

*Draft*

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

Appendices

Prepared for  
**National Geospatial-Intelligence Agency**



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**Appendix 3.11B**  
**Federally Listed Species**

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## Fenton Site- ESA Listed Species and Habitat Suitability

Species	Listing Status	Habitat	Site Suitability
<b>Clams</b>			
Scaleshell mussel ( <i>Leptodea leptodon</i> )	Endangered	Large rivers with strong currents and occasionally occur in reaches with river and lake conditions (USFWS, 2010).	<b>Not Suitable.</b> No permanent water bodies occur on the property.
Pink mucket ( <i>Lampsilis abrupta</i> )	Endangered	Large rivers with strong currents and occasionally occur in reaches with river and lake conditions (USFWS, 2014b).	<b>Not Suitable.</b> No permanent water bodies occur on the property.
Spectaclecase ( <i>Cumberlandia monodonta</i> )	Endangered	Large rivers with strong currents and occasionally occur in reaches with river and lake conditions (USFWS, 2014c).	<b>Not Suitable.</b> No permanent water bodies occur on the property.
Sheepnose mussel ( <i>Plethobasus cyphus</i> )	Endangered	High-quality, medium-to-large rivers with a gravel or mud substrate and moderate current velocity (USFWS, 2014d).	<b>Not Suitable.</b> No permanent water bodies occur on the property.
Snuffbox mussel ( <i>Epioblasma triquetra</i> )	Endangered	Areas with strong currents in small-to-medium-sized creeks (USFWS, 2014e).	<b>Not Suitable.</b> No permanent water bodies occur on the property.
<b>Fishes</b>			
Pallid sturgeon ( <i>Scaphirhynchus albus</i> )	Endangered	Bottoms of large, silty rivers. Preferred habitat includes a variety of depths and velocities formed by braided channels, sand bars, flats, and gravel bars (USFWS, 2013b).	<b>Not Suitable.</b> No permanent water bodies occur on the property.
<b>Flowering Plants</b>			
Decurrent false aster ( <i>Boltonia decurrens</i> )	Threatened	Moist, sandy floodplains and prairie wetlands along the Illinois River (USFWS, 2014f).	<b>Not suitable.</b> Site is not in moist, sandy floodplains or prairie wetlands of Illinois River. Thus no suitable habitat for decurrent false aster.
Mead's milkweed ( <i>Asclepias meadii</i> )	Threatened	Tall grass prairies, in hay meadows, and in thin soil glades or barrens. (USFWS, 2014g).	<b>Not suitable.</b> Site is not located a tall grass prairie.
Running buffalo clover ( <i>Trifolium stoloniferum</i> )	Endangered	Mesic habitats of partial to filtered sunlight, where there is a prolonged moderate periodic disturbance, such as grazing, trampling, or mowing. Regions underlain with limestone or other calcareous bedrock (USFWS, 2007a; USFWS 2015b).	<b>Not suitable.</b> Any potential habitat on the property has been removed. The remaining grassy area is significantly disturbed and does not provide suitable habitat for running buffalo clover.
<b>Mammals</b>			
Gray bat ( <i>Myotis grisescens</i> )	Endangered	Gray bats live in caves year round, using different caves for summer roosting and winter hibernation (USFWS, 2014h). Foraging habitat occurs along riparian corridors.	<b>Not suitable.</b> There are no caves on or near the property. The gray bat would not hibernate or roost on the property. There is a thin strip of riparian vegetation immediately adjacent to the property to the north along the Meramec River. The riparian zone is outside of the property boundary and would not be disturbed.

