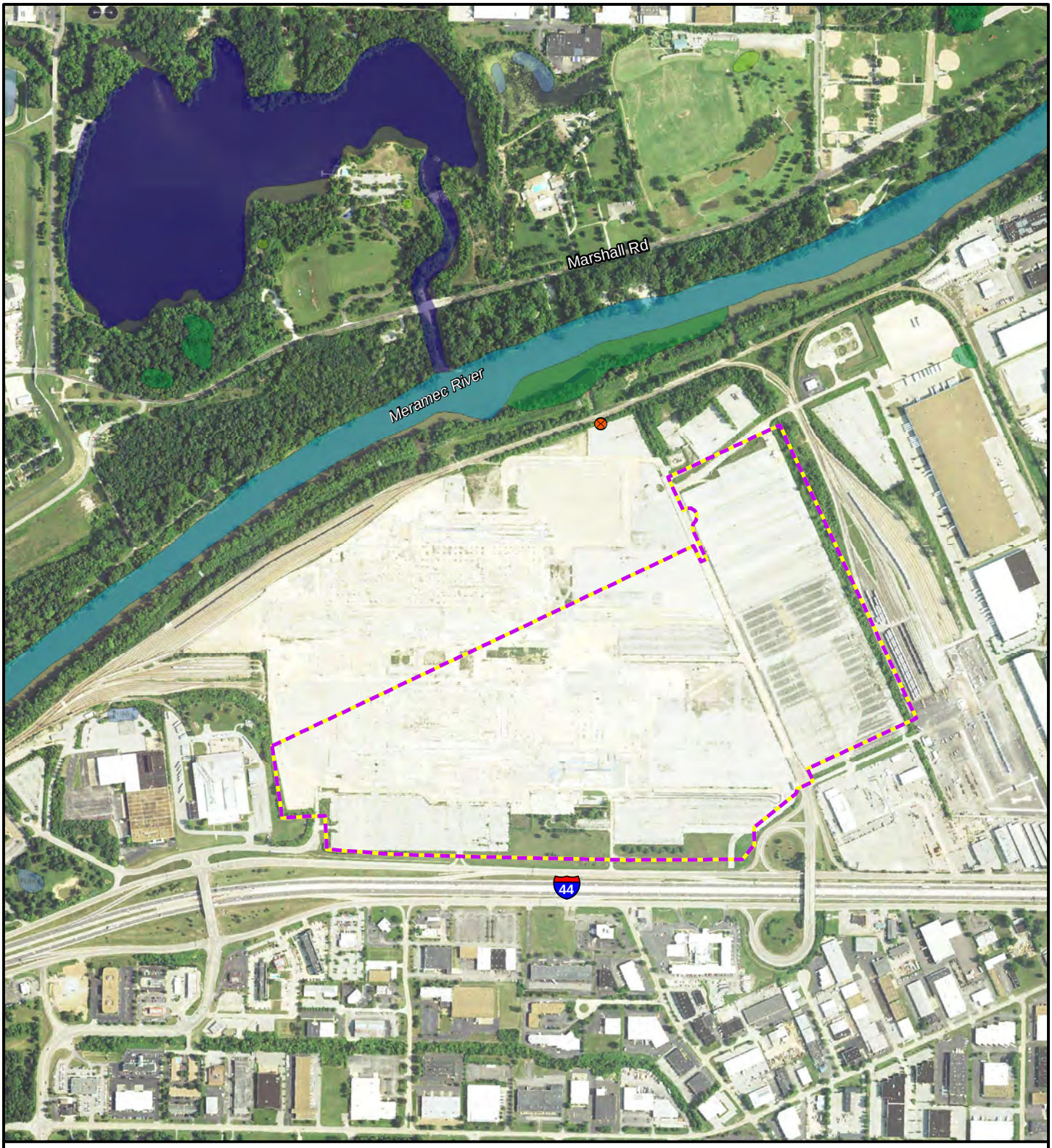
No surface waterbodies are present on the Fenton Site (see Figure 3.10-1), based on USFWS NWI and USGS NGD mapping and site visits. On January 12, 2016, the USACE St. Louis District Regulatory Branch confirmed that there are no surface waters on the Fenton Site (Regulatory Branch File Number: MVS-2015-705, Appendix 3.10-A).

### 3.10.1.3 Floodplains

The Fenton Site is located outside the 100-year floodplain but approximately 12.8 acres of the site along the northern and eastern boundaries are within the 500-year floodplain (Figure 3.10-2), based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs).

### 3.10.1.4 Groundwater

The Fenton Site is in an unnamed groundwater sub-province that is part of the Salem Plateau Groundwater Province (Missouri Department of Natural Resources [MoDNR], 2015b). The Salem Plateau Groundwater Province accounts for nearly 47 percent of Missouri's potable groundwater (MoDNR, 2015b). Groundwater quality in this province is generally very good; the groundwater is a moderately mineralized, calcium-magnesium-bicarbonate type. The topography of the Fenton Site suggests that shallow groundwater at the site predominantly flows northeastward. No public water supply wells are located on or in the immediate vicinity of the Fenton Site, based on water well maps prepared by MoDNR.




Proposed Site

Construction Limits

**Site Visit Features**

Stormwater Detention Basin

**NWI Features**

Freshwater Forested/Shrub Wetland

Lake

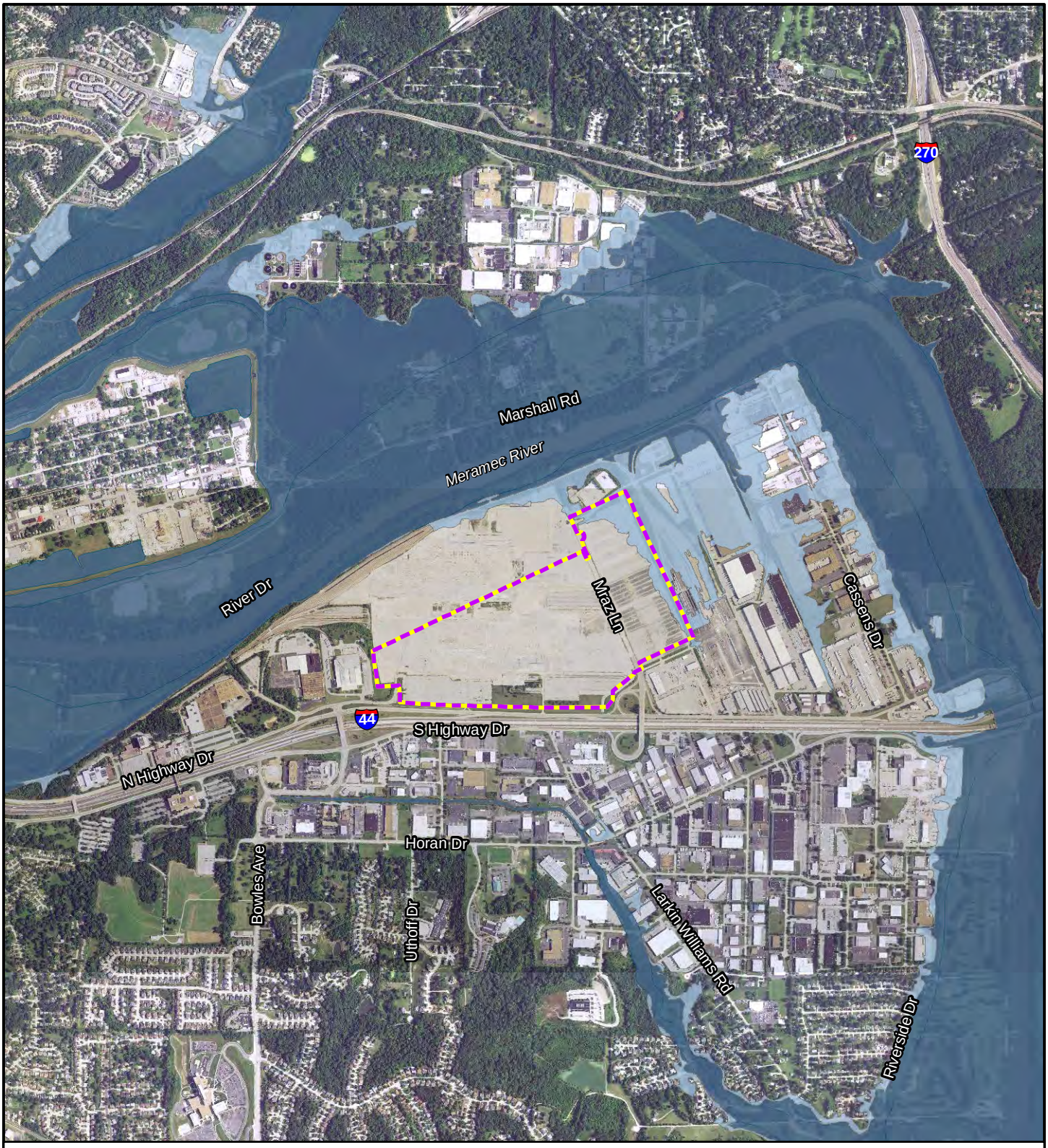
Riverine

NWI-National Wetlands Inventory
NWI Source: U.S. Fish and Wildlife Service (USFWS)
Image Source: National Agriculture Imagery Progarm (NAIP) 2014

N

0 0.25 0.5 Miles

Figure 3.10-1
Fenton Site Wetlands and Surface Waters
NGA EIS




Proposed Site

Construction Limits

100-Year (1%-annual-chance) Floodplain

500-Year (0.2%-annual-chance) Floodplain

Figure 3.10-2
Fenton Site Floodplains
NGA EIS

N

0 0.25 0.5 Miles

Image Source: National Agriculture Imagery Program (NAIP) 2014
100-Year Floodplain Source: Federal Emergency Management Agency (FEMA)

## 3.10.2 Mehlville Site

### 3.10.2.1 Wetlands

A small scour area with wetland plants (less than 0.1 acre) was identified in the south-central portion of the Mehlville Site below an onsite retention pond (Figure 3.10-3). This scour area is located at the outflow of the pond and is hydrologically connected to the onsite streams to its south. This scour area was confirmed as a jurisdictional wetland subject to Section 404 of the CWA by the USACE St. Louis District Regulatory Branch on January 12, 2016 (Regulatory Branch File Number: MVS-2015-705, Appendix 3.10-A).

### 3.10.2.2 Surface Water

The Mehlville Site is located in the Meramec River Watershed, which is detailed in Section 3.10.1.2 of the Fenton Site discussion. Several surface waterbodies were identified on the site, including a stormwater retention pond, two intermittent streams, and one ephemeral stream. These surface waterbodies are shown on Figure 3.10-3, and their onsite quantities and approximate total sizes are presented in Table 3.10-1.

TABLE 3.10-1
**Quantities and Approximate Sizes of Surface Waterbodies on the Mehlville Site**

| | | Approximate Total Size | |
|---|---|---|---|
| **Surface Waterbody** | **Quantity** | **Acres** | **Linear Feet** |
| Stormwater Retention Pond | 1 | 3.5 | -- |
| Intermittent Stream | 2 | -- | 2,658 |
| Ephemeral Stream | 1 | -- | 373 |

The stormwater retention pond is approximately 3.5 acres in size and receives stormwater drainage from the adjacent onsite developed area. During certain rain events, this pond drains into the downstream intermittent stream via the pond's outflow pipe. This stormwater pond is also identified on NWI and NHD mapping. Two intermittent streams are located in the southern part of the site and the third stream is located in the northern portion of the site. Segments of these streams are identified on NHD mapping. The intermittent stream in the northern part of the site flows westward, while the intermittent stream in the southern portion of the site flows southward. The streams ultimately drain into the Meramec River. The combined length of the three onsite intermittent streams is approximately 2,658 feet, and the stream widths range from approximately 3 to 9 feet. The stream length within the construction boundary is 2,035 feet. The onsite ephemeral stream is approximately 373 feet long and 3 feet wide, and it is a tributary of one of the intermittent streams in the southern portion of the site. The ephemeral stream is not located in the construction boundary. In addition, two culverts were identified in the southern part of the site (see Figure 3.10-3). The northernmost culvert is expected to convey drainage from the onsite stormwater retention pond and from the wetlands associated with the intermittent streams in the southern portion of the site. The southernmost culvert conveys stream flow southward beyond the site boundary.

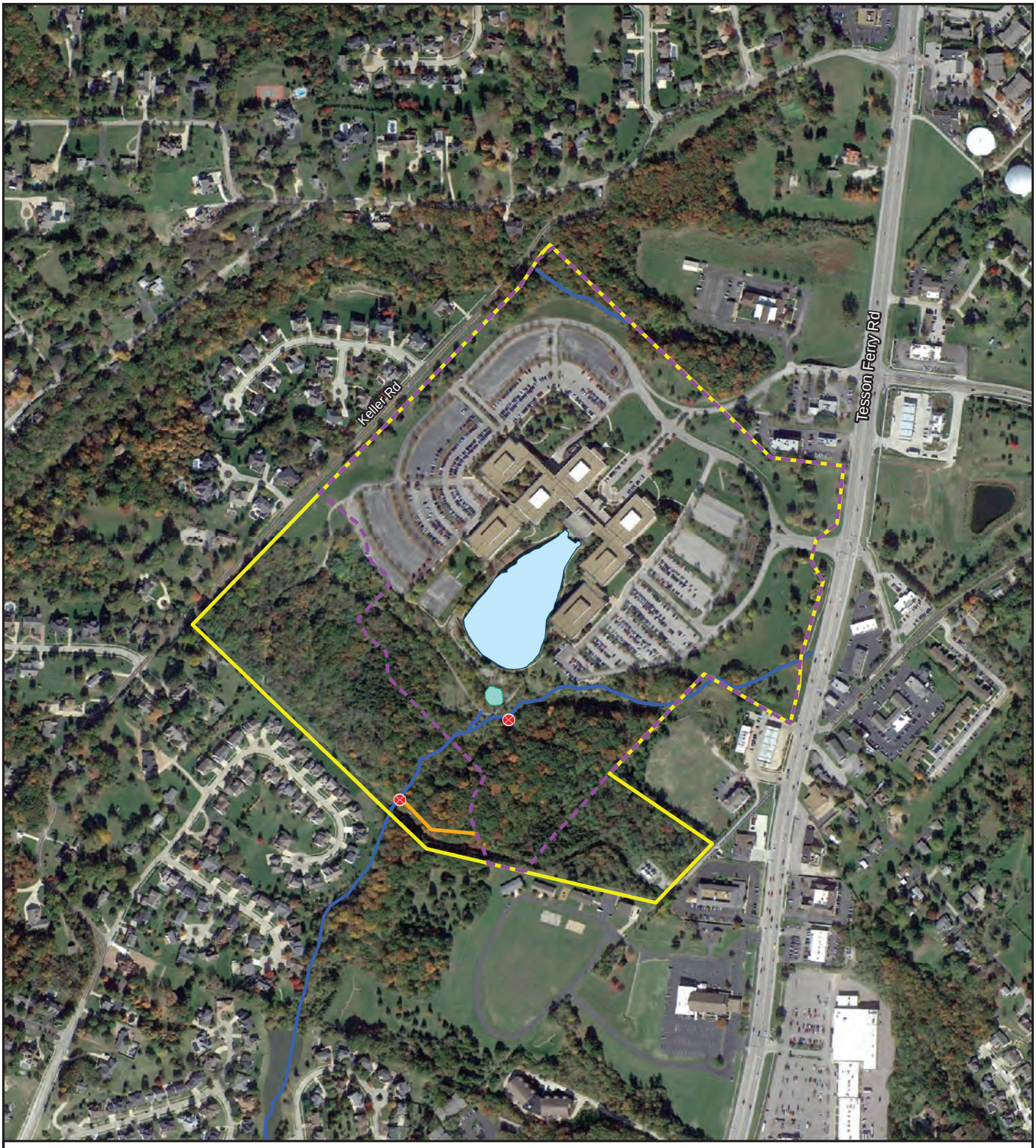
The onsite stormwater retention pond, the intermittent streams, and the ephemeral stream were confirmed to be jurisdictional waters subject to Section 404 of the CWA by the USACE St. Louis District Regulatory Branch on January 12, 2016 (Regulatory Branch File Number: MVS-2015-705, Appendix 3.10-A).

#### 3.10.2.3 Floodplains

No 100-year or 500-year floodplain areas are located on or adjacent to the Mehlville Site, based on the FEMA FIRM.

#### 3.10.2.4 Groundwater

The Mehlville Site is located in an unnamed groundwater sub-province that is part of the Salem Plateau Groundwater Province (MoDNR, 2015b). Approximately 46.6 percent of Missouri's potable groundwater is obtained from the Salem Plateau Groundwater Province (MoDNR, 2015b). Groundwater quality in this province is generally very good; the groundwater is a moderately mineralized, calcium-magnesium-bicarbonate type. The topography of the Mehlville Site suggests that shallow groundwater at the site predominantly flows southward. No public water supply wells are present on or in the immediate vicinity of the Mehlville Site, based on water well maps prepared by MoDNR.




Proposed Site
Construction Limits
Intermittent Stream
Ephemeral Stream
Stormwater Pond
Wetland
Culvert

Data Source: NHD- National Hydrography Dataset
NHD Source: U.S. Geological Survey (USGS)
Image Source: Google Earth Pro, Modified by CH2MHill,
Image Flown 10/21/2014

N

0 0.1 0.2 0.3 Miles

Figure 3.10-3
Mehlville Site Wetlands and Surface Waters
NGA EIS

## 3.10.3 St. Louis City Site (Preferred Alternative)

### 3.10.3.1 Wetlands

No wetlands are located on or adjacent to the St. Louis City Site, based on USFWS NWI and USGS NGD mapping and site visits. On January 12, 2016, the USACE St. Louis District Regulatory Branch confirmed that there are no wetlands on the St. Louis City Site (Regulatory Branch File Number: MVS-2015-705, Appendix 3.10-A).

### 3.10.3.2 Surface Water

The St. Louis City Site is located in the Cahokia-Joachim Watershed. This watershed covers portions of 10 counties, including five in Missouri and five in Illinois, and contains approximately 536 miles of rivers, streams, and creeks. Overall, water quality within the Cahokia-Joachim Watershed is relatively poor due to extensive runoff from urban and agricultural areas (Scorecard, 2015a).

No surface waterbodies are present on or adjacent to the St. Louis City Site, based on USFWS NWI and USGS NGD mapping and site visits. On January 12, 2016, the USACE St. Louis District Regulatory Branch confirmed that there are no surface waters on the St. Louis City Site (Regulatory Branch File Number: MVS-2015-705, Appendix 3.10-A).

### 3.10.3.3 Floodplains

No 100-year or 500-year floodplain areas are located on or adjacent to the St. Louis City Site, based on the FEMA FIRM.

### 3.10.3.4 Groundwater

The St. Louis City Site is located in an unnamed groundwater sub-province that is part of the Salem Plateau Groundwater Province (MoDNR, 2015b). As noted in Section 3.10.1.4 of the Fenton Site discussion, this province accounts for approximately 46.6 percent of Missouri's potable groundwater (MoDNR, 2015b). Groundwater quality in Salem Plateau Groundwater Province is generally very good; the groundwater is a moderately mineralized, calcium-magnesium-bicarbonate type. The topography of the St. Louis City Site suggests that shallow groundwater at the site predominantly flows eastward. No public water supply wells are located on or in the immediate vicinity the St. Louis City Site, based on water well maps prepared by MoDNR.

## 3.10.4 St. Clair County Site

### 3.10.4.1 Wetlands

A forested wetland approximately 2.1 acres in size was identified in the southwestern part of the site (Figure 3.10-4). This wetland is hydrologically connected to the onsite perennial stream and was confirmed to be a jurisdictional wetland subject to Section 404 of the CWA by the USACE St. Louis District Regulatory Branch on January 12, 2016 (Regulatory Branch File Number: MVS-2015-705, Appendix 3.10-A).

### 3.10.4.2 Surface Water

The St. Clair County Site is located in the Lower Kaskaskia Watershed, which is the southern portion of the approximately 5,746-square-mile Kaskaskia Watershed. The Kaskaskia River originates in east-central Illinois, flows southwest across southern Illinois, and ultimately drains into the Mississippi River. Overall water quality within the Lower Kaskaskia Watershed is low to moderate, primarily due to extensive runoff from agricultural areas (Scorecard, 2015b).

During the site visits conducted for this EIS, several surface waterbodies were identified on the St. Clair County Site, including a pond, perennial stream, and intermittent stream. These surface waterbodies are shown on Figure 3.10-4 and their onsite quantities and approximate total sizes are presented in Table 3.10-2.

TABLE 3.10-2
**Quantities and Approximate Sizes of Surface Waterbodies on the St. Clair County Site**

| | | Approximate Total Size | |
|---|---|---|---|
| **Surface Waterbody** | **Quantity** | **Acres** | **Linear Feet** |
| Pond | 1 | 0.9 | -- |
| Perennial Stream | 1 | -- | 2,092 |
| Intermittent Stream | 1 | -- | 250 |

The onsite pond is approximately 0.9 acre in size and is also identified on NWI and NHD mapping; the pond appears to be hydrologically isolated. The onsite perennial stream exists in the western part of the site and is also identified on NHD mapping. This stream originates north of the site, flows southward through the site, and then flows southeastward, ultimately draining into Silver Creek. Within the site boundary, the total length of the stream is estimated at approximately 2,092 feet and the stream width ranges from approximately 15 to 30 feet. The stream length within the construction boundary is 194 feet. The intermittent stream, which is approximately 250 feet in length, is a tributary to the perennial stream and is not located in the construction boundary.

The onsite perennial and intermittent streams were confirmed to be jurisdictional waters subject to Section 404 of the CWA by the USACE St. Louis District Regulatory Branch on January 12, 2016 (Regulatory Branch File Number: MVS-2015-705). The onsite pond was determined to be isolated and lacks a connection to regulated waters; therefore, the pond was found not to be subject to Section 404 of the CWA by the USACE St. Louis District Regulatory Branch on January 12, 2016 (Regulatory Branch File Number: MVS-2015-705, Appendix 3.10-A).

### 3.10.4.3 Floodplains

No 100-year or 500-year floodplain areas are located on or adjacent to the St. Clair County Site, based on the FEMA FIRM.

### 3.10.4.4 Groundwater

Three principal aquifer types are present in Illinois, including sand-and-gravel aquifers, shallow bedrock aquifers, and deep bedrock aquifers. None of these principal aquifer types underlies the St. Clair County Site;

however, based on aquifer location maps prepared by the Illinois State Water Survey (ISWS), a principal sand-and-gravel aquifer is located approximately 2 to 3 miles east of the site. Principal sand-and-gravel aquifers underlie about 25 percent of the total land area in Illinois and produce most of the groundwater used in the state (ISWS, 2015). Most of the total potential yield of sand-and-gravel aquifers in Illinois is located in alluvial deposits that lie directly adjacent to major rivers. Sand-and-gravel aquifers generally have good groundwater quality; the hardness of the water is relatively high due to high calcium carbonate levels. The topography of the St. Clair County Site suggests that shallow groundwater at the site predominantly flows southward. No public water supply wells are located on or near the St. Clair County Site, based on water well maps prepared by ISWS.

Proposed Site
Construction Limits
Perennial Stream
Intermittent Stream
Pond
Wetland

Figure 3.10-4
St. Clair County Site
Wetlands and Surface Waters
NGA EIS

NHD- National Hydrography Dataset
NHD Source: U.S. Geological Survey (USGS)
Image Source: Google Earth Pro, Modified by CH2MHill, Image Flown 10/21/2014

N

0 0.25 0.5 Miles

# 3.11 Biological Resources

This subsection describes the biological resources, including vegetation, wildlife, and protected species, found at the Next NGA West Campus proposed sites. The ROI for the biological resources analysis encompasses the areas within and immediately adjacent to the site boundaries, although a broader view was taken as necessary; for example, regional populations were considered for impacts to species stability.

Biological resources are protected under a number of laws, including the following:

- The Federal Noxious Weed Act (FNWA), as amended, provides for the control and management of non-indigenous weeds that may injure the interests of agriculture and commerce, wildlife resources, or the public health. The FNWA has been replaced by the Plant Protection Act, except for Section 2814. This section requires that each federal agency develop a management program to control undesirable plants on federal lands under the agency's jurisdiction, establish and adequately fund the program, and establish integrated management systems to control undesirable plants.
- The Endangered Species Act (ESA) requires federal agencies to ensure their actions do not jeopardize the continued existence of any federally listed endangered or threatened species or adversely modify any critical habitat of such species. Federal agencies must consult with the USFWS under Section 7 of the ESA regarding any action that may affect a listed species.
- The Migratory Bird Treaty Act (MBTA) stablished federal responsibilities to protect migratory birds Under the MBTA, nearly all species of birds occurring in the United States are protected. The MBTA makes it illegal to take (to hunt, pursue, wound, kill, possess, or transport by any means) listed bird species or their eggs, feathers, or nests unless otherwise authorized.

In November and December 2014, biologists contracted by USACE conducted a survey to assess the ecological communities of each site. In April 2015, USACE biologists followed up with their own surveys at the Mehlville and St. Clair County sites. The following subsections summarize the findings of these surveys along with additional literature research. For a detailed report of the contracted surveys, see Appendix 3.11A.

## 3.11.1 Fenton Site

The Fenton Site consists of approximately 167 acres of former industrial land. Biological resources on the site reflect its highly disturbed nature.

### 3.11.1.1 Vegetation

The surface of the Fenton Site is dominated by concrete slabs that remain following removal of the former Chrysler automobile assembly plant. Approximately 159 acres consist of impervious surfaces, and the remaining 8 acres consists of improved/maintained grass with some scattered large trees that extend along the former facility entrance (see Appendix 3.11A; USACE, 2014a).

A biological reconnaissance survey of the Fenton Site was conducted on November 19, 2014. Tree species present at the vegetated area included red maple (*Acer rubrum*), northern red oak (*Quercus rubra*), and eastern red cedar (*Juniperus virginiana*). Amur honeysuckle (*Lonicera maackii*) was identified along portions of the fence lines of the northern and eastern boundaries of the site. Additionally, an approximately 3-foot by 15-foot patch of cattail (*Typha latifolia*) was observed growing in a drainage depression along a road in the northeastern portion of the site. No other vegetation was observed within the site boundary (see Appendix 3.11A; USACE, 2014a).

Vegetation on properties surrounding the Fenton Site consist primarily of maintained landscaping associated with residential and commercial uses. An area of vegetation approximately 0.25 acre in size and consisting primarily of small amur honeysuckle was identified near the northern boundary. A vegetated corridor consisting of trees, shrubs, and mowed utility ROW is located outside of the proposed construction limits along Meramec River. The width of this corridor varies from approximately 250 to 400 feet along the south side of the river adjacent to the site to approximately 250 to 1,000 feet along the north side of the river.

Noxious Weeds

Non-native and invasive species occur on the Fenton Site. These include species within maintained parts of the site as well as along property boundaries and fence lines. The primary non-native invasive plant present is the amur honeysuckle (see Appendix 3.11A; USACE, 2014a). Other non-native or invasive plants occur in lesser numbers.

#### 3.11.1.2 Wildlife

No wildlife was observed on the site during a biological survey on November 19, 2014 (see Appendix 3.11A; USACE, 2014a). Due to the disturbed nature of the site, wildlife that could occur onsite would be expected to be common species associated with the region. These could include small mammals and various bird species. Other common species such as white-tailed deer (*Odocoileus virginianus*) and coyote, (*Canis latrans*) could occur as transients from the riparian corridor along the Meramec River adjacent to the site (USDA, 1994).

#### 3.11.1.3 Protected Species

Federally Listed Species

A review of the USFWS database (USFWS, 2014b) identified 12 federally listed threatened, endangered, and candidate species known to occur in St. Louis County, Missouri. However, no suitable habitat for any of these species exists at the Fenton Site. See Appendix 3.11B for a detailed list of these species and explanation of habitat suitability. The USFWS did not request additional surveying at this site for ESA-listed species.

State-Listed Species

A review of the MDC Natural Heritage Program (MDC, 2015b) identified eight state-listed threatened or endangered species that are not also federally listed, which are known to occur in St. Louis County, Missouri.

However, no suitable habitat for any of these species exists at the Fenton Site. See Appendix 3.11C for a detailed list of these species and explanation of habitat suitability.

Designated Critical Habitat

A review of the USFWS critical habitat mapping in Missouri determined no critical habitat has been designated on the Fenton Site or within St. Louis County (USFWS, 2014c).

Migratory Birds

No bird species were observed on the site during a biological survey on November 19, 2014, and little habitat is available for birds (see Appendix 3.11A; USACE, 2014a). However, the November survey period is outside the typical spring and fall bird migrations in Missouri. Migratory species could use the limited habitat present onsite and could occur in the riparian corridor along the Meramec River north of the site.

## 3.11.2 Mehlville Site

The Mehlville Site is a slightly graded, approximately 101-acre site with an existing office building complex. Approximately 30 acres of the property are a mature hardwood forested area with a dense understory. In the forested area to the south, a small scoured wetland was observed below the overflow dam from the stormwater pond. An intermittent stream flowing from the eastern boundary towards the southwestern boundary, and a single ephemeral tributary were also observed. An intermittent stream flows through a small portion of the northern corner of the property, north of the office building.

### 3.11.2.1 Vegetation

Vegetation communities on the property and surrounding properties consist primarily of urban areas, maintained lawn, landscaping, and mixed hardwood forest. Biologists conducted a reconnaissance survey on December 16, 2014, to assess the property's ecological communities (see Appendix 3.11A; USACE, 2014b). Approximately 70 acres of the property consist of office buildings, a retention pond, associated parking lots, and maintained grounds. The remaining approximately 30 acres, are forested (Figure 3.11-1). Forest canopy consists of mature mixed hardwood trees over a full understory. Tree species observed include red maple, northern red oak, white oak (*Quercus alba)*, shagbark hickory, (*Carya ovata*), American sycamore (*Platanus occidentalis*), black locust (*Robinia pseudoacacia*), common hackberry (*Celtis occidentalis*), and American elm (*Ulmus americana*). The understory consists primarily of amur honeysuckle, Japanese honeysuckle (*Lonicera japonica*), muscadine grape (*Vitis rotundifolia*), and sapling-aged versions of the mature trees. Vegetation communities within the forested area were distinctly different on the north side of the intermittent tributary compared to the southern side. Vegetative communities on the north side consisted of smaller-diameter trees and a dense understory of vines and shrubs that have developed since the area was disturbed by construction of the onsite stormwater retention pond. A 12-acre stand of mature and large-diameter trees, mostly shagbark hickory, white oak, and northern red oak, grows on the slopes near the property boundary on

the southern perimeter and south of the tributary. No herbaceous plant species were identified due to winter conditions at the time of the survey.

Noxious Weeds

Non-native and invasive species occur on the Mehlville Site. The primary non-native invasive plant species observed onsite were amur honeysuckle and Japanese honeysuckle (see Appendix 3.11A; USACE, 2014b).

#### 3.11.2.2 Wildlife

The forested habitat on the Mehlville Site, particularly the habitat in the southern portion of the site, is expected to be used by a variety of common wildlife species. During a site visit on December 16, 2014, the American robin (*Turdus migratorius*) and northern cardinal (*Cardinalis cardinalis*) were observed onsite. Several additional unidentifiable birds were observed or heard during the visit. White-tailed deer, coyote, and wild turkey (*Meleagris gallopavo*) have been observed by tenants using the site and are often observed on the property (see Appendix 3.11A; USACE, 2014b). Other species could also exist on the Mehlville Site, including common amphibians and reptiles such as the eastern garter snake (*Thamnophis sirtalis sirtalis*), American toad (*Anaxyrus americanus*), and green tree frog (*Hyla cinerea*) (USDA, 1994).

#### 3.11.2.3 Protected Species

Federally Listed Species

A review of the USFWS database (USFWS, 2014b) identified 12 federally threatened, endangered, and candidate species known to occur in St. Louis County, Missouri. See Appendix 3.11B for a detailed list of these species and a habitat suitability assessment. Of the 12 species found in St. Louis County, only three species were found to have potential habitat at the Mehlville Site, including the gray bat *(Myotis grisescens*), Indiana bat *(Myotis sodalis)*, and northern long-eared bat (*Myotis septentrionalis*).

No caves are on or mapped near the property and, therefore, these species would not hibernate on the property. However, potential foraging habitat for all three species occurs within the forested area along the stream, and the Indiana bat and northern long-eared bat could forage among trees in other portions of the site. There is also an approximately 12-acre stand of large-diameter trees, many with exfoliating bark, which extends off the property. This tree stand could provide suitable roosting habitat for the Indiana bat and the northern long-eared bat. The gray bat requires caves for summer roosts, so it would not roost on the property.

A mist-net survey was conducted to determine the presence or probable absence of Indiana and northern long-eared bats during the roosting season (Copperhead Environmental Consulting, 2015). No Indiana or northern long-eared bats were captured during the survey, indicating these species are not likely present within the project area during roosting. The survey results can be found in Appendix 3.11D.

State-Listed Species

A review of the MDC Natural Heritage Program (MDC, 2015b) identified eight state threatened or endangered species that are also not federally listed but that are known to occur in St. Louis County,

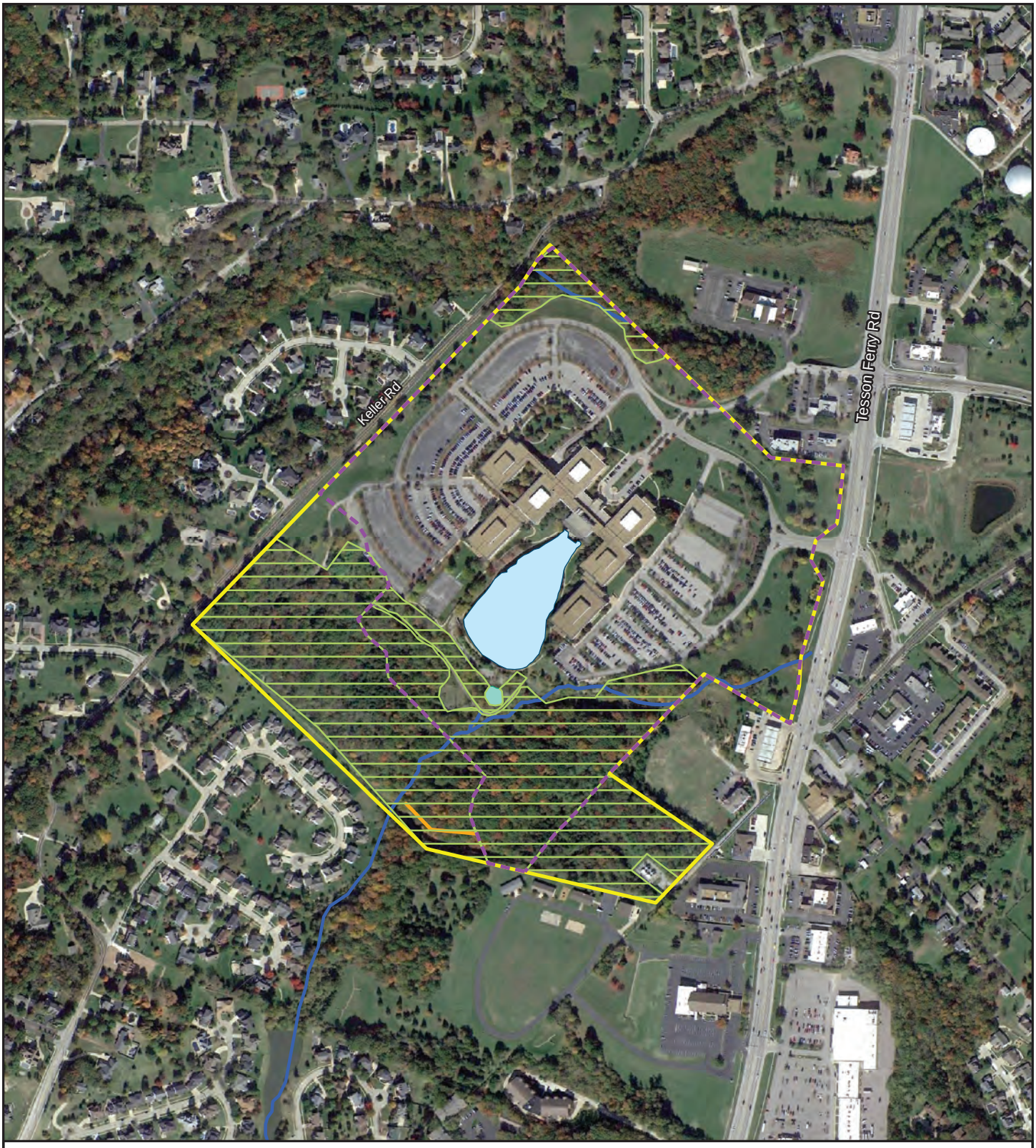
Missouri. However, no suitable habitat for any of these species exists at the Mehlville Site. See Appendix 3.11C for a detailed list of these species and explanation of habitat suitability.

Designated Critical Habitat

A review of the USFWS critical habitat mapping in Missouri determined no critical habitat has been designated on the property or within St. Louis County (USFWS, 2014d).

Migratory Birds

The Mehlville Site is located on the periphery of the Meramec River corridor in an area that already is fragmented with roads, development, and utility corridors. However, the undeveloped forested portions of the site are expected to be used by a variety of migratory bird species. Common songbird species were observed on the Mehlville Site during the December 2014 biological survey (see Appendix 3.11A; USACE, 2014b). However, the December survey period is outside of the typical spring and fall bird migrations in Missouri and species observed during the survey are not reflective of the migratory species that could occur on the site. Migratory species could use the forested and open habitat present on the Mehlville Site and could occur in the riparian corridor along the Meramec River and other forested areas west of the site.




Proposed Site
Construction Limits
Intermittent Stream
Ephemeral Stream
Stormwater Pond
Wetland
Forest Area

Data Source: NHD- National Hydrography Dataset
NHD Source: U.S. Geological Survey (USGS)
Image Source: Google Earth Pro, Modified by CH2MHill,
Image Flown 10/21/2014

N

0 0.1 0.2 0.3 Miles

Figure 3.11-1
Mehlville Site Biological Resources
NGA EIS

## 3.11.3 St. Louis City Site (Preferred Alternative)

The St. Louis City Site encompasses approximately 100 acres in St. Louis County, Missouri. Biological resources on and adjacent to the site reflect the residential and commercial uses of the site and vacant lots from demolished or abandoned structures and buildings.

### 3.11.3.1 Vegetation

A biological site visit for the St. Louis City Site was conducted on November 18, 2014. During the site visit, vegetation observed at the site was associated with historical maintenance of the housing areas, and most parcels had been recently mowed. Mature trees were sparsely scattered in most of the residential yards. Tree species observed included red maple, box elder (*Acer negundo*), northern red oak, pin oak *(Quercus palustris)*, American sycamore, eastern red cedar, and flowering dogwood (*Cornus florida*).

Some of the vacant parcels on the St. Louis City Site were converted to urban garden plots. Corn and Johnsongrass (*Sorghum halepense*) were observed growing in converted garden plot areas. At the time of the site investigation, most garden plots appeared to have been harvested for the year. Other vacant parcels and improved grounds were covered with recent snowfall.

A woodlot adjacent to the southern boundary of the St. Louis City Site was fenced and inaccessible during the survey. Observations from the perimeter of the area determined dominant tree species to be red maple, box elder, northern red oak, and American sycamore. The understory cover was dense and consisted primarily of amur honeysuckle (see Appendix 3.11A; USACE, 2014c).

<u>Noxious Weeds</u>

Non-native species, such as amur honeysuckle and Johnsongrass, are associated with maintained residential housing uses and occur on the St. Louis City Site (see Appendix 3.11A; USACE, 2014c).

### 3.11.3.2 Wildlife

Limited wildlife was observed on the St. Louis City Site during the biological survey on November 18, 2014. Two songbird species, American robin and northern cardinal, were observed (see Appendix 3.11A; USACE, 2014c). Due to the disturbed nature of the site, wildlife that could occur onsite would be expected to be common species associated with the region. These could include small mammals and various songbird species (USDA, 1994).

### 3.11.3.3 Protected Species

<u>Federally Listed Species</u>

A review of the USFWS database (USFWS, 2014b) identified 12 federally threatened, endangered, and candidate listed species known to occur in St. Louis County, Missouri. See Appendix 3.11B for a detailed list of these species and a habitat suitability assessment. Due to the urban nature of the St. Louis City Site, there is very limited potential for habitat for listed species within the site. The USFWS did not request additional surveying at this site for ESA-listed species.

State-Listed Species

A review of the MDC Natural Heritage Program (MDC, 2015b) identified eight additional state threatened or endangered species, which are not also federally listed, that are known to occur in St. Louis County, Missouri. However, no suitable habitat for any of these species exists at the St. Louis City Site. See Appendix 3.11C for a detailed list of these species and explanation of habitat suitability.

Designated Critical Habitat

A review of the USFWS critical habitat mapping in Missouri determined no critical habitat has been designated on the property or within St. Louis County (USFWS, 2014e).

Migratory Birds

A few common songbird species were observed on the site during the November 2014 biological survey (see Appendix 3.11A; USACE, 2014c). However, the November survey period is outside the typical spring and fall bird migrations in Missouri, and species observed during the survey are not reflective of the migratory species that could occur on the site.

## 3.11.4 St. Clair County Site

The property totals approximately 182 acres and consists primarily of agricultural land with sparse forested areas along a stream and in thin rows that separate agricultural fields. A 0.9-acre freshwater pond is located in the vicinity of Wherry Road near the property's northern boundary. A perennial stream, surrounded by a forested riparian corridor, flows generally north to south in the western portion of the property. A small intermittent tributary is located within the forested corridor joining the perennial stream. The site also contains a forested wetland within an area along the southern property boundary, dividing the agricultural fields from the offsite driving range.

As part of routine land management operations, St. Clair County conducted a selective timber harvest on the St. Clair County Site in January 2015. This action resulted in changed biological resource conditions on the site after the Proposed Action was announced and prior to the agency decision being made. Because the St. Clair County timber harvest was independent of the Proposed Action, the existing conditions for analysis of impacts of the Proposed Action are the post-harvest conditions of the St. Clair County Site. The St. Clair County selective timber harvest could combine with the impacts of the Proposed Action and other past, present, and reasonably foreseeable actions to contribute to cumulative impacts, and the contribution of the timber harvest to cumulative impacts is discussed in Section 4.15.4. Compensatory mitigation for the St. Clair County selective timber harvest is discussed in Section 4.11.4.1.

### 3.11.4.1 Vegetation

Vegetation communities on the property and surrounding properties consist primarily of agricultural land and approximately 32 acres of mixed hardwood forest. Biologists conducted a reconnaissance survey on November 17, 2014, and USACE conducted a follow-up site assessment on April 15, 2015, to evaluate the

property's ecological communities. Approximately 145 acres of the property are maintained agricultural land. Forested areas within the boundary encompass approximately 32 acres and lie along Wherry Road at the northern boundary, along the perennial stream and its tributary, and in thin stands of trees separating agricultural plots (Figure 3.11-2). Forest canopy consists of mature mixed hardwood trees over a full understory. Tree species observed include red maple, sugar maple *(Acer saccharum)*, box elder, northern red oak, pin oak, white oak, American sycamore, American hophornbeam (*Ostrya virginiana*), sweetgum (*Liquidambar styraciflua*), cottonwood (*Populus deltoides*), and green ash (*Fraxinus pennsylvanica*). The understory consists primarily of eastern red cedar, and the exotic and invasive amur honeysuckle. Open areas on the property are maintained agricultural fields that had been recently harvested at the time of the reconnaissance (see Appendix 3.11A; USACE, 2014d).

St. Clair County conducts periodic timber harvesting on the parcel. The most recent harvest occurred in February 2015. During that harvest, most of the larger trees in the corridor along the perennial stream were harvested. Younger trees and smaller-diameter trees were left in this area following the harvest (Farmer, 2015).

Noxious Weeds

Non-native and invasive species occur on the property. The primary non-native plants present include Japanese honeysuckle, amur honeysuckle, and multiflora *(Rosa multiflora*) rose (see Appendix 3.11A; USACE, 2014d; USAF, 2012a).

#### 3.11.4.2 Wildlife

The St. Clair County Site consists predominantly of agricultural land (approximately 145 acres) with approximately 32 acres of forested land. The site is also surrounded by an interstate highway, airport, and Scott AFB. The agricultural land provides relatively low-quality habitat for wildlife. The forested land, including the riparian corridor of the perennial stream in the western part of the site, an onsite pond, and a forested wetland, provides relatively high-quality habitat and is expected to be used by a variety of wildlife species.

Birds documented on the property through visual observation and listening during the November 2014 site reconnaissance included the American robin, northern cardinal, and mourning dove (*Zenaida macroura*). Multiple sets of white-tailed deer tracks were observed on the property (see Appendix 3.11A; USACE, 2014d). During the USACE follow-up site assessment in April 2015, two birds, the field sparrow (*Spizella pusilla*) and common grackle (*Quiscalus quiscula*), were observed on the property.

Fish surveys have been periodically conducted at nearby Silver Creek since 1982 (USAF, 2012b). The stream on the St. Clair County Site is a smaller tributary of Silver Creek and would not be expected to have a high level of species diversity.

Daily and seasonal bird movements create various hazardous conditions for neighboring Scott AFB, MidAmerica St. Louis Airport, and the vicinity. Due to resident and migratory bird species and other wildlife, Scott AFB has implemented a Bird/Animal Aircraft Strike Hazard (BASH) plan to minimize the hazard from birds/wildlife to aircraft at the installation and in their operating areas (Scott AFB, 2011).

#### 3.11.4.3 Protected Species

Federally Listed Species

A review of the USFWS database (USFWS, 2015f) revealed seven federally threatened, endangered, and candidate listed species known to occur in St. Clair County, Illinois. See Appendix 3.11B for a detailed list of these species and a habitat suitability assessment. Of the seven species found in St. Clair County, only three species were found to have potential habitat at the St. Clair County Site; these are the gray bat, Indiana bat, and northern long-eared bat. The habitat potential for these species is explained below.

No caves are on or mapped near the property; therefore, these species would not hibernate on the property. Further, the gray bat requires caves for summer roosts and, therefore, it would not roost on the property. The riparian area along the tributary to Silver Creek and the forested wetland north of the driving range do not provide suitable roosting habitat for the Indiana bat and northern long-eared bat. The onsite riparian corridor contains small-diameter trees, consisting mostly of box-elder, black cherry *(Prunus serotina)*, American elm, and honey locust *(Gleditsia triacanthos)* following the timber harvest in February 2015. It has a dense understory of amur honeysuckle. The combination of the recent timber harvest and the dense amur honeysuckle makes this area generally unsuitable for bat roosting. The forested wetland has an open central area, but the trees are young. Review of historical aerial photographs indicates the area was under plow as recently as 1998, but developing woody species with a dense understory by 2003. As a result, this forested wetland is generally unsuitable for bat roosting.

The Indiana, gray, and northern long-eared bat species have been identified through surveys along Silver Creek on adjacent Scott AFB, which indicates these species are foraging in the vicinity. The three bat species could forage along the tributary or along the periphery of the forested wetland, but are unlikely to forage within the wetland due to a lack of flight corridors for access.

State-Listed Species

A review of the Illinois Department of Natural Resources (IDNR) natural database for state-listed threatened or endangered species in St. Clair County (IDNR, 2014) identified 14 state-listed threatened or endangered species, which are not also federally listed, that are known to occur in St. Clair County, Illinois. See Appendix 3.11C for a detailed list of these species and an explanation of the suitable habitat. Of the 14 species, two have potential habitat at the St. Clair County Site, the loggerhead shrike (*Lanius ludovicianus*) and the barn owl (*Tyto alba*). A description of the habitat is provided below.

The loggerhead shrike is listed "endangered" and occurs in southern Illinois throughout the year as a resident in open areas with thorny shrub/brush habitats. This species also nests in mature oaks or cedars. Wooded portions of the property could provide potential nesting habitat and the species could forage over the agricultural fields.

The barn owl is also listed "endangered" and typically uses habitat associated with agricultural areas and open grasslands. Limited potential nesting habitat occurs within the forested area of the site, and the agricultural areas on the property provide potential foraging habitat**.**

Designated Critical Habitat

A review of the USFWS critical habitat mapping in Illinois determined no critical habitat has been designated on the property or within St. Clair County (USFWS, 2014g).

Migratory Birds

The St. Clair County Site consists predominantly of agricultural land (approximately 145 acres) with approximately 32 acres of forested land (Figure 3.11-2). The site is also surrounded by an interstate highway, airport, and Scott AFB. The agricultural land provides relatively low-quality habitat for migratory birds. The forested land, including the riparian corridor of the perennial stream in the western part of the site, an onsite pond, and a forested wetland, provide relatively high-quality habitat and is expected to be used by a variety of migratory bird species.

During the November 2014 site reconnaissance, birds noted on the property through observation and listening included the American robin, northern cardinal, and mourning dove (see Appendix 3.11A; USACE, 2014d). However, the November survey period is outside of the typical spring and fall bird migrations in Illinois and species observed during the survey are not reflective of the migratory species that could occur on the site. Migratory bird surveys were conducted in conjunction with the Scott AFB *Fish and Wildlife Component Plan* in 2010. During these surveys, a total of 828 observations of migratory species were recorded during 4 morning and 3 evening surveys at 14 sample points. It has been estimated that the 828 observations represent 37 separate species, with the most common species being the northern cardinal, American robin, tufted titmouse (*Baeolophus bicolor*), red-winged blackbird (*Agelaius phoeniceus*), and common grackle (Scott AFB, 2010).

Proposed Site
Construction Limits
Perennial Stream Inside Construction Limits
Perennial Stream Outside Construction Limits
Intermittent Stream Outside Construction Limits
Pond
Wetland
Forested Areas
Pre-clearing Forested Areas

NHD- National Hydrography Dataset
NHD Source: U.S. Geological Survey (USGS)
Image Source: Google Earth Pro, Modified by CH2MHill, Image Flown 10/21/2014

N

0 0.25 0.5 Miles

Figure 3.11-2
St. Clair County Site
Biological Resources
NGA EIS

# 3.12 Geological, Soil, and Paleontological Resources

This subsection discusses geology and paleontology. Geology is the science that deals with the earth's physical structure, substance, and history, and includes the topography and soil found in an area. Paleontology is the science that deals with the life of past geological periods as known from fossil remains. This subsection addresses geological and paleontological conditions at each alternative site. The ROI for the geology and paleontology resources analysis is the area within the site boundaries, although some of the resources addressed often extend well beyond the site boundaries.

## 3.12.1 Fenton Site

### 3.12.1.1 Topographical Conditions

According to the 1982 USGS Fenton, Missouri, 7.5-minute series topographic map, the site's elevation ranges from 420 feet above mean sea level (amsl) in the northeastern portion of the site to 450 feet amsl in the southwestern portion. The topography in the area is relatively flat. Based on the topographic map review, the site elevation is similar to or higher than that of the adjoining and immediate surrounding areas in all directions (Environmental Data Resources, Inc. [EDR], 2014a).

### 3.12.1.2 Geological Conditions

In the past, limestone bedrock has been encountered at depths ranging from 60 to 75 feet below ground surface (bgs) in the region of the site (EDR, 2014a). The Fenton Site is near a historically rich mining area of refractory clay (clay that can withstand high temperatures) in the west-southwestern portion of the St. Louis city limits that was heavily mined from the 1850s to the 1940s. Depth to the resource is approximately 100 feet bgs (Fenneman, 1911).

### 3.12.1.3 Soil

Urban land complex, bottomland (0 to 3 percent slopes) is the predominant soil type on the site, and Fishpot-Urban land complex (0 to 5 percent slopes) occurs along the southwestern site boundary (Natural Resources Conservation Service [NRCS], 2014a, 2014b). The Urban land complex (0 to 3 percent slopes) is classified with a typical soil profile consisting of alluvium, and has a rare frequency of flooding. The Fishpot-Urban land complex (0 to 5 percent slopes) is classified as somewhat poorly drained with a typical soil profile of stratified silt loam and stratified silt loam above silty clay loam. Depth to the water table is approximately 12 to 24 inches (NRCS, 2014a). The urban land soil type is not classified as prime farmland, but the Fishpot-Urban land complex is classified as prime farmland if drained (NRCS, 2014b). Prime farmland is further discussed in Section 3.2, *Land Use and Community Cohesion*.

### 3.12.1.4 Paleontological Conditions

Database searches did not identify any recorded paleontological resources discoveries within the Fenton Site. Extensive fossils have been discovered in exposed river bed rocks approximately 3 miles south of the site (Eastern Missouri Society for Paleontology, 2012). The Fenton Site is approximately 95 percent developed and covered by an unknown thickness of disturbed sediment and historical fill. A small portion of the site is

not developed, but is covered by a layer of sediment disturbed by previous development activities. Below this disturbed sediment and artificial fill, available geological mapping (NRCS, 2014a) shows the Fenton Site is underlain by quaternary alluvial deposits of low to unknown paleontological sensitivity and limestone.

## 3.12.2 Mehlville Site

### 3.12.2.1 Topographical Conditions

According to the 1974 USGS MetLife, St. Louis, Missouri, 7.5-minute series topographic map, the Mehlville Site's elevation ranges from approximately 600 feet amsl in the northern portion of the site to 550 feet amsl in the southern portion of the site. The topography in the immediate area is relatively flat, but the elevation gradually decreases towards the west. Based on the topographic map review, the site is at an elevation similar to or higher than that of the adjoining and surrounding areas in all directions (EDR, 2014b).

### 3.12.2.2 Geological Conditions

In the past, limestone and dolomite bedrock has been encountered at depths ranging from 40 to 60 feet bgs in the region of the site (EDR, 2014b).

The Mehlville Site is also near a historically rich mining area of refractory clay in the west-southwestern area of the St. Louis city limits. However, due to the heavy mining of this resource from the 1850s to the 1940s, there is little likelihood of impacting this feature because of its location and depth (approximately 100 feet bgs) (Fenneman, 1911).

### 3.12.2.3 Soil

Urban Land-Harvester complex (2 to 9 percent slopes) is the predominant soil type on the site followed by the Crider-Menfro silt loams (14 to 30 percent slopes), both of which occur in the southeastern portion of the site (NRCS, 2014c, 2014d). The Urban Land-Harvester complex (2 to 9 percent slopes) is comprised of approximately 50 percent each of urban land and harvester soil. The Urban Land-Harvester complex is classified as moderately drained with a typical soil profile of surficial silt loam and silty clay from above clay loam (NRCS, 2014c). The Crider-Menfro silt loams (14 to 30 percent slopes) comprise approximately 50 percent each of Crider and Menfro soil. The Crider complex (14 to 30 percent slope) is classified as well drained with a typical soil profile of silt loam above silty clay loam (NRCS, 2014d). The Menfro complex (14 to 30 percent slopes) is classified as well drained with a typical soil profile of a surficial layer of silt loam, then silty clay loam above silt loam. Depth to the water table is greater than 80 inches (NRCS, 2014d). None of the soil types found on the site is classified as prime farmland (NRCS, 2014c).

### 3.12.2.4 Paleontological Conditions

Database searches conducted for this EIS did not identify any recorded paleontological resources discoveries within the Mehlville Site. Extensive fossils have been discovered in exposed riverbed rocks approximately 3 miles north of the site (Eastern Missouri Society for Paleontology, 2012). The Mehlville Site is approximately 65 percent developed and covered by an unknown thickness of disturbed sediment and historic fill. A portion of the site is not developed, and is covered by a layer of undisturbed sediment. Below this

undisturbed sediment, available geological mapping (NRCS, 2014c, 2014d) shows the Mehlville Site is underlain by silt and clay deposits of low to unknown paleontological sensitivity with limestone and dolomite bedrock.

## 3.12.3 St. Louis City Site (Preferred Alternative)

### 3.12.3.1 Topographical Conditions

According to the 1998 USGS St. Louis, Missouri, 7.5-minute series topographic map, the St. Louis City Site's elevation ranges from approximately 500 feet amsl in the northern portion of the property to 490 feet amsl in the southern portion of the property (EDR, 2014c). The topography in the area is relatively flat. Based on the topographic map review, the site is at an elevation similar to or higher than that of the adjoining and surrounding areas in all directions (EDR, 2014c).

### 3.12.3.2 Geological Conditions

The geology encountered at this site is typically described as firm or stiff, silty clays. A thin layer of very stiff residual and/or glacial clays overlies limestone bedrock, which can be identified at depths ranging from 20 to 35 feet bgs (Woodward-Clyde, 1991).

The west-southwestern portion of the St. Louis city limits are home to deposits of historically rich, high-quality refractory clay that was heavily mined from the 1850s to the 1940s (Fenneman, 1911). This clay, along with minor, associated deposits of coal, was dug out and mined from a depth of generally less than 100 feet. Due to this history, refractory clay and coal that may still be present are considered a geological resource.

### 3.12.3.3 Soil

Urban land (0 to 5 percent slopes) is the predominant soil type on the St. Louis City Site and the Urban Land-Harvester complex (0 to 2 percent slopes) occurs along the northern property boundary (NRCS, 2014e, 2014f). Urban land (0 to 5 percent slopes), which makes up 90 percent of the site, is developed and not classified as prime farmland (NRCS, 2014e). The Urban Land-Harvester complex (0 to 2 percent slopes) is classified as moderately and well drained with a typical soil profile of surficial silt loam and silty clay loam above silt loam (NRCS, 2014f). The depth to water table is approximately 30 to 36 inches (NRCS, 2014e). The Urban Land-Harvester soil is not classified as prime farmland (NRCS, 2014f).

### 3.12.3.4 Paleontological Conditions

Database searches did not identify any recorded paleontological resources discoveries within the St. Louis City Site. The area of the site is approximately 80 percent developed and covered by a layer of unknown thickness that comprises disturbed sediment and historical fill. The southern portion of the site is not developed, but is covered by a layer of sediment disturbed by previous development activities. Below this disturbed sediment and artificial fill, available geological mapping (NRCS, 2014e, 2014f) shows the St. Louis City Site is underlain by very stiff residual and glacial clays of low to unknown paleontological sensitivity.

## 3.12.4 St. Clair County Site

### 3.12.4.1 Topographical Conditions

According to the 1991 USGS Scott AFB, Illinois, 7.5-minute series topographic map, the St. Clair County Site's elevation ranges from 450 feet amsl in the southern portion of the site to 500 feet amsl in the northeastern portion of the site. The topography in the area is highest to the north, and gradually decreases moving south. Based on the topographic map review, the site is at an elevation similar to or lower than that of the adjoining and surrounding areas in all directions (EDR, 2014d).

### 3.12.4.2 Geological Conditions

The overall geology of the site is described mostly as glacial and alluvial deposits. Underlying these deposits are layers of shale, siltstone, sandstone, limestone, claystone, and coal at a depth of at least 85 feet bgs (USAF, 2012b).

Due to the rich history of coal deposits and mining in this region of the Mississippi Valley, potential exists that a geological resource, such as coal, is present within the site boundary. However, the depth to coal would be at least 85 feet bgs (USAF, 2012b). There are mineral rights associated with the St. Clair County Site.

### 3.12.4.3 Soil

Winfield silt loam (2 to 5 percent slopes) is the predominant soil type on the St. Clair County Site, followed by Downsouth silt loam (2 to 5 percent slopes); both soil types occur on the western side of the site and Menfro silt loam (5 to 10 percent slopes) occurs along the southern site boundary (NRCS, 2014g, 2014h, 2014i). Winfield silt loam (2 to 5 percent slopes) is classified as moderately well drained with a typical soil profile of silt loam, silty clay loam, and silt loam. Depth to the water table is approximately 24 to 42 inches (NRCS, 2014g). The Downsouth complex (2 to 5 percent slopes) is classified as moderately well drained with a typical soil profile of surficial silt loam and silty clay loam above silt loam. Depth to the water table is approximately 24 to 42 inches (NRCS, 2014h). The Menfro silt loam (5 to 10 percent slopes) is classified as well drained with a typical soil profile of surficial silt loam and silty clay loam above silt loam. Depth to the water table is more than 80 inches (NRCS, 2014i). All identified soil types are classified as both prime farmland and prime farmland of statewide importance (NRCS, 2014g). The area currently exists as farmland and is actively in use during growing seasons. Prime farmland and farmland of statewide importance are further discussed in Section 3.2, *Land Use and Community Cohesion*.

### 3.12.4.4 Paleontological Conditions

Database searches did not identify any recorded paleontological resources discoveries within the St. Clair County Site. Paleontological resources have been discovered in the bed of the Osage River located in St. Clair County (Saunders, 1977). The St. Clair County Site area is undeveloped and covered by a layer of unknown thickness comprised of silty and silty clay sediments. Below these sediments, available geological mapping (NRCS, 2014g, 2014h, 2014i) shows the St. Clair County Site is underlain by glacial and alluvial deposits of low to unknown paleontological sensitivity.

# 3.13 Air Quality and Climate Change

This subsection discusses air quality and climate change by examining the topics of criteria pollutants, greenhouse gas (GHG) emissions, and the effects of climate change on the Proposed Action. The methodology for the analysis of each topic is discussed below. The Proposed Action activities would occur in either the City of St. Louis, Missouri, St. Louis County, Missouri, or St. Clair County, Illinois. The ROI for the analysis of potential air quality impacts includes those counties. Climate change is analyzed on a regional level, which includes much of the Midwest.

Criteria Pollutants

Federal air quality policies are regulated through the Clean Air Act (CAA). Pursuant to this act, the U.S. Environmental Protection Agency (USEPA) has established National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment (USEPA, 2011a). NAAQS have been established for the following air pollutants (also called criteria pollutants): carbon monoxide (CO), ozone ($O_3$), nitrogen dioxide ($NO_2$), sulfur dioxide ($SO_2$), respirable particulate matter (PM) defined as particulate matter less than 10 microns in aerodynamic diameter ($PM_{10}$), fine particulate matter defined as particulate matter less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$), and lead. Table 3.13-1 summarizes the NAAQS for these criteria pollutants. The CAA, as amended, requires each state to maintain a State Implementation Plan (SIP) for achieving compliance with the NAAQS. It also requires USEPA to designate areas (counties or air basins) as in attainment or nonattainment with respect to each criteria pollutant, depending on whether the area meets the NAAQS. An area that is designated nonattainment is subject to planning requirements to attain the standard. Areas that currently meet the air quality standard but previously were classified as nonattainment are “in maintenance” for that standard.

TABLE 3.13-1
**National Ambient Air Quality Standards**

| Criteria Pollutant | Federal Standard (Averaging Period) [a] |
|---|---|
| Carbon monoxide (CO) | 35 ppmv (1-hour)<br>9 ppmv (8-hour) |
| Nitrogen dioxide ($NO_2$) | 0.100 ppmv (1-hour)<br>0.053 ppmv (annual arithmetic mean) |
| Ozone ($O_3$) | 0.070 ppmv (8-hour) |
| Fine particulate matter ($PM_{2.5}$) | 12 $\mu g/m^3$ (annual arithmetic mean)<br>35 $\mu g/m^3$ (24-hour) [b] |
| Particulate matter ($PM_{10}$) | 150 $\mu g/m^3$ (24-hour) |
| Sulfur dioxide ($SO_2$) | 0.5 ppm (3-hour, secondary standard)<br>0.075 ppmv (1-hour) [b] |
| Lead | 0.15 $\mu g/m^3$<br>(rolling 3-month average) |

TABLE 3.13-1
**National Ambient Air Quality Standards**

| Criteria Pollutant | Federal Standard (Averaging Period) [a] |
|---|---|

Notes:

[a] National standards other than $O_3$, PM, and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. The $O_3$ standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For $PM_{10}$, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m$^3$ is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, is equal to or less than the standard.

[b] To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 parts per billion.

µg/m$^3$ = microgram(s) per cubic meter

ppmv = parts per million, by volume

NA = not applicable

Source: USEPA, 2011a

The USEPA has issued regulations addressing the applicability and procedures for ensuring that federal activities comply with the amended CAA. The USEPA Final Conformity Rule requires federal agencies to ensure that federal actions in designated nonattainment or maintenance areas conform to an approved or promulgated SIP or federal implementation plan. This ensures that a federal action would not do any of the following:

- Cause a new violation of the NAAQS
- Contribute to any increase in the frequency or severity of violations of existing NAAQS
- Delay the timely attainment of any NAAQS interim or other attainment milestones

If a project would result in a total net increase in pollutant emissions that is less than the applicable *de minimis* (that is, negligible) thresholds established in 40 CFR 93.153(b), detailed conformity analyses are not required pursuant to 40 CFR 93.153(c).

Greenhouse Gas Emissions

Global climate change is caused in large part by human-made emissions of GHG released into the atmosphere through the combustion of fossil fuels and by other activities (World Meteorological Organization, 2015). On October 30, 2009, USEPA published a Final Rule requiring mandatory reporting of GHG emissions from facilities that have major stationary sources generating 25,000 metric tons (MT) or more of carbon dioxide equivalent ($CO_2e$) emissions during operation (USEPA, 2009). Data published by USEPA indicate that NGA's current St. Louis operations did not report GHG emissions to USEPA in 2013 because onsite operational activities did not generate more than 25,000 MT of $CO_2e$ per year (USEPA, 2014, 2015a).

On December 18, 2014, the Council on Environmental Quality (CEQ) released revised draft guidance regarding the methods by which federal agencies can improve their consideration of the effects of GHG emissions and climate changes in their evaluations of Proposed Actions (CEQ, 2014). The guidance states

that estimates of the expected annual direct and indirect GHG emissions should be evaluated and quantified, if possible. The guidance established 25,000 MT of $CO_2e$ per year as a reference point to determine when a quantitative analysis of GHG emissions should occur.

Climate Change

The U.S. climate has warmed in recent decades and climate models unanimously project this warming trend will continue into the future. The anticipated change in climate is expected to have many effects on regional environments and economies, mainly resulting from increased extreme weather events, including increased droughts and flooding. The following executive orders (E.O.s) have been issued recently in response to climate change and apply to the Proposed Action.

- E.O. 13693, Planning for Federal Sustainability in the Next Decade (2015)
- E.O. 13690, Establishing a Federal Flood Risk Management Standard (2015)
- E.O. 13653, Preparing the United States for the Impacts of Climate Change (2013)

An evaluation of existing air quality conditions, ambient GHG emissions, and climate change predictions for each site is provided below.

## 3.13.1 Fenton Site

### 3.13.1.1 Criteria Pollutants

The Fenton Site is located in St. Louis County, Missouri. St. Louis County is in nonattainment with 8-hour $O_3$ and $PM_{2.5}$ NAAQS. As a result, the Proposed Action is subject to review under the General Conformity Rule for pollutants that are in nonattainment or maintenance.

Appendix 3.13A (see Table AQ-1) provides a summary of the ambient criteria pollutant concentrations at air quality monitoring stations near the Fenton Site (see Figure 3.13-1). As noted in Table AQ-1, the results of ambient monitoring at the stations from the latest 3 years of available data indicate that the monitored background $O_3$ concentrations exceeded the NAAQS in 2011 and 2012 at the Blair Street monitoring station, and in 2011, 2012, and 2013 at the Arnold West monitoring station. Ambient monitoring results for $O_3$ varied from 0.075–0.102 parts per million by volume (ppmv) compared to the 8-hour NAAQS threshold of 0.075 ppmv. These monitored background concentrations reflect current conditions in the project vicinity.

The regional emission inventories, maintained by the USEPA, summarize the types and quantities of pollutants released within the region during the year. The most recent published emissions inventory data for St. Louis County are summarized in Appendix 3.13A (Table AQ-2). Total mobile source emissions are 227,186 tons per year, including 154,111 tons per year CO, 51,457 tons per year oxides of nitrogen ($NO_x$), and 17,281 tons per year volatile organic compounds (VOCs). Total area source emissions are 41,287 tons per year, including 22,540 tons per year $PM_{10}$ and 3,290 tons per year $PM_{2.5}$. Total stationary sources are 49,605 tons per year, including 15,444 tons per year $SO_2$. Mobile source emissions account for more than 88 percent of the County's CO emissions, 86 percent of the County's $NO_x$ emissions, and 40 percent of the

County's VOC emissions. Area sources account for more than 81 and 43 percent of St. Louis County's $PM_{10}$ and $PM_{2.5}$ emissions, respectively, while stationary sources represent more than 98 percent of the County's $SO_2$ emissions.

#### 3.13.1.2 Greenhouse Gas Emissions

Table 3.13-2 provides a summary of carbon dioxide ($CO_2$) emissions in Missouri for 2010 through 2012, which are the most recent data available. $CO_2$ emissions represent approximately 80 percent of total GHG emissions. The largest source of $CO_2$ and overall GHG emissions is fossil fuel combustion. The electric power and transportation sectors account for approximately 58 and 28 percent of all $CO_2$ emissions, respectively.

TABLE 3.13-2
**$CO_2$ Emissions in Missouri (Metric Tons) in 2010 – 2012**

| | 2010 | 2011 | 2012 |
|---|---|---|---|
| **Missouri** | | | |
| Residential Sector | 6.9 | 6.6 | 5.3 |
| Commercial Sector | 4.1 | 4.0 | 3.6 |
| Industrial Sector | 7.9 | 6.4 | 7.6 |
| Transportation Sector | 37.3 | 36.6 | 35.4 |
| Electric Power Sector | 76.0 | 78.6 | 73.0 |
| Total | 132.2 | 132.2 | 124.9 |

Source: USEIA, 2015.

#### 3.13.1.3 Climate Change

Climate change is a global phenomenon with regional implications. The St. Louis region has and will continue to experience impacts associated with climate change. A number of comprehensive studies have been performed to determine the effects of climate change within the Midwest region, which includes the Fenton Site. These studies have been summarized by Pryor et al. (2014) and indicate that predominant impacts of climate change in the region will be continued increases in temperature and more frequent and intense flooding, as discussed below.

The average Midwest temperature increased by more than 1.5 degrees Fahrenheit (°F) between 1900 and 2010. The amount of future warming will depend on the atmospheric concentration of GHGs. Projections based on a substantial reduction in GHGs emissions indicate a 3.8°F temperature increase by 2050; projections based on current GHG emissions indicate a 4.9°F temperature increase by 2050 (Pryor et al., 2014).

Projections of precipitation changes are less certain than those for temperature. Under higher emissions scenarios, global climate models project average winter and spring precipitation by late this century (2071-2099) to increase 10–20 percent relative to 1971–2000 (Pryor et al, 2014). This increase in precipitation is expected to result in more frequent and intense flooding events.

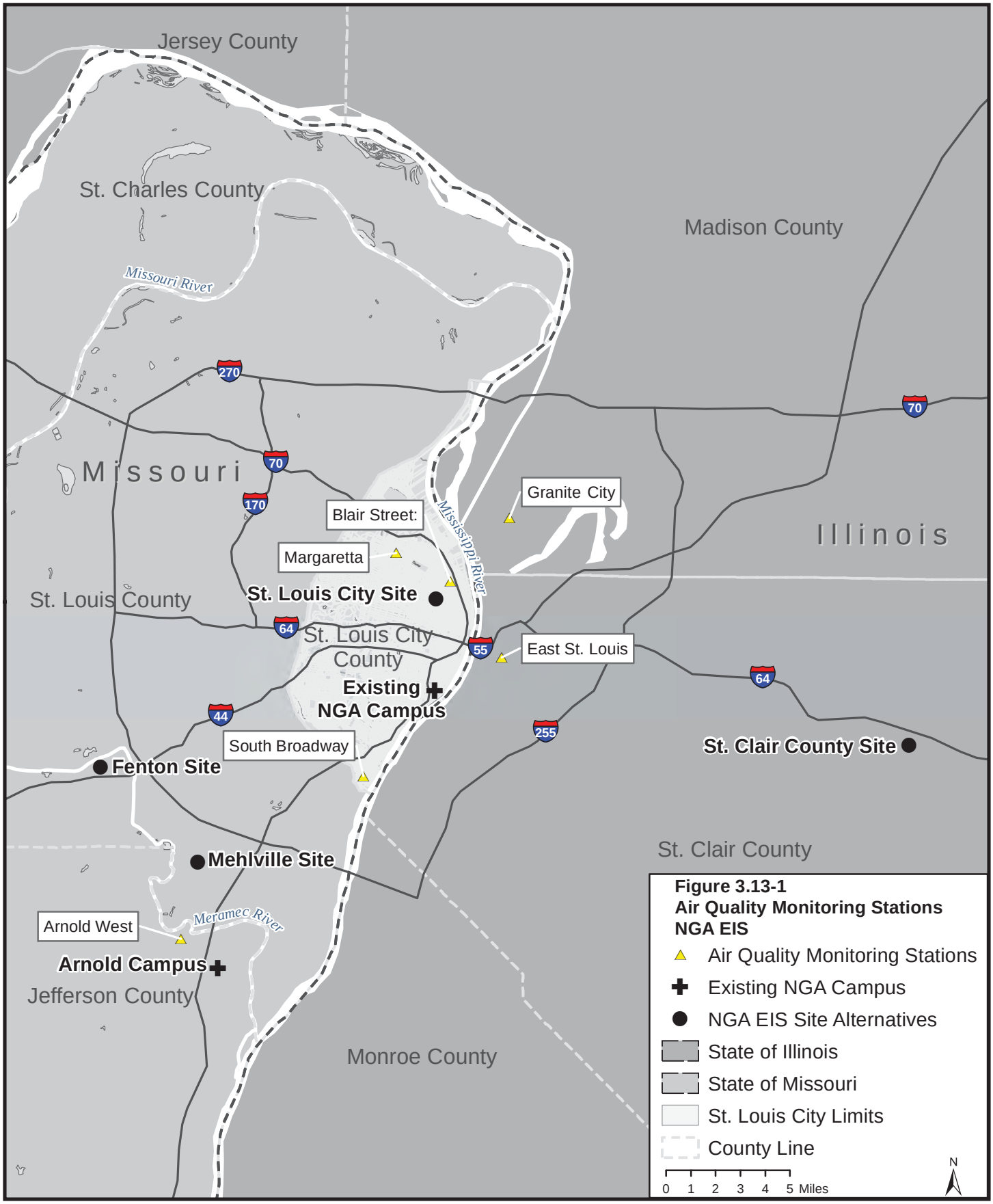



**Figure 3.13-1**
**Air Quality Monitoring Stations**
**NGA EIS**

- Air Quality Monitoring Stations
- Existing NGA Campus
- NGA EIS Site Alternatives
- State of Illinois
- State of Missouri
- St. Louis City Limits
- County Line

## 3.13.2 Mehlville Site

### 3.13.2.1 Criteria Pollutants

The emissions data for the Mehlville Site are identical to those presented for the Fenton Site because both sites are located in St. Louis County. These data are presented in Appendix 3.13A (Table AQ-1). The ambient air monitoring stations near the Mehlville Site are also the same as those presented for the Fenton Site (Blair Street and Arnold West monitoring stations). Based on their regional proximity, ambient air quality would be similar at both sites.

### 3.13.2.2 Greenhouse Gas Emissions

$CO_2$ emissions data for the Mehlville Site are identical to those presented for the Fenton Site because both sites are located in Missouri. These data are summarized in Table 3.13-2.

### 3.13.2.3 Climate Change

Because the climate change projections are regional in nature and because both sites are in the Midwest, the climate change projections for the Mehlville Site are identical to those presented for the Fenton Site.

## 3.13.3 St. Louis City Site (Preferred Alternative)

### 3.13.3.1 Criteria Pollutants

The St. Louis City Site is located within the City of St. Louis, Missouri, and is in nonattainment with 8-hour ozone and $PM_{2.5}$ NAAQS. Additionally, the site is in the St. Louis Non-Classifiable Maintenance Area for the 8-hour CO NAAQS. As a result, the Proposed Action involving this site is subject to review under the General Conformity Rule. The General Conformity Rule would be applied only to the pollutants that are in nonattainment or maintenance. Emissions data for the St. Louis City Site are presented in Appendix 3.13A (Table AQ-1). The ambient air monitoring stations near the St. Louis City Site are also the same as those presented for the Fenton Site. With the exception of CO, ambient air quality would be similar at both sites, based on their regional proximity.

### 3.13.3.2 Greenhouse Gas Emissions

$CO_2$ emissions data for the St. Louis City Site are the same as those presented for the Fenton Site because both sites are located in Missouri. These data are summarized in Table 3.13-2.

### 3.13.3.3 Climate Change

Because the climate change projections are regional in nature and because both sites are in the Midwest, the climate change projections for the St. Louis City Site are identical to those presented for the Fenton Site.

## 3.13.4 St. Clair County Site

### 3.13.4.1 Criteria Pollutants

The St. Clair County Site is in southern Illinois and included in the St. Louis, Missouri, 8-hour $O_3$ and $PM_{2.5}$ nonattainment areas. As a result, the Proposed Action involving this site is subject to review under the General Conformity Rule for those constituents.

Appendix 3.13A (Table AQ-3) provides a summary of the ambient criteria pollutant concentrations at air quality monitoring stations near the St. Clair County Site (see Figure 3.13-1). As noted in Table AQ-3, the results of ambient monitoring at the stations from the latest 3 years of available data indicate that the monitored background $O_3$ concentrations exceeded the NAAQS in 2011 and 2012, and $PM_{2.5}$ concentrations exceeded the NAAQS in 2011 at the St. Clair County and Granite City monitoring stations. Ambient monitoring results for $O_3$ in 2011 and 2012 varied from 0.086-0.092 ppmv compared to the 1-hour NAAQS threshold of 0.075 ppmv. Ambient monitoring results for $PM_{2.5}$ in 2011 varied from 37.1 to 37.4 micrograms per cubic meter (µg/m$^3$) and 12.8 to 13.3 µg/m$^3$, to the 24-hour and annual average NAAQS thresholds of 35 and 12 µg/m$^3$, respectively. These monitored background concentrations reflect current conditions in the project vicinity.

The most recent published emissions inventory data for St. Clair County are summarized in Appendix 3.13A (Table AQ-4). Total mobile source emissions are 37,226 tons per year, including 27,346 tons per year CO and 6,682 tons per year $NO_x$. Total area source emissions are 22,565 tons per year, including 16,103 tons per year $PM_{10}$ and 2,875 tons per year $PM_{2.5}$. Total stationary sources are 4,803 tons per year, including 164 tons per year $SO_2$. Total natural sources are 8,291 tons per year, including 6,550 tons per year VOCs. Mobile source emissions account for more than 85 percent of the County's CO emissions and 90 percent of its $NO_x$ emissions. Area sources account for more than 94 and 79 percent of St. Clair County's $PM_{10}$ and $PM_{2.5}$ emissions, respectively, while stationary sources account for more than 58 percent of the County's $SO_2$ emissions. Natural sources represent more than 52 percent of the County's VOC emissions.

### 3.13.4.2 Greenhouse Gas Emissions

Table 3.13-3 provides a summary of $CO_2$ emissions for 2010 through 2012 in Illinois, which are the most recent data available. The electric power and transportation sectors account for approximately 40 and 28 percent of all $CO_2$ emissions, respectively.

TABLE 3.13-3
**$CO_2$ Emissions in Illinois (Metric Tons) in 2010 – 2012**

| | 2010 | 2011 | 2012 |
|---|---|---|---|
| **Illinois** | | | |
| Residential Sector | 23.6 | 23.6 | 20.3 |
| Commercial Sector | 11.5 | 12.4 | 10.9 |
| Industrial Sector | 33.1 | 34.5 | 34.9 |
| Transportation Sector | 63.5 | 63.0 | 60.9 |
| Electric Power Sector | 94.1 | 91.2 | 85.3 |
| Total | 225.8 | 224.7 | 212.3 |

Source: USEIA, 2015

### 3.13.4.3 Climate Change

Because the climate change projections are regional in nature and because both sites are in the Midwest, the climate change projections for the St. Clair County Site are identical to those presented for the Fenton Site.

# 3.14 Airspace

This subsection evaluates potential encroachment on Federal Aviation Administration (FAA)-administered airspace during construction and operation of the Next NGA West Campus. Information about the existing FAA classification for each of the alternative sites was obtained through review of FAA regulations (14 CFR), aeronautical charts, manuals, pilot handbooks, and policies. The ROI for airspace is defined in vertical and horizontal dimensions. The vertical dimension of the airspace ROI is from the ground surface up to 10,000 feet above mean sea level (amsl), which is consistent with the FAA controlled airspace classification elevations for Class B airspace. The horizontal dimension of the ROI is assumed to have lateral limits that are divided into three concentric circles: an inner 10-nautical-mile (nm) radius, a middle 20-nm radius, and an outer 30-nm radius, centered on the site. The inner 10-nm radius area is subdivided based on operational needs, runway alignment, adjacent regulatory airspace, or adjacent airports. The areas between 10 to 20 nm and 20 to 30 nm may be vertically subdivided because of terrain or other regulatory airspace (FAA, 2014a). The FAA has established four categories of airspace: controlled, uncontrolled, special use, other airspace. All of the Next NGA West proposed sites are located within controlled airspace.

Controlled airspace has defined vertical and horizontal dimensions and is divided into seven classes ranging from Class A through Class G (FAA, 2008). The South 2nd Street facility and the alternative sites occur in Class B and D airspace. The specifics of Class B and D airspace are as follows (FAA, 2014a):

- Class B airspace: Extends from ground surface to 10,000 feet amsl surrounding the nation's busiest airports. Dimensions are individually tailored based on facility type and terrain, and requires air traffic control (ATC) clearance for aircraft to operate in the area, under both instrument flight rules (IFR) conditions (that is, bad weather requiring instruments for guidance) or visual flight rules (VFR) (that is, normal conditions).
- Class D airspace: Occupies airspace from the surface to 2,500 feet above the airport elevation surrounding those airports that have an operational control tower. Dimensions are individually tailored for each airport, and radio communication with ATC is required prior to entering and during the time within that airspace.

## 3.14.1 Fenton Site

The Fenton Site is inside the 30-nm radius for St. Louis-Lambert International Airport Class B airspace (FAA, 2014b). The nearest airport is the Spirit of St. Louis Airport, 14.8 miles from the site.

## 3.14.2 Mehlville Site

The Mehlville Site is inside the 30-nm radius for St. Louis-Lambert International Airport Class B airspace (FAA, 2014b). The nearest airport is the St. Louis Downtown Airport, 13.6 miles from the site.

### 3.14.3 St. Louis City Site (Preferred Alternative)

The St. Louis City Site is inside the 30-nm radius for St. Louis-Lambert International Airport Class B airspace (FAA, 2014b). The nearest airport is the St. Louis Downtown Airport, 6.1 miles from the site.

### 3.14.4 St. Clair County Site

The St. Clair County Site is inside the 30-nm radius for St. Louis-Lambert International Airport and Scott AFB/ MidAmerica St. Louis Airport (Scott/MAA) Class B airspace (FAA, 2014b).

The St. Clair County Site is also located in the Class D airspace for Scott/MAA. The Scott/MAA Class D airspace is located beneath the Class B airspace area. The Scott/MAA Class D surface area is defined as the airspace within a 5.8-mile radius from the geographic center of Scott/MAA (USAF, 2007).

SECTION 4.0

# Environmental Consequences

This section addresses the potential environmental impacts from the Proposed Action. The Proposed Action considers siting, constructing and operating the Next NGA West Campus at one of four alternative locations (Section 2.5, *Description of Alternatives Carried Forward for Analysis*).

Sections 4.1 through 4.14 provide resource-focused analyses of the potential environmental impacts. Pursuant to National Environmental Policy Act (NEPA) regulations (Title 40 of the *Code of Federal Regulations* [CFR] Parts 1500-1508 [40 CFR 1500-1508]), project effects were evaluated based on context and intensity. Context refers to the affected environment in which a proposed project occurs, which is described in Section 3.0, *Affected Environment*. The intensity of the impact was assessed in regards to type (no/negligible, minor to moderate, or major), quality (negative versus beneficial), and duration (short term versus long term). For every impact identified in Section 4.0, an intensity designation was assigned. Impacts were then numbered to correspond across all four sites and the No Action Alternative. For example, Biology-1 corresponds to direct vegetation impacts across all the alternatives.

The analysis also identifies the necessary environmental protection measures, including best management practices (BMPs), mitigation measures, plans or permits, and coordination. These environmental protection measures offset negative impacts from the Proposed Action. The following is a definition of each environmental protection measure:

- **Mitigation Measures:** These measures are based on a legal or regulatory requirement.
- **BMP**: These measures are standard industry practice.
- **Plans/Permits:** These measures are plans or permits that are required to implement the Proposed Action.
- **Coordination:** These measures are instances where the government will need to coordinate with an outside agency to determine necessary mitigation measures or obtain concurrence on an affect determination.

BMPs, plans/permits, coordination, and mitigation measures for each resource were also numbered to correspond across the four sites and the No Action Alternative. An impact summary table is provided at the end of each site discussion and resource section.

Section 4.15, *Cumulative Impacts*, describes the cumulative impacts of each of the resource areas discussed, followed by an overall summary table. Section 4.16, *Irreversible and Irretrievable Commitment of Resources*, summarizes the analyses required by NEPA regarding the relationships among local, short-term uses of the environment and long-term productivity and irreversible or irretrievable commitment of resources.

There have been a number of revisions to the impact findings shown in this table since the publication of the DEIS. These revisions were based on analysis performed in response to input received from public comments. For an explanation of changes made, please see the comment response summary provided in Appendix 1D.

