



Draft Environmental Impact Statement

Proposed Development of an Updated Facility for the National Wildlife Health Center Madison, Wisconsin

Prepared for:
United States Geological Survey

June **2024**

Draft Environmental Impact Statement

PROPOSED DEVELOPMENT OF AN UPDATED FACILITY FOR THE NATIONAL WILDLIFE HEALTH CENTER – MADISON, WISCONSIN

Prepared for:



U.S. Geological Survey (Lead Agency)
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ABSTRACT

Draft Environmental Impact Statement Proposed Development of an Updated Facility for the National Wildlife Health Center - Madison, Wisconsin

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Title: Proposed Development of an Updated Facility for the National Wildlife Health Center

Location: 6006 Schroeder Road, Madison, Wisconsin 53711

Designation: Draft Environmental Impact Statement

Summary: The National Wildlife Health Center (NWHC) was established in 1975 in Madison, Wisconsin, as a biomedical laboratory dedicated to assessing the impact of disease on wildlife and is the only national center devoted to wildlife disease detection, control, and prevention in the U.S. Since then, the emergence of wildlife diseases has become a high-priority concern in the U.S. and the world. In addition to their harmful effects on natural wildlife populations and ecosystems, there is the potential for the spread of zoonotic diseases to humans and for causing economic losses associated with livestock morbidity and mortality. The NWHC is responsible for providing research and investigating and responding to known and emerging wildlife diseases and wildlife mortality outbreaks throughout the U.S. Designated as a “mission essential” facility, the NWHC’s age and space constraints are limiting its ability to perform its mission to advance wildlife health science.

In response, the U.S. Geological Survey (USGS), which oversees the NWHC, is proposing to develop an updated facility to ensure the NWHC can continue addressing issues related to wildlife health science. In compliance with the National Environmental Policy Act (NEPA) of 1969, USGS prepared this Draft Environmental Impact Statement (DEIS) to identify and assess potential environmental impacts of the Proposed Action. Various alternatives for the Proposed Action were evaluated, and USGS identified a Preferred Alternative. The USGS Preferred Alternative is to construct a new NWHC on the grounds of the existing NWHC in Madison, Wisconsin. This alternative best meets the project’s purpose and need versus other alternatives. The construction of a new facility for the NWHC would result in temporary and long-term impacts to topography, soils, biological resources, visual and aesthetic resources, land use, air quality, and noise. These direct impacts primarily would occur on the 24-acre NWHC property itself. The NWHC operates biomedical laboratories to investigate diseases with an emphasis on those that naturally occur in wildlife and impact conservation of United States species. NWHC laboratories have safety and biosafety measures incorporated into their design and operation. These measures systematically minimize the risk through both engineering- and organizational-based controls (policies, processes, procedures). Regulatory compliance and mitigation measures are outlined in this DEIS. Beneficial impacts of the Preferred Alternative would derive from fulfilling the NWHC’s mission to advance wildlife health science, creation of a modern and energy efficient wildlife health center, and stimulation of the local and regional economies during construction and operation. Cumulative, secondary, and construction-related impacts would be controlled, mitigated, or avoided to the extent possible.

Publication Date: June 14, 2024. Comments on the DEIS are due by July 29, 2024. To be considered during preparation of the Final EIS, comments need to be submitted using the NWHC EIS website (<https://www.nwhceis.com/>); by mail to Jordan D. Sizemore, REM, NEPA Project Manager, Environmental Management Branch, U.S. Geological Survey, 6006 Schroeder Road, Madison, Wisconsin 53711; or by email: jsizemore@usgs.gov.

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EXECUTIVE SUMMARY

This environmental impact statement (EIS) analyzes the U.S. Geological Survey's (USGS) Proposed Action to develop an updated facility for the National Wildlife Health Center (NWHC), located on a 24-acre tract of federal property in Madison, Wisconsin. This Proposed Action would support the agency's current and future needs to streamline delivery of research, enhance worker and public safety, modernize biohazard and pathogen containment and biological-waste disposal, and improve operating efficiencies and costs. The USGS established the NWHC in 1975 in Madison, Wisconsin, as the first biomedical laboratory dedicated to assessing the impact of disease on wildlife and identifying the role of various pathogens in contributing to wildlife losses. It remains today as the only national center devoted to wildlife disease detection, control, and prevention in the United States.

The emergence of wildlife diseases has become a high-priority concern in the United States and the world. In addition to their harmful effects on natural wildlife populations and ecosystems, there is the potential for the spread of zoonotic diseases to humans, and for causing economic losses associated with livestock morbidity and mortality. The NWHC is responsible for providing research and for investigating and responding to known and emerging wildlife diseases and wildlife mortality outbreaks throughout the United States. The NWHC performs diagnostics and research to detect and characterize pathogens naturally occurring in wildlife in North America and has been providing vital disease and pathogen detection services, active disease surveillance, and applied research to help understand, detect, respond to, and manage wildlife diseases on the landscape for over 40 years.

Starting in 2008, the USGS conducted multiple studies of the current facility to identify where efficiencies could benefit NWHC operations. While safe operation requirements continue to be maintained, the studies consistently found over-crowded laboratories and administrative areas; inefficient infrastructure (e.g., heating, ventilation, and air conditioning systems) that do not meet current standards for energy efficiency; and extensive wear and tear due to the age of the buildings and associated equipment.

ES-1 Purpose and Need

The purpose of the Proposed Action is to update the aging NWHC facility to incorporate technological advances in biosafety engineering and equipment and add additional space for enhanced animal care and research. The NWHC needs modernized facilities with sufficient space and modern technologies to support its mission of providing essential national research. The existing facilities continue to require major monitoring and maintenance to maintain current operations. Studies indicate that continuing to maintain and update the current facility to meet the mission and function of the NWHC is not effective and cost prohibitive.

The NWHC needs facilities that provide functional space for administration and operations and meet health and safety standards and regulatory requirements. Adequate space is needed to conduct research into wildlife disease detection, enhance animal-care conditions, and strengthen other programs that support the NWHC mission. In addition, modern laboratory equipment and mechanical systems are needed to efficiently implement the latest operating and management approaches within the facility. These modernizations would further enhance the NWHC's capability to reduce exposure to pathogens and the risks faced by staff and members of the public. Improved efficiencies in operations and equipment would also contribute to meeting current Federal Sustainability Program requirements, such as the Net Zero Greenhouse Gas Emission Goal outlined in Executive Order 14057 Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability.

ES-2 Public Scoping

Following publication of the Notice of Intent (NOI) to prepare an EIS, the USGS held a 45-day public scoping period from September 5, 2023, to October 20, 2023. The NOI invited federal, state, county, and local agencies, Tribes, officials, organizations, and the public to participate in the scoping and Draft EIS (DEIS) study process and included information concerning the date, time, and means to participate at public scoping meetings. The USGS hosted an in-person public scoping meeting in Madison, Wisconsin, on September 21, 2023, and virtual scoping meeting on September 28, 2023. The in-person meeting was attended by 6 members of the public, and the virtual meeting was attended by 20 members of the public.

The USGS considered all comments from members of the public, organizations, and regulatory agencies, including comments received directly through US mail or email, during development of the DEIS. A total of 13 pieces of correspondence were received via the project website and email during the public scoping period, and a total of 33 individual comments were coded. Commenters made various suggestions, summarized below and in the Public Scoping Summary Report (see Appendix B):

- Commenters made suggestions regarding measures the USGS should employ during the design and construction of the Preferred Alternative to reduce environmental impacts or improve conditions for laboratory animals. Components of the Preferred Alternative, including construction activities and elements of the proposed design of the new NWHC, including elements specific to facilities for laboratory animals, are discussed in Section 2.4 of this DEIS. Mitigation measures specific to individual resource topics are discussed in their respective sections in Chapter 3.
- One commenter suggested the USGS construct a new addition to the existing NWHC facility and redesign the existing space instead of constructing a new facility. This comment is addressed in Section 2.2.
- One commenter stated the range of alternatives should include alternatives that would relocate the NWHC to alternate sites, and that the EIS should identify and include dismissal criteria for all alternatives that are not carried forward for detailed analysis. Alternatives that were considered but eliminated from further evaluation are discussed in Section 2.2. The reasons each alternative was eliminated are discussed in this section.
- Commenters addressed various issues and impact topics, including noise and vibration during construction, climate change, wetlands and waters of the United States, songbirds, traffic and transportation, and environmental justice, requesting that the USGS address these in the EIS. These issues and impact topics are addressed in Chapter 3.