**Fenton Site- ESA Listed Species and Habitat Suitability**

Species	Listing Status	Habitat	Site Suitability
Indiana bat ( <i>Myotis sodalis</i> )	Endangered	Preferred summer habitat includes small-to-medium river and stream corridors with well-developed riparian woods, woodlots within 1 to 3 miles of small-to-medium rivers and streams, and upland forests with open travel corridors. The Indiana bat uses caves and mines as hibernacula during the winter months (USFWS, 2007b; USFWS, 2014i).	<b>Not suitable.</b> There are no caves within the property. Potential summer roosting and foraging habitat occurs within the riparian zone to the north of the property boundary off-site along the Meramec River. The riparian zone is outside of the property boundary and would not be disturbed. The limited trees onsite lack exfoliating bark or cavities and are unsuitable for Indiana bat roosting.
Northern long-eared bat ( <i>Myotis septentrionalis</i> )	Proposed Endangered	Roosts underneath bark, in cavities, or in crevices of both live and dead trees. Rarely, northern long-eared bats have been found roosting in vacant structures, such as barns or sheds. During winter months, caves and mines with a constant temperature are used for hibernation (USFWS, 2014j).	<b>Not Suitable.</b> Because there are no caves, this species would not hibernate on the property. Potential summer roosting and foraging habitat occurs within the riparian zone to the north of the property boundary off-site along the Meramec River. The riparian zone is outside of the property boundary and would not be disturbed. The limited trees onsite lack exfoliating bark or cavities and are unsuitable for northern long-eared bat roosting.

Source: (USFWS, 2014a).

**Mehlville Site- ESA Listed Species and Habitat Suitability**

<b>Species</b>	<b>Listing Status</b>	<b>Habitat</b>	<b>Site Suitability</b>
<b>Clams</b>			
Scaleshell mussel ( <i>Leptodea leptodon</i> )	Endangered	Large rivers with strong currents and occasionally occur in reaches with river and lake conditions (USFWS, 2010).	<b>Not Suitable.</b> Due to the size, low velocity, and poor quality, there is no habitat in the streams within the property boundary.
Pink mucket ( <i>Lampsilis abrupta</i> )	Endangered	Large rivers with strong currents and occasionally occur in reaches with river and lake conditions (USFWS, 2014b).	<b>Not Suitable.</b> Due to the size, low velocity, and poor quality, there is no habitat in the streams within the property boundary.
Spectaclecase ( <i>Cumberlandia monodonta</i> )	Endangered	Large rivers with strong currents and occasionally occur in reaches with river and lake conditions (USFWS, 2014c).	<b>Not Suitable.</b> Due to the size, low velocity, and poor quality, there is no habitat in the streams within the property boundary.
Sheepnose mussel	Endangered	High-quality, medium-to-large rivers with a gravel or mud substrate and moderate current velocity (USFWS, 2014d).	<b>Not Suitable.</b> Due to the size, low velocity, and poor quality, there is no habitat in the streams within the property boundary.
Snuffbox mussel ( <i>Epioblasma triquetra</i> )	Endangered	Areas with strong currents in small-to-medium-sized creeks (USFWS, 2014e).	<b>Not Suitable.</b> Due to the size, low velocity, and poor quality, there is no habitat in the streams within the property boundary.
<b>Fishes</b>			
Pallid sturgeon	Endangered	Bottoms of large, silty rivers. Preferred habitat includes a variety of depths and velocities formed by braided channels, sand bars, flats, and gravel bars (USFWS, 2013b).	<b>Not Suitable.</b> The perennial stream located on the property is not of sufficient size and depth to support the sturgeon.
<b>Flowering Plants</b>			
Decurrent false aster	Threatened	Moist, sandy floodplains and prairie wetlands along the Illinois River, and relies on prolonged flooding to maintain suitable habitat conditions to prevent overgrowth by other plants (USFWS, 2014f).	<b>Not suitable.</b> Site is not in moist, sandy floodplains or prairie wetlands of Illinois River. Thus no suitable habitat for decurrent false aster.
Mead's milkweed	Threatened	Tall grass prairies, in hay meadows, and in thin soil glades or barrens. Restricted to sites that have never been plowed and that have been only lightly grazed, and hay meadows that are cropped annually (USFWS, 2014g).	<b>Not suitable.</b> Site is not located in a tall grass prairie, in hay meadows, or in thin soil glades or barrens. Property has been significantly disturbed and developed.
Running buffalo clover	Endangered	Mesic habitats of partial to filtered sunlight, where there is a prolonged moderate periodic disturbance, such as grazing, trampling, or mowing. Regions underlain with limestone or other calcareous bedrock (USFWS, 2007a; USFWS 2015b).	<b>Not suitable.</b> The property has been largely developed, which paired with landscaping, grading, and chemical management over the course of several decades, leaves the grounds significantly disturbed and does not provide suitable habitat for running buffalo clover.