## 4.1 Socioeconomics

This subsection analyzes the potential impacts to socioeconomic resources from constructing and operating the Proposed Action and the No Action Alternative. Potential construction impacts include changes to population and housing associated with the construction workforce (number of workers during project construction) as well as the changes to employment and income associated with construction payroll and expenditures on construction materials (steel, concrete, wood, etc.). Although tax revenues such as earnings tax and sales tax are potential construction impacts, earnings tax for construction workers has not been defined because of the uncertainty about the origin of construction workers not living in the region and where those living in the region reside. Sales tax associated with construction expenditures is not included due to uncertainty about where materials would be purchased. For similar reasons, sales tax associated with construction worker purchases cannot be determined by location.

Potential operational impacts to socioeconomic resources include impacts to population, housing, employment, and income, and tax revenues resulting from relocating the South 2nd Street facility in the region. The analysis included the following assumptions:

Population. It was assumed no new permanent jobs would be created because of the Proposed Action; therefore, there would be no increase in population in the ROI. While the Next NGA West Campus is being designed for 3,150 personnel, no new positions or influx of personnel are anticipated in the foreseeable future. Therefore, no changes to population were analyzed. The current total of 2,927 personnel as of August 11, 2015, was used in the analysis.

Housing. Some personnel may move over time. However, the extent of relocation and the period during which NGA personnel may relocate is a personal choice and unknown at this time. In addition, relocations are often not directly correlated to the place of employment of a single household member, but result from multiple factors such as employment location of other members of the household and school locations. Therefore, residential relocations were not analyzed quantitatively in this section. Information was provided on available housing in the MSA (to include Missouri and Illinois data) as a point of comparison to demonstrate current vacancy and occupancy rates.

Employment and Income. Personnel estimates were based on a total of 2,927 personnel as of August 11, 2015, which is composed of 273 who live in the City of St. Louis and 2,654 who live outside the city (Berczek, 2015, pers. comm.). The NGA total personnel numbers can fluctuate on a weekly basis, and the ratio of contractors to government employees (estimated to be approximately 1:4) also varies. A conservative

approach was taken in analyzing employment and income effects, and it was assumed that all personnel could be government employees and subject to earnings tax.

Tax Revenue. For the purpose of evaluating earnings tax impacts, the City of St. Louis earnings tax calculations were based on the number of current personnel who reside outside the city: 2,654 (Comer, 2014) out of the 2,927 total personnel as of August 11, 2015 (Berczek, 2015, pers. comm.). It was assumed that earnings taxes would be lost for all personnel residing outside the city if a site outside the City of St. Louis were selected. Approximately 70 percent of the current employees reside in Missouri and 30 percent in Illinois (Comer, 2014).

Information on the potential loss of property tax from relocating the NGA West Campus was provided for affected municipalities based on current assessed values. Changes in property tax paid by NGA personnel are unknown and speculative because relocations would be a matter of personal choice and potentially affected by multiple factors. It was assumed NGA personnel would not relocate over the short term. Over the long term, some relocations may occur, though they are likely to be gradual and difficult to predict. For similar reasons, changes in state income tax paid by NGA personnel as a result of relocating the NGA West Campus are unknown and would be difficult to predict. State income tax is affected by place of employment and location of residence; although residential relocations may occur over the long term, the extent of relocations would be difficult to predict.

As discussed in more detail in Section 1.6, *Scope of the Analysis*, possible impacts associated with the future use of the South 2nd Street facility were not analyzed in this document because it is unknown who would occupy the site after NGA leaves. However, the loss of tax revenue from NGA leaving the South 2nd Street facility was analyzed for each site under the impact defined as **Socio-Econ-3a**.

The IMPLAN model (Minnesota IMPLAN Group, 2015) (described in more detail below) was used to estimate impacts associated with construction expenditures and construction-related payroll. These were determined at a regional level and applied across all the sites being considered for the Next NGA West Campus. The IMPLAN model was also used to estimate secondary, or “ripple,” effects associated with employment and income across the region, but it cannot determine how gains might be distributed among municipalities because of the proximity of sites to each other and the interrelated economic linkages over a large metropolitan region. The IMPLAN model does not assess the relative importance of benefits. Therefore, benefits are described semi-quantitatively using factors such as the increased number of employees working in the area and their contributions to the local economy through purchases and tax payments.

Following the description of the IMPLAN model and results, the impacts below are described for each site:

- Construction Impacts
  - Population and Housing
  - Employment and Income
  - Tax Revenue

- Operational Impacts
  - Population and Housing
  - Employment and Income
  - Tax Revenue

Table 4.1-1 identifies the impact thresholds for socioeconomics.

TABLE 4.1-1
**Impact Thresholds for Socioeconomics**

| Impact | Description |
|---|---|
| No/negligible | No impacts to socioeconomic factors would be expected or impacts to socioeconomic factors would be barely perceptible and would not alter resource conditions. |
| Minor to Moderate | Impacts to socioeconomic factors would be detectable and spread over the MSA. An individual municipality may experience a more concentrated impact to one socioeconomic factor such as tax revenue. |
| Major | Impacts to socioeconomic factors would be great and concentrated in a municipality or local area where proportionally greater effects may occur to more than one of the following categories: population, housing, employment, and income, or tax revenue. |
| Quality | Beneficial—would have a positive effect on socioeconomic factors.<br>Negative—would have an adverse effect on socioeconomic factors. |
| Duration | Short-term—would occur during the proposed construction period.<br>Long-term—would continue post-construction and through the duration of operations. |

IMPLAN Model and Results

Construction impacts to the region from the Proposed Action were analyzed using the IMPLAN model. In addition to the direct economic effects, the Proposed Action would result in secondary (indirect and induced) economic effects. Indirect effects are “inter-industry” and result from the purchase of construction materials and/supplies from another industry, such as a supplier purchasing raw materials or components of its product from another industry sector. Induced effects result from labor income spending, such as a construction worker spending salary dollars at a local restaurant. These economic effects were estimated using the IMPLAN model and include changes in characteristics, such as regional employment and income. The magnitude of these economic effects depends on the initial changes in economic activity within the region, such as construction expenditures. For the purposes of this analysis and inclusion in the IMPLAN model, the U.S. Army Corps of Engineers (USACE) estimated these construction costs ($945 million as discussed in Table 4.1-2). The magnitude of the economic effects is also influenced by the following factors:

- Interactions within the regional economy (for example, economic linkages) that create multiplier effects in a regional economy as money is circulated.
- Dispersal of money spent on goods and services outside the region and across geographies that reduces the multiplier effects in a regional economy.

In addition to the effects associated with the Proposed Action, there may be synergies with other projects in the region, resulting in additional economic benefits. In combination, they may contribute to the growth of service-related businesses or create confidence in the growth potential of an area, which encourages other development.

This section describes regional modeling options considered for the socioeconomic analysis, modeling assumptions, and results, which were then applied to each of the sites being considered.

Regional economic analysis modeling systems (consisting of data as well as analytical software), such as Regional Economic Models Inc., Regional Industrial Multiplier System II, and IMPLAN, are available for regional economic analysis. These three models were evaluated as possible tools to estimate the economic impacts associated with the construction of the Next NGA West Campus. The IMPLAN model was chosen in this analysis because it is the industry standard. It is also the one that had the most up-to-date economic data to characterize the economy of the St. Louis MSA region.

IMPLAN is a computer database and modeling system used to create input-output models for any combination of U.S. counties (Minnesota IMPLAN Group, 2015). It is the most widely used of such model systems in the U.S. It is a static model that estimates impacts for a snapshot in time when the impacts are expected to occur, based on the makeup of the economy at the time of the underlying IMPLAN data. It provides users with the ability to define industries, economic relationships, and projects to be analyzed. It can be customized for any county, region, or state, and used to assess the “ripple” or “multiplier” effects caused by increasing or decreasing spending in various parts of the economy. IMPLAN measures the initial impact to the economy but does not consider long-term adjustments. The model does not assess the relative importance of benefits; therefore, benefits are described semi-quantitatively without attributing significance.

The IMPLAN model includes the following: 1) estimates of final demands and final payments for each county developed from government data; 2) a national average matrix of technical coefficients; 3) mathematical tools that help the user formulate a regional model; and 4) tools that allow the user to input data that are more accurate or add data refinements, conduct impact analyses, and generate reports.

Indirect and induced economic effects of the Proposed Action construction phase were evaluated using an IMPLAN model of the St. Louis MSA ROI and the project construction costs developed for the ROI.
The agricultural effects on regional income are not included or quantified in the IMPLAN model. The project construction costs were further refined with assumptions on construction duration, construction cost split between materials/equipment and labor, origin and size of labor force, and origin of construction materials. Because the IMPLAN model is an annual model that evaluates the regional economic effects of changes in local expenditures, it was refined to identify which of the project’s costs were on locally sourced material and labor inputs.

Data inputs for the St. Louis MSA IMPLAN model were developed with the following assumptions and construction expenditures estimated by USACE:

- Duration of construction is 5 years.

- Project's total construction cost is estimated at $945 million (in 2014 dollars); of this, 45 percent is assumed to be the cost of materials and the remaining 55 percent is anticipated to be construction payroll. Cost estimates may change as the engineering design is refined.
- Forty percent of the cost of materials is sourced locally, that is, within the St. Louis MSA region, while 60 percent is assumed to be sourced from outside the MSA.
- The annual construction workforce totals 500.
- Eighty-five percent (or 425) of the construction workforce would be from the St. Louis MSA region, while the remaining 75 jobs (predominantly skilled labor) would come from outside the region.

Project costs were converted to average annual expenditures for the duration of the construction period because economic impacts are typically measured and reported in annual terms. Table 4.1-2 summarizes the annual estimates of the construction-phase expenditures used as inputs to the St. Louis MSA IMPLAN model.

TABLE 4.1-2
**Proposed Action Construction Project Cost**

| | **Project Cost (Million 2014 Dollars)** | | |
|---|---|---|---|
| | | **Spent Locally (within St. Louis MSA)** | |
| | **Total** | **Total** | **Annual Average** |
| Construction Cost | $945.00 | | |
| Construction Expenditures on Materials (for example, steel, concrete, wood, etc.) | $425.25[a] | $170.10[c] | $34.02 |
| Construction Payroll | $519.75[b] | $441.79[d] | $88.36 |

Notes:
[a]Construction expenditures on materials are 45% of the project construction cost.
[b]Construction payroll is 55% of the project construction cost.
[c]Local portion (within St. Louis MSA) of the construction expenditures on materials is 40%.
[d]Local (within St. Louis MSA) of the construction workforce is 85%; thus, the local construction payroll is assumed to be 85%.
Source: USACE.

Table 4.1-3 shows the IMPLAN model results for the annual construction phase employment and income effects of the project.

TABLE 4.1-3
**Proposed Action Construction-Phase Regional Economic Impacts**

| | |
|---|---|
| **Employment (FTEs)** | |
| Direct (Construction workers in the MSA) | 425 |
| Indirect (from inter-industry spending) | 250 |
| Induced (from labor income spending) | 670 |
| Total | 1,345 |
| **Income (Million 2014 Dollars)** | |
| Direct | $122.4 |
| Indirect | $17.5 |
| Induced | $33.8 |
| Total | $173.7 |

Note:
FTE = Full-time equivalents

In addition to the average annual direct employment of 425 full-time-equivalent jobs (FTEs), the IMPLAN results in Table 4.1-3 indicate that the construction phase of the project would result in annual indirect and induced employment within the St. Louis MSA region of 250 and 670 FTEs, respectively. The total annual construction-related employment is estimated to be 1,345 FTEs. These additional jobs are less than 0.1 percent of the total labor force (1,418,097) in the St. Louis MSA.

As expected, the increase in regional employment would be accompanied by increased levels of income within the region (Table 4.1-3). Construction of the proposed project is expected to result in $122.4 million in annual direct income to the St. Louis MSA region. The annual indirect and induced income is estimated at $17.5 million and $33.8 million, respectively. Impacts associated with the construction phase would be temporary and are applicable to all sites because all of the sites are in the St. Louis MSA region.

## 4.1.1 Fenton Site

### 4.1.1.1 Construction Impacts

**Effects on Population, Housing, Employment, and Income**. Construction of the proposed project would occur over a 5-year period and include direct and indirect effects on population. These effects would flow from the influx of construction workers (estimated to be 75 additional workers out of 500 total) from outside the ROI who temporarily relocate during the construction period. The non-resident workers would primarily be responding to short-term needs for skilled labor with different skill sets that fluctuate over time. Relocation is unlikely because non-resident workers are unlikely to be employed for the entire 5-year construction period, but rather would move to other construction jobs once their particular skill set was no longer needed for the Proposed Action. Therefore, the presence of non-resident construction workers would likely result in **no/negligible impact** to the ROI population (**Socio-Econ-1a**).

The estimated 75 construction workers from outside the ROI who would temporarily relocate would likely reside within hotels, rental units, or trailer campgrounds for the period they would be involved with the construction activity. The amount of available housing (more than 25,250 vacant rental units in the St. Louis MSA) would be able to easily accommodate the 75 construction workers. Therefore, there would be **no/negligible impact** to housing **(Socio-Econ-1b)** resulting from any construction workers moving to the St. Louis MSA.

Construction of the proposed project would result in employment opportunities (425 jobs) for residents of the St. Louis MSA. The project's construction cost is estimated at $945 million (in 2014 dollars). As shown in Table 4.1-2, the estimated value of materials purchased locally within the St. Louis MSA during the 5-year construction period would be $170.1 million, while the construction payroll would total $441.8 million (in 2014 dollars). These additional funds would cause a temporary beneficial impact by creating the potential for other employment opportunities (indirect and induced employment) for local workers in those industries that supply construction materials, as well as in other service areas such as transportation and retail. The increase in jobs would be a **minor to moderate, short-term benefit** to employment within the ROI during

construction (**Socio-Econ-2a**). The additional funds from salary dollars and the purchase of construction material would result in a temporary increase in regional incomes within the ROI, resulting in a **minor to moderate, short-term benefit (Socio-Econ-2b)**.

**Effects on Tax Revenues**. A short-term increase in tax revenues would result within the ROI from the temporary increase in spending associated with purchasing construction materials and construction workers' secondary expenditures. Approximately $170.1 million (in 2014 dollars) of construction materials would be purchased within the ROI, while approximately $441.8 million of the construction payroll would be for the construction workforce within the ROI over a 5-year period. Increased spending in the ROI during construction would result in a **minor to moderate, short-term benefit** on tax revenues within the ROI (**Socio-Econ-3a**). Where in the MSA the construction materials would be purchased and the tax revenues accrue is uncertain; therefore, the magnitude of this impact was not determined.

#### 4.1.1.2 Operational Impacts

This section evaluates the potential impacts to population, housing, employment, and income once the Next NGA West Campus is operating. Overall, no immediate change to socioeconomic conditions would be expected within the region.

**Effects on Population, Housing, Employment, and Income**. New jobs would not directly result from the long-term operation of the Next NGA West Campus; therefore, no changes in population would be expected. Consequently, **no/negligible impact** to population (**Socio-Econ-4a**) would occur from operating the Next NGA West Campus.

NGA personnel are not expected to relocate given the proximity of the South 2nd Street facility to the Fenton Site. Although driving times may increase for some NGA personnel, commuting times are expected to decrease for other NGA personnel depending on the location of their residences relative to the Fenton Site. If relocations do occur, renting or purchasing a home in a new location is expected to make another residence available elsewhere in the MSA, which would not affect the overall availability of housing in the region. **No/negligible impact** to housing **(Socio-Econ-4b)** would result from operating the Next NGA West Campus.

No new NGA jobs would be created from operating the Next NGA West Campus (**Socio-Econ-5a**), and consequently, regional income associated with spending by new personnel would not change (**Socio-Econ-5b**).

At the Fenton Site, the Next NGA West Campus would be located in an industrial park adjacent to Interstate 44 (I-44) and bounded by the Meramec River. The primary road to the site is an access road that parallels I-44. Cross-traffic and access to this area are limited, and there is little vacant land immediately adjacent to the Fenton Site or in the part of the ROI south of I-44. Development that occurs is likely to be infill development south of I-44 and may be commercial, industrial, or residential. Replacement or turnover of existing business and land uses with similar uses may also occur. The potential for induced development in the area would be minor and depend on the location and ease of access to infill development that might occur in the area.

Therefore, indirect impacts to socioeconomic factors as a result of induced development are expected to be negligible.

Regardless of the extent of new development, changes in the local economy may occur from spending by NGA personnel at existing local services, such as eateries and gas stations. Some benefits to the local economy are expected given the number of NGA personnel, even if only a small percentage takes advantage of local services. Therefore, a **minor to moderate, long-term benefit** associated with potential employment or income is expected from operating the Proposed Action at the Fenton Site (**Socio-Econ-5c**).

**Effects on Tax Revenue**. If the Fenton Site were selected for the Proposed Action, NGA personnel who live in the City of St. Louis would continue to pay earnings tax ($225,018), while NGA personnel living outside the city would not. This loss of approximately $2.19 million in earnings tax would be 1.43 percent of the City's total 2014 earnings tax ($153.3 million) and 0.22 percent of City's $985,213,411 budget (Table 3.1-11). The City of St. Louis would experience a decrease in earnings tax revenue, which would be a **minor to moderate, negative, and long-term impact (Socio-Econ-6a).**

Because NGA is a federal entity, it is exempt from paying property tax. As described is Section 3.1.1.3, the City of Fenton would not receive approximately $5,502 in annual fire protection tax revenue, which represents 0.103 percent of the City of Fenton budget (Fenton does not collect property tax). In addition, St. Louis County would lose approximately $462,308 in property tax revenue (0.43 percent of the total property tax revenue, not including the commercial surcharge of $93,547.94 levied by the St. Louis County) if NGA relocated to the Fenton Site. Last, St. Louis County would lose approximately $555,856 in total tax revenue, or 0.09 percent of its annual operating budget (see Table 3.1-6), from the site. These municipalities would experience a decrease in property tax revenue, which would be a **minor to moderate, negative, and long-term impact (Socio-Econ-6b).**

Operating the Next NGA West Campus at the Fenton Site would result in a potential increase in sales tax revenue from secondary expenditures by NGA personnel to the City of Fenton, St. Louis County and the State of Missouri. Some NGA personnel may leave the campus during or after the workday to take advantage of local services. Spending by NGA personnel at nearby eateries, gas stations, daycare centers, gyms, and retailers would contribute to a minimal increase in sales taxes. Therefore, the sales tax increase from secondary expenditures from operating the Proposed Action at the Fenton Site would result in **no/negligible** indirect impact **(Socio-Econ-6c).**

Table 4.1-4 summarizes the impacts to socioeconomics for the Fenton Site.

TABLE 4.1-4
**Fenton Site Summary of Socioeconomic Impacts**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| **Construction** | | |
| **Population and Housing** | | |
| Socio-Econ-1a: Population, increase in construction workers | No/negligible impact | Not applicable |
| Socio-Econ-1b: Construction worker impact on housing | No/negligible impact | Not applicable |
| **Employment and Income** | | |
| Socio-Econ-2a: Construction employment | Minor to moderate short-term benefit | Not applicable |
| Socio-Econ-2b: Construction job income (to households and industry) | Minor to moderate, short-term benefit | Not applicable |
| **Tax Revenue** | | |
| Socio-Econ-3a: Regional—from increased spending in region during construction | Minor to moderate, short-term benefit | Not applicable |
| **Operational** | | |
| **Population and Housing** | | |
| Socio-Econ-4a: Population | No/negligible impact | Not applicable |
| Socio-Econ-4b: Housing | No/negligible impact | Not applicable |
| **Employment and Income** | | |
| Socio-Econ-5a: Employment | No/negligible impact | Not applicable |
| Socio-Econ-5b: Income | No/negligible impact | Not applicable |
| Socio-Econ-5c: Induced employment or income | Minor to moderate, long-term benefit | Not applicable |
| **Tax Revenue** | | |
| Socio-Econ-6a: Indirect impact to St. Louis, loss of earnings tax from NGA non-residents of St. Louis | Minor to moderate, negative, long-term impact | Not applicable |
| Socio-Econ-6b: Loss of property tax paid to municipality | Minor to moderate, negative, long-term impact | Not applicable |
| Socio-Econ-6c: Sales tax | No/negligible impact | Not applicable |

## 4.1.2 Mehlville Site

### 4.1.2.1 Construction Impacts

Because all the Proposed Action sites are in the St. Louis MSA, the regional socioeconomic impacts from construction at the Mehlville Site would be comparable to those described for the Fenton Site (see Section 4.1.1.1), with **no/negligible** construction impacts and effects on population or housing **(Socio-Econ-1a and 1b).** As with the Fenton Site, construction jobs would result in changes in employment and income in the region. The increase in jobs would be a **minor to moderate, short-term benefit** to employment within the ROI during construction (**Socio-Econ-2a**). The additional funds from salary dollars

and the purchase of construction material would result in a temporary increase in regional income within the ROI, resulting in a **minor to moderate, short-term benefit (Socio-Econ-2b).**

Increased spending in the ROI during construction would result in a **minor to moderate, short-term benefit** on tax revenues within the ROI (**Socio-Econ-3a**). However, it is uncertain at this time where in the MSA the construction materials would be purchased; therefore, the magnitude of the sales tax revenue by geography cannot be determined at this time.

#### 4.1.2.2 Operational Impacts

**Effects on Population, Housing, Employment, and Income**. Direct impacts on population, housing, employment, and income would be comparable to those described for the Fenton Site (Section 4.1.1.1). **No/negligible direct impact** on population, housing, employment, or income would occur from operating the Proposed Action because no new NGA jobs would be created **(Socio-Econ-4a and Socio-Econ-5a and 5b).**

NGA employees are not expected to relocate given the proximity of the South 2nd Street facility to the Mehlville Site. Although driving times may increase for some NGA personnel, travel times are expected to decrease for other NGA personnel depending on the location of their residences relative to the Mehlville Site. If relocations do occur, renting or purchasing a home in a new location is expected to make another residence available elsewhere in the MSA, which would not affect the overall availability of housing in the region. **No/negligible impact** to housing (**Socio-Econ-4b**) would result from the Proposed Action.

At the Mehlville Site, the Next NGA West Campus (Proposed Action) would be in an existing suburban office park that currently houses approximately 1,060 employees (Poinsett, 2015, pers. comm.) and is served by nearby commercial businesses. It is anticipated that those businesses would continue to serve NGA employees in much the same way as they have accommodated current office park employees. The Next NGA West Campus would add approximately 2,000 personnel to the office park. The increased number of personnel relative to the current site tenants, the accessibility of nearby services, and the availability of land for development are expected to positively contribute to the local economy. Therefore, a **minor to moderate, long-term benefit** associated with indirect employment or income would occur from operating the Proposed Action at the Mehlville Site (**Socio-Econ-5c**).

**Effects on Tax Revenue**. If the Mehlville Site were selected for the Proposed Action, NGA personnel who live in the City of St. Louis would continue to pay earnings tax ($225,018), while NGA staff living outside the City of St. Louis would not. This loss of $2.19 million in earnings tax would be 1.43 percent of the City's 2014 total earnings tax ($153.3 million) and 0.22 percent of the City's $985,213,411 budget (Table 3.1-11). For the City of St. Louis, this would be **a minor to moderate, negative, and long-term impact (Socio-Econ-6a).**

If the Mehlville Site were selected for the Next NGA West Campus, St. Louis County would lose approximately $545,495 in property tax revenue (not including the $129,945 commercial surcharge levied by

St. Louis County), or 0.51 percent of the total annual property tax revenue that St. Louis County receives from the office park operating onsite. Approximately 0.01 percent of the St. Louis County 2014 adjusted operating budget, or approximately $675,440 in property tax payments to St. Louis County, would be lost due to the Proposed Action (Table 3.1-9) These municipalities would experience a decrease in property tax revenue, which would be a **minor to moderate, negative, and long-term impact (Socio-Econ-6b).**

Operating the Next NGA West Campus at the Mehlville Site would result in a potential increase in sales tax revenue from secondary expenditures by NGA personnel to St. Louis County and the State of Missouri. Some NGA personnel may leave the campus during or after the workday to take advantage of local services. Spending by NGA personnel at nearby eateries, gas stations, daycare centers, gyms, and retailers would contribute to a minimal increase in sales taxes. Therefore, the sales tax increase from secondary expenditures from operating the Proposed Action at the Mehlville Site would result in **no/negligible indirect impact** (**Socio-Econ-6c**).

Table 4.1-5 summarizes the impacts to socioeconomics for the Mehlville Site.

TABLE 4.1-5
**Mehlville Site Summary of Socioeconomic Impacts**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| **Construction** | | |
| **Population and Housing** | | |
| Socio-Econ-1a: Population, increase in construction workers | No/negligible impact | Not applicable |
| Socio-Econ-1b: Construction worker impact on housing | No/negligible impact | Not applicable |
| **Employment and Income** | | |
| Socio-Econ-2a: Construction employment | Minor to moderate, short-term benefit | Not applicable |
| Socio-Econ-2b: Construction job income (to households and industry) | Minor to moderate, short-term benefit | Not applicable |
| **Tax Revenue** | | |
| Socio-Econ-3a: Regional—from increased spending in region during construction | Minor to moderate, short-term benefit | Not applicable |
| **Operational** | | |
| **Population and Housing** | | |
| Socio-Econ-4a: Population | No/negligible impact | Not applicable |
| Socio-Econ-4b: Housing | No/negligible impact | Not applicable |
| **Employment and Income** | | |
| Socio-Econ-5a: Employment | No/negligible impact | Not applicable |
| Socio-Econ-5b: Income | No/negligible impact | Not applicable |
| Socio-Econ-5c: Induced employment or income | Minor to moderate, long-term benefit | Not applicable |

TABLE 4.1-5
**Mehlville Site Summary of Socioeconomic Impacts**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| **Tax Revenue** | | |
| Socio-Econ-6a: Indirect impact to St. Louis, loss of earnings tax from NGA non-residents of St. Louis | Minor to moderate, negative, long-term impact | Not applicable |
| Socio-Econ-6b: Loss of property tax paid to municipality | Minor to moderate, negative, long-term impact | Not applicable |
| Socio-Econ-6c: Sales tax | No/negligible impact | Not applicable |

## 4.1.3 St. Louis City Site (Preferred Alternative)

### 4.1.3.1 Construction Impacts

Because all the Proposed Action sites are in the St. Louis MSA, the regional socioeconomic impacts from construction at the St. Louis City Site would be comparable to those described for the Fenton Site (see Section 4.1.1.1), with **no/negligible** construction impacts and effects on population or housing **(Socio-Econ-1a and 1b).** As with the Fenton Site, construction jobs would result in changes in employment and income in the region. The increase in jobs would be a **minor to moderate, short-term benefit** to employment within the ROI during construction **(Socio-Econ-2a**). The additional funds from salary dollars and the purchase of construction material would result in a temporary increase in regional incomes in the ROI, resulting in a **minor to moderate, short-term benefit (Socio-Econ-2b).**

Increased spending in the ROI during construction would result in a **minor to moderate, short-term benefit** on tax revenues within the ROI **(Socio-Econ-3a).** Where in the MSA the construction materials would be purchased is unknown at this time; therefore, the magnitude of sales tax revenue by geography cannot be determined at this time.

### 4.1.3.2 Operational Impacts

**Effects on Population, Housing, Employment, and Income**. Direct impacts on population, housing, employment, and income would be comparable to those described for the Fenton Site (Section 4.1.1.2.1). **No/negligible direct impact** on population, housing, and employment or income would occur from operating the Proposed Action because no new jobs would be created (**Socio-Econ-4a and Socio-Econ-5a and 5b**).

NGA employees are not expected to relocate given the proximity of the South 2nd Street facility to the St. Louis City Site. Although driving times may increase for some NGA personnel, commuting times are expected to decrease for other NGA personnel depending on the location of their residences relative to the St. Louis City Site. If relocations do occur, renting or purchasing a home in a new location is expected to make another residence available elsewhere in the MSA, which would not affect the overall availability of housing in the region. The Proposed Action would result in **no/negligible impact** to housing (**Socio-Econ-4b**).

Redevelopment of the area surrounding the St. Louis City Site would provide benefits by virtue of redeveloping vacant sites. It is unclear whether the presence of the Next NGA West Campus would aid/ stimulate additional redevelopment or be a neutral factor. The Proposed Action would not directly provide new jobs in the ROI at the time of relocation; however, development of the St. Louis City Site in this redevelopment area could encourage some business growth over time to supply services to the NGA employees, such as restaurants, retail stores, and gas stations. Likewise, revenues at area businesses could see some increase from secondary expenditures of NGA employees, which could indirectly increase employment opportunities and income. Therefore, **minor to moderate, long-term benefits** would result from the creation or growth of other businesses in the area from the NGA relocation **(Socio-Econ-5c).**

**Effects on Tax Revenue**. Employees of businesses in the City of St. Louis are subject to earnings tax, and all St. Louis residents must pay earnings tax regardless of the location of their place of employment. If the NGA West Campus is relocated from its current site on South 2nd Street to another location in the city, there would be no change in the number of NGA personnel paying earnings taxes and thus **no/negligible impact** to the city (**Socio-Econ-6a**).

As described in Section 3.1.3.3, NGA is a federal entity, and it does not pay property tax to the City of St. Louis. If the Proposed Action moves to a new site within the City, there would be no change to property tax collected by the City from NGA**.** If the St. Louis City Site were selected for the Next NGA West Campus, St. Louis would lose the current property tax it receives from the residential and commercial businesses that operate in this area. The City of St. Louis received $64,180 in property tax revenue in 2014 for the St. Louis City Site (Halliday, 2015b, pers. comm.). This reflects a fraction of a percent (0.11 percent) of the $56.5 million in property tax revenue received, and 0.01 percent of the total city budget in 2014 (Table 3.1-12). The City of St. Louis would experience a decrease in property tax revenue, which would be a **minor to moderate, negative, and long-term impact (Socio-Econ-6b).**

Because the St. Louis City Site is within the boundary of the City of St. Louis, **no/negligible impacts** would be expected to the sales tax paid by NGA personnel **(Socio-Econ-6c)**.

Table 4.1-6 summarizes the impacts to socioeconomics for the St. Louis City Site.

TABLE 4.1-6
**St. Louis City Site Summary of Socioeconomic Impacts**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| **Construction** | | |
| **Population and Housing** | | |
| Socio-Econ-1a: Population, increase in construction workers | No/negligible impact | Not applicable |
| Socio-Econ-1b: Construction worker impact on housing | No/negligible impact | Not applicable |

TABLE 4.1-6
**St. Louis City Site Summary of Socioeconomic Impacts**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| **Employment and Income** | | |
| Socio-Econ-2a: Construction employment | Minor to moderate, short-term benefit | Not applicable |
| Socio-Econ-2b: Construction job income (to households and industry) | Minor to moderate, short-term benefit | Not applicable |
| **Tax Revenue** | | |
| Socio-Econ-3a: Regional—from increased spending in region during construction | Minor to moderate, short-term benefit | Not applicable |
| **Operational** | | |
| **Population and Housing** | | |
| Socio-Econ-4a: Population | No/negligible impact | Not applicable |
| Socio-Econ-4b: Housing | No/negligible impact | Not applicable |
| **Employment and Income** | | |
| Socio-Econ-5a: Employment | No/negligible impact | Not applicable |
| Socio-Econ-5b: Income | No/negligible impact | Not applicable |
| Socio-Econ-5c: Induced employment or income | Minor to moderate, long-term benefit | Not applicable |
| **Tax Revenue** | | |
| Socio-Econ-6a: Indirect impact to St. Louis, loss of earnings tax from NGA non-residents of St. Louis | No/negligible impact | Not applicable |
| Socio-Econ-6b: Loss of property tax paid to municipality | Minor to moderate, negative, long-term impact | Not applicable |
| Socio-Econ-6c: Sales tax | No/negligible impact | Not applicable |

## 4.1.4 St. Clair County Site

### 4.1.4.1 Construction Impacts

Because all the Proposed Action sites are in the same region, the socioeconomic impacts from construction at the St. Clair County Site would be comparable to those described for the Fenton Site (see Section 4.1.1.1), with **no/negligible** construction impacts and effects on population or housing **(Socio-Econ-1a and 1b).**

As with the Fenton Site, construction jobs would result in changes in employment and income in the region. The increase in jobs would be a **minor to moderate, short-term benefit** to employment within the ROI during construction **(Socio-Econ-2a**). The additional funds from salary dollars and the purchase of construction material would result in a temporary increase in regional incomes within the ROI, resulting in a **minor to moderate, short-term benefit (Socio-Econ-2b).**

Increased spending in the ROI during construction would result in a **minor to moderate, short-term benefit** on tax revenues within the ROI (**Socio-Econ-3a**). Where in the MSA the construction materials would be purchased and tax revenues accrue is uncertain; therefore, the magnitude of this impact was not determined.

#### 4.1.4.2 Operational Impacts

**Effects on Population, Housing, Employment, and Income**. Impacts on population, housing, employment, and income would be comparable to those described previously for the Fenton Site (Section 4.1.1.2.1). **No/negligible direct** impact on population and housing, employment, or income would occur from operating the Proposed Action because no new jobs would be created (**Socio-Econ 4a and Socio-Econ-5a and 5b**).

Over time, some NGA employees may choose to relocate to be closer to the St. Clair County Site following a move to that campus, which is approximately 35 minutes by car from the South 2nd Street facility. If relocations were to occur, they are expected to affect only the personnel with longer driving distances and would likely occur over an extended period. Where relocations do occur, renting or purchasing a home in a new location is expected to make another residence available elsewhere in the MSA and not affect the overall availability of housing in the region. **No/negligible impact** to housing **(Socio-Econ-4b)** is expected from the Proposed Action.

At the St. Clair County Site, the Proposed Action would be located in an area that is planned for development as the MidAmerica Commercial Park. Development and height restrictions exist in this area to ensure building compatibility with airport activities. Despite these restrictions, much of the surrounding area is currently vacant, and some additional development is likely to occur in this area over time, particularly with the influx of NGA personnel. Some benefits to the local economy are expected given the number of personnel associated with NGA, even if only a small percentage of the personnel takes advantage of local services. Therefore, a **minor to moderate, long-term benefit** from creation or growth of other businesses in the area would be expected from the NGA relocation **(Socio-Econ-5c).**

**Effects on Tax Revenue**. If the Next NGA West Campus were to move to St. Clair County, NGA personnel who live in St. Louis would continue to pay earnings tax, while NGA staff living outside the city would not. This loss of approximately $2.19 million in 2014 earnings tax would be 1.43 percent of the City's total earnings tax ($153.3 million) and 0.22 percent of the City's $985,213,411 budget (Table 3.1-11). This would result in a **minor to moderate, negative, and long-term impact** to the City of St. Louis (**Socio-Econ-6a**).

If the St. Clair County Site were selected for the Next NGA West Campus, there would be no change to the County's property tax revenue; it is already exempt from property taxes because it is County-owned (Table 3.1-14). Therefore, there would be **no/negligible impact** to property tax revenue (**Socio-Econ 6b**). The loss of revenue from the two agricultural leases (129 acres) associated with the site would be approximately $250 per acre, or $32,250 total, on average each year for MidAmerica St. Louis Airport (St. Clair County), in addition to the loss of income generated for the two farmers leasing the property. However, the airport farm manager identified alternative agricultural lease locations, and one of the farmers prepared a replacement field (121 acres) in fall 2015, which is planned to be in agricultural production in spring 2016. The other farmer chose not to continue to lease land (Trapp, 2016), with the acreage accounting for less than 8 percent of his total farming operation (Collingham, 2015b, pers. comm.).

Currently, MidAmerica St. Louis Airport has approximately 2,300 acres in its agricultural lease program. The proposed St. Clair County Site includes approximately 129 acres or (5.6 percent) of this total amount. Of the 129 acres that would be displaced by the Proposed Action, approximately 121 acres would be relocated, with a net reduction of 8 acres of leased land. This would amount to a loss of $2,000 in revenue for MidAmerica St. Louis Airport, which is less than 0.5 percent of the annual agricultural lease revenue of $575,000 (Trapp, 2015c, pers. comm.). Therefore, **no/negligible impact** to the overall MidAmerica agricultural lease revenue and farmer income from these existing agricultural leases is anticipated because of the relatively small size of the revenue stream (**Socio-Econ-6b**). Operating the Next NGA West Campus at the St. Clair Site would result in a potential increase in sales tax revenue from secondary expenditures by NGA personnel to St. Clair County and the State of Illinois. Some NGA personnel may leave the campus during or after the workday to take advantage of local services. Spending by NGA personnel at nearby eateries, gas stations, daycare centers, gyms, and retailers would contribute to a potential increase in sales taxes. Therefore, the sales tax increase from secondary expenditures from operating the Proposed Action at the St. Clair Site would result in **no/negligible** indirect impact **(Socio-Econ-6c).**

Table 4.1-7 summarizes the impacts to socioeconomics for the St. Clair County Site.

TABLE 4.1-7
**St. Clair County Site Summary of Socioeconomic Impacts**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| **Construction** | | |
| **Population and Housing** | | |
| Socio-Econ-1a: Population, increase in construction workers | No/negligible impact | Not applicable |
| Socio-Econ-1b: Construction worker impact on housing | No/negligible impact | Not applicable |
| **Employment and Income** | | |
| Socio-Econ-2a: Construction employment | Minor to moderate, short-term benefit | Not applicable |
| Socio-Econ-2b: Construction job income (to households and industry) | Minor to moderate, short-term benefit | Not applicable |
| **Tax Revenue** | | |
| Socio-Econ-3a: Regional—from increased spending in region during construction | Minor to moderate, short-term benefit | Not applicable |
| **Operational** | | |
| **Population and Housing** | | |
| Socio-Econ-4a: Population | No/negligible impact | Not applicable |
| Socio-Econ-4b: Housing | No/negligible impact | Not applicable |
| **Employment and Income** | | |
| Socio-Econ-5a: Employment | No/negligible impact | Not applicable |
| Socio-Econ-5b: Income | No/negligible impact | Not applicable |
| Socio-Econ-5c: Induced employment or income | Minor to moderate, long-term benefit | Not applicable |

TABLE 4.1-7
**St. Clair County Site Summary of Socioeconomic Impacts**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| **Tax Revenue** | | |
| Socio-Econ-6a: Indirect impact to St. Louis, loss of earnings tax from NGA non-residents of St. Louis | Minor to moderate, negative, long-term impact | Not applicable |
| Socio-Econ 6b: Loss of property tax paid to municipality/loss of revenue from agricultural lease | No/negligible impact | Not applicable |
| Socio-Econ-6c: Sales tax | No/negligible impact | Not applicable |

### 4.1.5 No Action

Under the No Action Alternative, NGA would not relocate from its South 2nd Street facility, and no construction activities would occur at any of the proposed sites. It is presumed that current activities would continue at each of the proposed sites. **No/negligible impacts** to socioeconomic resources would occur because of the continued operation of NGA's South 2nd Street facility **(Socio-Econ-1a through 6c)**.

### 4.1.6 Summary of Impacts and Environmental Protection Measures

There are no environmental protection measures identified for socioeconomics.

Table 4.1-8 summarizes individual and overall impacts for all of the project alternatives.

TABLE 4.1-8
**Summary of Socioeconomics Impacts**

| Impacts | Fenton Site | Mehlville Site | St. Louis City Site | St. Clair County Site | No Action |
|---|---|---|---|---|---|
| **Construction** | | | | | |
| **Population and Housing** | | | | | |
| Socio-Econ-1a: Population, increase in construction workers | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact |
| Socio-Econ-1b: Construction worker impact on housing | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact |
| **Employment and Income** | | | | | |
| Socio-Econ-2a: Construction employment | Minor to moderate, short-term benefit | Minor to moderate, short-term benefit | Minor to moderate, short-term benefit | Minor to moderate, short-term benefit | No/negligible impact |
| Socio-Econ-2b: Construction job income (To households and industry) | Minor to moderate, short-term benefit | Minor to moderate, short-term benefit | Minor to moderate, short-term benefit | Minor to moderate, short-term benefit | No/negligible impact |

TABLE 4.1-8
**Summary of Socioeconomics Impacts**

| Impacts | Fenton Site | Mehlville Site | St. Louis City Site | St. Clair County Site | No Action |
|---|---|---|---|---|---|
| **Tax Revenue** | | | | | |
| Socio-Econ-3a: Regional—From increased spending in region during construction | Minor to moderate, short-term benefit | Minor to moderate, short-term benefit | Minor to moderate, short-term benefit | Minor to moderate, short-term benefit | No/negligible impact |
| **Operational** | | | | | |
| **Population and Housing** | | | | | |
| Socio-Econ-4a: Population | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact |
| Socio-Econ-4b: Housing | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact |
| **Employment and Income** | | | | | |
| Socio-Econ-5a: Employment | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact |
| Socio-Econ-5b: Income | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact |
| Socio-Econ-5c: Induced employment or income | Minor to moderate, long-term benefit | Minor to moderate, long-term benefit | Minor to moderate, long-term benefit | Minor to moderate, long-term benefit | No/negligible impact |
| **Tax Revenue** | | | | | |
| Socio-Econ-6a: Indirect impact to St. Louis, loss of earnings tax from NGA non-residents of St. Louis | Minor to moderate, negative, long-term impact | Minor to moderate, negative, long-term impact | No/negligible impact | Minor to moderate, negative, long-term impact | No/negligible impact |
| Socio-Econ-6b: Loss of property tax paid to municipality/loss of revenue from agricultural lease | Minor to moderate, negative, long-term impact | Minor to moderate, negative, long-term impact | Minor to moderate, negative, long-term impact | No/negligible impact | No/negligible impact |
| Socio-Econ-6c: Sales tax | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact |

# 4.2 Land Use and Community Cohesion

This subsection describes the potential impacts to land use and community cohesion within the ROIs as a result of implementing the Proposed Action. The ROI is described in Section 3.2, *Affected Environment*, and comprises the site and the area within 0.5 mile of the site boundary.

The methodology for assessing potential land use impacts involved comparing the compatibility of each alternative with the land use plans and zoning designations described in Section 3.2. Land use compatibility was assessed on alternative sites and in the area surrounding each site. The impact analysis methodology for assessing potential impacts to farmland subject to the Farmland Protection Policy Act (FPPA) involved reviewing the Natural Resources Conservation Service (NRCS) soil mapping for each site. Where soil types subject to the FPPA were identified, a Farmland Conversion Impact Rating Form was completed by the U.S. Department of Agriculture (USDA) (Appendix 3.2C).

The determination of impacts to community cohesion was made by assessing the potential effects of a high-security government facility placed at each site. Impacts to community cohesion may occur where access and linkages are blocked to areas that provide opportunities for residents to gather and interact and where routine life activities are met (such as grocery stores and pharmacies). Visual impacts that might affect community cohesion are discussed in Section 4.9, *Visual Resources*. Impacts to community cohesion as a result of property acquisition would be associated primarily with the relocation of individuals, businesses, and community resources, such as churches, parks, schools, and community centers at the St. Louis City Site (see Section 4.2.3.2, *Community Cohesion*, and Section 5.0, *Environmental Justice*, for a discussion of the relocation process). Community cohesion could also be affected by changes that reduce or remove linkages among community resources.

Table 4.2-1 identifies the impact thresholds for land use and community cohesion.

TABLE 4.2-1
**Impact Thresholds for Land Use**

| Impact | Description |
|---|---|
| No/Negligible | Land Use: No changes in Land Use Plan or Zoning are needed. No conversion of prime, unique, or important farmlands would occur or conversion would have a USDA Farmland Conversion Impact Rating of less than 175.<br>Community Cohesion: No impacts related to community cohesion would be expected or impacts to community cohesion would be barely perceptible and would not alter conditions that provide a sense of community cohesion. |
| Minor to Moderate | Land Use: Changes in the Land Use Plan or Zoning would be necessary for consistency with the larger vision for future development in the area. Changes might also be needed for project-specific requirements that are consistent with the overall vision for the area. Beneficial impacts would occur where the Proposed Action and associated land use changes support, but do not completely fulfill, redevelopment planning efforts of the local, regional, and/or state government.<br>Little to no conversion of prime, unique, or important farmlands would occur, as documented by a USDA Farmland Conversion Impact Rating of 176 to 225.<br>Community Cohesion: Impacts related to community cohesion would be detectable, such as changes in access routes to established community resources or changes in location of a community resource that result in decreased accessibility or removal of frequently used community resource. |

TABLE 4.2-1
**Impact Thresholds for Land Use**

| Impact | Description |
|---|---|
| Major | Land Use: The Proposed Action would require changes to the current Land Use Plan and Zoning because it is inconsistent with plans or the larger vision for the area. Beneficial impacts would occur where land use changes completely fulfill redevelopment planning efforts of the local, regional, and/or state government.<br>Conversion of prime, unique, or important farmlands would occur, as documented by a USDA Farmland Conversion Impact Rating of 225.<br>Community Cohesion: Impacts related to community cohesion would result in changes that appreciably alter current conditions, including the availability and/or access of community resources, and location or proximity of these resources to the neighborhood. Major portions of businesses and residences would be relocated, causing a segregation isolation of services from residents, bifurcation of established community, or substantial loss of community center of activity. |
| Quality | Beneficial— would have a positive effect on land use or community cohesion.<br>Negative—would have an adverse effect on land use or community cohesion. |
| Duration | Short term—would occur only during the proposed construction period.<br>Long term—would continue beyond the proposed construction period. |

## 4.2.1 Fenton Site

### 4.2.1.1 Land Use

Site Land Use

The land use designation at the Fenton Site is Industrial/Utility, and it is zoned as a Planned Industrial Development (PID), which allows for office/administrative use, such as the Next NGA West Campus. The Proposed Action is compatible with both these designations. Furthermore, the development of the Next NGA West Campus at this location would result in the conversion of a large vacant parcel to a new office complex, providing a **minor to moderate, long-term benefit (Land Use-1)**. Preparation and approval of a site development plan may be required by the City of Fenton prior to construction **(Land Use Permit/Plan-1).**

Surrounding Land Use

The land uses surrounding the site are largely commercial and industrial/utility, which are compatible with the Proposed Action. Recreational uses along the Meramec River would not be affected by the Proposed Action because the recreational area would remain open to the public. Recreational uses east and west of the Fenton Site are effectively isolated from the site and would not be affected. The area surrounding the site is already largely developed; however, implementing the Proposed Action may result in induced growth in the form of infill development south of I-44. Replacement or turnover of existing businesses and land uses with similar land uses may also occur. The potential for induced development in the area is minor and depends on the location and ease of access to infill development that might occur in the area. Therefore, the Proposed Action would result in a **minor to moderate, long-term benefit** to surrounding land uses **(Land Use-2)**.

Prime, Unique, and Important Farmlands

The Fenton Site is within a Census urban boundary and thus not subject to FPPA (U.S. Census Bureau [USCB], 2015g). Therefore, the Proposed Action would have **no/negligible impact** to farmlands **(Land Use-3)**.

#### 4.2.1.2 Community Cohesion

Displacement/Relocation

The Fenton Site is in an industrial area with little sense of community cohesion. The nearest residential neighborhoods are more than 0.25 mile from the site and separated from the site by the Meramec River to the north and I-44 to the south. Acquisition of the Fenton Site for the Proposed Action would not displace or relocate any residents or businesses. There would be **no/negligible impacts** to community cohesion from acquiring the property for the Proposed Action **(Land Use-4)**.

Construction Impacts

Nearby residences and community resources could be affected by increased noise levels, reduced air quality, and increased traffic during construction. Please see Section 4.4, *Traffic and Transportation*, Section 4.5, *Noise*, and Section 4.13, *Air Quality and Climate Change*, for detailed explanations of these impacts. Construction-related noise and reduced air quality would be unlikely to impact the use of community resources or reduce the quality of gatherings. Construction would occur primarily on weekdays during normal working hours **(Land Use BMP-1),** which would further reduce the potential for impacts to outdoor activities at nearby community resources. Construction-related traffic would not interfere with access to community resources because existing road infrastructure provides a direct exit to the Fenton Site that does not serve other destinations. This would allow construction traffic to avoid more developed interchanges and roads, and access the site directly from I-44. There would be **no/negligible impacts** from construction **(Land Use-5)**.

Operation Impacts

A portion of Meramec Park is adjacent to the proposed site but offers no public access or amenities. Operating Next NGA West Campus at the Fenton Site would not prevent individuals from accessing existing residences or amenities, or from normally attending gatherings or neighborhood events. Therefore, there would be **no/negligible** impacts to community cohesion from the operation of Next NGA West Campus **(Land Use-6).**

Table 4.2-2 summarizes impacts and environmental protection measures for the Fenton Site.

TABLE 4.2-2
**Fenton Site Summary of Land Use Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measures |
|---|---|---|
| **Land Use Impacts** | | |
| Land Use-1: Impacts to onsite land use | Minor to moderate, long term benefit | Permit/Plan-1: Site Development Plan |
| Land Use-2: Impacts to surrounding land use | Minor to moderate, long term benefit | Not applicable |
| Land Use-3: Conversion of prime, unique, and important farmlands | No/negligible impact | Not applicable |
| **Community Cohesion Impacts** | | |
| Land Use-4: Displacement/relocation of current residents and businesses | No/negligible impact | Not applicable |

TABLE 4.2-2
**Fenton Site Summary of Land Use Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measures |
|---|---|---|
| Land Use-5: Construction impacts | No/negligible impact | BMP-1: Construction will occur primarily on weekdays and during normal working hours |
| Land Use-6: Impacts from NGA operations | No/negligible impact | Not applicable |

## 4.2.2 Mehlville Site

### 4.2.2.1 Land Use

Site Land Use

The current land use at the Mehlville Site is as a suburban office park, and the site is designated for commercial land use by St. Louis County. The site is zoned as a Planned Commercial District. The Proposed Action is compatible with both designations. Therefore, there would be **no/negligible impact** to current or future land use **(Land Use-1).** Preparation and approval of a site development plan may be required by St. Louis County prior to construction **(Land Use Permit/Plan-1)**.

Surrounding Land Use

Land uses surrounding the site are largely residential, with commercial and institutional uses along Tesson Ferry Road. These land uses would be compatible with the proposed project, which is similar to the development currently at the Mehlville Site. Commercial uses support the office complex with restaurants, shopping, and service stations. The Proposed Action would increase the number of personnel relative to the current site tenant, and with the availability of land for development in the surrounding area, may induce development and result in a **minor to moderate, long-term benefit** on surrounding land uses **(Land Use-2)**.

Prime, Unique, and Important Farmlands

The Mehlville Site is within a Census urban boundary and not subject to FPPA (USCB, 2015g). Therefore, the Proposed Action would have **no/negligible impact** to farmlands **(Land Use-3)**.

### 4.2.2.2 Community Cohesion

Displacement/Relocation

Acquiring the property at the Mehlville Site for the Proposed Action would not result in displacement of any residences or affect access to community resources. It would result in the potential relocation of the current MetLife and Cigna operations and employees. It is possible these operations would relocate regardless because the Mehlville Site is currently for sale. Consequently, there would be **no/negligible impact (Land Use-4)** due to displacement as a result of the Proposed Action.

Construction Impacts

Residential neighborhoods and community resources, such as churches, could be affected by noise, dust, and increased large-vehicle traffic from construction activities. Impacts to the surrounding area from construction-related noise and a reduction in air quality are discussed further in Section 4.5, *Noise*, and Section 4.13, *Air*

*Quality and Climate Change*. Impacts due to traffic are discussed in Section 4.4, *Traffic and Transportation*. Construction activities would not preclude people from accessing homes, churches, or businesses near the Mehlville Site. Therefore, there would be **no/negligible impacts** to these residences and amenities during construction due to restricted access **(Land Use-5)**. Construction would likely only occur on weekdays during normal working hours and would be unlikely to affect neighborhood events and church activities **(Land Use BMP-1)**.

Operational Impacts

Operation of the Next NGA West Campus at the Mehlville Site would be similar to existing uses at the site. No aspect of operations would interfere with access to community resources or disrupt gatherings or neighborhood activities. Therefore, there would be **no/negligible impacts** to community cohesion from operation of the Next NGA West Campus **(Land Use-6)**.

Table 4.2-3 summarizes impacts and environmental protection measures related to the Mehlville Site.

TABLE 4.2-3
**Mehlville Site Summary of Land Use Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measures |
|---|---|---|
| **Land Use Impacts** | | |
| Land Use-1: Impacts to onsite land use | No/negligible impact | Permit/Plan-1: Site Development Plan |
| Land Use-2: Impacts to surrounding land use | Minor to moderate, long-term benefit | Not applicable |
| Land Use-3: Conversion of prime, unique, and important farmlands | No/negligible impact | Not applicable |
| **Community Cohesion Impacts** | | |
| Land Use-4: Displacement/relocation of current residents and businesses | No/negligible impact | Not applicable |
| Land Use-5: Construction impacts | No/negligible impact | BMP-1: Construction will occur primarily on weekdays and during normal working hours |
| Land Use-6: Impacts from NGA operations | No/negligible impact | Not applicable |

## 4.2.3 St. Louis City Site (Preferred Alternative)

### 4.2.3.1 Land Use

Site Land Use

The entire St. Louis City Site (as well as the adjacent Pruitt-Igoe property) is included in the Cass and Jefferson Redevelopment Area[12] and was designated as blighted in the January 2015 Blighting Study. The study reported 78 percent of the land area being vacant and 6 percent of the land area having vacant buildings

[12] Development Strategies. 2015b. Development Strategies. 2015b. (2015 Cass and Jefferson Redevelopment Plan) *Blighting Study & Redevelopment Plan for the Cass Avenue, Jefferson Avenue/Parnell Street, Montgomery Street, and North 22nd Street Redevelopment Area*. January 13.

at the time of the blighting designation, for a total of 84 percent[13]. Since the completion of the Blighting Study in January 2015, the City has conducted a more detailed analysis, refined the land use/vacancy categories, and further updated classifications of some of the lots. Based on the revisions, 85 percent of the St. Louis City Site consists of vacant lots or lots with vacant residential buildings as of December 2015 (Halliday, 2015a, pers. comm.). In total, 76 percent of the St. Louis City Site are vacant land, 9 percent are vacant residential lots, and only 13 percent of the parcels are owner or renter-occupied residences. The remaining 2 percent of the parcels are commercial (0.9 percent vacant, 0.5 percent owner occupied and 0.4 percent tenant occupied), churches (0.15 percent), and educational use (0.05 percent).

On February 14, 2015, the City of St. Louis Planning Commission amended the St. Louis Strategic Land Use Plan (City of St. Louis, 2015a), and designated the area as an Opportunity Area.

Objectives of the amendment include:

- Making the St. Louis City Site an attractive alternative for the Next NGA West Campus
- Providing a stabilizing land use anchor within RPA D of the NorthSide Redevelopment Area that may provide the impetus for more infill development consistent with the 2009 NorthSide Redevelopment Plan (Development Strategies, 2009b)
- Retaining NGA employees within the St. Louis city limits

The Proposed Action would be consistent with the currently adopted redevelopment plans and strategic plan amendment, as well as with the policies of attracting and maintaining sustainable employment and economic development in the NorthSide Area. The Proposed Action also is compatible with and supportive of City redevelopment activities. Constructing the Next NGA West Campus at the St. Louis City Site would be a **minor to moderate, long-term benefit (Land Use-1).** Preparation and approval of a site development plan may be required by the City of St. Louis prior to construction **(Land Use Permit/Plan-1)**.

Surrounding Land Use

The site and surrounding land uses are in RPA D of the 2009 NorthSide Redevelopment Area[14], within areas covered by the Strong Cities, Strong Communities (SC2) Initiative and the HUD designated Urban Promise Zone and adjacent to the Preservation Square housing development, which is the subject of the Near NorthSide Transformation Plan, also sponsored by a HUD through a Choice Neighborhood Planning Grant. The Proposed Action has the potential to provide a stabilizing influence in the area during and after the

[13]Development Strategies. 2015a. (2015 Blighting Study) *Data and Analysis of Conditions Representing a "Blighted Area" for the Cass Avenue, Jefferson Avenue/Parnell Street, Montgomery Street, and North 22nd Street Redevelopment Area*. January 8.

[14]Development Strategies. 2009b. (2009 NorthSide Redevelopment Plan) *Redevelopment Plan for the NorthSide Tax Increment Financing (TIF) Redevelopment Area*. September 16.

redevelopment period, which would help achieve goals for the site and realize plans for surrounding land use and development. It also has the potential to encourage economic activity through the creation of new businesses (for example, restaurants, shopping, and gas stations) near the site, which would further aid in redevelopment (see Section 4.1, *Socioeconomics*, for further discussion of the economic impacts of the Proposed Action). Redevelopment of surrounding property is consistent with the redevelopment and strategic plan amendment as well as with the policies and other actions focused on attracting and maintaining sustainable employment and economic development in the area. As a result, potential induced development in the surrounding area would result in a **minor to moderate, long-term benefit** (**Land Use-2**).

Prime, Unique, and Important Farmlands

The St. Louis City Site is within an urban census boundary and not subject to FPPA (USCB, 2015i). Therefore, the Proposed Action would have **no/negligible impact** to farmlands **(Land Use-3)**.

#### 4.2.3.2 Community Cohesion

Displacement/Relocation

The factors leading to blighted conditions have contributed to residents and businesses leaving the St. Louis City Site and the Cass and Jefferson Redevelopment Area. These conditions have been present for many years, with site vacancy rates estimated at 67 percent of the parcels since 2002 and 85 percent of the parcels in 2015 (Halliday, 2015a, pers. comm.). In coordination with the City and in conjunction with the 2009 NorthSide Redevelopment Plan (Development Strategies, 2009b), the developer, Northside Regeneration LLC, has been consolidating and acquiring property in these areas. In January 2015, the City, under the auspices of the St. Louis Development Corporation (SLDC) and Land Clearance for Redevelopment Agency (LCRA), began actively pursuing redevelopment of the St. Louis City Site for the Next NGA West Campus. The City's focus has been on acquiring a large block of land to accommodate the Next NGA West Campus. The Strategic Land Use Plan amendment adopted in February 2015 stated that "the Redevelopment Plan [Cass and Jefferson Redevelopment Plan] is intended to facilitate the long-term development of the area and a potential new facility for the National Geospatial Intelligence Agency facility…" (City of St. Louis Planning and Urban Design Agency [PUDA], 2014). LCRA is working to consolidate the majority of the site by sending letters to landowners, residents, and businesses and conducting land appraisals and negotiations with landowners in accordance with the Missouri relocation statutes (Sections 523.200–215, RSMo, 2014). The letters indicate the purpose of the intended acquisition as follows: "the large site is needed to keep the National Geospatial Intelligence Agency (NGA) in the City of St. Louis," and "…your property is located in the proposed project area and that LCRA is interested in acquiring the property for redevelopment purposes."

To date, potential land-acquisition efforts have focused on agreements of sale, with the intent to purchase properties and relocate the remaining residences, businesses, and community facilities. As of December 2015, agreements of sale have been reached on 94 percent of the properties, with contracts signed on 30 percent of

the properties and 64 percent pending signatures. Of the remaining properties, 1 percent have title issues and negotiations are continuing for the remaining 5 percent (Halliday, 2015e, pers. comm.).

Under the Relocation Plan (Appendix C) of the 2009 NorthSide Redevelopment Plan (Appendix 3.2A; Development Strategies, 2009b), relocations would meet the requirements of the Missouri relocation statutes (Sections 523.200–215, RSMo, 2014), which also meet the requirements of the federal Uniform Relocation and Real Estate Acquisition Act (URA), 1970, as amended (49 CFR 24). These relocation statutes provide for a relocation assistant to establish the needs and services required by each affected person.

- A minimum of three housing referrals for residential persons (rental or owner-occupied residents) or suitable referral sites for displaced businesses. This includes assistance in obtaining affordable housing in the area in which a resident wishes to reside, connection with social service support, and assistance in relocation payments.
- A choice between relocation payments or property acquisition reimbursement is allowed as part of the negotiation process for the acquisition of the land.
- The option of a fixed moving expense payment or the actual reasonable costs of relocation for residents, including but not limited to moving costs, utility deposits, key deposits, storage of personal property up to 1 month, utility transfer and connection fees, and other initial rehousing deposits, including first and last month's rent and security deposit.
- For eligible businesses, payments to business owners with the option of a fixed moving expense payment or the actual costs of moving, and up to an additional $10,000 for reestablishment expenses.

The City of St. Louis has stated that every attempt will be made to be fair and equitable to all residential, commercial, and institutional property owners (City of St. Louis Board of Aldermen, 2015). Relocations would comply with the Missouri relocation statutes (Sections 523.200–215, RSMo, 2014), which also meet the requirements of the federal URA (see Section 5.0, *Environmental Justice*, for further discussion of the relocation process).

The selection of the St. Louis City Site would impact the remaining residences, businesses, and community facilities, including 61 single-family residences, 13 two-family residences, 3 four-family residences, 5 businesses, and 3 institutional uses and 1 neighborhood play lot. The extent of community resources in the surrounding area (56 within 0.5 mile of the site boundary) indicates that the site has less community cohesion than surrounding areas.

Regardless of potential NGA site selection, relocations would be expected to occur in this area over time as a result of ongoing City redevelopment activities. However, the specifics of individual building relocations and the extent of infill versus large-scale development may vary depending on the type of development plan implemented. Previous redevelopment plans for the area called for infill development and incremental

redevelopment. However, NGA would require the entire St. Louis City Site, in order to accommodate the building and space requirements of the NGA mission.

Impacts to residents and businesses are expected to be short-term and limited to those experiencing relocations. As a result, a **minor to moderate, negative short-term impact** is expected to result from the Proposed Action (**Land Use-4a**). Relocation packages conducted in compliance with the Missouri relocation statutes and will fully ameliorate the potential for long-term negative impacts associated with relocation. The City's LCRA will follow the Missouri relocation statutes as such and efforts will be made to relocate individuals in the vicinity. Relocation to nearby neighborhoods is expected to lessen the disruption of routines and use of nearby community facilities **(Land Use Mitigation-1).**

Over the long term, a positive impact on community cohesion is expected for those relocated and placed in more sustainable communities nearby with a greater level of service and community cohesion. Development of the Proposed Action would benefit the larger community by providing stable development and potentially attracting services to the area. The Proposed Action has the potential to function as a business anchor in the center of the redevelopment area. This investment may indirectly attract reinvestments into adjacent neighborhoods consistent with the redevelopment plan, including mixed uses and public services, such as clinics. Therefore, the Proposed Action is expected to be a **minor-moderate, long-term benefit** to community cohesion (**Land Use 4b)**.

Construction Impacts

Relocations would precede development, minimizing impacts to residents of the development area. Construction traffic, noise, and air quality impacts could disrupt or reduce the quality of community activities and interactions within nearby neighborhoods and at nearby community resources. However, construction would likely occur only on weekdays during normal working hours and would be unlikely to disrupt neighborhood events and church activities **(Land Use BMP-1).** Impacts to the surrounding area from construction-related noise and a reduction in air quality are discussed further in Section 4.5, *Noise*, and Section 4.13, *Air Quality and Climate Change.* Impacts due to traffic are discussed in Section 4.4, *Traffic and Transportation*.

Due to the proximity of community residents and amenities to the project site, construction activities could delay or detour circulation to those accessing homes, churches, community facilities, or businesses **(Land Use BMP-2).** Nonetheless**,** some people in the area may avoid use of community resources near the site until construction is completed. As stoplights are installed, crosswalks could be added at intersections with sidewalks to facilitate access to nearby community resources **(Land Use BMP-3).** NGA would coordinate with the City if appropriate crosswalk locations on city streets are identified. Construction is anticipated to take up to 5 years and would result in **minor to moderate, negative, short-term impacts** to community cohesion activities **(Land Use-5).**

Operational Impacts

There have been plans to redevelop the area in and around the St. Louis City Site since the 1960s, but little large-scale redevelopment has occurred. Operation of the Next NGA West Campus at the St. Louis City Site would maintain employment in the City of St. Louis and could make the surrounding area more attractive to redevelopment, resulting in a **minor to moderate, long-term benefit** to community cohesion **(Land Use-6)**.

Table 4.2-4 summarizes impacts and environmental protection measures related to the St. Louis City Site.

TABLE 4.2-4
**St. Louis City Site Summary of Land Use Impacts and Environmental Protection Measures**

| Impact Category | St. Louis City Site | Environmental Protection Measures |
|---|---|---|
| **Land Use Impacts** | | |
| Land Use-1: Impacts to onsite land use | Minor to moderate, long-term benefit | Permit/Plan-1: Site Development Plan |
| Land Use-2: Impacts to surrounding land use | Minor to moderate long-term benefit | Not applicable |
| Land Use-3: Conversion of prime, unique, and important farmlands | No/negligible impact | Not applicable |
| **Community Cohesion Impacts** | | |
| Land Use-4a: Short-term impacts from displacement/relocation of current residents and businesses | Minor to moderate, negative, short-term impact | Mitigation 4a: Efforts will be made to relocate current residences and businesses nearby |
| Land Use-4b: Long-term impacts from displacement/relocation of current residents and businesses | Minor to moderate, long-term benefit | Mitigation-4b: All relocations will be in compliance with Missouri statutes governing acquisition and relocations |
| Land Use-5: Construction impacts | Minor to moderate, negative, short-term impact | BMP-1: Construction will occur primarily on weekdays and during normal working business hours<br>BMP-2: Effort will be made to maintain access to community resources during construction<br>BMP-3: Coordinate with the City to install crosswalks if appropriate locations are identified at intersections with sidewalks and stop lights |
| Land Use-6: Impacts from NGA operations | Minor to moderate, long-term benefit | Not applicable |

## 4.2.4 St. Clair County Site

### 4.2.4.1 Land Use

Site Land Use

Current land use at the St. Clair County Site is designated as agriculture and government with future land use designated for government/institutional and industrial (St. Clair County, Illinois, 2015b). The site is a zoned Agricultural Industry District (AID) and located in St. Clair County's proposed MidAmerica Commercial Park. Although the Proposed Action would result in conversion of undeveloped land into the Next NGA West Campus, it would be compatible with the current zoning, which allows the County to approve government facilities. As such, it would be consistent with the planned future use of the area. Therefore, the Proposed

Action would have **no/negligible impact** to land use at the site **(Land Use-1**). Preparation and approval of a site development plan may be required by St. Clair County prior to construction **(Land Use Permit/Plan-1)**.

Surrounding Land Use

Land uses surrounding the site are undeveloped and agricultural, with the exception of Scott AFB to the south and MidAmerica St. Louis Airport to the east. The Proposed Action would be compatible with these uses. Much of the undeveloped land surrounding the proposed site is owned by St. Clair County and planned for development as MidAmerica Commercial Park. Implementing the Proposed Action would not affect future development of the commercial park, which is likely to occur regardless whether the Next NGA West Campus locates in St. Clair County. However, it may create additional induced growth or development nearby in the form of services to support the Next NGA West Campus. Because the Proposed Action would be compatible with the current and proposed land use, there would be a **minor to moderate long long-term beneficial impact** to surrounding land uses **(Land Use-2)**.

Prime, Unique, and Important Farmlands

The St. Clair County Site includes 109 acres of prime, unique, and important farmlands that would be converted under the Proposed Action and 46.3 acres of statewide and locally important farmland. However, based on the USDA Farmland Conversion Impact Rating of 171 (Appendix 3.2C), which equates to a "low rating for protection," there would be a **no/negligible long-term impact** to farmlands **(Land Use-3)**.

#### 4.2.4.2 Community Cohesion

Displacement/Relocation

The St. Clair County Site includes active crop land and the Scott AFB golf course driving range. The driving range is owned by St. Clair County (MidAmerica St. Louis Airport) and leased by Scott AFB. The crop land is leased by two farmers through the MidAmerica St. Louis Airport agricultural lease program. Acquisition of the St. Clair County Site would require relocating the Scott AFB driving range and agricultural leases. Because of the availability of similar agricultural plots in St. Clair County, the airport farm manager contacted the two farmers about alternative farm lease locations at the airport. One of the farmers prepared a replacement field (121 acres) in fall 2015, which is planned to be in agricultural production in spring 2016; the other farmer chose not to continue to lease land (Trapp, 2016). Of the 129 acres that would be displaced by the Proposed Action, approximately 121 acres are planned to be relocated, with the remaining 8 acres accounting for only 0.3 percent of the total agricultural lease program (Trapp, 2016). The airport farm manager also noted that the acreage the second farmer would stand to lose if the St. Clair County Site were selected accounts for less than 8 percent of his total farming operation (Collingham, 2015b, pers. comm.).

The driving range at Cardinal Creek Golf Course is within the southwestern corner of the site boundary, as shown on Figure 3.2-6. Due to its location within the site boundary, the driving range would likely need to be relocated elsewhere. Additionally, those using the driving range can instead access driving ranges at the

following nearby golf courses: Tamarack Country Club, approximately 4 miles west, in Shiloh; and the Yorktown Golf Course, a public course 6 miles west, in Belleville. Other nearby driving ranges are located at the Clinton Hill Country Club in Swansea and The Practice Tee in Fairview Heights, located slightly farther west.

The temporary disruption of the agricultural lease and its likely relocation would result in **no/negligible impact** to community cohesion **(Land Use-4a**). The relocation of the driving range from its current location would result in **no/negligible impact** to community cohesion **(Land Use-4b**).

Construction Impacts

Construction activities would not interfere with access to the golf course, and there are no other community resources in the ROI. Impacts to the surrounding area from construction-related noise and a reduction in air quality are discussed further in Section 4.5, *Noise*, and Section 4.13, *Air Quality and Climate Change*. Impacts due to traffic are discussed in Section 4.4, *Traffic and Transportation*. Indirect construction-related noise and air quality impacts would be expected to have a **minor to moderate, negative, and short-term impact** over the duration of the 5-year construction period (**Land Use-5)** on golf course users. Construction would likely occur only on weekdays during normal working hours, which would reduce the potential for impacts **(Land Use BMP-1)**.

Operational Impacts

The St. Clair County Site consists mainly of undeveloped agricultural land, with no residential areas on or near the site. Scott AFB's Cardinal Creek Golf Course would not be impacted by operation of the Proposed Action. The RV camping sites and garden plot located within the Scott Lake Area of the Base are approximately 0.25 mile southeast of the site and not expected to be impacted by the Proposed Action. There are no other community resources in the analysis area. Therefore, there would be **no/negligible impacts** to community cohesion from operations of the Next NGA West Campus (**Land Use-6)**.

Table 4.2-5 summarizes impacts and environmental protection measures related to the St. Clair County Site.

TABLE 4.2-5
**St. Clair County Site Summary of Land Use Impacts and Environmental Protection Measures**

| Impact Category | St. Clair County Site | Environmental Protection Measures |
|---|---|---|
| **Land Use Impacts** | | |
| Land Use-1: Impacts to onsite land use | No/negligible impact | Permit/Plan-1: Site Development Plan |
| Land Use-2: Impacts to surrounding land use | Minor to moderate, long-term benefit | Not applicable |
| Land Use-3: Conversion of prime, unique, and important farmlands | No/negligible impact | Not applicable |

TABLE 4.2-5
**St. Clair County Site Summary of Land Use Impacts and Environmental Protection Measures**

| Impact Category | St. Clair County Site | Environmental Protection Measures |
|---|---|---|
| **Community Cohesion Impacts** | | |
| Land Use-4a: Displacement/relocation of agricultural leases<br>Land Use-4b Displacement/relocation of golf course driving range | No/negligible impact No/negligible impact | Not applicable |
| Land Use-5: Construction impacts | Minor to moderate, negative, short-term impact | BMP-1: Construction will occur primarily on weekdays and during normal working hours |
| Land Use-6: Impacts from NGA operations | No/negligible impact | Not applicable |

Note:

[a] Coordination initiated; form to be resubmitted per NRCS if site is selected.

### 4.2.5 No Action Alternative

Under the No Action Alternative, the South 2nd Street facility would not relocate, and current activities would continue at each alternative. There would be **no/negligible** new impacts to land use and community cohesion (**Land Use-1 through 6**).

### 4.2.6 Summary of Impacts and Environmental Protection Measures

The following summarizes the required environmental protection measures related to the Proposed Action:

**Land Use Permit/Plan-1:** Preparation and approval of a site development plan.

**Land Use Mitigation-1:** All acquisitions will be in compliance with Missouri statutes governing acquisition and relocations.

**Land Use BMP-1**: Construction will primarily occur on weekdays and during normal working hours to avoid indirect impacts from construction-related noise, air quality, and traffic.

**Land Use BMP-2**: Effort will be made to keep access open to community resources during construction.

**Land Use BMP-3**: Crosswalks could be installed at intersections with sidewalks and stoplights.

Table 4.2-6 summarizes individual and overall impacts for all project alternatives.

TABLE 4.2-6
**Summary of Impacts to Land Use**

| | Project Alternatives | | | | |
|---|---|---|---|---|---|
| **Impact Category** | **Fenton Site** | **Mehlville Site** | **St. Louis City Site** | **St. Clair County Site** | **No Action** |
| **Land Use Impacts** | | | | | |
| Land Use-1: Impacts to onsite land use | Minor to moderate, long-term benefit | No/negligible impact | Minor to moderate, long-term benefit | No/negligible impact | No/negligible impact |
| Land Use-2: Impacts to surrounding land use | Minor to moderate, long-term benefit | Minor to moderate, long-term benefit | Minor to moderate, long-term benefit | Minor to moderate, long-term benefit | No/negligible impact |

TABLE 4.2-6
**Summary of Impacts to Land Use**

| | Project Alternatives | | | | |
|---|---|---|---|---|---|
| **Impact Category** | **Fenton Site** | **Mehlville Site** | **St. Louis City Site** | **St. Clair County Site** | **No Action** |
| Land Use-3: Conversion of prime, unique, and important farmlands | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible, impact | No/negligible impact |
| **Community Cohesion Impacts** | | | | | |
| Land Use-4: Displacement/relocation of current residents and businesses | No/negligible impact | No/negligible impact | Minor to moderate, negative, short-term impact<br>Minor to moderate, beneficial, long-term impact | No/negligible impact (agricultural leases)<br>No/negligible impact (driving range) | No/negligible impact |
| Land Use-5: Construction impacts | No/negligible impact | No/negligible impact | Minor to moderate, negative, short-term impact | Minor to moderate, negative, short-term impact | No/negligible impact |
| Land Use-6: Impacts from NGA operations | No/negligible impact | No/negligible impact | Minor to moderate, long-term benefit | No/negligible impact | No/negligible impact |

# 4.3 Health and Safety

This subsection describes the potential short- and long-term impacts to health and safety within the ROI as a result of implementing the Proposed Action.

The ROI for the health and safety analysis is defined as follows:

- Occupational Health – The proposed project site boundaries for each alternative
- Crime – The jurisdictional boundaries for the law enforcement agency surrounding the Fenton, Mehlville, St. Louis City, and St. Clair County sites
- Emergency Response – The service area boundaries for the emergency responders described in Section 3.3, *Health and Safety*
- Protection of Children – The proposed site boundaries and land within a 0.5-mile planning area of each site

Table 4.3-1 identifies the impact thresholds for health and safety.

TABLE 4.3-1
**Impact Thresholds for Health and Safety**

| Impact | Description |
|---|---|
| No/Negligible Impact | No impacts to health and safety would be expected or potential impacts would not be measurable or perceptible. |
| Minor to Moderate | Impacts to the health and safety would be noticeable but would result in limited new risks. |
| Major | Impacts to health and safety would be measurable and substantial. |
| Quality | Beneficial – would have a positive effect on health and safety.<br>Negative – would have an adverse effect on health and safety. |
| Duration | Short-term – would occur during the proposed construction period.<br>Long-term – would continue post-construction and through the duration of operations. |

## 4.3.1 Fenton Site

### 4.3.1.1 Health and Safety

Occupational Health

Hazards present at the Fenton Site during demolition and construction would include slip, trip, and fall hazards as well as underfoot hazards (uneven pavement and railroad tracks). The NGA construction contractor will develop and implement a construction health and safety plan (HSP) to minimize the risks associated with these hazards **(Health BMP-1)**.

Occupational health and safety are a high priority to NGA, and all NGA personnel and contractors working at the Next NGA West Campus will comply with applicable Occupational Safety and Health Administration (OSHA) regulations as well as U.S. Department of Defense (DoD) and NGA-specific regulations **(Health BMP-2).**

Infrastructure construction could displace the existing 500-year floodplain area within the site (discussed further in Section 4.10, *Water Resources*). NGA will avoid and minimize floodplain impacts during site development to the extent practicable, and any infrastructure located within the floodplain will be designed and constructed in compliance with all applicable regulatory requirements pertaining to floodplains **(Health BMP-3)**. Based on the implementation of **Health BMP-1, 2**, and **3**, the Proposed Action would have **no/negligible impact** on occupational health **(Health-1)**.

Crime

The proposed Next NGA West Campus would include security measures, such as a fence or wall, guards, security-controlled access, multiple security checkpoints, and Anti-Terrorism Force Protection (ATFP) measures. These measures would directly prevent crime within the Fenton Site and can be expected to indirectly hinder crime in the immediate area due to trained law enforcement personnel being onsite to observe and report any nearby crime. Development of the Fenton Site under the Proposed Action would result in the replacement of an abandoned industrial site with modern infrastructure and NGA security measures and personnel. The Proposed Action is expected to have a **minor to moderate**, **long-term benefit** on crime **(Health-2)**.

Emergency Response

The Proposed Action would not substantially alter travel patterns surrounding the Fenton Site. There would be an increase in traffic levels on roadways near the site associated with construction and employee traffic; however, this would not substantially hinder emergency travel in the area (see Section 3.4, *Traffic and Transportation*). Due to the secure nature of the NGA facilities and the safety protocols in place for NGA personnel, the demand for emergency services is not expected to substantially increase due to the presence of the Next NGA West Campus. The Proposed Action would have **no/negligible impact** on emergency response time and demand **(Health-3)**.

Protection of Children

During operations, the Next NGA West Campus would consist of a secure government facility, with a patrolled security feature (a fence and/or wall) around all buildings and infrastructure. Children would only access the Next NGA West Campus under very controlled circumstances and would be escorted at all times. Children could be attracted to the site during construction; however, onsite construction activities would occur within a fenced in area, with posted signage warning of the danger **(Health BMP-4)**. There would be **no/negligible impacts** to child safety expected from construction or operation of the Next NGA West Campus **(Health-4)**.

Table 4.3-2 summarizes the impacts to health and safety at the Fenton Site and the environmental protection measures.

TABLE 4.3-2
**Fenton Site Summary of Health and Safety Impacts and Environmental Protection Measures**

| Impacts Category | Impact | Environmental Protection Measures |
|---|---|---|
| Health-1: Impact on occupational health | No/negligible impact | BMP-1: Develop and implement a construction HSP<br>BMP-2: NGA personnel will comply with OSHA and DoD- and NGA-specific safety protocols<br>BMP-3: Avoid and minimize floodplain impacts |
| Health-2: Impact on crime | Minor to moderate, long-term benefit | Not applicable |
| Health-3: Impact on emergency response | No/negligible impact | Not applicable |
| Health-4: Safety impacts to children | No/negligible impact | BMP-4: Fencing and signage will be installed around construction site |

## 4.3.2 Mehlville Site

### 4.3.2.1 Health and Safety

Occupational Health

Hazards present at the Mehlville Site during demolition and construction would include slip, trip, and fall hazards, natural hazards (for example, ticks, poisonous plants, and wildlife), and underfoot hazards (for example, uneven pavement). The NGA construction contractor will develop and implement a construction HSP to minimize the risks associated with these hazards **(Health BMP-1)**.

Occupational health and safety are a high priority to NGA, and all NGA personnel and contractors working at the new facilities will comply with applicable OSHA regulations as well as DoD and NGA-specific regulations **(Health BMP-2).**

Based on the implementation of **Health BMP-1 and 2**, the Proposed Action would have **no/negligible impact** on occupational health **(Health-1)**.

Crime

The proposed Next NGA West Campus would include security measures, such as a fence or wall, guards, security-controlled access, multiple security checkpoints, and ATFP measures. These measures would directly prevent crime within the Mehlville Site and can be expected to indirectly hinder crime in the immediate area due to trained law enforcement personnel being onsite to observe and report any nearby crime. Given that the existing land use is an office park, development of the Mehlville Site under the Proposed Action is not expected to have an appreciable effect on crime in the ROI. Based on the analysis conducted, the Proposed Action would have **no/negligible impact** on crime **(Health-2)**.

Emergency Response

The Proposed Action would not substantially alter travel patterns surrounding the Mehlville Site. There would be an increase in traffic levels on roadways near the site associated with construction and employee traffic; however, this would not substantially hinder emergency travel in the area (see Section 3.4, *Traffic and*

*Transportation*). The demand for emergency services is not expected to substantially increase due to the presence of the Next NGA West Campus because emergency services are already provided to support the current office park occupants, and the secure nature of the NGA facilities and the safety protocols in place for NGA personnel would reduce the need for local law enforcement presence. The Proposed Action would have **no**/**negligible impact** on emergency response time and demand **(Health-3)**.

Protection of Children

Operation and construction of the Next NGA West Campus would preclude unescorted access by children, regardless of the site selected. Therefore, impacts to child safety from construction and operation activities would be the same across the four sites. See the Fenton Site discussion for a detailed explanation of safety impacts to children.

Table 4.3-3 summarizes the impacts to health and safety at the Mehlville Site and the environmental protection measures.

TABLE 4.3-3
**Mehlville Site Summary of Health and Safety and Environmental Protection Measures**

| Impacts Category | Impact | Environmental Protection Measures |
|---|---|---|
| Health-1: Impact on occupational health | No/negligible impact | BMP-1: Develop and implement a construction HSP<br>BMP-2: NGA personnel will comply with OSHA and DoD- and NGA-specific safety protocols |
| Health-2: Impact on crime | No/negligible impact | Not applicable |
| Health-3: Impact on emergency response | No/negligible impact | Not applicable |
| Health-4: Safety impacts to children | No/negligible impact | BMP-4: Fencing and signage will be installed around construction site |

## 4.3.3 St. Louis City Site (Preferred Alternative)

### 4.3.3.1 Health and Safety

Occupational Health

Hazards present at the St. Louis City Site during demolition and construction would include slip, trip, and fall hazards, natural hazards (for example, ticks, poisonous plants, and wildlife), underfoot hazards (for example, uneven pavement), and hazards associated with abandoned buildings/infrastructure (for example, mold and structural deterioration). The NGA construction contractor will develop and implement a construction HSP to minimize the risks associated with these hazards **(Health BMP-1)**. Although temporary exposure to these hazards would occur during the construction phase, these hazards would largely be permanently eliminated by development of the site under the Proposed Action. Therefore, there would be an overall decrease in the health and safety risks posed by the existing abandoned houses and buildings under the Proposed Action.

Occupational health and safety are a high priority to NGA, and all NGA personnel and contractors working at the new facilities will comply with applicable OSHA regulations as well as DoD and NGA-specific regulations **(Health BMP-2).**

Based on implementation of **Health BMP-1**, the Proposed Action would have a **minor to moderate**, **long-term benefit** on occupational health **(Health-1)**.

Crime

The proposed Next NGA West Campus would include security measures, such as a fence or wall, guards, security-controlled access, multiple security checkpoints, and ATFP measures. These measures would directly prevent crime within the St. Louis City Site and can be expected to indirectly hinder crime in the immediate area due to trained law enforcement personnel being onsite to observe and report any nearby crime. Development of the St. Louis City Site under the Proposed Action would result in the replacement of an area with numerous abandoned houses and buildings with modern infrastructure and NGA security and personnel; therefore, it is expected to have an overall positive effect on crime in the ROI. The Proposed Action would have a **minor to moderate**, **long-term benefit** on crime (**Health-2)**.

Emergency Response

Due to the secure nature of the NGA facilities and the safety protocols in place for NGA personnel, the demand for emergency services is not expected to substantially increase due to the presence of the Next NGA West Campus. Under the Proposed Action, the local roadways that grid the St. Louis City Site would be closed and removed. The arterial roadways surrounding the site, including Cass Avenue, would remain open. A fire station, St. Louis Fire Department Engine House No. 5, is located one block east the site. Additional traffic from the Proposed Action and changes to travel patterns caused by the closure of local roadways across the site could increase emergency response time by a few minutes as a result of rerouting emergency responders around the site onto Cass Avenue, St. Louis Avenue, North Jefferson Avenue, or North 22nd Street, which would remain open. However, NGA will coordinate its site plans with local emergency responders so that alternate routes can be proactively determined **(Health BMP-5)**. The Proposed Action would have **minor to moderate, negative, long-term impact** on emergency response time and demand **(Health-3)**.

Protection of Children

Operation and construction of the Next NGA West Campus will preclude unescorted access by children, regardless of the site selected. Therefore, impacts to child safety from construction and operation activities would be the same across the four sites. See the Fenton Site discussion above for a detailed explanation of safety impacts to children. However, construction of a Next NGA West Campus at the St. Louis City Site would replace existing abandoned and dilapidated buildings, which pose a potential safety hazard to children. Therefore, there would be a **minor to moderate, long-term benefit** to child safety as a result of removing unsafe conditions **(Health-4).**

Table 4.3-4 summarizes the impacts to health and safety at the St. Louis City Site and the environmental protection measures.