ES-3 Alternatives

The USGS considered various alternatives to provide updated facility conditions to more efficiently meet the agency's current and future needs. Alternatives that were considered but eliminated from further evaluation include alternatives that would consolidate one or more Madison-area DOI organizations at existing, renovated, or modernized facilities on the NWHC property; alternatives for constructing a new NWHC facility at alternative sites both in and outside of Madison, Wisconsin; and alternative building placements and configurations on the existing property. The no action alternative and one action alternative have been carried forward for detailed evaluation in the DEIS:

- **No Action Alternative** – No updates would be completed to the existing facility, and no new facilities would be developed. Operations would continue from the current NWHC in Madison, Wisconsin, with repairs and maintenance completed as needed and as resources are available.
- **Preferred Action Alternative** – Development of a new NWHC on the grounds of the existing center in Madison, Wisconsin.

The decision to be made is whether or not to build and operate a new NWHC on the existing property. Construction of a new facility under the Preferred Action Alternative would allow for USGS to provide sufficient lab space and install modern, more efficient, and secure building envelope technologies and systems. Multiple benefits are associated with the proposed site on the NWHC property. Construction and operation of the new NWHC on this site would:

- Allow the Main Building and Tight Isolation Building (TIB) to continue to operate during construction with only minimal disruption to utility services;
- Allow space for installation of geothermal and solar photovoltaic (PV) systems;
- Avoid the ice fall zone associated with the Channel 15 broadcast antenna located northwest of the property;
- Allow the existing access driveway from Schroeder Road to be maintained;
- Minimize potential impacts to the prairie area and other environmental resources; and
- Minimize overall development costs.

The no action alternative, while it does not meet the purpose of and need for the Proposed Action, is included in compliance with Council on Environmental Quality regulations implementing NEPA (40 CFR 1502.14(c)). The No Action Alternative considers continued operation of the existing facility. Repairs and maintenance would be completed as needed and as resources are available. While the No Action Alternative would avoid potential environmental impacts associated with development of a new NWHC, adoption of the No Action Alternative would also result in the loss of the benefits associated with the Preferred Action Alternative. These benefits include meeting the need for a modern, efficient, and cost-effective NWHC; the societal advantages derived from continuing to advance wildlife health science; and the potential economic benefits to the City of Madison and Dane County as a consequence of construction and operation of the new facility.

ES-4 Summary of Environmental Consequences

Table ES-1 provides a summary of the environmental consequences of the alternatives considered in this EIS.

Table ES-1: Comparison of Potential Environmental Impacts of the Alternatives.

Environmental Resource	Alternatives	
	No Action Alternative	Preferred Action Alternative – New NWHC
Topographic Features	The property and structures comprising the NWHC in Madison would remain in their current condition. Topographic conditions would be unaffected, and mitigation measures would not be necessary.	<p>The proposed site for the new NWHC is relatively flat, and only minor modifications (i.e., ground clearing, coarse and fine grading, excavations) would be necessary for development. The full extent of surface alterations would be determined once a detailed site development plan is finalized. Potential impacts to topography would be minimized by developing the new NWHC floor plates in a manner that reflects and respects the site's topography.</p> <p>To minimize topographic alterations, the new NWHC would be developed in a manner that is generally compatible with existing topography and drainage patterns.</p>
Geologic Features	Geologic features and conditions would be unaffected, and mitigation measures would not be necessary.	Disturbance of natural geologic features during construction of the new NWHC would be limited to those areas where deep excavations or borings, such as those for the geothermal system, would occur. The potential for damage to the new NWHC from seismic activity is low. NWHC development is not expected to result in adverse impacts to geologic features and no additional impacts are anticipated once construction is completed.
Soils	Soil types, conditions, and characteristics would be unaffected, and mitigation measures would not be necessary.	<p>Construction activities associated with site preparation (i.e., ground clearing, grading, excavation, etc.) would directly affect the three native soil types on the property. Some slight, temporary adverse effects to native soils from potential wind or water erosion would be expected.</p> <p>To minimize potential adverse effects, a soil erosion and sediment control plan would be completed. Erosion control measures would be inspected periodically and replaced or repaired as required.</p>
Water Resources	There would be no impacts to water resources and hydrologic features, and mitigation measures would not be necessary.	<p>Development of the new NWHC would result in a change in impervious surfaces on the property. The new NWHC structure and associated impervious surfaces would be sited to overlap existing paved surfaces to limit the amount of site disturbance required during construction.</p> <p>The proposed stormwater collection system would result in runoff volumes that are equal or less than pre-development volumes. Similarly, groundwater recharge on the property would remain substantially unchanged. Surface waters or mapped floodplains would not be affected as there are none located on the property. No other hydrologic alterations are expected once construction of the new NWHC is completed.</p>
Biological Resources	Biological resources would be unaffected, and mitigation measures would not be necessary.	Existing vegetation and wildlife habitat, including prairie habitat and maintained lawns, would be temporarily or permanently disturbed. Existing built/impervious surfaces that would not be redeveloped would be converted to native vegetated area or maintained grass lawn and degraded prairie habitat would be restored. There are no wetlands or waterbodies on the property that would be affected.

Environmental Resource	Alternatives	
	No Action Alternative	Preferred Action Alternative – New NWHC
		<p>Wildlife may be harmed or displaced to nearby habitats during construction. There would be no change in NWHC operation and maintenance activities post-construction that would displace wildlife species on the property. There would be no effect on whooping crane, eastern prairie fringed orchid, prairie bush clover, or ornate box turtle. The long-eared bat, tricolored bat, and rusty patched bumble bee are not likely to be adversely affected. USGS has determined that Preferred Alternative is not likely to adversely affect monarch butterfly, while a determination of no effect was reached for monarch butterfly using the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) system and Minnesota-Wisconsin Determination Key. The USGS has consulted with the USFWS under section 7 of the ESA regarding potential impacts to federally listed and candidate species, and the USFWS has concurred with the effects determinations above in correspondence dated April 10 and May 10, 2024.</p> <p>Impacts to vegetation would be minimized by incorporating best management practices, including invasive plant removal and revegetation with native plant species. A June 1 – August 15 restriction on tree clearing will be implemented to avoid the maternity period for the northern long-eared bat and tricolored bat. To minimize adverse effects to the rusty patched bumble bee, USFWS recommended conservation measures outlined in the Wisconsin DNR Endangered Resources Review would be employed during construction. These conservation measures also would minimize potential impacts to the monarch butterfly.</p>
Cultural Resources	Archaeological and architectural resources would be unaffected, and mitigation measures would not be necessary.	<p>There would be no impacts to architectural resources as the NWHC is not eligible for inclusion in the National Register of Historic Places. Much of the development would be confined to the area adjoining the existing building and parking lot footprint, where little to no potential to impact intact archaeological resources remains due to disturbance from past construction activities. A small section of the parcel to the north of the NWHC parking lot totaling less than one acre would have been covered by the 1977 survey, and therefore no impacts are anticipated in this area as no archaeological resources were identified during the survey. The USGS is completing consultation under section 106 of the National Historic Preservation Act with Tribal leaders and Tribal Historic Preservation Officers representing federal recognized Tribes that have cultural and/or historic ties to the NWHC property.</p>
Hazardous Materials	The use, storage, handling, and disposal of hazardous materials would not be affected. Pathology waste would continue to be incinerated while medical/infectious waste would continue to be steam sterilized.	<p>Any hazardous materials generated during construction and used during NWHC operation would continue to be handled in accordance with stringent operating policies, procedures and regulatory requirements. Incinerators and thermal tissue digesters would be used to dispose of biological waste. Other solid wastes (i.e., bedding) would be sterilized by autoclaving.</p> <p>The possibility exists that the Main Building contains asbestos-containing materials (ACM), lead-based paint, and transformer oil containing Polychlorinated Biphenyls (PCBs). ACM and any lead-based paint would be abated in accordance with state and federal regulations by licensed personnel, and the handling, storage, transport, and final</p>