**Mehlville Site- ESA Listed Species and Habitat Suitability**

Species	Listing Status	Habitat	Site Suitability
<b>Mammals</b>			
Gray bat	Endangered	Gray bats live in caves year round, using different caves for summer roosting and winter hibernation (USFWS, 2014h). Foraging habitat occurs along riparian corridors.	<b>Potentially Suitable.</b> There are no caves on or near the property, so this species would not roost or hibernate on the property. Potential foraging habitat for this species occurs within the forested area onsite. However, the dense understory vegetation that would allow easy predator access to trees indicates the habitat within the onsite forested area would be generally unsuitable for gray bat foraging.
Indiana bat	Endangered	During summer, Indiana bat typically roosts under exfoliating bark of snags or live trees, but also will roost in cavities and the angles of broken limbs. Roost trees usually are in open forested areas with little understory development, where the tree receives some sun exposure during the day. Preferred habitat includes small-to-medium river and stream corridors with well-developed riparian woods, woodlots within 1 to 3 miles of small-to-medium rivers and streams, and upland forests with open travel corridors. The Indiana bat uses caves and mines as hibernacula during the winter months (USFWS, 2007b; USFWS, 2014i).	<b>Potentially suitable.</b> Because there are no caves, this species would not hibernate on the property. Potential roosting and foraging habitat occurs within the forested areas onsite. However, the lack of live trees/snags greater than 5in in diameter that have exfoliating bark, cracks, crevices, or hollows makes this area generally unsuitable for the Indiana bat roosting. Further, the dense understory vegetation that would allow easy predator access to trees indicates the majority of the potential habitat within the onsite forested area would be generally unsuitable for Indiana bat foraging.
Northern long-eared bat	Proposed Endangered	Roosts alone or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. Rarely, northern long-eared bats have been found roosting in vacant structures, such as barns or sheds. During winter months, caves and mines with a constant temperature are used for hibernation (USFWS, 2014j).	<b>Potentially Suitable.</b> Because there are no caves, this species would not hibernate on the property. Potential roosting and foraging habitat occurs within the forested areas on site. However, the lack of live trees/snags greater than 5in in diameter that have exfoliating bark, cracks, crevices, or hollows, makes this area generally unsuitable for the Northern long-eared bat roosting. Further, the dense understory vegetation that would allow easy predator access to trees indicates the majority of the potential habitat within the onsite forested area would be generally unsuitable for Northern long-eared bat foraging.

Source: (USFWS, 2014a).