TABLE 4.3-4
**St. Louis City Site Summary of Health and Safety and Environmental Protection Measures**

| Impacts Category | Impact | Environmental Protection Measures |
|---|---|---|
| Health-1: Impact on occupational health | Minor to moderate, long-term benefit | BMP-1: Develop and implement a construction HSP<br>BMP-2: NGA personnel will comply with OSHA and DoD- and NGA-specific safety protocols |
| Health-2: Impact on crime | Minor to moderate, long-term benefit | Not applicable |
| Health-3: Impact on emergency response | Minor to moderate, negative, long-term impact | BMP-5: NGA will coordinate its site plans with local emergency responders |
| Health-4: Safety impacts to children | Minor to moderate, long-term benefit | BMP-4: Fencing and signage will be installed around construction site |

## 4.3.4 St. Clair County Site (Preferred Alternative)

### 4.3.4.1 Health and Safety

Occupational Health

Hazards present at the St. Clair County Site during demolition and construction would include slip, trip, and fall hazards, natural hazards (for example, ticks, poisonous plants, and wildlife), and underfoot hazards (for example, uneven ground surface). The NGA construction contractor will develop and implement a construction HSP to minimize the risks associated with these hazards **(Health BMP-1)**.

Occupational health and safety are a high priority to NGA, and all NGA personnel and contractors working at the new facilities will comply with applicable OSHA regulations as well as DoD- and NGA-specific regulations **(Health BMP-2).**

Based on implementation of **Health BMP-1 and Health BMP-2**, the Proposed Action would have **no/ negligible impact** on occupational health **(Health-1)**.

Crime

The proposed Next NGA West Campus would include security measures, such as a fence or wall, guards, security controlled access, multiple security checkpoints, and ATFP measures. These measures would directly prevent crime within the St. Clair County Site and can be expected to indirectly hinder crime in the immediate area due to trained law enforcement personnel being onsite to observe and report any nearby crime. Development of the St. Clair County Site under the Proposed Action is not expected to have an appreciable effect on crime in the ROI; therefore, the Proposed Action would have **no/negligible impact** on crime **(Health-2)**.

Emergency Response

The Proposed Action would not substantially alter travel patterns surrounding the St. Clair County Site. There would be an increase in traffic levels on roadways near the site associated with construction and employee traffic; however, this would not substantially hinder emergency travel in the area (see Section 3.4, *Traffic and Transportation*, for additional detail). Due to the secure nature of the NGA facilities and the safety protocols in place for NGA personnel, the demand for emergency services is not expected to substantially increase due to the presence of the Next NGA West Campus. The Proposed Action would have **no/negligible impact** on emergency response time and demand **(Health-3)**.

Protection of Children

Operation and construction of the Next NGA West Campus will preclude unescorted access by children, regardless of the site selected. Therefore, impacts to child safety from construction and operation activities would be the same across the four sites. See the Fenton Site discussion for a detailed explanation of safety impacts to children.

Table 4.3-5 summarizes the impacts to health and safety at the St. Clair County Site and the environmental protection measures.

TABLE 4.3-5
**St. Clair County Site Summary of Health and Safety Impacts and Environmental Protection Measures**

| Impacts Category | Impact | Environmental Protection Measures |
|---|---|---|
| Health-1: Impact on occupational health | No/negligible impact | BMP-1: Develop and implement a construction HSP<br>BMP-2: NGA personnel will comply with OSHA and DoD- and NGA-specific safety protocols |
| Health-2: Impact on crime | No/negligible impact | Not applicable |
| Health-3: Impact on emergency response | No/negligible impact | Not applicable |
| Health-4: Safety impacts to children | No/negligible impact | BMP-4: Fencing and signage will be installed around construction site |

## 4.3.5 No Action Alternative

The potential risks to environmental health and safety under the No Action Alternative would remain unchanged from current conditions. Under the No Action Alternative, NGA would not relocate and no construction or demolition activities would occur at any of the proposed sites. Therefore, the No Action Alternative would have **no/negligible** new impacts on health and safety **(Health 1 through 4)**.

## 4.3.6 Summary of Impacts and Environmental Protection Measures

The following is a summary of the suggested environmental protection measures related to the Proposed Action.

**Health BMP-1:** The NGA construction contractor will develop and implement a construction HSP to minimize the risks associated with physical and natural hazards.

**Health BMP-2:** NGA personnel will comply with OSHA and DoD- and NGA-specific safety protocols.

**Health BMP-3:** NGA will avoid and minimize floodplain impacts during development of the Fenton Site to the extent practicable and any infrastructure located within the floodplain will be designed and constructed in compliance with all applicable regulatory requirements pertaining to floodplains.

**Health BMP-4:** Construction site will be fenced and warning signs will be placed explaining the inherent danger at the site.

**Health BMP-5**: NGA will coordinate its site plans with local emergency responders so that alternate routes can be proactively determined.

Table 4.3-6 below provides a summary of impacts resulting from the Proposed Action by site.

TABLE 4.3-6
**Summary of Impacts to Health and Safety**

| **Impacts** | **Project Alternatives** | | | | |
|---|---|---|---|---|---|
| **Impact Category** | **Fenton Site** | **Mehlville Site** | **St. Louis City Site** | **St. Clair County Site** | **No Action** |
| Health-1: Impact on occupational health | No/negligible impact | No/negligible impact | Minor to moderate, long-term benefit | No/negligible impact | No/negligible impact |
| Health-2: Impact on crime | Minor to moderate, long-term benefit | No/negligible impact | Minor to moderate, long-term benefit | No/negligible impact | No/negligible impact |
| Health-3: Impact on emergency response | No/negligible impact | No/negligible impact | Minor to moderate, negative, long-term impact | No/negligible impact | No/negligible impact |
| Health-4: Safety impacts to children | No/negligible impact | No/negligible impact | Minor to moderate, long-term benefit | No/negligible impact | No/negligible impact |

# 4.4 Traffic and Transportation

This section addresses the consequences to the traffic and transportation environment surrounding the Next NGA West Campus for each of the alternative sites. This includes an LOS analysis for the regional and local road networks identified in the Affected Environment section with the Next NGA West Campus in place. Table 4.4-1 identifies impact thresholds for traffic and transportation.

TABLE 4.4-1
**Impact Thresholds for Traffic and Transportation**

| Impact | Description |
|---|---|
| No/Negligible Impact | No impacts to transportation resources would be expected or impacts to transportation resources would likely be undetectable. |
| Minor to Moderate | Impacts to transportation resources would likely be detectable but would not result in traffic operations exceeding MoDOT or IDOT LOS guidelines and increasing congestion by more than 10 percent. |
| Major | Impacts to transportation resources would result in traffic operations exceeding MoDOT or IDOT LOS guidelines and increase congestion by more than 10 percent. |
| Quality | Beneficial – would have a positive effect on transportation.<br>Negative – would have an adverse effect on transportation. |
| Duration | Short term – would occur only during the proposed construction period.<br>Long term – would continue beyond the proposed construction period. |

The following sections describe the results of the LOS analysis performed on roadway networks for each site with the Next NGA West Campus in place. These increased traffic analyses are referred to as the Proposed Action Scenario. Refer to Appendix 4.4A for an explanation of how traffic volumes generated by the Next NGA West Campus were determined, along with specific routing assumptions for each site. The LOS analysis was performed for both the existing year (2014), and for the future year (2040). Even though the Next NGA West Campus is not expected to open until 2022, the year 2014 was used to determine the immediate impacts to the transportation system because an analysis of the year 2014 could be directly compared with the existing conditions analysis described in Section 3.0, *Affected Environment*. The results of these analyses were compared with the results of the No Action analysis described in the Affected Environment section to determine the level of impact.

An impact was considered major if it met two criteria. First, it caused an analysis segment to exceed the threshold for the LOS guideline defined by the governing agency (Missouri Department of Transportation [MoDOT] or Illinois Department of Transportation [IDOT]). Second, the increase in density or delay was greater than 10 percent. Additionally, if a major impact could be easily mitigated during the construction phase, then a major impact was reduced to a minor to moderate impact. The LOS threshold exceedances for the first criteria are shown as follows:

**MoDOT LOS exceedance (*MoDOT Engineering Policy Guide*)**

- Rural corridors – E peak hour
- Urban corridors – F peak hour

**IDOT LOS exceedance (*IDOT Bureau of Design and Environment*)**

- Freeways – urban D
- Expressways – urban D
- Rural two lane – principal arterials C, minor arterials D

The second criteria (greater than 10 percent increase in density or delay) was included because a roadway segment could be very close to the threshold for an LOS exceedance under the No Action Scenario, and cross the threshold under the Proposed Action Scenario. However, the actual difference in operations between the No Action and Proposed Action Scenario would be negligible, that is, a few seconds extra delay.

Any location determined to meet the criteria of a major impact is shown in bold font in the results tables in the sections below for each site. Locations that experience no change in density or delay as a result of the Next NGA West Campus are labeled as "No change."

## 4.4.1 Fenton Site

### 4.4.1.1 Level of Service Analysis and Impact Assessment

**Existing Year.** Tables 4.4-2 through 4.4-6 summarize the results of the existing year LOS analysis for the Fenton Site roadway network with the Next NGA West Campus in place (Proposed Action Scenario).

TABLE 4.4-2
**Existing Year (2014) LOS for Freeway Segments in the Fenton Site**

| Freeway Segments (2014 Proposed Action) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-44 EB west of Route 141 | 29.3 | D | No change | No change |
| I-44 EB between Route 141 and Bowles | 36.3 | E | No change | No change |
| I-44 EB at Bowles | 29.2 | D | No change | No change |
| I-44 EB between Bowles and Mraz | 27.2 | D | No change | No change |
| I-44 EB at Mraz | No change | No change | No change | No change |
| I-44 WB at Mraz | No change | No change | No change | No change |
| I-44 WB between Mraz and Bowles | No change | No change | No change | No change |
| I-44 WB at Bowles | No change | No change | 40.1 | E |
| I-44 WB between Bowles and Route 141 | No change | No change | 43.4 | E |
| I-44 WB west of Route 141 | No change | No change | 31.5 | D |

TABLE 4.4-3
**Existing Year (2014) LOS for Ramp Merge and Diverge in the Fenton Site**

| Ramp Merge (on-ramp) and Diverge (off-ramp) (2014 Proposed Action) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-44 EB off-ramp at Route 141 | No change | No change | No change | No change |
| I-44 EB on-ramp at Route 141 (slip ramp) | No change | No change | No change | No change |
| I-44 EB off-ramp at Bowles (slip ramp) | No change | No change | No change | No change |
| I-44 EB off-ramp at Mraz (slip ramp) | 28.7 | D | No change | No change |
| I-44 EB on-ramp at Mraz (slip ramp) | No change | No change | No change | No change |

TABLE 4.4-3
**Existing Year (2014) LOS for Ramp Merge and Diverge in the Fenton Site**

| Ramp Merge (on-ramp) and Diverge (off-ramp) (2014 Proposed Action) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-44 WB on-ramp at Mraz (slip ramp) | No change | No change | No change | No change |
| I-44 WB on-ramp at Bowles (slip ramp) | No change | No change | 41.9 | F (<10%) |
| I-44 WB off-ramp at Route 141 (slip ramp) | No change | No change | No change | No change |
| I-44 WB on-ramp at Route 141 | No change | No change | No change | No change |

TABLE 4.4-4
**Existing Year (2014) LOS for Weaving Segments in the Fenton Site**

| Weaving segments (2014 Proposed Action) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-44 EB between Mraz and I-270 | No change | No change | -- | F (<10%) |
| I-44 WB between I-270 and Soccer Park/Mraz | 22.9 | C | No change | No change |

TABLE 4.4-5
**Existing Year (2014) LOS for Signalized Intersections in the Fenton Site**

| Signalized Intersections (2014 Proposed Action) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| MO 141 at North Outer Road | 53.3 | D | 190.5 | F (<10%) |
| MO 141 at South Outer Road | 73.7 | E | 36.9 | D |
| Valley Park Road at North Outer Road | 19.4 | B | 17.9 | B |
| Valley Park Road at South Outer Road | 17.9 | B | 13.9 | B |
| Bowles at North Outer Road | 33.9 | C | 46.0 | D |
| Bowles at South Outer Road | 26.8 | C | 64.5 | E |

TABLE 4.4-6
**Existing Year (2014) LOS for Unsignalized Intersections in the Fenton Site**

| Unsignalized Intersections (2014 Proposed Action) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| Bowles at Larkin Williams Drive | 7.5 (NBL)<br>9.6 (EBTR)<br>11.5 (WBTL) | A (NBL)<br>A (EBTR)<br>B (WBTL) | 7.3 (NBL)<br>9.0 (EBTR)<br>10.8 (WBTL) | A (NBL)<br>A (EBTR)<br>B (WBTL) |

These results show that if the Next NGA West Campus were in place today, there would be no major impacts to the Fenton roadway network. The increase in traffic volume did not result in operations that exceed the MoDOT LOS guidelines anywhere that was not already exceeding the guidelines in the No Action analysis. Additionally, the increase in density or delay in these locations was less than 10 percent. Therefore, there would be **no/negligible impacts** to the existing year LOS **(Transportation-1).** All DoD employees are eligible for the DoD's Mass Transportation Benefit Program, which helps to offset transportation costs to and from work. This program covers bus passes for buses that service the Fenton Site. It is anticipated that available routes would be enhanced to facilitate stops at this site.

**Future Year.** Due to the previously described lack of growth for most of the roadway segments within the Fenton Site roadway network, the Proposed Action 2040 analysis consisted of only the intersections along Bowles Avenue. These intersections were all found to continue to operate within MoDOT's LOS guidelines in 2040 with the Next NGA West Campus in place. Therefore, there would be **no/negligible impacts** expected in future years (**Transportation-2**). Tables 4.4-7 and 4.4-8 summarize the results of the future year LOS analysis for the Fenton Site roadway network with the Next NGA West Campus in place (Proposed Action Scenario).

TABLE 4.4-7
**Future Year (2040) LOS for Signalized Intersections in the Fenton Site**

| Signalized Intersections (2040 Proposed Action) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| Bowles at North Outer Road | 35.3 | D | 46.4 | D |
| Bowles at South Outer Road | 26.9 | C | 66.8 | E |

TABLE 4.4-8
**Future Year (2040) LOS for Unsignalized Intersections in the Fenton Site**

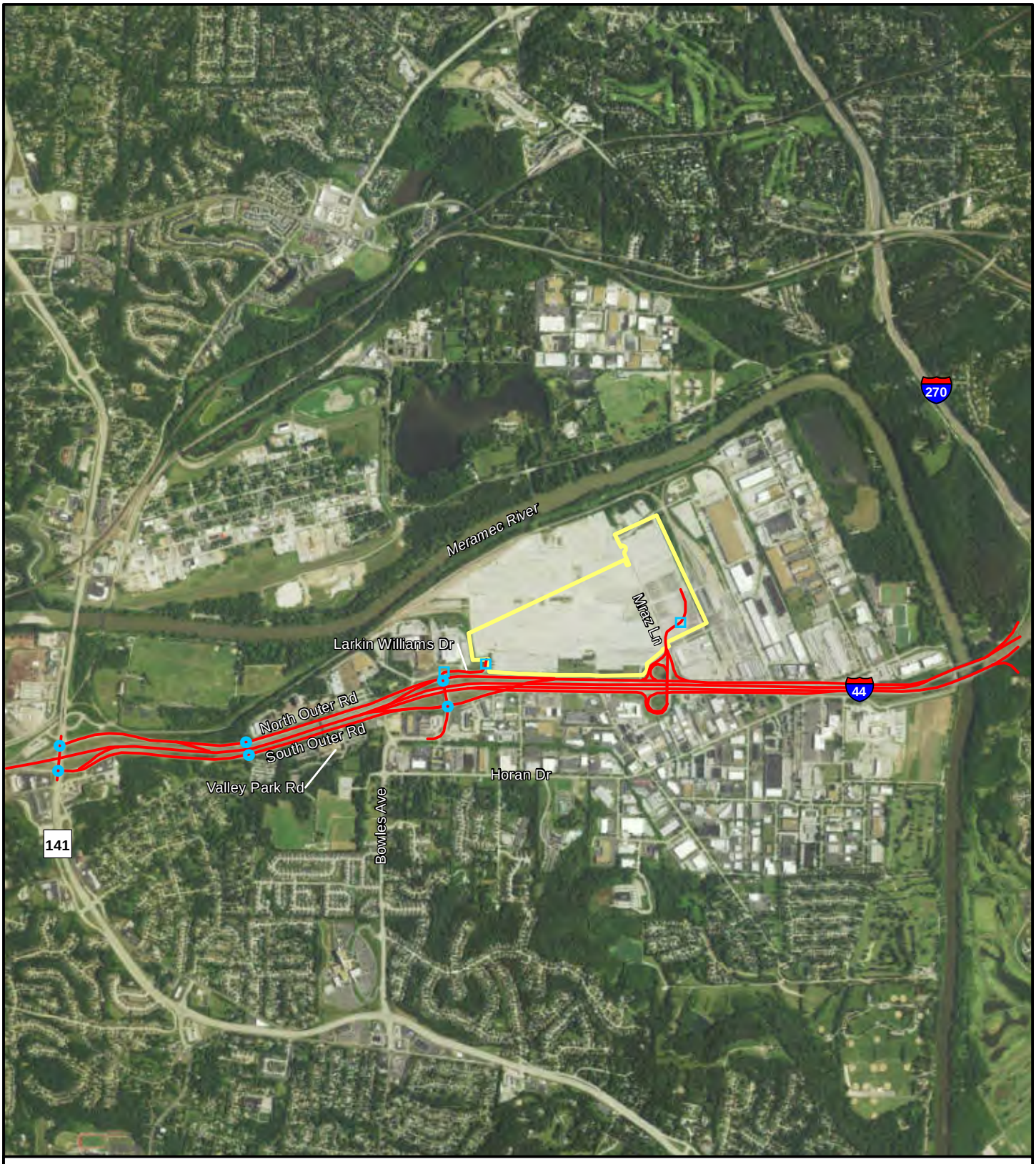
| Unsignalized Intersections (2040 Proposed Action) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| Bowles at Larkin Williams Drive | 7.5 (NBL)<br>9.6 (EBTR)<br>11.5 (WBTL) | A (NBL)<br>A (EBTR)<br>B (WBTL) | 7.3 (NBL)<br>9.0 (EBTR)<br>10.8 (WBTL) | A (NBL)<br>A (EBTR)<br>B (WBTL) |

### 4.4.1.2 Construction Traffic

Project-related construction traffic could contribute to interference with pedestrians (including children), bicyclists, and transit. This includes heavy truck traffic, as materials are brought to the project site and demolished or excavated materials are hauled out. Construction activities could also require temporary lane or road closure due to underground utility work. A detailed Construction Management Plan, detailing transportation requirements will be created and reviewed by the City **(Transportation Plan/Permit-1)** to ensure construction traffic is not causing undesirable conditions for the local population. The Construction Management Plan will identify when and where temporary closures occur, with the requirement of maintaining traffic flow during peak travel periods. Impacts due to construction traffic are expected to be **minor to moderate, negative, and short term (Transportation-3)** because standard construction practices would be used to manage traffic during construction (see Table 4.4-9 and Figure 4.4-1)**.**

TABLE 4.4-9
**Fenton Site Summary of Transportation Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Transportation-1: Existing LOS impacts | No/negligible impact | Not applicable |
| Transportation-2: Future LOS impacts | No/negligible impact | Not applicable |
| Transportation-3: Construction traffic | Minor to moderate, negative, short-term impact | Transportation Plan/Permit-1: Implement a Construction Management Plan |




Proposed Site

Roadways

Unsignalized Intersections Analyzed

Signalized Intersections Analyzed

Figure 4.4-1
Location of Transportation Impacts - Fenton Site
NGA EIS

N

0 0.25 0.5 0.75 1 Miles

Image Source: Esri, Microsoft, Image Flown 2/2/2012

## 4.4.2 Mehlville Site

### 4.4.2.1 Level of Service Analysis and Impact Assessment

**Existing Year.** Tables 4.4-10 through 4.4-13 summarize the results of the existing year LOS analysis for the Mehlville Site roadway network with the Next NGA West Campus in place (Proposed Action Scenario). Note that the Proposed Action analysis of the signalized intersections along Tesson Ferry Road included optimization of the signal timings, while the No Action analysis used the existing signal timings.

TABLE 4.4-10
**Existing Year (2014) LOS for Freeway Segments in the Mehlville Site**

| Freeway Segments (2014 Proposed Action) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-270 EB west of Tesson Ferry Road | 20.5 | C | No change | No change |
| I-270 EB east of Tesson Ferry Road | No change | No change | 24.9 | C |
| I-270 WB east of Tesson Ferry Road | 26.9 | D | No change | No change |
| I-270 WB west of Tesson Ferry Road | No change | No change | 20.6 | C |
| I-55 SB north of Butler Hill Road | No change | No change | No change | No change |
| I-55 SB south of Butler Hill Road | No change | No change | 19.7 | C |
| I-55 NB south of Butler Hill Road | 19.9 | C | No change | No change |
| I-55 NB north of Butler Hill Road | No change | No change | No change | No change |

TABLE 4.4-11
**Existing Year (2014) LOS for Ramp Merge and Diverge in the Mehlville Site**

| Ramp Merge (on-ramp) and Diverge (off-ramp) (2014 Proposed Action) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-55 NB off at Butler Hill Road | 21.8 | C | No change | No change |
| I-55 SB on at Butler Hill Road | No change | No change | 18.4 | B |

TABLE 4.4-12
**Existing Year (2014) LOS for Signalized Intersections in the Mehlville Site**

| Signalized Intersections (2014 Proposed Action) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| Tesson Ferry Road at I-270 ramp terminal WB | 20.5 | C | 20.7 | C |
| Tesson Ferry Road at I-270 ramp terminal EB | 19.4 | B | 15.7 | B |
| Tesson Ferry Road at Mattis Road | 15.1 | B | 20.5 | C |
| Tesson Ferry Road at Kennerly Road | 27.1 | C | 35.9 | D |
| Tesson Ferry Road at Schuessler Road | 12.3 | B | 30.6 | C |
| Tesson Ferry Road at Bauer Road | 8.1 | A | 5.5 | A |
| Tesson Ferry Road at Butler Hill Road | 14.3 | B | 46.7 | D |
| Tesson Ferry Road at Old Tesson Ferry | 5.5 | A | 5.5 | A |
| Butler Hill Road at Ambs Road | 8.9 | A | 9.2 | A |
| Butler Hill Road at Kerth Road | 13.4 | B | 47.7 | D |
| Butler Hill Road at Ozark Glen Drive | 25.9 | C | 40.2 | D |
| Butler Hill Road at I-55 SB ramp terminal | 23.1 | C | 22.1 | C |
| Butler Hill Road at I-55 NB ramp terminal | 32.6 | C | 21.6 | C |

TABLE 4.4-13
**Existing Year (2014) LOS for Unsignalized Intersections in the Mehlville Site**

| Unsignalized Intersections (2014 Proposed Action) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| **Tesson Ferry Road at entrance to Next NGA West Campus** | 11.1 (NBL)<br>13.1 (EBR)<br>**83.6 (EBL)** | B (NBL)<br>B (EBR)<br>**F (EBL)** | 13.6 (NBL)<br>9.8 (EBR)<br>**123.7 (EBL)** | B (NBL)<br>B (EBR)<br>**F (EBL)** |

These results show that if the Next NGA West Campus were in place today, there would be an impact to the Mehlville Site roadway network at the new unsignalized intersection along Tesson Ferry Road at the new entrance to the Next NGA West Campus. This impact would meet the criteria for being considered a major impact; however, because mitigation of this issue should be relatively simple, it is not considered a major impact.

Mitigation for the unsignalized entrance to the Next NGA West Campus is to install a traffic signal. The actual location of the traffic signal will be determined during the project design phase and in consultation with MoDOT, the jurisdictional agency of Tesson Ferry Road. An additional signal will require the removal of an existing signal to conform to signal spacing requirements. This is an immediate impact and, therefore, the mitigation measure should be part of the initial project design and construction **(Transportation Coordination-1).** With implementation of this mitigation, impacts to the Mehlville Site roadway network would be **minor to moderate, negative, and long term (Transportation-1)**. All DoD employees are eligible for the DoD's Mass Transportation Benefit Program, which helps to offset transportation costs to and from work. This program covers bus passes for buses that service the Mehlville Site. It is anticipated that available routes would be enhanced to facilitate stops at this site.

**Future Year.** Due to the previously described lack of growth for most of the roadway segments within the Mehlville Site roadway network, the Proposed Action 2040 analysis consisted of only the freeway segments on I-55, the ramps to and from I-55, and the signalized intersections at the I-55 ramp terminal intersections on Butler Hill Road. These locations were all found to continue to operate within MoDOT's LOS guidelines in 2040 with the Next NGA West Campus in place. Therefore, there would be **no/negligible impacts** to future year LOS (**Transportation-2**). Tables 4.4-14 through 4.4-16 summarize the results of the future year LOS analysis for the Mehlville Site roadway network with the Next NGA West Campus in place (Proposed Action scenario).

TABLE 4.4-14
**Future Year (2040) LOS for Freeway Segments in the Mehlville Site**

| Freeway Segments (2040 Proposed Action) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-55 SB south of Butler Hill Road | No change | No change | 20.2 | C |
| I-55 NB south of Butler Hill Road | 20.4 | C | No change | No change |

TABLE 4.4-15
**Future Year (2040) LOS for Ramp Merge and Diverge in the Mehlville Site**

| Ramp Merge (on-ramp) and Diverge (off-ramp) (2040 Proposed Action) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-55 NB off at Butler Hill Road | 22.1 | C | No change | No change |
| I-55 SB on at Butler Hill Road | No change | No change | 20.8 | C |

TABLE 4.4-16
**Future Year (2040) LOS for Signalized Intersections in the Mehlville Site**

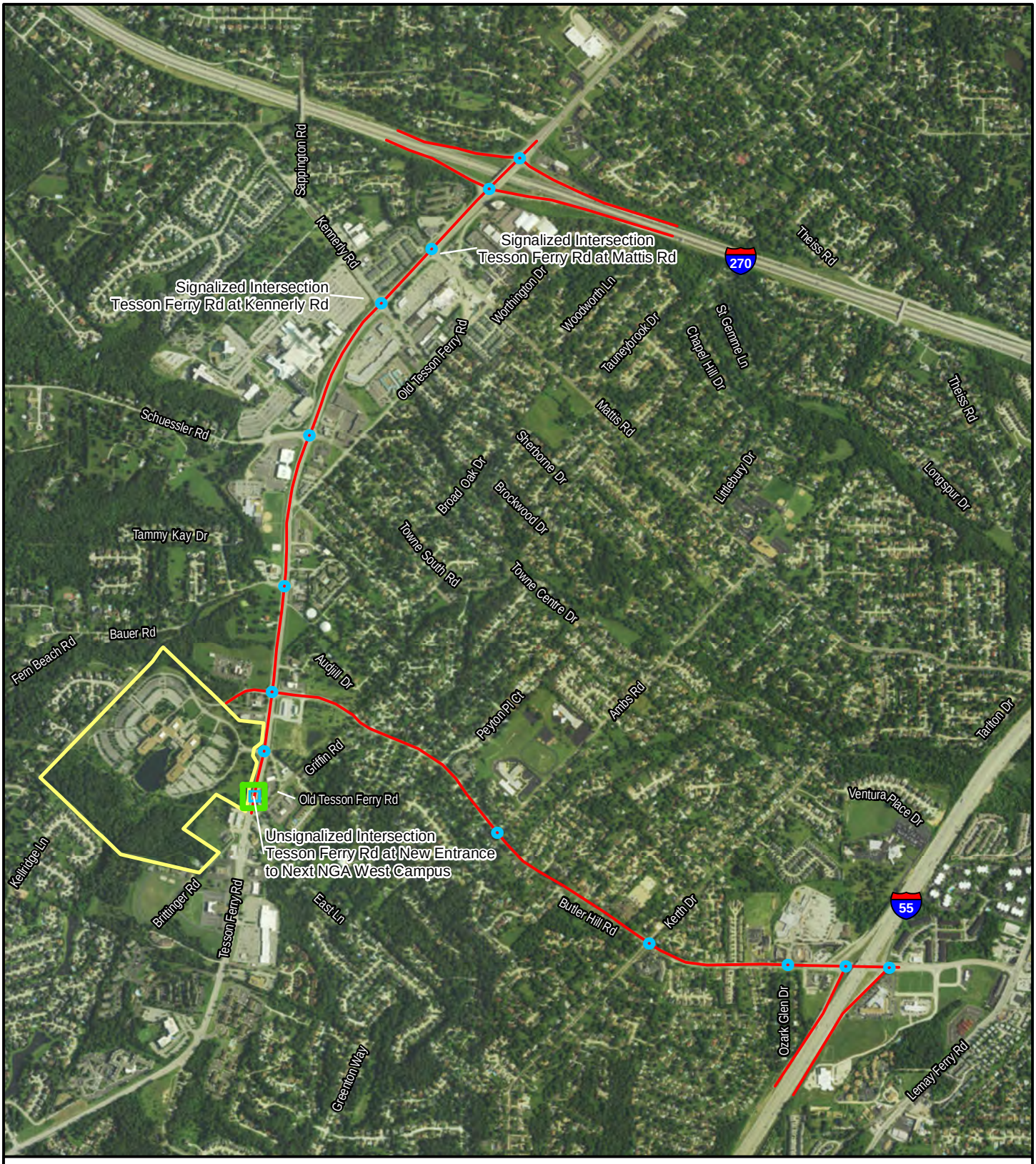
| Signalized Intersections (2040 Proposed Action) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| Butler Hill Road at I-55 NB ramp terminal | 32.9 | C | 21.6 | C |

#### 4.4.2.2 Construction Traffic

Construction traffic impacts at the Mehlville Site would be similar to the Fenton Site because similar equipment, construction techniques, and BMPs would be used. See the Fenton Site discussion for a detailed explanation of impacts (also see Table 4.4-17 and Figure 4.4-2).

TABLE 4.4-17
**Mehlville Site Summary of Transportation Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Transportation-1: Existing LOS of impacts | Minor to moderate, negative long-term impact | Transportation Coordination-1: Coordinate with MoDOT to install a traffic signal |
| Transportation-2: Future LOS of impacts | No/negligible impact | Not applicable |
| Transportation-3: Construction traffic | Minor to moderate, negative, short-term impact | Transportation Plan/Permit-1: Implement a Construction Management Plan |




Proposed Site

Impact Location

Roadways

Signalized Intersections Analyzed

Unsignalized Intersections Analyzed

Figure 4.4-2
Location of Transportation Impacts - Mehlville Site
NGA EIS

N

0 0.25 0.5 Miles

Image Source: Esri, Microsoft, Image Flown 2/2/2012

## 4.4.3 St. Louis City Site (Preferred Alternative)

### 4.4.3.1 Level of Service Analysis and Impact Assessment

**Existing Year.** Tables 4.4-18 through 4.4-21 summarize the results of the existing year LOS analysis for the St. Louis City Site roadway network with the Next NGA West Campus in place (Proposed Action Scenario).

TABLE 4.4-18
**Existing Year (2014) LOS for Freeway Segments in the St. Louis City Site**

| Freeway Segments (2014 Proposed Action) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-64 EB west of Ewing | 19.8 | C | No change | No change |
| I-64 WB west of Market | No change | No change | 17.7 | B |
| I-70 EB west of 11th Street | 44.0 | E | No change | No change |
| I-44 NB south of 10th Street | 45.6 | F (<10%) | No change | No change |

TABLE 4.4-19
**Existing Year (2014) LOS for Weaving Segments in the St. Louis City Site**

| Weaving Segments (2014 Proposed Action) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-64 EB between Ewing and Jefferson | 21.5 | C | No change | No change |
| I-64 WB between Jefferson and Market | No change | No change | 23.1 | C |
| I-70 EB between 11th Street and Cass Avenue | 39.0 | E | 25.6 | C |
| I-70 WB between 10th Street and Branch | No change | No change | 25.0 | C |

TABLE 4.4-20
**Existing Year (2014) LOS for Signalized Intersections in the St. Louis City Site**

| Signalized Intersections (2014 Proposed Action) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| Jefferson Avenue at Cass Avenue | 12.8 | B | 17.5 | B |
| Jefferson Avenue at Drive Martin Luther King | 8.5 | A | 11.0 | B |
| Jefferson Avenue at Delmar | 8.7 | A | 7.7 | A |
| Jefferson Avenue at Washington Avenue | 16.0 | B | 13.9 | B |
| Jefferson Avenue at Locust | 9.5 | A | 9.8 | A |
| Jefferson Avenue at Olive | 17.0 | B | 19.2 | B |
| Jefferson Avenue at Pine | 19.9 | B | 15.1 | B |
| Jefferson Avenue at Market | 30.1 | C | 30.6 | C |
| Jefferson Avenue at I-64 WB on-ramp | 1.5 | A | 17.7 | B |
| Jefferson Avenue at I-64 EB off-ramp | 23.8 | C | 34.1 | C |
| Cass Avenue at 20th Street | 17.2 | B | 14.9 | B |
| Cass Avenue at 14th Street | 16.3 | B | 18.2 | B |
| Cass Avenue at North Florissant Avenue | 20.2 | C | 20.6 | C |
| Cass Avenue at I-70 ramp terminal | 10.3 | B | 30.8 | C |
| Cass Avenue at 9th Street | PM only | PM only | 16.6 | B |
| Cass Avenue at Broadway | PM only | PM only | 26.7 | C |

TABLE 4.4-20
**Existing Year (2014) LOS for Signalized Intersections in the St. Louis City Site**

| Signalized Intersections (2014 Proposed Action) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| North Florissant Avenue at St. Louis Avenue | PM only | PM only | 13.6 | B |
| North Florissant Avenue at N. Market Street | PM only | PM only | 3.5 | A |
| North Florissant Avenue at Madison Street | PM only | PM only | 4.3 | A |
| North Florissant Avenue at 14th Street | PM only | PM only | 19.2 | B |

TABLE 4.4-21
**Existing Year (2014) LOS for Unsignalized Intersections in the St. Louis City Site**

| Unsignalized Intersections (2014 Proposed Action) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| **Jefferson entrance to NGA** | 15.6 | C | **80.2** | **F** |
| | 15.6 | C | **80.2** | **F** |
| | 0.1 | A | 0.1 | A |
| **Cass entrance west to NGA** | 13.1 | B | **53.0** | **F** |
| | 13.1 | B | **53.0** | **F** |
| | 0.1 | A | 0.1 | A |
| Cass entrance east to NGA (trucks) | 15.4 | C | 17.4 | B |
| | 15.4 | C | 17.4 | B |
| | 0.1 | A | 0.1 | A |

These results show that if the Next NGA West Campus were in place today, there would be an impact to the St. Louis City Site roadway network at the unsignalized entrances to the Next NGA West Campus along Jefferson Avenue and Cass Avenue. This impact would meet the criteria for being considered a major impact; however, because mitigation of this issue should be relatively simple it is not considered a major impact. Mitigation for the unsignalized entrances to the Next NGA West Campus is to install traffic signals. The installation would need to be coordinated with the City of St. Louis, the owning agency of Jefferson Avenue and Cass Avenue. It is recommended that these signals be actuated and, therefore, they would only be triggered when a vehicle is waiting to leave the campus. This would allow free-flow operation on Jefferson Avenue and Cass Avenue most of the time. NGA will coordinate with the jurisdictional agency (City of St. Louis) regarding construction of this mitigation measure. This is an immediate impact and, therefore, the mitigation measure should be part of the initial project construction **(Transportation Coordination-1).** With implementation of this mitigation, impacts to the St. Louis City Site roadway network would be **minor to moderate, negative, and long term (Transportation-1).** All DoD employees are eligible for the DoD's Mass Transportation Benefit Program, which helps to offset transportation costs to and from work. This program covers bus passes for buses that service the St. Louis City Site. It is anticipated that available routes would be enhanced to facilitate stops at this site.

**Future Year.** As stated previously, only some of the roadways in the St. Louis City Site roadway network will experience growth in the future. These roadways were analyzed with the Next NGA West Campus in place and the results are provided in Tables 4.4-22 through 4.4-25.

TABLE 4.4-22
**Future Year (2040) LOS for Freeway Segments in the St. Louis City Site**

| Freeway Segments (2040 Proposed Action) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-70 EB west of 11th Street | 49.2 | F (<10%) | No change | No change |
| I-44 NB south of 10th Street | 48.8 | F (<10%) | No change | No change |

TABLE 4.4-23
**Future Year (2040) LOS for Weaving Segments in the St. Louis City Site**

| Weaving Segments (2040 Proposed Action) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-70 EB between 11th Street and Cass Avenue | -- | F (<10%) | 28.8 | D |
| I-70 WB between 10th Street and Branch | No change | No change | 26.0 | C |

TABLE 4.4-24
**Future Year (2040) LOS for Signalized Intersections in the St. Louis City Site**

| Signalized Intersections (2040 Proposed Action) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| Jefferson Avenue at Cass Avenue | 15.3 | B | 20.0 | B |
| Jefferson Avenue at Drive Martin Luther King | 8.3 | A | 10.9 | B |
| Jefferson Avenue at Delmar | 8.7 | A | 7.7 | A |
| Jefferson Avenue at Washington Avenue | 17.2 | B | 14.3 | B |
| Cass Avenue at 20th Street | 16.9 | B | 13.3 | B |
| Cass Avenue at 14th Street | 15.8 | B | 19.3 | B |
| Cass Avenue at North Florissant Avenue | 20.1 | C | 19.1 | B |
| Cass Avenue at I-70 ramp terminal | 23.7 | C | 63.0 | E |
| Cass Avenue at 9th Street | PM only | PM only | 15.1 | B |
| Cass Avenue at Broadway | PM only | PM only | 26.1 | C |

TABLE 4.4-25
**Future Year (2040) LOS for Unsignalized Intersections in the St. Louis City Site**

| Unsignalized Intersections (2040 Proposed Action) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| **Jefferson entrance to NGA** | 15.6<br>15.6<br>0.1 | C<br>C<br>A | **80.2**<br>**80.2**<br>0.1 | **F**<br>**F**<br>A |
| **Cass entrance west to NGA** | 14.4<br>14.4<br>0.2 | B<br>B<br>A | **112.0**<br>**112.0**<br>0.1 | **F**<br>**F**<br>A |
| Cass entrance east to NGA (trucks) | 18.4<br>18.4<br>0.2 | C<br>C<br>A | 22.0<br>22.0<br>0.1 | C<br>C<br>A |

These results show that in 2040 with the Next NGA West Campus in place, the delays at the unsignalized entrances to the Next NGA West Campus, previously identified as impacts, continue to increase. With the

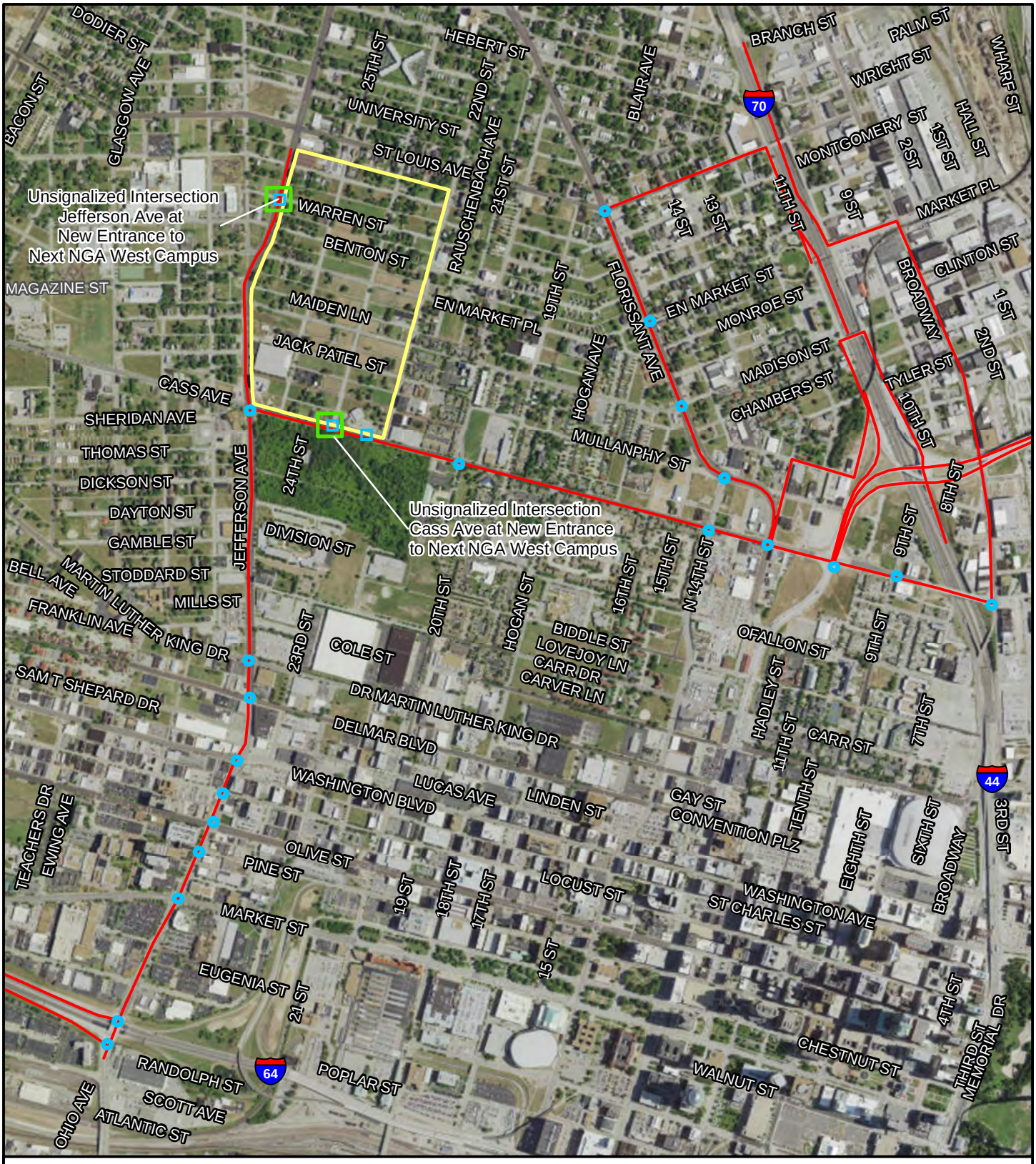
installation of traffic signals **(Transportation Coordination-1)** impacts to the St. Louis City Site roadway network would be **minor to moderate, negative, and long term (Transportation-2)**.

#### 4.4.3.2 Construction Traffic

Construction traffic impacts at the St. Louis City Site could contribute to interference with pedestrians (including children), bicyclists, and transit. This includes heavy truck traffic, as materials are brought to the project site and demolished or excavated materials are hauled out. Construction activities would require temporary and permanent lane or road closures due to facility construction and underground utility work. A detailed Construction Management Plan will be created and reviewed by the City **(Transportation Plan/Permit-1)** to ensure construction traffic is not impacting the local population. The Construction Management Plan will identify when and where permanent and temporary closures occur, with the requirement of maintaining traffic flow during peak travel periods. Impacts due to construction traffic are expected to be **minor to moderate, negative, and short term (Transportation-3)** because standard construction practices would be used to manage traffic during construction (also see Table 4.4-26 and Figure 4.4-3).

TABLE 4.4-26
**St. Louis City Site Summary of Transportation Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Transportation-1: Existing LOS of impacts | Minor to moderate, negative, long-term impact | Transportation Coordination 1: NGA to coordinate with the City of St. Louis to install traffic signal |
| Transportation-2: Future LOS of impacts | Minor to moderate, negative, long-term impact | Transportation Coordination 1: NGA to coordinate with the City of St. Louis to install traffic signal |
| Transportation-3: Construction traffic | Minor to moderate, negative, short-term impact | Transportation Plan/Permit-1: Implement a Construction Management Plan |




Proposed Site

Impact Location

Roadways

Unsignalized Intersections Analyzed

Signalized Intersections Analyzed

Figure 4.4-3
Location of Transportation Impacts - St. Louis City Site
NGA EIS

N

0 0.25 0.5 Miles

Image Source: Esri, Microsoft, Image Flown 2/2/2012

## 4.4.4 St. Clair County Site

### 4.4.4.1 Level of Service Analysis and Impact Assessment

**Existing Year.** The following tables summarize the results of the existing year LOS analysis for the St. Clair County Site roadway network with the Next NGA West Campus in place (Proposed Action Scenario). As a reminder, IDOT LOS exceedance thresholds are lower than those for MoDOT. Consequently, a D or lower rating, with a greater than 10 percent change in service, is considered a major impact in Tables 4.4-27 through 4.4-30.

TABLE 4.4-27
**Existing Year (2014) LOS for Freeway Segments in the St. Clair County Site**

| Freeway Segments (2014 Proposed Action) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-64 EB west of US 50 | 11.5 | B | No change | No change |
| I-64 EB west of Rieder Road | 5.5 | A | No change | No change |
| I-64 EB east of Rieder Road | No change | No change | No change | No change |
| I-64 WB east of Rieder Road | No change | No change | No change | No change |
| I-64 WB west of Rieder Road | No change | No change | 12.0 | B |
| I-64 WB west of US 50 | No change | No change | 14.9 | B |

TABLE 4.4-28
**Existing Year (2014) LOS for Ramp Merge and Diverge in the St. Clair County Site**

| Ramp Merge (on-ramp) and Diverge (off-ramp) (2014 Proposed Action) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-64 EB off at Rieder Road | 9.3 | A | No change | No change |
| I-64 EB on at Rieder Road | No change | No change | No change | No change |
| I-64 WB off at Rieder Road | No change | No change | No change | No change |
| I-64 WB on at Rieder Road | No change | No change | 16.5 | B |
| I-64 EB off to US 50 SB | 19.2 | B | No change | No change |
| I-64 WB on from US 50 NB | No change | No change | 18.7 | B |

TABLE 4.4-29
**Existing Year (2014) LOS for Signalized Intersections in the St. Clair County Site**

| Signalized Intersections (2014 Proposed Action) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| Rieder Road at I-64 WB | 4.3 | A | 13.6 | B |
| Rieder Road at I-64 EB | 10.5 | B | 12.2 | B |
| Rieder Road at Wherry Road | 5.7 | A | 14.3 | B |
| **IL 158 at Wherry Road** | 14.4 | B | **37.8** | **D** |

TABLE 4.4-30
**Existing Year (2014) LOS for Unsignalized Intersections in the St. Clair County Site**

| Unsignalized Intersections (2014 Proposed Action) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| Wherry Road at Wherry Road Connection | 4.1 (WBL/T)<br>17.5 (NBL/R) | A (WBL/T)<br>C (NBL/R) | 2.1 (WBL/T)<br>14.8 (NBL/R) | A (WBL/T)<br>B (NBL/R) |
| Wherry Road entrance to NGA | 4.6 (WBL/T)<br>12.4 (NBL/R) | A (WBL/T)<br>B (NBL/R) | 0.2 (WBL/T)<br>13.7 (NBL/R) | A (WBL/T) B (NBL/R) |
| Wherry Connector/Rieder Road entrance to NGA north | 12.4 (EBL/R)<br>2.5 (NBL/T) | B (EBL/R)<br>A (NBL/T) | 16.2 (EBL/R)<br>0.1 (NBL/T) | C (EBL/R)<br>A (NBL/T) |
| Wherry Connector/Rieder Road entrance to NGA south | 11.2 (EBL/R)<br>1.8 (NBL/T) | B (EBL/R)<br>A (NBL/T) | 10.6 (EBL/R)<br>0.1 (NBL/T) | B (EBL/R)<br>A (NBL/T) |

These results show that if the Next NGA West Campus were in place today, there would be an impact to the St. Clair County Site roadway network at the signalized intersection of Route 158 at Wherry Road. This impact would meet the criteria for being considered a major impact; however, because mitigation of this issue should be relatively simple, it is not considered a major impact.

Mitigation for the intersection of Route 158 with Wherry Road would be to add an exclusive right turn lane to westbound Wherry Road with a storage length of at least 500 feet. Implementing this mitigation measure will improve operations to LOS C. NGA will coordinate with the jurisdictional agencies (IDOT and St. Clair County) regarding construction of this mitigation measure. This is an immediate impact; therefore, the mitigation measure should be part of the initial project construction **(Transportation Coordination-2)**. After implementation of this mitigation, impacts to the St. Clair County Site roadway network would be **minor to moderate, negative, and long term (Transportation-1)**. All DoD employees are eligible for the DoD's Mass Transportation Benefit Program, which helps to offset transportation costs to and from work. This program covers bus passes and MetroLink tickets for buses and trains that service the St. Clair County Site. It is anticipated that available routes would be enhanced to facilitate stops at this site.

**Future Year.** As stated in Section 3.0, *Affected Environment*, all the roadways in the St. Clair County Site roadway network will experience growth in the future. These roadways were analyzed with the Next NGA West Campus in place and the results are provided in Tables 4.4-31 through 4.4-34.

TABLE 4.4-31
**Future Year (2040) LOS for Freeway Segments in the St. Clair County Site**

| Freeway Segments (2040 Proposed Action) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-64 EB west of US 50 | 20.6 | C | No change | No change |
| I-64 EB west of Rieder Road | 9.9 | A | No change | No change |
| I-64 EB east of Rieder Road | No change | No change | No change | No change |
| I-64 WB east of Rieder Road | No change | No change | No change | No change |
| I-64 WB west of Rieder Road | No change | No change | 17.3 | B |
| I-64 WB west of US 50 | No change | No change | 24.6 | C |

TABLE 4.4-32
**Future Year (2040) LOS for Ramp Merge and Diverge in the St. Clair County Site**

| Ramp Merge (on-ramp) and Diverge (off-ramp) (2040 Proposed Action) | Density (pcphpl) AM peak hour | LOS AM peak hour | Density (pcphpl) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| I-64 EB off at Rieder Road | 16.7 | B | No change | No change |
| I-64 EB on at Rieder Road | No change | No change | No change | No change |
| I-64 WB off at Rieder Road | No change | No change | No change | No change |
| I-64 WB on at Rieder Road | No change | No change | 23.0 | C |
| I-64 EB off to US 50 SB | 28.8 | D (<10%) | No change | No change |
| I-64 WB on from US 50 NB | No change | No change | 24.8 | C |

TABLE 4.4-33
**Future Year (2040) LOS for Signalized Intersections in the St. Clair County Site**

| Signalized Intersections (2040 Proposed Action) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| Rieder Road at I-64 WB | 21.6 | C | 12.9 | B |
| **Rieder Road at I-64 EB** | **39.4** | **D** | 13.9 | B |
| Rieder Road at Wherry Road | 14.9 | B | 31.8 | C |
| **IL 158 at Wherry Road** | 5.6 | A | **59.7** | **E** |

TABLE 4.4-34
**Future Year (2040) LOS for Unsignalized Intersections in the St. Clair County Site**

| Unsignalized Intersections (2040 Proposed Action) | Delay (seconds) AM peak hour | LOS AM peak hour | Delay (seconds) PM peak hour | LOS PM peak hour |
|---|---|---|---|---|
| **Wherry Road entrance to NGA** | 0.2 (WBL/T)<br>**30.4 (NBL/R)** | A (WBL/T)<br>**D (NBL/R)** | 0.1 (WBL/T)<br>**695.2 (NBL/R)** | A (WBL/T)<br>**F (NBL/R)** |
| **Wherry Connector/Rieder Road entrance to NGA north** | 16.9 (EBL/R)<br>0.9 (NBL/T) | C (EBL/R)<br>A (NBL/T) | **37.9 (EBL/R)**<br>0.1 (NBL/T) | **E (EBL/R)**<br>A (NBL/T) |
| Wherry Connector/Rieder Road entrance to NGA south | 24.6 (EBL/R)<br>0.8 (NBL/T) | C (EBL/R)<br>A (NBL/T) | 12.8 (EBL/R)<br>0.1 (NBL/T) | B (EBL/R)<br>A (NBL/T) |

These results show that in 2040 with the Next NGA West Campus in place, there would be impacts in the following locations:

- Signalized intersection at Rieder Road at I-64 eastbound ramp terminal intersection
- Unsignalized intersections at the entrances to the Next NGA West Campus along Wherry Road and Rieder Road

In addition, the delay at the signalized intersection of IL 158 and Wherry Road, previously identified as an existing year impact, continues to increase without mitigation. These impacts would meet the criteria for being considered a major impact; however, because mitigation of these issues should be relatively simple, they are not considered major impacts.

Mitigation for the intersection of Rieder Road at the I-64 eastbound ramp terminal is to add a second exclusive right turn to the I-64 eastbound off-ramp. Implementing this mitigation measure will improve operations to LOS C. NGA will coordinate with the jurisdictional agency (IDOT) regarding construction of this mitigation measure. This mitigation measure would not need to be implemented until sometime in the future **(Transportation Coordination-2)**.

Mitigation for the unsignalized entrances to the Next NGA West Campus is to install traffic signals. The installation would need to be coordinated with St. Clair County, the owning agency of Wherry Road and Rieder Road. It is recommended that these signals be actuated and, therefore, only triggered when a vehicle is waiting to leave the campus. NGA will coordinate with the jurisdictional agency (St. Clair County) regarding construction of this mitigation measure. This would allow free-flow operation on Wherry Road and Rieder Road most of the time. This mitigation measure would not need to be implemented until sometime in the future **(Transportation Coordination-1)**.

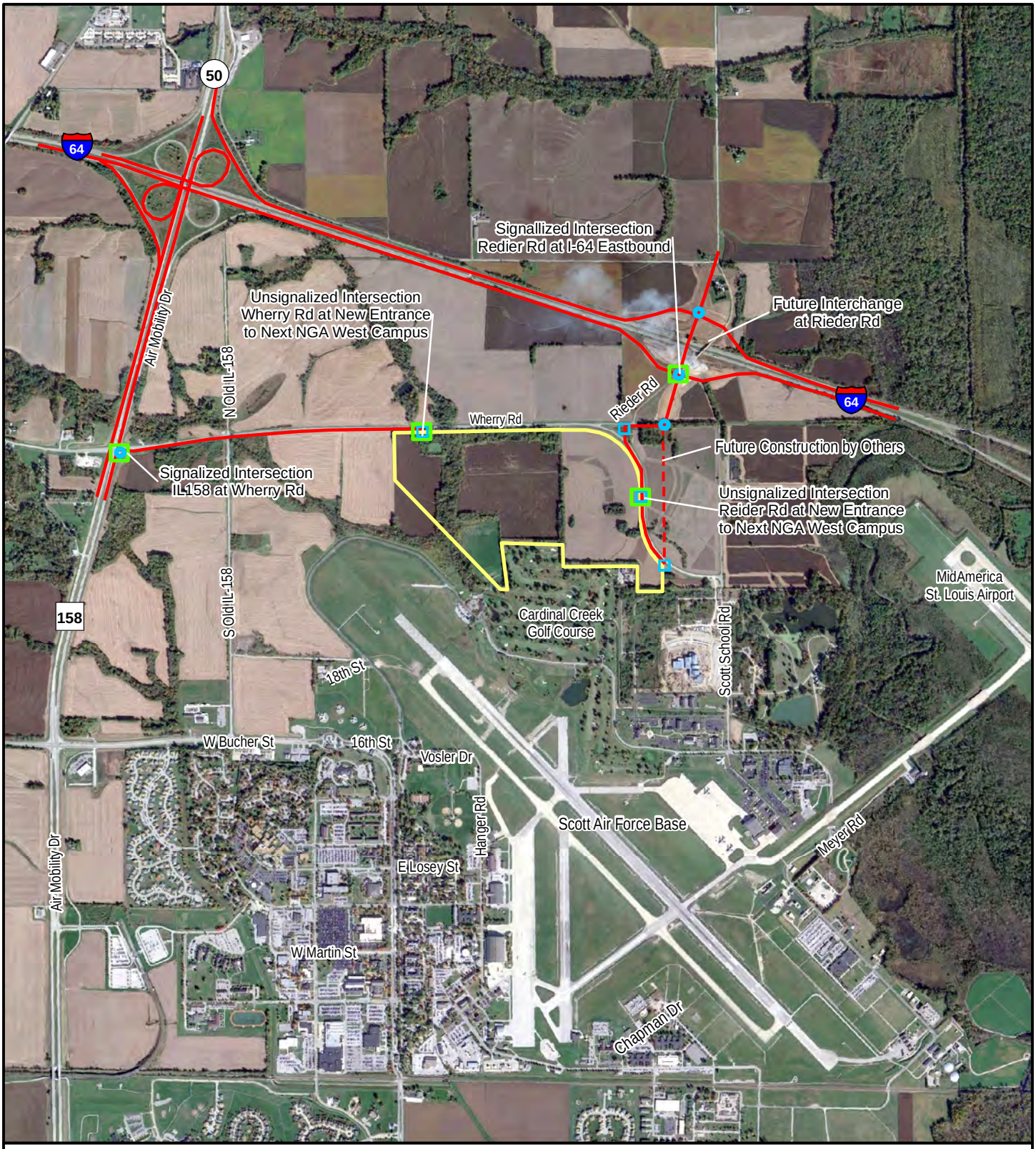
With the implementation of these mitigations, the future impacts to the St. Clair County Site roadway network would be **minor to moderate, negative, and long term (Transportation-2)**.

#### 4.4.4.2 Construction Traffic

Construction traffic impacts at the St. Clair Count Site would be similar to the Fenton Site because similar equipment, construction techniques, and BMPs would be used. See the Fenton Site discussion for a detailed explanation of impacts (also see Table 4.4-35 and Figure 4.4-4).

TABLE 4.4-35
**St. Clair County Site Summary of Transportation Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Transportation-1: Existing LOS of impacts | Minor to moderate, negative, long-term impact | Transportation Coordination-2: NGA will coordinate with IDOT to create a right turn lane |
| Transportation-2: Future LOS of impacts | Minor to moderate, negative, long-term impact | Transportation Coordination-1: NGA will coordinate with St. Clair County to install traffic signals<br>Transportation Coordination-2: NGA will coordinate with IDOT to create a right turn lane |
| Transportation-3: Construction traffic | Minor to moderate, negative, short-term impact | Transportation Plan/Permit-1: Implement a Construction Management Plan |




Proposed Site

Impact Location

Unsignalized Intersections Analyzed

Signalized Intersections Analyzed

Roadways

Future Construction by Others

N

0 0.25 0.5 0.75 1 Miles

Image Source: Google Earth Pro, Modified by CH2MHill, Image Flown 10/21/2014

Figure 4.4-4
Location of Transportation Impacts - St. Clair County Site
NGA EIS

### 4.4.5 No Action Alternative

The No Action Alternative is the continuation of the current use of the South 2nd Street facility. Under the No Action Alternative, current activities would continue at each of the site alternatives, and no construction activities would be expected to occur. Because there would be no change from current conditions other than the ongoing construction of the Rieder Road Interchange at the St. Clair County Site, **no/negligible impacts** to transportation would result **(Transportation 1 through 3).**

### 4.4.6 Summary of Impacts and Environmental Protection Measures

The following is a summary of the environmental protection measures related to the Proposed Action.

**Transportation Coordination-1**: NGA will work with IDOT, MoDOT, or other owning agency to install a traffic signal at the entry to the Next NGA West Campus.

**Transportation Coordination -2**: NGA will work with IDOT, MoDOT, or other owning agency to install a second exclusive right-turn lane (St. Clair County Site).

**Transportation Plan/Permit-1**: A detailed Construction Management Plan will be created and reviewed by the relevant city. The plan will include a description of the necessary closures and detours, with the requirement of maintaining traffic flow during peak hours.

Table 4.4-36 summarizes individual and overall impacts for all of the project alternatives.

TABLE 4.4-36
**Summary of Impacts to Transportation Resources**

| | Project Alternatives | | | | |
|---|---|---|---|---|---|
| **Impacts** | **Fenton Site** | **Mehlville Site** | **St. Louis City Site** | **St. Clair County Site** | **No Action** |
| Transportation-1: Existing LOS of impacts | No/negligible impact | Minor to moderate, negative, long-term impact | Minor to moderate, negative, long-term impact | Minor to moderate, negative, long-term impact | No/negligible impact |
| Transportation-2: Future LOS of impacts | No/negligible impact | No/negligible impact | Minor to moderate, negative, long-term impact | Minor to moderate, negative, long-term impact | No/negligible impact |
| Transportation-3: Construction traffic | Minor to moderate, negative, short-term impact | Minor to moderate, negative, short-term impact | Minor to moderate, negative, short-term impact | Minor to moderate, negative, short-term impact | No/negligible impact |

# 4.5 Noise

This subsection describes the potential noise impacts within the ROI under the No Action Alternative or as a result of implementing the Proposed Action. The ROI for noise is the project boundary, adjacent communities, and the local access routes leading to the site.

Table 4.5-1 identifies the impact thresholds for noise.

TABLE 4.5-1
**Impact Thresholds for Noise**

| Impact | Description |
|---|---|
| No/ Negligible | Construction or operation noise will not be perceivable.<br>There would be no change in noise conditions or transportation-related noise would result in a long-term increase of up to 3 dBA (barely perceivable). |
| Minor to Moderate | Construction or operation noise would be compliant with St. Louis City Ordinance 64566; for example construction would only occur during daytime hours (7 a.m. to 10 p.m.).<br>Transportation-related noise would result in a long-term increase of 3 to 5 dBA (barely perceivable to readily apparent). |
| Major | Construction or operation noise would involve noise levels beyond what is allowed in St. Louis City Ordinance 64566.<br>Transportation-related noise would result in a long-term increase of greater than 5 dBA (readily apparent). |
| Quality | Beneficial – would have a positive effect on the noise environment.<br>Negative – would have an adverse effect on the noise environment. |
| Duration | Short term – would occur only during the proposed construction period.<br>Long term – would continue beyond the proposed construction period. |

Noise from construction activities would add to the noise environment within the ROI. Construction activities would be temporary and are expected to occur during normal working hours; however, some construction work may occur outside normal hours, when required. Construction is usually carried out in reasonably discrete steps, each with its own mix of equipment and noise characteristics. Construction under the Proposed Action would be conducted using standard construction equipment and methods.

Based on data presented in the U.S. Environmental Protection Agency (USEPA) publication, *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances* (USEPA, 1971), the main phases of outdoor construction typically generate noise levels that range from 78 to 89 A-weighted decibels (dBA) approximately 50 feet from a construction site (Table 4.5-2).

TABLE 4.5-2
**Typical Noise Levels Associated with Main Phases of Outdoor Construction**

| Construction Phase | Noise Level at 50 Feet (dBA) |
|---|---|
| Ground Clearing | 84 |
| Excavation, Grading | 89 |
| Foundations | 78 |
| Structural | 85 |
| Finishing | 89 |

Notes:
dBA = A-weighted decibel
Data Source: USEPA, 1971.

## 4.5.1 Fenton Site

### 4.5.1.1 Construction Noise

The nearest noise-sensitive land uses to the Fenton Site are Meramec Landing Park, located approximately 800 feet north of the site, a residential area located approximately 1,000 feet southwest of the site, and several hotels/motels located approximately 700 feet south of the site. Based on the general estimation of noise levels discussed in Table 4.5-2, construction noise is expected to be within the general range of 78 to 89 dBA, depending on the type of construction activity that is conducted. Construction contractors will comply with the City of St. Louis noise ordinance (St. Louis, 1998), which requires all construction equipment to have sound control devices equivalent to or better than original equipment and for construction to occur during daytime (7 a.m. to 10 p.m.) hours **(Noise BMP-1)**. With implementation of **Noise BMP-1**, construction noise under the Proposed Action would be a **minor to moderate, negative, and short-term impact (Noise-1).**

### 4.5.1.2 Transportation Noise

Under the Proposed Action, up to 3,150 NGA personnel would commute to the Fenton Site; however, NGA personnel work in shifts and have a wide range in commute times at the South 2nd Street facility. For purpose of analysis, it is assumed that 1,500 vehicles would be operated by NGA personnel during the peak traffic-volume hour.

The primary access route for the Fenton Site would be Bowles Avenue, which has a future-year traffic peak-hour volume of 1,580 vehicles (discussed further in Section 4.4, *Traffic and Transportation*). The addition of 1,500 NGA personnel vehicles would approximately double the traffic volume on Bowles Avenue, which is generally considered to result in a 3-dBA increase in the surrounding noise environment. Therefore, noise-sensitive land uses near the road, which include residential areas southwest of the site, could experience an increase in noise levels of approximately 3-dBA during peak-hour traffic volumes. Based on the analysis conducted, transportation noise under the Proposed Action would have a **no/negligible impact (Noise-2)**.

### 4.5.1.3 Operational Noise

Noise generated by NGA operations would be largely confined to the interior of the proposed NGA facilities and is expected to result in a negligible increase in the ambient noise levels at the site. In case of a power outage in the area, the NGA standby generators would operate. These generators are located in a contained area in the interior of the site and would be barely perceivable to people outside the site. Therefore, operational noise under the Proposed Action would have **no/negligible impact (Noise-3).**

The noise impacts and associated environmental protection measures for the Fenton Site are summarized in Table 4.5-3.

TABLE 4.5-3
**Fenton Site Summary of Noise Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Noise-1: Construction noise | Minor, negative, short-term impact | Noise BMP-1: Comply with ordinances pertaining to construction noise |
| Noise-2: Transportation noise | No/negligible impact | Not applicable |
| Noise-3: Operational noise | No/negligible impact | Not applicable |

## 4.5.2 Mehlville Site

### 4.5.2.1 Construction Noise

The nearest noise-sensitive land uses to the Mehlville Site are residential areas that border the site to the north, west, and south, and a church that is adjacent to the northeastern side of the site. Based on typical construction noise levels, construction activity that occurs near the outer perimeter of the Mehlville Site could generate noise levels within the general range of 78 to 89 dBA. Construction contractors will comply with the City of St. Louis noise ordinance (St. Louis, 1998), which requires all construction equipment to have sound control devices equivalent to or better than original equipment and for construction to occur during daytime (7 a.m. to 10 p.m.) hours **(Noise BMP-1)**. With implementation of **Noise BMP-1**, construction noise under the Proposed Action would have a **minor to moderate, negative, and short-term impact (Noise-1).**

### 4.5.2.2 Transportation Noise

For a conservative analysis, it is assumed that 1,500 vehicles would be operated by NGA personnel during the peak traffic-volume hour. The primary access route for the Mehlville Site would be Route 21, which has a future-year traffic peak-hour volume of 2,690 vehicles (discussed further in Section 4.4, *Traffic and Transportation*). The addition of 1,500 NGA personnel vehicles to the future-year peak-hour traffic volume would result in a 56 percent increase in traffic on Route 21. A doubling of traffic volume is generally considered to result in a 3-dBA increase in the surrounding noise environment. Given that the addition of NGA personnel traffic would result in less than a doubling of traffic volume, noise-sensitive land uses near the road, which include residential areas, churches, and schools, are expected to experience an increase in noise levels of less than 3 dBA during peak-hour traffic volumes. Based on the analysis conducted, transportation noise under the Proposed Action would have **no/negligible impact** (**Noise-2**).

### 4.5.2.3 Operational Noise

The potential impacts of operational noise at the Mehlville Site are similar to those described for the Fenton Site (Section 4.5.1.3). Based on the analysis conducted, operational noise under the Proposed Action would have **no/negligible impact (Noise-3)**.

The noise impacts and associated environmental protection measures for the Mehlville Site are summarized in Table 4.5-4.

TABLE 4.5-4
**Mehlville Site Summary of Noise Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Noise-1: Construction noise | Minor to moderate, negative, short-term impact | Noise BMP-1: Comply with ordinances pertaining to construction noise |
| Noise-2: Transportation noise | No/negligible impact | Not applicable |
| Noise-3: Operational noise | No/negligible impact | Not applicable |

## 4.5.3 St. Louis City Site (Preferred Alternative)

### 4.5.3.1 Construction Noise

The nearest noise-sensitive land uses to the St. Louis City Site are residential areas and churches that border the site. The maximum expected noise level from the most common construction equipment has a maximum noise level of 89 dBA. Construction contractors will comply with the City of St. Louis noise ordinance (St. Louis, 1998), which requires all construction devices to have sound control equipment equivalent to or better than original equipment and for construction to occur during daytime (7 a.m. to 10 p.m.) hours **(Noise BMP-1)**. With implementation of **Noise BMP-1**, construction noise under the Proposed Action would have a **minor to moderate, negative, and short-term impact (Noise-1).**

### 4.5.3.2 Transportation Noise

For a conservative analysis, it is assumed that 1,500 vehicles would be operated by NGA personnel during the peak traffic-volume hour (discussed further in Section 4.5.1.2). The primary access route for the St. Louis City Site would be Parnell Street, which has a future-year traffic peak-hour volume of 1,530 vehicles (discussed further in Section 4.4, *Traffic and Transportation*). The addition of 1,500 NGA personnel vehicles would approximately double the traffic volume on Parnell Street, which is generally considered to result in a 3-dBA increase in the surrounding noise environment. Therefore, noise-sensitive land uses near the road, which include residential areas, could experience an increase in noise levels of approximately 3 dBA during peak-hour traffic volumes. Based on the analysis conducted, transportation noise under the Proposed Action would have a **no/negligible impact (Noise-2)**.

### 4.5.3.3 Operational Noise

The potential impacts of operational noise at the St. Louis City Site are similar to those described for the Fenton Site (Section 4.5.1.3). Based on the analysis conducted, operational noise under the Proposed Action would have **no/negligible impact (Noise-3)**.

The noise impacts and associated environmental protection measures for the St. Louis City Site are summarized in Table 4.5-5.

TABLE 4.5-5
**St. Louis City Site Summary of Noise Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Noise-1: Construction noise | Minor to moderate, negative, short-term impact | Noise BMP-1: Comply with ordinances pertaining to construction noise |
| Noise-2: Transportation noise | No/negligible impact | Not applicable |
| Noise-3: Operational noise | No/negligible impact | Not applicable |

## 4.5.4 St. Clair County Site

### 4.5.4.1 Construction Noise

There are no noise-sensitive land uses near the St. Clair County Site. Therefore, construction noise generated on the site would have no effect on noise-sensitive land uses. Construction contractors will comply with local ordinances pertaining to construction noise thresholds and abatement requirements (**Noise BMP-1**). Based on the analysis conducted and with implementation of **Noise BMP-1**, construction noise under the Proposed Action would have **no/negligible impact (Noise-1).**

### 4.5.4.2 Transportation Noise

There are no noise-sensitive land uses on Wherry Road, which would be the primary access route for the St. Clair County Site. Therefore, transportation noise under the Proposed Action would have **no/negligible impact (Noise 2)**.

### 4.5.4.3 Operational Noise

The potential impacts of operational noise at the St. Clair County Site are similar to those described for the Fenton Site (Section 4.5.1.3). Based on the analysis conducted, operational noise under the Proposed Action would have **no/negligible impact (Noise-3)**.

The noise impacts and associated environmental protection measures for the St. Clair County Site are summarized in Table 4.5-6.

TABLE 4.5-6
**St. Clair County Site Summary of Noise Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Noise-1: Construction noise | No/negligible impact | Noise BMP-1: Comply with ordinances pertaining to construction noise |
| Noise-2: Transportation noise | No/negligible impact | Not applicable |
| Noise-3: Operational noise | No/negligible impact | Not applicable |

## 4.5.5 No Action Alternative

The No Action Alternative is the continuation of the current use the South 2nd Street facility. Under the No Action Alternative, current activities would continue at each of the site alternatives, and no construction

would be expected to occur. Because there would be no change from current conditions, **no impacts** from noise would result **(Noise-1 through 3).**

### 4.5.6 Summary of Impacts and Environmental Protection Measures

The following is a summary of the environmental protection measures related to the Proposed Action.

**Noise BMP-1**: Construction contractors will comply with local ordinances pertaining to construction noise thresholds and abatement requirements.

The noise impacts for the project alternatives are summarized in Table 4.5-7.

TABLE 4.5-7
**Summary of Noise Impacts**

| Impact Category | Project Alternatives | | | | |
|---|---|---|---|---|---|
| | **Fenton Site** | **Mehlville Site** | **St. Louis City Site** | **St. Clair County Site** | **No Action** |
| Noise-1: Construction noise | Minor to moderate, negative, short-term impact | Minor to moderate, negative, short-term | Minor to moderate, negative, short-term impact | No/negligible impact | No/negligible impact |
| Noise-2: Transportation noise | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact |
| Noise-3: Operational noise | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact |

# 4.6 Hazardous Materials and Solid Waste

This subsection describes the potential impacts related to hazardous materials and solid wastes within the ROI. The ROI for hazardous materials is defined as the area within the project boundaries, adjoining properties, and a 1.5-mile search area. The ROI for solid wastes is described as the respective county in which the site resides.

Table 4.6-1 presents impact thresholds for hazardous materials and solid waste.

TABLE 4.6-1
**Impact Thresholds for Hazardous Materials and Solid Waste**

| Impact | Description |
|---|---|
| No/Negligible | There would be no impacts related to hazardous materials or solid waste, or any risk from hazardous materials or waste generated would be the same as existing conditions. |
| Minor to Moderate | Impacts related to hazardous materials would be detectable, but result in minimal (barely perceivable) change in risk to the human or natural environment.<br>The solid wastes generated from the Proposed Action would be an increase from current conditions, but would be within the capacity of local landfills. |
| Major | Impacts related to hazardous materials would be detectable and result in a substantial change in risk to the human or natural the environment.<br>The solid wastes generated from the Proposed Action would be an increase from current conditions, and would be beyond the capacity of local landfills. |
| Quality | Beneficial – would have a positive effect on the human or natural environment.<br>Negative – would have an adverse effect on the human or natural environment. |
| Duration | Short term – would occur only during the proposed construction period.<br>Long term – would continue beyond the proposed construction period. |

## 4.6.1 Fenton Site

### 4.6.1.1 Existing Contamination

Existing contamination, if confirmed present at the Fenton Site by a Phase II environmental site assessment (ESA), would be remediated by the current land owner before the site is acquired by the federal government. The remediation of contaminated land as a pre-acquisition action would be conducted in compliance with Engineering Regulation 405-1-11(e)(2), which states that “It is Corps of Engineers policy not to acquire contaminated land. Prior to the initiation of negotiations, investigations must be conducted to assure that contaminants are identified and required cleanup issues addressed.”

Prior to the federal government taking title to the property, remediation would have to comply with MoDNR Brownfields/Voluntary Cleanup Program (BVCP) standards. The current property owner would apply to the BVCP and obtain a “Certificate of Completion” issued by MoDNR. The Certificate would acknowledge that remediation was performed to standards acceptable to the State of Missouri. The BVCP environmental characterization would involve a process whereby site-related contaminants of concern would be screened against BVCP default target levels (DTLs).

- If the maximum soil and groundwater concentrations do not exceed established DTLs and the site poses no ecological risk, the current property owner would petition MoDNR for a Certificate of Completion. Under these conditions, MoDNR would issue a Certificate of Completion and no activity or use limitations would be required regardless of how the site might be used.
- If a DTL is exceeded, additional risk assessment and site characterization would be performed prior to the federal government taking title on the property, and the current property owner would seek a non-residential use standard for the Fenton Site. However, the land transfer agreement may involve property use restrictions that may be transferred to the federal government upon acquisition of the property. NGA and the government property owner will monitor agreed-upon environmental parameters (if any) should the land transfer agreement include such stipulations (**Haz/Waste Mitigation-1)**.

Given the site history, contamination at the Fenton Site could range from relatively minor to extensive. Consequently, there could be a **minor to moderate, long-term benefit** at the Fenton Site **(Haz/Waste-1)**, commensurate with the severity of contamination to be remediated. USACE requested additional testing be performed at the Fenton Site, by the current owner (USACE, 2015n). However, this testing was not performed. While the government currently does not know the time or cost necessary to remediate the Fenton site, risks associated with hazardous waste remediation cost and time to complete were considered by NGA in its decision.

#### 4.6.1.2 Construction-Related Hazardous Materials

Construction of the Next NGA West Campus would require temporary transport, use, storage, and disposal of hazardous materials, petroleum products, and wastes. Materials commonly used at construction sites include diesel fuel, lubricants, paints and solvents, and cement products containing basic or acidic chemicals. Hazardous wastes generated during construction include welding materials, fuel and lubricant containers, paint and solvent containers, and cement products.

Accidental spills or releases associated with the temporary transport, storage, use, and disposal of hazardous materials and wastes could occur during construction. However, hazardous materials and wastes will be used, stored, disposed of, and transported in compliance with all applicable laws and regulations **(Haz/Waste BMP-1)**. Identification, generation, transportation, storage, treatment, and disposal of all hazardous materials and hazardous wastes will be conducted in compliance with the RCRA. All hazardous materials and hazardous wastes will be handled and transported following the requirements of the Hazardous Materials Transportation Act and under Executive Order (E.O.) 12088, *Federal Compliance with Pollution Control*.

Accidental spills or releases that result from the routine transport, use, storage, and disposal of hazardous materials and wastes during construction could create a hazard to public health and the environment.

However, with implementation of **Haz/Waste BMP-1** and implementation of a spill response plan **(Haz/Waste BMP-2)**, this impact would be **no/negligible (Haz/Waste-2).**

Prior to construction, the construction contractors will prepare and implement a construction management plan that prescribes activities for workers to follow in the event that soil or groundwater contamination is encountered based on visual observation and/or smell **(Haz/Waste BMP-3)**. The construction management plan will include, at a minimum, provisions for periodic briefings of construction staff prior to work, a list of contact persons in case of a possible encounter with undocumented contamination; provisions for immediate notification of the observation to construction management; and notification of the regulatory agency with jurisdiction. If contamination is found, construction would halt in the vicinity of the find and the next steps will be decided in consultation with the regulatory agency. Because the site would be remediated prior to construction and because encountered contamination would be addressed in collaboration with the regulatory agency, there are **no/negligible** impacts expected from hazardous materials **(Haz/Waste-3).**

Vapor intrusion (VI) of natural and/or anthropogenic sources and pathways could occur during Proposed Action. The magnitude of risk (if any) from VI is not known at this time. VI screening will be required in advance of design and construction of the Next NGA West Campus to determine if VI is a concern. If a VI risk is identified, appropriate mitigation, either through design or remediation, would be required prior to construction (**Haz/Waste Mitigation-2)**.

#### 4.6.1.3 Operational Use of Hazardous Materials

Chemicals and hazardous materials typically used for offices and building maintenance are currently used by NGA at the South 2nd Street facility. These include hydraulic fluids associated with the elevators, pesticides/herbicides, spray paint, lubricants, cleaners, and degreasers. Recycling storage/collection areas are provided for batteries, transformers, used light bulbs, and used ink cartridges. Lead-acid batteries are used for a backup power source. Water treatment chemicals are stored and used onsite for the building cooling system. All materials are used, stored, and disposed of in accordance with NGA policy as well as state and federal regulations. NGA would store diesel fuel onsite during operations to supply backup generators. Diesel storage would include appropriate secondary containment **(Haz/Waste BMP-4)**. NGA will prepare and implement a spill response plan **(Haz/Waste BMP-2)**.

The Existing NGA Campus is a RCRA small quantity generator. The following NGA policies and procedures are in place and will continue to be implemented at the Next NGA West Campus.

- NI 4165.60R7-NGA Instruction for Solid Waste Management and Waste Reduction
- NGA Environmental Management, Standard Operation Procedure 001-Hazardous Materials and Hazardous Waste Management
- Procedures for Hazardous Waste Turn-in
- Procedures for Hazardous Material Shipment

- Procedures for Uniform Hazardous Waste Manifest
- Procedures for Inspections (40 CFR 265.174) of Containment Buildings
- Procedures for Satellite Accumulation (40 CFR 262.34(c))
- Procedures for Universal Wastes (40 CFR 273)
- Training Requirements (49 CFR 172.704)
- Akima Standard Operating Procedure 601, Small Quantity Generator, Hazardous Materials and Hazardous Waste Management

There would be **no/negligible** expected impacts **(Haz/Waste-4)** from hazardous materials due to NGA operations because only a small quantity of materials would be generated by NGA, and standard protocols are already in place.

#### 4.6.1.4 Solid Waste

Demolition and Construction Waste

Five acres of the 167-acre Fenton Site are vegetated and would require clearing and grubbing to prepare the site for construction. Table 4.6-2 presents a summary of estimated solid waste that would be generated by demolition of existing structures and other features (such as roads, parking areas, and sidewalks) and preparing the site for construction. These estimates are based on current material found on the sites and do not take into account any recycling/reuse activities. Appendix 4.6A includes the calculation spreadsheet for the estimations.

TABLE 4.6-2
**Summary of Estimated Solid Waste Generation at the Fenton Site during Construction**

| Activity | Wood ($yd^3$) | Brick ($yd^3$) | Concrete ($yd^3$) | Metal ($yd^3$) | Paper Board ($yd^3$) | Asphalt (bituminous asphaltic concrete and asphaltic concrete) ($yd^3$) | Clear and Grub ($yd^3$) | Municipal Solid Waste ($yd^3$) | Total ($yd^3$) |
|---|---|---|---|---|---|---|---|---|---|
| Demolition | 270 | 1,380 | 330 | 60 | 20 | 513,000 | -- | 1,090 | 516,150 |
| Construction Preparation | -- | -- | -- | -- | -- | -- | 60 | 1,610 | 1,670 |

Based on estimates, the total volume of demolition-related waste from the Fenton Site would be approximately 520,000 cubic yards ($yd^3$) before reuse or recycling. This is approximately 0.27 percent of the permitted capacity of the three regional landfills that accept construction and demolition material (Table 3.6-1). The total volume of non-demolition construction-related waste materials from site preparation would be a maximum of 1,700 $yd^3$ before reuse or recycling. This is less than 0.01 percent of the permitted capacity of the three regional landfills that accept construction and demolition material. Within the region, there is an active construction and demolition waste reuse/recycle program and approximately 50 percent of waste is diverted from landfills (MoDNR, 2015c). Additionally, construction activities would comply with

ASHRAE Standard 189.1, *Standard for Design of High-Performance Green Buildings*, which sets standards for the recycling of construction materials. Because the waste being sent to landfills would be expected to be less than 0.27 percent of capacity, and because area landfills will be able to accommodate this waste, there would be **minor to moderate, negative long-term impacts** on area landfills from construction and demolition-related solid waste **(Haz/Waste-5)**.

When possible, demolition materials such as soil from grading will be used onsite **(Haz/Waste BMP-5).** Most of the material that cannot be reused onsite could be reused on other sites or recycled. A portion of the debris will be diverted from landfills through reuse and recycling **(Haz/Waste BMP-6)**.

Operational Waste

Operational waste generation is typically based on the number of personnel working at a facility. The number of personnel is not expected to change with operation of NGA at a new location; therefore, the amount of waste generated under the Proposed Action is assumed to be the same as under current conditions. In compliance with NI 4165.60R7 (NGA, 2011), NGA will continue to implement solid waste management and waste reduction, including recycling programs to minimize the amount of waste from facility operations going into the landfills **(Haz/Waste BMP-7)**. With implementation of the **Haz/Waste BMP-7**, there would be **no/negligible impact** from operation-related solid waste, when compared to current conditions **(Haz/Waste-6)**.

Table 4.6-3 summarizes the hazardous materials and solid waste-related impacts for the Fenton Site and the environmental protection measures.

TABLE 4.6-3
**Fenton Site Summary of Hazardous Materials and Solid Waste Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measures |
|---|---|---|
| Haz/Waste-1: Existing hazardous material contamination | Minor to moderate long-term benefit | Haz/Waste Mitigation-1: Complete site characterization and removal or remediation of contamination will be completed prior to acquisition of the site<br>Haz/Waste Mitigation-2: VI assessment prior to construction and implementation of mitigation measures |
| Haz/Waste-2: Construction-related hazardous material use | No/negligible impact | Haz/Waste BMP-1: Hazardous materials and wastes will be used, stored, disposed of, and transported during construction in compliance with all applicable laws and regulations<br>Haz/Waste BMP 2: Spill response plan for accidental spills/releases |
| Haz/Waste-3: Inadvertent discovery of hazardous material | No/negligible impact | Haz/Waste BMP-3: Creation of a construction management plan, including hazardous materials protocols |
| Haz/Waste-4: Operational use of hazardous materials | No/negligible impact | Haz/Waste BMP 2: Spill response plan for accidental spills/releases<br>Haz/Waste BMP-4: Secondary containment for diesel storage |
| Haz/Waste-5: Solid waste generated from construction | Minor to moderate, negative, long-term impacts | Haz/Waste BMP-5: When possible, demolition materials, such as soils from grading, will be used onsite<br>Haz/Waste BMP-6: A large portion of the debris will be diverted from landfills through reuse and recycling |
| Haz/Waste-6: Operation generated solid waste | No/negligible impact | Haz/Waste BMP-7: NGA will continue to implement solid waste management and waste reduction, including recycling programs |

## 4.6.2 Mehlville Site

### 4.6.2.1 Existing Contamination

If chosen, a Phase II ESA will be performed and existing contamination at the Mehlville Site would be properly remediated by the government. The remediation of contaminated land as a pre-acquisition action would be conducted in compliance with Engineering Regulation 405-1-11(e)(2). The handling of existing contamination will be managed in the same manner as described for the Fenton Site. See Section 4.6.1.1 (Fenton Site) for a detailed explanation of the site remediation process in Missouri. Remediation of existing contamination would result in a **minor to moderate, long-term benefit (Haz/Waste-1),** based on the relatively low level of existing contamination onsite. While the government currently does not know the time or cost necessary to remediate the Mehlville Site, risks associated with hazardous waste remediation cost and time to complete were considered by NGA in its decision.