Environmental Resource	Alternatives	
	No Action Alternative	Preferred Action Alternative – New NWHC
		<p>disposal of these materials would be carried out in accordance with applicable regulations. Inspections and recent field visits confirmed the absence of PCBs on site. If present, universal and general equipment wastes would be addressed and disposed of prior to demolition.</p> <p>No adverse impacts from handling, storage, transport, and disposal of hazardous materials, biological wastes, asbestos-containing materials, lead-based paint, polychlorinated biphenyls, or other wastes are anticipated. The USGS would conduct additional comprehensive surveys (i.e., for ACM and lead-based paint) to ensure compliance.</p>
Visual and Aesthetic Resources	Visual resources and aesthetic features would be unaffected, and mitigation measures would not be necessary.	<p>Visual and aesthetic characteristics of the NWHC property would be altered during construction (i.e., through the presence of construction trailers, use of equipment, stockpiling of materials), which is anticipated to take place for 36 months. No additional visual and aesthetic impacts are anticipated once construction is completed. The new, modernized NWHC would be a substantial visual upgrade over the current NWHC.</p> <p>Visual impacts would be minimized by implementing high quality and contemporary design features that are sensitive to the visual resources within and around the property.</p>
Demographic Characteristics	The demographic composition of the City of Madison and Dane County would be unaffected.	During the construction phase, a temporary population increase is possible depending on the number of jobs created, and the ability of the local workforce to fill those positions. Population impacts directly attributable to the construction phase would be temporary and minimal. No direct or induced population impacts are expected during the operation phase.
Economic Characteristics	There would be no change to the economies of the City of Madison and Dane County.	Development of the new NWHC has the potential to stimulate the local and regional economy during both the construction and operation phases. Construction expenditures (i.e., materials, payroll, taxes and profits) would have a temporary beneficial impact on the economy. Economic activity generated during the operation phase (i.e., operating budget, payroll, and expenditures) would continue throughout the life of the new facility.
Housing Characteristics	The supply, availability, and cost of housing in the local and regional housing markets would be unaffected.	No existing housing units would be displaced, relocated, or otherwise adversely affected during construction. Impacts would be temporary or minimal during construction, and there would be no impacts on the supply, availability, and cost of housing during the operation phase.
Environmental Justice	Members of environmental justice communities would be unaffected, and mitigation would not be necessary.	The Preferred Alternative would result in disproportionately high and adverse impacts during construction for environmental justice communities in the immediate vicinity of the NWHC property. Environmental justice communities present in the surrounding area would experience temporary impacts during construction including elevated noise levels, traffic emissions of air pollutants, and the potential for accidental releases of hazardous materials. Impacts would be similar in magnitude and duration to other construction and

Environmental Resource	Alternatives	
	No Action Alternative	Preferred Action Alternative – New NWHC
		<p>redevelopment projects in the Madison area. Operation of the new NWHC is not expected to result in disproportionately high or adverse impacts to these communities.</p> <p>The USGS has emphasized outreach to the NWHC's neighbors, environmental justice and disadvantaged communities, and Tribes during scoping and development of the DEIS to minimize adverse community impacts.</p>
Land Use	Adjoining and nearby land uses would be unaffected, and mitigation measures would not be necessary.	By maintaining NWHC operation at the current location, potential direct land use impacts would be limited to a small portion of the overall property. No adverse impacts in the form of changes to land uses or new developments are expected to occur.
Fiscal Considerations	There would be no changes to property ownership that would affect the city and county's fiscal conditions.	There would be no change to tax revenues as the NWHC property has been in federal government ownership for over 40 years. Positive fiscal impacts (i.e., tax revenues) associated with economic activity would result from the development of the new NWHC. No impacts are anticipated for utility services or operating expenses.
Community Facilities and Services	Law enforcement, fire protection, and emergency medical services would be unaffected, and mitigation measures would not be necessary.	NWHC construction and operation is not expected to adversely affect or place an undue burden upon law enforcement agencies, the fire department, or emergency medical responders operating in the vicinity of the NWHC property or within the greater Madison and Dane County areas.
Utilities	The utility providers and the infrastructure that supply potable water, wastewater collection and treatment, electric power, natural gas, telecommunications, and solid waste services would be unaffected and mitigation measures would not be necessary.	<p>The new NWHC is not expected to disrupt electrical or natural gas services, water demands and wastewater flow, telecommunications, and solid waste management or adversely impact residential, commercial, and industrial customers in the area.</p> <p>Temporary impacts would be minimized by ensuring that the construction period is kept to the shortest duration possible and effective worker safety, noise, fugitive dust, and soil erosion control measures are implemented. Electrical and natural gas services would be carried out in conformance with applicable regulations.</p>
Transportation Systems	Traffic patterns and volumes along Schroeder Road and other local and regional roadways and public transit networks and ridership would be unaffected, and mitigation measures would not be necessary.	<p>Construction is expected to increase traffic volumes along the routes leading to and from the NWHC by workers and the delivery of materials, supplies, and equipment. The volume and timing of traffic would vary depending on the phase of construction. The overall volume of vehicles traveling on Schroeder Road to the new NWHC during the operation phase is not expected to change.</p> <p>Communication and coordination between USGS, the construction contractors, and the appropriate city and county traffic control agencies would be used to avoid or minimize temporary traffic disruptions during construction.</p>
Air Quality	Local and regional air quality would be unaffected, and mitigation measures would not be necessary.	Air quality impacts resulting from construction-related activities (i.e., fugitive dust during ground clearing, construction equipment emissions) would be short-term and intermittent. Emissions would not adversely impact neighboring properties or residents. The new NWHC is not expected to produce a greater volume of emissions than the

Environmental Resource	Alternatives	
	No Action Alternative	Preferred Action Alternative – New NWHC
		<p>current facility and would not be an additional source of emissions. A reduction in chlorofluorocarbons, halons, and other greenhouse gases emissions is expected to occur due to facility improvements. There would be no change to the volume of motor vehicle emissions. Radon monitoring was performed with all levels recording less than 0.5 pCi/L, which is equivalent to radon levels found in the ambient environment. It is not expected that the presence of radon in the environment would have an adverse effect.</p> <p>To minimize potential air quality impacts, best management practices would be incorporated within standard operating procedures and be specified for NWHC construction activities and later building demolitions. Construction activities would be in compliance with Chapter NR 4115 revisions and would follow recommendations provided by the Wisconsin DNR.</p>
Noise	There would be no changes to noise sources and levels, and mitigation measures would not be necessary.	<p>Potential noise impacts may occur from construction activities, routine operation and maintenance, and vehicle traffic associated with facility operation. Construction noise would be temporary and intermittent. Sound levels during operation of the new NWHC are expected to be similar to levels experienced during current NWHC operation.</p> <p>Measures to minimize potential construction noise impacts include source and site control, time and activity constraints, and community awareness.</p>

ACRONYMS AND ABBREVIATIONS

AAALAC	Association for Assessment and Accreditation of Laboratory Animal Care	kBtu	One thousand British Thermal Units
AADT	Average Annual Daily Traffic	kWh	Kilowatt-hours
ABSL	Animal Biosafety Level	LED	Light emitting diode
ACM	Asbestos-containing materials	mgd	Million gallons per day
ALS	Advanced Life Support	msl	Mean sea level
APE	Area of Potential Effect	NAAQS	National Ambient Air Quality Standards
BMBL	Biosafety in Microbiological and Biomedical Laboratories	NEPA	National Environmental Policy Act
BMPs	Best Management Practices	NIH	National Institutes of Health
BSL	Biological Safety Level	NOI	Notice of Intent
CAA	Clean Air Act	NPS	National Park Service
CAAA	Clean Air Act Amendments	NRCS	Natural Resources Conservation Service
CCTV	closed circuit television	NRHP	National Register of Historic Places
CDC	Centers for Disease Control and Prevention	NWHC	National Wildlife Health Center
CEQ	Council on Environmental Quality	NWI	National Wetland Inventory
CFR	Code of Federal Regulations	PCBs	Polychlorinated biphenyls
CSU	Colorado State University	pCi/L	Picocuries per liter
dB	Decibels	PPE	Personal protective equipment
dba	A-weighted decibels	ppm	Parts per million
DEIS	Draft EIS	psi	Pounds per square inch
DOI	U.S. Department of the Interior	PV	Photovoltaic
EISA	Energy Independence and Security Act	RCL	Residual contaminant levels
EDS	Effluent Decontamination System	RPBB HPZ	Rusty Patched Bumble Bee Federal High Potential Zone
EIS	Environmental Impact Statement	SHPO	State Historic Preservation Office
EMS	Emergency Medical Services	SIP	State Implementation Plan
EMTs	Emergency Medical Technicians	THPO	Tribal Historic Preservation Officers
EO	Executive Order	TIB	Tight Isolation Building
ESA	Endangered Species Act	tpy	Tons per year
FEIS	Final EIS	USDA	U.S. Department of Agriculture
FEMA	Federal Emergency Management Agency	USEPA	U.S. Environmental Protection Agency
FPPA	Farmland Protection Policy Act	USFWS	U.S. Fish and Wildlife Service
GHG	Greenhouse gases	USGS	U.S. Geological Survey
gpm	Gallons per minute	UW	University of Wisconsin
HEPA	High-efficiency particulate absorbing	UWRP	University of Wisconsin Research Park, Inc.
IACUC	Institutional Animal Care and Use Committee	VOCs	volatile organic compounds
IPaC	USFWS Information for Planning and Consultation	WAC	Wisconsin Administrative Code
		Wisconsin DNR	Wisconsin Department of Natural Resources