**St. Louis City Site- ESA Listed Species and Habitat Suitability**

Species	Listing Status	Habitat	Site Suitability
<b>Clams</b>			
Scaleshell mussel	Endangered	Large rivers with strong currents and occasionally occur in reaches with river and lake conditions (USFWS, 2010).	<b>Not Suitable.</b> No permanent water bodies occur on the property.
Pink mucket	Endangered	Large rivers with strong currents and occasionally occur in reaches with river and lake conditions (USFWS, 2014b).	<b>Not Suitable.</b> No permanent water bodies occur on the property.
Spectaclecase	Endangered	Large rivers with strong currents and occasionally occur in reaches with river and lake conditions (USFWS, 2014c).	<b>Not Suitable.</b> No permanent water bodies occur on the property.
Sheepnose mussel ( <i>Plethobasus cyphus</i> )	Endangered	High-quality, medium-to-large rivers with a gravel or mud substrate and moderate current velocity (USFWS, 2014d).	<b>Not Suitable.</b> No permanent water bodies occur on the property.
Snuffbox mussel	Endangered	Areas with strong currents in small-to-medium-sized creeks (USFWS, 2014e).	<b>Not Suitable.</b> No permanent water bodies occur on the property.
<b>Fishes</b>			
Pallid sturgeon	Endangered	Bottoms of large, silty rivers. Preferred habitat includes a variety of depths and velocities formed by braided channels, sand bars, flats, and gravel bars (USFWS, 2013b).	<b>Not Suitable.</b> No permanent water bodies occur on the property.
<b>Flowering Plants</b>			
Decurrent false aster	Threatened	Moist, sandy floodplains and prairie wetlands along the Illinois River, and relies on prolonged flooding to maintain suitable habitat conditions to prevent overgrowth by other plants (USFWS, 2014f).	<b>Not suitable.</b> Site is not in moist, sandy floodplains or prairie wetlands of Illinois River. Thus no suitable habitat for decurrent false aster.
Mead's milkweed	Threatened	Tall grass prairies, in hay meadows, and in thin soil glades or barrens. Restricted to sites that have never been plowed and that have been only lightly grazed, and hay meadows that are cropped annually (USFWS, 2014g).	<b>Not suitable.</b> Site is not located in a tall grass prairie, in hay meadows, or in thin soil glades or barrens. Property has been significantly disturbed and developed and thus does not provide suitable habitat.
Running buffalo clover	Endangered	Mesic habitats of partial to filtered sunlight, where there is a prolonged moderate periodic disturbance, such as grazing, trampling, or mowing. Regions underlain with limestone or other calcareous bedrock (USFWS, 2007a; USFWS 2015b).	<b>Not suitable.</b> The property has been developed and redeveloped over the course of several decades in combination with landscaping, grading, and chemical management that have left the grounds significantly disturbed and unable to provide suitable habitat for running buffalo clover.
<b>Mammals</b>			
Gray bat	Endangered	Gray bats live in caves year round, using different caves for summer roosting and winter hibernation (USFWS, 2014h). Foraging habitat occurs along riparian corridors.	<b>Potentially suitable.</b> Because there are no caves, this species would not hibernate or roost on the property. Because there are no streams in the forested area south of the site and dense understory vegetation is present in that area that would allow easy predator

**St. Louis City Site- ESA Listed Species and Habitat Suitability**

Species	Listing Status	Habitat	Site Suitability
Indiana bat	Endangered	During summer, Indiana bat typically roosts under exfoliating bark of snags or live trees, but also will roost in cavities and the angles of broken limbs. Roost trees usually are in open forested areas with little understory development, where the tree receives some sun exposure during the day. Preferred habitat includes small-to-medium river and stream corridors with well-developed riparian woods, woodlots within 1 to 3 miles of small-to-medium rivers and streams, and upland forests with open travel corridors. The Indiana bat uses caves and mines as hibernacula during the winter months (USFWS, 2007; USFWS, 2014i).	access to trees, gray bats are unlikely to forage in this area.  <b>Potentially suitable.</b> Because there are no caves, this species would not hibernate on the property. Potential roosting and foraging habitat occurs within the forested Pruitt Igoe site. However, the dense understory vegetation that would allow easy predator access to trees indicates this area is generally unsuitable for the Indiana bat roosting.
Northern long-eared bat	Proposed Endangered	Roosts alone or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. Rarely, northern long-eared bats have been found roosting in vacant structures, such as barns or sheds. During winter months, caves and mines with a constant temperature are used for hibernation (USFWS, 2014j).	<b>Potentially Suitable.</b> Potential roosting and foraging habitat occurs within the forested Pruitt Igoe complex. However, the well-developed and dense understory makes this area generally unsuitable for the Northern long-eared bat roosting.

Source: (USFWS, 2014a).