### 4.6.2.2 Construction-Related Hazardous Materials

Potential impacts from use of hazardous materials during construction at the Mehlville Site would be similar to those discussed for the Fenton Site because similar equipment and construction techniques would be used. See Section 4.6.1.2 (Fenton Site)**.** Because any existing contamination will be remediated prior to construction, the likelihood of inadvertent discovery is also low at the Mehlville Site. See Section 4.6.1.2 (Fenton Site) for a detailed explanation of impacts associated with inadvertent discovery.

### 4.6.2.3 Operational Use of Hazardous Materials

The operational use of hazardous materials at the Mehlville Site would be identical to that at the Fenton Site. See Section 4.6.1.3 (Fenton Site) for a detailed explanation of impacts associated with operational use of hazardous materials.

### 4.6.2.4 Solid Waste

Demolition and Construction Waste

A large, two-story office building is currently located on the 101-acre site. Nearly 70 percent of the site is developed with the office building, landscaping, parking lots, and roads. Table 4.6-4 presents a summary of estimated solid waste that would be generated by demolition of existing structures and other features on the Mehlville Site. The actual demolition method would be determined upon completion of the design phase. These estimates do not take into account any recycling/reuse activities. Appendix 4.6A includes the calculation spreadsheet for the estimations.

TABLE 4.6-4
**Summary of Estimated Solid Waste Generation at the Mehlville Site during Construction**

| Activity | Wood ($yd^3$) | Brick ($yd^3$) | Concrete ($yd^3$) | Metal ($yd^3$) | Paper Board ($yd^3$) | Asphalt (bituminous asphaltic concrete and asphaltic concrete) ($yd^3$) | Clear and Grub ($yd^3$) | Municipal Solid Waste ($yd^3$) | Total ($yd^3$) |
|---|---|---|---|---|---|---|---|---|---|
| Demolition | 14,600 | 14,600 | 37,960 | 2,190 | 3,650 | 38,930 | -- | -- | 111,930 |
| Construction Preparation | -- | -- | -- | -- | -- | -- | 2,380 | 1,610 | 3,990 |

Construction and demolition of the existing structures and site features is anticipated to generate solid waste, including soil, concrete, metal, wood/lumber, and asphalt. Based on estimates, the total volume of demolition-related waste from the Mehlville Site would be approximately 120,000 $yd^3$ before reuse or recycling. This is approximately 0.06 percent of the permitted capacity of the three regional landfills that accept construction and demolition material. Based on estimates, the total volume of construction-related waste materials from site preparation would be approximately 2,400 $yd^3$ before reuse or recycling. This is less than 0.001 percent of the permitted capacity of the three regional landfills that accept construction and demolition material. Within the region, there is an active construction and demolition waste reuse/recycle program and approximately 50 percent of waste is diverted from landfills (MoDNR, 2015c). Additionally, construction activities would comply with ASHRAE Standard 189.1, which sets standards for the recycling of construction materials. Because the waste being sent to landfills would be expected to be less than 0.06 percent of capacity, and because area landfills would be able to accommodate this waste, there would be **minor to moderate, negative long-term impacts** on area landfills from construction and demolition-related solid waste **(Haz/Waste-5)**.

When possible, demolition materials such as soil from grading will be used onsite **(Haz/Waste BMP-5).** Most of the material that cannot be reused onsite could be reused on other sites, recycled, or disposed of in landfills. A large portion of the debris will be diverted from landfills through reuse and recycling **(Haz/Waste BMP-6)**.

Operational Waste

Operation-related solid waste impacts would be the same as those described above for the Fenton Site (see Section 4.6.1.4). Therefore, with implementation of the **Haz/Waste BMP-7**, there would be **no/negligible impacts** from operation-related solid waste **(Haz/Waste-6)**.

Table 4.6-5 summarizes the hazardous materials and hazardous waste-related impacts for the Mehlville Site and the environmental protection measures.

TABLE 4.6-5
**Mehlville Site Summary of Hazardous Materials and Solid Waste Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measures |
|---|---|---|
| Haz/Waste-1: Existing hazardous material contamination | Minor to moderate long-term benefit | Haz/Waste Mitigation-1: Complete site characterization and removal or remediation of contamination will be completed prior to acquisition of the site<br>Haz/Waste Mitigation-2: VI assessment prior to construction and implementation of mitigation measures |
| Haz/Waste-2: Construction-related hazardous material use | No/negligible impact | Haz/Waste BMP-1: Hazardous materials and wastes will be used, stored, disposed of, and transported during construction in compliance with all applicable laws and regulations<br>Haz/Waste BMP 2: Spill response plan for accidental spills/releases |
| Haz/Waste-3: Inadvertent discovery of hazardous material | No/negligible impact | Haz/Waste BMP-3: Creation of a construction management plan, including hazardous materials protocols |

TABLE 4.6-5
**Mehlville Site Summary of Hazardous Materials and Solid Waste Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measures |
|---|---|---|
| Haz/Waste-4: Operational use of hazardous materials | No/negligible impact | Haz/Waste BMP 2: Spill response plan for accidental spills/releases<br>Haz/Waste BMP-4: Secondary containment for diesel storage |
| Haz/Waste-5: Solid waste generated from construction | Minor to moderate, negative, long-term impacts | Haz/Waste BMP-5: When possible, demolition materials, such as soils from grading, will be used onsite<br>Haz/Waste BMP-6: A large portion of the debris will be diverted from landfills through reuse and recycling |
| Haz/Waste-6: Operation generated solid waste | No/negligible impact | Haz/Waste BMP-7: NGA will continue to implement solid waste management and waste reduction, including recycling programs |

## 4.6.3 St. Louis City Site (Preferred Alternative)

### 4.6.3.1 Existing Contamination

A partial Phase II ESA was performed by the City of St. Louis (Appendix 3.6A). This partial Phase II did not cover all of the site parcels. If the St. Louis City Site is chosen as the preferred alternative, a full Phase II ESA will be performed. Existing contamination at the St. Louis City Site would be properly remediated by the City of St. Louis before the site is acquired by the federal government. The remediation of contaminated land as a pre-acquisition action would be conducted in compliance with Engineering Regulation 405-1-11(e)(2). The handling of existing contamination would be managed in the same manner as that described in Section 4.6.1.1 for the Fenton Site. There would be a **minor to moderate, long-term benefit** at the St. Louis City Site **(Haz/Waste-1)** due to the remediation of known existing site contamination. While the government currently does not know the time or cost necessary to remediate the St. Louis City Site, risks associated with hazardous waste remediation cost and time to complete were considered by NGA in its decision.

### 4.6.3.2 Construction-Related Hazardous Materials

Construction impacts at the St. Louis City Site would be similar to those discussed for the Fenton Site, because the government would acquire a clean site and similar equipment and construction techniques would be used. See Section 4.6.1.2 (Fenton Site) for a detailed explanation of construction-related impacts**.**

The likelihood of inadvertent discovery is also low at the St. Louis City Site, because any existing contamination would be remediated prior to acquisition. See the Fenton Site (Section 4.6.1.3) for a detailed explanation of impacts associated with inadvertent discovery.

### 4.6.3.3 Operational Use of Hazardous Materials

The operational use of hazardous materials at the St. Louis City Site would be identical to that of the Fenton Site. See the Fenton Site discussion above for a detailed explanation of impacts associated with operational use of hazardous materials.

### 4.6.3.4 Solid Waste

Demolition and Construction Waste

Table 4.6-6 presents a summary of estimated solid waste that would be generated by demolition of existing structures and other features on the St. Louis City Site. These estimates do not take into account any recycling/reuse activities. Appendix 4.6A includes the calculation spreadsheet for the estimations.

TABLE 4.6-6
**Summary of Estimated Solid Waste Generation at the St. Louis City Site during Construction**

| Activity | Wood ($yd^3$) | Brick ($yd^3$) | Concrete ($yd^3$) | Metal ($yd^3$) | Paper Board ($yd^3$) | Asphalt (bituminous asphaltic concrete and asphaltic concrete) ($yd^3$) | Clear and Grub ($yd^3$) | Municipal Solid Waste ($yd^3$) | Total ($yd^3$) |
|---|---|---|---|---|---|---|---|---|---|
| Demolition | 9,020 | 46,470 | 11,100 | 2,080 | 690 | 21,800 | -- | -- | 91,160 |
| Construction Preparation | -- | -- | -- | -- | -- | -- | 840 | 1,610 | 2,450 |

Based on estimates, the total volume of demolition-related waste from the St. Louis City Site would be approximately of 93,000 $yd^3$ before reuse or recycling. This is approximately 0.05 percent of the permitted capacity of the three regional landfills that accept construction and demolition material. The total volume of construction-related waste materials from site preparation would be approximately 2,500 $yd^3$ before reuse or recycling. This is less than 0.001 percent of the permitted capacity of the three regional landfills that accept construction and demolition material. Within the region, there is an active construction and demolition waste reuse/recycle program and approximately 50 percent of waste is diverted from landfills (MoDNR, 2015c). Additionally, construction activities would comply with ASHRAE Standard 189.1, which sets standards for the recycling of construction materials. Because the waste being sent to landfills would be less than 0.05 percent of capacity, and because area landfills would be able to accommodate this waste, there would be **minor to moderate, negative long-term impacts** on area landfills from construction and demolition-related solid waste **(Haz/Waste-5)**.

When possible, demolition materials such as soil from grading will be used onsite **(Haz/Waste BMP-5).** Most of the material that cannot be safely reused onsite could be reused on other sites, recycled, or disposed of in Class III landfills. A large portion of the debris will be diverted from landfills through reuse and recycling **(Haz/Waste BMP-6)**.

Operational Waste

Operation-related solid waste impacts would be the same as described for the Fenton Site (Section 4.6.1.4). Therefore, with implementation of the **Haz/Waste BMP-7**, there would be **no/negligible impacts** from operation-related solid waste when compared to the current condition **(Haz/Waste-6)**.

Table 4.6-7 summarizes the hazardous materials and hazardous waste-related impacts for the St. Louis City Site and the environmental protection measures.

TABLE 4.6-7
**St. Louis City Site Summary of Hazardous Materials and Hazardous Waste Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measures |
|---|---|---|
| Haz/Waste-1: Existing hazardous material contamination | Minor to moderate long-term benefit | Haz/Waste Mitigation-1: Complete site characterization and removal or remediation of contamination will be completed prior to acquisition of the site<br>Haz/Waste Mitigation-2: VI assessment prior to construction and implementation of mitigation measures |
| Haz/Waste-2: Construction-related hazardous material use | No/negligible impact | Haz/Waste BMP-1: Hazardous materials and wastes will be used, stored, disposed, and transported during construction in compliance with all applicable laws and regulations<br>Haz/Waste BMP 2: Spill Response Plan for accidental spills/releases |
| Haz/Waste-3: Inadvertent discovery of hazardous material | No/negligible impact | Haz/Waste BMP-3: Creation of a construction management plan, including hazardous materials protocols |
| Haz/Waste-4: Operational use of hazardous materials | No/negligible impact | Haz/Waste BMP 2: Spill Response Plan for accidental spills/releases<br>Haz/Waste BMP-4: Secondary Containment for Diesel Storage. |
| Haz/Waste-5: Solid waste generated from construction | Minor to moderate, negative, long-term impacts | Haz/Waste BMP-5: When possible, demolition materials, such as soils from grading, will be used onsite<br>Haz/Waste BMP-6: A large portion of the debris will be diverted from landfills through reuse and recycling |
| Haz/Waste-6: Operation generated solid waste | No/negligible impact | BMP-7: NGA will continue to implement solid waste management and waste reduction, including recycling programs |

## 4.6.4 St. Clair County Site

### 4.6.4.1 Existing Contamination

Existing contamination at the St. Clair County Site would be properly remediated by St. Clair County before the site is acquired by the government. The remediation of contaminated land, as a pre-acquisition action, would be conducted in compliance with Engineering Regulation 405-1-11(e)(2). Prior to the government taking title to the property, remediation would comply with the IEPA Site Remediation Program (SRP) standards. St. Clair County would apply to the SRP cleanup program for a No Further Remediation (NFR) letter issued by IEPA. The NFR letter would acknowledge that remediation was performed to standards acceptable to the State of Illinois. The SRP environmental characterization would involve a process whereby site-related contaminants of concern would be screened against Tiered Approach to Corrective Action Objectives (TACO) standards.

- If the maximum soil and groundwater concentrations do not exceed established TACO standards and the site poses no ecological risk, St. Clair County would petition IEPA for an NFR letter. Under these conditions, IEPA would issue the NFR letter and no activity or use limitations would be required regardless of how the site might be used.

- If a screening standard is exceeded, additional risk assessment and site characterization would be performed prior to the government taking title to the property and would consider future use of the site. At that point, St. Clair County would seek a non-residential use standard for the St. Clair County Site. However, the land transfer agreement may involve property use restrictions that may be transferred to the government upon acquisition of the property. NGA and the government property owner would monitor agreed-upon environmental parameters (if any) should the land transfer agreement include such stipulations **(Haz/Waste Mitigation-1)**.

Based on the expected low level of existing contamination onsite, remediation of existing contamination would result in a **minor to moderate, long-term benefit (Haz/Waste-1)**. While the government currently does not know the time or cost necessary to remediate the St. Clair County Site, risks associated with hazardous waste remediation cost and time to complete were considered by NGA in its decision.

#### 4.6.4.2 Construction-Related Hazardous Materials

Construction impacts at the St. Clair County Site would be similar to those discussed for the Fenton Site because similar equipment and construction techniques would be used. See Section 4.6.1.2 for a detailed explanation of construction-related impacts**.**

The likelihood of inadvertent discovery is also low at the St. Clair County Site, because any existing contamination would be remediated prior to construction. See the Fenton Site (Section 4.6.1.2) for a detailed explanation of impacts associated with inadvertent discovery.

#### 4.6.4.3 Operational Use of Hazardous Materials

The operational use of hazardous materials at the St. Clair County Site would be identical to the Fenton Site. See Section 4.6.1.3 (Fenton Site) for a detailed explanation of impacts associated with operational use of hazardous materials.

#### 4.6.4.4 Solid Waste

<u>Demolition and Construction Waste</u>

The 182-acre St. Clair County Site is used for agriculture and a portion is occupied by a golf course driving range. The only structure currently present on the site is a small abandoned shed located on the eastern portion of the site that would be removed prior to government acquisition of the site. Table 4.6-8 presents a summary of the estimated solid waste that would be generated preparing the site for construction. These estimates do not take into account any recycling or reuse activities. Appendix 4.6A includes the calculation spreadsheet for the estimations.

TABLE 4.6.8
**Summary of Estimated Solid Waste Generation at the St. Clair County Site during Construction**

| Action | Wood ($yd^3$) | Brick ($yd^3$) | Concrete ($yd^3$) | Metal ($yd^3$) | Paper Board ($yd^3$) | Asphalt (bituminous asphaltic concrete and asphaltic concrete) ($yd^3$) | Clear and Grub ($yd^3$) | Municipal Solid Waste ($yd^3$) | Total ($yd^3$) |
|---|---|---|---|---|---|---|---|---|---|
| Demolition | 0 | 0 | 0 | 0 | 0 | 0 | -- | -- | -- |
| Construction Preparation | -- | -- | -- | -- | -- | -- | 2,520 | 2,870 | 5,390 |

There would be no appreciable solid waste resulting from demolition of existing structures or features on the St. Clair County Site and there would be a minimal reduction in regional landfill space from this activity. Based on estimates, the total volume of construction-related waste materials from site preparation would be approximately 5,400 $yd^3$ before reuse or recycling. This is less than 0.001 percent of the permitted capacity of the three regional landfills that accept construction and demolition material. Because the waste being sent to landfills would be expected to be less than 0.001 percent of capacity, and because area landfills would be able to accommodate this waste, there would be **no/negligible impact** on area landfills from construction and demolition-related solid waste **(Haz/Waste-5)**.

When possible, demolition materials such as soil from grading will be used onsite **(Haz/Waste BMP-5).** Most of the material that cannot be reused onsite could be reused on other sites, recycled, or disposed of in landfills. A large portion of the debris will be diverted from landfills through reuse and recycling **(Haz/Waste BMP-6)**. Construction activities would comply with ASHRAE Standard 189.1, which sets standards for the recycling of construction materials.

Operational Waste

Operation-related solid waste impacts would be the same as those described for the Fenton Site (Section 4.6.1.4). Therefore, with implementation of the **Solid Waste BMP-7**, there would be **no/negligible** impacts from operation-related solid waste when compared to the current condition **(Haz/Waste-6)**.

Table 4.6-9 summarizes the hazardous materials and hazardous waste-related impacts for the St. Clair County Site and the environmental protection measures.

TABLE 4.6-9
**St. Clair County Site Summary of Hazardous Materials and Hazardous Waste Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measures |
|---|---|---|
| Haz/Waste-1: Existing hazardous material contamination | Minor to moderate, long-term benefit | Haz/Waste Mitigation-1: Complete site characterization and removal or remediation of contamination will be completed prior to acquisition of the site<br>Haz/Waste Mitigation-2: VI assessment prior to construction and implementation of mitigation measures |
| Haz/Waste-2: Construction-related hazardous material use | No/negligible impact | BMP-1: Hazardous materials and wastes will be used, stored, disposed of, and transported during construction in compliance with all applicable laws and regulations<br>Haz/Waste BMP 2: Spill response plan for accidental spills/releases |

TABLE 4.6-9
**St. Clair County Site Summary of Hazardous Materials and Hazardous Waste Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measures |
|---|---|---|
| Haz/Waste-3: Inadvertent discovery of hazardous material | No/negligible impact | BMP-3: Creation of a construction management plan, including hazardous materials protocols |
| Haz/Waste-4: Operational use of hazardous materials | No/negligible impact | Haz/Waste BMP 2: Spill response plan for accidental spills/releases<br>Haz/Waste BMP-4: Secondary containment for diesel storage |
| Haz/Waste-5: Solid waste generated from construction | No/negligible impact | BMP-65 When possible, demolition materials, such as soils from grading, will be used onsite<br>BMP-6: A large portion of the debris will be diverted from landfills through reuse and recycling |
| Haz/Waste-6: Operation-generated solid waste | No/negligible impact | BMP-7: NGA will continue to implement solid waste management and waste reduction, including recycling programs |

## 4.6.5 No Action Alternative

The No Action Alternative is the continuation of the current use of NGA's South 2nd Street facility. Under the No Action Alternative, current activities would continue at each of the site alternatives, and no construction would be expected to occur. Because there would be no change from current conditions, **no/negligible impacts** from hazardous materials and solid waste would result **(Haz/Waste-1 through 6).**

## 4.6.6 Summary of Impacts and Environmental Protection Measures

The following is a summary of the environmental protection measures related to the Proposed Action.

**Haz/Waste Mitigation-1:** Complete site characterization and removal or remediation of contamination will be completed prior to acquisition of the site.

**Haz/Waste Mitigation-2:** VI assessment and implementation of appropriate mitigation measures will be conducted prior to construction, if necessary.

**Haz/Waste BMP-1:** Hazardous materials and wastes will be used, stored, disposed of, and transported during construction in compliance with all applicable laws and regulations.

**Haz/Waste BMP-2:** NGA and construction contractors will create and implement a spill response plan.

**Haz/Waste BMP-3:** NGA will require all construction contractors to create and implement a construction management plan, including hazardous materials discovery protocols.

**Haz/Waste BMP-4:** Secondary containment will be used for diesel storage.

**Haz/Waste BMP-5:** Demolition materials (such as soil) will be used on site, whenever possible.

**Haz/Waste BMP-6:** Construction debris will be diverted from landfills through reuse and recycling.

**Haz/Waste BMP-7:** NGA will continue to implement solid waste management and waste reduction, including recycling programs, to minimize the amount of waste from facility operations going into the landfills.

Table 4.6-10 summarizes individual and overall impacts for all of the project alternatives.

TABLE 4.6-10
**Summary of Impacts Hazardous Materials and Solid Wastes**

| | Project Alternatives | | | | |
|---|---|---|---|---|---|
| **Impact Category** | **Fenton Site** | **Mehlville Site** | **St. Louis City Site** | **St. Clair County Site** | **No Action** |
| Haz/Waste-1: Existing hazardous material contamination | Minor to moderate long-term benefit | Minor to moderate long-term benefit | Minor to moderate long-term benefit | Minor to moderate long-term benefit | No impact |
| Haz/Waste-2: Construction-related hazardous material use | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact |
| Haz/Waste-3: Inadvertent discovery of hazardous material | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact |
| Haz/Waste-4: Operational use of hazardous materials | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact |
| Haz/Waste-5: Solid waste generated from construction | Minor to moderate, negative, long-term impacts | Minor to moderate, negative, long-term impacts | Minor to moderate, negative, long-term impacts | No/negligible impact | No/negligible impact |
| Haz/Waste-6: Operation-generated solid waste | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact |

# 4.7 Utilities

This subsection describes the potential impacts to the utilities within the ROI as a result of implementing the Proposed Action or the No Action Alternative. The ROI for utilities includes the area within the site boundary, and where necessary, the areas around the project boundary that may require construction to upgrade or modify the utilities to allow for suitable service to the site.

NGA considered the potential for utility-related impacts to power, water, wastewater, stormwater, communications, and natural gas. The utility requirements for the Next NGA West Campus are described below.

Power

Two independent circuits from a utility substation would be required. The circuits may be connected to the same substation, but separate circuits are needed for increased reliability. Anticipated peak electrical demand for the site is 41,700 kilowatts (Newman, 2015, pers. comm.). Emergency diesel fuel generators would be used for backup power supply when necessary. Alternative energy sources will be considered during the design phase; however, solar or photovoltaic power is the most likely alternative energy source. A brief evaluation into the photovoltaic potential for each site resulted in little discernable differences in available system size and capacity (Appendix 4.7A). According to the National Renewable Energy Laboratory, the photovoltaic solar resource for the associated areas of Missouri and Illinois is 4.5 to 5.0 kilowatt hours per square meter per day. There are no significant differences in solar resources among the four proposed site locations. On all four sites, there is available open space that could be used to house photovoltaic systems (Swanson, 2016).

Water

Expected potable water demand is 315,000 gallons per day, which is based on 3,150 personnel at 100 gallons per capita per day.

Wastewater/Stormwater

The wastewater disposal rate is expected to be equivalent to the water use rate discussed above. Stormwater would be managed based on campus design and site conditions. Stormwater management systems (for example, culverts, drainage ditches, and stormwater detention ponds) may potentially include new constructed systems and/or use of existing onsite or offsite systems. Stormwater would be managed in accordance with the Energy Independence and Security Act (EISA) and other guidance on stormwater management for federal facilities.

Natural Gas

Non-interruptible monthly peak demand is estimated at 3,300 therms.

Communications

The site would require a connection to commercial communication systems for telephone and data needs as well as a connection to military communication services. This analysis includes only commercial communications infrastructure.

Table 4.7-1 identifies the impact thresholds for utilities.

TABLE 4.7-1
**Impact Thresholds for Utilities**

| Impact | Description |
|---|---|
| No/Negligible | Impacts to utilities would not occur or impacts would be at the lowest level of detection. |
| Minor to Moderate | Impacts to utilities would be detectable to readily apparent. There would be some increases in utility infrastructure (extensions, upgrades, new construction) to serve the proposed development and, if needed, adjacent properties. No or minimal service interruptions would occur. |
| Major | Impacts to utilities that could occur include brown-outs of power, loss of sufficient water pressure, and overflowing wastewater and stormwater lines. There would be extensive increases in utility infrastructure (extensions, upgrades, new construction) to serve the proposed development and offsite properties. |
| Quality | Beneficial – would have a positive effect on utilities.<br>Negative – would have an adverse effect on utilities. |
| Type | Short term – would occur only during the proposed construction period.<br>Long term – would continue beyond the proposed construction period. |

Utility providers have indicated that sufficient capacity can be provided to all the alternative sites (Newman, 2015, pers. comm.). Specific details (for example, location of substations that would provide required power supply after extensions) are described when known; however, locations or potential utility relocations are unknown at this time. Most work outside the project site boundaries would likely occur within existing utility easements; however, acquisition or temporary impacts may be necessary.

The need for additional infrastructure or extension of existing infrastructure could result in impacts outside the site boundary. If offsite environmental impacts were to occur, NGA would coordinate with the utility companies to determine the necessary requirements under NEPA and other regulations. Because the actual location of the utility relocations would not be determined until after site selection and not until the design phase, the associated environmental impacts from offsite utility relocation are not included in this environmental impact statement (EIS).

Impacts related to project construction could include scheduled utility service interruptions, accidental interruptions of utility service, offsite environmental impacts from digging and trenching, and potential utility right-of-way acquisition. Outages will be avoided to the extent possible **(Utilities BMP-1)**. To avoid accidental outages, public utilities within the potential impact area will be located (by probing, potholing, electronic detection, as-built designs, or other means) prior to construction **(Utilities BMP-2)**.

DoD Energy Policy (Directive 4180.01) establishes policy and guidance, and assigns responsibilities for energy planning, use, and management. The policy includes actions such as improved energy performance and use of renewable energy sources and alternative fuels. Additionally, DoD provides funding through the National Defense Authorization Act for new construction on DoD properties to achieve LEED Silver certification. DoD also authorizes LEED Gold or Platinum certifications or Green Globes certifications. LEED and Green Globes are green-building certification programs that recognize building strategies and practices. To receive certification, building projects must meet certain requirements and earn points to achieve the different levels of certification. Implementation of these policies and certification goals will minimize the impacts to utilities **(Utilities BMP-3).**

## 4.7.1 Fenton Site

### 4.7.1.1 Power

Electricity to the Fenton Site is provided solely by Ameren Missouri. To obtain power to the site, one 34-kV circuit would need to be extended from an existing substation located 1 mile east of the site. This service line would be extended to the north property line. The second 34-kV circuit would need to be extended 2 miles from an existing substation located west of the site to the northwest side of the proposed site. All work to provide sufficient power supply for the Next NGA West Campus would be coordinated with Ameren Missouri. With implementation of the BMPs described in the introduction of this section **(Utilities BMPs-1 through 3)**, impacts to power service would be **minor to moderate, negative, and short term (Utilities-1)** (see Table 4.7-2).

### 4.7.1.2 Water

The existing potable water main was used to provide potable water service from Missouri American Water to the former Chrysler automobile assembly plant; however, existing infrastructure may require onsite and offsite extensions or upgrades to suit project specifications. With implementation of the BMPs described in the introduction of this section **(Utilities BMPs-1 through 3)**, impacts to water service would be **minor to moderate, negative, and short term (Utilities-2)** (see Table 4.7-2).

### 4.7.1.3 Wastewater/Stormwater

The wastewater service pipeline, provided by MSD, was used to support the former Chrysler automobile assembly plant. Although this utility service currently exists, the wastewater main may require re-routing during construction activities. Coordination with MSD would be required to install new connections to the Next NGA West Campus, or relocation or removal of existing infrastructure from the site. The only stormwater management system identified to date on the Fenton Site is a stormwater detention basin near the northern boundary of the site. Stormwater management opportunities for the site would be evaluated during project design and may involve use of the existing onsite stormwater basin, construction of new onsite stormwater systems (for example, culverts, drainage ditches, stormwater detention ponds), and/or use of offsite systems. Development and operation of the proposed NGA infrastructure on the site would be required

to comply with the St. Louis County Phase II Stormwater Management Plan administered by MSD. Prevention of stormwater pollution during construction on the Fenton Site is discussed in Section 4.10.1.2. With implementation of the BMPs described in the introduction of this section **(Utilities BMPs-1 through 3)**, impacts to wastewater and stormwater service would be **minor to moderate, negative, and short term (Utilities-3)** (see Table 4.7-2).

#### 4.7.1.4 Natural Gas

Laclede Gas Company (Laclede) natural gas lines were used to support the former Chrysler automobile assembly plant; however, it is possible that utility infrastructure may require onsite and offsite upgrades or extensions to suit project specifications and ensure continued service to adjacent properties. With implementation of the BMPs described in the introduction of this section **(Utilities BMPs-1 through 3)**, impacts to natural gas services would be **minor to moderate, negative, and short term (Utilities-4)** (see Table 4.7-2).

#### 4.7.1.5 Communications

Communication lines in this area from multiple providers were used to support the former Chrysler automobile assembly plant; however, it is possible that communications infrastructure may require onsite and offsite upgrades or extensions to suit project specifications. With implementation of the BMPs described in the introduction of this section (**Utilities BMPs-1 through 3)**, impacts to communications service would be **minor to moderate, negative, and short term (Utilities-5)** (see Table 4.7-2).

Table 4.7-2 summarizes the utility-related impacts for the Fenton Site and the environmental protection measures.

TABLE 4.7-2
**Fenton Site Summary of Utility-Related Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measures |
|---|---|---|
| Utilities-1: Impacts to power supply | Minor to moderate, negative, and short-term impact | Utilities BMP-1: Outages will be avoided to the extent possible<br>Utilities BMP-2: Public utilities within the potential impact area will be positively located prior to construction<br>Utilities BMP-3: NGA will incorporate DoD energy policies and LEED or Green Globes green building goals |
| Utilities-2: Impacts to water supply | Minor to moderate, negative, and short-term impact | Utilities BMP-1: Outages will be avoided to the extent possible<br>Utilities BMP-2: Public utilities within the potential impact area will be positively located prior to construction<br>Utilities BMP-3: NGA will incorporate DoD energy policies and LEED or Green Globes green building goals |
| Utilities-3: Impacts to wastewater service | Minor to moderate, negative, and short-term impact | Utilities BMP-1: Outages will be avoided to the extent possible<br>Utilities BMP-2: Public utilities within the potential impact area will be positively located prior to construction<br>Utilities BMP-3: NGA will incorporate DoD energy policies and LEED or Green Globes green building goals |

TABLE 4.7-2
**Fenton Site Summary of Utility-Related Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measures |
|---|---|---|
| Utilities-4: Impacts to natural gas supply | Minor to moderate, negative, and short-term impact | Utilities BMP-1: Outages will be avoided to the extent possible<br>Utilities BMP-2: Public utilities within the potential impact area will be positively located prior to construction<br>Utilities BMP-3: NGA will incorporate DoD energy policies and LEED or Green Globes green building goals |
| Utilities-5: Impacts to communications service | Minor to moderate, negative, and short-term impact | Utilities BMP-1: Outages will be avoided to the extent possible<br>Utilities BMP-2: Public utilities within the potential impact area will be positively located prior to construction<br>Utilities BMP-3: NGA will incorporate DoD energy policies and LEED or Green Globes green building goals |

## 4.7.2 Mehlville Site

### 4.7.2.1 Power Supply

Electricity is provided to the Mehlville Site by Ameren Missouri. To obtain power to the site, one 34-kV circuit would need to be extended from a substation located just northwest of the project site. The second 34-kV circuit would need to be extended from a substation located near the southeast side of the property. All work to provide sufficient power supply for the Next NGA West Campus would be coordinated with Ameren Missouri. With implementation of the BMPs described in the introduction of this section **(Utilities BMPs-1 through 3)**, impacts to power supply would be **minor to moderate, negative, and short term (Utilities-1)** (see Table 4.7-3).

### 4.7.2.2 Water

The existing potable water main was originally used to provide potable water service from Missouri American Water to a large office building on the Mehlville Site; however, it is possible that water supply infrastructure may require onsite and offsite upgrades or extensions to suit project specifications. With implementation of the BMPs described in the introduction of this section **(Utilities BMPs-1 through 3)**, impacts to water supply would be **minor to moderate, negative, and short term (Utilities-2)** (see Table 4.7-3).

### 4.7.2.3 Wastewater/Stormwater

An existing 8-inch-diameter vitrified clay pipe wastewater line that connects to the site and adjacent properties would potentially be re-routed to maintain service to the gas station and residential building adjacent to the property. Coordination with MSD would be required to install, relocate, or remove infrastructure on the Next NGA West Campus and ensure continued service to the adjacent properties. Onsite stormwater management systems include a stormwater detention pond and drainage culverts/pipes. Stormwater management opportunities for the Mehlville Site would be evaluated during project design and may potentially involve potential use of the existing onsite stormwater detention pond and culverts/pipes, potential construction of new onsite stormwater systems (for example, culverts, drainage ditches, stormwater detention ponds), and/or potential use of offsite systems. Development and operation of the proposed NGA

infrastructure on the site would be required to comply with the St. Louis County Phase II Stormwater Management Plan administered by MSD. Prevention of stormwater pollution during construction on the Mehlville Site is discussed in Section 4.10.2.2. With implementation of the BMPs described in the introduction of this section **(Utilities BMPs-1 through 3),** impacts to stormwater and wastewater service would be **minor to moderate, negative, and short term (Utilities-3)** (see Table 4.7-3).

#### 4.7.2.4 Natural Gas

The existing onsite building does not have gas service; therefore, a new service tap would be required for the site. Based on discussions with Laclede, the existing main on Tesson Ferry Road would have suitable pressure to meet the needs of the proposed site. Coordination with Laclede would be required to install the infrastructure to the Next NGA West Campus. With implementation of the BMPs described in the introduction of this section **(Utilities BMPs-1 through 3)**, impacts to natural gas supply would be **minor to moderate, negative, and short term (Utilities-4)** (see Table 4.7-3).

#### 4.7.2.5 Communications

Information on the size of communication infrastructure in the area is pending. It is possible that communications infrastructure may require onsite and offsite upgrades or extensions to suit project specifications and ensure continued service to adjacent properties. With implementation of the BMPs described in the introduction of this section **(Utilities BMPs-1 through 3)**, impacts to communication service are anticipated to be **minor to moderate, negative, and short term (Utilities-5)** (see Table 4.7-3).

Table 4.7-3 summarizes the utility-related impacts for the Mehlville Site and the environmental protection measures.

TABLE 4.7-3
**Mehlville Site Summary of Utility-Related Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measures |
|---|---|---|
| Utilities-1: Impacts to power supply | Minor to moderate, negative, and short-term impact | Utilities BMP-1: Outages will be avoided to the extent possible<br>Utilities BMP-2: Public utilities within the potential impact area will be positively located prior to construction<br>Utilities BMP-3: NGA will incorporate DoD energy policies and LEED or Green Globes green building goals |
| Utilities-2: Impacts to water supply | Minor to moderate, negative, and short-term impact | Utilities BMP-1: Outages will be avoided to the extent possible<br>Utilities BMP-2: Public utilities within the potential impact area will be positively located prior to construction<br>Utilities BMP-3: NGA will incorporate DoD energy policies and LEED or Green Globes green building goals |
| Utilities-3: Impacts to wastewater service | Minor to moderate, negative, and short-term impact | Utilities BMP-1: Outages will be avoided to the extent possible<br>Utilities BMP-2: Public utilities within the potential impact area will be positively located prior to construction<br>Utilities BMP-3: NGA will incorporate DoD energy policies and LEED or Green Globes green building goals |

TABLE 4.7-3
**Mehlville Site Summary of Utility-Related Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measures |
|---|---|---|
| Utilities-4: Impacts to natural gas supply | Minor to moderate, negative, and short-term impact | Utilities BMP-1: Outages will be avoided to the extent possible<br>Utilities BMP-2: Public utilities within the potential impact area will be positively located prior to construction<br>Utilities BMP-3: NGA will incorporate DoD energy policies and LEED or Green Globes green building goals |
| Utilities-5: Impacts to communications service | Minor to moderate, negative, and short-term impact | Utilities BMP-1: Outages will be avoided to the extent possible<br>Utilities BMP-2: Public utilities within the potential impact area will be positively located prior to construction<br>Utilities BMP-3: NGA will incorporate DoD energy policies and LEED or Green Globes green building goals |

## 4.7.3 St. Louis City Site (Preferred Alternative)

### 4.7.3.1 Power

It is presumed the existing substation may remain in place. The three 13.8-kV underground circuits near North 22nd Street are located under the proposed property line and would need to be relocated. The electrical services to the individual buildings on the St. Louis City Site as well as some services to traffic signal controllers and roadway lighting substation would need to be removed from the site. St. Louis Development Corporation has committed to relocate these circuits and remove all the services located within the property prior to acquisition of the property by the government. This site only has availability of a single 34-kV line that can be extended from the former substation to the property. The additional circuit to meet NGA's needs would require a new substation or modifications to the existing substation. With implementation of the BMPs described in the introduction of this section **(Utilities BMPs-1 through 3)**, impacts to power supply would be **minor to moderate, negative, and short term (Utilities-1)** (see Table 4.7-4).

### 4.7.3.2 Water

All existing water service to the multiple buildings onsite would need to be removed. The 20-inch-diameter water main on Cass Avenue and North Jefferson Avenue is suitable in capacity to meet the site needs; therefore, the only modification required is the removal of the service lines (City of St. Louis Water Division, 2015). St. Louis Development Corporation has agreed to remove these service lines. With implementation of the BMPs described in the introduction of this section **(Utilities BMPs-1 through 3)**, impacts to water supply would be **minor to moderate, negative, and short term (Utilities-2)** (see Table 4.7-4).

### 4.7.3.3 Wastewater/Stormwater

All existing wastewater services to the multiple buildings onsite would need to be removed. One 24-inch-diameter brick main located in the alley between North Market Street and Benton Street affects properties outside the site; therefore, it would need to be relocated to ensure continued service for these properties. The St. Louis Development Corporation has agreed to remove these services and relocate the main. Stormwater and wastewater are currently managed in a combined system in this ROI. Prevention of

stormwater pollution during construction on the St. Louis City Site is discussed in Section 4.10.3.2. With implementation of the BMPs described in the introduction of this section **(Utilities BMPs-1 through 3)** impacts to wastewater and stormwater would be **minor to moderate, negative, and short term (Utilities-3)** (see Table 4.7-4).

#### 4.7.3.4 Natural Gas

The 20-inch-diameter medium-pressure distribution line located at Howard Street may need to be removed and replaced with a 12-inch-diameter medium-pressure main on Cass Avenue. The remaining natural gas services located within the site for the multiple buildings would need to be removed. St. Louis Development Corporation has agreed to remove these services and relocate the 20-inch-diameter gas main. With implementation of the BMPs described in the introduction of this section **(Utilities BMPs-1 through 3)**, impacts to natural gas service would be **minor to moderate, negative, and short term (Utilities-4)** (see Table 4.7-4).

#### 4.7.3.5 Communications

Multiple communications service providers are located along Cass Avenue and North Jefferson Avenue. Utility infrastructure may require onsite and offsite upgrades or extensions to suit project specifications and adjacent properties. Services to the individual properties on the St. Louis City Site would be removed. St. Louis Development Corporation has agreed to remove these services. With implementation of the BMPs described in the introduction of this section **(Utilities BMPs-1 through 3)**, impacts to communication services would be **minor to moderate, negative, and short term (Utilities-5)** (see Table 4.7-4).

Table 4.7-4 summarizes the utility-related impacts for the St. Louis City Site and the environmental protection measures.

TABLE 4.7-4
**St. Louis City Site Summary of Utility-Related Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measures |
|---|---|---|
| Utilities-1: Impacts to power supply | Minor to moderate, negative, and short-term impact | Utilities BMP-1: Outages will be avoided to the extent possible<br>Utilities BMP-2: Public utilities within the potential impact area will be positively located prior to construction<br>Utilities BMP-3: NGA will incorporate DoD energy policies and LEED or Green Globes green building goals |
| Utilities-2: Impacts to water supply | Minor to moderate, negative, and short-term impact | Utilities BMP-1: Outages will be avoided to the extent possible<br>Utilities BMP-2: Public utilities within the potential impact area will be positively located prior to construction<br>Utilities BMP-2: NGA will incorporate DoD energy policies and LEED or Green Globes green building goals |
| Utilities-3: Impacts to wastewater service | Minor to moderate, negative, and short-term impact | Utilities BMP-1: Outages will be avoided to the extent possible<br>Utilities BMP-2: Public utilities within the potential impact area will be positively located prior to construction<br>Utilities BMP-3: NGA will incorporate DoD energy policies and LEED or Green Globes green building goals |

TABLE 4.7-4
**St. Louis City Site Summary of Utility-Related Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measures |
|---|---|---|
| Utilities-4: Impacts to natural gas supply | Minor to moderate, negative, and short-term impact | Utilities BMP-1: Outages will be avoided to the extent possible<br>Utilities BMP-2: Public utilities within the potential impact area will be positively located prior to construction<br>Utilities BMP-3: NGA will incorporate DoD energy policies and LEED or Green Globes green building goals |
| Utilities-5: Impacts to communications service | Minor to moderate, negative, and short-term impact | Utilities BMP-1: Outages will be avoided to the extent possible<br>Utilities BMP-2: Public utilities within the potential impact area will be positively located prior to construction<br>Utilities BMP-3: NGA will incorporate DoD energy policies and LEED or Green Globes green building goals |

## 4.7.4 St. Clair County Site

### 4.7.4.1 Power

The Ameren Illinois 34-kV three-phase distribution line would need to be extended approximately 100 feet from the north side of Wherry Road to the property line. Only a single circuit is available to the St. Clair County Site at this time. To meet NGA's requirements, a new substation may be required or modifications made to an existing substation to provide a second service. With implementation of the BMPs described in the introduction of this section **(Utilities BMPs-1 through 3)**, impacts to power supply would be **minor to moderate, negative, and short term (Utilities-1)** (see Table 4.7-5).

### 4.7.4.2 Water

Water utility infrastructure would require onsite and offsite upgrades or extensions to suit project specifications and ensure continued service to adjacent properties. Information on the capacity of the existing 10-inch-diameter water main in the area is pending; however, based on the size, it likely does not provide sufficient capacity for the Next NGA West Campus. Water conservation measures may potentially be used in the site design to lower water consumption and reduce water utility upgrades **(Utilities BMP-4**). With implementation of the BMPs described in the introduction of this section **(Utilities BMPs-1 through 3)**, impacts to water supply would be **minor to moderate, negative, and short term (Utilities-2)** (see Table 4.7-5).

### 4.7.4.3 Wastewater/Stormwater

Wastewater utility infrastructure would require onsite and offsite upgrades or extensions to suit project specifications and adjacent property needs. Based on its size, the existing 6-inch-diameter wastewater main would likely need to be replaced. The Scott AFB wastewater treatment plant has a design maximum flow of 3.0 million gallons per day (mgd). The daily flow rate for 2014 was 0.955 mgd, or approximately 32 percent of the plant's capacity. If the 0.330 mgd that NGA would produce is added to the system, it would bring the plant to approximately 43 percent of its capacity, which is well below the 80 percent threshold of critical review set by the State of Illinois in Title 35 of the Illinois Administrative Code, Part 392, Subpart C.

Stormwater infrastructure does not currently exist on the site. Stormwater management opportunities for the site would be evaluated during project design and may potentially involve construction of onsite stormwater systems (for example, culverts or drainage ditches) and/or potential use of offsite systems. Development and operation of the proposed NGA infrastructure on the St. Clair County Site would be required to comply with the stormwater requirements in the Northeastern Watersheds Management Plan administered by St. Clair County. Prevention of stormwater pollution during construction on the St. Clair County Site is discussed in Section 4.10.4.2. With implementation of the BMPs described in the introduction of this section **(Utilities BMPs-1 through 3)**, impacts to wastewater and stormwater would be **minor to moderate, negative, and short term (Utilities-3)** (see Table 4.7-5).

#### 4.7.4.4 Natural Gas

Utility infrastructure would likely require onsite and offsite upgrades or extensions to suit project specifications and ensure continued service to adjacent properties. With implementation of the BMPs described in the introduction of this section **(Utilities BMPs-1 through 3)**, impacts to natural gas supply would be **minor to moderate, negative, and short term (Utilities-4)** (see Table 4.7-5).

#### 4.7.4.5 Communications

New communication infrastructure, including new distribution hubs and infrastructure upgrades to provide the proper communication lines to the site, would be required to support the St. Clair County Site. With implementation of the BMPs described in the introduction of this section **(Utilities BMPs-1 through 3)**, impacts to communications would be **minor to moderate, negative, and short term (Utilities-5)** (see Table 4.7-5).

Table 4.7-5 summarizes the utility-related impacts for the St. Clair County Site and the environmental protection measures.

TABLE 4.7-5
**St. Clair County Site Summary of Utility-Related Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measures |
|---|---|---|
| Utilities-1: Impacts to power supply | Minor to moderate, negative, and short-term impact | Utilities BMP-1: Outages will be avoided to the extent possible<br>Utilities BMP-2: Public utilities within the potential impact area will be positively located prior to construction<br>Utilities BMP-3: NGA will incorporate DoD energy policies and LEED or Green Globes green building goals |
| Utilities-2: Impacts to water supply | Minor to moderate, negative, and short-term impact | Utilities BMP-1: Outages will be avoided to the extent possible<br>Utilities BMP-2: Public utilities within the potential impact area will be positively located prior to construction<br>Utilities BMP-3: NGA will incorporate DoD energy policies and LEED or Green Globes green building goals |
| Utilities-3: Impacts to wastewater service | Minor to moderate, negative, and short-term impact | Utilities BMP-1: Outages will be avoided to the extent possible<br>Utilities BMP-2: Public utilities within the potential impact area will be positively located prior to construction<br>Utilities BMP-3: NGA will incorporate DoD energy policies and LEED or Green Globes green building goals |

TABLE 4.7-5
**St. Clair County Site Summary of Utility-Related Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measures |
|---|---|---|
| Utilities-4: Impacts to natural gas supply | Minor to moderate, negative, and short-term impact | Utilities BMP-1: Outages will be avoided to the extent possible<br>Utilities BMP-2: Public utilities within the potential impact area will be positively located prior to construction<br>Utilities BMP-3: NGA will incorporate DoD energy policies and LEED or Green Globes green building goals |
| Utilities-5: Impacts to communications service | Minor to moderate, negative, and short-term impact | Utilities BMP-1: Outages will be avoided to the extent possible<br>Utilities BMP-2: Public utilities within the potential impact area will be positively located prior to construction<br>Utilities BMP-3: NGA will incorporate DoD energy policies and LEED or Green Globes green building goals |

## 4.7.5 No Action Alternative

Under the No Action, NGA will not relocate, and no construction would occur at any of the proposed sites. It is presumed that current activities would continue at each of the proposed sites. For these reasons, the No Action Alternative would have **no/negligible impact** on utilities **(Utilities-1-5).**

## 4.7.6 Summary of Impacts and Environmental Protection Measures

The following is a summary or the environmental protection measures associated with the Proposed Action.

**Utilities BMP-1**: Outages will be avoided to the extent possible.

**Utilities BMP-2:** Public utilities within the potential impact area will be positively located (by probing, potholing, electronic detection, as-built designs, or other means) prior to construction.

**Utilities BMP-3:** NGA will incorporate DoD energy policies and LEED or Green Globes green building goals.

The utility impacts for the project alternatives are summarized in Table 4.7-6.

TABLE 4.7-6
**Summary of Impacts to Utilities**

| | Project Alternatives | | | | |
|---|---|---|---|---|---|
| **Impact Category** | **Fenton Site** | **Mehlville Site** | **St. Louis City Site** | **St. Clair County Site** | **No Action** |
| Utilities-1: Impacts to power supply | Minor to moderate, negative, and short-term impact | Minor to moderate, negative, and short-term impact | Minor to moderate, negative, and short-term impact | Minor to moderate negative, and short-term impact | No/negligible |
| Utilities-2: Impacts to water supply | Minor to moderate, negative, and short-term impact | Minor to moderate, negative, and short-term impact | Minor to moderate, negative, and short-term impact | Minor to moderate, negative, and short-term impact | No/negligible |
| Utilities-3: Impacts to wastewater service | Minor to moderate, negative, and short-term impact | Minor to moderate, negative, and short-term impact | Minor to moderate, negative, and short-term impact | Minor to moderate, negative, and short-term impact | No/negligible |

TABLE 4.7-6
**Summary of Impacts to Utilities**

| | Project Alternatives | | | | |
|---|---|---|---|---|---|
| **Impact Category** | **Fenton Site** | **Mehlville Site** | **St. Louis City Site** | **St. Clair County Site** | **No Action** |
| Utilities-4: Impacts to natural gas supply | Minor to moderate, negative, and short-term impact | Minor to moderate, negative, and short-term impact | Minor to moderate, negative, and short-term impact | Minor to moderate, negative, and short-term impact | No/negligible |
| Utilities-5: Impacts to communications service | Minor to moderate, negative, and short-term impact | Minor to moderate, negative, and short-term impact | Minor to moderate, negative, and short-term impact | Minor to moderate, negative, and short-term impact | No/negligible |

# 4.8 Cultural Resources

This section describes the potential impacts to cultural resources within the Area of Potential Effects (APE) under the No Action Alternative or as a result of implementing the Proposed Action. Because NEPA and NHPA Section 106 are parallel processes that are closely related in their findings of consequences for cultural resources, this section presents the findings for both regulations. For purposes of clarity, this section uses the term "impact" when discussing NEPA and the term "effect" when discussing Section 106. No important non-NRHP cultural resources were identified; therefore, impacts are discussed only for historic properties (that is, cultural resources that are eligible for or listed in the NRHP). Under Section 106, the Proposed Action is referred to as the undertaking, as defined in Section 3.8. As a result of the acquisition, development, and use by NGA of any of the four project alternatives, any buildings, including all historic buildings, located within the boundaries of the selected alternative would be demolished. Completion of the archaeological inventory, evaluation, and assessment of effects, with resolution of adverse effects if necessary, will be addressed in the Section 106 Programmatic Agreement, which has been under development since July 2015 and will be executed prior to signing the ROD for the EIS. An unanticipated discovery plan would be in place prior to construction of the selected alternative to address any archaeological resources that might be discovered during construction. Once the land is purchased by the federal government, any remaining belowground cultural resources would become federal property. NHPA Section 106 and 110 responsibilities would be negotiated between USAF and NGA.

After historic properties were identified within the APE, the project was analyzed to determine whether it would have a direct or indirect impact or effect, either permanently or during construction, on those properties. Then it was determined whether the impact or effect was major under NEPA and/or adverse under Section 106. This section presents findings under both regulations.

To determine the direct impacts under NEPA on historic properties from this project, the following information was analyzed:

- Location of the project elements and their proximity to known historic properties
- Potential visual effects on historic properties
- Potential partial or complete demolition of historic properties
- General construction activities
- Potential for vibration that could damage historic properties
- Potential for noise that could affect the use of historic properties

The extent to which these types of impacts could alter the integrity of historic properties was examined based on the project and the types of identified historic properties.

For indirect impacts, broader changes that the project may cause (such as changes in land use) were identified and analyzed qualitatively, based primarily on those seen from previous similar projects. This analysis could include activities related to the project but not directly part of the project.

Because this section addresses both NEPA and Section 106, the following presents an explanation of how Section 106 evaluates consequences of project actions on historic properties.

Section 106 Assessment of Effects

The Advisory Council on Historic Preservation's (ACHP's) regulations implementing Section 106 of the NHPA create a process by which federally assisted projects are reviewed for their effects on properties listed in, or eligible for listing in, the NRHP. After the resource is identified and evaluated, the Criteria of Adverse Effect are applied. These criteria are used to determine whether the undertaking could change the characteristics that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Section 106 of the NHPA allows three findings for effects on historic properties:

- No Historic Properties Affected
- No Adverse Effect
- Adverse Effect

An effect is adverse under Section 106 if it diminishes the integrity of the property's historically significant characteristics. Examples of adverse effects include, but are not limited to the following:

- Demolition of the historic property
- Relocation of the historic property
- Introduction of visual, audible, or atmospheric elements that are out of character with the setting of the historic property

The lead federal agency makes the determination of effect for each architectural property or archaeological site. Based on these determinations, an overall finding of effect for the undertaking is reached, in consultation with the SHPO and other consulting parties. The federal agency then requests concurrence from the SHPO on the finding of effect. In the case of an adverse effect, the agency must notify the ACHP of the finding. If the agency wishes to prepare a Programmatic Agreement, as planned for this project, then the ACHP must be invited to participate in the consultation (see Table 3.8-1 for specific steps and dates of the Section 106 process for this project.)

Section 106 Resolution of Effects

As stipulated in 36 CFR 800.1(a), the goal of consultation is to identify historic properties potentially affected by the undertaking, assess effects to them, and seek ways to avoid, minimize, or mitigate any adverse effects

on historic properties. When an undertaking is found to have an adverse effect, Section 106 requires notification to the ACHP and consultation with SHPO, affected Native American tribes, and other interested parties regarding appropriate avoidance or mitigation measures. Generally speaking, mitigation measures might include redesigning aspects of a project, relocating or documenting buildings and/or structures, or recovering data from archaeological sites. For a finding of adverse effect, the product of consultation is usually a Memorandum of Agreement per 36 CFR 800.6(c) or a Programmatic Agreement per 36 CFR 800.14(b) between the SHPO, the federal agency, ACHP if they choose to participate, and other consulting parties. This agreement contains stipulations specifying measures to be implemented that would avoid, minimize, or mitigate the adverse effects. For this project, a Programmatic Agreement is being drafted to resolve potential adverse effects from the proposed project.

NEPA Impact Thresholds and Section 106 Effects

Table 4.8-1 identifies impact thresholds of NEPA impacts relevant to historic properties for this project, and also lists the correlation between NEPA impacts and NHPA Section 106 effects.

TABLE 4.8-1
**Impact Thresholds for Historic Properties**

| NEPA Impact | Description [a] |
|---|---|
| No/ Negligible | No impacts on historic properties would be expected or impacts on historic properties would not be expected to be detectable and would not alter resource characteristics.<br>*The NHPA Section 106 determination would be no historic properties affected.* |
| Minor to Moderate | Impacts on historic properties would result in little, if any, loss of integrity and would be slight but noticeable.<br>Impacts would not appreciably alter resource characteristics.<br>*The NHPA Section 106 determination would be no adverse effect on historic properties.* |
| Major | Impacts on historic properties would result in disturbance to an important site, substantial loss of integrity, and/or severe alteration of property conditions, the result of which would significantly affect the human environment.<br>Impacts would appreciably alter the relationship between a significant resource and an affiliated group's body of practices or beliefs.<br>*The NHPA Section 106 determination would be adverse effect to historic properties.*<br>*Measures to mitigate adverse effects under Section 106 would be decided through consultation, but mitigation would not be sufficient to reduce the intensity of impacts to a level less than major under NEPA.* |
| Quality | Beneficial – would have a positive effect on historic properties or the cultural environment *(equivalent to no adverse effect to historic properties).*<br>Negative – would have a negative effect on historic properties or the cultural environment *(equivalent to no adverse effect or adverse effect to historic properties depending on the severity of the impact).* |
| Type: | Short-term – would occur only during the proposed construction period.<br>Long-term – would continue beyond the proposed construction period. |

Note:

[a] Language shown in italics is the corresponding "Section 106 Finding of Effect."

### 4.8.1 Fenton Site

No known historic properties are located within the Fenton Site APE; therefore, **no/negligible impacts** would occur to known historic properties as a result of the Proposed Action, **(Cultural-1).** Under Section 106, there would be a finding of **no historic properties affected** as a result of this project.

The Fenton Site has no to extremely low potential for deeply buried cultural deposits based on the findings from the geo-archaeological survey conducted in July 2015 (USACE, 2015j). Based on these findings, construction activities would result in **no/negligible impacts** to archeological resources and **no historic properties affected** under Section 106 **(Cultural-2)**. An unanticipated discovery plan will be in place prior to construction. During construction, if prehistoric- or historic-period archaeological sites are encountered, construction would halt in the vicinity of the site found, and NGA would consult with SHPO, interested Native American tribes, and other interested parties **(Cultural Mitigation-1)** as appropriate regarding eligibility for listing in the NRHP, project impacts, necessary mitigation, or other treatment measures.

There are no known historic properties at or adjacent to the Fenton Site; therefore, there are **no/negligible** expected indirect impacts to historic properties in the vicinity **(Cultural-3)**.

Table 4.8-2 provides NEPA impacts as well as the corollary finding of effect under Section 106, which results from a parallel process. This format is also used for the subsequent Summary of Historic Properties Impacts and Environmental Protection Measures tables (Tables 4.8-3, 4.8-4, and 4.8-5). For more detailed information regarding Section 106, refer to the Cultural Resources Technical Reports (see Table 4.8-2 and Appendix 3.8A).

TABLE 4.8-2
**Fenton Site Summary of Historic Properties Impacts and Environmental Protection Measures**

| Impact Category | Impact [a] | Environmental Protection Measures |
|---|---|---|
| Cultural-1: Impacts (including visual) to known historic properties | No/negligible impact<br>*No historic properties affected* | Not applicable |
| Cultural-2: Potential impacts to archaeological resources from proposed construction | No/negligible impact<br>*No historic properties affected* | Cultural Mitigation-1: Comply with Unanticipated Discovery Plan |
| Cultural-3: Indirect impacts to surrounding historic properties | No/negligible impact<br>*No historic properties affected* | Not applicable |

Note:
[a] Language shown in italics is the corresponding Section 106 Finding of Effect.

### 4.8.2 Mehlville Site

No known historic properties are located within the Mehlville Site APE; therefore, **no/negligible impacts** would occur to known historic properties as a result of the Proposed Action, including visual impacts **(Cultural-1)**. There would be a finding of **no historic properties affected** under Section 106 as a result of this project.

There are no previously recorded archaeological sites on the Mehlville Site, and there is a low to medium likelihood of encountering archaeological sites during construction. Due to the existing level of disturbance at the property, it is unlikely any discovered archaeological sites would be eligible for the NRHP; consequently, the impacts to archaeological resources are expected to be **no/negligible (Cultural-2).** If previously unidentified archaeological resources were discovered during construction, construction would halt in the vicinity of the find and NGA would consult with SHPO, interested Native American tribes, and other interested parties as appropriate regarding eligibility for listing in the NRHP, project impacts, necessary mitigation, or other treatment measures **(Cultural Mitigation-1)**.

There are no known historic properties at or adjacent to the Mehlville Site; therefore, there are no expected indirect impacts to historic properties in the vicinity **(Cultural-3)** (see Table 4.8-3).

TABLE 4.8-3
**Mehlville Site Summary of Historic Property Impacts and Environmental Protection Measures**

| Impacts Category | Impact [a] | Environmental Protection Measures |
|---|---|---|
| Cultural-1: Impacts (including visual) to known historic properties | No/negligible impact<br>*No historic properties affected* | Not applicable |
| Cultural-2: Potential impacts to archaeological resources from proposed construction | No/negligible impact<br>*No historic properties affected* | Cultural Mitigation-1: Comply with Unanticipated Discovery Plan |
| Cultural-3: Indirect impacts to surrounding historic properties | No/negligible impact<br>*No historic properties affected* | Not applicable |

Note:

[a] Language shown in italics is the corresponding Section 106 Finding of Effect.

### 4.8.3 St. Louis City Site (Preferred Alternative)

There are 6 historic buildings listed or eligible for listing in the NRHP as well as 105 buildings and 16 objects that contribute to an NRHP-listed historic district located within the APE for the St. Louis City Site. As part of the Proposed Action, all historic buildings located within the project alternative boundary would be demolished. These include 15 residential buildings and 3 warehouses that contribute to the NRHP-listed St. Louis Place NRHP District, as well as the NRHP-listed Buster Brown-Blue Ribbon building. The demolition of NRHP-listed buildings and contributing resources to an NRHP-listed historic district, and visual impacts to the historic district would result in **major, negative, and long-term impacts** on historic properties under NEPA and a finding of **adverse effect** under Section 106 **(Cultural-1**). The removal of historic architectural resources results in measurable impacts that are both severe and permanent. Although mitigation would be implemented, demolition of a historic building cannot be mitigated to less than a major impact because it is a permanent removal of historic fabric. NGA will continue to consult with the Missouri SHPO to determine the appropriate mitigation measures for these impacts **(Cultural Mitigation-2).** Tillie's Corner Historical Project, a local consulting party representing neighborhood interests, has provided several mitigation suggestions. These will be finalized in the Programmatic Agreement, but NGA and the City of St. Louis agree that it is important to involve neighborhood residents in the development of meaningful mitigation projects.

If the St. Louis City Site is chosen for development, operation of the campus could result in alterations to the setting and character of the St. Louis Place NRHP District and the other adjacent historic properties. Currently, a defining feature of the APE's setting, which encompasses the St. Louis Place NRHP District, is the prominent street grid pattern. The Proposed Action would remove this grid pattern and replace the existing urban, residential blocks with a secured campus. This would alter the feel and visual appearance of the area and would impact views of and from the historic properties adjacent to the project. However, many of the urban blocks within the APE, particularly south of Benton Street, are currently vacant, heavily overgrown, and do not contain standing structures. For these reasons, the proposed project location has already lost much of its historic, residential, urban feel. The preliminary designs for the St. Louis City Site include a security feature between the proposed campus and surrounding historic properties. The security feature would take the form of either a fence or wall and will be compatible with the surrounding historic district and historic buildings. Design considerations will include construction materials, color, and architectural details. Buildings within the campus could range in height from one to six stories tall, which is taller than the typical historic buildings in the area that range in height from one to four stories. Although these new buildings would be set back within the project alternative boundary, with the tallest building likely placed in the center of the property, it is possible that they would still be visible through or over the security feature. The implementation of the security feature and the alteration to the existing street grid pattern adjacent to the historic properties would likely result in visual impacts from the operation of the St. Louis City Site but a finding of **no adverse effect** under Section 106 **(Cultural-1)**.

St. Stanislaus Kostka Church, the former Crunden Branch Library, and the Pruitt School are separated from the project footprint by the former Pruitt-Igoe property and would not experience any effects from the project due to the large, vegetated buffer. The Pruitt-Igoe property was included in the APE because the property's inclusion in the project had been contemplated. However, the project was revised and these properties no longer have the potential to be affected by the project. Other historic properties that are within the APE but outside the project boundary could experience some impacts as a result of construction. Buildings contributing to the St. Louis Place NRHP District, including the Frank P. Blair School, are not within the project footprint but are directly adjacent to it. The former Jefferson-Cass Health Center is also adjacent to but outside the footprint, located diagonally across the street at N. Jefferson and Cass Avenues. Construction activities could result in temporary access restrictions to these historic buildings because of street closures and detours. Other typical impacts from construction could include dust from construction activities and increased traffic, noise, and vibrations that could affect the adjacent NRHP-listed historic district and NRHP-eligible and -listed buildings. See Section 4.5, *Noise*, for an explanation of construction noise impacts at this alternative. Construction activities could also result in temporary visual impacts to the adjacent NRHP-listed historic district and NRHP-eligible and -listed buildings. Impacts to these historic properties from construction would result in a short-term impact with a finding of **no adverse effect** under Section 106, but contribute to the **major, negative, and long-term impact** to historic properties **(Cultural 1)**.

No previously identified archaeological resources are located within the APE for the St. Louis City Site; however, there is a high likelihood of encountering archaeological sites during construction. The impacts to unidentified archaeological resources are expected to be **minor to moderate, negative, and long term (Cultural-2)** based on the high likelihood of encountering a site but relatively low likelihood of that site being eligible for the NRHP because of previous substantial ground disturbance**.** An unanticipated discovery plan will be in place prior to construction. If previously unidentified archaeological resources are discovered during construction, construction would halt in the vicinity of the archaeological find and NGA would consult with SHPO, interested Native American tribes, and other interested parties as appropriate regarding eligibility for listing in the NRHP, project impacts, necessary mitigation, or other treatment measures **(Cultural Mitigation-1)**.

Indirect effects to historic properties from the proposed project may be either positive or negative. The Next NGA West Campus may increase development pressures, leading to future demolition of historic buildings and continued transition in the area from residential uses to commercial and government uses, which would be a negative impact. However, the addition of the Next NGA West Campus may attract new residents and a subsequent increased desire for historic properties in the area, resulting in rehabilitations of those properties and stabilization of the neighborhood, which would be a positive impact. At this time, it is not known whether developers or new residents would be attracted to the area surrounding the Next NGA West Campus. If these changes occur, they could result in either positive or negative indirect impacts, depending on the type and intensity of development that happens. While these potential effects and the degree to which they would occur are unknown, it is likely that the changes that occur would result in **minor to moderate, negative, long-term** indirect impacts **(Cultural 3)** (see Table 4.8-4).

TABLE 4.8-4
**St. Louis City Site Summary of Historic Property Impacts and Environmental Protection Measures**

| Impacts Category | Impact [a] | Environmental Protection Measures |
|---|---|---|
| Cultural-1: Impacts (including visual) to known historic properties | Major, negative, and long-term impact<br>*Adverse effect to historic properties* | Cultural Mitigation-2: Stipulations specified in the Programmatic Agreement (Pending consultation with SHPO) |
| Cultural-2: Potential impacts to archaeological resources from proposed construction | Minor to moderate, negative, and long-term impact<br>*No adverse effect to historic properties* | Cultural Mitigation-1: Comply with Unanticipated Discovery Plan |
| Cultural-3: Indirect impacts to surrounding historic properties | Minor to moderate, negative and long-term impact<br>*No adverse effect to historic properties* | Not applicable |

Note:

[a] Language shown in italics is the corresponding Section 106 Finding of Effect.

## 4.8.4 St. Clair County Site

Development of the St. Clair County Site could impact archaeological Site 11S825, which is eligible for listing in the NRHP. Due to the size and location of the site, it is unlikely that the site could be completely avoided during project development. As a result of construction activities, disturbance to the site could result in **major,**

**negative, and long-term impacts** and an **adverse effect** under Section 106 **(Cultural-1)**. NGA has consulted with the Illinois SHPO to determine the appropriate mitigation measures **(Cultural Mitigation-2).** If avoidance of the site is deemed infeasible, mitigation of the site will be accomplished through completion of the terms of the data recovery plan (Scheid and Loebel, 2015) approved by the Illinois SHPO on November 10, 2015. Mitigation measures include data recovery at archaeological Site 11S825 **(Cultural Mitigation-3),** as well as public outreach focused on ongoing activities and long-term benefits of the site excavation. The public engagement plan for Site 11S825 centers around the use of video, news releases, and social media, as well as building website content conveying information on the early settlement and lifeways in St. Clair County as revealed by archaeological finds. Per the approved St. Clair County data recovery plan, public lectures by a St. Clair County representative at local libraries, schools, or other public venues are anticipated, as well as a display for the MidAmerica Airport terminal that illustrates life during the early settlement of the region, using artifacts recovered from the site. Although the property has been previously surveyed for archaeological resources, there remains some possibility that unknown resources could exist. However, as 9 of the 10 known sites have been determined to be not eligible for the NRHP, it is likely that other sites there would also be not eligible. As a result of construction activities, disturbance to these resources, if they exist, could result in **minor to moderate, negative, and long-term impacts** and **no adverse effect** under Section 106 **(Cultural-2).** Compliance with an Unanticipated Discovery Plan would be used to address these impacts **(Cultural Mitigation-1).**

No historic architectural resources are located within the APE for the St. Clair County Site. The Scott Field/Scott AFB Historic District is located southwest of the project alternative, outside of the APE. The historic district is a significant distance southwest of the proposed project location and is not expected to experience any impacts. Therefore, no existing historic architectural resources would be impacted, including visual impacts, during construction or operation**.**

Due to the distance between the project location and the historic district, there are no expected indirect impacts to historic properties in the vicinity of the St. Clair County Site **(Cultural-3)** (see Table 4.8-5).

TABLE 4.8-5
**St. Clair County Site Summary of Historic Property Impacts and Environmental Protection Measures**

| Impact Category | Impact [a] | Environmental Protection Measures |
|---|---|---|
| Cultural-1: Impacts to known historic properties | Major, negative, long-term impact<br>*Adverse effect to historic properties* | Cultural Mitigation-2: Stipulations specified in the Programmatic Agreement (Pending consultation with SHPO)<br>Cultural Mitigation-3: Archaeological data recovery |
| Cultural-2: Potential impacts to archaeological resources from proposed construction | Minor to moderate, negative, long-term impact<br>*No adverse effect to historic properties* | Cultural Mitigation-1: Comply with Unanticipated Discovery Plan |
| Cultural-3: Indirect impacts to surrounding historic properties | No/negligible impact<br>*No historic properties affected* | Not applicable |

Note:

[a] Language shown in italics is the corresponding Section 106 Finding of Effect.

### 4.8.5 No Action Alternative

Under the No Action Alternative, NGA would not relocate from the South 2nd Street facility and no construction would occur at any of the proposed alternatives. It is presumed that current activities would continue at each of the proposed alternatives. For these reasons, there would be **no/negligible** impacts to historic properties **(Cultural-1 through 3).**

### 4.8.6 Summary of Impacts and Environmental Protection Measures

The following is a summary of the environmental protection measures related to the Proposed Action.

**Cultural Mitigation-1:** Compliance with an unanticipated discovery plan for archaeological resources, which will be in place prior to construction. The plan will cover the protocols to be followed if an archaeological site or human remains were discovered and would include a list of appropriate contacts. If previously unidentified archaeological resources were discovered during construction, construction will halt in the vicinity of the find and a USACE archaeologist will survey the site and determine the NRHP eligibility. NGA will consult with SHPO, interested Native American tribes, and other interested parties as appropriate regarding eligibility and, if necessary, project impacts and necessary mitigation or other treatment measures.

**Cultural Resources Mitigation-2:** Stipulations specified in the Section 106 Programmatic Agreement, reached through consultation. For project alternatives found to contain historic properties, the proposed construction activities would result in a finding of **major impact/adverse effect**. When an undertaking is found to have an adverse effect, NHPA Section 106 requires consultation with the SHPO and other interested parties regarding appropriate avoidance, minimization, or mitigation measures. Stipulations of the Section 106 Programmatic Agreement would also suffice to address the necessary mitigation for major impacts to cultural resources under NEPA. Specific mitigation measures would be developed in consultation with the SHPO and consulting parties.

**Cultural Mitigation-3:** Archaeological data recovery at archaeological Site 11S825 at the St. Clair County Site will be accomplished through completion of the terms of the data recovery plan (Scheid and Loebel, 2015) approved by the Illinois SHPO on November 10, 2015, and stipulated as part of the Section 106 Programmatic Agreement.

Table 4.8-6 provides a summary of the impacts on historic properties, as described in this subsection.

TABLE 4.8-6
**Summary of Impacts to Historic Properties**

| | Project Alternatives | | | | |
|---|---|---|---|---|---|
| **Impacts** | **Fenton** | **Mehlville** | **St. Louis City** | **St. Clair County** | **No Action** |
| Cultural-1: Impacts (including visual) to known historic properties | No/negligible impact<br>*No historic properties affected* | No/negligible impact<br>*No historic properties affected* | Major, negative, long-term impact<br>*Adverse effect to historic properties* | Major, negative, long-term impact<br>*Adverse effect to historic properties* | No/negligible impact<br>*No historic properties affected* |
| Cultural-2: Potential impacts to archaeological resources from proposed construction | No/negligible impact<br>*No historic properties affected* | No/negligible impact<br>*No historic properties affected* | Minor to moderate, negative, long-term impact<br>*No adverse effect to historic properties* | Minor to moderate, negative, long-term impact<br>*No adverse effect to historic properties* | No/negligible impact<br>*No historic properties affected* |
| Cultural-3: Indirect impacts to surrounding historic properties | No/negligible impact<br>*No historic properties affected* | No/negligible impact<br>*No historic properties affected* | Minor to moderate, negative and long-term impact<br>*No adverse effect to historic properties* | No/negligible impact<br>*No historic properties affected* | No/negligible impact<br>*No historic properties affected* |

Note:

Language shown in italics is the corresponding Section 106 Finding of Effect.

# 4.9 Visual Resources/Aesthetics

The landscape character of each of the four sites and the No Action was assessed to determine impacts to viewers. Answering the following questions helped assess impacts:

1. Would the Next NGA West Campus result in a visually pleasing campus and complement the surrounding area?
2. Would the landscaping complement the Next NGA West Campus and the surrounding area, while addressing the security needs of the campus?

Table 4.9-1 identifies the impact thresholds for visual resources.

TABLE 4.9-1
**Impact Thresholds for Visual Resources**

| Impact | Description |
|---|---|
| No/Negligible | No or nearly unperceivable impacts to visual resources would be expected. |
| Minor to Moderate | There would be perceivable change to the existing visual character of the area; however, the changes would provide the same visual quality as the current conditions (that is, remain high, average, or low). |
| Major | There would be a substantial change to the existing visual quality of a broad area and/or historic district. |
| Quality: | Beneficial – would result in improved visual quality.<br>Negative – changes to landscape character and a reduction in the visual quality. |
| Type: | Short term – would occur only during the proposed construction period.<br>Long term – would continue beyond the proposed construction period. |

The Next NGA West Campus would include exterior building materials, landscaping, and a fence or wall that would complement or enhance the visual quality of the proposed site locations. The resulting visual quality of the site is expected to be high. During the short-term construction, the visual character of the project area would be similar to any large-scale construction project in the St. Louis area. All existing structures would be removed from the proposed sites prior to construction.

## 4.9.1 Fenton Site

The Next NGA West campus setting and the final landscaping would be an improvement to the current concrete and asphalt slab remaining from the former automobile assembly plant; therefore, the Proposed Action would change the visual quality of the site from low to high. The Proposed Action would have an overall **major, beneficial, and long-term impact (Visual-1)** to the visual resources of the Fenton Site (see Table 4.9-2). NGA will consider the existing surrounding visual character of the site and design the landscaping and architecture commensurate with the surrounding location **(Visual BMP-1).**

Table 4.9-2 summarizes the impacts to visual resources for the Fenton Site and the environmental protection measures.

TABLE 4.9-2
**Fenton Site Summary of Visual Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Visual-1: Impacts to visual quality | Major, long-term benefit | Visual BMP-1: Design landscaping and architecture commensurate with viewer sensitivity and campus security |

## 4.9.2 Mehlville Site

The Mehlville Site is currently a visually pleasing business park with both building construction materials that complement the local area and mature vegetation. The Proposed Action would result in a new building and landscaping that are also complementary to the local community; further, NGA will consider the existing surrounding visual character of the site and design the landscaping and architecture commensurate to the surrounding location **(Visual BMP-1).** Therefore, there would be no change to the visual quality at the site. The impacts to visual resources at the site would be **no/negligible (Visual-1)** (see Table 4.9-3).

Table 4.9-3 summarizes the impacts to visual resources for the Mehlville Site and the environmental protection measures.

TABLE 4.9-3
**Mehlville Site Summary of Visual Impacts and Environmental Protection Measures**

| Impact category | Impact | Environmental Protection Measure |
|---|---|---|
| Visual-1: Impacts to visual quality | No/negligible impact | Visual BMP-1: Design landscaping commensurate with viewer sensitivity and campus security |

## 4.9.3 St. Louis City Site (Preferred Alternative)

The Next NGA West Campus would change the character of the St. Louis City Site from a distressed urban area to an office/research park with a campus-like character, and the Proposed Action would change the visual quality of the site from low to high. Therefore, the Proposed Action would be a **major, long-term benefit (Visual-1)** (see Table 4.9-4). NGA will consider the existing surrounding visual character of the site and design the landscaping and architecture commensurate to the surrounding location **(Visual BMP-1).**

Table 4.9-4 summarizes the impacts to visual resources for the St. Louis City Site and the environmental protection measures.

TABLE 4.9-4
**St. Louis City Site Summary of Visual Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Visual-1: Impacts to visual quality | Major, long-term benefit | Visual BMP-1: Design landscaping commensurate with viewer sensitivity and campus security |

## 4.9.4 St. Clair County Site

The Proposed Action would change the character of the St. Clair County Site from an open, agricultural character to that of an office/research park with a campus-like character. However, the visual quality of the

site would remain high. Further, NGA will consider the existing surrounding visual character of the site and design the landscaping and architecture commensurate to the surrounding location **(Visual BMP-1).**

Therefore, the Proposed Action would have **no/negligible impact** to visual resources based upon the criteria used to determine impacts **(Visual-1)** (see Table 4.9-5).

Table 4.9-5 summarizes the impacts to visual resources for the St. Clair County Site and the environmental protection measures.

TABLE 4.9-5
**St. Clair County Site Summary of Visual Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Visual-1: Impacts to visual quality | No/negligible impact | Visual BMP-1: Design landscaping commensurate with viewer sensitivity and campus security |

## 4.9.5 No Action Alternative

Under the No Action Alternative, the South 2nd Street facility would remain at the current location and there would be no changes in visual quality. Therefore, the No Action Alternative would have a **no/negligible impact** to visual resources **(Visual-1)**.

## 4.9.6 Summary of Impacts and Environmental Protection Measures

The following is a summary of the environmental protection measures related to the Proposed Action.

Table 4.9-6 presents a summary of visual resources impacts by site.

**Visual BMP-1**: Where the Next NGA West Campus would be adjacent to viewers with high visual sensitivity, such as residential areas, exterior building and security feature design, and landscaping appropriate to such a setting will be installed.

Table 4.9-6 summarizes individual and overall impacts for all the project alternatives.

TABLE 4.9-6
**Summary of Impacts to Visual Resources**

| | Project Alternatives | | | | |
|---|---|---|---|---|---|
| **Impact Category** | **Fenton Site** | **Mehlville Site** | **St. Louis City Site** | **St. Clair County Site** | **No Action** |
| Visual-1: Impacts to visual quality | Major, long-term benefit | No/negligible impact | Major, long-term benefit | No/negligible impact | No/negligible impact |

# 4.10 Water Resources

Potential impacts to water resources within the ROI were analyzed under the Proposed Action and No Action Alternative. The ROI for the water resources impact analysis is generally the areas within the site boundaries. However, when necessary, the analysis also addresses potential impacts to hydrologically connected offsite wetlands/waters.

The analysis of impacts on water resources is based on the findings of site visits conducted by a government contractor (see Appendix 3.11A; USACE, 2014a, 2014b, 2014c, 2014d) and USACE; reviews of USFWS National Wetlands Inventory (NWI) mapping (USFWS, 2014a), U.S. Geological Survey (USGS) National Hydrography Dataset (NHD) mapping (USGS, 2014), Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) and other available data/literature on water resources within the ROI; ongoing regulatory consultations; and professional opinion.

Table 4.10-1 identifies the impact thresholds for water resources.

TABLE 4.10-1
**Impact Thresholds for Water Resources**

| Impact | Description |
|---|---|
| No/Negligible | Impacts to water resources (wetlands, surface water, floodplains, and groundwater) would not occur or would be at the lowest level of detection. There would be no loss of water resource area and very little to no impairment of water resource function. |
| Minor to Moderate | Impacts to water resources would be detectable. There would be little to moderate overall loss of water resource area and loss/impairment of water resource function. All disturbances would be confined within the project site boundary. |
| Major | Impacts to water resources would be substantial. There would be extensive loss to a scarce or unique water resource area and loss/impairment of water resource function. Onsite disturbances would have high potential to negatively affect the functionality of connected offsite water resources. |
| Quality | Beneficial – would have a positive effect on water resources.<br>Negative – would have an adverse effect on water resources. |
| Type | Short term – would occur only during the proposed construction period.<br>Long term – would continue beyond the proposed construction period. |

## 4.10.1 Fenton Site

### 4.10.1.1 Wetlands

No wetlands are located on the Fenton Site and, therefore, construction of the Next NGA West Campus on the site would have no direct impact on wetlands. Appropriate BMPs (for example, silt fencing) will be implemented during construction to avoid and minimize potential indirect impacts (erosion, sedimentation, and pollution) to offsite wetlands **(Water BMP-1)**.

NGA operations would be confined within the site boundary and onsite hazardous materials/wastes associated with NGA operations would be managed in accordance with all applicable environmental compliance regulations (see Section 4.6 *Hazardous Materials and Solid Waste*), thereby minimizing the potential for release into offsite wetlands.

The Proposed Action would have **no/negligible impact** on wetlands **(Water-1)**, with implementation of **Water BMP-1**.

#### 4.10.1.2 Surface Water

No surface waterbodies are located on the Fenton Site and, therefore, construction of the Next NGA West Campus would have no direct impact on surface waterbodies. Appropriate BMPs (for example, silt fencing) will be implemented during construction to avoid and minimize potential indirect impacts (erosion sedimentation, and pollution) to offsite surface waterbodies **(Water BMP-1)**.

Construction of the Next NGA West Campus on the Fenton Site would require a Missouri State Operating Permit from MoDNR **(Water Permit/Plan-1)**, which is required for any proposed project that would disturb 1 acre or more of land in the state. As part of this permit, NGA would be required to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) that would outline the BMPs and engineering controls to be used to prevent and minimize erosion, sedimentation, and pollution during the project.

The type, number, size, and location of any new stormwater management systems (for example, culverts, drainage ditches, stormwater retention ponds) constructed on the Fenton Site and/or the potential use of any existing onsite or offsite stormwater management systems would be determined during the design and permitting phase in accordance with the EISA and other guidance on stormwater management for federal facilities.

NGA operations on the Fenton Site would have no effect on surface waterbodies. NGA operations would be confined within the site boundary and onsite hazardous materials/wastes associated with NGA operations would be managed in accordance with all applicable environmental compliance regulations, thereby minimizing the potential for release into offsite surface waterbodies. See Section 4.6, *Hazardous Materials and Solid Waste*, for a more detailed explanation.

The Proposed Action would have **no/negligible impact** on surface water **(Water-2)** with implementation of **Water BMP-1** and acquisition of **Water Permit/Plan-1.**

#### 4.10.1.3 Floodplains

Approximately 12.8 acres of the Fenton Site are within the 500-year floodplain (see Section 3.10.1.3 and Figure 3.10-2), based on the FEMA FIRM that covers the Fenton Site and surrounding areas. Under the Proposed Action, infrastructure construction could displace floodplain area within the site. The maximum amount of floodplain area that would be displaced would be approximately 12.8 acres. In compliance with E.O. 11988, *Floodplain Management* and E.O. 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*, NGA would avoid and minimize floodplain impacts during site development to the extent practicable. Any infrastructure located within the floodplain would be designed and constructed in compliance with all applicable regulatory requirements pertaining to floodplains, and no occupied buildings or critical infrastructure would be placed in

the floodplain. Following site development, NGA operations would have no potential to impact floodplains. The Proposed Action would have a **minor to moderate, negative, and long-term impact** on floodplains **(Water-3).**

#### 4.10.1.4 Groundwater

Groundwater that exists just below the land surface on the Fenton Site may be encountered during certain types of construction activities such as site grading and excavation within the footprints of the proposed infrastructure components. Any dewatering necessary during such construction activities would be conducted using standard methods and would have little effect on groundwater quality or flow. If contaminated groundwater is encountered during dewatering, it would be containerized and disposed of in accordance with all applicable laws and regulations. Following site development, NGA operations would not involve any subsurface intrusive activity and, therefore, would have no potential to impact groundwater.

No public water supply wells are located on or in the immediate vicinity of the Fenton Site, based on water well maps prepared by MoDNR. Therefore, the proposed infrastructure construction and NGA operations on the Fenton Site would have no effect on public water supply wells.

The Proposed Action would have **no/negligible impact** on groundwater **(Water-4)**.

Table 4.10-2 summarizes the water resources impacts and associated environmental protection measures for the Fenton Site.

TABLE 4.10-2
**Fenton Site Summary of Water Resources Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Water-1: Impacts to wetlands | No/negligible impact | Water BMP-1: Implement erosion control BMPs during construction |
| Water-2: Impacts to surface water | No/negligible impact | Water BMP-1: Implement erosion control BMPs during construction<br>Water Permit/Plan-1: Obtain a Missouri State Operating Permit from MoDNR |
| Water-3: Impacts to floodplains | Minor to moderate, negative, long-term impact | Not applicable |
| Water-4: Impacts to groundwater | No/negligible impact | Not applicable |

### 4.10.2 Mehlville Site

#### 4.10.2.1 Wetlands

A single (less than 0.1 acre in size) forested/shrub wetland is present in the south-central portion of the Mehlville Site (Figure 4.10-1). This wetland was created through scour from the stormwater retention pond's overflow located to its north, and is expected to be hydrologically connected to the onsite streams to its south. Under the Proposed Action, infrastructure construction could displace the entire 0.1-acre wetland. The onsite wetland is expected to qualify as a jurisdictional wetland that is subject to Section 404 of the CWA. Therefore, displacement of this wetland by the proposed infrastructure construction is expected to require a CWA

Section 404 (Dredge and Fill) Permit from USACE **(Water Permit/Plan-2)** and a CWA Section 401 Water Quality Certification from MoDNR **(Water Permit/Plan-3)**. Compensatory wetland mitigation requirements are determined by USACE on a case-by-case basis based on the type of activities proposed, the nature and extent of the proposed wetland impacts, and the quality/functionality of the wetlands proposed to be impacted. Compensatory mitigation of wetlands is preferred to occur through a mitigation bank in accordance with 40 CFR 230. If a mitigation bank is not available to serve the area where impacts would occur, then an in-lieu fee payment is the second option for compensatory mitigation. At present, there are no banks serving the project area with wetland mitigation credits available. Therefore, if compensatory mitigation is required, NGA would make appropriate payments into an in-lieu fee program, as required by the CWA Section 404 permit that would be issued. If the Mehlville Site is selected, NGA would propose to make the in-lieu fee payment sufficient to cover compensatory mitigation as shown in Table 4.10-3 **(Water Mitigation-1).** If a mitigation bank becomes available for use, then a bank would be used instead.