1.0 INTRODUCTION

The U.S. Geological Survey (USGS) proposes the development of an updated facility for the National Wildlife Health Center (NWHC). This Proposed Action would support the agency's current and future needs to streamline delivery of research through design and construction of a purpose-built facility, enhance worker and public safety, enhance animal care conditions, modernize biohazard and pathogen containment and biological-waste disposal, and improve operating efficiencies and costs. The USGS established the NWHC in 1975 in Madison, Wisconsin as the first biomedical laboratory dedicated to assessing the impact of disease on wildlife and identifying the role of various pathogens in contributing to wildlife losses. It remains today as the only center nationally devoted to wildlife disease detection, control, and prevention in the United States.

The emergence of wildlife diseases is a high-priority concern in the United States and the world. In addition to their harmful effects on natural wildlife populations and ecosystems, there is the potential for the spread of zoonotic diseases to humans, and for causing economic losses associated with livestock morbidity and mortality. The NWHC is responsible for providing research and for investigating and responding to known and emerging wildlife diseases and wildlife mortality outbreaks throughout the United States. The NWHC performs diagnostics and research to detect and characterize pathogens naturally occurring in wildlife in North America and has been providing vital disease and pathogen detection services, active disease surveillance, and applied research to help understand, detect, respond to, and manage wildlife diseases on the landscape for over 40 years.

1.1 Background

The NWHC is located on a 24-acre tract of federal property which, along with a vacant building, was originally acquired from the U.S. Fish and Wildlife Service (USFWS) in 1978 to consolidate USFWS expertise into a single program and provide a permanent facility for the NWHC. The Main Building on the property was constructed in the 1960's and underwent extensive renovations in 1982. A second building, the Tight Isolation Building (TIB), was constructed in 1985 and modified in 1989. Other small structures are also on the property including a maintenance garage and a modular building added in the 2000's and used as employee offices. Portions of the property not occupied by buildings, access and service driveways, and parking areas were restored to native prairie in 1988. An interpretive nature trail has also been developed through the prairie and adjacent wooded area that is accessible to the public.

In 1996, the NWHC was transferred to USGS where it remains one of many entities that provides the independent science that forms the base of sound management of the nation's natural resources. The USGS, created by an act of Congress in 1879, is an agency of the federal government where scientists study the nation's landscape, its natural resources, and the natural hazards that threaten it. The USGS is also a research organization whose work spans the disciplines of biology, geography, geology, and hydrology. In performing its mission, the NWHC:

- Monitors disease from free-living wildlife populations, detects changes in disease patterns and the emergence of new variants, and determines the impact of disease on wildlife resources under U.S. Department of the Interior (DOI) stewardship.
- Defines the ecological relationships among host, agent, and environment leading to the occurrence of disease.
- Develops effective strategies and technology for disease prevention and control.

- Provides guidance, training, and technical assistance for reducing wildlife losses when disease outbreaks occur.

The NWHC provides information, technical assistance, and research on national and international wildlife health issues. It also monitors and assesses the impact of disease on wildlife populations; defines ecological relationships leading to the occurrence of disease; transfers technology for disease prevention and control; and provides guidance, training, and assistance for reducing wildlife losses. Some of these diseases include Chronic Wasting Disease, West Nile Virus, Newcastle disease, salmonellosis, and avian influenza. As a Level 2 Security Facility under the U.S. Department of Justice Standards for Federal Facilities, the NWHC operates under criteria established by the National Institutes of Health (NIH) and the Centers for Disease Control and Prevention (CDC) for Biological Safety Level 3 (BSL-3) containment.

The NWHC functions as an integrated program involving disease diagnosis, field response to animal disease outbreaks, research, animal welfare, and training of others in disease identification and control. Collaboration with and technical assistance is also provided to universities and a wide variety of agencies and organizations within the federal, state, and private sectors. This has resulted in an extensive network of interaction and today the NWHC is a national resource for information, technical assistance, and research on wildlife health issues.

Starting in 2008, the USGS conducted multiple studies of the current facility to identify where efficiencies could benefit NWHC operations. While safe operation requirements continue to be maintained, the studies consistently found over-crowded laboratories and administrative areas; inefficient infrastructure (e.g., heating, ventilation, and air conditioning systems [HVAC]) that do not meet current standards for energy efficiency; and extensive wear and tear due to the age of the buildings and associated equipment.

Proactive efforts had been made to repair systems and facilities. However, as is typical with repairs of older equipment and infrastructure, these efforts provide only short-term relief so were focused only on those necessary for maintaining safe operations. Additionally, major repairs have involved replacing systems like-for-like, as other limitations of the aging buildings prevent full updating of major infrastructure. Continued renovations and repairs would be cost prohibitive and would not fully address the challenges associated with the aging buildings and building systems.

1.2 Purpose and Need for the Proposed Action

The purpose of the Proposed Action is to update the aging NWHC facility to incorporate technological advances in biosafety engineering and equipment as well as add additional space for enhanced animal care and research. The NWHC needs modernized facilities with sufficient space and modern technologies to support their mission essential national research. The existing facilities continue to require major monitoring and maintenance to maintain current operations. Studies indicate that continuing to maintain and update the current facility to meet the mission and function of the NWHC is not effective and cost prohibitive.

The NWHC needs facilities that provide functional space for administration and operations and meet health and safety standards and regulatory requirements. Adequate space is needed to conduct research into wildlife disease detection, enhance animal-care conditions, and strengthen other programs that support the mission of the NWHC. In addition, modern laboratory equipment and mechanical systems are needed to efficiently implement the latest operating and management approaches within the facility. These modernizations would further enhance the NWHC's capability to reduce exposure to pathogens and the risks faced by staff and members of the public. Improved efficiencies in operations and equipment would also contribute to meeting current Federal Sustainability Program requirements, such as the Net Zero Greenhouse Gas Emission Goal outlined in Executive Order (EO) 14057 Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability.

1.3 Location

Since its establishment, the facilities comprising the NWHC have been located at 6006 Schroeder Road, approximately five miles southwest of downtown Madison (Exhibit 1-1). U.S. Route 12/14 (the Beltline



Exhibit 1-1: National Wildlife Health Center Location

Highway) borders the property to the north, and Schroeder Road borders the property to the south. The NWHC is in the city's Southwest Neighborhood planning area, a diverse suburban area primarily developed with single family and multi-family residences, commercial uses along primary arterial roadways, schools and community centers, parks and open spaces, and industrial areas north and south of the Beltline.

1.4 Existing Facility

The NWHC's Main Building, comprising approximately 33,000 square feet of floor space, contains the necropsy laboratory and associated disease diagnostic laboratories; general support laboratories for biological media and reagent preparation, glassware preparation and other special use areas; a physical plant including an incinerator for inactivation of biohazardous waste; and administrative support areas with a conference room, staff offices, data processing, and records areas. A photovoltaic (PV) system used to generate electricity, along with other conservation measures, are employed to reduce energy consumption and control operational costs.