**St. Clair Site- ESA Listed Species and Potential Habitat**

Species	Listing Status	Habitat	Site Suitability
<b>Fishes</b>			
Pallid sturgeon	Endangered	Bottoms of large, silty rivers. Preferred habitat includes a variety of depths and velocities formed by braided channels, sand bars, flats, and gravel bars (USFWS, 2013b).	<b>Not Suitable.</b> Streams on the property are not large enough to develop suitable features to support this species.
<b>Crustaceans</b>			
Illinois cave amphipod ( <i>Gammarus acherondytes</i> )	Endangered	Streams primarily in the dark zones of caves in areas of the Salem Plateau section of the Illinois plains (USFWS, 2002).	<b>Not Suitable.</b> No caves are present on the property.
<b>Flowering Plants</b>			
Decurrent false aster	Threatened	Moist, sandy floodplains and prairie wetlands along the Illinois River, and relies on prolonged flooding to maintain suitable habitat conditions to prevent overgrowth by other plants (USFWS, 2014f).	<b>Not Suitable.</b> The site does not provide suitable habitat for decurrent false aster.
Eastern prairie fringed orchid ( <i>Platanthera leucophaea</i> )	Threatened	Wetlands such as marsh edges, sedge meadows, and occasionally bogs. Mesic prairies also provide habitat. Full sun is required for optimum growth and flowering, and a grassy habitat with little or no woody encroachment (USFWS, 2014o).	<b>Not Suitable.</b> The site does not provide suitable habitat for the eastern prairie fringed orchid because the open areas are actively used for agriculture.
<b>Birds</b>			
Least tern ( <i>Sterna antillarum</i> )	Endangered	Sandbars with sparse vegetation on the Missouri and Yellowstone Rivers in North Dakota. Birds also nest, rear young, and relax on barren river sandbars (INHS, 2015a).	<b>Not Suitable.</b> The St. Clair County property does not occur along the Mississippi or Missouri rivers, and the onsite stream lacks sandbars or suitable habitat for the least tern.
<b>Mammals</b>			
Gray bat	Endangered	Gray bats live in caves year round, using different caves for summer roosting and winter hibernation (USFWS, 2014h). Foraging habitat occurs along riparian corridors.	<b>Potentially suitable.</b> Because there are no caves, this species would not hibernate or roost on the property. The Gray bat has been identified through surveys on Scott AFB, which indicates foraging habitat is present in the Silver Creek Riparian Corridor. However, the dense understory vegetation indicates this area is generally unsuitable for gray bat roosting
Indiana bat	Endangered	During summer, typically roosts under exfoliating bark of snags or live trees, but also will roost in cavities and the angles of broken limbs. Roost trees usually are in open forested areas with little understory development, where the tree receives some sun exposure during the day. Preferred habitat includes small-to-medium river and stream corridors with well-developed riparian woods, woodlots within 1 to 3 miles of small-to-medium rivers and streams, and upland forests with open travel corridors. The Indiana bat uses caves and mines as hibernacula during the winter months (USFWS, 2007b; USFWS, 2014i).	<b>Potentially suitable.</b> The Indiana bat has been captured and identified through mist net surveys on Scott AFB, which indicate roosting and foraging habitat is present in the Silver Creek Riparian Corridor. The bat could forage on the property and could roost in the limited forest on site. However, the dense understory vegetation that would allow easy predator access to trees indicates this area is generally unsuitable for Indiana bat roosting. Because there are no caves, this species would not hibernate on the property and there

**St. Clair Site- ESA Listed Species and Potential Habitat**

Species	Listing Status	Habitat	Site Suitability
Northern long-eared bat	Proposed Endangered	Roosts alone or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. Rarely, northern long-eared bats have been found roosting in vacant structures, such as barns or sheds. During winter months, caves and mines with a constant temperature are used for hibernation (USFWS, 2014j).	<p>would be no direct, indirect, or cumulative impacts to Indiana bat hibernacula or bats within hibernacula.</p> <p><b>Potentially suitable.</b> The Northern long-eared bat has been identified through surveys on Scott AFB, which indicate foraging habitat is present in the Silver Creek Riparian Corridor. Because there are no caves, this species would not hibernate on the property. Potential roosting and foraging habitat occurs within the forested areas onsite. However, the dense understory vegetation that would allow easy predator access to trees indicates this area is generally unsuitable for the Northern long-eared bat roosting.</p>

Source: (USFWS, 2014a).