Appropriate BMPs (for example, silt fencing) will be implemented during construction to avoid and minimize potential indirect impacts (erosion, sedimentation, and pollution) to offsite wetlands **(Water BMP-1)**. NGA operations on the Mehlville Site would have no effect on wetlands. NGA operations would be confined within the site boundary and onsite hazardous materials and/or wastes associated with NGA operations would be managed in accordance with all applicable environmental compliance regulations (see Section 4.6, *Hazardous Materials and Solid Waste*), thereby minimizing the potential for release into offsite wetlands.

The Proposed Action would have a **minor to moderate, negative, and long-term impact** on wetlands **(Water-1)** with implementation of **Water Mitigation-1** and **Water BMP-1**, and acquisition of **Water Permit/Plan-2** and **Water Permit/Plan-3**.

#### 4.10.2.2 Surface Water

Several surface waterbodies are located on the Mehlville Site, including a stormwater retention pond, two intermittent streams, and one ephemeral stream (see Section 3.10.2.2 and Figure 3.10-3). Under the Proposed Action, infrastructure construction could displace surface waterbodies within the site; however, the ephemeral stream and 617 linear feet of the intermittent stream will be avoided. Approximately 2,035 linear feet of onsite intermittent stream is within an area that NGA has identified for development; therefore, this length of onsite stream would be impacted. The onsite stormwater retention pond and intermittent streams have been determined to be waters of the United States and subject to Section 404 of the CWA. Impacts to waters of the United States will require a CWA Section 404 (Dredge and Fill) Permit from USACE **(Water Permit/ Plan-2)** and a CWA Section 401 Water Quality Certification from MoDNR **(Water Permit/Plan-3)**. Because of the length of the stream that would be impacted (approximately 2,035 linear feet), it is expected that an Individual Permit under the CWA would be necessary and that compensatory mitigation would be required. If a mitigation bank is not available to serve the area where impacts would occur, then an in-lieu fee payment is the second option for compensatory mitigation. At present, there are no banks serving the project area with

stream mitigation credits available. If the Mehlville Site is selected, NGA would propose to make the in-lieu fee payment sufficient to cover compensatory mitigation as shown in Table 4.10-3 (see Section 4.10.2.1) **(Water Mitigation-1).** If a mitigation bank becomes available for use, then a bank would be used instead. Appropriate BMPs (for example, silt fencing) will be implemented during construction to avoid and minimize potential indirect impacts (erosion sedimentation, and pollution) to onsite and offsite surface waterbodies **(Water BMP-1)**.

TABLE 4.10-3
**Mehlville Site Summary of Mitigation [a] for Unavoidable Impacts to Water Resources**

| Water Resource | Avoidance/ Minimization | Estimated Impacts | Proposed Ratio | Proposed Mitigation Acreage[b] |
|---|---|---|---|---|
| Wetland | None | 0.1 acre | 3:1 | 0.3 acre |
| Stormwater Retention Pond | None | 3.5 acres | 3:1 | 10.5 acres |
| Stream Channel | 617 linear feet of intermittent stream<br>373 linear feet of ephemeral stream | 2,035 linear feet of intermittent stream | If selected, site will be assessed using the Missouri Stream Mitigation Method to determine appropriate mitigation | |

Notes:

[a] Mitigation would be in the form of payment to an in-lieu fee program or through a mitigation bank.

[b] Proposed mitigations are estimates and subject to negotiation with the regulatory authority.

Construction on the Mehlville Site will require a Missouri State Operating Permit from MoDNR, as described in Section 4.10.1.2 for the Fenton Site **(Water Permit/Plan-1)**. As part of this permit, NGA would be required to prepare and implement a SWPPP that would outline the BMPs and engineering controls to be used to prevent and minimize erosion, sedimentation, and pollution during the project.

The type, number, size, and location of any new stormwater management systems (for example, culverts, drainage ditches, stormwater retention ponds) that may be constructed on the Mehlville Site and/or the potential use of any existing onsite or offsite stormwater management systems would be determined during the design and permitting phases of the development in accordance with the EISA and other guidance on stormwater management for federal facilities.

NGA operations would be confined within the site boundary and onsite hazardous materials/wastes associated with NGA operations would be managed in accordance with all applicable environmental compliance regulations, thereby minimizing the potential for release into onsite and offsite surface waterbodies. See Section 4.6, *Hazardous Materials and Solid Waste*, for a more detailed explanation.

The Proposed Action would have a **minor to moderate, negative, and long-term impact** on surface water **(Water-2)** with implementation of **Water Mitigation-1** and **Water BMP-1**, and acquisition of **Water Permit/Plan-1**, **Water Permit/Plan-2**, and **Water Permit/Plan-3**.

#### 4.10.2.3 Floodplains

No 100-year or 500-year floodplain areas are located on the Mehlville Site, based on the FEMA FIRM. Therefore, the Proposed Action would have **no/negligible impact** on floodplains **(Water-3)**.

#### 4.10.2.4 Groundwater

Groundwater that exists just below the land surface on the Mehlville Site may be encountered during certain types of construction activities such as site grading and excavation within the footprints of the proposed infrastructure components. Any dewatering necessary during construction activities would be conducted using standard methods and would have no effect on groundwater quality or flow. If contaminated groundwater is encountered during dewatering, it would be containerized and disposed of in accordance with all applicable laws and regulations. Following site development, NGA operations would not involve any subsurface intrusive activity and, therefore, would have no potential to impact groundwater.

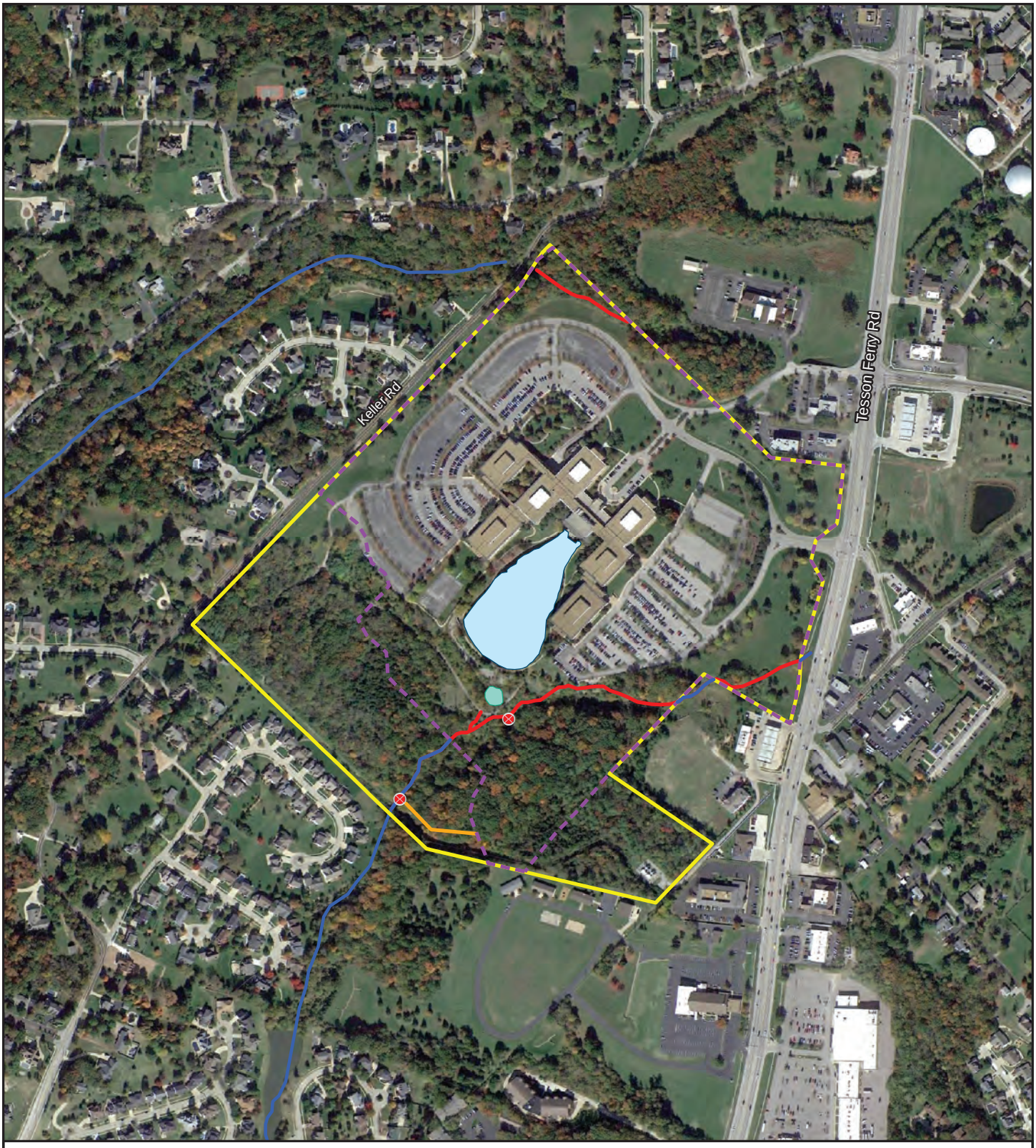
No public water supply wells are present on or in the immediate vicinity of the Mehlville Site, based on water well maps prepared by MoDNR. Therefore, the proposed infrastructure construction and NGA operations on the Mehlville Site would have no effect on public water supply wells.

The Proposed Action would have **no/negligible impact** on groundwater **(Water-4)**.

Table 4.10-4 summarizes the water resources impacts and associated environmental protection measures for the Mehlville Site.

TABLE 4.10-4
**Mehlville Site Summary of Water Resources Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Water-1: Impacts to wetlands | Minor to moderate, negative, long-term impact | Water BMP-1: Implement erosion control BMPs during construction<br>Water Mitigation-1: Implement any CWA required compensatory mitigation<br>Water Permit/Plan-2: Obtain a CWA Section 404 Permit from USACE<br>Water Permit/Plan-3: Obtain a CWA Section 401 Water Quality Certification from MoDNR as part of the CWA Section 404 permitting process |
| Water-2: Impacts to surface water | Minor to moderate, negative, long-term impact | Water BMP-1: Implement erosion control BMPs during construction<br>Water Mitigation-1: Implement any required CWA compensatory mitigation<br>Water Permit/Plan-1: Obtain a Missouri State Operating Permit from MoDNR<br>Water Permit/Plan-2: Obtain a CWA Section 404 Permit from USACE<br>Water Permit/Plan-3: Obtain a CWA Section 401 Water Quality Certificate from MoDNR as part of the CWA Section 404 permitting process |
| Water-3: Impacts to floodplains | No/negligible impact | Not applicable |
| Water-4: Impacts to groundwater | No/negligible impact | Not applicable |




Proposed Site
Construction Limits
Intermittent Stream Inside Construction Limits
Intermittent Stream Outside Construction Limits
Ephemeral Stream Outside Construction Limits
Stormwater Pond
Wetland
Culvert

Data Source: NHD- National Hydrography Dataset
NHD Source: U.S. Geological Survey (USGS)
Image Source: Google Earth Pro, Modified by CH2MHill,
Image Flown 10/21/2014

N

0 0.1 0.2 0.3 Miles

Figure 4.10-1
Mehlville Site Wetlands and Surface Water Impacts
NGA EIS

## 4.10.3 St. Louis City Site (Preferred Alternative)

### 4.10.3.1 Wetlands

No wetlands are located on the St. Louis City Site and, therefore, construction and operation of the Next NGA West Campus on the site would have no direct impact on wetlands. Appropriate BMPs (for example, silt fencing) will be implemented during construction to avoid indirect impacts (erosion, sedimentation, and pollution) **(Water BMP-1)**.

NGA operations on the St. Louis City Site would have no effect on wetlands. NGA operations would be confined within the site boundary and onsite hazardous materials/wastes associated with NGA operations would be managed in accordance with all applicable environmental compliance regulations (see Section 4.6, *Hazardous Materials and Solid Waste*), thereby minimizing the potential for release into offsite wetlands.

The Proposed Action would have **no/negligible impact** on wetlands **(Water-1)** with implementation of **Water BMP-1**.

### 4.10.3.2 Surface Water

No surface waterbodies are present on the St. Louis City Site and, therefore, construction and operation of the Next NGA West Campus would have no direct impact on surface waterbodies. Appropriate BMPs (for example, silt fencing) will be implemented during construction to avoid and minimize potential indirect impacts (erosion sedimentation, and pollution) to offsite surface waterbodies **(Water BMP-1)**.

Construction of the proposed NGA infrastructure on the St. Louis City Site would require a Missouri State Operating Permit from MoDNR, as described previously in Section 4.10.1.2 for the Fenton Site **(Water Permit/Plan-1).** As part of this permit, NGA would be required to prepare and implement a SWPPP that would outline the BMPs and engineering controls to be used to prevent and minimize erosion, sedimentation, and pollution during the project.

The type, number, size, and location of any new stormwater management systems (for example, culverts, drainage ditches, stormwater retention ponds) that may be constructed on the St. Louis City Site and/or the potential use of any existing onsite or offsite stormwater management systems would be determined during the design and permitting phases of the development in accordance with the EISA and other guidance on stormwater management for federal facilities.

NGA operations would be confined within the site boundary and onsite hazardous materials/wastes associated with NGA operations would be managed in accordance with all applicable environmental compliance regulations, thereby minimizing the potential for release into onsite and offsite surface waterbodies. See Section 4.6, *Hazardous Materials and Solid Waste*, for a more detailed explanation.

The Proposed Action would have **no/negligible impact** on surface water (**Water-2**) with implementation of **Water BMP-1** and acquisition of **Water Permit/Plan-1**.

#### 4.10.3.3 Floodplains

No 100-year or 500-year floodplain areas are present on the St. Louis City Site, based on the FEMA FIRM. Therefore, the proposed infrastructure construction and NGA operations on the St. Louis City Site would have **no/negligible impact** on floodplains **(Water-3)**.

#### 4.10.3.4 Groundwater

Groundwater that exists just below the land surface on the St. Louis City Site may be encountered during certain types of construction activities such as site grading and excavation within the footprints of the proposed infrastructure components. Any dewatering necessary during such construction activities would be conducted using standard methods and would have no effect on groundwater quality or flow. If contaminated groundwater is encountered during dewatering, it would be containerized and disposed of in accordance with all applicable laws and regulations. Following site development, NGA operations would not involve any subsurface intrusive activity and, therefore, would have no potential to impact groundwater.

No public water supply wells are located on or in the immediate vicinity of the St. Louis City Site, based on water well maps prepared by MoDNR. Therefore, the proposed infrastructure construction and NGA operations on the St. Louis City Site would have no effect on public water supply wells.

The Proposed Action would have **no/negligible impact** on groundwater **(Water-4)**.

Table 4.10-5 summarizes the water resources impacts and associated environmental protection measures for the St. Louis City Site.

TABLE 4.10-5
**St. Louis City Site Summary of Water Resources Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Water-1: Impacts to wetlands | No/negligible impact | Water BMP-1: Implement erosion control BMPs during construction |
| Water-2: Impacts to surface water | No/negligible impact | Water BMP-1: Implement erosion control BMPs during construction Water Permit/Plan-1: Obtain a Missouri State Operating Permit from MoDNR |
| Water-3: Impacts to floodplains | No/negligible impact | Not applicable |
| Water-4: Impacts to groundwater | No/negligible impact | Not applicable |

### 4.10.4 St. Clair County Site

#### 4.10.4.1 Wetlands

One approximately 2.1-acre forested wetland is located in the southwestern portion of the St. Clair County Site (see Figure 4.10-2). The NGA site design would avoid impacts to the entire 2.1-acre jurisdictional wetland. Because no wetland impacts would occur, no compensatory wetland mitigation would be required. Appropriate BMPs (for example, silt fencing) will be implemented during construction to avoid and minimize potential indirect impacts (erosion, sedimentation, and pollution) to onsite and offsite wetlands **(Water BMP-1)**.

NGA operations would be confined within the site boundary and onsite hazardous materials/wastes associated with NGA operations would be managed in accordance with all applicable environmental compliance regulations (see Section 4.6, *Hazardous Materials and Solid Waste*), thereby minimizing the potential for release into onsite or offsite wetlands.

The Proposed Action would have a **no/negligible impact** on wetlands (**Water-1**) with implementation of **Water BMP-1**.

#### 4.10.4.2 Surface Water

Three surface waterbodies are located on the St. Clair County Site, including a pond, a perennial stream, and an intermittent stream (see Figure 4.10-2). Under the Proposed Action, infrastructure construction would impact approximately 194 linear feet of perennial stream. Approximately 1,898 linear feet of perennial stream and approximately 250 linear feet of intermittent stream would be avoided.

The onsite approximately 0.9-acre pond is not a water of the United States and is not subject to regulation under the CWA. While NGA would avoid impacts to the pond to the extent practicable, no mitigation would be proposed should it be impacted by site development.

The onsite perennial stream was determined to be a water of the United States subject to the federal regulations under Section 404 of the CWA. Impacts to the surface waterbodies that qualify as waters of the United States would require a CWA Section 404 (Dredge and Fill) Permit from USACE **(Water Permit/Plan-2)** and a CWA Section 401 Water Quality Certification from IEPA **(Water Permit/Plan-3)**. The length of the stream that would be impacted (approximately 194 linear feet) would normally be authorized under a CWA Nationwide Permit. Compensatory mitigation of streams is preferred to occur through a mitigation bank in accordance with 40 CFR 230. If a mitigation bank is not available to serve the area where impacts would occur, then an in-lieu fee payment is the second option for compensatory mitigation. At present, there are no banks serving the project area with stream mitigation credits available. If the St. Clair County Site is selected, NGA would propose to make the in-lieu fee payment sufficient to cover compensatory mitigation as shown in Table 4.10-6 **(Water Mitigation-1).** If a mitigation bank becomes available for use, then a bank would be used instead.

TABLE 4.10-6
**St. Clair County Site Summary of Mitigation [a] for Unavoidable Impacts to Water Resources**

| Water Resource | Avoidance/Minimization | Estimated Impacts | Proposed Ratio | Proposed Mitigation Acreage[b] |
|---|---|---|---|---|
| Wetland | 2.1 acres | None | N/A | None |
| Pond | None | 0.9 acre | N/A | None |
| Stream Channel | 1,898 linear feet of perennial stream<br>250 linear feet of intermittent stream | 194 linear feet of perennial stream | If selected, any required stream mitigation would be determined using the Illinois Stream Mitigation Method [a] | |

Notes:

[a] Stream mitigation would be in the form of payment to an in-lieu fee program or through a mitigation bank.

[b] Proposed mitigations are estimates and subject to negotiation with the regulatory authority.

Appropriate BMPs (for example, silt fencing) will be implemented during construction to avoid and minimize potential indirect impacts (erosion sedimentation, and pollution) to onsite and offsite surface waterbodies **(Water BMP-1)**.

Construction of the proposed NGA infrastructure on the St. Clair County Site would require a General National Pollutant Discharge Elimination System (NPDES) Permit for Stormwater Discharges from Construction Site Activities from IEPA **(Water Permit/Plan-4)**, which is required for any proposed project that would disturb 1 acre or more of land in Illinois. As part of this permit, NGA would be required to prepare and implement a SWPPP that would outline the BMPs and engineering controls to be used to prevent and minimize erosion, sedimentation, and pollution during the project.

The type, number, size, and location of any new stormwater management systems (for example, culverts or drainage ditches) that may be constructed on the St. Clair County Site and/or the potential use of any existing onsite or offsite stormwater management systems would be determined during the design and permitting phases of the development, in accordance with the EISA and other guidance on stormwater management for federal facilities. NGA operations on the St. Clair County Site would have no effect on surface waterbodies. NGA operations would be confined within the site boundary and onsite hazardous materials/wastes associated with NGA operations would be managed in accordance with all applicable environmental compliance regulations, thereby minimizing the potential for release into onsite and offsite surface waterbodies.

The Proposed Action would have a **minor to moderate, negative, and long-term impact** on surface water **(Water-2)** with implementation of **Water Mitigation-1** and **Water BMP-1**, and acquisition of **Water Permit/Plan-2**, **Water Permit/Plan-3**, and **Water Permit/Plan-4**.

#### 4.10.4.3 Floodplains

No 100-year or 500-year floodplain areas are located on the St. Clair County Site, based on the FEMA FIRM. Therefore, the proposed infrastructure construction and NGA operations on the St. Clair County Site would have **no/negligible impact** on floodplains **(Water-3)**.

#### 4.10.4.4 Groundwater

Groundwater that exists just below the land surface on the St. Clair County Site may be encountered during certain types of construction activities such as site grading and excavation within the footprints of the proposed infrastructure components. Any dewatering necessary during such construction activities would be conducted using standard methods and would have no effect on groundwater quality or flow. If contaminated groundwater is encountered during dewatering, it would be containerized and disposed of in accordance with all applicable laws and regulations. Following site development, NGA operations would not involve any subsurface intrusive activity and, therefore, would have no potential to impact groundwater.

No public water supply wells are present on or near the St. Clair County Site, based on water well maps prepared by the Illinois State Water Survey. Therefore, the proposed infrastructure construction and NGA operations on the St. Clair County Site would have no effect on public water supply wells.

The Proposed Action would have **no/negligible impact** on groundwater **(Water-4)**.

Table 4.10-7 summarizes the water resources impacts and associated environmental protection measures for the St. Clair County Site.

TABLE 4.10-7
**St. Clair County Site Summary of Water Resources Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Water-1: Impacts to wetlands | No/negligible impact | Water BMP-1: Implement erosion control BMPs during construction |
| Water-2: Impacts to surface water | Minor to moderate, negative, long-term impact | Water BMP-1: Implement erosion control BMPs during construction<br>Water Mitigation-1: Implement any required compensatory mitigation<br>Water Permit/Plan-2: Obtain a CWA Section 404 Permit from USACE<br>Water Permit/Plan-3: Obtain a CWA Section 401 Water Quality Certification from IEPA as part of the CWA Section 404 permitting process<br>Water Permit/Plan-4: Obtain a General NPDES Permit For Stormwater Discharges From Construction Site Activities from IEPA |
| Water-3: Impacts to floodplains | No/negligible impact | Not applicable |
| Water-4: Impacts to groundwater | No/negligible impact | Not applicable |

Proposed Site
Construction Limits
Perennial Stream Inside Construction Limits
Perennial Stream Outside Construction Limits
Intermittent Stream Outside Construction Limits
Pond
Wetland

NHD- National Hydrography Dataset
NHD Source: U.S. Geological Survey (USGS)
Image Source: Google Earth Pro, Modified by CH2MHill, Image Flown 10/21/2014

N

0 0.25 0.5 Miles

Figure 4.10-2
St. Clair County Site
Wetland and Surface Water Impacts
NGA EIS

### 4.10.5 No Action Alternative

The No Action Alternative is the continued use of NGA's South 2nd Street facility. Under the No Action Alternative, current activities would continue at each of the site alternatives, and no construction or associated land clearing activities would be expected to occur. Because there would be no change from current conditions, **no**/**negligible impacts** to water resources would result **(Water-1 through Water-4)**.

### 4.10.6 Summary of Impacts and Environmental Protection Measures

**Water Mitigation-1**: Implement any required compensatory mitigation for impacts to jurisdictional wetlands or waters of the United States.

**Water BMP-1:** Implement BMPs during construction to avoid and minimize potential indirect impacts to onsite and offsite wetlands and surface waterbodies.

**Water Permit/Plan-1:** Obtain a Missouri State Operating Permit from MoDNR (Fenton, Mehlville, and St. Louis City sites), which is required for projects that disturb 1 acre or more of land in Missouri.

**Water Permit/Plan-2:** Obtain a CWA Section 404 Permit from USACE for impacts to waters of the United States.

**Water Permit/Plan-3**: Obtain a CWA Section 401 Water Quality Certification from MoDNR (Fenton, Mehlville, and St. Louis City sites) or IEPA (St. Clair County Site) as part of the CWA Section 404 permitting process.

**Water Permit/Plan-4**: Obtain a General NPDES Permit for Stormwater Discharges from Construction Site Activities from IEPA (St. Clair County Site), which is required for projects that disturb 1 acre or more of land in Illinois.

The water resources impacts for the project alternatives are summarized in Table 4.10-8.

TABLE 4.10-8
**Summary of Impacts to Water Resources**

| | **Project Alternatives** | | | | |
|---|---|---|---|---|---|
| **Impacts** | **Fenton Site** | **Mehlville Site** | **St. Louis City Site** | **St. Clair County Site** | **No Action** |
| Water-1: Impacts to wetlands | No/negligible impact | Minor to moderate, negative, long-term impact | No/negligible impact | No/negligible impact | No/negligible impact |
| Water-2: Impacts to surface water | No/negligible impact | Minor to moderate, negative, long-term impact | No/negligible impact | Minor to moderate, negative, long-term impact | No/negligible impact |
| Water-3: Impacts to floodplains | Minor to moderate, negative, long-term impact | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact |
| Water 4: Impacts to groundwater | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact |

# 4.11 Biological Resources

This subsection analyzes the potential impacts to biological resources within the ROI under the Proposed Action and No Action Alternative. The ROI for the biological resources impact analysis is generally the areas within and immediately adjacent to the site boundaries, though a broader view was taken as necessary; for example, regional populations were considered for impacts to species stability.

The analysis of impacts on biological resources was based on the review of available studies (including site-specific field surveys), readily available resource data, literature review, and ongoing regulatory discussions. The evaluation criteria for biological resources include disturbance, displacement, and mortality of plant and wildlife species, and destruction of suitable habitat. These measures are the basis for the evaluation criteria used to assess the potential impacts of the Proposed Action and the No Action Alternative.

Table 4.11-1 identifies the impact thresholds for biological resources.

TABLE 4.11-1
**Impact Thresholds for Biological Resources**

| Impact | Description |
|---|---|
| No/Negligible | No impacts to biological resources would be expected or impacts to biological resources would not be expected to be detectable or cause loss of resource integrity. |
| Minor to Moderate | Impacts to biological resources would result in little, if any, loss of resource integrity. Impacts would not appreciably alter resource conditions or cause long-term or permanent changes of population sizes or habitat use. While ESA-listed species may be present in the area, the likelihood of encountering a listed species during construction or operation is low. |
| Major | Impacts to biological resources would result in loss of integrity, and/or alteration of resource conditions. Impact would be severe and long lasting, and could result in loss of one or more regional populations. There would be direct and noticeable impacts to ESA-listed species. |
| Quality | Beneficial – would have a positive effect on the biological resources.<br>Negative – would have an adverse effect on the biological resources. |
| Duration | Short term – would occur only during the proposed construction period.<br>Long term – would continue beyond the proposed construction and operation period. |

## 4.11.1 Fenton Site

### 4.11.1.1 Vegetation

Any existing vegetation would be eliminated in constructing the Next NGA West Campus at the Fenton Site. Most of the site (approximately 159 acres) is currently covered with concrete or asphalt. The remaining 8 acres consist of maintained grass and sparse landscaped trees around the existing entrance. Because the parcel contains only a small area of landscaped vegetation that would be removed and the Next NGA West Campus will contain an equal or greater amount of landscaped vegetation, there would be minimal effect on regional vegetation population stability or species composition. Impacts to native vegetation due to mortality and loss of natural habitat from the Proposed Action would be **no/negligible (Biology-1a)**.

Areas converted to or re-covered with impervious surfaces would have minimal potential to contribute to the spread of exotic invasive plants on the property. Open spaces would be landscaped and maintained during operation, which would minimize the potential for the spread of exotic invasive species. Because weeds in landscaped areas would be managed and current weed species would be removed, there is a potential **minor to moderate, long-term benefit** to the natural environment **(Biology-1b)**.

#### 4.11.1.2 Wildlife

The project would be implemented in a vacant industrial area that consists of approximately 159 acres of impervious surface, and available wildlife habitat includes approximately 8 acres of landscaped area. The level of activity associated with construction would displace any present wildlife from the project area. However, species that are accustomed to human activity would be expected to return to suitable habitat around the periphery of the campus upon completion of construction. Construction noise could also result in disruptions and avoidance behaviors for wildlife in areas immediately adjacent to the site. These disruptions would be limited to periods and locations of loud noise at the site, and normal wildlife behavior would resume once construction stops.

Incidental mortality, or accidental killing, of wildlife and avian species could occur during construction activities. Additional incidental mortality could occur during operations, such as a bird colliding with the building. Because there would be little wildlife use of this area due to the limited habitat available, any impacts from incidental mortality would be individualized and would not measurably affect regional population size or stability. The potential for wildlife to be displaced or killed during construction or operation is considered to be **no/negligible impact (Biology-2a)**.

Following construction the Fenton Site would be landscaped with vegetation, including trees. The landscaped areas would provide potential habitat for common species of wildlife (for example, nesting area for birds); however, the proposed fence or wall around the perimeter of the site would likely be an impediment to wildlife corridors. There would be **no/negligible impact (Biology-2b)** to wildlife habitat in the area, due to the currently disturbed nature of the site.

There are no airports or military airfields in the immediate vicinity of the Fenton Site (see Section 3.14, *Airspace*); therefore, there would be no potential for development of this site to contribute Bird/Animal Aircraft Strike Hazard (BASH) issues at any airport or airfield. There would be **no/negligible impact** from potential BASH issues **(Biology-2c)**.

#### 4.11.1.3 Protected Species

<u>Federally Listed Species</u>

There is no potential impact to federally listed threatened or endangered species due to lack of suitable habitat onsite. In a letter dated November 13, 2015, the USFWS concurred that there would be no impacts to

federally listed threatened or endangered species at the Fenton Site. Therefore, there would be **no/negligible impact** to federally listed species **(Biology-3)**.

State-Listed Species

There is no potential impact to state-listed species due to lack of suitable habitat on the Fenton Site. Therefore, there would be **no/negligible impact** to state-listed species **(Biology-4**).

Migratory Birds

The project site and surrounding property are primarily industrial, and potential nesting habitat is limited to a small area of mature trees along the Meramec River corridor. Mitigation to reduce impacts to species listed under the Migratory Bird and Treaty Act (MBTA) could include work exclusion periods in the immediate area of active nests, biological inspections and monitoring, or compensatory mitigation. The bald eagle (*Haliaeetus leucocephalus*), which is protected under the MBTA and Bald and Golden Eagle Protection Act (BGEPA), has not been documented to occur on or near the Fenton Site. In the event that the bald eagle is found on or near the site during the project, the appropriate USFWS office would be contacted and the USFWS National Bald Eagle Management Guidelines would be implemented in coordination with USFWS.

Because of the nature of the site development, compensatory mitigation, if required, could not be implemented onsite. NGA is coordinating with the USFWS regarding the MBTA to establish appropriate mitigation **(Biology Coordination-1)**. The potential for disturbance or mortality of migratory birds during construction activities would be **no/negligible** impact **(Biology-5)** due to small amount of potential habitat.

#### 4.11.1.4 Summary of Impacts and Environmental Protection Measures

Table 4.11-2 summarizes the impacts to biology for the Fenton Site and the environmental protection measures.

TABLE 4.11-2
**Fenton Site Summary of Biological Impacts and Environmental Protection Measures**

| Impacts Category | Impact | Environmental Protection Measure |
|---|---|---|
| Biology-1a: Native vegetation community mortality and natural habitat loss | No/negligible impact | None |
| Biology-1b: Spread of noxious weeds | Minor to moderate, long-term benefit | None |
| Biology-2a: Displacement and incidental mortality of wildlife during construction and operation | No/negligible impact | None |
| Biology-2b: Loss of wildlife habitat | No/negligible impact | None |
| Biology-2c: Bird/Animal Aircraft Strike Hazard (BASH) | No/negligible impact | Not applicable |
| Biology-3: Mortality and disturbance to federally listed species | No/negligible impact | Not applicable |
| Biology-4: Mortality and disturbance to state-listed species | No/negligible impact | Not applicable |
| Biology-5: Mortality and disturbance to migratory birds | No/negligible impact | Biology Coordination-1: Coordinate with USFWS regarding the MBTA and BGEPA |

## 4.11.2 Mehlville Site

### 4.11.2.1 Vegetation

Approximately 70 acres of the 101-acre Mehlville Site consist of an office complex, while about 30 acres of the site, in the southern portion of the property, consist primarily of native vegetation. The forested corridor in this southern segment provides natural habitat and exists mostly outside of the construction corridor. Site preparation and construction would primarily affect previously developed terrain. Up to approximately 50 percent of the forested area (approximately 15 acres) would be removed from development of the Mehlville Site. Approximately half (approximately 6 acres) of the 12-acre stand of mature and large-diameter shagbark hickory, white oak, and northern red oak would be cleared (Figure 4.11-1). No tree clearing would occur after March 31 or prior to October 1 to avoid potential direct impacts to federally listed bat species and migratory birds (**Biology Mitigation-1**). Consequently, due to the small area relative to the potential habitat available in the region, impacts would not affect population stability or regional species composition. Direct and indirect impacts to native vegetation due to mortality and loss of natural habitat would be **minor to moderate, negative, and long term (Biology-1a).**

Areas converted to impervious surfaces and landscaped would have minimal potential to contribute to the spread of exotic invasive plants on the property and approximately 60 percent (approximately 18 acres) of the wooded area onsite would remain undisturbed. Because weeds in landscaped areas would be managed and existing weed species would be removed, there is a potential **minor to moderate, long-term benefit** to the natural environment **(Biology-1b)**.

Up to 15.9 acres of riparian forest could be impacted by development of the Mehlville Site. If the Mehlville Site is selected, NGA would propose to mitigate for lost riparian habitat by replacing riparian forest at a 3:1 ratio through an in-lieu fee program (**Biology Mitigation-2**). The Mehlville Site lacks sufficient space to replant the necessary acres of riparian forest. The mitigation for the impacts up to 15.9 acres of riparian forest will be combined with mitigation for unavoidable impacts to streams and wetlands (see Table 4.11-3) and accomplished through an in-lieu fee program. If the Mehlville site is selected, USACE will work with regulatory agencies to identify an appropriate in-lieu fee project that would focus on stream and riparian restoration using tree species that would provide potentially suitable roosting sites for bat species and migratory birds.

TABLE 4.11-3
**Mehlville Site Summary of Mitigation [a] for Unavoidable Impacts to Biological Resources**

| Biological Resource | Avoidance/ Minimization | Estimated Impacts | Proposed Ratio | Proposed Mitigation Acreage[b] |
|---|---|---|---|---|
| Riparian Forest Habitat | None | 15.9 acres | 3:1 | 47.7 acres |
| Wetland | None | 0.1 acre | 3:1 | 0.3 acre |
| Stormwater Retention Pond | None | 3.5 acres | 3:1 | 10.5 acres |

TABLE 4.11-3
**Mehlville Site Summary of Mitigation [a] for Unavoidable Impacts to Biological Resources**

| Biological Resource | Avoidance/ Minimization | Estimated Impacts | Proposed Ratio | Proposed Mitigation Acreage[b] |
|---|---|---|---|---|
| Stream Channel | 617 linear feet of intermittent stream<br>373 linear feet of ephemeral stream | 2,035 linear feet of intermittent stream | If selected, site will be assessed using the Missouri Stream Mitigation Method to determine appropriate mitigation. | |

Notes:

[a] Mitigation would be in the form of payment to an in-lieu fee program or through a mitigation bank.

[b] Proposed mitigations are estimates and subject to negotiation with the regulatory authority.

#### 4.11.2.2 Wildlife

The project would be implemented in a suburban commercial area, where high levels of human activity occur and available wildlife habitat is limited primarily to the forested corridor in the southern portion of the property. The level of activity associated with construction would displace wildlife from the project area, but species that are accustomed to human activity would likely return upon completion of construction. Construction noise could also result in disruptions and avoidance behaviors for wildlife in areas immediately adjacent to the site. These disruptions would be limited to periods and locations of loud noise at the site, and normal wildlife behavior would resume after construction. While the project would displace wildlife habitat within the construction footprint, any habitat fragmentation effects are expected to be minimal because most (approximately 13 acres) of the forest that would not be developed would remain as a contiguous block and because habitat in the surrounding area already is fragmented by roads, development, and utility corridors. No degradation of offsite habitat would occur because any impacts would be contained within the site. Moreover, approximately 60 percent (approximately 18 acres) of the forested habitat in the southern portion of the site has been identified by NGA for no development and would not be impacted.

No additional wildlife habitat mitigation beyond the mitigation described in Section 4.11.2.1 for vegetation would be implemented.

Incidental mortality of wildlife and avian species could occur during construction activities, but it is unlikely a species would become locally extinct as a result of construction activities. Additional incidental mortality such as a bird collision with the building could occur during operations. Impacts to wildlife would be **minor to moderate, negative, and long term (Biology-2a),** given the likelihood of wildlife in the forested corridor.

The impacts to current viable wildlife habitat (that is, the 30-acre forested corridor) located within the project boundary would be **minor to moderate, negative, and long term (Biology-2b)**.

There are no airports or military airfields in the immediate vicinity of the Mehlville Site (see Section 3.14, *Airspace*). Therefore, there would be **no/negligible impacts** from BASH issues at the Mehlville Site **(Biology-2c)**.

#### 4.11.2.3 Protected Species

Federally Listed Species

ESA-listed threatened and endangered species known to occur in the ROI are listed in Appendix 3.11B. Suitable habitat for these species, with the exception of the gray bat, Indiana bat, and northern long-eared bat, is not present on the property and the species would not occur. Potential impacts to listed bat species are described below.

No caves are on or near the property. Therefore, the bats would not hibernate on the property and there would be no impacts to bat hibernacula. Further, the gray bat would not roost on the property and there would be no impacts to gray bat maternity roosts.

The mature forest in the southern portion of the site provides potentially suitable summer and maternity roosting habitat for the Indiana bat or the northern long-eared bat. A survey for protected bat species was conducted in July 2015 to determine whether Indiana or northern long-eared bats roost on the Mehlville Site. No Indiana or northern long-eared bats were identified during the surveys (Copperhead Environmental Consulting, 2015).

Foraging by the gray bat, Indiana bat, and northern long-eared bat cannot be completely ruled out; therefore, direct impacts from loss of foraging habitat or alteration of habitat quality as a result of proposed construction activities could occur. However, any impacts would be limited to less than a 5-acre reduction in foraging habitat and extensive foraging habitat is available elsewhere in the region and within the typical foraging ranges of these three species (along the Meramec River and its tributaries, and in parks and public lands near these waters). Moreover, approximately 60 percent (approximately 18 acres) of the forested habitat in the southern part of the site, which provides the most suitable habitat for bats, has been identified by NGA and designated as an area for no development. Therefore, the highest quality foraging habitat for the species on the Mehlville Site would not be impacted. No tree clearing would occur after March 31 or prior to October 1 to avoid potential direct impacts to federally listed bat species (**Biology Mitigation-1**). If the Mehlville Site is selected, implementation of the Proposed Action may affect, but is unlikely to adversely affect, the three listed bat species. Impacts to foraging habitat are expected to be **minor to moderate, negative, and short-term (Biology-3)**.

NGA will coordinate with USFWS under Section 7 of the ESA to determine any additional required mitigation measures, beyond avoidance of the highest quality foraging habitat, should this site be selected. This coordination will be completed before the ROD is signed. Any mitigation measures determined to be necessary will be implemented should this site be selected **(Biology Coordination-2)**.

State-Listed Species

There is **no/negligible potential to impact** state-listed species due to lack of suitable habitat on the Mehlville Site (**Biology-4**).

Migratory Birds

The site and surrounding property use is primarily commercial and residential, and potential nesting habitat is limited to the mature forested area in the southern portion of the property. There is limited nesting or foraging habitat in a small area of mature trees in the southern portion of the property as well as a potential water source associated with the 3.5-acre stormwater retention pond. The Mehlville Site is located on the periphery of the Meramec River corridor in an area that already is fragmented with roads, development, and utility corridors. While the project would displace migratory bird habitat within the construction footprint, any habitat fragmentation effects are expected to be minimal and no degradation of surrounding habitat would occur because any impacts would be contained within the site. Moreover, approximately 60 percent (approximately 18 acres) of the forested habitat in the southern part of the site has been identified by NGA for no development and would not be impacted. No tree clearing would occur after March 31 or prior to October 1 to avoid potential direct impacts to migratory birds (**Biology Mitigation-1**).

Mitigation to reduce impacts to migratory birds could include work exclusion periods in the immediate area of active nests, biological inspections and monitoring, or compensatory mitigation. The bald eagle, which is protected under the MBTA and BGEPA, has not been documented to occur on or near the Mehlville Site. In the event that the bald eagle is found on or near the site during the project, the appropriate USFWS office would be contacted and the USFWS National Bald Eagle Management Guidelines would be implemented in coordination with USFWS.

Because of the nature of the site development, compensatory mitigation, if required, could not be implemented onsite. NGA is coordinating with USFWS to establish appropriate mitigation and will implement mitigation accordingly (**Biology Coordination-1)**. The potential for disturbance or mortality of migratory birds during construction activities would result in a **minor to moderate, negative, and short-term impact (Biology-5).**

#### 4.11.2.4 Summary of Impacts and Environmental Protection Measures

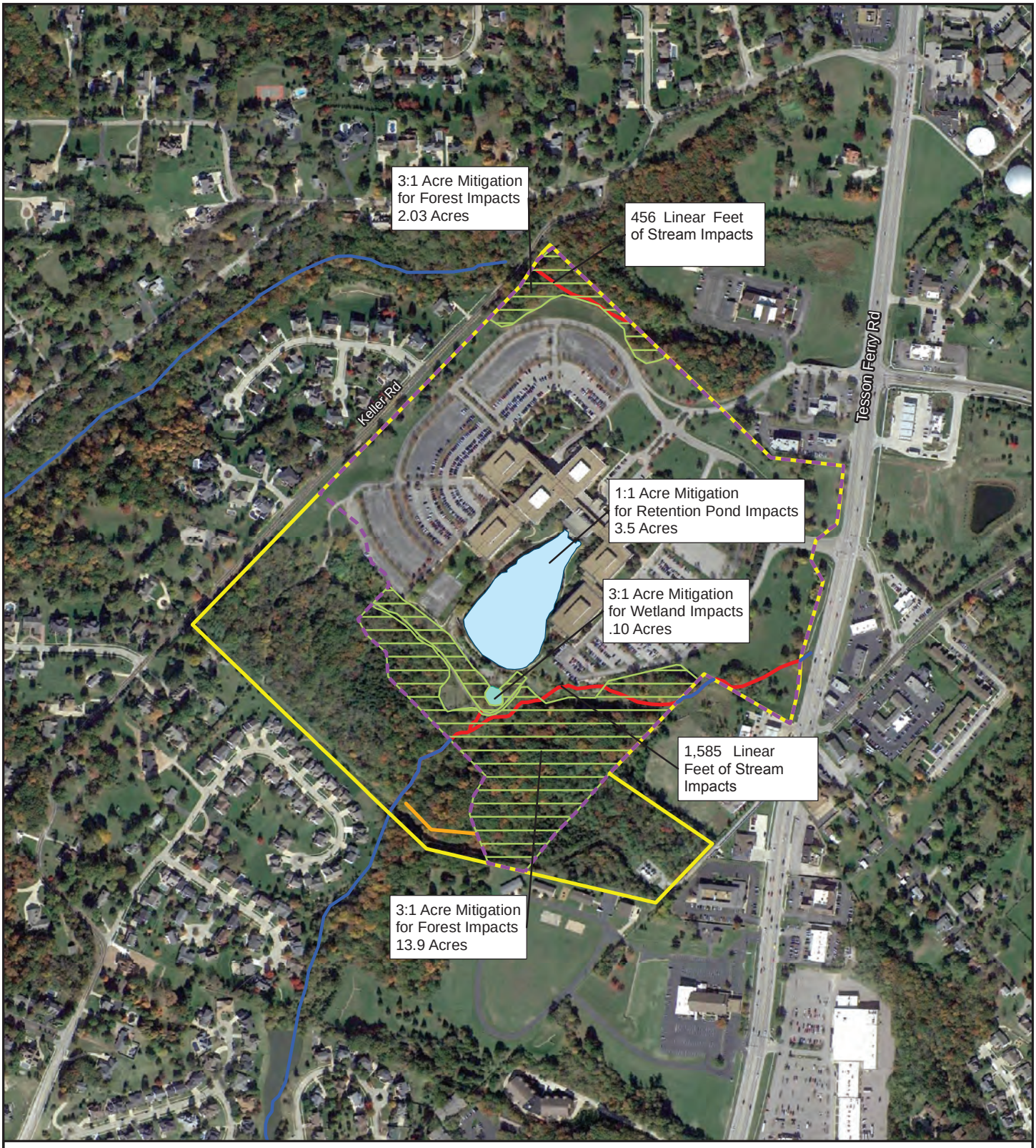
Table 4.11-4 summarizes the impacts to biology for the Mehlville Site and the environmental protection measures.

TABLE 4.11-4
**Mehlville Site Summary of Biological Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Biology-1a: Native vegetation community mortality and natural habitat loss | Minor to moderate, negative, long-term impact | Biology Mitigation-1: No tree clearing after March 31 and prior to October 1<br>Biology Mitigation-2: Provide payment to in-lieu fee program to offset impacts to riparian forest at a 3:1 ratio |
| Biology-1b: Spread of noxious weeds | Minor to moderate, long-term benefit | None |
| Biology-2a: Displacement and incidental mortality of wildlife during construction and operation | Minor to moderate, negative, long-term impact | None |

TABLE 4.11-4
**Mehlville Site Summary of Biological Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Biology-2b: Loss of wildlife habitat | Minor to moderate, negative, long-term impact | None |
| Biology-2c: Bird/Animal Aircraft Strike Hazard (BASH) | No/negligible impact | Not applicable |
| Biology-3: Mortality and disturbance to federally listed species | Minor to moderate, negative, short-term impact | Biology Mitigation-1: No tree clearing after March 31 and prior to October 1<br>Biology Coordination-2: Coordinate with USFWS under ESA for concurrence with a "not likely to adversely affect" determination and regarding any additional required mitigation |
| Biology-4: Mortality and disturbance to state-listed species | No/negligible impact | Not applicable |
| Biology-5: Mortality and disturbance to migratory birds | Minor to moderate, negative, short-term impact | Biology Mitigation-1: No tree clearing after March 31 and prior to October 1<br>Biology Coordination-1: Coordinate with USFWS under MBTA and BGEPA |




Proposed Site
Construction Limits
Intermittent Stream Inside Construction Limits
Intermittent Stream Outside Construction Limits
Ephemeral Stream Outside Construction Limits
Stormwater Pond
Wetland
Forest Disturbance

Data Source: NHD- National Hydrography Dataset
NHD Source: U.S. Geological Survey (USGS)
Image Source: Google Earth Pro, Modified by CH2MHill,
Image Flown 10/21/2014

N

0 0.1 0.2 0.3 Miles

Figure 4.11-1
Mehlville Site Biological Impacts
NGA EIS

## 4.11.3 St. Louis City Site (Preferred Alternative)

### 4.11.3.1 Vegetation

Prior to acquisition by the federal government, the site would be cleared of all vegetation. Because the lost vegetation would be from sparsely scattered trees within a residential area, there would be minimal loss of native species from the region. Direct and indirect impacts to native vegetation due to mortality and loss of natural habitat would be **no/negligible (Biology-1a)**.

Areas converted to impervious surfaces and landscaped area would have minimal potential to contribute to the spread of exotic invasive plants on the property. Therefore, there would be **a minor to moderate, long-term benefit** at the St. Louis City Site due to the reduction of noxious weeds **(Biology-1b)**.

### 4.11.3.2 Wildlife

The St. Louis City Site is located in an urban area where available wildlife habitat is minimal. Incidental mortality of wildlife and avian species could occur during construction activities, but no species would be expected to become locally extinct from construction activities. Additional incidental mortality could occur during operations, such as a bird colliding with the building. However, any impacts from incidental mortality would be individualized and would not measurably affect regional population size or stability. Construction noise could also result in disruptions and avoidance behaviors for wildlife in areas immediately adjacent to the site. These disruptions would be limited to periods and locations of loud noise at the site, and normal wildlife behavior would resume after construction.

Impacts to wildlife during construction and operation at the St. Louis City Site would be **no/negligible** (**Biology-2a**). Impacts due to loss of wildlife habitat would also be **no/negligible (Biology-2b)** due to the low quantity and quality of existing habitat.

There would be **no/negligible impact** for potential BASH issues **(Biology-2c)** because there are no airfields in the immediate vicinity of the site (see Section 3.14, *Airspace*).

### 4.11.3.3 Protected Species

<u>Federally Listed Species</u>

There is no potential impact to federally listed threatened or endangered species due to lack of suitable habitat onsite. In a letter dated November 13, 2015, the USFWS concurred that there would be no impacts to federally listed threatened or endangered species at the St. Louis City Site. Therefore, there would be **no/negligible impact** to federally listed species (**Biology-3**).

<u>State-Listed Species</u>

There is no potential to impact state-listed species due to lack of habitat on the site. Therefore, there would be **no/negligible impacts** to state-listed species. (**Biology-4**).

Migratory Birds

Limited low-quality nesting or foraging habitat is available in the trees currently located on the St. Louis City Site. No tree clearing would occur after March 31 or prior to October 1 to avoid potential direct impacts to federally listed bat species and migratory birds (**Biology Mitigation-1**).Mitigation to reduce impacts could include work exclusion periods in the immediate area of active nests, biological inspections and monitoring, or compensatory mitigation. The bald eagle, which is protected under the MBTA and BGEPA, has not been documented to occur on or near the St. Louis City Site. In the event that the bald eagle is found on or near the site during the project, the appropriate USFWS office would be contacted and the USFWS National Bald Eagle Management Guidelines would be implemented in coordination with USFWS.

Because of the nature of the site development, compensatory mitigation, if required, could not be implemented onsite. NGA is coordinating with USFWS to establish appropriate mitigation and will implement mitigation accordingly **(Biology Coordination-1)**. The potential for disturbance or mortality of migratory birds during construction activities would result in a **minor to moderate, negative, and short-term impact (Biology-5).**

#### 4.11.3.4 Summary of Impacts and Environmental Protection Measures

Table 4.11-5 summarizes the impacts to biology for the St. Louis City Site and the environmental protection measures.

TABLE 4.11-5
**St. Louis City Site Summary of Biological Impacts and Environmental Protection Measures**

| Impacts Category | Impact | Environmental Protection Measure |
|---|---|---|
| Biology-1a: Native vegetation community mortality and natural habitat loss | No/negligible impact | None |
| Biology-1b: Spread of noxious weeds | Minor to moderate, long-term benefit | None |
| Biology-2a: Displacement and incidental mortality of wildlife during construction and operation | No/negligible impact | None |
| Biology-2b: Loss of wildlife habitat | No/negligible impact | None |
| Biology-2c: Bird/Animal Aircraft Strike Hazard (BASH) | No/negligible impact | Not applicable |
| Biology-3: Mortality and disturbance to federally listed species | No/negligible impact | Not applicable |
| Biology-4: Mortality and disturbance to state-listed species | No/negligible impact | Not applicable |
| Biology-5: Mortality and disturbance to migratory birds | Minor to moderate, negative, short-term impact | Biology Mitigation-1: No tree clearing after March 31 and prior to October 1<br>Biology Coordination-1: Coordinate with USFWS under MBTA and BGEPA |

## 4.11.4 St. Clair County Site

### 4.11.4.1 Vegetation

Proposed construction activities would result in clearing approximately 157 of the site's 182 acres. Most (approximately 135 acres) of the vegetation affected is active agricultural land. Approximately 50 percent of the forested land would be cleared, with approximately 12.01 acres of forested land preserved along the riparian corridor of the perennial stream (Figure 4.11-2). No tree clearing would occur after March 31 or prior to October 1 to avoid potential direct impacts to federally listed bat species and migratory birds (**Biology Mitigation-1**). There would be little loss of native species from the region. Direct and indirect impacts to native vegetation due to mortality and loss of natural habitat would be **minor to moderate, negative, and long term (Biology-1a)**.

Areas converted to impervious surfaces and maintained landscaped areas would have minimal potential to contribute to the spread of exotic invasive plants on the property. Therefore, there would be a **minor to moderate, long-term benefit** due to the reduction of noxious weeds to the St. Clair County Site **(Biology-1b)**.

Selective harvest of tree species was completed in early 2015 on a portion of the St. Clair County Site. While this tree harvest was not part of the Proposed Action, USFWS is requiring mitigation for the trees removed if the St. Clair Site is chosen. St. Clair County has agreed to mitigate the pre-clearing impacts at a 1:1 ratio (Table 4.11-6). This mitigation would be accomplished within Engelmann Park outside the Proposed Action footprint, with up to 12.01 acres replanted with hardwood trees native to the area on 30-foot centers (50 trees per acre).

Up to 0.98 acre of riparian forest could be impacted by development of the St. Clair County Site. If the St. Clair County Site is selected, NGA would propose to mitigate for lost riparian habitat by replacing riparian forest at a 3:1 ratio (Table 4.11-6) (**Biology Mitigation-2**). Mitigation would involve replanting up to 2.94 acres that is now in agricultural production with native trees, with a focus on tree species that would provide potentially suitable roosting sites for bat species. This planting would be contiguous with the replanting done for the St. Clair County selective harvest.

Up to 8.24 acres of non-riparian forested habitat could be impacted by development of the St. Clair County Site. If the St. Clair County Site is selected, NGA would propose to mitigate for lost non-riparian forested habitat at a 2:1 ratio (Table 4.11-6) (**Biology Mitigation-1**). Mitigation would involve replanting up to 16.48 acres that is now in agricultural production with native trees, with a focus on tree species that would provide potentially suitable roosting sites for bat species. This planting would be contiguous with the replanting done for the St. Clair County selective harvest.

TABLE 4.11-6
**St. Clair County Site Summary of Mitigation [a] for Unavoidable Impacts to Water Resources**

| Water Resource | Avoidance/ Minimization | Estimated Impacts | Proposed Ratio | Proposed Mitigation Acreage[b] |
|---|---|---|---|---|
| Riparian Habitat affected by selective tree harvest (to be performed by St. Clair County) | None | 12.01 acres | 1:1 | 12.01 acres |
| Riparian Habitat affected by Proposed Action | 15.5 acres | 0.98 acre | 3:1 | 2.94 acres |
| Forested Habitat | None | 8.24 acres to be mitigated | 2:1 | 16.48 acres |
| Wetland | 2.01 | None | N/A | None |
| Stream Channel | 1,898 linear feet of perennial stream<br>250 linear feet of intermittent stream | 194 linear feet of perennial stream | If selected, any required stream mitigation would be determined using the Illinois Stream Mitigation Method [a] | |

Notes:

[a] Stream mitigation would be in the form of payment to an in-lieu fee program or through a mitigation bank.

[b] Proposed mitigations are estimates and subject to negotiation with the regulatory authority.

### 4.11.4.2 Wildlife

The St. Clair County Site consists predominantly of agricultural land (approximately 145 acres) with approximately 32 acres of forested land. An interstate highway, airport, and Scott AFB also surround the site. The agricultural land provides relatively low-quality habitat for wildlife. The forested land, including the riparian corridor of the perennial stream in the western part of the site, an onsite pond, and a forested wetland, provides relatively high-quality habitat for wildlife. While the project would displace habitat within the construction footprint, the habitat fragmentation effects are expected to be minimal because disturbance of the riparian corridor would be limited to a single road crossing and 15.5 acres of riparian corridor will remain. The road crossing would likely take the form of either a bridge or culvert. No degradation of surrounding habitat would occur because any impacts would be contained within the site. Moreover, the riparian corridor of the perennial stream has been identified by NGA for no development beyond the single road crossing and, therefore, impacts would not prevent wildlife use of the corridor. Habitat impacts would be mostly limited to agricultural land that provides relatively low-quality habitat for wildlife.

No additional wildlife habitat mitigation beyond the mitigation described in Section 4.11.4.1 for vegetation would be implemented.

Incidental mortality of wildlife and avian species could occur during construction activities, but no species would be expected to become locally extinct from construction activities. Additional incidental mortality could occur during operations, such as a bird colliding with the building. However, any impacts from incidental mortality would be individualized and would not measurably affect regional population size or stability. Construction noise could also result in disruptions and avoidance behaviors for wildlife in areas

immediately adjacent to the site. These disruptions would be limited to periods and locations of loud noise at the site, and normal wildlife behavior would resume after construction.

Impacts to wildlife at the St. Clair County Site would be **minor to moderate, negative, and long term (Biology-2a)** given the likelihood of wildlife to be present at the site. The impacts due to the loss of habitat would be **minor to moderate, negative, and long term (Biology-2b)** due to the small area of the habitat and the presence of other nearby wildlife habitat.

Reduction in agricultural land could reduce potential foraging and resting habitat for birds. Because the habitat would be reduced, the property would be less attractive to bird species managed under the BASH program. Elimination of active agriculture may makes the area less attractive to white-tail deer, which also would lower the potential for BASH issues. The Proposed Action could result in a **minor to moderate, long-term benefit (Biology-2c)** due to the reduced likelihood of BASH incidents. NGA will coordinate with the Federal Aviation Administration (FAA) and Scott AFB to ensure that campus design features do not attract birds or other wildlife to the site **(Biology Coordination-3)**.

#### 4.11.4.3 Protected Species

Federally Listed Species

ESA-listed threatened and endangered species known to occur in the ROI are listed in Appendix 3.11B. Suitable habitat for these species is not present on the property, with the exception of the gray bat, Indiana bat, and northern long-eared bat. Potential impacts to listed bat species are described below.

No caves are on or near the property. The bats would not hibernate on the property and there would be no impacts to bat hibernacula or bats within hibernacula. Because of the lack of caves, the gray bat would not roost on the property and there would be no impacts to gray bat maternity roosts. The riparian area and forested wetland on the site do not provide potentially suitable summer and maternity roosting habitat for the Indiana bat or the northern long-eared bat due to the lack of suitable trees and the dense understory of amur honeysuckle. These species would not roost on the property. Therefore, there would be no impacts to Indiana bat or northern long-eared bat maternity roosts.

Potential foraging habitat for these three species occurs along the riparian area and the forested wetland onsite. Because foraging by the gray bat, Indiana bat, and northern long-eared bat cannot be ruled out, direct impacts from loss of habitat or alteration of habitat quality as a result of proposed construction activities could occur. However, the riparian corridor of the perennial stream that provides suitable habitat for bats has been identified by NGA and designated as an area for no development other than a single road crossing. Complete avoidance of the riparian corridor is not possible, as it would be necessary to cross the stream to provide connectivity for the full site. However, the area with the highest habitat quality for the three listed bat species would not be impacted to any substantial degree and bat use of the riparian corridor would continue. No tree clearing would occur after March 31 or prior to October 1 to avoid potential direct impacts to federally listed

bat species (**Biology Mitigation-1**). If the St. Clair County Site is selected, implementation of the Proposed Action may affect, but is unlikely to adversely affect, the three listed bat species. Because any impacts would be limited to a minor reduction in quality or quantity of foraging habitat and because extensive foraging habitat is available elsewhere in the region and within the typical foraging ranges of these three species (along Silver Creek), impacts to foraging habitat would be **minor to moderate, negative, and long term (Biology-3)**.

Because impacts to the three species of bats would be limited to minor impacts to potential foraging habitat and no impacts to roosting habitat or hibernacula would occur, no mitigation is expected. However, NGA will coordinate with USFWS under Section 7 of the ESA to determine any additional required mitigation measures, beyond avoidance of impacts to most of the riparian corridor, should this site be selected. This coordination will be completed before the ROD is signed. **(Biology Coordination-2)**.

State-Listed Species

Two state-listed species, the loggerhead shrike and the barn owl, could use the St. Clair County Site and are discussed below. USACE will coordinate with IDNR regarding potential impacts to these species **(Biology Coordination-4)**.

Wooded portions of the property could provide potential nesting habitat for the loggerhead shrike and the species could forage over the agricultural fields. Because use of the property by the loggerhead shrike cannot be ruled out, indirect impacts from habitat modification as a result of proposed construction activities could occur. Development of the property could impact potential foraging habitat. Incidental mortality could also occur if construction-related disturbance would result in nest abandonment. Impacts to the loggerhead shrike from impacts to foraging and nesting habitat, and potential incidental mortality would be a **minor to moderate, negative, and long term (Biology-4)** because these impacts would have minimal effects on regional populations.

Limited potential nesting habitat for barn owls occurs within the forested area of the property and the agricultural areas on the property provide potential foraging habitat. Because use of the property by the barn owl cannot be ruled out, indirect impacts from habitat modification as a result of proposed construction activities could occur. Incidental mortality could also occur if construction-related disturbance would result in nest abandonment. Impacts to barn owl from impacts to foraging and nesting habitat, and potential incidental mortality if clearing during nesting season would be **minor to moderate, negative, and long term (Biology-4)** because the effects would be minimal on regional populations.

Migratory Birds

The St. Clair County Site consists predominantly of agricultural land (approximately 145 acres) with approximately 32 acres of forested land. The site is also surrounded by an interstate highway, airport, and Scott AFB. Good-quality habitat for migratory birds on the St. Clair County Site is largely limited to the

forested area, including the riparian corridor of the perennial stream. While the project would displace habitat within the construction footprint, the habitat fragmentation effects are expected to be minimal because the riparian corridor would only be disturbed by a single road crossing. No degradation of surrounding habitat would occur because any impacts would be contained within the site. Moreover, the riparian corridor of the perennial stream in the western part of the site has been identified by NGA for no development beyond a single road crossing and would not be substantially impacted. No tree clearing would occur after March 31 or prior to October 1 to avoid potential direct impacts to migratory birds (**Biology Mitigation-1**).

Mitigation to reduce impacts could include work exclusion periods in the immediate area of active nests, biological inspections and monitoring, or compensatory mitigation. The bald eagle (*Haliaeetus leucocephalus*), which is protected under the MBTA and BGEPA, has not been documented to occur on or near the St. Clair County Site. In the event that the bald eagle is found on or near the site during the project, the appropriate USFWS office would be contacted and the USFWS National Bald Eagle Management Guidelines would be implemented in coordination with USFWS.

NGA is coordinating with USFWS to establish appropriate mitigation and will implement mitigation accordingly **(Biology Coordination-1)**. The potential for disturbance or mortality of migratory birds during construction activities would result in a **minor to moderate, negative, and short-term impact (Biology-5).**

#### 4.11.4.4 Summary of Impacts and Environmental Protection Measures

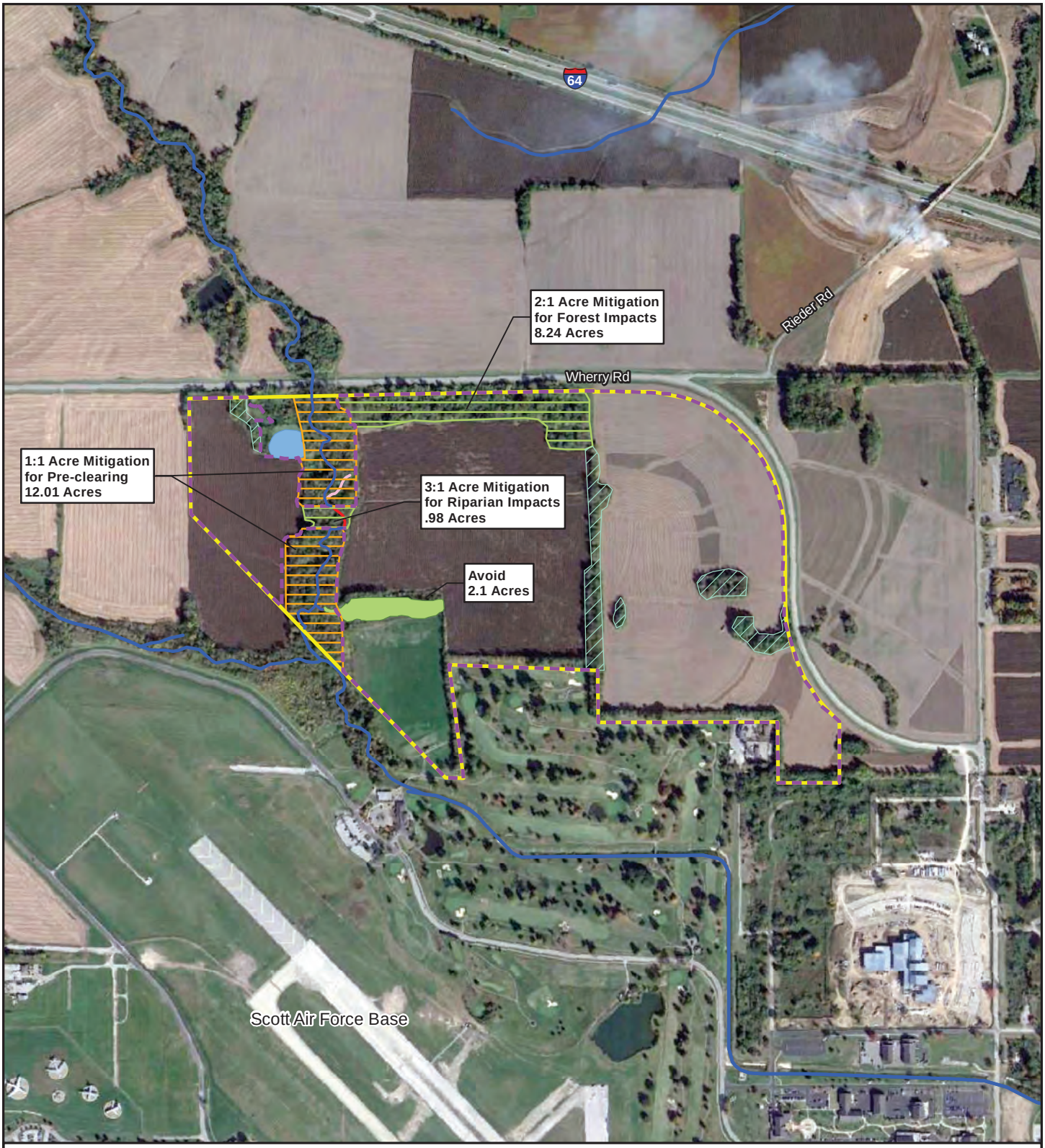
Table 4.11-7 summarizes impacts to biology for the St. Clair County Site and the environmental protection measures.

TABLE 4.11-7
**St. Clair County Site Summary of Biological Impacts and Environmental Protection Measures**

| Impacts | Impact | Environmental Protection Measures |
|---|---|---|
| Biology-1a: Native vegetation community mortality and natural habitat loss | Minor to moderate, negative, long-term impact | Biology Mitigation-1: No tree clearing after March 31 and prior to October 1<br>Biology Mitigation-2: Replace cleared riparian forest at a 3:1 ratio, cleared non-riparian forest at 2:1 ratio, and the area cleared during St, Clair County selective harvest at 1:1 ratio |
| Biology-1b: Spread of noxious weeds | Minor to moderate, long-term benefit | None |
| Biology-2a: Displacement and incidental mortality of wildlife during construction and operation | Minor to moderate, negative, long-term impact | None |
| Biology-2b: Loss of wildlife habitat | Minor to moderate, negative, long-term impact | None |
| Biology-2c: Bird/Animal Aircraft Strike Hazard (BASH) | Minor to moderate, long-term benefit | Biology Coordination-3: NGA will coordinate with the FAA and Scott AFB regarding campus design features |

TABLE 4.11-7
**St. Clair County Site Summary of Biological Impacts and Environmental Protection Measures**

| Impacts | Impact | Environmental Protection Measures |
|---|---|---|
| Biology-3: Mortality and disturbance to federally listed species | Minor to moderate, negative, and long-term impact | Biology Mitigation-1: No tree clearing after March 31 and prior to October 1<br>Biology Coordination-2: Coordinate with USFWS under ESA for concurrence with a "not likely to adversely affect" determination and regarding any additional required mitigation measures |
| Biology-4: Mortality and disturbance to state-listed species | Minor to moderate, negative, and long-term impact | Biology Coordination-4: USACE will coordinate with IDNR regarding potential impacts to state-listed species |
| Biology-5: Mortality and disturbance to migratory birds | Minor to moderate, negative, and short-term impact | Biology Mitigation-1: No tree clearing after March 31 and prior to October 1<br>Biology Coordination-1: Coordinate with USFWS to establish appropriate mitigation under the MBTA and BGEPA |




Proposed Site
Construction Limits
Perennial Stream Inside Construction Limits
Perennial Stream Outside Construction Limits
Intermittent Stream Outside Construction Limits
Pond
Wetland
Mitigated Forest Disturbance
Non Mitigated Forest Disturbance
Pre-clearing Forest Disturbance

NHD- National Hydrography Dataset
NHD Source: U.S. Geological Survey (USGS)
Image Source: Google Earth Pro, Modified by CH2MHill, Image Flown 10/21/2014

N

0 0.25 0.5 Miles

Figure 4.11-2
St. Clair County Site
Biological Impacts
NGA EIS

### 4.11.5 No Action Alternative

The No Action Alternative is the continued use of the South 2nd Street facility. Under the No Action Alternative, current activities would continue at each of the site alternatives and no construction or associated land clearing activities would be expected to occur. Because there would be no change from current conditions, **no**/**negligible** impacts to biological resources would result **(Biology 1 through 5).**

### 4.11.6 Summary of Impacts and Environmental Protection Measures

The following is a summary of the environmental protection measures related to the Proposed Action.

**Biology Mitigation-1:** No tree clearing would occur after March 31 and prior to October 1.

**Biology Mitigation-2:** Replace cleared forest at the following ratios: riparian forest at a 3:1 ratio, non-riparian forest at 2:1 ratio, and selective harvest forest at 1:1 ratio.

**Biology Coordination-1:** NGA will coordinate with USFWS to establish appropriate mitigation for migratory birds.

**Biology Coordination-2:** NGA will coordinate with USFWS under Section 7 of the ESA to determine appropriate mitigation for ESA-listed species.

**Biology Coordination-3:** NGA will coordinate with the FAA and Scott AFB to ensure that campus design features do not attract birds or other wildlife to the site.

**Biology Coordination-4:** USACE will coordinate with IDNR regarding potential impacts to state-listed species.

Table 4.11-8 summarizes individual and overall impacts for all the project alternatives.

TABLE 4.11-8
**Summary of Impacts to Biology**

| | Project Alternatives | | | | |
|---|---|---|---|---|---|
| **Impacts** | **Fenton Site** | **Mehlville Site** | **St. Louis City Site** | **St. Clair County Site** | **No Action** |
| Biology-1a: Native vegetation community mortality and natural habitat loss | No/negligible impact | Minor to moderate, negative, long-term impact | No/negligible impact | Minor to moderate, negative, long-term impact | No/negligible impact |
| Biology-1b: Spread of noxious weeds | Minor to moderate, long-term benefit | Minor to moderate, long-term benefit | Minor to moderate, long-term benefit | Minor to moderate, long-term benefit | No/negligible impact |
| Biology-2a: Displacement and incidental mortality of wildlife during construction | No/negligible impact | Minor to moderate, negative, long-term impact | No/negligible impact | Minor to moderate, negative, long-term impact | No/negligible impact |
| Biology-2b: Loss of wildlife habitat | No/negligible impact | Minor to moderate, negative, long-term impact | No/negligible impact | Minor to moderate, negative, long-term impact | No/negligible impact |
| Biology-2c: Bird/Animal Aircraft Strike Hazard (BASH) | No/negligible impact | No/negligible impact | No/negligible impact | Minor to moderate, long-term benefit | No/negligible impact |

TABLE 4.11-8
**Summary of Impacts to Biology**

| | Project Alternatives | | | | |
|---|---|---|---|---|---|
| **Impacts** | **Fenton Site** | **Mehlville Site** | **St. Louis City Site** | **St. Clair County Site** | **No Action** |
| Biology-3: Mortality and disturbance to federally listed species | No/negligible impact | Minor to moderate, negative, short-term impact | No/negligible impact | Minor to moderate, negative, long-term impact | No/negligible impact |
| Biology-4: Mortality and disturbance to state-listed species | No/negligible impact | No/negligible impact | No/negligible impact | Minor to moderate, negative, long-term impact | No/negligible impact |
| Biology-5: Mortality and disturbance to migratory birds | No/negligible impact | Minor to moderate, negative, short-term impact | Minor to moderate, negative, short-term impact | Minor to moderate, negative, short-term impact | No/negligible impact |

# 4.12 Geological, Soil, and Paleontological Resources

This subsection analyzes the potential impacts to surface soil, subsurface geology, and paleontological resources within the ROI under the No Action Alternative or as a result of implementing the Proposed Action. The ROI for soil, subsurface geology, and paleontological resources is generally the area within the project boundary; however, when necessary, a broader overview of the region is considered.

The analysis of impacts on soil, subsurface geology, and paleontological resources was based on review of web-based resource data, site observations, and professional opinion.

Table 4.12-1 identifies the impact thresholds for soil, subsurface geology, and paleontological resources.

TABLE 4.12-1
**Impact Thresholds for Soil, Geology, and Paleontological Resources**

| Impact | Description |
|---|---|
| No/Negligible | Impacts to soil, subsurface geology, and/or paleontological resources would not occur or would be at the lowest level of detection. |
| Minor to Moderate | Impacts to soil, subsurface geology, and/or paleontological resources would be detectable to readily apparent. There would be little to moderate loss of resource integrity and/or alteration of resource conditions. |
| Major | There would be extensive and long-term loss of resource integrity and/or alteration of resource conditions. |
| Quality | Beneficial – would have a positive effect on soil, subsurface geology, and/or paleontological resources.<br>Negative – would have an adverse effect on soil, subsurface geology, and/or paleontological resources. |
| Type | Short term – would occur only during the proposed construction period.<br>Long term – would continue beyond the proposed construction period. |

## 4.12.1 Fenton Site

### 4.12.1.1 Surface Soil

The Fenton Site is entirely developed and covered in concrete and asphalt, except for a small undeveloped area in the southwestern portion of the site. Exposed surface soil within the footprints of the construction area would be disturbed via excavation and/or application of new pavement/concrete. All surface soil at the Fenton Site have experienced past disturbance. NGA will develop and implement a stormwater pollution prevention plan (SWPPP) Appropriate BMPs such as silt fencing will be implemented during construction to minimize potential soil erosion and sedimentation **(Geology BMP-1)**.

NGA operations would have minimal effect on surface soil because NGA operations would occur primarily indoors and soil-disturbing activities would result primarily from landscaping activities on already-disturbed soil.

With implementation of **Geology BMP-1**, the Proposed Action would have **no/negligible impact** on surface soil **(Geology-1)**.

### 4.12.1.2 Subsurface Geology

Excavation and construction of the foundations of the Next NGA West Campus at the Fenton Site would involve contact with the layer of disturbed sediment/fill that underlies the entire site, and would potentially contact undisturbed geological material beneath this disturbed layer. However, site development would have

minimal effect on geological materials considered to be unique or currently economically important in the area, due to the low likelihood of these occurrence.

Based on the analysis conducted, the Proposed Action would have **no/negligible impact** on subsurface geology **(Geology-2)**.

#### 4.12.1.3 Paleontology

Database searches conducted for this EIS did not identify any recorded paleontological resources discoveries within the Fenton Site. The Fenton Site is mostly developed and underlain by a layer of disturbed sediment and fill material of unknown thickness. This disturbed layer is underlain by natural geological material that has low to unknown paleontological sensitivity. Any unknown paleontological resources on the Fenton Site would have a greater likelihood of occurring in this subsurface layer and a lesser likelihood of occurring on the developed ground surface or the underlying disturbed sediment/fill layer. If any paleontological resources are discovered during site development, NGA will follow all federal procedures pertaining to the management of the discovered resources in accordance with the Paleontological Resources Preservation Act of 2009 **(Geology BMP-2)**.

With implementation of **Geology BMP-2**, the Proposed Action would have **no/negligible impact** on paleontological resources **(Geology-3)**.

The geological and paleontological resources impacts and associated environmental protection measures for the Fenton Site are summarized in Table 4.12-2.

TABLE 4.12.2
**Fenton Site Summary of Geological and Paleontological Resources Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Geology-1: Impacts to surface soil | No/negligible impact | Geology BMP-1: Implement BMPs during construction to avoid and minimize potential soil erosion and sedimentation |
| Geology-2: Impacts to subsurface geology | No/negligible impact | Not applicable |
| Geology-3: Impacts to paleontological resources | No/negligible impact | Geology BMP-2: Follow all federal procedures pertaining to the management of any paleontological resources discovered during construction |

### 4.12.2 Mehlville Site

#### 4.12.2.1 Surface Soil

Exposed surface soil within the footprints of the proposed NGA infrastructure would be disturbed via excavation and/or application of new pavement/concrete. Approximately 65 percent of the land surface at the Mehlville Site has experienced past disturbance. Appropriate BMPs such as silt fencing will be implemented during construction to minimize potential soil erosion and sedimentation **(Geology BMP-1)**.

NGA operations would have minimal effect on surface soil because NGA operations would occur primarily indoors and soil-disturbing activities would result primarily from landscaping activities on already-disturbed soil.

Based on the analysis conducted and with the implementation of **Geology BMP-1**, the Proposed Action would have **no/negligible impact** on surface soil.

#### 4.12.2.2 Subsurface Geology

Excavation and construction of the foundations of the Next NGA West Campus at the Mehlville Site would involve contact with subsurface materials, which include disturbed sediment/fill material that underlies approximately 65 percent of the site, and natural geological material that underlies this disturbed layer and the undeveloped portions of the site. Site development would have minimal effect on geological materials considered to be unique or currently economically important in the area, based on the low likelihood of their occurrence. Therefore, the Proposed Action would have **no/negligible impact** on subsurface geology **(Geology-2)**.

#### 4.12.2.3 Paleontology

Database searches did not identify any recorded paleontological resources discoveries within the Mehlville Site. Approximately 65 percent of the Mehlville Site is developed and underlain by a layer of disturbed sediment and fill material of unknown thickness. This disturbed layer as well as the undeveloped portions of the site are underlain by natural geological material that has low to unknown paleontological sensitivity. Any unknown paleontological resources on the Mehlville Site would have a greater likelihood of occurring in this subsurface layer and a lesser likelihood of occurring on the developed ground surface or the underlying disturbed sediment/fill layer. If any paleontological resources are discovered during site development, NGA will follow all federal procedures pertaining to the management of the discovered resources in accordance with the Paleontological Resources Preservation Act of 2009 **(Geology BMP-2)**.

With implementation of **Geology BMP-2**, the Proposed Action would have **no/negligible impact** on paleontological resources **(Geology-3)**.

The geological and paleontological resources impacts and associated environmental protection measures for the Mehlville Site are summarized in Table 4.12-3.

TABLE 4.12-3
**Mehlville Site Summary of Geological and Paleontological Resources Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Geology-1: Impacts to surface soil | No/negligible impact | Geology BMP-1: Implement BMPs during construction to avoid and minimize potential soil erosion and sedimentation |
| Geology-2: Impacts to subsurface geology | No/negligible impact | Not applicable |
| Geology-3: Impacts to paleontological resources | No/negligible impact | Geology BMP-2: Follow all federal procedures pertaining to the management of any paleontological resources discovered during construction |

## 4.12.3 St. Louis City Site (Preferred Alternative)

### 4.12.3.1 Surface Soil

Exposed surface soil within the footprints of the proposed NGA infrastructure would be disturbed via excavation and/or application of new pavement/concrete. Most surface soil at the St. Louis City Site have experienced past disturbance. Appropriate BMPs such as silt fencing will be implemented during construction to minimize potential soil erosion and sedimentation **(Geology BMP-1)**.

NGA operations would have minimal effect on surface soil because NGA operations would occur primarily indoors and soil-disturbing activities would result primarily from landscaping activities on already-disturbed soil.

With the implementation of **Geology BMP-1**, the Proposed Action would have **no/negligible impact** on surface soil **(Geology-1)**.

### 4.12.3.2 Subsurface Geology

Excavation and construction of the foundations of the Next NGA West Campus at the St. Louis City Site would involve contact with subsurface materials, which include disturbed sediment/fill material that underlies most of the site, and natural geological material that underlies this disturbed layer and the undeveloped portions of the site. Site development would have minimal effect on geological materials considered to be unique or currently economically important in the area.

Based on the analysis conducted, the Proposed Action would have **no/negligible impact** on subsurface geology **(Geology-2)**.

### 4.12.3.3 Paleontology

Database searches identified no recorded paleontological resources discoveries within the St. Louis City Site. The St. Louis City Site is mostly developed and underlain by a layer of disturbed sediment and fill material of unknown thickness. This disturbed layer is underlain by natural geological material that has low to unknown paleontological sensitivity. Any unknown paleontological resources on the St. Louis City Site would have a greater likelihood of occurring in this subsurface layer and a lesser likelihood of occurring on the developed ground surface or the underlying disturbed sediment/fill layer. If any paleontological resources are discovered during site development, NGA will follow all federal procedures pertaining to the management of the discovered resources in accordance with the Paleontological Resources Preservation Act of 2009 **(Geology BMP-2)**.

Based on the analysis conducted and with implementation of **Geology BMP-2**, the Proposed Action would have **no/negligible impact** on paleontological resources **(Geology-3)**.

The geological and paleontological resources impacts and associated environmental protection measures for the St. Louis City Site are summarized in Table 4.12-4.

TABLE 4.12-4
**St. Louis City Site Summary of Geological and Paleontological Resources Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Geology-1: Impacts to surface soil | No/negligible impact | Geology BMP-1: Implement BMPs during construction to avoid and minimize potential soil erosion and sedimentation |
| Geology-2: Impacts to subsurface geology | No/negligible impact | Not applicable |
| Geology-3: Impacts to paleontological resources | No/negligible impact | Geology BMP-2: Follow all federal procedures pertaining to the management of any paleontological resources discovered during construction |

## 4.12.4 St. Clair County Site

### 4.12.4.1 Surface Soil

Exposed surface soil within the footprints of the proposed NGA infrastructure would be disturbed via excavation and application of new pavement/concrete. Most surface soil at the St. Clair County Site have experienced past disturbance from agricultural practices. Appropriate BMPs such as silt fencing will be implemented during construction to minimize potential soil erosion and sedimentation **(Geology BMP-1)**. The potential impacts that the proposed construction would have on prime, unique, and important farmlands at the St. Clair County Site are analyzed in Section 4.2.4.1.

NGA operations would have minimal effect on surface soil because NGA operations would occur primarily indoors and soil disturbing activities would result primarily from landscaping activities on already-disturbed soil.

With the implementation of **Geology BMP-1**, the Proposed Action would have **no/negligible impact** on surface soil **(Geology-1)**.

### 4.12.4.2 Subsurface Geology

Excavation and construction of the foundations of the Next NGA West Campus at the St. Clair County Site would involve contact with subsurface materials, which include geological material that underlies the disturbed soil layer. Site development would have minimal effect on geological materials considered to be unique or economically important due to the low likelihood of their occurrence. However, St. Clair County would obtain any mineral rights should the St. Clair County Site be selected and any costs associated with acquiring them would be absorbed by the County.

Therefore, the Proposed Action would have **no/negligible impact** on subsurface geology **(Geology-2)**.

### 4.12.4.3 Paleontology

Database searches conducted for this EIS did not identify any recorded paleontological resources discoveries within the St. Clair County Site. The St. Clair County Site is undeveloped but most of the land surface has been disturbed by agricultural practices. The site is underlain by natural geological material that has low to unknown paleontological sensitivity. Any unknown paleontological resources on the St. Clair County Site

would have a greater likelihood of occurring in this subsurface layer and a lesser likelihood of occurring on the disturbed ground surface. If any paleontological resources are discovered during site development, NGA will follow all federal procedures pertaining to the management of the discovered resources in accordance with the Paleontological Resources Preservation Act of 2009 **(Geology BMP-2)**.

With implementation of **Geology BMP-2**, the Proposed Action would have **no/negligible impact** on paleontological resources **(Geology-3)**.

The geological and paleontological resources impacts and associated environmental protection measures for the St. Clair County Site are summarized in Table 4.12-5.

TABLE 4.12-5
**St. Clair County Site Summary of Geological and Paleontological Resources Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Geology-1: Impacts to surface soil | No/negligible impact | Geology BMP-1: Implement BMPs during construction to avoid and minimize potential soil erosion and sedimentation |
| Geology-2: Impacts to subsurface geology | No/negligible impact | Not applicable |
| Geology-3: Impacts to paleontological resources | No/negligible impact | Geology BMP-2: Follow all federal procedures pertaining to the management of any paleontological resources discovered during construction |

## 4.12.5 No Action Alternative

The No Action Alternative is the continued use of the South 2nd Street facility. Under the No Action Alternative, current activities would continue at each of the site alternatives, and no construction or associated land clearing activities would be expected to occur. Because there would be no change from current conditions, **no/negligible** impacts to geological resources would result **(Geology 1 through 3).**

## 4.12.6 Summary of Impacts and Environmental Protection Measures

**Geology BMP-1**: Implement appropriate BMPs during construction to avoid and minimize potential soil erosion and sedimentation.

**Geology BMP-2**: If any paleontological resources are discovered during site development, follow all federal procedures pertaining to the management of the discovered resources in accordance with the Paleontological Resources Preservation Act of 2009.