The TIB is located approximately 150 feet northeast of the Main Building and while the buildings are physically separated, there is not a complete separation of functions, with researchers working in both buildings. The TIB contains specialized research laboratories and support areas, staff offices for investigators and Biological Safety Level 3 (BSL-3) bio-containment animal research areas. The Animal Isolation Wing is self-contained and includes equipment and special-use areas to clean cages and glassware, to incinerate bio-hazardous waste, and to conduct necropsies. Entry into the area requires use of personal protective equipment (PPE) and work practice controls such as, specialized clothing and footwear, changes of clothing and footwear for each room entered, and depending upon the pathogens present within the facility, a mandatory shower upon exit from the room or facility level (Exhibit 1-2).

1.5 Existing Public Health, Safety, and Security Controls

The NWHC complies with all local, state, and federal regulations along with industry standards and best practices to ensure the health and safety of staff, visitors, neighbors, and the general public. In addition, the USGS has a strong safety culture at the NWHC. The NWHC achieves high standards of biosafety and biosecurity through engineering controls, administrative (or programmatic) controls, and use of PPE, employed in combination to provide redundancy. Adherence to these controls is evaluated and maintained through both internal and external inspection and review, and the record of minimal findings demonstrates the culture of safety and success of the biosafety and biosecurity program at the NWHC. The sections below provide an overview of the public health, safety, and security controls that are implemented at the NWHC and ensure the appropriate risk mitigation associated with NWHC operations and potential emergency situations such as natural disasters.

1.5.1 Engineering Controls

In the context of health and safety, engineering controls are facility characteristics and equipment that prevent the release of contaminants into the workplace and the environment. Engineering controls at the NWHC meet the CDC and NIH standards for biological safety level-3 with enhancements for all laboratories and animal holding rooms, which include the following:

- Laboratories and animal holding rooms are maintained under negative air pressure, with unidirectional airflow, high-efficiency particulate absorbing (HEPA)-filtered exhaust, and approximately 12 air changes per hour.
- Hands-free sinks and eyewashes are available near the exit of all laboratories.
- Entrance to laboratory access areas is through two self-closing doors.
- All work with infectious agents or toxins is performed within an appropriate, annually certified biosafety cabinets.
- All spaces have no exterior windows and sealed floors and walls.

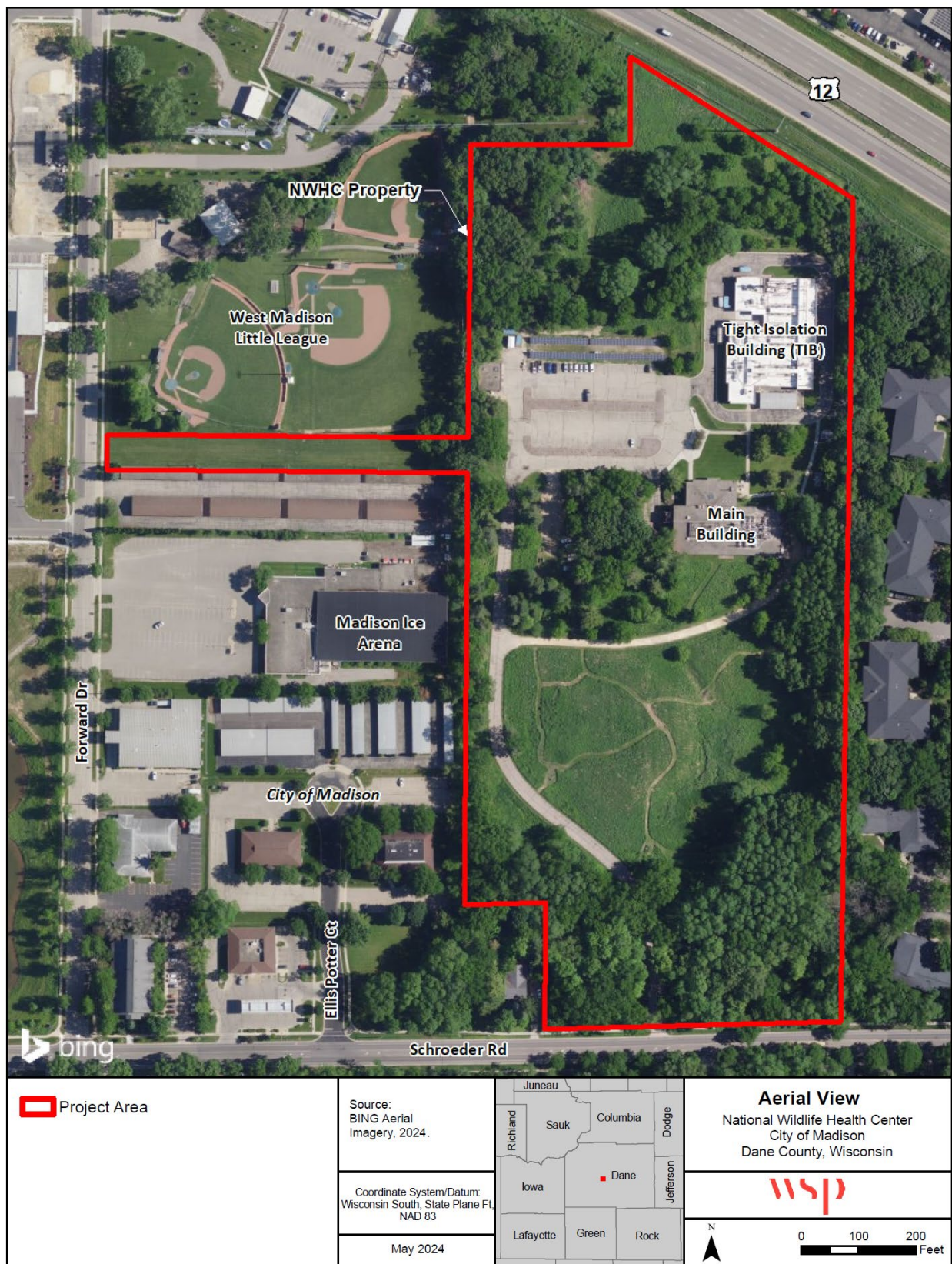


Exhibit 1-2: Aerial View of National Wildlife Health Center

- Laboratory waste is decontaminated using autoclaves or incinerators. Animal holding room and necropsy waste is decontaminated using autoclaves, incinerators, or an effluent retention and decontamination system.
- The animal holding facility has shower out capability at the facility level with some animal rooms having shower out capability at the room level. This enhancement is also available in both necropsy suites.

1.5.2 Security Controls

NWHC security controls include:

- Grounds and buildings have closed circuit television (CCTV) coverage 24/7, access to the buildings is restricted 24/7, and building security alarms are activated after hours
- Access to all BSL-3 and Animal Biosafety Level (ABSL)-3 spaces is restricted.
- All infectious agents are stored in secured laboratories.
- Some laboratories with higher risk agents have additional intrusion devices that are triggered in the event of unauthorized access.

1.5.3 Administrative Controls

Administrative controls are safety policies, rules, supervision, schedules, and training with the goal of reducing the duration, frequency, and severity of exposure to biological hazards. NWHC's primary administrative control involves having all research with biological agents and toxins reviewed and approved by the Institutional Biosafety Committee (IBC). Researchers submit a biosafety protocol to the Committee with information about the personnel involved and their level of training and experience, the research space(s), and potential hazards associated with the work, and planned risk mitigation measures.

Study-specific standard operating procedures are also submitted with the protocol so that the Biosafety Committee can review and approve the risk assessment for the project. The committee uses the Biosafety in Microbiological and Biomedical Laboratories (BMBL) and NIH guidelines as a benchmark for the risk assessment. The protocol is also evaluated to ensure the proposed work complies with applicable regulations such as local, state, or federal waste regulations, and CDC and/or U.S. Department of Agriculture (USDA) permitting requirements. The committee works with the researcher until all the committee's requests have been addressed.

Administrative controls also include:

- An Occupational Health Program is in place for medical surveillance of laboratory workers. All laboratory staff are enrolled in the program and may be offered immunizations or medications for infectious agents or toxins they work with, if available.
- NWHC maintains a Safety Manual which is updated annually.
- Annual training on biosafety and biosecurity is provided to all staff, and safety updates are provided at monthly All Hands Meetings.
- Annual insider threat training is provided for all staff.
- All staff who have access to the facility undergo at least a Special Agreement Check background investigation through USGS.
- A detailed building security plan is in place and is reviewed at least annually.

1.5.4 Personal Protective Equipment

Personal Protective Equipment (PPE) is the final layer in the hierarchy of controls. Required PPE for laboratory and animal work is documented for each study. If respiratory protection is required, personnel

are enrolled in the respiratory protection program which requires annual training, annual fit test (for properly fitting respirators), and medical clearance (1- to 5-year clearance). Personnel are trained on how to put on and take off PPE, how to perform daily checks of the equipment, and how to maintain the equipment over time.

1.5.5 Inspection and Review

Laboratories and animal spaces are inspected annually to make sure that the facility meets regulatory standards. The Institutional Biosafety Committee evaluates whether researchers are following approved biosafety practices and procedures, as documented in approved biosafety protocols. In addition, the Institutional Animal Care and Use Committee (IACUC) also performs post approval monitoring for approved animal experimental protocols. The NWHC's biosafety and biosecurity practices and documentation are subjected to regular external inspections by the CDC and the USDA.

1.5.6 Standards and Accreditation

The NWHC holds itself to the highest standards in animal welfare by maintaining an Animal Welfare Assurance with the Public Health Service Office of Lab Animal Welfare, and by following all guidelines and regulations in the Public Health Service Policies on Humane Care and Use of Laboratory Animals, the Animal Welfare Act, and the U.S. Government Principles for the Utilization and Care of Vertebrate Animals Used in Testing, Research, and Training. In addition, the NWHC is undergoing a program status evaluation by the Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC) International. AAALAC International is a private, nonprofit organization that promotes humane treatment of animals in science through a voluntary international accreditation program.

1.6 Required Permits, Consultations, and Approvals

The USGS is coordinating to complete the required consultations with federal and/or state regulatory agencies as part of the National Environmental Policy Act (NEPA) process, including consultation under Section 106 of the National Historic Preservation Act of 1966 and Section 7 of the Endangered Species Act of 1973 (ESA). Additional information regarding agency consultations is provided in Chapter 3.0 of this Draft Environmental Impact Statement.

Federal agencies are not subject to traditional municipal zoning and land use development regulations or review and approval policies, procedures, and permits. Nonetheless, in planning for the Proposed Action, the USGS will consider the relationship of any new or upgraded facilities to local land use plans, policies, and regulations.

1.7 Planning and Environmental Impact Statement Process

The USGS prepared this DEIS to evaluate the impacts of the Proposed Action on the human environment, consistent with the purpose and goals of NEPA (42 USC 4321 et seq.) and pursuant to the Council on Environmental Quality's (CEQ) implementing NEPA regulations at 40 CFR Parts 1500 – 1508 (as amended). Additionally, the EIS was prepared consistent with the Department of the Interior's NEPA regulations (43 CFR Part 46), long-standing federal judicial and regulatory interpretations, and Administration priorities and policies including Secretary's Order No. 3399 requiring bureaus and offices to use "the same application or level of NEPA that would have been applied to a proposed action before the 2020 Rule went into effect."

The following sections describe opportunities for public involvement during the NEPA process. Development of the alternatives evaluated in the DEIS, and a detailed description of the action alternative (Preferred Alternative) and the no action alternative, are provided in Chapter 2. A discussion of the scoping of issues and the analysis of existing conditions and potential direct, indirect, and cumulative impacts of the alternatives are included in Chapter 3.

1.7.1 Scope of the Environmental Impact Statement

This DEIS evaluates the potential environmental effects of the USGS's Proposed Action to develop an updated facility for the NWHC that can meet the agency's current and future needs, streamline delivery of research, enhance worker and public safety with modern biohazard and pathogen containment and biological-waste disposal, and control operating costs. The analysis in the DEIS is focused on alternatives that meet the purpose of and need for the Proposed Action (see Section 1.2). Therefore, proposed activities or changes related solely to the NWHC's operations, such as the types of studies conducted or procedures related to laboratory animals, separate from the design of vivarium spaces, are outside the scope of this EIS and would continue to be managed in compliance with the requirements of the NWHC's certifications and accreditations, including the Animal Welfare Assurance with the National Institute of Health Office of Lab Animal Welfare, and applicable guidelines such as those of the American Veterinary Medical Association.

1.7.2 Public Participation – Scoping and DEIS Review

Following publication of the Notice of Intent (NOI) to prepare an EIS, the USGS held a 45-day public scoping period from September 5, 2023, to October 20, 2023. The NOI invited federal, state, county, and local agencies, Tribes, officials, organizations, and the public to participate in the scoping and DEIS study process and included information concerning the date, time, and means to participate at public scoping meetings. The USGS hosted an in-person public scoping meeting in Madison, Wisconsin, on September 21, 2023, and virtual scoping meeting on September 28, 2023. The in-person meeting was attended by 6 members of the public, and the virtual meeting was attended by 20 members of the public.

The USGS considered all comments from members of the public, organizations, and regulatory agencies, including comments received directly through US mail or email. A total of 13 pieces of correspondence were received via the project website and email during the public scoping period, and a total of 33 individual comments were coded. Commenters addressed the Preferred Alternative; alternatives considered but dismissed from full analysis; the range of alternatives; various issues and impact topics, including environmental justice; suggestions for consultation; the planning process; the purpose and need for the Proposed Action; and other topics. The Public Scoping and Engagement Report (Appendix B) summarizes all comments received during the scoping period.

This DEIS is available for public review and comment from June 14 to July 29, 2024. Individuals with an interest in the Proposed Action have an opportunity to review the evaluations, inquire about any areas of concern, and offer additional information that should be considered by USGS during the planning and decision-making process. During the public review period, the USGS will host an in-person public meeting in Madison, Wisconsin, and a virtual public meeting. The dates and times of these meetings and other meeting information will be provided on the project website (<https://www.nwhceis.com/>) and in notifications published in the Wisconsin State Journal and Capital Times and emailed to individuals on the project contact list. Following the end of the DEIS public comment period, USGS will prepare and publish a Final EIS (FEIS) in accordance with NEPA and its guidance, which will incorporate additional data which may come to light into the decision-making process and respond to comments received on the DEIS.

2.0 ALTERNATIVES

Various alternatives to invest in the NWHC were identified and considered to provide updated facility conditions to more efficiently meet the agency's current and future needs. The goals evaluated for the alternatives include streamlining delivery of research, enhancing worker and public safety, improving modern biohazard and pathogen containment and biological waste disposal, and controlling operating costs.

The CEQ guidelines for implementing the procedural provisions of NEPA establish a number of policies for federal agencies codified in 40 CFR Parts 1500-1508. The analysis of alternatives should present the environmental impacts of the Proposed Action and the alternatives in comparative form based on the information and analysis presented in the sections on the affected environment (40 CFR § 1502.15) and the environmental consequences (40 CFR § 1502.16).

The alternatives analysis (40 CFR § 1502.14) is required to:

- Evaluate reasonable alternatives to the Proposed Action, and, for alternatives that the agency eliminated from detailed study, briefly discuss the reasons for their elimination.
- Discuss each alternative considered in detail, including the Proposed Action, so that reviewers may evaluate their comparative merits.
- Include the No Action Alternative.
- Identify the agency's Preferred Alternative or alternatives, if one or more exists, in the DEIS and identify such alternative in the FEIS unless another law prohibits the expression of such a preference.
- Include appropriate mitigation measures not already included in the Proposed Action or alternatives.
- Limit their consideration to a reasonable number of alternatives.

The analysis conducted under these guidelines addresses the following categories of alternatives for the Proposed Action. USGS organized the multiple alternatives considered into these categories to clarify the broad alternatives considered (e.g., consolidation, alternative locations) and group similar, but distinct, alternatives together.

- **No Action Alternative.** Under the No Action Alternative, the NWHC would continue to function, be maintained, and operate under its current conditions. There would be no major updates made to the existing facility or new construction implemented.
- **Consolidation Alternatives.** This group of alternatives includes alternatives that would consolidate one or more Madison-area DOI organizations at existing, renovated, or modernized facilities on the NWHC property.
- **Alternative Locations.** This group of alternatives includes options for constructing a new NWHC facility at alternative sites both in and outside of Madison, Wisconsin.
- **Siting and Design Alternatives.** This group of alternatives includes alternative building placements and configurations for a new NWHC facility on the existing property. These

alternatives considered different building placements on the existing property, separate from the building placement and configuration that were ultimately identified as the Preferred Alternative.

- **USGS Preferred Alternative (New NWHC Facility).** This alternative would construct new facilities on the grounds of the NWHC in Madison, Wisconsin. This is the alternative preferred by USGS for implementation of the Proposed Action.