The geological and paleontological resources impacts for the project alternatives are summarized in Table 4.12-6.

TABLE 4.12-6
**Summary of Impacts to Geological and Paleontological Resources**

| | Project Alternatives | | | | |
|---|---|---|---|---|---|
| **Impacts** | **Fenton Site** | **Mehlville Site** | **St. Louis City Site** | **St. Clair County Site** | **No Action** |
| Geology-1: Impact on surface soil | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact |
| Geology-2: Impact on subsurface geology | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact |
| Geology-3: Impact on paleontology | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact |

# 4.13 Air Quality and Climate Change

This subsection describes the potential impacts on air quality and climate change within the ROI that could result from the implementation of the Proposed Action or No Action Alternative. The ROI for the air quality and greenhouse gas (GHG) emissions includes St. Louis County, Missouri, for the Fenton and Mehlville sites, the City of St. Louis for the St. Louis City Site, and St. Clair County, Illinois, for the St. Clair County Site. The ROI for climate change is the Midwestern region of the United States.

Detailed emission calculations were performed using the U.S. Air Force's Air Conformity Applicability Model (ACAM) and are provided in Appendix 3.13A. ACAM was used to assess the potential air quality impacts associated with the action in accordance with Air Force Instruction 32-7040, Air Quality Compliance and Resource Management and the General Conformity Rule (40 CFR 93, Subpart B). Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions. General Conformity has been evaluated for the action according to the requirements of 40 CFR 93, Subpart B. Construction-related air emissions were assumed to begin in 2017 and peak in 2021.

For the construction phase, the following data were inputted into the model:

- Phase start date
- Phase duration
- Building type
- Estimated area of building
- Estimated height of building
- Estimated area of site to be graded and/or paved
- Average hauling truck round trip commute
- Average days worked per week

For the operational phase, the following data were inputted into the model:

- Phase start date
- Estimated area of building (heating needs)
- Emergency generator horsepower rating and annual hours of operation
- Personnel commuting (based on the average commute distance for each of the sites)

The ACAM estimates emissions resulting from the construction workers' commuting to the site, mobile and stationary construction equipment, heating of the building, emergency generator operation, and personnel commuting to and from work using USEPA emission factors. The model outputs VOC, $SO_2$, $NO_X$, CO, $PM_{10}$, $PM_{2.5}$, and lead emissions by year for the construction and operational phases into a report, which is provided in Appendix 3.13A.

Table 4.13-1 identifies the thresholds of impact relevant to the air quality and climate change analysis.

TABLE 4.13-1
**Impact Thresholds for Air Quality and Climate Change**

| Impact | Description |
|---|---|
| No/Negligible | No impacts to air quality, from GHG emissions or from climate change would be expected, or impacts to air quality or from climate change would not be noticeable or measurable. |
| Minor to Moderate | Criteria pollutant or precursor emissions for which the area is classified as nonattainment or maintenance are measurable but less than the *de minimis* thresholds established in 40 CFR 93.<br>GHG or $CO_2e$ emissions are measurable but less than the 25,000-MT reporting threshold.<br>Impacts from climate change would be noticeable and could result in minor infrastructure damage. |
| Major | Criteria pollutant or precursor emissions for which the area is classified as nonattainment or maintenance are greater than the *de minimis* thresholds established in 40 CFR 93.<br>GHG $CO_2e$ emissions would be greater than the 25,000-MT reporting threshold.<br>Impacts from climate change would be severe and could result in extensive infrastructure damage or loss of life. |
| Quality | Beneficial–would have a positive effect on air quality.<br>Negative–would have an adverse effect on air quality. |
| Duration | Short term–would occur only during the proposed construction period.<br>Long term–would continue beyond the proposed construction period. |

Notes:
CFR = *Code of Federal Regulations*
$CO_2e$ = carbon dioxide equivalent
MT = metric ton(s)

## 4.13.1 Fenton Site

Construction Impacts

Project construction at the Fenton Site would result in short-term emissions of criteria pollutants (carbon monoxide [CO], oxides of nitrogen [$NO_x$], volatile organic compounds [VOCs], sulfur dioxide [$SO_2$], $PM_{10}$, and $PM_{2.5}$) and GHGs. Exhaust emissions would result from construction equipment, vehicles, material hauling, and fugitive dust emissions. Fugitive dust emissions include emissions from soil-disturbing activities, unpaved roads, and paved roads.

The Fenton Site is located in an area currently in nonattainment with 8-hour ozone ($O_3$) and $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS). As a result, the Proposed Action at this site is subject to review under the General Conformity Rule. Detailed emission calculations were performed using the Air Force's Air Conformity Applicability Model (ACAM) and are provided in Appendix 3.13A. Construction-related air emissions were assumed to begin in 2017 and peak in 2021. Table 4.13-2 compares the calculated annual peak construction emissions with the federal thresholds, and Appendix 3.13A provides a detailed explanation of the calculations. Construction of the Next NGA West Campus at the Fenton Site would result in **minor to moderate, negative, and short-term impacts** to air quality **(Air Quality-1)** because, annual construction emissions would be less than the federal *de minimis* thresholds.

TABLE 4.13-2
**Proposed Action Demolition and Construction Emissions – Fenton Site**

| | Emissions for 2023 (ton/yr) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Emissions Location** | **VOC** | **CO** | **$NO_x$** | **$SO_2$** | **$PM_{10}$** | **$PM_{2.5}$** | **Lead** |
| *De Minimis* Levels (ton/yr) | 100 | -- | 100 | 100 | -- | 100 | -- |
| Fenton Site | 33.4 | 178 | 9.87 | 0.259 | 0.604 | 0.349 | 0.000 |
| Thresholds Exceeded for Any Activity? | No | No | No | No | No | No | No |

Source: Appendix 3.13A.

The construction carbon dioxide equivalent ($CO_2e$) emissions, would be a minute fraction of the 25,000-MT quantitative analysis threshold; therefore, construction of the Next NGA West Campus at the Fenton Site would result in **no/negligible impacts** from GHG emissions **(Air Quality-2)**.

Operation Impacts

The Proposed Action would result in operation-related air emissions generated by heating systems and emergency diesel generators and includes personnel commuting to and from the site. An employee commute distance of 27 miles roundtrip was estimated using the current zip codes of NGA personnel. This is a 0.6-mile increase from the average roundtrip distance for the current site (26.4 miles). Table 4.13-3 compares the annual operational emissions of criteria pollutants calculated using the ACAM for the Fenton Site with the federal *de minimis* thresholds. Operation of the Next NGA West Campus at the Fenton Site would result in **minor to moderate, negative, and long-term impacts** to air quality **(Air Quality-3)** because NAAQS emissions are measurable but less than *de minimis* and reporting thresholds.

TABLE 4.13-3
**Proposed Action Operation Emissions – Fenton Site**

| | Emissions for 2024 (ton/yr) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Emissions Location** | **VOC** | **CO** | **$NO_x$** | **$SO_2$** | **$PM_{10}$** | **$PM_{2.5}$** | **Lead** |
| *De Minimis* Levels (ton/yr) | 100 | -- | 100 | 100 | -- | 100 | -- |
| Fenton Site | 20.0 | 305 | 16.1 | 0.441 | 0.992 | 0.556 | 0.000 |
| Thresholds Exceeded for Any Activity? | No | No | No | No | No | No | No |

Source: Appendix 3.13A.

Operation of the Next NGA West Campus would result in the generation of a negligible amount of GHGs. The 0.6-mile increase in the average roundtrip commute distance would result in a 298-metric-ton (MT) per year increase in carbon dioxide ($CO_2$) emissions, which is 0.00084 percent of the 2012 Missouri Transportation Sector $CO_2$ emissions and substantially less than the 25,000-MT reporting threshold. Operation of the Next NGA West Campus at the Fenton Site would result in **minor to moderate, negative, and long-term impacts** from GHG emissions **(Air Quality-4)** because GHG emissions are measurable but less than the reporting thresholds.

The effects of climate change to the Next NGA West Campus at the Fenton Site would result in **no/negligible impacts (Air Quality-5)**. Although the Fenton Site is partially within the 500-year floodplain for the Meramec River, no key infrastructure would be placed within the floodplain or in areas at risk to increased future flooding. Consequently, the increased temperatures and flooding associated with climate change should have no noticeable effect on the Next NGA West Campus.

Environmental protection measures will be implemented to further reduce or avoid air quality impacts of the Proposed Action for the Fenton Site. These measures are described below.

- Fugitive dust emissions will be controlled by measures prescribed in Title 10 of the Missouri Code of State Regulations (CSR), Division 10, Chapter 6.170 (10 CSR 10-6.170), 10 CSR 10-5.385, and 10 CSR 10-5.570 (MoDNR), 2015d). The relevant measures available to reduce both onsite and offsite fugitive dust emissions are summarized in the following bullets; implementation of these measures will be further described in a Dust Control Plan prepared for the project **(Air Quality Plan/ Permit-1)**:
  - Develop procedures involving construction, repair, cleaning, and demolition of buildings and their appurtenances that reduce PM emissions
  - Paving or frequent cleaning of roads, driveways, and parking lots
  - Application of dust-free surfaces
  - Application of water
  - Planting and maintenance of vegetative ground cover
- Heavy-duty diesel vehicle (gross vehicle weight rating of greater than 8,000 pounds) emissions will be controlled by the measure prescribed in 10 CSR 10-5.385 (MoDNR, 2015d). This measure will reduce onsite and offsite heavy-duty diesel vehicle emissions by limiting the time that vehicles can idle to no more than 5 minutes in any 60-minute period **(Air Quality BMP-1)**.
- Boiler sulfur emissions will be controlled by the measures prescribed in 10 CSR 10-5.570 (MoDNR, 2015d). For boilers with a nameplate capacity greater than 50 million British thermal units per hour (MMBtu/hour), this measure limits $SO_2$ emissions to 1.0 pound of $SO_2$/MMBtu of actual heat input in any 30-day period. Boilers that combust only natural gas, liquefied petroleum (LP) gas, and/or No. 2 fuel oil with less than 0.5 percent sulfur are exempt from 10 CSR 10-5.570. This measure reduces $SO_2$ emissions from industrial boilers. By reducing $SO_2$ emissions released into the atmosphere, emissions of $PM_{2.5}$ will be reduced **(Air Quality BMP-2)**.
- The USEPA Diesel Emission Reduction Checklist will be used to reduce emissions from diesel generators. A copy of the checklist can be found in Appendix 1D as an attachment to the USEPA DEIS comment letter **(Air Quality BMP-3)**.

Table 4.13-4 summarizes the impacts to air quality for the Fenton Site and the environmental protection measures.

TABLE 4.13-4
**Fenton Site Summary of Air Quality Impacts and Environmental Protection Measures**

| Impacts Category | Impact | Environmental Protection Measures |
|---|---|---|
| Air Quality-1: Generation of criteria pollutant emissions resulting from demolition and construction activities | Minor to moderate, negative, short-term impact | Air Quality Plan/Permit-1: Implement fugitive dust plan<br>Air Quality BMP-1: Limit idling times for heavy vehicles |
| Air Quality-2: Generation of GHG emissions resulting from demolition and construction activities | No/negligible impact | Not applicable |
| Air Quality-3: Generation of criteria pollutants resulting from operation | Minor to moderate, negative, long-term impact | Air Quality BMP-2: Control sulfur emissions<br>Air Quality BMP-3: Implement USEPA Diesel Emission Reduction Checklist |
| Air Quality-4: Generation of GHG emissions resulting from operation | Minor to moderate, negative, long-term impact | Not applicable |
| Air Quality-5: Impacts from climate change | No/negligible impact | Not applicable |

## 4.13.2 Mehlville Site

Construction Impacts

Project demolition and construction at the Mehlville Site would result in short-term emissions of CO, $NO_x$, VOCs, $SO_2$, $PM_{10}$, and $PM_{2.5}$. The Mehlville Site would also include the demolition of 33,244,280 cubic feet ($ft^3$) of structure as well as the associated demolition equipment and haul trucks for debris. Exhaust emissions would result from construction/demolition equipment, vehicles, material hauling, and fugitive dust emissions. Fugitive dust emissions include emissions from soil disturbing activities, unpaved roads, and paved roads.

The Mehlville Site is located in an area currently in nonattainment with 8-hour $O_3$ and $PM_{2.5}$ NAAQS. As a result, the Proposed Action involving this site is subject to review under the General Conformity Rule. Detailed emission calculations were performed using the ACAM and are provided in Appendix 3.13A. Construction-related air emissions were assumed to begin in 2017 and peak in 2021. Table 4.13-5 compares the calculated annual peak construction emissions with the federal thresholds. Demolition and construction of the Next NGA West campus at the Mehlville Site would result in **minor to moderate, negative, and short-term impacts** to air quality **(Air Quality-1)** because annual demolition and construction emissions would be less than the federal thresholds.

TABLE 4.13-5
**Proposed Action Demolition and Construction Emissions – Mehlville Site**

| | Emissions for 2023 (ton/yr) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Emissions Location** | **VOC** | **CO** | **$NO_x$** | **$SO_2$** | **$PM_{10}$** | **$PM_{2.5}$** | **Lead** |
| *De Minimis* Levels (ton/yr) | 100 | -- | 100 | 100 | -- | 100 | -- |
| Mehlville Site | 34.6 | 198 | 10.8 | 0.276 | 0.656 | 0.373 | 0.000 |
| Thresholds Exceeded for Any Activity? | No | No | No | No | No | No | No |

Source: Appendix 3.13A.

$CO_2$ emissions would be minute compared to the 25,000-MT quantitative analysis threshold; therefore, the Proposed Action at the Mehlville Site would result in **no/negligible long-term impacts** from GHG emissions **(Air Quality-2)**.

Operation Impacts

The Proposed Action would result in operation-related air emissions. These air emissions would be generated by heating systems and emergency diesel generators. Additionally, operation-related emissions would include personnel commuting to and from the site. An employee commute distance of 30 miles roundtrip was estimated using the current zip codes of NGA personnel. This is a 3.6-mile increase from the average roundtrip distance for the current site (26.4 miles). Table 4.13-6 compares the annual operational emissions calculated using the ACAM with the federal *de minimis* thresholds. Operation of the Next NGA West Campus at the Mehlville Site would result in **minor to moderate, negative, and long-term impacts** to air quality **(Air Quality-3)** because emissions would be below federal *de minimis* thresholds.

TABLE 4.13-6
**Proposed Action Operation Emissions – Mehlville Site**

| | Emissions for 2024 (ton/yr) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Emissions Location** | **VOC** | **CO** | **$NO_x$** | **$SO_2$** | **$PM_{10}$** | **$PM_{2.5}$** | **Lead** |
| *De Minimis* Levels (ton/yr) | 100 | -- | 100 | 100 | -- | 100 | -- |
| Mehlville Site | 22.2 | 339 | 17.7 | 0.471 | 1.08 | 0.597 | 0.000 |
| Thresholds Exceeded for Any Activity? | No | No | No | No | No | No | No |

Source: Appendix 3.13A.

The 3.6-mile commute increase for the current site will result in a 1,787-MT per year increase in $CO_2$ emissions, which is a 0.0050 percent of the 2012 Missouri Transportation Sector $CO_2$ emissions and substantially less than the 25,000-MT reporting threshold. Therefore, operation of the Next NGA West Campus at the Mehlville Site would result in **minor to moderate, negative, and long-term impacts** from GHG emissions **(Air Quality-4)**.

The effects of climate change to the Next NGA West Campus at the Mehlville Site would result in **no/negligible impacts (Air Quality-5)**, because the Mehlville Site is located outside the floodplain and the projected temperature increases are unlikely to have a noticeable effect on operations, because activities would be performed in a climate-controlled office building.

Environmental protection measures will be implemented to reduce or avoid impacts of the Proposed Action at the Mehlville Site. These measures will be the same as those listed for the Fenton Site in the proceeding section.

Table 4.13-7 summarizes the impacts to air quality for the Mehlville Site and the environmental protection measures.

TABLE 4.13-7
**Mehlville Site Summary of Air Quality Impacts and Environmental Protection Measures**

| Impacts Category | Impact | Environmental Protection Measures |
|---|---|---|
| Air Quality-1: Generation of criteria pollutant emissions resulting from demolition and construction activities | Minor to moderate, negative, short-term impact | Air Quality Plan/Permit-1: Implement fugitive dust controls<br>Air Quality BMP-1: Limit idling times for heavy vehicles |
| Air Quality-2: Generation of GHG emissions resulting from demolition and construction activities | No/negligible impact | Not applicable |
| Air Quality-3: Generation of criteria pollutants resulting from operation | Minor to moderate, negative, long-term impact | Air Quality BMP-2: Control sulfur emissions<br>Air Quality BMP-3: Implement USEPA Diesel Emission Reduction Checklist |
| Air Quality-4: Generation of GHG emissions resulting from operation | Minor to moderate, negative, long-term impact | Not applicable |
| Air Quality-5: Impacts from climate change | No/negligible impact | Not applicable |

## 4.13.3 St. Louis City Site (Preferred Alternative)

Construction Impacts

Project construction at the St. Louis City Site would result in short-term emissions of CO, $NO_x$, VOCs, $SO_2$, $PM_{10}$, and $PM_{2.5}$. Construction activities at the St. Louis City Site would be very similar to the Fenton Site. The major difference is the area requiring grading at the Fenton Site is approximately twice that of the St. Louis City Site. Exhaust emissions would result from construction equipment, vehicles, material hauling, and fugitive dust emissions. Fugitive dust emissions include emissions from soil-disturbing activities, unpaved roads, and paved roads.

The St. Louis City Site is located in an area currently in nonattainment with 8-hour $O_3$ and $PM_{2.5}$ NAAQS. As a result, the Proposed Action involving this site is subject to review under the General Conformity Rule. Construction-related air emissions are anticipated to begin in 2017 and peak in 2023. Detailed ACAM

emission calculations are provided in Appendix 3.13A. Table 4.13-8 compares the annual peak construction emissions with the federal and local thresholds.

Additionally, the site is in the St. Louis Non-classifiable Maintenance Area for 8-hour CO NAAQS. Potential impacts from CO emissions were analyzed for each year of construction through the first full year of operation. Peak construction-related emissions were calculated to occur in calendar year 2023.

In addition to 6 months of construction at the St. Louis City Site, the emissions calculated for this year also include 6 months of operational emissions. During the peak-construction year, commuting by personnel to either the existing or the new site accounts for approximately 85 percent of annual CO emissions. There is only a 0.2-mile difference in commuting distance between the two sites. Therefore, the net change in CO emissions would result from construction, operation-related, and a slightly greater commuting distance would be approximately 27 tons. This calculated net increase is less than the *de minimis* level threshold; therefore, conducting the Conformity Analysis for CO is not necessary.

Construction of the Next NGA West campus at the St. Louis City Site would result in **minor to moderate, negative, and short-term impacts** to air quality **(Air Quality-1)** because annual construction emissions would be less than the federal thresholds.

TABLE 4.13-8
**Proposed Action Construction Emissions – St. Louis City Site**

| | Emissions for 2023 (ton/yr) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Emissions Location** | **VOC** | **CO[a]** | **$NO_x$** | **$SO_2$** | **$PM_{10}$** | **$PM_{2.5}$** | **Lead** |
| *De Minimis* Levels (ton/yr) | 100 | 100 | 100 | 100 | -- | 100 | -- |
| St. Louis City Site | 33.2 | 27 | 9.74 | 0.256 | 0.597 | 0.345 | 0.000 |
| Thresholds Exceeded for Any Activity? | No | No | No | No | No | No | No |

Notes:
[a]CO value is the net change between the existing location and the proposed St. Louis City Site.
Source: Appendix 3.13A.

The $CO_2e$ emissions due to construction would be a minute fraction of the 25,000-MT quantitative analysis threshold. Construction of the Next NGA West Campus at the St. Louis City Site would result in **no/negligible long-term impacts** from GHG emissions **(Air Quality-2)**.

Operation Impacts

The Proposed Action would result in operation-related air emissions. These air emissions would be generated by heating systems and emergency diesel generators. Additionally, operation-related emissions would include personnel commuting to and from the site. An employee commute distance of 26.6 miles roundtrip was estimated using the current zip codes of NGA personnel. This is a 0.2-mile increase from the average distance for the current site (26.4 miles).

Calendar year 2024 is the first full year of operational emissions of the St. Louis City Site. The total operational CO emissions calculated from the proposed St. Louis City site are approximately 301 ton/yr. The majority of these emissions (greater than 295 ton/yr) would be the result of employee commuting, which would not be a significant change from current commuting patterns. The Threshold for Conformity Analysis for CO is based on a 100 ton/yr net increase compared to the No Action Alternative. Because the net operational increase in CO emissions is calculated to be approximately 6 ton/yr, the 100 ton/yr *de minimis* threshold is not exceeded at the St. Louis Site and conducting the Conformity Analysis for CO is not necessary. Annual operational emissions would be less than the federal significance thresholds for criteria pollutants. Therefore, operation of the Next NGA West Campus at the St. Louis City Site would result in **minor to moderate, negative, and long-term impacts** to air quality **(Air Quality-3)**.

Table 4.13-9 compares the annual operational emissions with the federal *de minimis* thresholds.

TABLE 4.13-9
**Proposed Action Operation Emissions – St. Louis City Site**

| | Emissions for 2024 (ton/yr) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Emissions Location** | **VOC** | **CO** | **$NO_x$** | **$SO_2$** | **$PM_{10}$** | **$PM_{2.5}$** | **Lead** |
| *De Minimis* Levels (ton/yr) | 100 | 100 | 100 | 100 | -- | 100 | -- |
| St. Louis City Site | 19.8 | 6 | 15.9 | 0.437 | 0.980 | 0.550 | 0.000 |
| Thresholds Exceeded for Any Activity? | No | No | No | No | No | No | No |

Source: Appendix 3.13A.

Operation of the Next NGA West Campus at the St. Louis City Site would result in the generation of a negligible amount of GHGs. The 0.2-mile increase in the average commuting distance would result in a 99.3-MT per year increase in $CO_2e$ emissions, which is 0.00028 percent of the 2012 Missouri Transportation Sector $CO_2e$ emissions and significantly less than the 25,000-MT reporting threshold. Therefore, operation of the Next NGA West Campus at the St. Louis City Site would result in **minor to moderate, negative, and long-term impacts** from GHG emissions (**Air Quality-4)**.

The effects of climate change on the Next NGA West Campus at the St. Louis City Site would result in **no/negligible impacts (Air Quality-5)**, because the St. Louis City Site is located outside the floodplain and the projected temperature increases are unlikely to have a noticeable effect on operations.

Environmental protection measures will be implemented to reduce or avoid impacts of the Proposed Action for the St. Louis City Site. These measures will be similar to those listed for the Fenton Site.

Table 4.13-10 summarizes the impacts to air quality for the St. Louis City Site and the environmental protection measures.

TABLE 4.13-10
**St. Louis City Site Summary of Air Quality Impacts and Environmental Protection Measures**

| Impacts Category | Impact | Environmental Protection Measures |
|---|---|---|
| Air Quality-1: Generation of criteria pollutant emissions resulting from demolition and construction activities | Minor to moderate, negative, short-term impact | Air Quality Plan/Permit-1: Implement fugitive dust controls<br>Air Quality BMP-1: Limit idling times for heavy vehicles |
| Air Quality-2: Generation of GHG emissions resulting from demolition and construction activities | No/negligible impact | Not applicable |
| Air Quality-3: Generation of criteria pollutants resulting from operation | Minor to moderate, negative, long-term impact | Air Quality BMP-2: Control sulfur emissions<br>Air Quality BMP-3: Implement USEPA Diesel Emission Reduction Checklist |
| Air Quality-4: Generation of GHG emissions resulting from operation | Minor to moderate, negative, long-term impact | Not applicable |
| Air Quality-5: Impacts from climate change | No/negligible impact | Not applicable |

## 4.13.4 St. Clair County Site

Construction Impacts

Construction at the St. Clair County Site would result in short-term emissions of CO, $NO_x$, VOCs, $SO_2$, $PM_{10}$, and $PM_{2.5}$. Construction activities at the St. Clair County Site are very similar to the construction activities at the Fenton Site. The major difference is the area requiring grading at the Fenton Site is greater by a factor of approximately 1.5 over the area requiring grading at the St. Clair County Site. Exhaust emissions would result from construction equipment, vehicles, material hauling, and fugitive dust emissions. Fugitive dust emissions include emissions from soil-disturbing activities, unpaved roads, and paved roads.

The St. Clair County Site is in southern Illinois and included in the St. Louis, Missouri, 8-hour $O_3$ and $PM_{2.5}$ nonattainment areas (IEPA, 2015). As a result, the Proposed Action involving this site is subject to review under the General Conformity Rule for those constituents. Construction-related air emissions are anticipated to begin in 2017 and peak in 2021. Detailed emission calculations are provided in Appendix 3.13A.
Table 4.13-11 compares the annual peak construction emissions with the federal *de minimis* thresholds. Construction of the Next NGA West Campus at the St. Clair County Site would result in **minor to moderate, negative, and short-term impacts** to air quality **(Air Quality-1)** because annual construction emissions would be less than the federal *de minimis* thresholds.

TABLE 4.13-11
**Proposed Action Construction Emissions – St. Clair County Site**

| | Emissions for 2023 (ton/yr) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Emissions Location** | **VOC** | **CO** | **$NO_x$** | **$SO_2$** | **$PM_{10}$** | **$PM_{2.5}$** | **Lead** |
| *De Minimis* Levels (ton/yr) | 100 | -- | 100 | 100 | -- | 100 | -- |
| St. Clair County Site | 46.8 | 401 | 19.9 | 0.440 | 1.15 | 0.598 | 0.000 |
| Thresholds Exceeded for Any Activity? | No | No | No | No | No | No | No |

Source: Appendix 3.13A.

Construction emissions would be a fraction of the 25,000-MT quantitative analysis threshold for $CO_2e$. Therefore, construction of the Next NGA West Campus at the St. Clair County Site would result in **no/negligible long-term impacts** from GHG emissions **(Air Quality-2)**.

Operation Impacts

The Next NGA West Campus would result in operation-related air emissions. These air emissions would be generated by heating systems and emergency diesel generators. Additionally, operation-related emissions would include personnel commuting to and from the site. An employee commute distance of 58.2 miles roundtrip was estimated using the current zip codes of NGA personnel. This is a 31.8-mile increase from the average roundtrip distance for the current site (26.4 miles). The other considered sites would have commuting distances of between 27 miles and 30 miles roundtrip. Table 4.13-12 compares the annual operational emissions with the federal thresholds.

Despite the increase in commute distance, the annual operational emissions would be less than the federal *de minimis* thresholds for criteria pollutants. Therefore, operation of the Next NGA West Campus at the St. Clair County Site would result in **minor to moderate, negative, and long-term impacts** to air quality and **(Air Quality-3)**.

TABLE 4.13-12
**Proposed Action Operation Emissions – St. Clair County Site**

| | Emissions for 2024 (ton/yr) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Emissions Location** | **VOC** | **CO** | **$NO_x$** | **$SO_2$** | **$PM_{10}$** | **$PM_{2.5}$** | **Lead** |
| *De Minimis* Levels (ton/yr) | 100 | -- | 100 | 100 | -- | 100 | -- |
| St. Clair County Site | 43.0 | 687 | 33.3 | 0.752 | 1.92 | 0.984 | 0.000 |
| Thresholds Exceeded for Any Activity? | No | No | No | No | No | No | No |

Source: Appendix 3.13A.

Operation of the Next NGA West Campus at the St. Clair County Site would result in the generation of GHGs. The 31.8-mile increase in the average commute roundtrip distance would result in generation of 15,784 tons per year of $CO_2$ emissions, this amount is 0.026 percent of the 2012 Illinois Transportation Sector $CO_2$ emissions. The annual operational emissions would be less than the 25,000-MT stationary source reporting threshold for $CO_2e$; therefore, operation of the Next NGA West Campus at the St. Clair County Site would result in **minor to moderate, negative, and long-term impacts** from GHG emissions **(Air Quality-4)**.

The effects of climate change on the Next NGA West Campus at the St. Clair County Site would result in **no/negligible impacts (Air Quality-5)**. The onsite stream, which could flood during more extreme storm events, will be avoided and the St. Clair County Site is located outside the floodplain. Furthermore, the projected temperature increases are unlikely to have a noticeable effect on operations.

The following is a summary of the relevant environmental protection measures that will be implemented to reduce or avoid impacts of the Proposed Action at the St. Clair County Site.

- Fugitive dust emissions will be controlled as prescribed in Title 35 of the Illinois Administrative Code, Subtitle B, Chapter I, Subchapter c, Part 212.301 and Part 212.315 (Illinois Pollution Control Board [IPCB], 2015). The relevant measures available to reduce both onsite and offsite fugitive dust emissions are summarized in the following bullets; implementation of these measures will be further described in the Dust Control Plan **(Air Quality Plan/Permit-2)**:
  - Develop procedures involving construction, repair, cleaning, and demolition of buildings and their appurtenances that produce PM emissions
  - Paving or frequent cleaning of roads, driveways, and parking lots
  - Application of dust-free surfaces
  - Application of water
  - Planting and maintenance of vegetative ground cover
- The USEPA Diesel Emission Reduction Checklist will be used to reduce emissions from diesel generators. A copy of the checklist can be found in Appendix 1D as an attachment to the USEPA DEIS comment letter **(Air Quality BMP-3)**.
- Heavy-duty diesel vehicle emissions will be controlled by the measure prescribed in Section 625 Illinois Compiled Statute (ILCS) 5/11-1429 (IL Vehicle Code, 2015). This measure will reduce onsite and offsite heavy-duty diesel vehicle emissions by limiting vehicle idling times to no more than 10 minutes within any 60-minute period (**Air Quality BMP-4**).
- VOC emissions from architectural coatings will be controlled as prescribed in Title 35 of the Illinois Administrative Code, Subtitle B, Chapter I, Subchapter c, Part 219.561 (IPCB, 2015). Photochemically reactive material in architectural coatings are limited to no more than 20 percent by volume in containers having a capacity of more than 1 gallon **(Air Quality BMP-5)**.

Table 4.13-13 summarizes the impacts to air quality for the St. Clair County Site and the environmental protection measures.

TABLE 4.13-13
**St. Clair County Site Summary of Air Quality Impacts and Environmental Protection Measures**

| Impacts Category | Impact | Environmental Protection Measures |
|---|---|---|
| Air Quality-1: Generation of criteria pollutant emissions resulting from demolition and construction activities | Minor to moderate, negative, short-term impact | Air Quality Plan/Permit-2: Fugitive dust plan<br>Air Quality BMP-4: Control idling times of heavy-duty diesel vehicles<br>Air Quality BMP-5: Control VOC emissions |

TABLE 4.13-13
**St. Clair County Site Summary of Air Quality Impacts and Environmental Protection Measures**

| Impacts Category | Impact | Environmental Protection Measures |
|---|---|---|
| Air Quality-2: Generation of GHG emissions resulting from demolition and construction activities | No/negligible impact | Not applicable |
| Air Quality-3: Generation of criteria pollutants resulting from operation | Minor to moderate, negative, long-term impact | Air Quality BMP-3: Implement USEPA Diesel Emission Reduction Checklist |
| Air Quality-4: Generation of GHG emissions resulting from operation | Minor to moderate, negative, long-term impact | Not applicable |
| Air Quality-5: Impacts from climate change | No/negligible impact | Not applicable |

## 4.13.5 No Action Alternative

Under the No Action, NGA would not relocate and no construction or demolition activities would occur at any of the proposed sites. It is presumed that current activities would continue at each of the proposed sites. The South 2nd Street facility would not be renovated or upgraded. Therefore, there would be **no/negligible impacts** to air quality and GHG emissions **(Air Quality-1 and 4).** However, because of the proximity of the floodplain to the current facility, there would be **minor to moderate, negative, and long-term impacts (Air Quality-5)** from risks associated with climate change.

## 4.13.6 Summary of Impacts and Environmental Protection Measures

The following lists the environmental protection measures for air quality and Table 4.13-14 summarizes the impacts to air quality at each of the site alternatives:

- **Air Quality Plan/Permit-1**: A Fugitive dust emissions plan will be implemented with measures prescribed in the Missouri CSR.
- **Air Quality Plan/Permit-2**: Fugitive dust emissions will be controlled as prescribed in the Illinois Administrative Code.
- **Air Quality BMP-1**: Heavy-duty diesel vehicle emissions will be controlled by the measure prescribed in the Missouri CSR.
- **Air Quality BMP-2**: Boiler sulfur emissions will be controlled by the measures prescribed in the Missouri CSR.
- **Air Quality BMP-3**: Implement USEPA's Diesel Emission Reduction Checklist.
- **Air Quality BMP-4**: Heavy-duty diesel vehicle emissions will be controlled by the measure prescribed in the Illinois Compiled Statutes.
- **Air Quality BMP-5**: VOC emissions from architectural coatings will be controlled as prescribed in the Illinois Administrative Code.

TABLE 4.13-14
**Summary of Impacts to Air Quality**

| | Project Alternatives | | | | |
|---|---|---|---|---|---|
| **Impacts** | **Fenton Site** | **Mehlville Site** | **St. Louis City Site** | **St. Clair County Site** | **No Action** |
| Air Quality-1: Generation of criteria pollutant emissions resulting from construction activities | Minor to moderate, negative, short-term impact | Minor to moderate, negative, short-term impact | Minor to moderate, negative, short-term impact | Minor to moderate, negative, short-term impact | No/negligible impact |
| Air Quality-2: Generation of GHG emissions resulting from demolition and construction activities | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact |
| Air Quality-3: Generation of criteria pollutants resulting from operation | Minor to moderate, negative, long-term impact | Minor to moderate, negative, long-term impact | Minor to moderate, negative, long-term impact | Minor to moderate, negative, long-term impact | No/negligible impact |
| Air Quality-4: Generation of GHG emissions resulting from operation | Minor to moderate, negative, long-term impact | Minor to moderate, negative, long-term impact | Minor to moderate, negative, long-term impact | Minor to moderate, negative, long-term impact | No/negligible impact |
| Air Quality-5: Impacts from climate change | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact | Minor to moderate, negative, long-term impact |

# 4.14 Airspace

This subsection describes the potential impacts to airspace within the ROI as a result of implementing any of the alternatives. The analysis of impacts on airspace resources is based on review of Federal Aviation Administration (FAA) policies, Federal Aviation Regulations (FAR), and other available data/ literature on airspace resources within the ROI.

Table 4.14-1 identifies the impact thresholds relevant to airspace.

TABLE 4.14-1
**Impact Thresholds for Airspace**

| Impact Category | Description |
|---|---|
| No/Negligible | Impacts to airspace would not change flight operations, and no disruption to civil, commercial, or military flight patterns would occur. |
| Minor to Moderate | Impacts to airspace would result in minimal changes to civil, commercial, or military flight patterns. Any changes to airspace conditions would be barely noticeable. |
| Major | Impacts to airspace would require substantial changes to civil, commercial, or military flight patterns, and would result in noticeable disruptions to flight operations. |
| Quality | Beneficial – would have a positive effect on the airspace.<br>Negative – would have an adverse effect on the airspace. |
| Duration | Short term – would occur only during the proposed construction period.<br>Long term – would continue beyond the proposed construction period. |

## 4.14.1 Fenton Site

Controlled Airspace

The Fenton Site is located in Class B airspace. Because of its distance from the nearest airport, no changes to airspace or aircraft operations or flying (instrument flight rules [IFR] and visual flight rules [VFR]) conditions are anticipated to occur from the Proposed Action. Consequently, there are expected to be **no/negligible impacts** to Airspace **(Airspace-1**).

Glint and Glare

Glint is a momentary flash of light, while glare is considered a continuous source of excessive brightness (DoD, 2014). Although glint and glare are generally associated with solar renewable energy systems, other reflective surfaces, including building facades, car parks, and white concrete, could affect pilots and air traffic controllers. Glint or glare from the Next NGA West Campus could impair safe flight operations. Final design would be modified to avoid or minimize glint and glare through selection of building materials and modifying orientation and angles that could cause glint or glare. Coordination with the FAA will occur during the design phase of the Proposed Action **(Airspace Coordination-1)**. With implementation of design features that would avoid and minimize glint and glare, there would be **no**/**negligible impact** to operations within the airspace **(Airspace-2)**.

Table 4.14-2 summarizes the impacts to airspace for the Fenton Site and the environmental protection measures.

TABLE 4.14-2
**Fenton Site Summary of Airspace Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Airspace-1: Impacts to current airspace conditions | No/negligible impact | None |
| Airspace-2: Impacts to aircraft operations from potential glint and glare from solar panels on the Next NGA West Campus buildings | No/negligible impact | Airspace Coordination-1: Coordinate with the FAA to avoid or minimize potential interference with aircraft operations from glint and glare |

## 4.14.2 Mehlville Site

Due to the similarities in airspace designation and proximity to regional airports, the impacts to controlled airspace and glint or glare associated with the Mehlville Site would be similar to those at the Fenton Site (see Section 4.14.1). Table 4.14-3 summarizes the impacts to airspace for the Mehlville Site and the environmental protection measures.

TABLE 4.14-3
**Mehlville Site Summary of Airspace Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Airspace-1: Impacts to current airspace conditions | No/negligible impact | None |
| Airspace-2: Impacts to aircraft operations from potential glint and glare from solar panels on the Next NGA West Campus buildings | No/negligible impact | Airspace Coordination-1: Coordinate with the FAA to avoid or minimize potential interference with aircraft operations from glint and glare |

## 4.14.3 St. Louis City Site (Preferred Alternative)

Due to the similarities in airspace designation and proximity to regional airports, the airspace impacts to controlled airspace and glint or glare associated with the St. Louis City Site would be similar to those at the Fenton Site (see Section 4.14.1). Table 4.14-4 summarizes the impacts to airspace for the St. Louis City Site and the environmental protection measures.

TABLE 4.14-4
**St. Louis City Site Summary of Airspace Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Airspace-1: Impacts to current airspace conditions | No/negligible impact | None |
| Airspace-2: Impacts to aircraft operations from potential glint and glare from solar panels on the Next NGA West Campus buildings | No/negligible impact | Airspace Coordination-1: Coordinate with the FAA to avoid or minimize potential interference with aircraft operations from glint and glare |

### 4.14.4 St. Clair County Site

Controlled Airspace

The St. Clair County Site is within close proximity of Scott AFB/MidAmerica St. Louis Airport (Scott/MAA). Title 14 CFR 77 establishes parameters that require notification to the FAA of new construction (or alteration of existing structures) if within designated proximities to an airport, heliport, or other critical FAA facilities. The St. Clair County Site is within this designated proximity for Scott/MAA.

NGA will perform an aeronautical feasibility study, through submittal of FAA Form 7460-1, "Notice of Proposed Construction or Alteration" **(Airspace Plan/Permit-1)**. This form, as part of the hazard determination review process, must be submitted at least 45 days before the start date of the proposed construction or alteration, or the date an application for a construction permit is filed, whichever is earliest. This notification serves as the basis for the following:

- Evaluating the effect of the construction or alteration on operating procedures
- Determining the potential hazardous effect of the proposed construction on air navigation
- Identifying mitigating measures to enhance safe air navigation
- Charting new objects

Notification allows the FAA to identify potential aeronautical hazards in advance, thus preventing or minimizing adverse impacts to safe and efficient use of navigable airspace.

As a result of FAA coordination initiated by the FAA Form 7460-1 notification process, impacts to airspace from the Proposed Action at the St. Clair County Site are expected to be **minor to moderate, negative, and long term (Airspace-1)** because there would be minimal change to airspace or flying (IFR and VFR) conditions.

Glint and Glare

Glint and glare from the Next NGA West Campus could impair safe flight operations (DoD, 2014). NGA will coordinate with the FAA, and Scott/MAA to determine if there are any potential impacts to air navigation from glint and glare associated with the Next NGA West Campus. Final design would be modified to avoid or minimize glint and glare through selection of building materials and by modifying orientation and angles that could cause glint or glare. Coordination with the FAA will occur during the design phase of the Proposed Action **(Airspace Coordination-1)**. With implementation of design features that would avoid and minimize glint and glare, there would be **no/negligible impact** to operations within the airspace **(Airspace-2)**.

Table 4.14-5 summarizes the impacts to airspace for the St. Clair County Site and the environmental protection measures.

TABLE 4.14-5
**St. Clair County Site Summary of Airspace Impacts and Environmental Protection Measures**

| Impact Category | Impact | Environmental Protection Measure |
|---|---|---|
| Airspace-1: Impacts to current airspace conditions | Minor to moderate, negative, long-term impact | Airspace Plan/Permit-1: Aeronautical Study under 14 CFR 77 |
| Airspace-2: Impacts to aircraft operations from potential glint and glare from solar panels on the Next NGA West Campus buildings | No/negligible impact | Airspace Coordination-1: Coordinate with the FAA to avoid or minimize potential interference with aircraft operations from glint and glare |

## 4.14.5 No Action Alternative

Under the No Action Alternative, the Existing NGA Campus would remain at the South 2nd Street location. Because no new construction or change in operations would occur, there is **no**/**negligible impact** to airspace **(Airspace-1 and 2)**.

## 4.14.6 Summary of Impacts and Environmental Protection Measures

The following is a summary of the environmental protection measures related to the Proposed Action.

- **Airspace Coordination-1**: NGA will coordinate with the FAA during the design phase of the Proposed Action to avoid or minimize glint and glare.
- **Airspace Plan/Permit-1**: NGA will prepare FAA Form 7460-1 to work with the FAA to avoid and minimize any potential impacts to airspace resulting from construction of the Next NGA West Campus at the St. Clair County Site.

Table 4.14-6 summarizes individual and overall impacts for all the project alternatives.

TABLE 4.14-6
**Summary of Impacts to Airspace**

| | Project Alternatives | | | | |
|---|---|---|---|---|---|
| **Impact Category** | **Fenton Site** | **Mehlville Site** | **St. Louis City Site** | **St. Clair County Site** | **No Action** |
| Airspace-1: Impacts to current airspace | No/negligible impact | No/negligible impact | No/negligible impact | Minor to moderate, negative, long-term impact | No impact |
| Airspace-2: Impacts to aircraft operations from potential glint and glare from solar panels on the Next NGA West Campus buildings | No/negligible impact | No/negligible impact | No/negligible impact | No/negligible impact | No impact |

# 4.15 Cumulative Impacts

The CEQ regulations implementing NEPA define a "cumulative impact" as follows:

> *Cumulative impact is the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes the actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time* (40 CFR 1508.7).

Cumulative impacts would occur if the incremental effects of the Proposed Action resulted in an increased impact when added to the environmental effects of past, ongoing, and reasonably foreseeable future activities. Reasonably foreseeable future activities are defined as those that have an application for operations pending and would occur in the same time frame as the Proposed Action. Past activities are considered only when their impacts still would be present during implementation of the Proposed Action. For the purpose of the analysis, the Proposed Action impacts are based on the impacts that would have the potential to interact with other actions. It is also assumed that the environmental protection measures (BMPs, mitigations, plans/permits, coordination) described for each resource would be implemented under the Proposed Action and that other past, present, and reasonably foreseeable projects considered in the cumulative impacts assessment would comply with all applicable state and federal laws and regulations.

For a past, ongoing, or reasonably foreseeable future activity to be considered in the cumulative analysis, the incremental impacts of the activity and the Proposed Action must be related in space or time. Other past, present, and reasonably foreseeable actions were considered if they were actions of a similar character that could affect the same environmental resources within the ROI identified for the cumulative impacts. The following criteria were used to evaluate actions to include in the cumulative impacts analyses:

- Actions of a similar character that could affect the same environmental resources within the ROI (as defined in each of the resource sections).
- Past actions were considered only when their impacts still would be present during implementation of the Proposed Action.
- Reasonably foreseeable actions were considered through the estimated end of construction activities under the Proposed Action.

A list of potential cumulative actions is provided at the beginning of each of the subsections below. The cumulative impact analysis for each resource involved the following process:

- Recognize the resource-specific adverse impacts associated with implementing the Proposed Action at each of the sites. These are the impacts that were identified in the previous sections in this EIS.

- Identify cumulative activities that might occur in the same area and time frame as the Proposed Action by each potential project site. A 5-mile radius was used to locate potential activities unless otherwise noted.
- Assess the resource-specific impacts resulting from the cumulative activities at each site. Not all resource areas have the potential for cumulative impacts.
- Identify the potential cumulative impacts of these activities when considered together with the project-related impacts for each site. The impacts shown below represent the total cumulative impact, not the additive impact.

The level of cumulative impact analysis for each resource studied in this EIS varies depending on the sensitivity of the resource to potential cumulative impacts and the likelihood of a major impact. If a resource would receive only beneficial impacts from the Proposed Action, it was not analyzed in detail in this section.

## 4.15.1 Fenton Site

### 4.15.1.1 Cumulative Activities

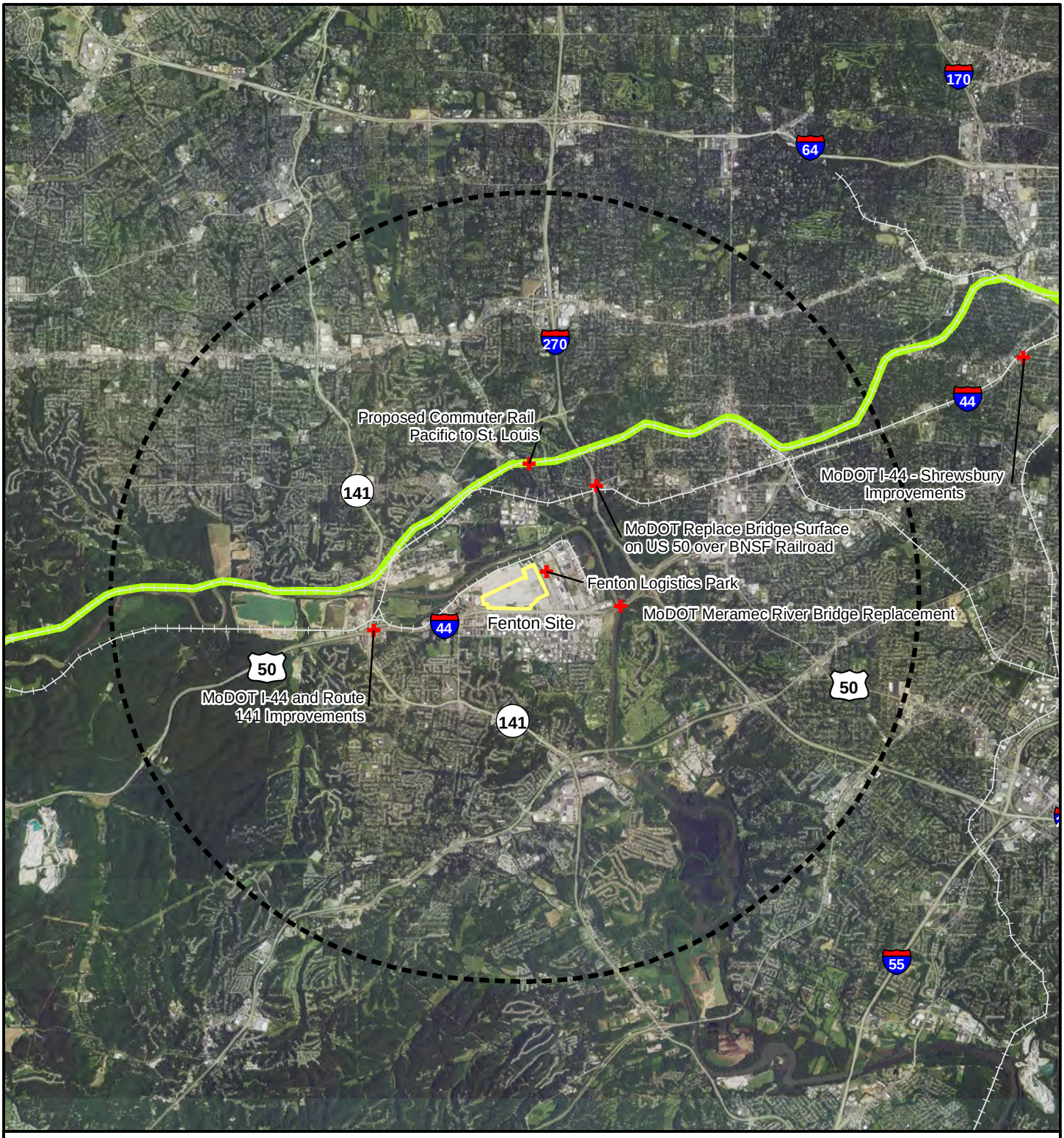
The following projects have been identified as having the potential for interaction with the Proposed Action to contribute to adverse cumulative impacts to evaluated resources at the Fenton Site (Figure 4.15-1).

<u>Transportation Projects</u>

- MoDOT I-44 and Missouri Route 141 Improvements (MoDOT, 2015a)
- MoDOT I-44 over the Meramec River bridge replacement
- MoDOT I-44 at Shrewsbury new interchange construction (MoDOT, 2015b)
- MoDOT replace the driving surface on bridge on US 50 over the BNSF Railway line (MoDOT, 2015c)
- MoDOT – Various repaving and repair projects on interstates in the St. Louis area
- St. Louis Regional Long-Range Transit Plan: Proposed Commuter Rail from Pacific into St. Louis (St. Louis County, 2013)
- St. Louis Regional Long-Range Transit Plan: Proposed Metro South extension of MetroLink transit rail from Shrewsbury south to I-55 (St. Louis County, 2013)

**Other Projects**

- Proposed Fenton Logistics Park could be implemented concurrent with the Proposed Action; see Section 3.2.1.3 for details (KP Development, 2015)




Proposed Site

5 Mile Radius

Cumulative Activities

Linear Transportation Cumulative Activites

Railroads

N

0 0.5 1 2 3 Miles

Image Source:
National Agriculture Imagery Program (NAIP) 2014

Figure 4.15-1
Projects Considered for Cumulative Impacts
within 5 miles of the Fenton Site
NGA EIS

#### 4.15.1.2 Cumulative Impacts

The following subsections explain the cumulative impacts of the Proposed Action and cumulative activities to individual resources.

The Proposed Action would cause no/negligible, negative, or beneficial impacts to the following resources at the Fenton Site. Consequently, the likelihood of the Proposed Action combining with the cumulative activities to create a noticeable adverse cumulative impact is low. Therefore, these resources are not discussed in detail in this section:

- Socioeconomics (beneficial and no/negligible impacts; only negative impact would not result in a cumulative impact)[15]
- Land Use (only beneficial and no/negligible impacts)
- Health and Safety (beneficial and no/negligible impacts)
- Cultural Resources (only no/negligible impacts)
- Visual Resources (only beneficial impact)
- Biology (beneficial and no/negligible impacts)
- Geology and Paleontology (only no/negligible impacts)
- Airspace (only no/negligible impacts)

The following subsections represent the resources where the Proposed Action may result in an adverse effect. These resources were analyzed, assuming the Proposed Action and cumulative activities were to occur, to determine if there would be a cumulative adverse impact to the resource.

**Traffic and Transportation**. The cumulative ROI for traffic and transportation at the Fenton Site is the regional and local road networks that provide the most direct paths to and from the site to an interchange at an interstate roadway. The Proposed Action would have **no/negligible impacts** to existing LOS (**Transportation-1**) and future LOS (**Transportation-2**). However, it would result in a **minor to moderate, negative, and short-term impac**t from construction traffic (**Transportation-3**).

***Cumulative Activities Affecting Traffic and Transportation.*** The Proposed Action could combine with the MoDOT activities and redevelopment projects to result in cumulative impacts if construction activities were to occur during the same period.

***Cumulative Impacts to Traffic and Transportation.*** The analysis of direct impacts included those predicted until 2040 and, consequently, includes cumulative effects as predicted by the transportation models. The

[15] There would be a potential adverse effect due to reduction in tax revenue. However, the redevelopment activities would increase tax revenue, and the transportation projects should have no effect on tax revenue. Therefore, there would not be an increased adverse effect.

cumulative activities and Proposed Action would likely result in increased congestion on I-44 and the arterials and collector roads leading to I-44 in the Fenton area. However, it is unlikely these activities would result in a transportation infrastructure failure. The construction for the cumulative transportation projects and other development projects in the area would likely be spread across a number of years. The Proposed Action construction activities would incrementally contribute to impacts from these other activities and result in **minor to moderate, negative, short-term term cumulative impacts** to traffic and transportation from construction **(Transportation Cumulative-1**). Long-term beneficial cumulative impacts to traffic and transportation would be expected once the proposed transportation improvement projects have been completed.

**Noise.** The ROI for noise includes local access routes to the entrance of the proposed NGA Campus, adjacent properties, and within the boundaries of the proposed NGA Campus. The Proposed Action would have **no/negligible impacts** from transportation noise (**Noise-2**) and operational noise (**Noise-3**). However, it would result in a **minor to moderate, negative, and short-term impact** from construction noise (**Noise-1**). Therefore, the potential for the Proposed Action to contribute to cumulative impacts to noise is limited to the construction period.

***Cumulative Activities Affecting Noise*.** The MoDOT projects and additional development near the Fenton Site could combine with the Proposed Action to incrementally contribute to cumulative noise impacts related to construction and traffic noise, if they were to occur at the same time.

***Cumulative Impacts to Noise*.** The cumulative noise impacts resulting from the Proposed Action, the MoDOT projects, and additional development near the Fenton Site could result in an increased annoyance to sensitive receptors across the Meramec River, particularly a disruption during outdoor activities. It is likely that the various construction projects would not occur simultaneously, but rather would be spread over time. Construction-related noise from the Proposed Action and other construction projects would likely result in short-term increases in noise levels, but all activities would comply with the St. Louis noise ordinance (St. Louis, 1998). Therefore, the cumulative noise impacts would be **minor to moderate, negative, and short term (Cumulative Noise-1)**.

**Hazardous Materials and Solid Waste**. The Proposed Action would have a **minor to moderate, long-term benefit** to existing hazardous material contamination (**Haz/Waste-1**). There would be **no/negligible impacts** from construction-related hazardous material use (**Haz/Waste-2**), inadvertent discovery of hazardous materials (**Haz/Waste-3**), operational use of hazardous material (Haz/Waste-4), and operation-generated solid waste (**Haz/Waste-6**). There would be a **minor to moderate, negative, and long-term impact** from solid waste generated from construction (**Haz/Waste-5**). There is an unknown risk from vapor intrusion, but this risk would not interact with other projects to create cumulative impacts. Therefore, the potential for cumulative impacts is limited to solid waste generated during the construction period. The cumulative ROI for solid waste is the Fenton Site and St. Louis County.

***Cumulative Activities Affecting Hazardous Materials and Solid Waste.*** The greatest potential for cumulative impact to solid waste would result from past, ongoing, or future additional development on or adjacent to the former Chrysler automobile assembly plant, due to the proximity to the Fenton Site. The Proposed Action also could incrementally combine with MoDOT and regional transportation projects to contribute to cumulative impacts in the ROI.

***Cumulative Impacts to Hazardous Materials and Solid Waste.*** The Proposed Action could combine with the above-mentioned activities to result in cumulative impacts. The St. Louis-Jefferson Waste Management District, along with other waste management districts in Missouri, implements recycle and landfill diversion programs that result in approximately 50 percent of solid waste, including construction and demolition waste, being either recycled or reused (MoDNR, 2015e). Solid waste management in Missouri includes development of new landfills to expand capacity, as needed.

Existing descriptive information was used to estimate the solid waste that would be generated by the MoDOT I-44 and Missouri Route 141 Improvements, the MoDOT I-44 over the Meramec River bridge replacement, MoDOT bridge surface replacement on US 50 over the BNSF Railway line, and the St. Louis Regional Long-Range Transit Plan: Proposed Commuter Rail from Pacific into St. Louis. These projects would result in an estimated 407,000 $yd^3$ of concrete and steel waste prior to any recycling or reuse efforts (see Appendix 4.15A for calculations). Other projects could not be reasonably projected for estimated wastes, but the total solid waste from other past, present, and reasonably foreseeable projects that would interact with development of the proposed NGA Campus at the Fenton Site would be greater than the approximately 407,000 $yd^3$ for the four projects estimated. These four projects would combine with the development of the proposed NGA Campus at the Fenton Site to produce less than 0.5 percent of the waste volume in the three landfills that accept construction and demolition waste. Even allowing for the additional waste of projects that could not be evaluated, the total burden on construction and demolition landfills would likely be less than 1 percent without allowing for waste diversion/reduction through recycling and reuse.

The incremental additions of solid waste from the construction of the Next NGA West Campus and the cumulative activities would continue to contribute to **minor to moderate, negative, and long-term cumulative impacts** to solid waste disposal in the ROI, because the existing capacity can accommodate this level of waste and because it is expected that additional capacity would be developed within the region as existing waste facilities approach capacity **(Cumulative Haz/Waste-1).**

**Utilities**. The ROI for each of the utility types includes the area within the site boundaries as well as surrounding areas that would require relocation or upgrades by the utility. The Proposed Action would have minor to **moderate, negative, and short-term impacts** to power supply (**Utilities-1**), water supply (**Utilities-2**), wastewater service (**Utilities-3**), natural gas supply (**Utilities-4**), and communications services (**Utilities-5**). These impacts are a result of the required infrastructure upgrades; there would be minimal to no impacts expected to regional utility service.

***Cumulative Activities Affecting Utilities.*** The Proposed Action also could incrementally combine with the MoDOT and development projects to contribute to cumulative impacts in the ROI.

***Cumulative Impacts to Utilities.*** While new infrastructure may also be required for the cumulative activities, the impact to all utilities would be **minor to moderate, negative, and short-term** because disruptions of service and outages are not expected **(Cumulative Utilities-1)**. NGA would coordinate with the local utility companies regarding utility requirements. Utility companies have been expanding service for new construction in the MSA successfully for many years. This trend is expected to continue.

**Water Resources**. The ROI for the water resources analysis is generally the areas within the site boundaries. However, hydrological connections to offsite wetlands/waters, the regional watershed, and groundwater basin were also considered. The Proposed Action would result in **no/negligible impacts** to wetlands (**Water-1**), surface water (**Water-2)**, and groundwater (**Water-4**). It would result in a minor to moderate, negative, and long-term impact to floodplains (**Water-3**).

***Cumulative Activities Affecting Water Resources.*** The Proposed Action could combine with the ongoing and reasonably foreseeable activities if the associated construction was also to occur within the floodplain.

***Cumulative Impacts to Water Resources.*** If the other cumulative activities were also to occur within the floodplain, a cumulative impact would occur. Interstate transportation projects would comply with E.O. 11988, *Floodplain Management*, which addresses government activities within floodplains. Other transportation projects would minimize encroachment into floodplains to avoid altering flood conveyance, flood storage, and flood elevations. If the Proposed Action were implemented, additional private development within the former Chrysler automobile assembly plant would not be within the floodplain because this area would be controlled by NGA. The cumulative impact to floodplains would be expected to be **minor to moderate, negative, and long term (Cumulative Water-1)**.

**Air Quality and Climate Change**. The cumulative ROI for air quality and GHG emissions at the Fenton Site is defined as St. Louis County, Missouri. The Proposed Action would result in **no/negligible impacts** from GHG emissions from construction (**Air Quality-2**) and effects from climate change (**Air Quality-5**), **minor to moderate, negative, and short-term impacts** to air quality from construction (**Air Quality-1**), and **minor to moderate, negative, and long-term impacts** to air quality and GHG emissions from operation (**Air Quality-3 and Air Quality-4**).

***Cumulative Activities Affecting Air Quality and Climate Change.*** The Proposed Action could combine with the new development, MoDOT projects, and commuter rail projects to result in cumulative impacts to air quality and climate change.

***Cumulative Impacts to Air Quality and Climate Change.*** The Proposed Action could combine with the current and reasonably foreseeable actions to increase air pollution in the ROI. CAA General Conformity is performed on a project-specific basis and not cumulatively. Emissions from these activities could collectively contribute to NAAQS and GHG (climate change) emissions, primarily during construction. The Proposed Action emissions would be considerably below CAA *de minimis* thresholds for criteria pollutants and quantitative reporting thresholds for GHG emissions. Cumulative impacts to air quality from construction-related emissions would likely remain **minor to moderate, negative, and short term (Cumulative Air Quality-1)**. Operational air emissions from the Proposed Action would combine incrementally with the construction of new development, MoDOT projects, and commuter rail projects to contribute to **minor to moderate, negative, and long-term cumulative impacts** to air quality **(Cumulative Air Quality-2)**. However, once the MoDOT and commuter rail projects have been completed, it is expected that traffic flow would be enhanced, resulting in reduced automobile emission and an overall benefit to air quality and climate change.

## 4.15.2 Mehlville Site

### 4.15.2.1 Cumulative Activities

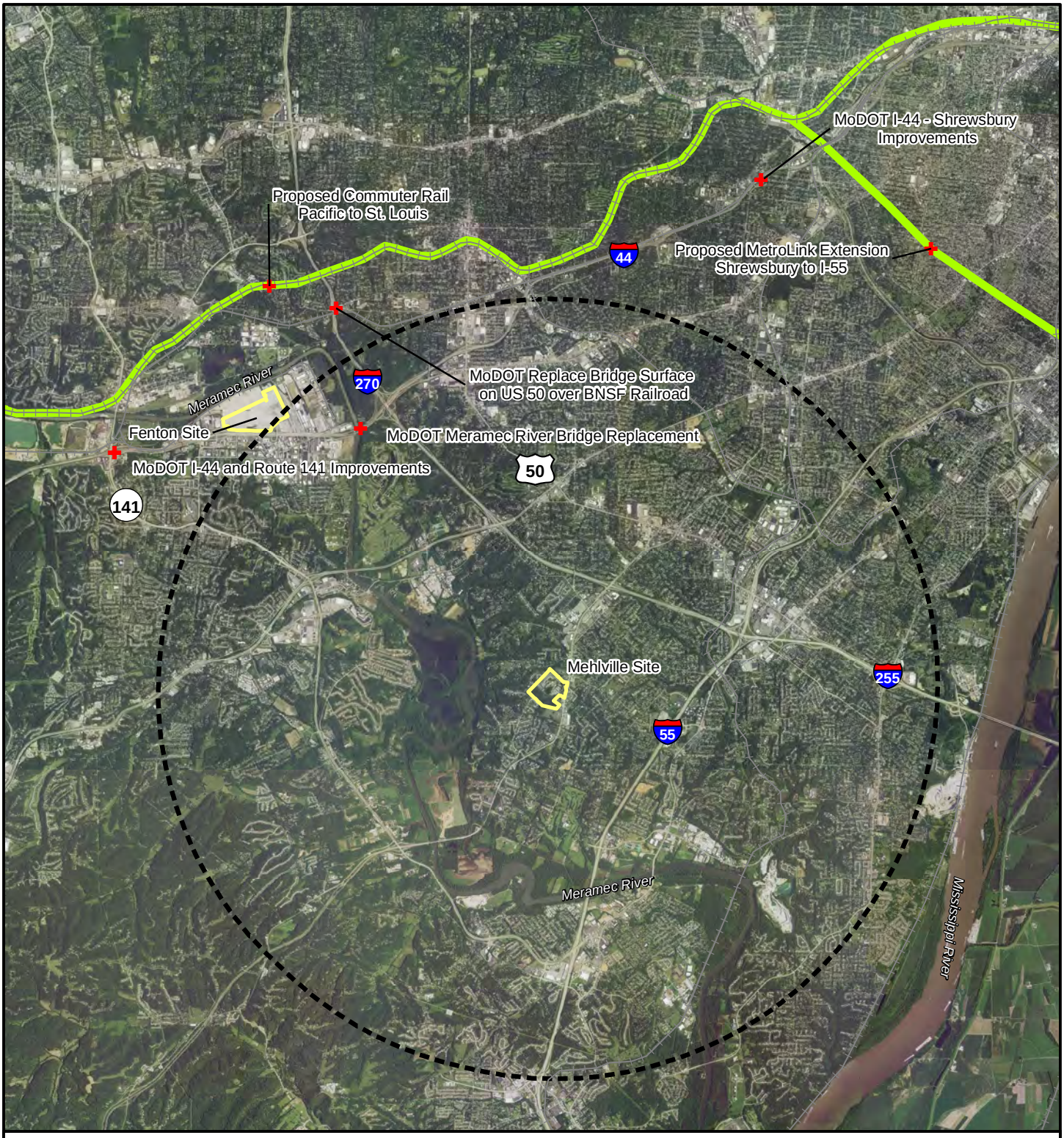
The following projects have been identified as having the potential for interaction with the Proposed Action to contribute to adverse cumulative impacts to evaluated resources at the Mehlville Site (Figure 4.15-2).

<u>Transportation Projects</u>

- MoDOT I-44 over the Meramec River bridge replacement
- MoDOT – Various repaving and repair projects on interstates in the St. Louis area
- St. Louis Regional Long-Range Transit Plan: Proposed Commuter Rail from Pacific into St. Louis – would provide new option for commuters from southwestern part of region and may alleviate vehicle traffic (St. Louis County, 2013)
- St. Louis Regional Long-Range Transit Plan: Proposed Metro South extension of MetroLink transit rail from Shrewsbury south to I-55 (St. Louis County, 2013)

<u>Other Projects</u>

No non-transportation projects were identified that could combine with the Proposed Action at the Mehlville Site.




Proposed Site
5 Mile Radius
Cumulative Activities
Non-linear Cumulative Activities
Railroads

N
0 0.5 1 2 3 Miles

Image Source:
National Agriculture Imagery Program (NAIP) 2014

Figure 4.15-2
Projects Considered for Cumulative Impacts within 5 miles of the Mehlville Site
NGA EIS

#### 4.15.2.2 Cumulative Impacts

The following subsections explain the cumulative impacts of the Proposed Action and cumulative activities to individual resources.

The Proposed Action would cause no/negligible, negative, or beneficial impacts to the following resources at the Mehlville Site. Consequently, the likelihood of the Proposed Action combining with other activities to create a noticeable adverse cumulative impact is low. Therefore, these resources are not discussed in detail in this section.

- Socioeconomics (beneficial and no/negligible impacts; only negative impact would not result in a cumulative impact)[16]
- Land Use (only beneficial and no/negligible impacts)
- Health and Safety (only no/negligible impacts)
- Cultural Resources (only no/negligible impacts)
- Visual Resources (no/negligible impact)
- Geology and Paleontology (only no/negligible impacts)
- Airspace (only no/negligible impacts)

The following subsections represent the resources where the Proposed Action may result in an adverse effect. These resources were analyzed, assuming the Proposed Action and cumulative activities were to occur, to determine if there would be a cumulative adverse impact to the resource.

**Traffic and Transportation.** The cumulative ROI for traffic and transportation at the Mehlville Site is the regional and local road networks that provide the most direct paths to and from the site to an interchange at an interstate roadway. The Proposed Action would have **no/negligible impacts** to future LOS **(Transportation-2).** However, it would result in a **minor to moderate, negative, and long-term impact** to existing LOS **(Transportation-1)** and **minor to moderate, negative, and short-term impact** from construction traffic **(Transportation-3).**

***Cumulative Activities Affecting Traffic and Transportation.*** The Proposed Action could combine with transportation activities to result in cumulative impacts.

***Cumulative Impacts to Traffic and Transportation.*** No cumulative impacts are expected to existing LOS because the MoDOT activities should result in a net benefit to transportation infrastructure. However, MoDOT activities and the Proposed Action could result in increased congestion in regional roadways in the Mehlville area during construction. The proposed transportation projects would likely be spread across a number of years.

[16] There would be a potential adverse effect due to reduction in tax revenue. However, the transportation projects should have no effect on tax revenue. Therefore, there would not be an increased adverse effect.

The Proposed Action would incrementally contribute to impacts from these other activities and result in **minor to moderate, negative, short- and long-term, cumulative impacts** to traffic and transportation in the area **(Cumulative Transportation -1).** Long-term beneficial cumulative impacts to traffic and transportation would be expected once the proposed transportation improvement projects have been completed.

**Noise.** The ROI for noise includes local access routes to the entrance of the proposed NGA Campus, adjacent properties, and the boundaries of the proposed NGA Campus. The Proposed Action would have **no/negligible impacts** from transportation noise **(Noise-2)**, operational noise **(Noise-3)**, and external noise on the NGA mission **(Noise-4)**. However, it would result in a **minor to moderate, negative, and short-term impact** from construction noise **(Noise-1)**. Therefore, the potential for cumulative impacts is limited to the construction period.

***Cumulative Activities Affecting Noise*.** The MoDOT projects could combine with the Proposed Action to incrementally contribute to cumulative noise impacts related to construction and traffic noise, if they were to occur at the same time.

***Cumulative Impacts to Noise*.** The cumulative noise impacts resulting from the Proposed Action and the MoDOT projects in the vicinity of the Mehlville Site could result in an increased annoyance to sensitive receptors, particularly disruptions to outdoor activities. It is likely that the various construction projects would not occur simultaneously, but rather would be spread over time. Construction-related noise from the Proposed Action and other construction projects would likely result in long-term increases in noise levels, but all activities would comply with the St. Louis noise ordinance (St. Louis, 1998). Therefore, the cumulative noise impacts would be **minor to moderate, negative, and short-term (Cumulative Noise-1)**.

**Hazardous Materials and Solid Waste.** The Proposed Action would have a **minor to moderate, long-term benefit** to existing hazardous material contamination **(Haz/Waste-1)**, and there would be **no/negligible impacts** from construction-related hazardous material use **(Haz/Waste-2)**, inadvertent discovery of hazardous materials **(Haz/Waste-3)**, operational use of hazardous material **(Haz/Waste-4)**, and operation-generated solid waste **(Haz/Waste-6)**. There would be a **minor to moderate, negative, and short-term impact** from solid waste generated from construction **(Haz/Waste-5)**. There is an unknown risk from VI, but this risk would not interact with other projects to create cumulative impacts. Therefore, the potential for cumulative impacts is limited to the cleanup of existing contamination and solid waste generated during the construction period. The cumulative ROI for solid waste is the Mehlville Site and St. Louis County.

***Cumulative Activities Affecting Hazardous Materials and Solid Waste*.** The Proposed Action also could incrementally combine with MoDOT projects to contribute to cumulative impacts in the ROI.

***Cumulative Impacts to Hazardous Materials and Solid Waste*.** The Proposed Action could combine with the MoDOT activities to result in cumulative impacts. The St. Louis-Jefferson Waste Management District, along with other waste management districts in Missouri, implements recycle and landfill diversion programs that result in approximately 50 percent of solid waste, including construction and demolition waste, being either

recycled or reused (MoDNR, 2015e). Solid waste management in Missouri includes development of new landfills to expand capacity, as needed.

Existing descriptive information was used to estimate the solid waste that would be generated by the MoDOT I-44 over the Meramec River bridge replacement. These projects would result in an estimated 56,000 $yd^3$ of concrete and steel waste prior to any recycling or reuse efforts (see Appendix 4.15A for calculations). Other projects could not be reasonably projected for estimated waste, but the total solid waste from other past, present, and reasonably foreseeable projects that would interact with development of the proposed NGA Campus at the Mehlville Site would be greater than the approximately 56,000 $yd^3$ for the four projects estimated. These four projects would combine with the development of the proposed NGA Campus at the Mehlville Site to produce less than 0.5 percent of the waste volume in the three landfills that accept construction and demolition waste. Even allowing for the additional waste of projects that could not be evaluated, the total burden on construction and demolition landfills would likely be less than 1 percent without allowing for waste diversion/reduction through recycling and reuse.

The incremental additions of solid waste from construction of the New NGA Campus and the cumulative activities would continue to contribute **minor to moderate, negative, and long-term cumulative impacts** to solid waste disposal in the ROI, because the existing capacity can accommodate this level of waste and because it is expected that additional capacity would be developed within the region as existing waste facilities approach capacity **(Cumulative Haz/Waste-1).**

**Utilities.** The ROI for each of the utility types includes the area within the site boundaries as well as surrounding areas that would require relocation or upgrades by the utility. The Proposed Action would have **minor to moderate, negative, and short-term impacts** to power supply **(Utilities-1)**, water supply **(Utilities-2)**, wastewater service **(Utilities-3)**, natural gas supply **(Utilities-4)**, and communications services **(Utilities-5)**. These impacts are a result of the required infrastructure upgrades; there would be minimal to no impacts expected to regional utility service.

***Cumulative Activities Affecting Utilities*.** The Proposed Action also could incrementally combine with the MoDOT activities to contribute to cumulative impacts in the ROI.

***Cumulative Impacts to Utilities*.** While utility infrastructure may be affected by the MoDOT activities, the cumulative impact to utilities would be **minor to moderate, negative, and short-term** because disruptions of service and outages are not expected **(Cumulative Utilities-1)**. NGA will coordinate with the local utility companies regarding utility requirements.

**Water Resources.** The ROI for the water resources analysis is generally the areas within the site boundaries. However, hydrological connections to offsite wetlands/waters, the regional watershed, and groundwater basin were also considered. The Proposed Action would result in **no/negligible** impacts to floodplains **(Water-3)**

and groundwater **(Water-4).** However, it would result in a **minor to moderate, negative, and long-term impact** to wetlands **(Water-1)** and surface water **(Water-2).**

***Cumulative Activities Affecting Water Resources*.** The Proposed Action could combine with the MoDOT activities to result in cumulative impacts to wetlands and surface waters in the ROI.

***Cumulative Impacts to Water Resources*.** Because the Proposed Action would result in the minor loss of wetlands, it would incrementally contribute to the loss of wetlands from the ROI. Because all projects would be expected to implement compensatory mitigation for the loss of wetlands, as required by the CWA Section 404 permit, the level of impact would be **minor to moderate, negative, and long term (Cumulative Water-2).**

The MoDOT projects would have the potential to impact surface waters and wetlands due to direct disturbance or indirectly through stormwater runoff, even where the loss of wetlands or waters would not occur. It is expected that MoDOT would use appropriate measures to minimize direct and indirect impacts to surface waters. Therefore, the incremental impacts of the Proposed Action with the MoDOT projects to surface waters would be **minor to moderate, negative, and long-term (Cumulative Water-3)**.

**Biological Resources.** The ROI for the biological resources impact analysis is generally the areas within and immediately adjacent to the site boundaries. The Proposed Action would have a **minor to moderate, long-term benefit** because of the reduction in weeds **(Biology-1b).** There would be **no/negligible impacts** because of BASH concerns **(Biology-2c),** and impacts to state-listed species **(Biology-4).** There would be **minor to moderate, negative, long-term impacts** to native vegetation **(Biology-1a),** incidental mortality of wildlife during construction **(Biology-2a),** and loss of wildlife habitat **(Biology-2b),** and **minor to moderate, negative, and short-term impacts** to federally listed species **(Biology-3)** and migratory birds **(Biology-5).**

***Cumulative Activities Affecting Biological Resources.*** The Proposed Action also could incrementally combine with the MoDOT activities to contribute to cumulative impacts in the ROI.

***Cumulative Impacts to Biological Resources*.** The Proposed Action could combine with the proposed MoDOT projects to result in cumulative impacts. As noted previously, it is expected that this project would use appropriate measures to minimize impacts to the natural environment and implement any required mitigation measures. The cumulative impacts to biological resources from the Proposed Action and incremental interaction with the proposed MoDOT projects could contribute to continued **minor to moderate, negative, long-term impacts**, due to the incremental reduction of native vegetation communities that provide habitat for species, including protected species and migratory birds **(Cumulative Biology-1)**.

**Air Quality and Climate Change.** The cumulative ROI for air quality and GHG emissions at the Mehlville Site is defined as St. Louis County, Missouri. The Proposed Action would result in **no/negligible** impacts to GHG emissions from construction **(Air Quality-2)** and the effects of climate change (**Air Quality-5)**; **minor to moderate, negative, and short-term impacts** to air quality from construction **(Air Quality-1)** and **minor**

**to moderate, negative, and long-term impacts** to air quality and GHG emissions from operation **(Air Quality-3** and **Air Quality-4)**.

***Cumulative Activities Affecting Air Quality and Climate Change.*** The Proposed Action could combine with the MoDOT and commuter rail projects to result in cumulative impacts to air quality and climate change.

***Cumulative Impacts to Air Quality and Climate Change.*** The Proposed Action could combine with the current and reasonably foreseeable actions to increase air pollution in the ROI. CAA General Conformity is performed on a project-specific basis and not cumulatively. Emissions from these activities could collectively contribute to NAAQS and GHG emissions, primarily during construction. The Proposed Action emissions would be considerably below CAA *de minimis* thresholds for criteria pollutants and quantitative reporting thresholds for GHG emissions. Cumulative impacts to air quality from construction-related emissions would likely remain **minor to moderate, negative, and short term (Cumulative Air Quality-1)**. Operational air emissions from the Proposed Action would combine incrementally with MoDOT and commuter rail construction projects to contribute to **minor to moderate, negative, and long-term cumulative impacts** to air quality **(Cumulative Air Quality-2)**. However, once the MoDOT and commuter rail projects have been completed, it is expected that traffic flow would be enhanced, resulting in reduced automobile emission and an overall benefit to air quality and climate change.

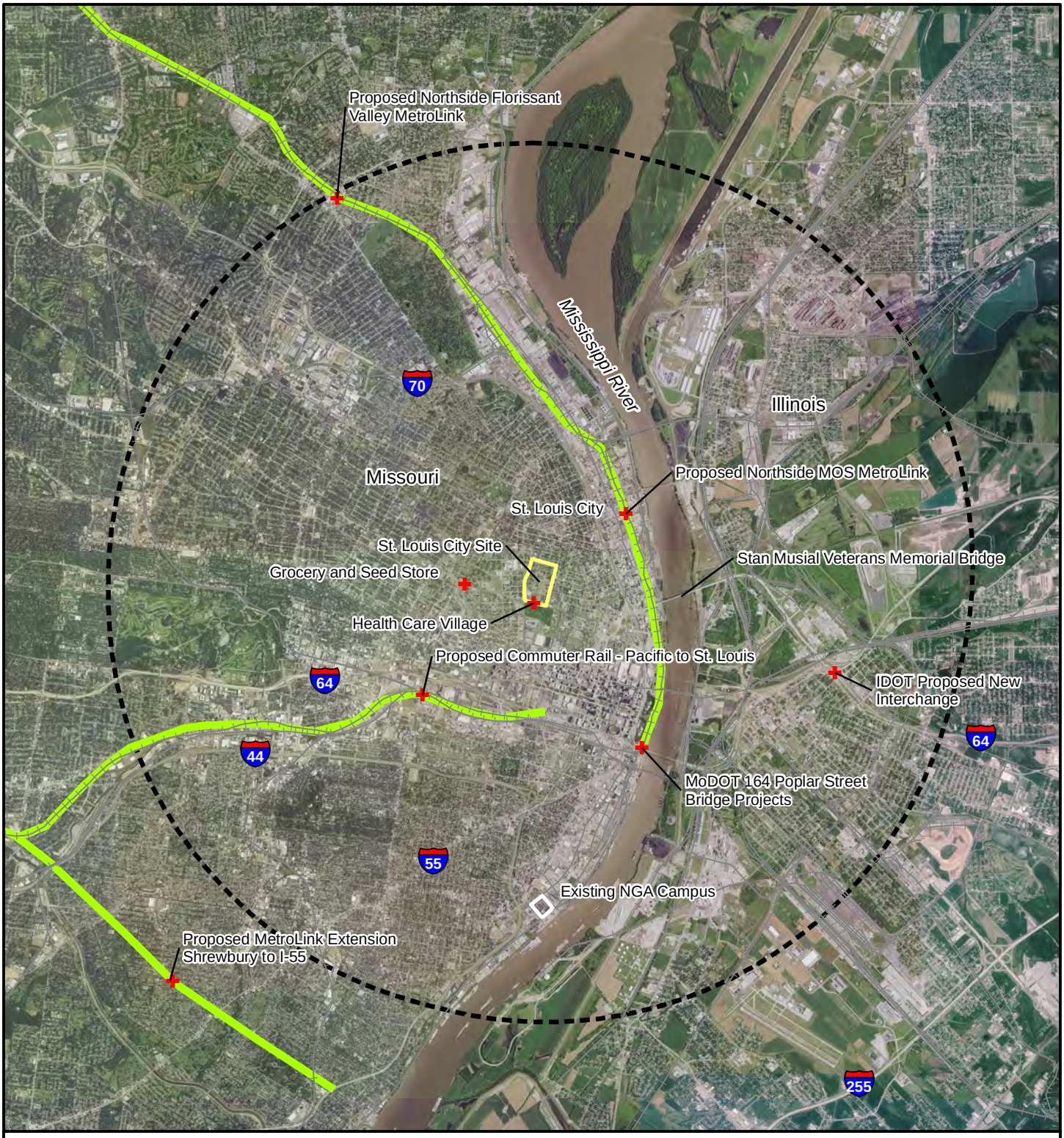
## 4.15.3 St. Louis City Site (Preferred Alternative)

### 4.15.3.1 Cumulative Activities

The following projects have been identified as having the potential for interaction with the Proposed Action to contribute to adverse cumulative impacts to evaluated resources at the St. Louis City Site (Figure 4.15-3).

<u>Transportation Projects</u>

- MoDOT I-64 Poplar Street Bridge Project (MoDOT, 2015d)
- MoDOT I-64 Poplar Street Bridge Widening (MoDOT, 2015e)
- MoDOT – Various repaving and repair projects on interstates in the St. Louis area
- St. Louis Regional Long-Range Transit Plan–Proposed Commuter Rail from Pacific into St. Louis – would provide new option for commuters from southwestern part of region and may alleviate vehicle traffic (St. Louis County, 2013)
- St. Louis Regional Long-Range Transit Plan–Proposed North Side – Florissant Valley MetroLink transit rail extension (East-West Gateway Council of Governments, 2011)
- St. Louis Regional Long-Range Transit Plan–Proposed MetroLink NorthSide minimum operating system (MOS) transit rail extension (East-West Gateway Council of Governments, 2011)
- The Stan Musial Veterans Memorial Bridge (opened February 2014)
- IDOT proposed new interchange




Proposed Site

5 Mile Radius

Cumulative Activities

Linear Transportation Cumulative Activities

Railroads

N

0 0.5 1 2 3 Miles

Image Source:
National Agriculture Imagery Program (NAIP) 2014

Figure 4.15-3
Projects Considered for Cumulative Impacts within 5 miles of the St. Louis City Site
NGA EIS

**Other Projects**

- Demolition of the former Pruitt-Igoe site in the late 1970s
- NorthSide Regeneration Tax Increment Financing (TIF) Redevelopment Plan, Northside Regeneration, LLC (St. Louis, 2009)
- Blighting Study and Redevelopment Plan for the Cass Ave., Jefferson Ave./Parnell St., Montgomery St., North 22nd St. Redevelopment Area (St. Louis, 2015)
- St. Louis: The Plan for the Neighborhoods of the 5th Ward (St. Louis, 2002)
- Cass/North Grand Boulevard – a grocery/convenience store that can be supported by the existing community
- Healthcare Village – would be on the 36-acre Pruitt-Igoe site; the certificate of need has been issued for this use

#### 4.15.3.2 Cumulative Impacts

The following subsections explain the cumulative impacts of the Proposed Action and cumulative activities to individual resources.

The Proposed Action would cause no/negligible, negative, or beneficial impacts to the following resources at the St. Louis City Site. Consequently, the likelihood of the Proposed Action combining with other activities to create a noticeable adverse cumulative impact is low. Therefore, these resources are not discussed in detail in this section.

- Socioeconomics (beneficial and no/negligible impacts; only negative impact would not result in a cumulative impact)[17]
- Water Resources (only no/negligible impacts)
- Geological and Paleontological Resources (only no/negligible impact)
- Visual Resources (only beneficial)
- Airspace (only no/negligible impacts)

The following subsections represent the resources where the Proposed Action may result in an adverse effect. These resources were analyzed, assuming the Proposed Action and cumulative activities were to occur, to determine if there would be a cumulative adverse impact to the resource.

[17] There would be a potential adverse effect due to reduction in tax revenue. However, the redevelopment projects would increase tax revenue and the transportation projects would have no effect on tax revenue. Therefore, there would not be an increase the adverse effect.

**Land Use and Community Cohesion.** The ROI for cumulative impacts to land use includes the St. Louis City Site and the surrounding lands within the proposed NorthSide Regeneration Project area. The Proposed Action would result in **no/negligible impacts** to prime farmlands **(Land Use-3)** and **minor to moderate, long-term benefits** to current land use **(Land Use-1)** and surrounding land use **(Land Use-2).**

The Proposed Action at the St. Louis City Site would result in **minor to moderate, negative short-term impacts** to community cohesion from relocation of residences and businesses **(Land Use-4a)** and **minor to moderate beneficial, long-term impacts (Land Use-4b)** to community cohesion for those relocated and placed in more sustainable communities nearby with a greater LOS and community cohesion. There would be a **minor to moderate, negative short-term impact** on community cohesion from construction impacts **(Land Use-5).** Operation of NGA at the St. Louis City Site could also provide a stabilizing force and attract additional services to the area, resulting in **minor to moderate beneficial, long-term impacts (Land Use-6).**

***Cumulative Activities Affecting Land Use and Community Cohesion*.** Multiple concept, land use, blighting, and redevelopment plans have been prepared, adopted, and refined over time to guide the redevelopment of the St. Louis City Site and adjacent areas. The 2009 NorthSide Redevelopment Plan (Development Strategies, 2009b) established a vision for the larger redevelopment area, which was refined for the St. Louis City Site as part of the Cass and Jefferson Redevelopment Area Plan. Several transit projects that are planned or have been completed will improve access to the area, and various developers, including Northside Regeneration, LLC, have identified land development projects to be constructed in the larger NorthSide Regeneration Project area. These projects and the implementation of activities associated with the NorthSide Regeneration Project would interact with the Proposed Action to contribute to cumulative impacts to land use and community cohesion within the ROI. In the area more immediate to the St. Louis City Site, a grocery/convenience store and health center have been identified as contributing to cumulative land use and community cohesion impacts.