2.1 Planning and Development of Alternatives

The alternatives addressed during the initial planning stages for the NWHC updates were based on multiple modernization planning processes conducted by USGS between 2008 and 2020, comments and input received during internal meetings, and discussions during that period:

- An initial study was completed in 2008 which evaluated a proposal to consolidate multiple federal organizations on the NWHC property.
- *2011 Modernization and Consolidation of Facilities – National Wildlife Health Center, Final Concept Submittal (Strang, Inc.)* – This study further evaluated the feasibility of consolidating multiple Madison-based DOI organizations onto the 24-acre NWHC site. The DOI organizations included the Wisconsin Water Science Center, USFWS, National Geospatial Program, Enterprise Publishing Network, National Spatial Data Infrastructure Partnership Office, Office of Management Services, and Geography Liaison Office. The study considered multiple alternatives for consolidation and facility modernization or reuse of existing facilities.
- *2017 National Wildlife Health Center Facility Modernization Plan (CTA and Page/SST Planners)* – This study and planning process included a review and validation of the 2011 modernization plan and recommendations for consolidation of DOI organizations and modernization of facilities. The study also included business case analyses for alternative site locations for the modernized NWHC.
- *2020 Phased Modernization Study (Strang and Merrick)* – This study and planning process reviewed, validated, and updated the 2017 modernization plan, developed a concept that meets USGS's identified planning objectives along with several development phasing scenarios. The concept that resulted from this effort informed development of the Preferred Alternative carried forward for analysis in this EIS.

Alternatives were developed based on the findings and recommendations of the studies noted above and were refined during discussions among USGS and NWHC staff during 2022 and 2023. Public and agency input related to the Proposed Action, NEPA process, and proposed alternatives was received during the public scoping process between September 5 through October 20, 2023, and considered during development of the DEIS. Scoping comments received are included in the Public Scoping Summary Report (Appendix B).

2.2 Alternatives Considered and Eliminated from Further Evaluation

Alternatives or alternative elements were identified by USGS during previous studies, internal evaluations, and during the public scoping process. Those considered and not evaluated further in the EIS, along with the reasons for their elimination, are described below.

2.2.1 Alternative Locations

2.2.1.1 National Wildlife Health Center Relocation

The 2017 modernization plan considered relocating the NWHC campus to an alternative site in the Madison area, potentially including property owned by the National Park Service (NPS) south of Madison, or to a university campus in partnership with an institution of higher education. Establishing a partnership with an institution of higher education was considered the more viable option, allowing facility construction to be funded as a budget line item versus a capital expenditure. A partnership also has the potential to broaden the research capabilities of the university partner and the NWHC. Therefore, a partnership with

an institution of higher education was the operationally preferred option, compared to relocation to other federal government-owned properties. Partnerships that were considered during the planning process are described below.

2.2.1.2 NWHC Partnerships with Higher Education Institutions

Partnerships with higher education institutions, which would involve relocating the NWHC from its current setting to a university campus, were considered with the University of Wisconsin (UW), UW Research Park, and Colorado State University (CSU).

- **New Veterinary Science School, University of Wisconsin**

This alternative would incorporate the proposed NWHC within the planned Veterinary Science School building on the UW Madison campus. Under this approach, the new NWHC would be a tenant in the planned Veterinary Medicine Department building on the UW Madison campus and was the subject of discussions between USGS and UW officials.

To design and construct a new UW Veterinary Science School building that incorporates a new NWHC, USGS would need to determine the space requirements for its research program and provide its portion of the funds necessary for design and construction. As this alternative was considered, it became clear that among the hurdles to overcome was how USGS would retain ownership of those parts of a UW building that it funded. It was also unclear how lease arrangements would cover operating and maintenance costs for a jointly owned UW-USGS building housing the NWHC and one that was determined to offer few, if any, opportunities for sharing laboratory and animal space. Most important, the schedule for design and construction of the Veterinary Science School building did not coincide with the timing of USGS's budget requests for NWHC design and construction. Since those discussions, UW broke ground on construction of the new Veterinary Science School building in June 2021 with completion expected during 2023 – 2024. Based on these factors, this alternative was eliminated from further consideration.

- **University of Wisconsin Research Park**

A partnership with the University of Wisconsin Research Park, Inc. (UWRP), a non-profit corporation affiliated with UW – Madison, was also considered as an alternative for addressing the NWHC's long-term facility needs. Two options were proposed by UWRP to USGS.

The first option involved partnering with UWRP and utilizing a developer to finance construction of a new NWHC with USGS leasing the building from UWRP. USGS would follow applicable federal regulations to request proposals from prospective developers to construct a new NWHC to USGS specifications at a location to be determined within Dane County. USGS would enter into a lease with UWRP (12-15 years or more) which would fund design and construction. Proposers would be required to identify a specific site, a concept for the building, and quote a "rent constant". USGS would have the option to re-use or dispose of the current NWHC campus once the new center is constructed.

A second option involved leasing a build-to-suit facility from UWRP which would identify a site for the new NWHC within its research park and act as the developer to build a facility to USGS specifications. USGS would lease the new facility from UWRP under a long-term lease (20-30 years or more) that could result in USGS owning the facility or having the right to acquire the NWHC at the end of the lease. Again, USGS would have the option to re-use or dispose of the current NWHC campus once the new NWHC is constructed.

The primary drawback to the lease options is that the USGS would not own the facility and would have little to no control over lease rates with the likelihood that lease rates would increase over time. In addition, USGS would not have direct oversight of critical mechanical systems associated with biosafety and security in leased facilities and areas housing research animals, which could affect compliance with scientific permits, biosafety and biosecurity standards, IACUC approvals and quality assurance programs tied to the NWHC's mechanical systems. Other drawbacks of these options included:

- Requires NWHC staff to relocate to a new unknown location.
- Mission risk associated with the need to supplement lease costs by increasing overhead rates and impacting funds available for meet mission requirements.
- Lack of facility ownership and the potential loss of direct oversight, monitoring and maintenance for critical mechanical systems associated with biosafety and security systems, areas housing research animals, and the impact this could have on compliance with scientific permits.
- May not realize full value of vacated NWHC property.

Based on these factors, this alternative was eliminated from further consideration.

• **Colorado State University – Foothills Campus**

A partnership with CSU was also considered for addressing the NWHC's long-term facility needs. The proposed NWHC would be included as part of development plans for CSU's Foothills Campus whereby a third-party developer would construct a new NWHC on CSU's campus in Fort Collins, Colorado. However, relocating NWHC to Colorado as part of a CSU/NWHC partnership has several notable drawbacks including:

- Loss of NWHC personnel as a result of relocating to Colorado including highly specialized expertise which would be difficult and costly to replace.
- Relocation costs for staff changing duty station.
- Disruption to and/or loss of current research partners.
- Potential for extended downtime associated with hiring new staff, establishing new partnerships, and/or construction delays impacting partners and research programs.
- Delays related to establishing new regulatory and permit reviews and approvals.
- Increased costs including annual rental payments and potentially additional operating costs associated with being on the CSU campus.
- May not realize full value of vacated NWHC property.

Based on these factors, this alternative was eliminated from further consideration.

2.2.2 Consolidation Alternatives

2.2.2.1 Consolidation with Other Area DOI Organizations with NWHC Improvements

The 2011 study evaluated NWHC modernization and relocation of up to seven additional Madison area DOI organizations. These included relocating the USGS Wisconsin Water Science Center, USFWS, National Geospatial Program, Enterprise Publishing Network, National Spatial Data Infrastructure Partnership Office, Office of Management Services, and Geography Liaison Office and with them a total of approximately 131 additional staff to the NWHC property.

This alternative would involve constructing a large addition that would join the Main Building and TIB, plus a second addition which would house the NWHC's BSL3-Ag space. Following construction of the additions, the two existing buildings would be reused with the Main Building used for office and administrative functions and the TIB used primarily for animal holding rooms. Construction to occur over multiple phases. While this alternative would eliminate payments for currently DOI leased space, this alternative has several notable drawbacks including:

- Design and construction would be complex and lengthy, due to the need for multiple construction phases.