***Cumulative Impacts to Land Use and Community Cohesion*.** Various communities have been built over time at the St. Louis City Site, starting in the 1880s. However, with the exodus to suburban communities beginning in the 1950s, the area has been in a steady state of decline, culminating in the demolition of the Pruitt-Igoe affordable housing complex in the 1970s. The NorthSide Regeneration Project area now has a vacancy rate of approximately 57 percent (little changed from the vacancy rate of 56 percent in 2002) and the St. Louis City Site proper has a vacancy rate of approximately 78 (compared to approximately 67 percent in 2002). This change can be attributed to an expansion of blight conditions and developer acquisition of land for redevelopment purposes.

The Proposed Action, in combination with other planned redevelopment projects, would change the St. Louis City Site and its vicinity from a predominantly long-term residential area with some light industry and commercial uses to a business/light industrial use with mixed-use and residential and commercial redevelopment around it. Over the short term, NGA's use of the St. Louis City Site would require relocation

of residences, businesses, and community resources. However, the other foreseeable projects are not expected to result in additional relocations, but rather will occur in areas where the land is vacant and available for redevelopment. Consequently, there would be no cumulative impacts associated with the relocations.

The long-term implementation of the NorthSide Area, including a grocery/convenience store and healthcare center, would provide stabilizing features to the community. These features could cumulatively support the building of a sustainable community that meets more of the routine and basic needs of the residents and businesses. NGA, along with the other cumulative activities, would provide a positive effect on the NorthSide Area and would provide a stabilizing investment that may attract other investments to build a stronger sense of community.

The communities within the vicinity of the St. Louis City Site could experience increased disruption of daily activities due to the cumulative effect of the construction of the Proposed Action and other redevelopment activities; however, the redevelopment projects are in early planning and likely to be developed over several years, thus staggering construction activities. There is the potential for **minor to moderate, negative, short-term** cumulative impacts **(Cumulative Land Use-1)** to community cohesion due to disruptions from construction projects occurring over time. Any contribution of the Proposed Action to these long-term impacts would be limited to its period of construction. Over the long term, relocation and redevelopment activities are expected to cumulatively result in stronger and more cohesive communities.

**Health and Safety.** The Proposed Action would result in **minor to moderate, long-term benefits** to occupational health **(Health-1)** and crime **(Health-2).** It would result in **minor to moderate, negative, and long-term impact** to emergency response **(Health-3).**

***Cumulative Activities Affecting Health and Safety*.** The Proposed Action could combine with the MoDOT transportation projects and regional redevelopment activities. The MoDOT activities would result in a benefit to transportation infrastructure.

***Cumulative Impacts to Health and Safety*.** If the MoDOT and regional redevelopment construction activities were to occur at the same time as the Proposed Action, there could be a cumulative impact to emergency response resulting from increased traffic congestion. Although the increased risk may be measurable, it is unlikely the impacts to health would exceed a regulatory threshold (as defined in the relative health-related impact tables) or a transportation failure. Additionally, once the transportation projects have been completed, traffic congestion should be alleviated, which would benefit emergency response times. Consequently, the cumulative impacts to emergency response times resulting from these activities would be **minor to moderate, negative, and long term,** with beneficial cumulative impacts once the transportation projects have been completed **(Cumulative Health-1).**

**Traffic and Transportation.** The cumulative ROI for traffic and transportation at the St. Louis City Site is the regional and local road networks that provide the most direct paths to and from the site to an interchange

at an interstate roadway. The Proposed Action would have **minor to moderate, negative, and long-term impacts** to existing LOS **(Transportation-1)** and future LOS **(Transportation-2).** It would result in a **minor to moderate, negative, and short-term impact** from construction traffic **(Transportation-3).**

***Cumulative Activities Affecting Traffic and Transportation.*** The Proposed Action could combine with the MoDOT activities and redevelopment projects to result in cumulative impacts, if construction activities were to occur during the same period.

***Cumulative Impacts to Traffic and Transportation.*** No cumulative impacts are expected to existing LOS from MoDOT activities because the MoDOT projects should result in a net benefit to transportation infrastructure. The regional development projects are not clearly defined at this time; consequently, it is not possible to determine their impacts to regional transportation infrastructure.

MoDOT activities, regional development projects, and the Proposed Action could result in increased congestion in regional roadways in the St. Louis City Site area during construction. There is a remote possibility that these activities could result in a transportation infrastructure failure. The proposed transportation projects and other development projects in the area would likely be spread across a number of years. The Proposed Action would incrementally contribute to impacts from these other construction activities and result in **minor to moderate, negative short-term cumulative impacts** to traffic and transportation in the area **(Transportation Cumulative-1**). Long-term beneficial cumulative impacts to traffic and transportation would be expected once the proposed transportation improvement projects have been completed.

**Noise.** The ROI for noise includes local access routes to the entrance of the proposed NGA Campus, adjacent properties, and the boundaries of the proposed NGA Campus. The Proposed Action would have **no/negligible impacts** from transportation noise **(Noise-2)**, operational noise **(Noise-3)**, and external noise on the NGA mission **(Noise-4)**. However, it would result in a **minor to moderate, negative, and short-term impact** from construction noise **(Noise-1)**. Therefore, the potential for cumulative impacts is limited to the construction period.

***Cumulative Activities Affecting Noise.*** The MoDOT projects and regional development projects could combine with the Proposed Action to incrementally contribute to cumulative noise impacts related to construction and traffic noise, if they were to occur at the same time.

***Cumulative Impacts to Noise.*** The cumulative noise impacts resulting from the Proposed Action, the MoDOT projects, and regional development projects in the vicinity of the St. Louis City Site could result in an increased annoyance to sensitive receptors, particularly disruptions to outdoor activities. It is likely that the various construction projects would not occur simultaneously, but rather would be spread over time. Construction-related noise from the Proposed Action and other construction projects would likely result in long-term increases in noise levels, but all activities would comply with the St. Louis noise ordinance

(St. Louis, 1998). Therefore, the cumulative noise impacts would be **minor to moderate, negative, and short term (Cumulative Noise-1)**.

**Hazardous Materials and Solid Waste.** The Proposed Action would have a **minor to major, long-term benefit** to existing hazardous material contamination **(Haz/Waste-1)**. There would be **no/negligible impacts** from construction-related hazardous material use **(Haz/Waste-2)**, inadvertent discovery of hazardous materials **(Haz/Waste-3)**, operational use of hazardous material **(Haz/Waste-4)**, and operation-generated solid waste **(Haz/Waste-6)**. There would be a **minor to moderate, negative, and short-term impact** from solid waste generated from construction **(Haz/Waste-5)**. There is an unknown risk from VI, but this risk would not interact with other projects to create cumulative impacts. Therefore, the potential for cumulative impacts is limited to the cleanup of existing contamination and solid waste generated during the construction period. The cumulative ROI for solid waste is the St. Louis City Site and St. Louis County.

***Cumulative Activities Affecting Hazardous Materials and Solid Waste*.** The MoDOT and regional development projects will contribute to regional solid waste generation.

***Cumulative Impacts to Hazardous Materials and Solid Waste*.** The Proposed Action could combine with the MoDOT and regional development activities to result in cumulative impacts. The St. Louis-Jefferson Waste Management District, along with other waste management districts in Missouri, implements recycle and landfill diversion programs that result in approximately 50 percent of solid waste, including construction and demolition waste, being either recycled or reused (MoDNR, 2015e). Solid waste management in Missouri includes development of new landfills to expand capacity, as needed.

Existing descriptive information was used to estimate the solid waste that would be generated by the construction of a Health Care Village to the south of the St. Louis City Site, a grocery/convenience store, the proposed Pacific to St. Louis commuter rail, the MoDOT I64 Poplar Street Bridge Project, the IDOT interchange project in East St. Louis, and the two proposed MetroLink projects. These projects would result in an estimated 463,500 $yd^3$ of concrete and steel waste prior to any recycling or reuse efforts (see Appendix 4.15A for calculations). Other projects could not be reasonably projected for estimated wastes, but the total solid waste from other past, present, and reasonably foreseeable projects that would interact with the development of the proposed NGA Campus at the St. Louis City Site would be greater than the approximately 463,500 $yd^3$ for the four projects estimated. These projects would combine with the development of the proposed NGA Campus at the St. Louis City Site to produce less than 0.25 percent of the waste volume in the three landfills that accept construction and demolition wastes. Even allowing for the additional waste of projects that could not be evaluated, the total burden on construction and demolition landfills would likely be less than 1 percent without allowing for waste diversion/reduction through recycling and reuse.

The incremental additions of solid waste from the construction of the Next NGA West Campus and the cumulative activities would continue to contribute **minor to moderate, negative, long-term, and**

**cumulative impacts** to solid waste disposal in the ROI, because the existing capacity can accommodate this level of waste and because it is expected that additional capacity would be developed within the region as existing waste facilities approach capacity **(Cumulative Haz/Waste-1).**

**Utilities.** The ROI for each of the utility types includes the area within the site boundary as well as surrounding areas that would require relocation or upgrades by the utility. The Proposed Action would have **minor to moderate, negative, and short-term impacts** to power supply **(Utilities-1)**, water supply **(Utilities-2)**, wastewater service **(Utilities-3)**, natural gas supply **(Utilities-4)**, and communications services **(Utilities-5)**. These impacts are a result of the required infrastructure upgrades; there would be minimal to no impacts expected to regional utility service.

***Cumulative Activities Affecting Utilities*.** The Proposed Action also could incrementally combine with the MoDOT and regional development projects to contribute to cumulative impacts in the ROI.

***Cumulative Impacts to Utilities*.** While utility infrastructure may be affected by the MoDOT activities, the cumulative impact to utilities would be **minor to moderate, negative, and short-term** because disruptions of service and outages are not expected **(Cumulative Utilities-1)**. NGA will coordinate with the local utility companies regarding utility requirements.

**Cultural Resources.** The ROI for cumulative impacts to cultural resources is defined as the APE that was determined for the analysis of direct and indirect impacts to cultural resources. Historic properties located within the project site boundary would be demolished as a result of the Proposed Action. The Proposed Action would result in **major, negative, and long-term impacts** to known historic resources **(Cultural-1).** It would result in potential **minor to moderate, negative, and long-term impacts** to archeological resources **(Cultural-2**), and indirect impacts to surrounding resources **(Cultural-3).**

***Cumulative Activities Affecting Cultural Resources*.** Projects associated with implementation of the NorthSide Regeneration Project would have the potential to contribute to cumulative impacts to the St. Louis Place NRHP District.

***Cumulative Impacts to Cultural Resources*.** Cumulative impacts on cultural resources would be expected from implementation of the Proposed Action and the incremental contributions of other reasonably foreseeable activities in the APE, because these activities may also disturb or remove cultural resources. The cumulative impacts to architectural resources would be **major, negative, and long term (Cumulative Cultural-1)**. Cumulative impacts to archeological cultural resources would be expected to be **minor to moderate, negative, and long term,** because it is unknown if archeological resources exist on the site **(Cumulative Cultural-2)**.

**Biological Resources.** The ROI for the biological resources impact analysis is generally the areas within and immediately adjacent to the site boundaries. There would be a **minor to moderate, long-term benefit** due to the reduction in the potential for spreading noxious weeds (**Biology-1b**). There would be **no/negligible**

**impacts** to native vegetation **(Biology-1a)**, incidental mortality of wildlife during construction **(Biology-2a)**, loss of wildlife habitat **(Biology-2b)**, BASH concerns **(Biology-2c)**, impacts to federally listed species **(Biology-3)**, and impacts to state-listed species **(Biology-4).** There would be **minor to moderate, negative, and short-term impacts** to migratory birds **(Biology-5).**

***Cumulative Activities Affecting Biological Resources.*** The Proposed Action also could incrementally combine with MoDOT activities to contribute to cumulative impacts in the ROI.

***Cumulative Impacts to Biological Resources.*** The Proposed Action could combine with the proposed MoDOT and regional development projects. The cumulative impacts to biological resources from the Proposed Action and cumulative activities could contribute to the **minor to moderate, negative, short-term, cumulative impacts** due to the incremental reduction of vegetation communities that provide habitat for common bird species, including migratory bird species **(Cumulative Biology-1)**.

**Air Quality and Climate Change.** The cumulative ROI for air quality and GHG emissions at the St. Louis City Site is defined as St. Louis County, Missouri. The Proposed Action would result in **no/negligible impacts** to GHG emissions from construction (**Air Quality-2**) and effects from climate change (**Air Quality-5)**; **minor to moderate, negative, and short-term impacts** to air quality from construction **(Air Quality-1)**, and **minor to moderate, negative, and long-term impacts** to air quality and GHG emissions from operation **(Air Quality-3** and **Air Quality-4)**.

***Cumulative Activities Affecting Air Quality and Climate Change.*** The Proposed Action could combine with the MoDOT, commuter rail, and regional development projects to result in cumulative impacts to air quality and climate change.

***Cumulative Impacts to Air Quality and Climate Change.*** The Proposed Action could combine with the current and reasonably foreseeable actions to increase air pollution in the ROI. CAA General Conformity is performed on a project-specific basis and not cumulatively. Emissions from these activities could collectively contribute to NAAQS and GHG emissions, primarily during construction. The Proposed Action emissions would be considerably below CAA *de minimis* thresholds for criteria pollutants and quantitative reporting thresholds for GHG emissions. Cumulative impacts to air quality from construction-related emissions would likely remain **minor to moderate, negative, and short term (Cumulative Air Quality-1)**. Operational air emissions from the Proposed Action would combine incrementally with the construction of new development, MoDOT projects, and commuter rail projects to contribute to **minor to moderate, negative, and long-term cumulative impacts** to air quality **(Cumulative Air Quality-2)**. However, once the MoDOT and commuter rail projects have been completed, it is expected that traffic flow will be enhanced, resulting in reduced automobile emission and an overall benefit to air quality and climate change.

## 4.15.4 St. Clair County Site

### 4.15.4.1 Cumulative Activities

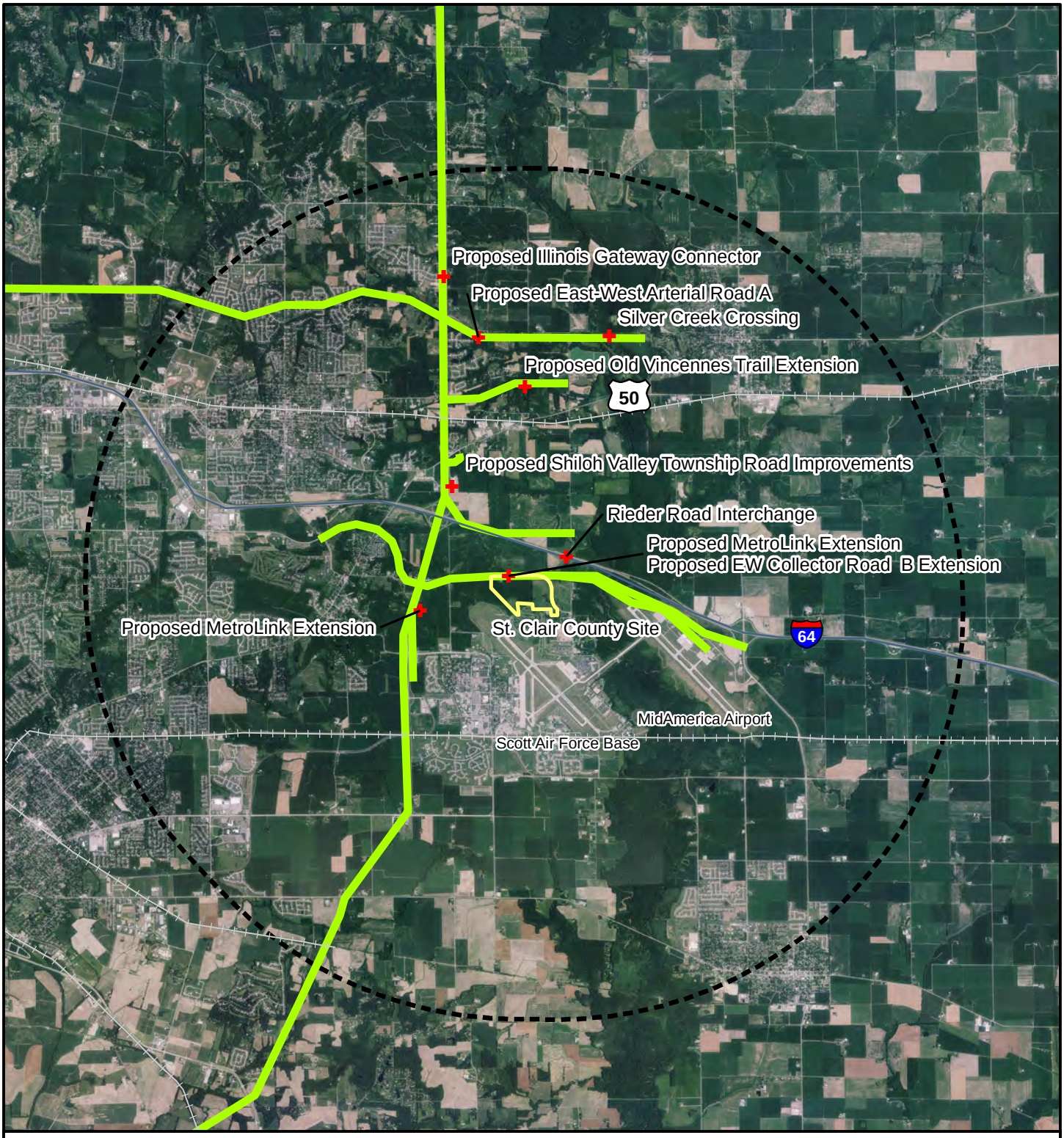
The following projects have been identified as having the potential for interaction with the Proposed Action to contribute to adverse cumulative impacts to evaluated resources at the St. Clair County Site (Figure 4.15-4).

Transportation Projects

- IDOT I-64/Rieder Road Interchange is under construction (IDOT, 2015a)
- IDOT Rieder Road Extension is proposed to complement the new interchange on I-64 at Rieder Road (IDOT, 2015a)
- IDOT Gateway Connector: an outer belt transportation corridor around the southwestern Illinois metropolitan area of the St. Louis Metropolitan region (IDOT, 2015b)
- East-West Arterial Road A would provide a connection between Old Collinsville Road and Rieder Road in the vicinity of Milburn School Road
- Silver Creek Crossing between O'Fallon and Lebanon (City of O'Fallon, 2015a)
- EW Collector Road B extension
- Shiloh Valley Township Road Improvements
- Old Vincennes Trail Extension

Other Projects

- New Scott AFB Gate Complex: New gate complex is planned for Scott AFB near the proposed St. Clair County Site (Scott AFB, 2015)
- MidAmerica Commercial Park: Plans for the MidAmerica Commercial Park would include the development of land northwest of Scott AFB and MidAmerica St. Louis Airport into a commercial and industrial park
- St. Clair County timber harvest on St. Clair County Site in January 2015




Proposed Site
5 Mile Radius
Cumulative Activites
Linear Transportation Cumulative Activities
Railroads

Figure 4.15-4
Projects Considered for Cumulative Impacts
within 5 miles of the St. Clair County Site
NGA EIS

N
0 0.5 1 2 3 Miles

Image Source:
National Agriculture Imagery Program (NAIP) 2014

#### 4.15.4.2 Cumulative Impacts

The following subsections explain the cumulative impacts of the Proposed Action and the cumulative activities to individual resources.

The Proposed Action would cause no/negligible negative or beneficial impacts to the following resources at the St. Clair County Site. Consequently, the likelihood of the Proposed Action combining with other activities to provide a noticeable adverse cumulative impact is low. Therefore, these resources are not discussed in detail in this section.

- Socioeconomics (beneficial and no/negligible impacts; only negative impact would not result in a cumulative impact)[18]
- Health and Safety (only no/negligible impacts)
- Noise (only no/negligible impacts)
- Hazardous Materials and Solid Waste (beneficial and no/negligible impacts)
- Geological and Paleontological Resources (only no/negligible impact)
- Visual Resources (only no/negligible impacts)

The following subsections represent the resources where the Proposed Action may result in an adverse effect. These resources where analyzed, assuming the Proposed Action and cumulative activities were to occur, to determine if there would be a cumulative adverse impact to the resource.

**Land Use and Community Cohesion.** The ROI for cumulative impacts to land use includes the St. Clair County Site and the surrounding lands within the MidAmerica Commercial Park and Scott AFB Gate Complex boundaries. The Proposed Action would be consistent with the proposed zoning in the ROI. The Proposed Action would result in **no/negligible impacts** to current land use **(Land Use-1)**, prime farmlands **(Land Use-3)**, displacement/relocation of agricultural lease farming **(Land Use-4a)**, displacement/relocation of the golf course driving range **(Land Use-4b)**, and community cohesion from NGA operations **(Land Use-6).** There would be a **minor to moderate, long-term benefit** to surrounding land use **(Land Use-2).** There would be a **minor to moderate, negative, and short-term impact** to community cohesion from construction impacts **(Land Use-5).**

***Cumulative Activities Affecting Land Use and Community Cohesion.*** The Proposed Action would interact with projects associated with implementation of the MidAmerica Commercial Park and the Scott AFB Gate Complex to contribute to cumulative impacts to land use.

[18] There would be a potential adverse effect due to reduction in tax revenue. However, the redevelopment activities would increase tax revenue and the transportation projects would have no effect on tax revenue. Therefore, there would not be an increase in the adverse effect.

***Cumulative Impacts to Land Use and Community Cohesion*.** The patrons of the Scott AFB Cardinal Creek Golf Course could experience increased disruption of daily activities due to the cumulative effect of the construction of the Proposed Action and the redevelopment activities; however, the redevelopment projects are in early planning and likely to be developed over several years, thus staggering construction activities. There is the potential for **minor to moderate, negative, and short-term** cumulative impacts **(Cumulative Land Use-1)** to community cohesion due to the disruption from construction projects occurring over time.

**Traffic and Transportation.** The cumulative ROI for traffic and transportation at the St. Clair County Site is the regional and local road networks that provide the most direct paths to and from the site to an interchange at an interstate roadway. The Proposed Action would result in a **minor to moderate, negative, and long-term impact** to existing LOS **(Transportation-1)**, and future LOS **(Transportation-2).** It would result in a **minor to moderate, negative, and short-term impact** from construction traffic **(Transportation-3).**

***Cumulative Activities Affecting Traffic and Transportation*.** The Proposed Action could combine with the IDOT projects, the MidAmerica Commercial Park development, and the Scott AFB Gate Complex project to result in cumulative impacts.

***Cumulative Impacts to Traffic and Transportation*.** No cumulative impacts are expected to existing LOS from IDOT activities because the IDOT projects should result in a net benefit to transportation infrastructure. The regional development projects are not clearly defined at this time; consequently, it is not possible to determine their impacts to regional transportation infrastructure.

IDOT activities, development projects, and the Proposed Action could result in increased congestion in regional roadways in the St. Clair County Site area during construction. However, it is unlikely that these activities would result in a transportation infrastructure failure, because the proposed transportation projects and other development projects in the area would likely be spread across a number of years. The Proposed Action would incrementally contribute to impacts from these other activities and result in **minor to moderate, negative, short-term cumulative impacts** to traffic and transportation in the area **(Transportation Cumulative-1**). Long-term beneficial cumulative impacts to traffic and transportation would be expected once the proposed transportation improvement projects have been completed.

**Utilities.** The ROI for each of the utility types includes the area within the site boundary as well as surrounding areas that would require relocation or upgrades by the utility. The Proposed Action would have **minor to moderate, negative, and short-term impacts** to power supply **(Utilities-1)**, water supply **(Utilities-2)**, wastewater service **(Utilities-3)**, natural gas supply **(Utilities-4)**, and communications services **(Utilities-5)**. These impacts are a result of the required infrastructure upgrades; there would be minimal to no impacts expected to regional utility service.

***Cumulative Activities Affecting Utilities*.** The Proposed Action could combine with the IDOT projects, the MidAmerica Commercial Park development, and the Scott AFB Gate Complex project to result in cumulative impacts, if construction activities were to occur during the same period.

***Cumulative Impacts to Utilities*.** While utility infrastructure may be affected by the cumulative activities, the cumulative impact to utilities would be **minor to moderate, negative, and short-term** because disruptions of service and outages are not expected **(Cumulative Utilities-1)**. NGA will coordinate with the local utility companies regarding utility requirements.

**Cultural Resources.** The ROI for cultural resources is the equivalent of the APE defined for the St. Clair County Site (Figure 3.8-2). The Proposed Action would have **no/negligible** indirect **impacts** to surrounding cultural resources **(Cultural-3**). It would result in a potential **major, negative, and long-term impact** to known historic resources **(Cultural-1)** and **minor to moderate, negative, and long-term impact** to archeological resources from construction **(Cultural-2).**

***Cumulative Activities Affecting Cultural Resources*.** The Proposed Action could combine with the IDOT projects, the MidAmerica Commercial Park development, and the Scott AFB Gate Complex project to result in cumulative impacts.

***Cumulative Impacts to Cultural Resources*.** The Proposed Action would result in potential impacts to discrete archeological sites within the project boundary. The cumulative activities could combine with the Proposed Action, if they too affected previously identified archeological resources within the APE. There would be continued **major, negative, and long-term** cumulative impacts to archeological resources **(Cumulative Cultural-2)** due to the impacts to known cultural resources within the proposed project area**.** For transportation projects, IDOT would be required to consult with the Illinois SHPO regarding any potential impacts to NRHP-listed sites.

**Water Resources.** The ROI for the water resources analysis is generally the areas within the site boundaries. However, hydrological connections to offsite wetlands/waters, the regional watershed, and groundwater basin were also considered. The Proposed Action would result in **no/negligible impacts** to wetlands **(Water-1)** floodplains **(Water-3)** and groundwater **(Water-4).** It would result in a **minor to moderate, negative, and long-term impact** surface water **(Water-2).**

***Cumulative Activities Affecting Water Resources*.** The Proposed Action could combine with the IDOT projects, the MidAmerica Commercial Park development, and the Scott AFB Gate Complex project to result in cumulative impacts.

***Cumulative Impacts to Water Resources*.** The cumulative activities and the Proposed Action would have the potential to impact surface waters and wetlands due to direct disturbance or indirectly through stormwater runoff, even where the loss of wetlands or waters would not occur. It is expected that IDOT, Scott AFB, and the MidAmerica Commercial Park developers would use appropriate measures to minimize direct and indirect impacts to surface waters. Therefore, the incremental impacts of the Proposed Action with the MoDOT projects to surface water would be **minor to moderate, negative, and long term (Cumulative Water-3)**.

**Biological Resources.** The ROI for the biological resources impact analysis is the areas within and immediately adjacent to the site boundary. The Proposed Action would result in a **minor to moderate, long-term benefit** to the spread of noxious weeds **(Biology-1b).** There would be **minor to moderate, negative, and short-term impacts** to the incidental mortality of wildlife during construction **(Biology-2a)** and migratory birds **(Biology-5).** There would be **minor to moderate, negative, and long-term impacts** to native vegetation **(Biology-1a)**, loss of wildlife habitat **(Biology-2b)**, BASH concerns **(Biology-2c)**, federally listed species **(Biology-3)**, and state-listed species **(Biology-4).**

***Cumulative Activities Affecting Biological Resources.*** The Proposed Action could combine with the IDOT projects, the MidAmerica Commercial Park development, and the Scott AFB Gate Complex project to result in cumulative impacts.

The selective timber harvest conducted by St. Clair County in January 2015 resulted in a vegetation change at the site. In addition to the change in vegetation, there was a loss of habitat for forest-dwelling wildlife, including federally listed bat species and bird species protected under the MBTA.

***Cumulative Impacts to Biological Resources.*** The Proposed Action could combine with cumulative activities to result in increased impacts to biological resources. The cumulative activities could result in disturbance to soils and vegetation and would cause displacement of wildlife, potentially including state- and federally listed species. Impacts would incrementally combine with the Proposed Action with regard to potential cumulative impacts in the ROI. However, it is expected that IDOT, Scott AFB, and the MidAmerica Commercial Park developers would use appropriate measures to minimize impacts to the natural environment and implement any required mitigation measures, pursuant to the ESA and other laws and regulations.

Conversion of forested habitat from the St. Clair County timber harvest at the St. Clair County Site resulted in minor to moderate, negative, and long-term impacts to vegetation and common wildlife species from the incremental contribution to loss of habitat in the region. The potential for indirect impacts to the endangered Indiana bat, the endangered gray bat, and the threatened northern long-eared bat from loss of potential foraging and roosting habitat as a result of the timber harvest would contribute to minor to moderate, negative, and long-term impact to these species. The loss of forested habitat also incrementally contributed to minor to moderate, negative, and long-term cumulative impacts to bird species listed under the MBTA.

The cumulative impacts to biological resources, including threatened and endangered species, from the Proposed Action and other considered projects would be **minor to moderate, negative, and long term (Cumulative Biology-1).**

**Air Quality and Climate Change.** The cumulative ROI for air quality and GHG emissions at the St. Clair County Site is defined as St. Clair County, Illinois. The Proposed Action would result in **no/negligible** impacts to GHG emissions from construction **(Air Quality-2)** and effects from climate change **(Air Quality-5); minor to moderate, negative, and short-term impacts** to air quality from construction **(Air**

**Quality-1)**, and **minor to moderate, negative, and long-term impacts** to air quality and GHG emissions from operation **(Air Quality-3** and **Air Quality-4)**.

***Cumulative Activities Affecting Air Quality and Climate Change.*** The Proposed Action could combine with IDOT and county/local road projects, the MidAmerica Commercial Park development, and the Scott AFB Gate Complex project to result in cumulative impacts to air quality.

***Cumulative Impacts to Air Quality and Climate Change.*** The Proposed Action could combine with the current and reasonably foreseeable actions to increase air pollution in the ROI. CAA General Conformity is performed on a project-specific basis and not cumulatively. Emissions from these activities could collectively contribute to NAAQS and GHG (climate change) emissions, primarily during construction. The Proposed Action emissions would be considerably below CAA *de minimis* thresholds for criteria pollutants and quantitative reporting thresholds for GHG emissions. Cumulative impacts to air quality from construction-related emissions would likely remain **minor to moderate, negative, and short term (Cumulative Air Quality-1)**. Operational air emissions from the Proposed Action would combine incrementally with construction of new development and IDOT projects to contribute to **minor to moderate, negative, and long-term cumulative impacts** to air quality **(Cumulative Air Quality-2)**. However, once the IDOT projects have been completed, it is expected that traffic flow will be enhanced, resulting in reduced automobile emission and an overall benefit to air quality and climate change.

**Airspace.** The ROI for airspace is defined in vertical and horizontal dimensions. The vertical dimension of the airspace ROI is from the ground surface up to 60,000 feet amsl, which is consistent with the FAA's controlled airspace classification elevations. The horizontal dimension of the ROI is assumed as a 35-mile-radius circle, centered on the site. The Proposed Action would result in **no/negligible impacts** to aircraft operations from potential glint/glare **(Airspace-1).** However, **minor to moderate, negative, and long-term impacts** would be expected to current airspace **(Airspace-2).**

***Cumulative Activities Affecting Airspace.*** The Proposed Action could combine with the IDOT projects, the MidAmerica Commercial Park development, and the Scott AFB Gate Complex project to result in cumulative impacts.

***Cumulative Impacts to Airspace.*** The cumulative activities are also within the St. Clair County Airport Overlay District (St. Clair County, Illinois, 2015a); therefore, these activities would also need to be consistent with the Airport Overlay District requirements (St. Clair County Airport Overlay Code, undated). It is assumed that the managers of the cumulative activities will also coordinate their activities with the FAA. Therefore, cumulative impacts to airspace from the Proposed Action at the St. Clair County Site are expected to be **minor to moderate, negative, and long term** (**Cumulative Airspace-1**) because there will be minimal change to airspace or flying (IFR and VFR) conditions.

### 4.15.5 Summary of Cumulative Impacts

Table 4.15-1 provides a summary of the cumulative impact analysis. The table shows the expected cumulative environmental impact from the Proposed Action and other potential cumulative activities. It should be noted that no increase in impacts (that is, a minor to moderate impact becoming a major impact) is expected from the incremental effect of the Proposed Action and the identified cumulative activities.

TABLE 4.15-1
**Summary of Cumulative Impacts**

| Cumulative Impact | Fenton Site | Mehlville Site | St. Louis City Site | St. Clair County Site |
|---|---|---|---|---|
| Cumulative Land Use-1: Impacts to community cohesion from construction | No cumulative impacts | No cumulative impacts | Minor to moderate, negative, short-term impact | Minor to moderate, negative, short-term impact |
| Cumulative Health-1: Increased emergency response times | No cumulative impacts | No cumulative impacts | Minor to moderate, negative, long-term impact | No cumulative impacts |
| Cumulative Transportation-1: Increased construction traffic | Minor to moderate, negative, short-term | Minor to moderate, negative, short-term | Minor to moderate, negative, short-term | Minor to moderate, negative, short-term |
| Cumulative Noise-1: Increased construction noise | Minor to moderate, negative, short-term impact | Minor to moderate, negative, short-term impact | Minor to moderate, negative, short-term impact | No cumulative impacts |
| Cumulative Haz/Waste-1: Increased solid waste from construction | Minor to moderate, negative, long-term impact | Minor to moderate, negative, long-term impact | Minor to moderate, negative, long-term impact | No cumulative impact |
| Cumulative Utilities-1: Increased utility needs | Minor to moderate, negative, short-term impact | Minor to moderate, negative, short-term impact | Minor to moderate, negative, short-term impact | Minor to moderate, negative, short-term impact |
| Cumulative Cultural-1: Impacts to architectural resources | No cumulative impacts | No cumulative impacts | Major, negative, long-term impact | No cumulative impacts |
| Cumulative Cultural-2: Impacts to archeological resources | No cumulative impact | No cumulative impacts | Minor to moderate, negative, long-term impact | Major, negative, long-term impact |
| Cumulative Water-1: Impacts to floodplains | Minor to moderate, negative, long-term impact | No cumulative impacts | No cumulative impacts | No cumulative impacts |
| Cumulative Water-2: Impacts to wetlands | No cumulative impacts | Minor to moderate, negative, long-term impact | No cumulative impacts | No cumulative impacts |
| Cumulative Water-3: Impacts to surface waters | No cumulative impacts | Minor to moderate, negative, long-term impact | No cumulative impacts | Minor to moderate, negative, long-term impact |
| Cumulative Biology-1: Impacts to biological resources | No cumulative impacts | Minor to moderate, negative, long-term impact | Minor to moderate, negative, short-term impact | Minor to moderate, negative, long-term impact |
| Cumulative Air Quality-1: Impacts to air quality from construction | Minor to moderate, negative, short-term impact | Minor to moderate, negative, short-term impact | Minor to moderate, negative, short-term impact | Minor to moderate, negative, short-term impact |

TABLE 4.15-1
**Summary of Cumulative Impacts**

| Cumulative Impact | Fenton Site | Mehlville Site | St. Louis City Site | St. Clair County Site |
|---|---|---|---|---|
| Cumulative Air Quality-2: Impacts to air quality from operation | Minor to moderate, negative, long-term impacts | Minor to moderate, negative, long-term impacts | Minor to moderate, negative, long-term impacts | Minor to moderate, negative, long-term impacts |
| Cumulative Airspace-1: Impacts to current airspace | No cumulative impacts | No cumulative impacts | No cumulative impacts | Minor to moderate, negative, long-term impact |

Note:

[a]Impacts assume BMPs and mitigation measures will be implemented for negative impacts.

## 4.16 Irreversible and Irretrievable Commitment of Resources

Irreversible or irretrievable resource commitments are related to the use of nonrenewable resources and the effects that using those resources would have on future generations. These effects primarily result from the use or conversion of a specific resource (for example, energy from hydrocarbons) that cannot be replaced within a reasonable period. Irreversible or irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored after implementing a Proposed Action (for example, extinction of a species).

The effects would be similar for all four alternative sites except where indicated below. Construction, demolition, paving, and vegetation clearing would consume electricity, hydrocarbon fuels, and water. Construction and paving would use construction materials, such as concrete and steel. Construction and paving materials would be recycled and reused to the extent practicable; however, some irreversible or irretrievable resource loss would result. The hydrocarbon-based energy required to conduct these activities or procure the finished materials would be permanently lost. Operation of the Next NGA West Campus would not add to or expand the current operations. It would be designed and operated to meet DoD policies and certification goals for energy planning, use, and management.

Construction, demolition, paving, and vegetation clearing would result in some loss of vegetated areas. Many of the areas have been previously disturbed but construction may affect vegetation or habitat in areas that support biological resources. The loss of vegetation and wildlife habitat from proposed activities would be minor or negligible for all sites and could be reversed through landscaping or subsequent restoration. Clearing of vegetation would not result in an irreversible or irretrievable commitment of resources.

Construction and demolition would result in the permanent loss of historic cultural resources at the St. Louis City Site and archeological resources at the St. Clair County Site. USACE is currently consulting with the Missouri and Illinois SHPOs to determine the appropriate mitigation for these losses.

## 4.17 Short-Term Uses of the Environment and Maintenance and Enhancement of Long-Term Productivity

Short-term uses of the environment associated with the Proposed Action would be similar for all four site alternatives and would result in impacts to certain resources that could affect the maintenance and enhancement of long-term productivity. Increased soil erosion could result from soil disturbance during construction activities. Wetlands could be lost at the Mehlville Site and the St. Clair County Site alternatives. The impacts on wetlands would require a permit and mitigation pursuant to the Clean Water Act. Compensatory mitigation would restore or create lost wetlands functions. Air quality could be affected by increased dust and vehicle emissions from construction activities. Construction could also generate increased noise. However, the following environmental protection measures would be implemented to lessen these effects:

- Implementation of design features, BMPs, mitigation measures, and standard construction practices
- Adherence to management plans and programs
- Compliance with federal, state, and local regulations

There would be a short-term beneficial socioeconomic impact associated with creation of jobs and purchase of materials during the construction period.

Construction and operation of the Next NGA West Campus at the St. Clair County Site would result in a loss of prime farmlands. The St. Clair County Comprehensive Plan establishes a goal to limit the conversion of sustainable prime farmland; however, the area that would be lost has already been designated for conversion from farmland to a commercial park. The Proposed Action would be consistent with the designated future land use for the site

Construction and operation of the Next NGA West Campus at the Mehlville and St. Louis City sites would result in a displacement of current businesses. However, the Next NGA West Campus would maintain and enhance the long-term use of these sites.

SECTION 5.0

# Environmental Justice

The key legislation and policy directives behind environmental justice assessment requirements are Title VI of the Civil Rights Act of 1964 and Executive Order 12898 (E.O. 12898), *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* issued by President William J. Clinton in 1994. Title VI of the 1964 legislation[19] prohibits intentional discrimination as well as disparate impact discrimination. E.O. 12898 mandates that agencies provide opportunities for minority and low-income populations to actively participate in the planning process and evaluates whether the project would result in any disproportionately high and adverse effects on individuals in these populations. E.O. 12898 directs federal agencies to take appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority populations and/or low-income populations to the greatest extent practicable by law.

The U.S. Environmental Protection Agency (USEPA) developed Plan EJ 2014 as a guiding principle to help integrate environmental justice into its programs, policies, and activities. Plan EJ 2014 has three major sections: Cross-Agency Focus Areas, Tools Development Areas, and Program Initiatives (USEPA, 2011b). USEPA updated previous guidance based on Plan EJ 2014 to support the evaluation of environmental justice considerations at key points in the decision-making process, evaluate whether proposed actions raise possible environmental justice concerns, and inform agencies on how to encourage related public participation in the decision-making process (USEPA, 2015b).

Consistent with the E.O. 12898 and USEPA's guidance, this Environmental Justice Analysis is organized as follows:

- Section 5.1 Introduction and EJSCREEN Approach
- Section 5.2 Public Outreach and Engagement of Minority and Low-Income Populations
- Section 5.3 Identification of Disproportionately High and Adverse Effects on Minority and Low-Income Populations
- Section 5.4 Compliance with E.O. 12898

## 5.1 Introduction and EJSCREEN Approach

The U.S. Department of Justice notes that the ultimate determination of whether a particular matter raises an environmental justice concern will depend on an evaluation of the *totality of the circumstances*. This includes

[19] Title VI states that "(n)o person in the United States shall, on the ground of race, color, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance."

multiple factors, such as the accumulation of environmental hazards in an affected area that may have resulted from a lack of public participation by the community, a lack of adequate protection under the laws designed to protect health and the environment, or unusual vulnerability of the community to such hazards. Building on these factors, USEPA states that environmental justice is the goal for all communities and that allegations of environmental injustice describe situations where communities believe the goal has not been achieved because of its belief that there is disproportionate exposure to environmental harms and risks (USEPA, 2004).

This section presents the demographic analysis used to determine minority and low-income populations. It also provides some context for the community (or lack of) within the 0.5-mile around each site. The site, along with the 0.5-mile planning area or region of influence (ROI), is assumed to be the area where the construction and operation of the Proposed Action would most likely generate impacts and the potential for environmental justice concerns.

The demographic information in this section is based on two sets of data: U.S. Census Bureau block group data and the USEPA's environmental justice screening and mapping tool, EJSCREEN. The EJSCREEN tool was used to determine the *totality of the present circumstances* concerning whether environmental justice concerns are already present at each site. Both the demographic data collected from the U.S. Census Bureau (USCB) and USEPA's EJSCREEN tool assess environmental justice populations relative to the region's populations. The key differences lie in the reference population that is used for comparison purposes and in the time period covered by the data. The demographic analysis uses American Community Survey (ACS) 2009–2013 block group estimates and compares them with the larger St. Louis, Illinois-Missouri MSA and corresponding local government (city or county). By contrast, EJSCREEN uses 2008–2012 block group estimates and compares them with either the state, USEPA region, or the nation. The methodology used to evaluate U.S. Census block group data and USEPA's screening tool are briefly described below.
Section 5.1.1, *Community Context and Demographic Analysis*, provides a summary of the physical and community context and comparative U.S. Census block group data for each proposed site. Section 5.1.2 provides the results of the EJSCREEN tool, along with a determination of which sites may present environmental justice concerns.

- Community Context and Demographic Analysis–This section provides an overview of the physical and community context in and surrounding each site alternative and then provides U.S. Census Bureau block group data to show the presence of minority and low-income populations for each site and the ROI. This U.S. Census block group data comes from the 2009–2013 ACS 5-Year Estimates (the most recent period for which data are available). Minority and low-income percentages of the population were calculated for the total population of U.S. Census block groups that were entirely or partially within the ROI. These percentages were compared to the corresponding value for the St. Louis, Illinois-Missouri MSA and corresponding local government (city or county). U.S. Census

block group data were used because block groups are one of the smallest demographic units for which U.S. Census data are consistently generated.[20]

- USEPA's EJSCREEN TOOL–The EJSCREEN tool generates a population estimate for each proposed site and adjacent populations using the 2008–2012 ACS 5-year block group data. The EJSCREEN tool compares the population estimates to the state (Missouri or Illinois) to determine potential disproportionate impacts. USEPA describes EJSCREEN as a pre-decisional screening tool that should not be used to identify or label an area as an "Environmental Justice (EJ) Community"; instead, it is designed as a starting point to identify candidate sites that might warrant further review or outreach.[21]

### 5.1.1 Community Context and Demographic Analysis

U.S. Census block groups for each of the project sites are identified on figures and data are summarized in corresponding tables for each location. The USCB (2009–2013 ACS 5-Year Estimates) were used to identify minority and low-income populations at the block group level for each of the proposed locations. The minority population information was pulled directly from the block group data. However, the low-income population was calculated from the corresponding poverty rate for the block group as documented in the U.S. Census. In this analysis, the percent of low income persons was derived by multiplying the poverty rate times 2 since the amount of income actually required for basic living costs (without government support) is far higher than the current federal poverty thresholds. This is a commonly accepted practice and consistent with previous versions of USEPA screening tools (USEPA, 2015c).

The following subsections provide a summary of the physical and community context and demographic data for each proposed site.

#### 5.1.1.1 Fenton Site

A Chrysler automobile assembly plant occupied the Fenton Site until 2009. The parcel is currently vacant and covered almost entirely in concrete and asphalt. The site is bounded by the Meramec River and a railroad to

[20] Block groups generally cover a contiguous geographic area and are often demarcated by physical landmarks or boundaries such as roads or railroads. They typically contain a range between 600 and 3,000 people and between 240 and 1,200 housing units. Therefore, block groups can vary in geographic size depending on population density. Less densely populated areas may contain fewer block groups and may span larger geographic areas. Conversely, more densely populated areas may include many block groups over a smaller geographic area (USCB, 2015j).

[21] "EJSCREEN is not designed to explore the root causes of differences in exposure. The demographic factors included in EJSCREEN are not necessarily causes of a given community's increased exposure or risk. This does not limit their usefulness for the limited purposes of the screening tool, however – these demographic factors are still useful as indicators of potential susceptibility to the environmental factors in EJSCREEN. They may be associated with susceptibility, whether or not they are causal, and can be used as proxies for other harder-to-measure factors that would better describe or determine susceptibility but for which nationally consistent data are not available. EJSCREEN screens geographic areas for increased potential for exposure and increased potential for susceptibility to exposures. Additional analysis is always needed to explore any underlying reasons for differences in susceptibility, exposure or health." (USEPA, 2015c)

the north, a railroad yard to the east, Interstate 44 (I-44) to the south, and a distribution center and the St. Louis College of Health Careers to the west. The closest residences are across the Meramec River and do not share the same transportation system that accesses the site.

The Fenton Site analysis area includes portions of three block groups in the City of Fenton, City of Kirkwood, Valley Park City, and St. Louis County, with a combined population of 7,462 (Figure 5-1). The site is wholly within Census Tract 2214.23 Block Group 1; however, the ROI crosses the river into the southeastern quarter of Census Tract 2181.03 Block Group 1. The population of U.S. Census block groups that were entirely or partially within the ROI is estimated to be approximately 5 percent minority and 20 percent low income. Both values are lower than that of the cities of Kirkwood and Valley Park, as well as the overall St. Louis MSA; however, they are slightly higher than the City of Fenton (Table 5-1).

TABLE 5-1
**Percent Minority and Low-Income Populations for Reference Population and Block Groups within a Half Mile of the Fenton Site [a]**

| | Total Population | Minority (%) | Low Income (%) |
|---|---|---|---|
| Reference Areas: | | | |
| City of Fenton | 4,035[b] | 3.6[b] | 15[c] |
| City of Kirkwood | 27,541[b] | 11.2[b] | 12[c] |
| Valley Park City | 6,968[b] | 19.3[b] | 25[c] |
| St. Louis MSA | 2,792,127[b] | 25.2[b] | 26[c] |
| Block Groups within a Half Mile: | | | |
| Census Tract 2214.23 Block Group 1 (Site) | 2,698[a] | 2.2[a] | 5[d] |
| Census Tract 2181.03 Block Group 1 (To the northwest) | 1,666[a] | 16.6[a] | 59[d] |
| Census Tract 2214.22 Block Group 1 (To the southwest) | 3,098[a] | 1[a] | 12[d] |
| **Total of Block Groups within a Half Mile:** | **7,462** | **5%[e]** | **20%[e]** |

Notes:

[a]USCB, 2015d.

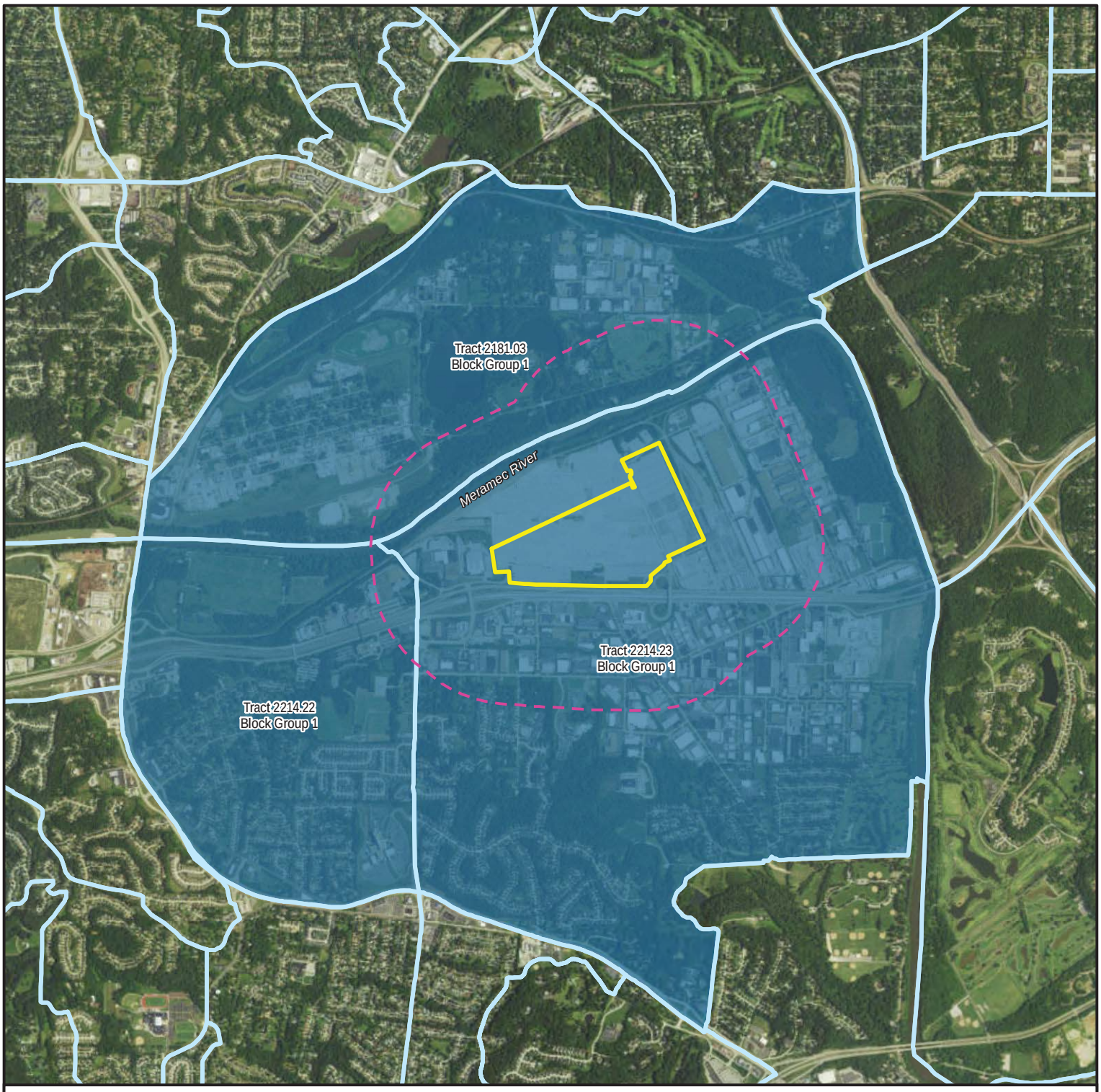
[b]USCB, 2015e.

[c]USCB, 2015f.

[d]USCB 2015c.

[e]Percentages calculated using total low income, total minority, and total population data for the applicable block groups.

Fifty-nine percent of the population of Census Tract 2181.03 Block Group 1 is low income. This is significantly larger than that of the overall St. Louis MSA (26 percent) and the City of Fenton (15 percent) (USCB, 2015f). Census Tract 2181.03 Block Group 1 is located northwest of the Fenton Site across the Meramec River and includes portions of Kirkwood and St. Louis County. The nearest Kirkwood-area residences to the Fenton Site are slightly more than 1,000 feet to the northwest along the south side of Marshall Road; however, these residences are insulated from the site by the Meramec River. To the south, the closest residence in Fenton is approximately 2,200 feet south of I-44 in an industrial area along Horan




Proposed Site

0.5-Mile Region of Influence (ROI)

Block Group Boundaries

Block Groups

Figure 5-1
Fenton Site Census Block Coverage
NGA EIS

N

0 0.25 0.5 0.75 1 Miles

Data Source: US Census Bureau 2014
Image Source: Esri, Microsoft, Image Flown 2/2/2012

Drive (Figure 5-1). There could be environmental justice concerns at the Fenton Site based on the low-income populations associated with Census Tract 2181.03 Block Group 1. However, this block group does not represent the majority of the site.

#### 5.1.1.2 Mehlville Site

The Mehlville Site is a suburban office park located west of Tesson Ferry Road, approximately 1.5 miles south of Tesson Ferry Road's intersection with Interstate 64 (I-64) in St. Louis County. This site has an existing two-story office building occupied by MetLife and Cigna. The site includes more than 30 percent open space to the southwest, beyond which lies suburban residential development to the western and southern boundaries. Approximately 25 homes back up to the proposed site boundary. Other nearby uses include shopping centers, restaurants, churches, banks, gas stations, healthcare facilities, and other suburban low-rise business buildings.

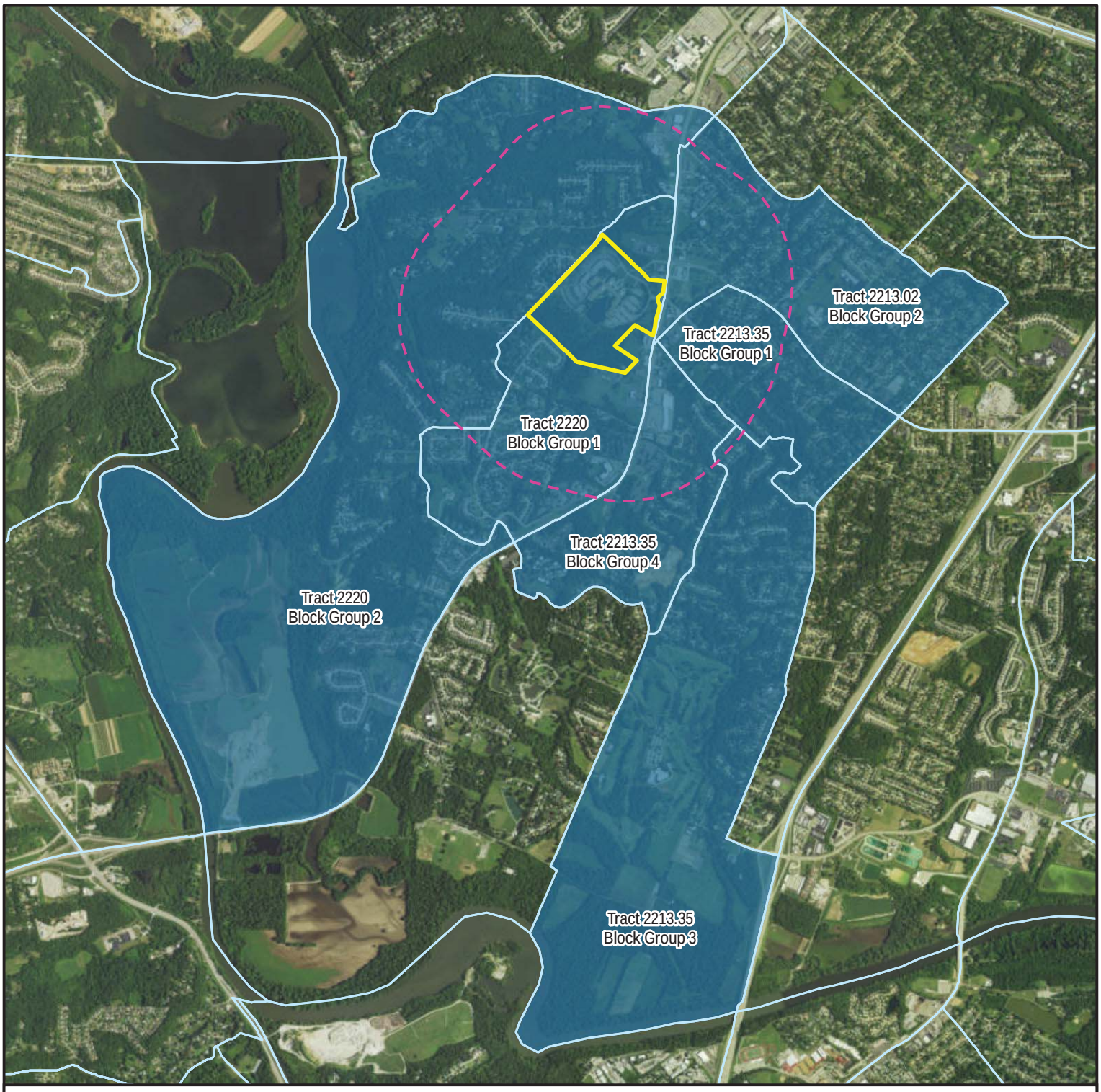
Census data identified 8,357 people residing in the five block groups, either partially or entirely within the Mehlville analysis area (see Figure 5-2 and corresponding data in Table 5-2). The actual Mehlville Site boundary is wholly within Census Tract 2220 Block Group 1 and represents approximately 40 percent of this block group's geographic area, which also extends to the southwest along Tesson Ferry Road to include portions of a residential neighborhood. Four percent of Census Tract 2220 Block Group 1 is considered a minority population and 6 percent are considered low income. The population of the block groups that were entirely or partially within the ROI is estimated to be 3 percent minority and less than 1 percent low income.

Both the specific and total block group calculations are comparable to those of the reference populations of the Mehlville analysis area (as represented by the Concord and Sappington CDPs) and substantially lower than those of the overall St. Louis MSA and therefore there is low potential for environmental justice concerns associated with this site (Table 5-2).

TABLE 5-2
**Percent Minority and Low-Income Populations for Reference Population and Block Groups within a Half Mile of the Mehlville Site[a]**

| | Total Population | Minority Population (%) | Low Income (%) |
|---|---|---|---|
| Reference Areas: | | | |
| Concord Census Designated Place | 16,750 | 2 | 9.2 |
| Sappington Census Designated Place | 7,426 | 4.9 | 11.8 |
| St. Louis MSA | 2,792,127 | 25.2 | 26 |
| Block Groups within a Half Mile: | | | |
| Census Tract 2220 Block Group 1 (Site) | 1,916 | 4.2 | 6 |
| Census Tract 2213.02 Block Group 2 | 2,107 | 0 | 1 |
| Census Tract 2213.35 Block Group 1 | 940 | 1 | 3 |
| Census Tract 2213.35 Block Group 4 | 1,539 | 9.3 | 0 |
| Census Tract 2220 Block Group 2 | 1,855 | Less than 1 | 3% |
| **Total of Block Groups within a Half Mile:** | **8,357** | **3%[b]** | **Less than 1%[b]** |

Notes:
[a]USCB, 2016b, 2016c
[b]Percentages calculated using total low income, total minority, and total population data for the applicable block groups.




Proposed Site

0.5-Mile Region of Influence (ROI)

Block Group Boundaries

Block Groups

Figure 5-2
Mehlville Site Census Block Coverage
NGA EIS

N

0 0.25 0.5 0.75 1 Miles

Data Source: US Census Bureau 2014
Image Source: Esri, Microsoft, Image Flown 2/2/2012

#### 5.1.1.3 St. Louis City Site

The St. Louis City Site is a 100-acre parcel that is part of the larger NorthSide Redevelopment Area[22], an urban redevelopment effort focused on North St. Louis that encompasses approximately 1,500 acres (inclusive of rights-of-way). The NorthSide Redevelopment Area was designated as blighted in 2009[23]. The 2009 NorthSide Redevelopment Plan (Development Strategies, 2009b) was developed at that time for the entire NorthSide Redevelopment Area. In early 2015, the St. Louis City Site was renamed the Cass and Jefferson Redevelopment Area[24] and determined to still be blighted, as described in the January 2015 Blighting Study (Development Strategies, 2015a).[25]

Since the completion of the Blighting Study in January 2015, the City has conducted a more detailed analysis of the St. Louis City Site (excluding the former Pruitt-Igoe site), refined the land use/vacancy categories, and further updated classifications of some of the lots. Based on the revisions, 85 percent of the St. Louis City Site consists of vacant lots or lots with vacant residential buildings as of December 2015 (Halliday, 2015a, pers. comm.). In total as of December 2015, 76 percent of the St. Louis City Site are vacant land, 9 percent are vacant residential lots, and only 13 percent of the parcels are owner or renter-occupied residences. The remaining 2 percent of the parcels are commercial (0.9 percent vacant, 0.5 percent owner occupied and 0.4 percent tenant occupied), churches (0.15 percent), and educational use (0.05 percent) (see Section 3.2, *Land Use and Community Cohesion*, for more information and graphic displays) (Development Strategies, 2015a).

The St. Louis City Site is bordered to the south by the Pruitt-Igoe site, a 36-acre parcel that has been left fallow and fenced off for more than 30 years. The entire NorthSide Redevelopment Area is void of critical elements of a sustainable community, such as grocery stores, pharmacies, and clinics. While there are as many as 60 community resources (churches, schools, and parks) in the ROI, only 4 are located inside the site boundaries, and they are near the edge of the proposed site. These facilities include the Howard Branch Grace Hill Head Start Center on 22nd Street, a play lot located on the northwest corner of 22nd Street and Montgomery Street (owned by Grace Hill Neighborhood Services), and the Rhema Baptist Church and Grace Hill Baptist Church located on Cass Avenue.

Since the 1970s, the City of St. Louis has been trying to encourage investments in pursuit of building a sustainable community in North St. Louis; however, continued deterioration of the area has occurred.

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[22] Development Strategies. 2009b. (2009 NorthSide Redevelopment Plan) *Redevelopment Plan for the NorthSide Tax Increment Financing (TIF) Redevelopment Area*. September 16.

[23] Development Strategies. 2009a. (2009 Blighting Study) *Data and Analysis of Conditions Representing a "Blighted Area" for the NorthSide Tax Increment Financing (TIF) Redevelopment Area*. September 2.

[24] Development Strategies. 2015b. (2015 Cass and Jefferson Redevelopment Plan) *Blighting Study & Redevelopment Plan for the Cass Avenue, Jefferson Avenue/Parnell Street, Montgomery Street, and North 22nd Street Redevelopment Area*. January 13.

[25] Development Strategies. 2015a. (2015 Blighting Study) *Data and Analysis of Conditions Representing a "Blighted Area" for the Cass Avenue, Jefferson Avenue/Parnell Street, Montgomery Street, and North 22nd Street Redevelopment Area*. January 8.

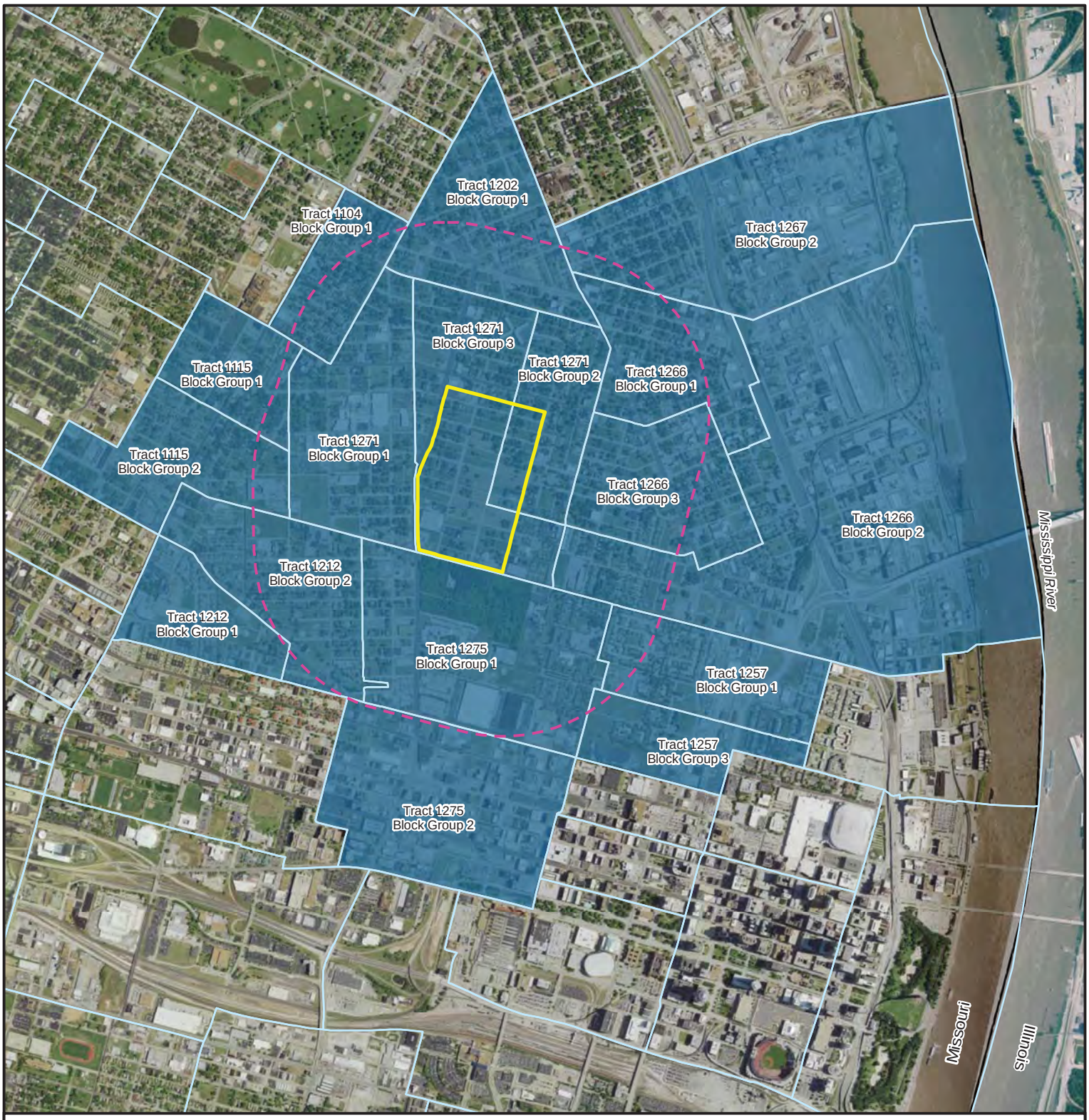
The St. Louis City Site was originally developed in the 1850s as a neighborhood with an urban grid design. Many of the homes within the site's interior have been demolished, leaving large blocks of vacant parcels. Some infill housing from the 1970s was constructed to spur growth. This effort was not successful, with many of the surrounding lots remaining vacant. The 2009 NorthSide Redevelopment Plan called for a 100-acre residential development surrounded by mixed-use and employment centers. These plans have not been successful in attracting investments.

Since early 2015, St. Louis Development Corporation's (SLDC's) Land Clearance for Redevelopment Authority (LCRA) has been working to actively acquire and consolidate property for the location of the Next NGA West Campus. To prepare for the possibility of the NGA proposal, the City amended the 2009 NorthSide Redevelopment Plan to specifically address the Cass and Jefferson Redevelopment Area and has been actively pursuing relocation agreements with the remaining property owners and tenants in accordance with Missouri relocation statutes (Sections 523.200–215, RSMo, 2014), which also meet the requirements of the federal URA. The City, under the auspices of the SLDC and LCRA, has been negotiating options with the remaining property owners to reach agreement on property acquisition. As of December 2015, agreements of sale have been reached on 94 percent of the properties, with contracts signed on 30 percent of the properties and 64 percent pending signatures (Halliday, 2015d, pers. comm.). Of the remaining 6 percent of the properties within the proposed NGA area, 1 percent have title issues. The city is continuing negotiations with the other 5 percent of the property owners (Halliday, 2015d, pers. comm.).

The Missouri relocation statutes (Sections 523.200–215, RSMo, 2014) provide fair compensation for the property, help identify and purchase comparable property in the nearby vicinity, facilitate and compensate for moving-related expenses, and provide access to additional services and assistance throughout the process.

In December 2015, Resolution Number 142-AA was passed to allow LCRA to acquire seven identified parcels through eminent domain if it is unable reach an agreement of sale. It also allows LCRA to acquire parcels through eminent domain that are currently under contract, if other circumstances delay purchase of a parcel. The resolution was passed in accordance with Section 8 of Ordinance 69977, which required that specific parcels be identified and approved by the Board of Alderman before LCRA took action.

Table 5-3 show the percent of minority and low-income populations in the Census block groups with the St. Louis City Site and the surrounding ROI (Figure 5-3). The St. Louis City Site ROI includes portions of 17 block groups, resulting in an estimated total population of 16,336. Of these, two block groups straddle portions of the site boundary, including Census Tract 1271 Block Group 3 (majority of the site) and Census Tract 1271 Block Group 2 (portion of the site north of Madison Street and east of 23rd Street). The population of these two block groups is approximately 1,437, or 9 percent of the population within the St. Louis City Site analysis area. The City of St. Louis as well as the overall St. Louis MSA are provided as reference areas and




Proposed Site

Region of Influence (ROI)

Block Group Boundaries

Block Groups

Figure 5-3
St. Louis City Site Census Block Coverage
NGA EIS

N

0 0.25 0.5 0.75 1 Miles

Data Source: US Census Bureau 2014
Image Source: Esri, Microsoft, Image Flown 2/2/2012

indicate that the analysis area has higher incidences of minority and low-income residents than either the City or the St. Louis MSA (Table 5-3). The population of the 17 block groups that were entirely or partially within the ROI is estimated to be 89.3 percent minority and 83.2 percent low income, both of which are noticeably higher than the corresponding percentages for the City and MSA. As a result, there are likely to be populations with environmental justice concerns associated with the St. Louis City Site.

TABLE 5-3
**Percent Minority and Low-Income Populations for Reference Population and Block Groups within a Half Mile of the St. Louis City Site[a]**

| | Total Population | Minority Population (%) | Low Income (%) |
|---|---|---|---|
| Reference Areas: | | | |
| St. Louis City | 318,955 | 57.3 | 54.8 |
| St. Louis MSA | 2,792,127 | 25.2 | 26.2 |
| Block Groups within a Half Mile: | | | |
| Census Tract 1271 Block Group 3 (Majority of site) | 743 | 98.1 | 100 |
| Census Tract 1271 Block Group 2 (That portion of the site north of Madison Street and east of 23rd Street) | 694 | 96.3 | 90 |
| Census Tract 1104 Block Group 1 | 599 | 100 | 27 |
| Census Tract 1115 Block Group 1 | 522 | 99.2 | 61 |
| Census Tract 1115 Block Group 2 | 410 | 100 | 100 |
| Census Tract 1202 Block Group 1 | 1,490 | 80.5 | 100 |
| Census Tract 1211 Block Group 1 | 1,813 | 88.3 | 100 |
| Census Tract 1212 Block Group 1 | 742 | 99.2 | 100 |
| Census Tract 1212 Block Group 2 | 1,330 | 100 | 26 |
| Census Tract 1255 Block Group 3 | 996 | 11.4 | 100 |
| Census Tract 1257 Block Group 1 | 2,264 | 99.6 | 26 |
| Census Tract 1257 Block Group 3 | 235 | 96.2 | 96 |
| Census Tract 1266 Block Group 1 | 928 | 44.5 | 62 |
| Census Tract 1266 Block Group 2 | 1,734 | 91 | 100 |
| Census Tract 1266 Block Group 3 | 1,015 | 95.9 | 84 |
| Census Tract 1267 Block Group 2 | 680 | 54.9 | 78 |
| Census Tract 1271 Block Group 1 | 587 | 96.1 | 85 |
| Census Tract 1275 Block Group 1 | 1,262 | 100 | 26 |
| Census Tract 1275 Block Group 2 | 1,101 | 68.4 | 27 |
| **Total of Block Groups within a Half Mile:** | **16,336** | **89.3%[b]** | **83.2%[b]** |

Notes:

[a]USCB 2015a.

[b]Percentages calculated using total low income, total minority, and total population data for the applicable block groups.

#### 5.1.1.4 St. Clair County Site

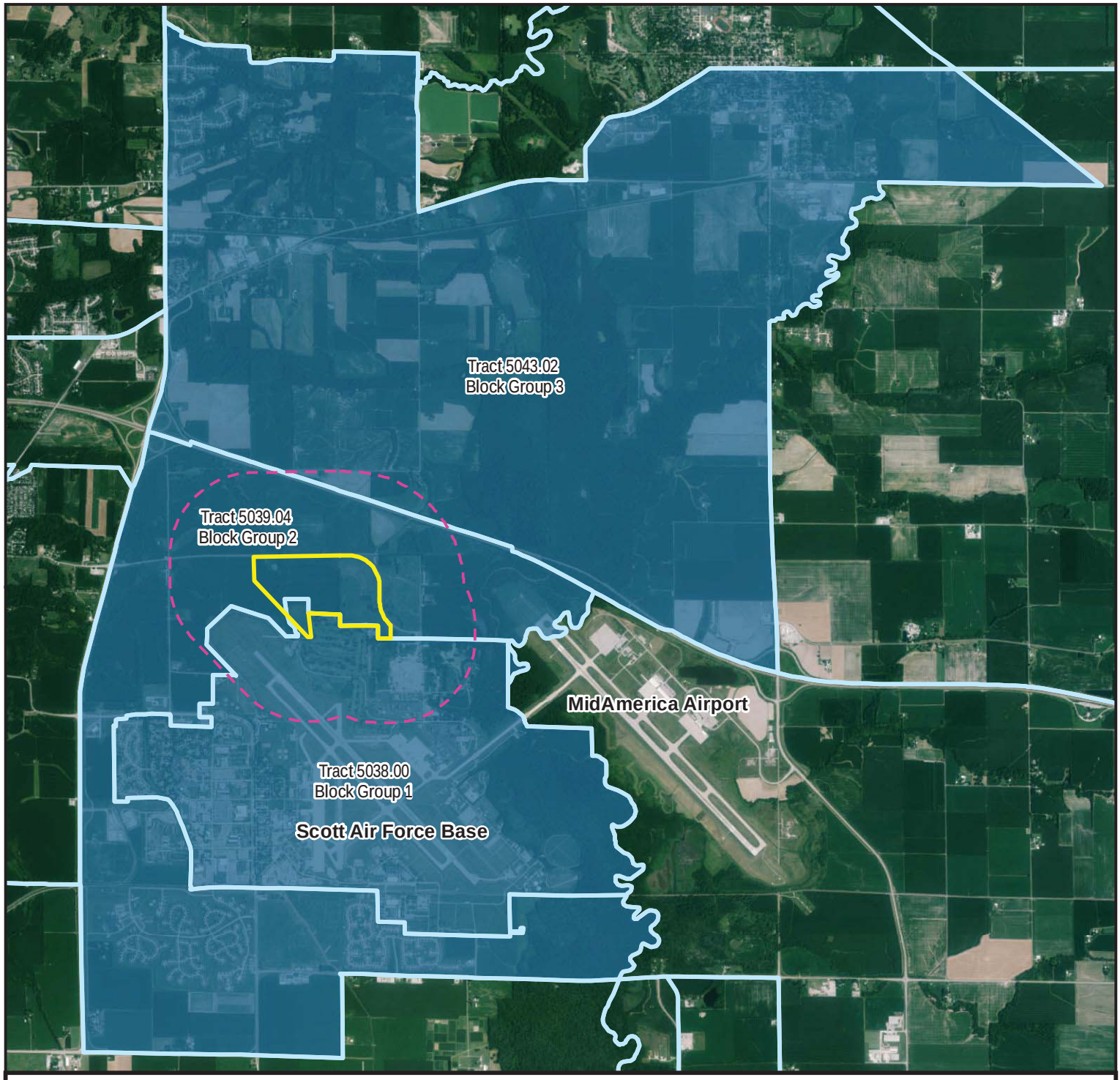
The St. Clair County Site includes agricultural land with sparsely forested areas along a stream and in thin rows that separate agricultural fields and the driving range for Scott Air Force Base (AFB) Cardinal Creek Golf Course, the only developed portion of the site. The site is owned by St. Clair County as a buffer for MidAmerica St. Louis Airport and Scott AFB (Scott AFB, 2008). No residences are present within 0.5 mile of the proposed site.

The three block groups that make up the St. Clair County analysis area are large geographic areas as shown on Figure 5-4 and in Table 5-4. These Census block groups extend outside the 0.5-mile ROI for the St. Clair County Site. The population of these three block groups is 7,991 residents, although there are no residences in or within 0.5 mile of the St. Clair County Site. The percentage of minority and low-income residents in the three block groups that were entirely or partially within the ROI is estimated to be 25 percent and 21 percent, respectively. Both of these figures are equal to or lower than the corresponding percentages for the St. Louis MSA (25.2 percent minority and 26 percent low income) and St. Clair County (37.2 percent minority and 35 percent low income), as shown in Table 5-4. For Census Tract 5039.04 Block Group 2 (the majority of the site) and Census Tract 5038.00 Block Group 1 (southwestern corner of the site, adjacent to Scott AFB's Cardinal Creek Golf Course), this includes the populations associated with Scott AFB housing just south and west of the Base along Patriots Drive (Scott AFB, 2015). Census Tract 5043.02 Block Group 3 (north of I-64), which includes a small portion of the St. Clair County Site analysis area, is a large block group extending from I-64 north to include the southern half of the City of Lebanon. As a result, the residents reported in Census block groups for the St. Clair County Site are located some distance from the site; the nearest residential development is approximately 0.75 miles southwest of the St. Clair County Site. Because none of the three block groups, considered individually or as a whole, was noticeably different than the reference areas, there is a low potential for populations with environmental justice concerns associated with this site.

TABLE 5-4
**Percent Minority and Low-Income Populations for Reference Population and Block Groups within a Half Mile of the St. Clair County Site[a]**

| | Total Population | Minority Population (%) | Low Income (%) |
|---|---|---|---|
| Reference Areas: | | | |
| St. Clair County | 268,939 | 37.2 | 35 |
| St. Louis MSA | 2,792,127 | 25.2 | 26 |
| Block Groups within a Half Mile: | | | |
| Census Tract 5039.04 Block Group 2 (Majority of site) | 4,445 | 30.7 | 16 |
| Census Tract 5038.00 Block Group 1 (Southwestern corner of site, adjacent to Cardinal Creek Golf Course) | 1,145 | 12.3 | 2 |
| Census Tract 5043.02 Block Group 3 (North of I-64) | 2,401 | 20.6 | 38 |
| **Total or Weighted Average[b] of Block Groups within a Half Mile[c]:** | **7,991** | **25%[b]** | **21%[b]** |

Notes:
[a]USCB, 2015d.
[b]Percentages calculated using total low income, total minority, and total population data for the applicable block groups.
[c]While this is the weighted average of the block group, no residents actually reside within 0.5 mile of the site boundary.




Proposed Site

0.5-Mile Region of Influence (ROI)

Block Group Boundaries

Block Group

Figure 5-4
St. Clair County Site Census Block Coverage
NGA EIS

N

0 0.25 0.5 0.75 1 Miles

Data Source: US Census Bureau 2014
Image Source: Esri, Microsoft, Image Flown 2/17/2012

## 5.1.2 USEPA EJSCREEN Tool Analysis

This analysis presents findings from the USEPA's EJSCREEN, a mapping and screening tool released in June 2015 that can be used to identify environmental justice concerns. EJSCREEN builds on the demographic analysis presented in Section 5.1.1, *Community Context and Demographic Analysis*. The tool proportions the block group data within 0.5 mile of each site and then identifies potential concerns through a series of demographic and environmental indicators described in Section 5.1.2.2, *Environmental Indices*. As noted previously, USEPA describes EJSCREEN as a screening tool rather than a method to explore the root causes of differences in environmental exposure on a site-specific basis.

The following subsections include a discussion and summary of EJSCREEN results for demographic indices and environmental indices. This section also summarizes the potential environmental justice indices and directs the reader to the corresponding resource sections of the environmental impact statement (EIS) for additional discussions.

### 5.1.2.1 Demographic Indices

The following sections summarize the demographic results obtained from EJSCREEN for each proposed site.

**Fenton Site.** EJSCREEN results for the Fenton Site reported a total population of 133, of which 10 percent is minority. This percentage is lower than the state (19 percent), USEPA Region 7 (18 percent), and the nation (36 percent). Thirty-two percent of the population is identified as low income. This is lower than the state (35 percent), USEPA Region (33 percent), and the nation (34 percent) (Appendix 5A).

**Mehlville Site.** EJSCREEN results for the Mehlville Site reported a total population of 3,928, of which 5 percent is minority. This percentage is lower than the state (19 percent), USEPA Region 7 (18 percent), and the nation (36 percent). Fifteen percent of the population is identified as low income. This is lower than the state (35 percent), USEPA Region 7 (33 percent), and the nation (34 percent) (Appendix 5A).

**St. Louis City Site.** EJSCREEN results for the St. Louis City Site reported a total population of 8,367, of which 93 percent is minority. This percentage is higher than the state (19 percent), USEPA Region 7 (18 percent), and the nation (36 percent). Seventy-seven percent of the population is identified as low income, which also is higher than the state (35 percent), USEPA Region 7 (33 percent), and the nation (34 percent). Figures 5-5 and 5-6 further illustrate the distribution of these potential environmental justice populations relative to the St. Louis City Site, which is shown in green. Figure 5.5 defines the Demographic Index and Figure 5.6 defines the Supplementary Demographic Index. Both of these indices are explicitly referenced in E.O. 12898. The Demographic Index is an average of percent low income and percent minority and is further defined on Figure 5.5. The Supplementary Demographic Index averages the percentages of six demographic factors: minority, low income, less than a high school education, linguistic isolation, under age 5, or older than age 64. These demographic factors are further defined on Figure 5.6.

TABLE 5-5
**USEPA EJSCREEN Environmental Indices for Each Site as Compared to the State of Either Missouri or Illinois[a]**

| Index (variable) | EIS Resource Section | Missouri State Average | Fenton Site | Mehlville Site | St. Louis City Site | Illinois State Average | St. Clair County Site |
|---|---|---|---|---|---|---|---|
| EJ Index for $PM_{2.5}$ ($PM_{2.5}$ in micrograms per cubic meter [$\mu g/m^3$]) | Section 3.13 - Air Quality and Climate Change | **10.8** | 12.1 | 11.9 | 12.7 | **11.4** | 10.9 |
| EJ Index for Ozone (ppb) | Section 3.13 - Air Quality and Climate Change | **48.4** | 49.1 | 49.5 | 49.1 | **44.1** | 49.6 |
| EJ Index for Traffic Proximity and Volume (daily traffic count/distance to road) | Section 3.4 - Traffic and Transportation | **66** | 100 | 120 | 130 | **69** | 28 |
| EJ Index for Lead Paint Indicator (% Pre-1960 Housing) | Section 3.6 - Hazardous Materials and Solid Waste | **0.31** | 0.26 | 0.71 | 0.42 | **0.43** | 0.4 |
| EJ Index for Proximity to National Priorities List (NPL) Sites (site count/kilometer [km] distance) | Section 3.6 - Hazardous Materials and Solid Waste | **0.075** | 0.46 | 0.083 | 0.14 | **0.069** | 0.027 |
| EJ Index for Proximity to Risk Management Plan (RMP) Sites (that is, potential chemical accident) (facility count/km distance) | Section 3.6 - Hazardous Materials and Solid Waste | **0.28** | 1.2 | 0.081 | 1.6 | **0.43** | 0.18 |
| EJ Index for Proximity to Treatment Storage and Disposal Facilities (TSDFs) (that is, hazardous waste management) (facility count/km distance) | Section 3.6 - Hazardous Materials and Solid Waste | **0.054** | 0.032 | 0.023 | 0.021 | **0.037** | 0.011 |
| EJ Index for Proximity to Major Direct Dischargers National Pollution Discharge Elimination System (NPDES) (facility count/km distance) | Section 3.10 – Water Resources | **0.17** | 0.74 | 0.2 | 0.25 | **0.27** | 0.069 |
| Legend: Indicates environmental indices above the respective state index. | | | | | | | |

Notes:

[a]USEPA, 2015c, 2015d.

Orange shading indicates that the site's environmental index is higher than that of the corresponding state (USCB, 2015a, 2015c, 2015e, 2015f).

| Map | Legend | Index (variable) Definition |
|---|---|---|
| | **Demographic Index**<br>Data not available<br>Less than 50%ile<br>50-60%ile<br>60-70%ile<br>70-80%ile<br>80-90%ile<br>90-95%ile<br>95-100%ile | The Demographic Index in EJSCREEN is a combination of percent low-income and percent minority, the two demographic factors that were explicitly named in Executive Order 12898 on Environmental Justice. For each Census block group, these two numbers are simply averaged together. The formula is as follows: Demographic Index = (% minority + % low-income)/2. Calculated from the Census Bureau's American Community Survey 2008-2012.<br><br>Note: Area shaded in green is St. Louis City Site. |

FIGURE 5-5
**USEPA EJSCREEN Demographic Maps for St. Louis City Site**

| | | |
|---|---|---|
| | **Supplementary Demographic Index**<br>Data not available<br>Less than 50%ile<br>50-60%ile<br>60-70%ile<br>70-80%ile<br>80-90%ile<br>90-95%ile<br>95-100%ile | The Supplementary Demographic Index is an average of six demographic factors: % minority, % low income, % less than high school, % in linguistic isolation, % under age 5, and % older than age 64 (as an integer 0-100). Calculated from the Census Bureau's American Community Survey 2008-2012.<br><br>Note: Area shaded in green is St. Louis City Site. |

FIGURE 5-6
**USEPA EJSCREEN Demographic Maps for St. Louis City Site** (USEPA, 2015c, 2015d)

Based on Figures 5-5 and 5-6, there are low-income and minority populations that could have potential environmental justice concerns surrounding the St. Louis City Site. Also, block groups south of Cass Avenue to the west report several Supplementary Demographic Indices, including higher concentrations of residents with less than a high school education, linguistic isolation, under age 5, or older than age 64 (Appendix 5A).

**St. Clair County Site**. EJSCREEN results for the St. Clair County Site reported a total population of two residents. However a review of aerial maps and local planning data indicate that there are no residential areas within the 0.5-mile ROI of the St. Clair County Site. The population of two, reported by EJSCREEN, is a weighted average of the entire population of the block group, which encompasses a larger geographic area than the ROI. As shown on Figure 5-4, Census Tract 5039.04 Block Group 2 extends west and south of Scott AFB to include a residential area associated with Scott AFB. Because a population of two is unsuitable for statistical analysis, the larger area encompassing the entire block group is used as the basis for assessing low-income and minority populations. As noted previously, the entire block group includes additional residential areas that might not be within the site analysis area.

The three block groups that include the St. Clair County analysis area are approximately 25 percent minority. This is lower than the state (36 percent) and the nation (36 percent) and comparable to USEPA Region 5 (24 percent). Twenty-one percent of the population is identified as low income. This is lower than the state (31 percent), USEPA Region 5 (32 percent), and the nation (34 percent) (Appendix 5).

#### 5.1.2.2 Environmental Indices

EJSCREEN uses a series of environmental indices to identify potential sources of environmental pollutants. These indices quantify the numbers and types of potential environmental pollutants, as well as geographic proximity to potential sources of environmental pollutants. As with demographic indicators, USEPA EJSCREEN background information provides screening-level information only because of limitations in the availability of data and variations in the methodology used to obtain and summarize the data (USEPA, 2015c).

Table 5-5 summarizes environmental indices for each proposed alternative site. The first column of the table summarizes potential sources of environmental pollutants. Examples include air quality, traffic, lead-based paint, and hazardous waste sites. The lead paint indicator suggests the presence of older housing, which can indicate the presence of lead paint in homes built before 1960. Additional information on other indices is further described in the table. A cross reference is provided in the second column to help the reader identify the corresponding resource section of the environmental impact statement (EIS). The remaining columns of Table 5-5 summarize indices for each proposed site and the respective state (Missouri or Illinois). For ease of comparison, values that are higher than that of the corresponding reference state are shaded orange. The EJSCREEN results indicate that the more urban locations with industrial legacies (Fenton Site and St. Louis City Site) tend to have indices noticeably higher than those of the State of Missouri. However, the Mehlville

Site has the highest indicator for potential lead paint, which is indicative of the age of the neighborhoods (pre-1960s) within the Mehlville analysis area.

## 5.2 Public Outreach and Minority and Low-Income Populations

E.O. 12898 requires agencies to provide full and fair opportunities for minority and low-income populations to engage in the public participation process. Section 1.9 of this EIS provides a discussion of the public outreach efforts conducted throughout this National Environmental Policy Act (NEPA) process; the Scoping Report, which documents public input, is provided in Appendix 1B.

The NGA and the U.S. Army Corps of Engineers (USACE) conducted outreach in each of the communities nearest the four site alternatives. However, only the St. Louis City Site includes a majority of minority and/or low-income residences. Therefore, additional efforts were made to engage community members at the St. Louis City Site, including phone calls and direct mailings to stakeholders and calling and e-mailing the aldermen of the 5th and 3rd Wards, who represent the neighborhood where the St. Louis City Site is located.

During the scoping meetings, attendees spoke with NGA representatives and provided comments. A census data search of the St. Louis City Site did not reveal a high percentage of non-English-speaking residents; therefore, none of the materials was translated into other languages.

During the St. Louis City Site meetings, attendees raised concerns about the lack of local jobs produced by the Proposed Action and the displacement of residents. Some residents supported the move, while others opposed it. Respondents expressed frustration about meeting outreach and previous attempts by other entities to redevelop their neighborhood. Other comments focused on hope for job opportunities, new development, and tax revenues from the project. See Appendix 1B for a more detailed explanation of scoping comments.

Because of concerns about distribution and receipt of the initial scoping meeting notifications (for meetings held in early December 2014), two more public scoping meetings were held for the community surrounding the St. Louis City Site. The first was promptly organized by contacting residents and neighborhood leaders to introduce the project and hear their concerns. This meeting was held on December 18, 2014, and included a representative from the SLDC.

Because of the holidays and the desire to provide increased notice, a second public meeting was held on January 14, 2015. In addition to a more comprehensive notification, the NGA and USACE team worked with local community stakeholders and active area residents during the meeting. During these two meetings, attendees expressed interest in receiving an assessment of community impacts of the project, the potential for relocation and property acquisition, and the desire to learn more about the potential for economic development to result from the NGA relocation.

In addition to the comments received during scoping, a petition was started on Change.org to encourage NGA to consider another site for its relocation. The petition contained 98,726 signatures as of September 14, 2015 (Change.org, 2015). Over the past year, the NGA has received input from several property owners and residents who have expressed both interest and concern over the proposed site development, mostly centered on their rights, property acquisition, and relocation assistance. More recently, a group of citizens have posted a website (www.savenorthsidestl.com) calling for the protection of 47 residential homes that include some elderly residents who do not wish to be relocated. They specifically request that the NGA remove this site from consideration.

In addition to these efforts, the City has been conducting outreach efforts in North St. Louis and adjacent to the St. Louis City Site. In January 2015, the City of St. Louis was a recipient of a $500,000 Choice Neighborhood Planning Grant from the U.S. Department of Housing and Urban Development (HUD) to develop a strategic Near NorthSide Transformation Plan. This plan is a comprehensive stakeholder- and resident-based plan to transform the Near NorthSide Area, which includes the Preservation Square housing development (Urban Strategies, 2015). The Preservation Square housing development is south of Cass Avenue, immediately adjacent to the St. Louis City Site.

As part of the Near NorthSide Transformation Plan, Urban Strategies, a St. Louis-based not-for-profit corporation, is leading community and stakeholder meetings, holding working group meetings, and administering a resident survey to stakeholders in the community (Urban Strategies, 2015). The City began these efforts in June 2015 by setting up monthly working group meetings, a housing working group, and a neighborhood working group. In addition, the City holds a monthly update for stakeholders and community members (Near NorthSide St. Louis, 2015). Once the Transformation Plan is completed, the Near NorthSide neighborhood will be eligible for a grant from HUD to implement the Transformation Plan.

Other planning and redevelopment initiatives include the Strong Cities, Strong Communities (SC2) Initiative and Urban Promise Zone designations. SC2 is a partnership between the White House and 14 federal agencies to help cities facing long-term challenges build capacity and more effectively use federal funds and investments. In St. Louis, the SC2 team works with city leadership and community organizations to implement the City's Sustainability Plan, which includes the NorthSide Regeneration Project (White House Council on Strong Cities, Strong Communities, 2014). Additionally, the City of St. Louis was designated as an Urban Promise Zone by HUD, which is a federal designation that creates an opportunity to obtain federal assistance to address high levels of poverty for the next 10 years. These outreach efforts are not directly related to the NGA proposal for the St. Louis City Site, but the planning efforts overlap within the City's visions for the NorthSide Area, and in combination, map create a synergy of increased community input on the City's development plans for revitalizing the NorthSide Area.

The City of St. Louis continued to conduct outreach activities in the NorthSide Area through door-to-door contacts on September 20, 2015, and October 22, 2015. As part of the contacts, residents were individually

invited to attend the public meeting in their neighborhood on October 29, 2015. Office hours also were held for 3 hours each day on November 5 and 12, 2015, at the local fire station at Cass and Jefferson Avenues to allow residents to ask questions and raise any concerns about the land acquisition process. In addition, the City met with various local organizations as part of its outreach efforts. When the Draft EIS was issued for public review in October 2015, the NGA continued to reach out to community leaders and affected residents and hold public meetings to receive input on the environmental analysis.

As part of the proposed Programmatic Agreement addressing impacts to cultural resources at each of the alternative sites, USACE conducted a Consulting Parties meeting on December 9, 2015, to review the proposed Programmatic Agreement. Representatives from the Tillie's Corner Historical Project (a local historical group interested in the St. Louis City Site and a Consulting Party to the Programmatic Agreement) participated in the meeting and suggested a number of potential cultural resources mitigation projects at the St. Louis City Site. These projects would document changes that have occurred in the North St. Louis area over the last 50 years.

The City of St. Louis is continuing to work with representatives of the Tillie's Corner Historical Project and other community members to determine the appropriate cultural resources mitigation measures, which will be stipulated in the Programmatic Agreement. The consultation process is ongoing and mitigation solutions will be in the Final Programmatic Agreement, which is expected in April 2016. The Final Programmatic Agreement will be executed prior to the signature of the Record of Decision for the EIS. Additionally, the NGA currently conducts a mentoring and tutoring program that is being considered as an opportunity to work in the surrounding community for the St. Louis City Site, if the site is chosen.

## 5.3 Identification of Disproportionately High and Adverse Effects on Minority and Low-Income Populations

The following indicators were used to determine the effect of the Proposed Action on minority and low-income populations:

- Environmental conditions, such as quality of air, water, and other environmental media, as well as loss of open space
- Human health, such as exposure of environmental justice communities to pathogens and nuisance concerns (odor, noise, and dust)
- Public welfare, such as reduced access to certain amenities like hospitals, safe drinking water, and public transportation
- Economic conditions, such as changes in employment, income, and the cost of housing

Based on the USEPA EJSCREEN tool and U.S. Census data, the St. Louis City Site is the only site alternative that consists predominantly of minority and low-income populations with contextual elements and history of

potential environmental justice concerns (Table 5-6). As a result, this section focuses on the EIS impacts analyses for only the St. Louis City Site. Earlier resource sections of the EIS, as appropriate, are referenced to determine whether a potential environmental justice concern exists for this site.

TABLE 5-6
**Environmental Justice Findings**

| Site | Potential Populations with EJ Concerns | Environmental Indices Indicative of EJ Concerns | Potential EJ Concerns |
|---|---|---|---|
| Fenton, Missouri | No | Yes | No |
| Mehlville, Missouri | No | No | No |
| St. Louis City, Missouri | Yes | Yes | Yes |
| St. Clair County, Illinois | No | No | No |

Table 5-7 presents a summary of the potential operational impacts and mitigation for the NGA at the St. Louis City Site and Table 5-8 presents a similar summary for construction impacts. Each table provides the relevant proposed environmental protection measures for construction and operation of the Proposed Action at the St. Louis City Site. Furthermore, the tables illustrate whether, following implementation of environmental protection measures, there are residual high or major impacts that require further review to determine if the project may result in disproportionately high and adverse impact on minority and low-income populations. These tables show whether an impact may be caused by the NGA Proposed Action, not whether low-income or minority populations are affected. In the far right column of each table appears information on whether a high and adverse impact results, and if there is such an impact, whether further site-specific review is necessary to determine who is affected and whether the project may result in disproportionately high and adverse impact on minority and low-income populations. Section 5.4.1 provides additional analysis of the adverse effects for community cohesion, and Section 5.4.2 provides additional information about cultural resources. See Section 4.0, *Environmental Consequences*, for a detailed analysis of all resource impacts.

TABLE 5-7
**Summary of Potential Operational Impacts and Mitigation for the St. Louis City Site**

| Element of Analysis | Next NGA West Impacts (Adverse and Beneficial) | Relevant Environmental Protection Measures[a] | Adverse EJ Effects to be Reviewed Further |
|---|---|---|---|
| Socioeconomic | Induced employment and income from operation<br>Loss of property tax to municipality | -- | No adverse effect. Therefore, no further review is necessary |
| Land Use | Conversion of 100 acres of urban area to federal property<br>Fulfillment of the City of St. Louis redevelopment plan objectives | -- | No adverse effect. Therefore, no further review is necessary |
| Community Cohesion | Displacement/Relocation<br>• 52 vacant structures<br>• 61 single-family residences<br>• 13 two-family residences<br>• 3 four-family residences<br>• 5 businesses | SLDC/LCRA will acquire property consistent with State of Missouri and City's relocation policy and the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 | Potential adverse effects, will be reviewed further, below |

TABLE 5-7
**Summary of Potential Operational Impacts and Mitigation for the St. Louis City Site**

| Element of Analysis | Next NGA West Impacts (Adverse and Beneficial) | Relevant Environmental Protection Measures[a] | Adverse EJ Effects to be Reviewed Further |
|---|---|---|---|
| | • 3 institutions (Howard Branch Grace Hill Head Start Center, Rhema Baptist Church, and Grace Baptist Church<br>• Children's play lot, owned by Grace Hill Neighborhood Services | Relocation service would attempt to find a nearby area (less than 1 mile away) to relocate neighborhood residents together to maintain community network<br>Church would be relocated within a reasonable distance of the current location to preserve existing congregation<br>Schools will be relocated within 0.5 mile of their existing locations to continue providing educational services to current attendees | |
| Health and Safety | New NGA Campus will likely have a stabilizing effect on local crime rates<br>Blighted conditions will be removed and hazardous material contamination will be remediated | -- | No adverse effect. Therefore, no further review is necessary |
| Traffic and Transportation | Increase in commuting traffic; however, the increase will not cause a failure in the regional transportation network<br>Additional traffic on local streets during peak hour commute | -- | No adverse effect. Therefore, no further review is necessary |
| Noise | No/negligible impacts from operations are expected | -- | No adverse effect. Therefore, no further review is necessary |
| Hazardous Materials | Facility is a small quantity generator, and all materials will be handled, stored, and disposed of in accordance with applicable regulations<br>Site will be cleaned according to Missouri Department of Natural Resources (MoDNR Volunteer Clean-Up Program) prior to NGA acquisition | -- | No adverse effect. Therefore, no further review is necessary |
| Cultural Resources | Demolition of historic buildings and disturbance of potential archaeological resources | Stipulations specified in the Programmatic Agreement (Pending consultation with SHPO and other consulting parties) | Major Impact/Adverse Effect under Section 106. Will be reviewed further |
| Visual | Blighted conditions will be replaced with a campus-like office park with landscaping | New buildings will complement current surroundings | No adverse effect. Therefore, no further review is necessary |
| Water Resources | No issues identified | -- | No adverse effect. Therefore, no further review is necessary |
| Air Quality | Slight increase in National Ambient Air Quality Standards (NAAQS) criteria emissions; however, all emissions would be below Clean Air Act (CAA) *de minimis* thresholds | -- | No adverse effect. Therefore, no further review is necessary |

Note:

[a]The environmental protection measures shown in this table represent the measures required to protect residents and individuals in and around the St. Louis City Site. Additional environmental protection measures are discussed in the resources discussions in Section 4, *Environmental Consequences*.

TABLE 5-8
**Summary of Potential Construction Impacts and Mitigation for the St. Louis City Site**

| Element of Analysis | Next NGA West Impacts | Relevant Environmental Protection Measures[a] | Adverse EJ Effects to be Reviewed Further |
|---|---|---|---|
| Socioeconomic | Construction employment<br>Induced employment and income from construction<br>Construction job income (to households and industry) | -- | No adverse effect. Therefore, no further review is necessary |
| Land Use and Community Cohesion | Delay or detours affecting circulation during construction | Access to community resources will be maintained to the extent possible and construction to occur primarily during weekdays and normal business hours | No adverse effect. Therefore, no further review is necessary |
| Health and Safety | Distractive nuisance of construction site | Construction site will be fenced and warning signs will be placed explaining the inherent danger at the site | No adverse effect. Therefore, no further review is necessary |
| Transportation | Increased construction traffic | A construction management plan will be created and implemented | No adverse effect. Therefore, no further review is necessary |
| Noise | Increased noise from construction | Construction noise would be compliant with St. Louis noise ordinances (St. Louis, 1998) | No adverse effect. Therefore, no further review is necessary |
| Hazardous Materials | Use of hazardous materials during construction | Hazardous materials and wastes will be used, stored, disposed of, and transported during construction in compliance with all applicable laws and regulations | No adverse effect. Therefore, no further review is necessary |
| Cultural Resources | Loss of street grid and introduction of a campus setting surrounded by solid perimeter wall would alter the historic urban character, feeling, and visual appearance of the area and would impact views of and from historic properties | -- | No major impact and no adverse effect under Section 106, therefore, no further review is necessary |
| Visual | Visual setting commensurate with a large construction project | -- | No adverse effect. Therefore, no further review is necessary |
| Water Resources | Stormwater runoff during construction | Implement erosion control best management practices (BMPs) during construction | No adverse effect. Therefore, no further review is necessary |
| Air Quality | Slight increase in NAAQS criteria emissions; however, all emissions would be below CAA *de minimis* thresholds | Air quality BMPs will be implemented during construction | No adverse effect. Therefore, no further review is necessary |

Note:

[a]The environmental protection measures shown in this table represent the measures required to protect residents and individuals in and around the St. Louis City Site. Additional environmental protection measures are discussed in the resources discussions found in Section 4, *Environmental Consequences*.

### 5.3.1 Community Cohesion

Potential direct impacts from the Proposed Action include property acquisition and relocation of existing residents and businesses.

In January 2015, the City finalized the Blighting Study[26], which analyzed the current conditions within the footprint of the Proposed Action and the former Pruitt-Igoe site (Development Strategies, 2015a). The findings of the Blighting Study indicate that the footprint for the Proposed Action at the St. Louis City Site contains 61 single-family residences, 13 two-family residences, 3 four-family residences, 5 businesses, and 3 institutional uses, including the Howard Branch Grace Hill Head Start Center, Rhema Baptist Church, and Grace Baptist Church. The St. Louis City Site also includes one neighborhood play lot on the northwest corner of 22nd Street and Montgomery Street. These are the remaining properties that would be relocated if the NGA selected this site. These residents and businesses are predominantly minority and low income.

Since 2009 when the City adopted the 2009 NorthSide Redevelopment Plan, the developer, Northside Regeneration, LLC, has been acquiring and consolidating property in these areas to create opportunities and attract development to the NorthSide Area (City of St. Louis, August 2015). The 2009 NorthSide Redevelopment Plan envisioned residential, commercial, and retail development. However, market conditions did not bring the residential development to fruition. Since early 2015, the City, under the auspices of the SLDC and LCRA, has been actively pursuing redevelopment of the St. Louis City Site for the Next NGA West Campus. Beginning in April 2015, the City began completing appraisals of the properties within the St. Louis City Site to advance the site as the location for the Next NGA West Campus. The City's intent is to purchase affected homes and businesses, including those on the St. Louis City Site acquired by Northside Regeneration, LLC and relocate the occupants to comparable, nearby properties.

Regardless of the potential NGA site selection, relocations would be expected to occur in this area over time as a result of ongoing city redevelopment activities. However, the extent of infill versus large-scale development may vary if other development plans were to be implemented. Infill development would result in fewer relocations.

The City's proposed relocation process is to voluntarily relocate home and business owners consistent with the Missouri relocation statutes (Sections 523.200–215, RSMo, 2014), which also meet the requirements of the federal URA. Most properties within the 100-acre site have existing or pending agreements of sale. As of December 2015, agreements of sale have been reached on 94 percent of the properties, with contracts signed on 30 percent of the properties (163 properties with 88 owners) and 64 percent pending signatures (351 properties with 3 owners) (Halliday, 2015d, pers. comm.). Of the remaining 6 percent of the properties

[26]Development Strategies. 2015a. (2015 Blighting Study) *Data and Analysis of Conditions Representing a "Blighted Area" for the Cass Avenue, Jefferson Avenue/Parnell Street, Montgomery Street, and North 22nd Street Redevelopment Area*. January 8.

where eminent domain is being considered, 1 percent have title issues (7 properties with 4 owners). The City is continuing negotiations with the remaining 5 percent of the property owners (30 properties with 15 owners) (Halliday, 2015d, pers. comm.). The City has stated that residents will not have to relocate if NGA does not select the site, and Resolution Number 142-AA, which allows LCRA to acquire parcels through eminent domain, is limited solely to property acquisition for the purpose of relocating NGA. The potential relocations represent an adverse impact occurring in a predominantly minority and low-income neighborhood. However, these relocations would occur in an area that is blighted and lacking many key elements of a sustainable community with vital services.

In the short term, the residents would experience disruption of their normal routines and duress from changing their residencies. The City of St. Louis, by law, would fully mitigate the costs and efforts associated with relocation and provide comparable property situated either nearby or in areas where more sustainable community services are available. In the long term, the new location may provide an improved standard of living and the remaining NorthSide neighborhoods would receive a stabilizing investment that may provide incentives for further investments and improvements. While the effects would be predominately borne by the minority and low-income population, the short-term relocation impacts are not considered high and adverse, because the Missouri relocation regulations substantially facilitate moving, compensate moving-related expenses, and provide substantial support by way of identifying relocation options and tailoring necessary services to the individual needs.

The analysis of the community impacts in Section 3.2, *Land Use and Community Cohesion*, found that the sparsely occupied development surrounded by vast areas of vacant parcels and businesses does not support a sustainable community. Consequently, constructing the Next NGA West Campus at the St. Louis Site would not result in long-term impacts on community cohesion when the community has been dissolving over many years.

The operational impacts of the Next NGA West Campus include the presence of a stabilizing institutional investment that may indirectly attract further investment into the NorthSide Redevelopment Area. The relocations would occur within the NorthSide Redevelopment Area, near other members of the community and within closer proximity of more abundant community services. Therefore, the Proposed Action would provide **long-term beneficial effects** to individuals who are relocated. In addition, the City of St. Louis is complementing these efforts with other federal redevelopment programs to develop a sustainable community in the broader NorthSide Redevelopment Area. These programs consist of the following:

- The SC2 Initiative in St. Louis, a partnership between the White House and 14 federal agencies to help cities facing long-term challenges build capacity and more effectively use federal funds and investments.

- The HUD Choice Neighborhood Planning Grant, which would guide the revitalization of the nearby Preservation Square housing area and former Pruitt-Igoe site.
- The Urban Promise Zones, a federal designation that creates an opportunity to obtain federal assistance to address high levels of poverty for the next 10 years.

Additionally, the American Federation of Labor and Congress of Industrial Organization Housing Investment Trust has issued a letter of interest (as of July 27, 2015) to invest in the first 242 units of market rate housing adjacent to the St. Louis City Site (Trumpka, 2015). Each of these activities works to improve the community and the quality of life within the NorthSide neighborhoods.

Any specific contribution of the Next NGA West Campus to future redevelopment cannot be quantified because subsequent redevelopment also would depend on implementation of projects unrelated to NGA, such as those proposed for the balance of the NorthSide Redevelopment Area. However, should NGA select the St. Louis City Site, the presence of the government facility could be a stabilizing influence in the neighborhood and contribute to the overall redevelopment planned for this area.

The NGA proposal may result in short-term change for a few residents and businesses; however, mitigation provided by the Missouri relocation statutes (Sections 523.200–215, RSMo, 2014), the resulting stability of the Next NGA West Campus, and efforts being implemented through other federal programs are expected to result in a more sustainable future for the community than exists today.

### 5.3.2 Cultural Resources

As discussed in Section 4.8.3, *Cultural Resources*, 19 historic buildings are located within the project alternative boundary: the NRHP-listed Buster Brown-Blue Ribbon building and 15 residential buildings and 3 warehouses that contribute to the NRHP-listed St. Louis Place NRHP District. These buildings will be removed before construction of the project begins. The Buster Brown building is listed under Criterion A for its association with the shoe manufacturing industry in St. Louis and under Criterion C for architecture. The St. Louis Place historic district is listed under Criterion A in the areas of Ethnic Heritage/European (German) and Community Planning and Development, highlighting the linear St. Louis Place Park, and under Criterion C for architecture. There is also a high likelihood of encountering archaeological resources from the historic era in the project boundaries, some of which may be significant, as well as a possibility of hosting deeply buried ancestral Osage sites because of their positions within the terraces of the Mississippi River.

The loss of these historic properties is an adverse effect under Section 106 and a major impact under NEPA. This adverse effect will be resolved through the stipulations in a Section 106 Programmatic Agreement. The agreement will be reached through the consultation process mandated under 36 CFR 800, which includes providing an opportunity for the public to express their views on resolving the adverse effect, as described in more detail in Section 5.2. The formally documented significance of the properties that will be removed is not associated with current ethnicities or populations. However, the City of St. Louis and NGA have consulted

with neighborhood residents, including members of the Tillie's Corner Historical Project, and agree that it is important to involve neighborhood residents in the development of meaningful mitigation projects. Affording neighborhood residents and stakeholders the opportunity to help select meaningful mitigation projects extends consultation in an important way. Selected projects will include public involvement in planning and execution, because continuing the conversation and engagement with the community is also important as the chosen projects proceed. In addition, there are many other small, single family houses from the late 1800s in this area of St. Louis that could accommodate relocated residents in a similar setting. Therefore, the impacts on these cultural resources are not high adverse effects disproportionately borne by environmental justice populations.

## 5.4 Compliance with Executive Order 12898

The analysis presented demonstrates that the St. Louis City Site is the only site with substantial minority and low-income populations that may be affected by the construction and operation of the Next NGA West Campus. Further, the USEPA EJSCREEN indices results showed that the Fenton and St. Louis City sites could both contain populations that may be exposed to environmental concerns, but only the St. Louis City Site has the potential to directly impact minority and low-income populations.

E.O. 12898 calls for federal agencies to provide opportunities for stakeholders to obtain information and provide comment on federal actions. NGA is complying with E.O. 12898 by conducting a public involvement program that includes targeted efforts to engage, inform, and solicit input from minority and low-income populations, as demonstrated through additional meetings in the St. Louis City Site neighborhood and added outreach to community leaders. The EIS responds to input received on the site selection process, including the desire to understand both community and economic impacts, but also a desire for more information about how LCRA, the City's Redevelopment Agency, proposes to relocate residents and business if the St. Louis City Site were selected.

As emphasized in USEPA's recent revisions to its *Guidance on Considering Environmental Justice during the Development of Regulatory Actions* (May 2015a), it is the role of this environmental justice analysis and screening to present anticipated impacts across population groups of concern (that is, minority and low-income populations) to the NGA, the agency decision maker for the project, with the purpose of informing its policy judgment and ultimate determination on whether there is a potential disproportionate impact that may merit additional action (USEPA, 2015b). This analysis finds that if the St. Louis City site is selected, the short-term impacts of relocation for residents and business would be borne by minority and low-income populations, but this impact is not high and adverse after considering several other factors, including the Missouri relocation statutes (Sections 523.200–215, RSMo, 2014), which also meet the requirements of the federal URA. Additionally, the Next NGA West Campus indirectly may provide a stabilizing effect and contribute some momentum toward enhancing the NorthSide community resources. These benefits may be realized by those being relocated, because the City's intention is to relocate residents and businesses within

the larger NorthSide Redevelopment Area, near other members of the community, business patrons, and within closer proximity of more abundant community services. Therefore, the NGA site alternative does not result in high and adverse effects on the health or environment that would be disproportionately borne by minority and low-income populations.

SECTION 6.0

# List of Preparers

TABLE 6-1
**List of Preparers**

| Name | Role | Education | Years of Experience |
|---|---|---|---|
| Kira Zender | Project Manager | M.S. Urban and Regional Planning<br>B.A. Urban Studies | 21 |
| Paul Thies | Senior Technical Consultant and Cumulative Impacts Senior Reviewer | Ph.D. Civil and Environmental Engineering<br>M.S. Water Resources<br>B.S. Forestry | 36 |
| Michelle Rau | Assistant Project Manager, NEPA Lead | M.S. Business Administration<br>B.S. Ecology and Evolutionary Biology | 18 |
| Richard Reaves | Lead Technical Reviewer | Ph.D. Wetland and Wildlife Ecology<br>B.S. Wildlife Ecology and Resource Management | 22 |
| Fatuma Yusuf | Socioeconomics Lead | Ph.D. Agricultural Economics<br>M.A. Agricultural Economics<br>M.S. Statistics<br>B.S. Range Management | 19 |
| Mary Jo Kealy | Socioeconomics Senior Reviewer | PhD. Economics<br>M.S. Economics<br>B.S. Economics | 33 |
| Valerie Ross | Senior NEPA Support | M.S. Regional Planning<br>B.S. Biology | 28 |
| Jodi Ketelsen | Environmental Justice Support | M.C.P Urban and Regional Planning<br>B.S. Landscape Architecture | 27 |
| Jesse Brown | Biological Support and Biological/Wetland Surveys | M.S. Biology<br>B.S. Biology | 5 |
| Lori Price | Cultural Resources Lead and Cultural Surveys/Section 106 | M.F.A. Historic Preservation and Architectural History<br>B.A. English and Political Science | 20 |
| Richard Zeroka | NEPA Support | M.A. Energy and Environmental Studies<br>B.A. Ecology<br>B.A. Physical Geography | 24 |
| Tunch Orsoy | Water Lead | M.S. Marine Science<br>B.S. Zoology | 26 |
| Timothy Nittler | Transportation Lead and Transportation Modeling | B.S. Civil Engineering | 21 |
| Daveitta Jenkins | Transportation Senior Reviewer | B.S. Civil Engineering | 21 |

TABLE 6-1
**List of Preparers**

| Name | Role | Education | Years of Experience |
|---|---|---|---|
| Ronald Vaughn | Air Quality and Greenhouse Gas Lead and Air Conformity Analysis | M.S. Environmental Engineering<br>B.S. Chemical Engineering | 25 |
| Lorraine Jameson | Environmental Justice Lead and Public Affairs | B.S. Journalism | 30 |
| Brett Weiland | Noise Lead | B.S. Environmental Science | 14 |
| Laura Glaser | Site Infrastructure and Utilities Lead | B.S. Lighting and Robotics Engineering | 15 |
| Lyna Black | Hazardous Materials and Waste and Solid Waste Lead | M.S. Geosciences<br>B.S. Biological Resources | 17 |

SECTION 7.0

# Agencies and Individuals Contacted

The following is a list of agencies and persons that were contacted for information or who provided input during the development of the DEIS. Appendix 1C includes comments submitted on the DEIS and the Army's responses to those comments.

## Federally Recognized Tribes

Please see Table 3.8-2 of the Cultural Resources Section for a full list.

## Federal Agencies

### National Geospatial-Intelligence Agency

David Berczek, Legislative & Intergovernmental Affairs Officer

Thomas Bukowski, Director Facility Program Office Security and Installations

Matthew Burkholder, Facilities Engineer

Julia Collins, Public Affairs Officer

Thomas Reynolds, Chief Engineer

### U.S. Army Corps of Engineers Kansas City District

Laurie Farmer, Project Manager

Richard Skinker, Project Manager

Bryan Smith, Project Manager

Jennifer Switzer, Planning Branch Chief

### U.S. Air Force

Brian Collingham, Scott AFB Environmental Impact Analysis Process Program Manager

William Bushman, Program Manager

Jean Reynolds, Program Manager

Paul Takacs, Environmental Engineer

### Federal Aviation Administration

Amy Hanson, Environmental Protection Specialist

Gary Wilson, Program Manager

### Advisory Council on Historic Preservation

Laura Kennedy, Assistant Historic Preservation Specialist

### Federal Highway Administration

Catherine Batey, Division Administrator, Illinois Division

Kevin Ward, Division Administrator, Missouri Division

### Natural Resource Conservation Service

Stan Mick, Area Conservationist, Jackson Area Office

### U.S. Environmental Protection Agency

J. Heath Smith, USEPA Region 7

### U.S. Fish and Wildlife Service

Amy Salveter, Field Supervisor, Columbia Ecological Services Office

## State Agencies

### Illinois Historic Preservation Agency

Amy Martin, Director

### Illinois Department of Transportation

Jeffrey Keirn, Region 5 Engineer

### Illinois State Historic Preservation Office

Rachel Leibowitz, Deputy State Historic Preservation Officer

Joseph Phillippe, Senior Archaeologist

### Missouri Department of Conservation

Alan Leary, Policy Coordinator

### Missouri Department of Natural Resources

Kris Zapalac, Historian, Missouri State Historic Preservation Office

### Missouri Department of Transportation

Greg Horn, District Engineer, St. Louis Metro District Office

### Missouri State Historical Preservation Office

Amanda Burke, Section 106 Compliance Reviewer

Judith Deel, Compliance Coordinator

## Local Agencies

### City of St. Louis

Betsy Bradley, Cultural Resources Director

Laura Costello, Director of Real Estate, St. Louis Development Corporation

Russell Halliday, St. Louis Development Corporation

David Meyer, St. Louis Development Corporation

Don Roe, Director, Planning and Urban Design Agency

Otis Williams, Director, St. Louis Development Corporation

### City of Fenton

Nikki Finkbiner, Community Development Director

### St. Clair County

Pamela Click, Zoning Secretary

### St. Louis County Department of Planning

Gail Choate, Land Use Manager

## Nongovernment Organizations

### NorthSide Regeneration, LLC

Larry Chapman, President of Chapman Ventures LLC

### St. Louis County Department of Highway and Traffic

Sheryl Hodges, Director

SECTION 8.0

# References


Allen, Michael R., and Lindsey Derrington (Preservation Research Office). 2011. *St. Louis Place Historic District [Union Addition] National Register of Historic Places Registration Form.* United States Department of the Interior, National Park Service. July 12.

American Association of State Highway and Transportation Officials. 2011. *A Policy on Geometric Design of Highways and Streets, 2011*. 6th ed. Washington D.C.

Berczek, David J. (National Geospatial-Intelligence Agency Legislative/Intergovernmental Affairs Officer). 2015. Personal communication with Kira Zender (CH2M HILL). August 21.

Botterbusch, Louis F. n.d. *St. Clair County: Some Area History and Some Family History by Mrs. Regina Breeden Bailey.* Available online at http://genealogytrails.com/ill/stclair/stchist.htm. Accessed on February 23, 2015.

Broderick, Janice, Duane Sneddeker, Mary Stiritz, and Carolyn H. Toft (Landmarks Association of St. Louis, Inc.). 1979. *St. Stanislaus Kostka Church National Register of Historic Places Inventory – Nomination Form.* United States Department of the Interior, National Park Service. April 11.

Bureau of Labor Statistics (BLS). 2012. *The Recession of 2007–2009, February 2012*. Available online at www.bls.gov/spotlight. Accessed on July 3, 2015.

Bureau of Labor Statistics (BLS). 2015. *Current Unemployment Rates for States and Historical Highs/Lows, Seasonally Adjusted*. Available online at http://www.bls.gov/web/laus/lauhsthl.htm. Accessed on July 3, 2015.

Cantwell, Tim (Director, MidAmerica St. Louis Airport). 2015. Personal communication with Kira Zender (CH2M HILL). June 23.

Change.org. (Institute for Justice). 2015. Petition from Charlesetta Taylor to National Geospatial Intelligence Agency: "Help save my longtime family home." Available online at https://www.change.org/p/city-of-st-louis-and-the-national-geospatial-intelligence-agency-help-save-my-longtime-family-home. Accessed on September 14, 2015.

Choate, Gail (Land Use Manager St. Louis County Department of Planning). 2016. Personal communication with Heather Broome (CH2M HILL) regarding development of Tesson Gardens. January 20.

City of Fenton Community Development Department. 2015. *City of Fenton at a Glance*. January. Available online at http://www.fentonmo.org/DocumentCenter/View/412. Accessed on July 2, 2015.

City of Fenton. 2014a. *City of Fenton, Missouri Annual Budget Fiscal Year 2015.* November 13.

City of Fenton. 2014b. *Official Zone District Map, City of Fenton Missouri*. Adopted by the Board of Aldermen on September 25, 2014 by Ordinance 3462; revised on October 23, 2014 by Ordinance 3469. Available online at http://www.fentonmo.org/ArchiveCenter/ViewFile/Item/270.

City of Fenton. 2015a. *Welcome to Fenton*. Available online at http://www.fentonmo.org/DocumentCenter/View/3776. Accessed on February 26, 2015.

City of Fenton. 2015b. Chapter 475: Business Zoning Districts, Section 475.080, *"PID" Planned Industrial Development District*. Ordinance No. 3078 Section 1, October 22, 2009. Accessed on March 20, 2015.

City of O'Fallon. 2014. *Economic Development Profile*. Economic Development Division, city of O'Fallon, Illinois. June.

City of O'Fallon. 2015a. *MidAmerica Enterprise Zone*. Available online at http://www.ofallon.org/economic-development-division/pages/midamerica-enterprise-zone. Accessed on July 20, 2015.

City of O'Fallon. 2015b. *Illinois 158 Corridor TIF* (O'Fallon TIF No. 1). Available online at http://www.ofallon.org/economic-development-division/pages/illinois-158-corridor-tif. Accessed on July 20, 2015.

City of St. Louis Board of Aldermen. 2015. *NGA Financing*. Board Bill No. 117. July 10.

City of St. Louis Metropolitan Police Department. 2015. *SLMPD Downloadable Crime Files, 2010 through 2014*. Available online at http://www.slmpd.org/Crimereports.shtml.

City of St. Louis Planning and Urban Design Agency (PUDA). 2013. *City of St. Louis Sustainability Plan*. Adopted January 9 and modified slightly on February 6. Available online at https://www.stlouis-mo.gov/government/departments/planning/documents/city-of-st-louis-sustainability-plan.cfm.

City of St. Louis Planning and Urban Design Agency (PUDA). 2014. St. Louis Citywide Zoning District Map. March 4.

City of St. Louis Planning and Urban Design Agency (PUDA). 2015. *Neighborhood Maps: St. Louis neighborhood maps*. Available online at https://www.stlouis-mo.gov/government/departments/public-safety/neighborhood-stabilization-office/neighborhoods/neighborhood-maps.cfm. Accessed on May 26, 2015.

City of St. Louis. 2011. *A Brief History of St. Louis.* Available online at https://www.stlouis-mo.gov/visit-play/stlouis-history.cfm. Accessed on February 23, 2015.

City of St. Louis. 2014. *FY 2015 Annual Operating Plan Summary and Overview*. June 27. Available online at https://www.stlouis-mo.gov/government/departments/budget/documents/FY-2015-Annual-Operating-Plan.cfm. Accessed on February 27, 2015.

City of St. Louis. 2015a. *City of St. Louis Proposed FY2016 Annual Operating Plan*. Presentation to the Ways and Means Committee. May 19.

City of St. Louis. 2015b. *FY 2015 Annual Operating Plan* as adopted by the Board of Aldermen on June 27, 2014. Available online at https://www.stlouis-mo.gov/government/departments/budget/documents/FY-2015-Annual-Operating-Plan.cfm. Accessed on July 7, 2015.

City of St. Louis. 2015c. *Amendment of the Strategic Land Use Plan (2005) of the St. Louis Comprehensive Plan (Amendment No. 12–Cass Ave, Jefferson Ave./Parnell St., Montgomery St., N. 22nd St. Redevelopment Area*). Approved February 4.

City of St. Louis. 2015d. *Neighborhood Comparison of Population for Census Year 2010*. Available online at http://stlcin.missouri.org/census/neighborhoodcomp.cfm. Accessed on February 18, 2015.

City of St. Louis Water Division. 2015. St. Louis Water Division Utility Maps for North St. Louis Site.

Collingham, Brian J. (Environmental Impact Analysis Process Program Manager, Scott AFB). 2015a. Personal communication with Kira Zender (CH2M HILL) regarding agricultural leases and acre size. July 21.

Collingham, Brian J. (Environmental Impact Analysis Process Program Manager, Scott AFB). 2015b. Personal communication with Kira Zender (CH2M HILL) regarding agricultural lease impacts. August 28.

Comer, Frank. 2014. Personal Communication between Frank Comer, NGA and Brian Smith, U.S. Army Corps of Engineers (Military Programs, Kansas City District) regarding distribution of NGA employees by zip code.

Copperhead Environmental Consulting. 2015. Indiana Bat and Northern Long-Eared Bat Presence/Probably Absence Survey for the National Geospatial-Intelligence Agency Environmental Impact Statement at the Mehlville Site, St. Louis County, Missouri. 17 August.

CoStar Group. 2015. *Mehlville – Saint Louis, MO*. Apartments.com. Available online at http://www.apartments.com/local/mehlville-saint-louis-mo/. Accessed on February 23, 2015.

Council on Environmental Quality (CEQ). 1983. *Guidance Regarding NEPA Regulations*. 40 CFR 1500. *Federal Register* 34263. July 28.

Council on Environmental Quality (CEQ). 1997. *Considering Cumulative Effects under the National Environmental Policy Act*. January.

Council on Environmental Quality (CEQ). 2014. *Revised Draft Guidance on the Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews*.

Department of Defense (DoD). 2002. *United Facilities Criteria (UFC 1-900-01): Selection of Methods for the Reduction, Reuse, and Recycling of Demolition Waste.* December 1.

Department of Defense (DoD). 2014. *Glint/Glare Issues on or Near Department of Defense (DoD) Aviation Operations*, Memorandum for Assistant Secretary of the Army (Installations, Environment, and Energy),

Assistant Secretary of the Navy (Energy, Installations, and Environment), and Acting Assistant Secretary of the Air Force (Installations, Environment, and Logistics). Office of the Undersecretary of Defense. June 11.

Development Strategies. 2009a. *Data and Analysis of Conditions Representing a "Blighted Area" for the NorthSide Tax Increment Financing (TIF) Redevelopment Area.* September 2.

Development Strategies. 2009b. *Blighting Study & Redevelopment Plan for the for the NorthSide Tax Increment Financing (TIF) Redevelopment Area*. September 16.

Development Strategies. 2015a. *Data and Analysis of Conditions Representing a "Blighted Area" for the Cass Avenue, Jefferson Avenue/Parnell Street, Montgomery Street, and North 22nd Street Redevelopment Area.* January 8.

Development Strategies. 2015b. *Blighting Study & Redevelopment Plan for the Cass Avenue, Jefferson Avenue/Parnell Street, Montgomery Street, and North 22nd Street Redevelopment Area*. January 13.

Diaz-Granados, Carol. 1981. *Cultural Resource Survey of 65.685 Acres of Land on the Left Bank of the Meramec River Extending Either Site of Bauer Road, St. Louis County, Missouri*.

Eastern Missouri Society for Paleontology. 2012. *Fossil Sites in the St. Louis Area*. Available online at http://www.mofossils.com/fossilsites.html. Accessed on April 1, 2015.

East-West Gateway Council of Governments. 2004. *Long-Range Population and Employment Projections.* June.

East-West Gateway Council of Governments and Metro St. Louis. 2011. *Moving Transit Forward. St. Louis Regional Long-Range Transit Plan.* Available online at http://www.metrostlouis.org/Libraries/MTF_documents/Moving_Transit_Forward_plan_document.pdf. Accessed in September 2014.

Environmental Data Resources, Inc. (EDR). 2014a. *The EDR Radius Map™ Report and GeoCheck®*. Chrysler-NGA, 1050 Dodge Drive, Fenton, MO 63026. Inquiry Number: 4085502.2s. Prepared using the EDR FieldCheck® System. September 26.

Environmental Data Resources, Inc. (EDR). 2014b. *The EDR Radius Map™ Report with GeoCheck®*, Metlife-NGA, 13045 Tesson Ferry Road, St. Louis, MO 63128. Inquiry Number: 4085433.2s. Prepared using the EDR FieldCheck® System. September 26.

Environmental Data Resources, Inc. (EDR). 2014c. *The EDR Radius Map™ Report and GeoCheck®. Northside City Side-NGA*, Cass Avenue, St. Louis, MO 63106. Inquiry Number: 4104193.2s. Prepared using the EDR FieldCheck® System. October 14.

Environmental Data Resources, Inc. (EDR). 2014d. *The EDR Radius Map™ Report with GeoCheck®*. Scott Air Force Base-NGA, Cherry Grove School Road, Scott Air Force Base, IL 62225. Inquiry Number: 4085345.2s. Prepared using the EDR FieldCheck® System. September 26.

Farmer, Laurie (USACE-Kansas City District). 2008. Personal communication with Kira Zender (CH2M HILL). May 18.

Federal Aviation Administration (FAA). 2008. *Pilot's Handbook of Aeronautical Knowledge*. U.S. Department of Transportation, Flight Standard Service. FAA-H-8083-25A.

Federal Aviation Administration (FAA). 2014a. *Procedures for Handling Airspace Matters.* U.S. Department of Transportation, Air Traffic Organization Policy. Order JO 7400.2K CHG 1. Chapters 1-32. Effective Date: April 3.

Federal Aviation Administration (FAA). 2014b. *Airspace Designations and Reporting Points*. U.S. Department of Transportation, Air Traffic Organization Policy. Order JO 7400.9Y. August 6.

Federal Bureau of Investigation. 2014. *Crime in the United States, 2013*. United States Department of Justice. November. Available online at http://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s/2013/crime-in-the-u.s.-2013. Accessed on March 26, 2015.

Federal Reserve Bank of St Louis (FRB). 2015a. Unemployment in States and Local Areas (all other areas), Available online at https://research.stlouisfed.org/fred2/series/MOSLURN, Monthly, Not Seasonally Adjusted, MOSLURN. Accessed on July 1, 2015.

Federal Reserve Bank of St. Louis (FRB). 2015b. *Metro Profile: After Stalling, Recovery Resumes in St. Louis.* Available online at https://www.stlouisfed.org/~/media/Files/PDFs/publications/pub_assets/pdf/re/2014/b/metro_profile.pdf. Accessed on February 2, 2015.

Fenneman, N.M. 1911. *Geology and Mineral Resources of the St. Louis Quadrangle, Missouri-Illinois*. Department of the Interior, U.S. Geological Survey, Bulletin 438, Washington, D.C.: Government Printing Office.

Fenton Historical Society. 2014. *History of Fenton: Our Archive.* Available online at http://www.fentonhistory.com/node/9. Accessed on February 23, 2015.

Finkbiner, Nikki (Community Development Director, City of Fenton). 2015. Personal communication with Heather Broome (CH2M HILL) regarding final plat approval. September 17.

Finkbiner, Nikki (Community Development Director, City of Fenton). 2016. Personal communication with Heather Broome (CH2M HILL) regarding status of land development activities. January 13.

Halliday, Russell (Delivery Manager, City of St. Louis). 2015a. Personal communication with Valerie Ross (CH2M HILL) regarding St. Louis City site vacancy. December 17.

Halliday, Russell (Delivery Manager, City of St. Louis). 2015b. Personal communication with Val Ross (CH2M HILL) regarding City of St. Louis property tax. July 31.

Halliday, Russell (Delivery Manager, City of St. Louis). 2015c. Personal communication with Kira Zender (CH2M HILL) regarding redevelopment action. August 7.

Halliday, Russell (Delivery Manager, City of St. Louis). 2015d. Personal communication with Valerie Ross (CH2M HILL) regarding St. Louis City site land acquisition status. December 19.

Halliday, Russell (Delivery Manager, City of St. Louis). 2015e. Personal communication with Laurie Farmer (USACE-Kansas City District) regarding remaining 10 percent remaining property owners. September 17.

Harl, Joe. 2006. *Data Recovery Investigations at the Cochran Gardens Hope VI Housing Development Tract, St. Louis City, Missouri.*

Illinois Department of Commerce and Economic Opportunity (IDOCE). 2015. *All Projections (2000-2030) – Illinois Only.* Available online: at http://www2.illinoisbiz.biz/popProj/Default.aspx. Accessed on January 28, 2015.

Illinois Department of Natural Resources (IDNR). 2014. *Illinois Threatened and Endangered Species by County: Illinois Natural Heritage Natural Database, St. Clair County.* October.

Illinois Department of Revenue (IDOR). 2015a. *Illinois Tax Rate Finder for July 2014*. Available online at https://www.revenue.state.il.us/app/trii/servlet/TRIInquiry?_CWSKEY=27510804814362994629 53&_CWSREQ=324204. Accessed on July 7, 2015.

Illinois Department of Revenue (IDOR). 2015b. *Locally Imposed Sales Taxes Administered by the Department of Revenue.* Available online at http://tax.illinois.gov/Publications/LocalGovernment/ST-62.pdf. Accessed on February 27, 2015.

Illinois Department of Transportation (IDOT). 2015a. Gateway Connector. Available online at http://www.idot.illinois.gov/projects/Gateway-Connector. Accessed on March 18, 2015

Illinois Department of Transportation (IDOT). 2015b. Current Road Construction: St. Clair County. Available online at http://www.gettingaroundillinois.com/roadconstruction/zonetbl.htm. Accessed on March 18, 2015

Illinois Environmental Protection Agency (IEPA). 2014a. *Illinois Landfill Projections of Disposal Capacity as of January 1, 2014.* July.

Illinois Environmental Protection Agency (IEPA). 2014b. Overview of the Site Remediation Program. Available online at http://www.epa.illinois.gov/topics/cleanup-programs/srp/overview/index. Accessed on July 4, 2015.

Illinois Environmental Protection Agency (IEPA). 2015. Air Quality Reports. Available online at http://www.epa.illinois.gov/topics/air-quality/air-quality-reports/index. Accessed on February 27, 2015.

Illinois State Police, 2015a. *Uniform Crime Report, 2013*. Available online at http://www.isp.state.il.us/crime/cii2013.cfm. Accessed on February 17, 2015.

Illinois State Police, 2015b. *Uniform Crime Report, 2011*. Available online at http://www.isp.state.il.us/crime/cii2011.cfm. Accessed on February 17, 2015.

Illinois State Water Survey (ISWS). 2015. *Illinois Water Supply Planning. Groundwater. Principal Aquifers.* Available online at http://www.isws.illinois.edu/wsp/wsground.asp. Accessed on February 18, 2015.

KP Development. 2015. *Fenton Logistics Park*. Available online at http://kpdevelopment.com/projects/mixed-use/fenton-logistics-park/. Accessed on March 23, 2015.

Kuhlmann Design Group, Inc. (Kuhlmann). 1993. *Site Reconnaissance and Phase I Site Assessment, Scott Joint Use Airport, Phase I Property Acquisition*.

Laclede Gas Company. 2015. *Utility Maps for Fenton, Mehlville, and North St. Louis Sites*. Accessed on March 5, 2015.

Linneman, Peter and Albert Saiz. 2006. *Forecasting 2020 U.S. County and MSA Populations.* April.

McLaughlin, Meredith, Janet Kneller, and Meredith Hawkins. 2009. *Archaeological Assessment, Architectural Evaluation and Tunnel Documentation for the Tucker Boulevard Study Area, St. Louis City, Missouri.*

Medlin, Jarrett. 2009. "North Side Story: A Brief History of the Near North Side, the heritage, neglect, and rebuilding of North St. Louis." *St. Louis Magazine*. October 27. Available online at http://www.stlmag.com/North-Side-Story-A-Brief-History-of-the-Near-North-Side/. Accessed on February 23, 2015.

Metropolitan St. Louis Sewer District (MSD). 2015. *Metropolitan St. Louis Sewer District Utility Maps for Fenton, Mehlville, and North St. Louis Sites.*

Meyer, Michael J. 2013. *Archaeological Testing of the Madam Haycraft (23SL2334) and Louis Beaydoin (23S12369) Sites in Association with MoDOT Job nos. J6I2377B and J6I2377C (I-64, St. Louis City).*

MidAmerica St. Louis Airport. 2015a. "Next NGA West- St. Clair County Site Environmental History – Parcel Summary: 53, 54, 58, 59, and 61." Engineering and Planning, Memorandum. January 20.

MidAmerica St. Louis Airport. 2015b. "Next NGA West- St. Clair County Site Environmental History – Parcel Summary: 18, 55, 56, 57, 59, and 99." Engineering and Planning, Memorandum January 26.

Minnesota IMPLAN Group. 2015. Available online at http://implan.com/V4/Index.php.

Missouri Department of Conservation (MDC). 2015a. *Meramec River.* Available online at http://mdc.mo.gov/your-property/greener-communities/missouri-watershed-inventory-and-assessment/meramec-river. Accessed on February 20, 2015.

Missouri Department of Conservation (MDC). 2015b. *Missouri Natural Heritage Program; Protected Species List for St. Louis County, MO.* Available online at http://mdc.mo.gov/your-property/greener-communities/heritage-program/results/county/St%20Louis. Accessed on February 20.

Missouri Department of Natural Resources (MoDNR). 2015a. *Guidelines for Phase 1 Archaeological Surveys and Reports*. State Historic Preservation Office.

Missouri Department of Natural Resources (MoDNR). 2015b. *Water Resources Center. Salem Plateau Groundwater Province.* Available online at http://www.dnr.mo.gov/env/wrc/groundwater/education/provinces/salemplatprovince.htm. Accessed on February 17, 2015.

Missouri Department of Natural Resources (MoDNR). 2015c. *Missouri Risk-Based Corrective Action, or MRBCA.* Available online at http://dnr.mo.gov/env/hwp/mrbca/mrbca.htm. Accessed on July 4, 2015.

Missouri Department of Natural Resources (MoDNR). 2015d. *St. Louis Area Air Monitoring Sites.* Available online at http://dnr.mo.gov/env/esp/aqm/st-louis.htm. Accessed on February 26, 2015.

Missouri Department of Natural Resources (MoDNR). 2015e. *Missouri Solid Waste Management Law, 1972 to 2012*. Available online at http://dnr.mo.gov/env/swmp/solid-waste-law-at-40.htm. Accessed on July 30, 2015.

Missouri Department of Revenue (MoDOR). 2015. *Local Sales Tax Rate Chart*. Revised May 21. Motor Vehicle Bureau for Months of July–September 2015. Available online at http://dor.mo.gov/pdf/localsales.pdf. Accessed on July 7, 2015.

Missouri Office of Administration. 2008. *Population Projections by Age, Missouri Counties: 2000 through 2030.* March. Available online at http://oa.mo.gov/budget-planning/demographic-information/population-projections/2000-2030-projections. Accessed on January 28 and 29, 2015.

Missouri Office of Administration. 2015. *Population Trends.* Available online at http://oa.mo.gov/budget-planning/demographic-information/population-projections/population-trends. Accessed on February 2, 2015.

Natural Resources Conservation Service (NRCS). 2014a. *Online Web Soil Survey 6.* "Fenton, Urban Land Complex." Available online at http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed on November 17, 2014.

Natural Resources Conservation Service (NRCS). 2014b. *Online Web Soil Survey 6.* "Fenton, Fishpot-Urban Land Complex." Available online at http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed on November 17, 2014.

Natural Resources Conservation Service (NRCS). 2014c. *Online Web Soil Survey 6.* Mehlville, Urban Land Harvester Complex. Available online at http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed on November 17, 2014.

Natural Resources Conservation Service (NRCS). 2014d. *Online Web Soil Survey 6.* "Mehlville, Crider-Menfro silt loams." Available online at http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed on November 17, 2014.

Natural Resources Conservation Service (NRCS). 2014e. *Online Web Soil Survey 6.* "North St. Louis, Urban Land Complex." Available online at http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed on November 17, 2014.

Natural Resources Conservation Service (NRCS). 2014f. *Online Web Soil Survey 6.* "North St. Louis, Urban Land-Harvester Complex." Available online at http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed on November 17, 2014.

Natural Resources Conservation Service (NRCS). 2014g. *Online Web Soil Survey 6.* "St. Clair, Winfield silt loam." Available online at http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed on November 17, 2014.

Natural Resources Conservation Service (NRCS). 2014h. *Online Web Soil Survey 6.* "St. Clair, Downsouth silt loam." Available online at http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed on November 17, 2014.

Natural Resources Conservation Service (NRCS). 2014i. *Online Web Soil Survey 6.* "St. Clair, Menfro silt loam." Available online at http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed on November 17, 2014.

Near NorthSide St. Louis. 2015. Near NorthSide Transformation Plan – How to get involved. Available online at http://www.nearnorthsidestl.com/get-involved/. Accessed on August 20, 2015.

Newman, Daniel. 2015. Personal communication with Laura Glaser (CH2M HILL) regarding NGA Utilities. March 10.

NorthSide Regeneration St. Louis. 2015. *Historic North St. Louis Made All New.* Available online at http://www.northstl.com/. Accessed on March 23, 2015.

Peter Meijer Architect, PC. 2013. *Thematic Survey of Modern Movement Non-Residential Architecture, 1945-1975, in St. Louis City*. Prepared for the City of St. Louis Cultural Resource Office, the Missouri Department

of Natural Resources, State Historic Preservation Office and the National Park Service, U.S. Department of the Interior. July 31.

Poinsett, Vickie (MetLife Property Manager). 2015. Personal communication with Kira Zender (CH2M HILL). August 10.

Porter, Jane and Carolyn Hewes Toft. 1982. *Frank P. Blair School. National Register of Historic Places Inventory – Nomination Form.* United States Department of the Interior, National Park Service.

Pryor, S.C. et al. 2014. Ch. 18 Mid-West. Climate Change Impacts in the United States: The Third National Climate Assessment, J.M. Melillo, Terese (T.C.) Richmond, and G.W. Yohe, Eds. U.S. Global Change Research Program, 408-440.

Randall, Justin (Senior Planner, City of O'Fallon Community Development, Illinois). 2015. Personal communication with Kira Zender (CH2M HILL). July 6.

Randall, Justin (Senior Planner, City of O'Fallon Community Development, Illinois). 2016. Personal communication with Heather Broome (CH2M HILL) regarding status of land development activities. January 15.

Rosko, Jackie. 2015. Personal communication with Kira Zender (CH2M HILL) regarding Cottonwood Hills and North Milam Landfills. April 6.

Saunders, Jeffrey J. 1977. *Paleontological Resources Survey. Tebo, South Grand and Osage Arms Harry S. Truman Dam and Reservoir, Osage River Basin, Missouri.* Prepared for Kansas City District Corps of Engineers. DACW4I-77-M-0228.

Scheid, Dwayne L. and Thomas J. Loebel. 2015. *Data Recovery Plan to Mitigate Adverse Effects to the Hancock Site (11S825), MidAmerica Airport, St. Clair County, Illinois*. Illinois State Archaeological Survey (ISAS), Prairie Research Institute, University of Illinois. September 13.

Scheid, Dwayne, Patrick Durst, Charles O. Witty, and Mark C. Branstner. 2012. *Archaeological Investigations at Site 11S825 (Hancock) for the I-64 Interchange at Reider Road Project*. Archaeological Testing Short Report No. 401. Illinois State Archaeological Survey, Prairie Research Institute, University of Illinois at Champaign-Urbana.

Scorecard. 2015a. *Clean Water Act Status: Cahokia-Joachim Watershed.* Available online at http://scorecard.goodguide.com/env-releases/water/cwa-watershed.tcl?huc8=07140101#ranking. Accessed on February 20, 2015.

Scorecard. 2015b. *Clean Water Act Status: Lower Kaskaskia Watershed.* Available online at http://scorecard.goodguide.com/env-releases/water/cwa-watershed.tcl?huc8=07140204. Accessed on February 20, 2015.

Scott Air Force Base (Scott AFB). 2008. *Scott Air Force Base MidAmerica St. Louis Airport Joint Land Use Study*. August.

Scott Air Force Base (Scott AFB). 2010. *Final Fish and Wildlife Component Plan, Scott Air Force Base, St. Clair County, Illino*is. November.

Scott Air Force Base (Scott AFB). 2011. *375 AMW/126 ARW/932 AW Bird/Wildlife Aircraft Strike Hazard (BASH) Plan 91-212.* May.

Scott Air Force Base (Scott AFB). 2015. *Scott AFB Utility Maps for St. Claire Site.* Accessed on March 5, 2015.

Sone, Stacy, Susan Sheppard, and Mimi Stiritz. 2004. *Buster Brown Blue Ribbon Shoe Factory [LaPrelle Williams Shoe Co]. National Register of Historic Places Registration Form.* United States Department of the Interior. National Parks Service. Landmarks Association of St. Louis.

St. Clair County, Illinois. 2011. *St. Clair County Comprehensive Plan*. Available online at http://www.co.st-clair.il.us/departments/zoning/Documents/SCCCompPlanFullFinalReport.pdf. Accessed on March 4, 2015.

St. Clair County, Illinois. 2013. *2014 Anticipated Revenues, Revenue Appropriations and Budget,* November. Available online at http://www.co.st-clair.il.us/departments/Auditor/Documents/2014%20Annual%20Budget.pdf. Accessed on July 7, 2015.

St. Clair County, Illinois. 2015a. *Section 1 St. Clair County, Illinois Appropriation Ordinance 2015.* Available online at http://www.co.st-clair.il.us/departments/auditor/Pages/default.aspx. Accessed on February 27, 2015.

St. Clair County, Illinois. 2015b. *Division XVII – Airport Overlay (AO) District*. Available online at http://www.co.st-clair.il.us/departments/zoning/Documents/StClairCountyAirportOverlayCode.pdf. Accessed on March 4, 2015.

St. Louis. 1998. St. Louis City Noise Ordinance 68130.

St. Louis. 2002. *A Plan for the Neighborhoods of the 5th Ward*. Available online at https://www.stlouis-mo.gov/government/departments/planning/documents/a-plan-for-the-neighborhoods-of-the-fifth-ward.cfm. Accessed on June 25, 2015.

St. Louis County, Missouri. 2015a. Real Estate Information. Available online at http://revenue.stlouisco.com/IAS. Accessed on May 29, 2015.

St. Louis County, Missouri. 2015b. Real Estate Taxes Amounts Due. Available online at http://revenue.stlouisco.com/Collection/TaxesDue.asp. Accessed on May 29, 2015.

St. Louis County, Missouri. 2015c. *2015 Adopted Budget: Fiscal Year Ending December 31, 2015.* Available online at http://www.stlouisco.com/portals/8/docs/document%20library/budget/2015/adopted/2015AdoptedSummaryBook.pdf. Accessed on February 27, 2015.

St. Louis County, Missouri. 2015d. *St. Louis Statistical Crime Summaries, 2010 through 2014.* Available online at http://maps.stlouisco.com/police/beta/lib/sbar/stats.html. Accessed on February 17, 2015.

St. Louis Post-Dispatch. 2013. "Developer has former Chrysler site in Fenton under contract." *St. Louis Post-Dispatch*. September 26. Available online at http://www.stltoday.com/business/columns/building-blocks/developer-has-former-chrysler-site-in-fenton-under-contract/article_0e1d105d-7b10-5f2e-8352-d86163afa83a.html. Accessed on March 23, 2015.

St. Louis Post-Dispatch. 2015. *Urban Strategies Kicks Off New Choice Neighborhood Initiative In St. Louis City With Community-Wide Meeting*. March 11, 2015.

St. Louis Regional Chamber. 2015a. *Major Employers – St. Louis, MO-IL MSA.* Available online at http://www.stlregionalchamber.com/regional-data/companies. Accessed on January 29, 2015.

St. Louis Regional Chamber. 2015b. *Economic Overview and Business Environment.* Available online at http://www.stlregionalchamber.com/work/economic-overview-business-environment. Accessed on February 2, 2015.

Stepro, Mitch. 2015. Personal communication with Kira Zender (CH2M HILL) regarding Champ Landfill. April 6.

Swanson, Thomas. 2016. *Memo: Assessment of Photovoltaic Potential for Proposed NGA West Site Locations.* Kansas City District Corps of Engineers. 15 January.

The Village of Shiloh. 2015. *The Village of Shiloh: The Place to Be.* Available online at http://shilohil.org/. Accessed on February 23, 2015.

Transportation Research Board (TRB). 2010. *Highway Capacity Manual*. Washington D.C.

Trapp, Daniel J. (Director, Engineering & Planning, MidAmerica St. Louis Airport). 2015a. Personal communication with Kira Zender (CH2M HILL) regarding amendment to height restriction in zoning ordinance. September 9.

Trapp, Daniel J. (Director, Engineering & Planning, MidAmerica St. Louis Airport). 2015b. *Memo: Next NGA West – St Clair County Site Environmental History - Parcel Summary Update: 18 and 99*. September 3.

Trapp, Daniel J. (Director, Engineering & Planning, MidAmerica St. Louis Airport). 2015c. Personal communication with Kira Zender (CH2M HILL) regarding agricultural leases on the St. Clair County Site. September 18.

Trapp, Daniel J. (Director Engineering & Planning, MidAmerica St. Louis Airport). 2016. Personal Communication with Valerie Ross (CH2M HILL) on status of agricultural leases. January 11.

Trumpka, Richard L. (President, American Federation of Labor and Congress of Industrial Organizations Housing Investment Trust). 2015. Letter of Interest to the City of St. Louis. July 27.

U.S. Air Force (USAF). 1991. *Final Environmental Impact Statement for Joint Military-Civilian Use of Scott Air Force Base, Illinois, Volume I: Impacts Analysis.* Headquarters Military Airlift Command. Scott Air Force Base, Illinois. July.

U.S. Air Force (USAF). 2007. *Midair Collision Avoidance Guide"* developed by the 375th Airlift Wing, Scott AFB, IL 62225-5000 (St. Clair County, Illinois). PowerPoint presentation of Scott AFB Midair Collision Avoidance (MACA) pamphlet.

U.S. Air Force (USAF). 2012a. *Final Integrated Natural Resources Management Plan for Scott Air Force Base, St. Clair County, Illinois*. February.

U.S. Air Force (USAF). 2012b. *Final Environmental Assessment of Installation Development at Scott Air Force Base, Illinois. Headquarters Air Mobility Command, 507 Symington Drive, Scott Air Force Base, Illinois 62225-5022.* August.

U.S. Army Corps of Engineers, Kansas City District (USACE). 2014a. *Biological Resource Technical Memorandum, Fenton Site, St. Louis, MO.* January.

U.S. Army Corps of Engineers, Kansas City District (USACE). 2014b. *Biological Resource Technical Memorandum, Mehlville Site, St Louis, MO.* January.

U.S. Army Corps of Engineers, Kansas City District (USACE). 2014c. *Biological Resource Technical Memorandum, Northside St. Louis Site, St. Louis MO.* January.

U.S. Army Corps of Engineers, Kansas City District (USACE). 2014d. *Biological Resource Technical Memorandum, St. Clair County, Illinois Site.* January.

U.S. Army Corps of Engineers, Kansas City District (USACE). 2015a. *Final Report Phase I Environmental Site Assessment – Fenton, Missouri.* May.

U.S. Army Corps of Engineers, Kansas City District (USACE). 2015b. *Final Report Phase I Environmental Site Assessment – Mehlville, Missouri.* May.

U.S. Army Corps of Engineers, Kansas City District (USACE). 2015c. *Final Report Preliminary Environmental Assessment, St. Louis City Site, North St. Louis, Missouri,* May.

U.S. Army Corps of Engineers, Kansas City District (USACE). 2015d. *Final Report Phase I Environmental Site Assessment – St. Clair County, Illinois*. June.

U.S. Army Corps of Engineers, Kansas City District (USACE). 2015e. *Architectural Survey of the Fenton Site, St. Louis County, Missouri*. Cultural Resources Survey for the Next NGA West Project.

U.S. Army Corps of Engineers, Kansas City District (USACE). 2015f. *Architectural Survey of the Mehlville Site, St. Louis County, Missouri*. Cultural Resources Survey for the Next NGA West Project.

U.S. Army Corps of Engineers, Kansas City District (USACE). 2015g. *Architectural Survey of the North St. Louis Site, St. Louis, Missouri*. Cultural Resources Survey for the Next NGA West Project.

U.S. Army Corps of Engineers, Kansas City District (USACE). 2015h. *Architectural Survey of the St. Clair County Site, St. Clair County, Illinois*. Cultural Resources Survey for the Next NGA West Project.

U.S. Army Corps of Engineers, Kansas City District (USACE). 2015i. *Archaeological Overview of the Fenton Site, St. Louis County, Missouri*. Cultural Resources Survey for the Next NGA West Project.

U.S. Army Corps of Engineers, Kansas City District (USACE). 2015j. *Geoarchaeological Summary of the Geologic Potential for Buried Prehistoric Cultural Deposits at the Fenton, MO, National Geospatial-Intelligence Agency (NGA) Site Location.*

U.S. Army Corps of Engineers, Kansas City District (USACE). 2015k. *Archaeological Overview of the Mehlville Site, St. Louis County, Missouri*. Cultural Resources Survey for the Next NGA West Project. May.

U.S. Army Corps of Engineers, Kansas City District (USACE). 2015l. *Archaeological Overview of the North St. Louis City Site, St. Louis County, Missouri*. Cultural Resources Survey for the Next NGA West Project. May.

U.S. Army Corps of Engineers, Kansas City District (USACE). 2015m. *Archaeological Overview of the North St. Clair County Site, St. Clair County, Illinois*. Cultural Resources Survey for the Next NGA West Project. May.

U.S. Army Corps of Engineers, Kansas City District (USACE). 2015n. Letter between Bryan Smith/USACE Project Manager and Scott Haley/KP Development regarding request for additional hazardous material investigations at Fenton Site. May 26.

U.S. Census Bureau (USCB). 2015a. Census data for Fenton City, St. Louis City, St. Clair County, St. Louis MSA, Missouri, and Illinois. ACS Demographic and Housing Estimates: 2009–2013 American Community Survey 5-Year Estimates; Profile of General Population and Housing Characteristics: 2010 Demographic Profile Data; Profile of General Demographic Characteristics: 2000 Census 2000 Summary File 1 (SF 1) 100-Percent Data. Available online at American Fact Finder: http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml. Accessed on January 29, 2015 and on January 13 and 15, 2016.

U.S. Census Bureau (USCB). 2015b. American Community Survey (ACS) 2009-2013, File DP05, 2013 Demographic and Housing Estimates. Available online at http://factfinder.census.gov/bkmk/table/1.0/en/ACS/13_5YR/DP05/1600000US2965954. Accessed on January 15, 2016.

U.S. Census Bureau (USCB). 2015c. *American Community Survey (ACS) 2009-2013, File B25001* Housing Units, Available online at https://www.census.gov/geo/reference/gtc/gtc_place.html. Accessed on July 4, 2015.

U.S. Census Bureau (USCB). 2015d. *2009-2013 5-Year American Community Survey, File C18120*. Employment Status by Disability Status. Available online at https://www.census.gov/geo/reference/gtc/gtc_place.html. Accessed on July 2, 2015, and on January 14 and 15, 2016.

U.S. Census Bureau (USCB). 2015e. *2009-2013 5-Year American Community Survey, File S2301*. Employment Status. Available online at https://www.census.gov/geo/reference/gtc/gtc_place.html. Accessed on July 2, 2015, and on January 14 and 15, 2016.

U.S. Census Bureau (USCB). 2015f. *2009-2013 5-Year American Community Survey, File B19013* Median Household Income in the Past 12 Months (in 2013 Inflation-adjusted Dollars). Available online at https://www.census.gov/geo/reference/gtc/gtc_place.html. Accessed on July 2, 2015, and on January 14 and 15, 2016.

U.S. Census Bureau (USCB). 2015g. *Urban and Rural Classification*, Available online at https://www.census.gov/geo/reference/urban-rural.html. Accessed on July 30, 2015.

U.S. Census Bureau (USCB). 2015h. *Census Urban Boundary Maps – St. Louis.* Available online at https://www.census.gov/geo/maps-data/maps/2010ua.html. Accessed on March 4, 2015.

U.S. Census Bureau (USCB). 2015i. *1950 Fast Facts.* Available online at https://www.census.gov/history/www/through_the_decades/fast_facts/1950_fast_facts.html. Accessed on February 2, 2015.

U.S. Census Bureau (USCB). 2015j. *B02001 – RACE, Universe Total population: 2009-2013 American Community Survey 5-Year Estimates for all Block Groups in St. Louis City, Missouri, St. Louis County, Missouri and St. Clair County, Illinois.* Available online at http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?fpt=table. Accessed on February 3, 2015.

U.S. Census Bureau (USCB). 2016a. Census data for Concord CDPs. ACS Demographic and Housing Estimates: 2009–2013 American Community Survey 5-Year Estimates; Profile of General Population and Housing Characteristics: 2010 Demographic Profile Data; Profile of General Demographic Characteristics:

2000 Census 2000 Summary File 1 (SF 1) 100-Percent Data. Available online at American Fact Finder: http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml. Accessed on March 1, 2016.

U.S. Census Bureau (USCB). 2016b. Census data for Concord CDP. Poverty Status in the Past 12 Months. Available online at American Fact Finder: http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk. Accessed on March 1, 2016.

U.S. Census Bureau (USCB). 2016c. Census data for Sappington CDP. Poverty Status in the Past 12 Months. Available online at American Fact Finder: http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk. Accessed on March 1, 2016.

U.S. Department of Agriculture (USDA). 1994. *Ecological Subregions of the United States. Central Till Plains*. Available online at http://www.fs.fed.us/land/pubs/ecoregions/ch28.html#251D. June. Accessed on January 27, 2015.

United States Energy Information Administration (USEIA). 2015 https://www.eia.gov/. Accessed on March 12, 2015.

U.S. Environmental Protection Agency (USEPA). 1971. *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances*. NTID300.1, Washington, D.C. 337 pp. December 31.

U.S. Environmental Protection Agency (USEPA). 2009. "Mandatory Reporting of Greenhouse Gases." *Federal Register*, Vol. 74, No. 209, October 30. p. 56260.

U.S. Environmental Protection Agency (USEPA). 2011a. *National Ambient Air Quality Standards (NAAQS)*. Available online at http://www.epa.gov/ttn/naaqs/criteria.html. Accessed on February 9, 2015.

U.S. Environmental Protection Agency (USEPA). 2011b. *Plan EJ 2014: Legal Tools Development Implementation Plan*. Washington D.C.: Office of General Counsel. September.

U.S. Environmental Protection Agency (USEPA). 2014. *AirData.* Available online at www.epa.gov/airdata/. Accessed on March 5, 2015.

U.S. Environmental Protection Agency (USEPA). 2015a. *2013 Greenhouse Gas Emissions from Large Facilities.* Available online at ghgdata.epa.gov. Accessed on February 25, 2015.

U.S. Environmental Protection Agency (USEPA). 2015b. *Guidance on Considering Environmental Justice During the Development of Regulatory Actions.* May.

U.S. Environmental Protection Agency (USEPA). 2015c. EJSCREEN Technical Documentation. Washington, D.C.: Office of Policy. May.

U.S. Environmental Protection Agency (USEPA). 2015d. *EJSCREEN Environmental Justice Mapping and Screening Tool*. Available online at http://ejscreen.epa.gov/mapper/index.html. Accessed on June 18, 2015.

U.S. Fish and Wildlife Service (USFWS). 2014a. *National Wetlands Inventory Wetlands Mapper.* Available online at http://www.fws.gov/wetlands/data/mapper.html. Accessed on December 3, 2014.

U.S. Fish and Wildlife Service (USFWS). 2014b. *Federally Listed Threatened and Endangered Species in Missouri*. Available online at http://www.fws.gov/midwest/endangered/lists/missouri-cty.html. Accessed on December 4, 2014.

U.S. Fish and Wildlife Service (USFWS). 2014c. *IPAC-Information, Planning, and Conservation System.* Review of resources for Fenton Site. Available online at http://ecos.fws.gov/ipac. Accessed on December 1, 2014.

U.S. Fish and Wildlife Service (USFWS). 2014d. *IPAC-Information, Planning, and Conservation System.* Review of resources for Mehlville Site. Available online at http://ecos.fws.gov/ipac. Accessed on December 22, 2014.

U.S. Fish and Wildlife Service (USFWS). 2014e. *IPAC-Information, Planning, and Conservation System.* Review of resources for St. Louis City Site. Available online at http://ecos.fws.gov/ipac. Accessed on December 1, 2014.

U.S. Fish and Wildlife Service (USFWS). 2014f. *Federally Listed Threatened and Endangered Species in Illinois*. Available online at http://www.fws.gov/midwest/endangered/lists/illinois-cty.html. Accessed on December 4, 2014.

U.S. Fish and Wildlife Service (USFWS). 2014g. *IPAC-Information, Planning, and Conservation System*. Review of resources for St. Clair County Site. Available online at http://ecos.fws.gov/ipac. Accessed on December 1, 2014.

U.S. Geological Survey (USGS). 2014. *Hydrography: National Hydrography Dataset and Watershed Boundary Dataset*. Available online at http://nhd.usgs.gov/. Accessed on December 3, 2014.

Urban Strategies. 2015. St. Louis Choice Neighborhoods. March 4, 2015.

Vector Communications. 2015. *NGA EIS Scoping Report*.

Vector Communications. 2016. *NGA Draft EIS Public Meeting Report*. 15 January.

White House Council on Strong Cities, Strong Communities. 2014. “Second Round of SC2 Locations.” January.

Woodward-Clyde. 1991. *Preliminary Geotechnical Investigation for Proposed Gateway Schools.* Prepared for St. Louis Public Schools, St. Louis, Missouri. December 27.

World Meteorological Organization. 2015. *Causes of Climate Change*. Available online at http://www.wmo.int/pages/themes/climate/causes_of_climate_change.php. Accessed on in April 2015.

Wright, John A. Sr. 2003. *African Americans in Downtown St. Louis*. Black America Series. ISBN 978-0-7385-3167-0. Chicago, IL: Arcadia Publishing.

Zatz, David. 2015. *Chrysler's St. Louis Plants (Fenton, Missouri).* Available online at http://www.allpar.com/corporate/factories/st-louis.html. Accessed on February 18, 2015.

SECTION 9.0

# Acronyms and Abbreviations

| | |
|---|---|
| °F | degrees Fahrenheit |
| µg/m$^3$ | microgram(s) per cubic meter |
| ACAM | Air Conformity Applicability Model |
| ACHP | Advisory Council on Historic Preservation |
| ACM | asbestos-containing material |
| ACS | American Community Survey |
| AFB | Air Force Base |
| AHPA | Archaeological and Historic Preservation Act |
| AID | Agricultural Industry District |
| Air Force | U.S. Air Force |
| AIRFA | American Indian Religious Freedom Act |
| amsl | above mean sea level |
| AO | Airport Overlay |
| APE | Area of Potential Effect |
| ARPA | Archaeological Resources Protection Act |
| ASTM E1527-13 | Standard Practice E1527-13 |
| ASTM | ASTM International |
| ATC | air traffic control |
| ATFP | anti-terrorism force protection |
| Base | Scott Air Force Base |
| BASH | Bird/Animal Aircraft Strike Hazard |
| BGEPA | Bald and Golden Eagle Protection Act |
| bgs | below ground surface |
| BLS | Bureau of Labor Statistics |
| BMP | best management practice |

| | |
|---|---|
| BVCP | Brownfields/Voluntary Cleanup Program |
| CAA | Clean Air Act |
| CDP | Census-Designated Place |
| CEQ | Council on Environmental Quality |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFR | *Code of Federal Regulations* |
| CO | carbon monoxide |
| $CO_2$ | carbon dioxide |
| $CO_2e$ | carbon dioxide equivalent |
| CSR | Missouri Code of State Regulations |
| CWA | Clean Water Act |
| dB | decibels |
| dBA | A-weighted noise sound level |
| DEIS | Draft Environmental Impact Statement |
| DIP | ductile iron pipe |
| DoD | U.S. Department of Defense |
| DTL | default target level |
| E.O. | Executive Order |
| EDR | Environmental Data Resources, Inc. |
| EIS | Environmental Impact Statement |
| EISA | Energy Independence and Security Act |
| ESA | Endangered Species Act; Environmental Site Assessment |
| ESTR | Eastbound shared Thru/Right |
| EWG | East-West Gateway Council of Governments |
| FAA | Federal Aviation Administration |
| FAR | Federal Aviation Regulations |
| FEIS | Final Environmental Impact Statement |

| | |
|---|---|
| FEMA | Federal Emergency Management Agency |
| FIRM | Flood Insurance Rate Maps |
| FNWA | Federal Noxious Weed Act |
| FPPA | Farmland Protection Policy Act |
| FR | Federal Register |
| FRB | Federal Reserve Bank |
| FRZ | Flight Restriction Zones |
| $ft^2$ | square foot (feet) |
| $ft^3$ | cubic foot (feet) |
| FTE | full-time equivalent |
| GHG | greenhouse gas |
| GIS | geographic information system |
| HSP | Health and Safety Plan |
| HUD | U.S. Department of Housing and Urban Development |
| I-255 | Interstate 255 |
| I-270 | Interstate 270 |
| I-44 | Interstate 44 |
| I-55 | Interstate 55 |
| I-64 | Interstate 64 |
| I-70 | Interstate 70 |
| IDNR | Illinois Department of Natural Resources |
| IDOR | Illinois Department of Revenue |
| IDOT | Illinois Department of Transportation |
| IEPA | Illinois Environmental Protection Agency |
| IFR | Instrument Flight Rules |
| ILCS | Illinois Compiled Statute |
| IPCB | Illinois Pollution Control Board |

| | |
|---|---|
| ISWS | Illinois State Water Survey |
| km | kilometer(s) |
| kV | kilovolt(s) |
| Laclede | Laclede Gas Company |
| LBP | lead-based paint |
| LCRA | Land Clearance for Redevelopment Authority |
| LEED | Leadership in Energy and Environmental Design |
| LESA | Land Evaluation Site Assessment |
| LOS | level of service |
| LP | liquefied petroleum |
| MBTA | Migratory Bird Treaty Act |
| MDC | Missouri Department of Conservation |
| MetLife | Metropolitan Life Insurance Company |
| MMBtu | million British thermal units |
| MoDNR | Missouri Department of Natural Resources |
| MoDOT | Missouri Department of Transportation |
| MOS | minimum operating system |
| MSA | Metropolitan Statistical Area |
| MSD | Metropolitan St. Louis Sewer District |
| MT | metric ton(s) |
| NA | not applicable |
| NAAQS | National Ambient Air Quality Standards |
| NAGPRA | Native American Graves Protection and Repatriation Act |
| NBL | northbound left |
| NEPA | National Environmental Policy Act |
| NESHAP | National Emissions Standards for Hazardous Air Pollutants |
| NFR | No Further Remediation |

| | |
|---|---|
| NGA | National Geospatial-Intelligence Agency |
| NHD | National Hydrography Dataset |
| NHPA | National Historic Preservation Act |
| nm | nautical mile(s) |
| $NO_2$ | nitrogen dioxide |
| NORM | Naturally Occurring Radioactive Material |
| $NO_X$ | oxides of nitrogen |
| NPDES | National Pollutant Discharge Elimination System |
| NPL | National Priorities List |
| NPS | National Park Service |
| NRCS | Natural Resources Conservation Service |
| NRHP | National Register of Historic Places |
| NSR | New Source Review |
| NWI | National Wetlands Inventory |
| $O_3$ | ozone |
| OA | opportunity area |
| OSHA | Occupational Safety and Health Administration |
| PCB | polychlorinated biphenyl |
| pcphpl | passenger cars per hour per lane |
| PEA | Preliminary Environmental Assessment |
| PEC | potential environmental concern |
| PID | Planned Industrial Development |
| PM | particulate matter |
| $PM_{10}$ | particulate matter less than 10 microns in aerodynamic diameter |
| $PM_{2.5}$ | particulate matter less than 2.5 microns in aerodynamic diameter |
| ppm | part(s) per million |
| ppmv | part(s) per million by volume |

| | |
|---|---|
| PUDA | Planning and Urban Design Agency |
| RCRA | Resource Conservation and Recovery Act |
| REC | recognized environmental condition |
| ROD | Record of Decision |
| ROI | region of influence |
| ROW | right-of-way |
| RPA | Redevelopment Project Areas |
| RV | recreational vehicle |
| SC2 | Strong Cities, Strong Communities |
| Scott/MAA | Scott Air Force Base/MidAmerica St. Louis Airport |
| SHPO | State Historic Preservation Office or Officer |
| SIP | State Implementation Plan |
| SLDC | St. Louis Development Corporation |
| SLS | Site Location Study |
| $SO_2$ | sulfur dioxide |
| SRP | Site Remediation Program |
| SST | Site Selection Team |
| SWPPP | stormwater pollution prevention plan |
| TACO | Tiered Approach to Corrective Action Objectives |
| TCP | traditional cultural property |
| TIF | Tax Increment Financing |
| TRB | Transportation Research Board |
| TSCA | Toxic Substances Control Act |
| U.S.C. | United States Code |
| UCR | Uniform Crime Reporting |
| URA | Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 |
| US 50 | U.S. Route 50 |

| | |
|---|---|
| USACE | U.S. Army Corps of Engineers |
| USAF | U.S. Air Force |
| USCB | U.S. Census Bureau |
| USDA | U.S. Department of Agriculture |
| USEPA | U.S. Environmental Protection Agency |
| USFWS | U.S. Fish and Wildlife Service |
| USGS | U.S. Geological Survey |
| UST | underground storage tank |
| VCP | vitrified clay pipe |
| VFR | Visual Flight Rules |
| VI | vapor intrusion |
| VOC | volatile organic compound |
| WWTP | wastewater treatment plant |
| $yd^3$ | cubic yard(s) |

SECTION 10.0

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