- Reuse of the Main Building and TIB would not fully allow for use of modern, more efficient and secure building envelope technologies.
- Accommodating other DOI agencies and renovations to the existing NWHC would require a very large building with associated increase in overall development costs.
- Building layout would be constrained by the locations and configurations of the existing buildings and infrastructure and would be less optimal than a constructing a new building.
- The basement of the Main Building is much less desirable space due to space constraints and the lack of windows, would be underutilized, and likely would be used only for storage.

For these reasons, this alternative was eliminated from further consideration.

2.2.2.2 Consolidation with Other Area DOI Organizations without NWHC Improvements

This alternative involves construction of a large addition to the Main Building, which would house those relocating DOI organizations with all facilities owned by the USGS, rather than leased. This alternative was evaluated in the 2008 and 2011 studies and dismissed from further consideration because it does not address the increasing costs to maintain the existing NWHC or the space needed for current and future NWHC operations. This alternative would continue to have the TIB physically separated from the Main Building and would not address operational and safety issues associated with moving occupants, supplies, and samples between buildings. This alternative was also eliminated from further consideration.

2.2.3 NWHC Development Alternatives

With the elimination of alternatives involving NWHC relocation, partnerships with institutions of higher learning, and consolidation with other area DOI agencies, USGS focused its efforts on developing a new NWHC on the property containing the existing NWHC. Beginning in 2020, information regarding site conditions and characteristics, the locations of the Main Building and TIB, on-site utility infrastructure, topographic and subsurface features, vehicle access and parking, environmental resources, and other features was gathered and analyzed as the basis for preparing preliminary conceptual plans for a new NWHC. Underlying development of the conceptual plans were a number of important considerations:

- Avoiding development within the ice fall zone surrounding the Channel 15 broadcast antenna.
- Maintaining operation of the Main Building and TIB and the on-site utility infrastructure to service the Main Building and TIB throughout new NWHC construction.
- Maintaining the NWHC access driveway from Schroeder Road.
- Providing areas for geothermal and PV system installations.
- Minimizing potential impacts to prairie areas and other environmental resources.
- Minimizing overall development costs.

Based on the analysis, preliminary NWHC conceptual development plans were prepared to test building locations, configurations, orientations, spatial relationships, internal circulation and parking, and other ancillary development. This effort also served to limit impacts to environmental features where possible, control development costs, and avoid disruptions to NWHC operations during construction.

The progression of conceptual development plans served to incorporate favorable components derived from initial, less optimal plans as determined by the analysis. In this way, conceptual plans systematically evolved to produce an overall development plan which incorporates the best features of each preceding plan and leading to the Preferred Alternative.

2.2.3.1 NWHC Development – North

The approximately 12-acre northern portion of the NWHC property was analyzed for potential development. In doing so it was recognized that an area surrounding the 1,248-foot-tall broadcast antenna is subject to falling ice during winter months, thereby risking the safety and welfare of staff, visitors, parked vehicles, and the new NWHC structure. Therefore, areas within approximately 800 feet of the base of the antenna were removed from possible development, an exclusion zone that encompasses the northwest quadrant of the property.

NWHC development in the northern portion of the property would also face higher costs associated with extending the access driveway and connecting utility infrastructure to the utility yard. Shallow bedrock and topographic conditions found in this area could limit or eliminate construction of a basement level while increasing the overall cost of construction. Any prairie in this area would also be lost to development (Exhibit 2-1). With the need to continue operating the Main Building and TIB and avoiding disruptions to on-site utility infrastructure, the entire northern half of the property has been effectively eliminated from consideration and was not analyzed further as a potential site.

2.2.3.2 NWHC Development – South

With the limitations and hurdles facing development in the north, attention turned to the 12-acre southern portion of the property. NWHC development in this area avoids the conflicts described above; it's located outside the ice fall zone, allows uninterrupted operation of the Main Building and TIB during construction, uses vacant portions of the property for geothermal and PV system installations, and has a lower overall development cost. While infringing upon the south prairie, the plan would include removal of invasive plants while maintaining the prairie's approximate size and configuration and ensuring its long-term functioning (Exhibit 2-1). For these reasons, this portion of the site was considered viable and, therefore, was carried forward for detailed analysis.

2.3 Alternatives Considered in the Environmental Analysis

The sections below describe the alternatives carried forward for evaluation in the DEIS. Alternatives addressed in detail in the DEIS include:

- **No Action Alternative** – No updates would be completed to the existing facility, and no new facilities would be developed. Operations would continue from the current NWHC in Madison, Wisconsin, with repairs and maintenance completed as needed and as resources are available.
- **Preferred Action Alternative** – Development of a new NWHC on the grounds of the existing NWHC in Madison, Wisconsin.

2.3.1 No Action Alternative

The No Action Alternative is defined as a decision by USGS not to proceed with the Proposed Action, resulting in the continued operation of the current NWHC in Madison, Wisconsin. The NWHC would continue to operate from the Main Building and TIB in their current condition, and no renovations would be completed or new facilities would be developed. The NWHC would continue to operate out of crowded spaces that were not designed for their current uses and cannot accommodate updated laboratory and building system equipment. Repairs of existing building systems would be completed as needed but would be more costly as these systems continue to age, and renovations and repairs would be less effective in increasing the efficiency of these systems.

Adoption of the No Action Alternative would avoid the potential impacts and inconveniences (albeit temporary) associated with construction of the proposed NWHC such as increased noise, dust, soil erosion, energy consumption, traffic movements, and air emissions. Implementation of the No Action Alternative would also avoid the potential permanent impacts to visual and aesthetic resources associated with new NWHC development. While the No Action Alternative would avoid potential environmental impacts associated with new NWHC development and operation, adoption of the No Action Alternative would also result in the loss of the benefits associated with the Proposed Action. These



Exhibit 2-1: North and South Alternatives

benefits include meeting the need for a modern, efficient, and cost-effective NWHC; the societal advantages derived from continuing to advance wildlife health science; improvements in energy efficiency; and the potential economic benefits to the City of Madison and Dane County as a consequence of construction and operation of the new facility.

The No Action Alternative, by definition, does not meet the purpose and need for the Proposed Action. As noted earlier, the current NWHC is aged, space constrained, and inefficient and requires extensive and costly renovations to operate to current standards now and in the future. Nonetheless, to provide a baseline for comparison of the potential impacts of the Proposed Action, the No Action Alternative has been carried forward and addressed in Chapter 3.0.

2.3.2 Preferred Action Alternative – New NWHC

2.3.2.1 Site Description

The Preferred Alternative is development of a new NWHC on the current NWHC property in Madison, Wisconsin (see Exhibit 2-2). The proposed building site is in the south-central part of the property southwest of the Main Building and TIB. This location allows for both existing buildings to operate during construction with only minimal disruption to utility services during that time. The location also avoids the ice fall zone associated with the broadcast antenna located northwest of the property. Construction costs at this location would be lower compared to costs associated with construction on the northern part of the property because of shallow bedrock and steeper topography present in the northern area. While development of the new facility would infringe on the south prairie area, the Proposed Action includes removal of invasive species in the prairie and restoration of temporarily disturbed areas once construction is complete to maintain the prairie's long-term functioning.

2.3.2.2 Construction Process

Development of the new NWHC would involve various construction activities extending over an approximate 36-month construction period. Construction methods, sequencing, and duration for certain aspects are fairly well known including, for example, site preparation, utility connections, building construction, etc. Since the specific building design, materials, and equipment are not fully known at this time, reasonable expectations have been made for construction stages and sequencing based on projects of a similar nature and scale. The following provides an overview of the construction process.

- **Site Clearing and Preparation**

Initial site clearing and preparation would involve the use of equipment to remove concrete and asphalt pavement and vegetation within the development zone and to carry out rough and fine grading to establish level building and parking locations. Other site preparation activities would include installation of soil erosion and sediment control measures, stormwater control measures, temporary construction trailers and utility services, and similar initial site work.

- **Excavations and Foundations**

Following site clearing and grading, construction of footings and a basement foundation, and other below-grade components would commence. This typically involves use of equipment to excavate and remove soil material in preparation for foundation construction. Foundation work would include installing temporary forms and the pouring of concrete footings and the foundation floor and walls. Trenching for installation of new on-site underground utility service lines would also occur at this time. Trucks would deliver concrete and other foundation materials and licensed commercial carters would remove any wastes for off-site recycling or final disposal in a licensed disposal facility. Installation of the geothermal system (boreholes, piping, etc.) would involve drilling and trenching equipment although this work would occur during a later stage of development.

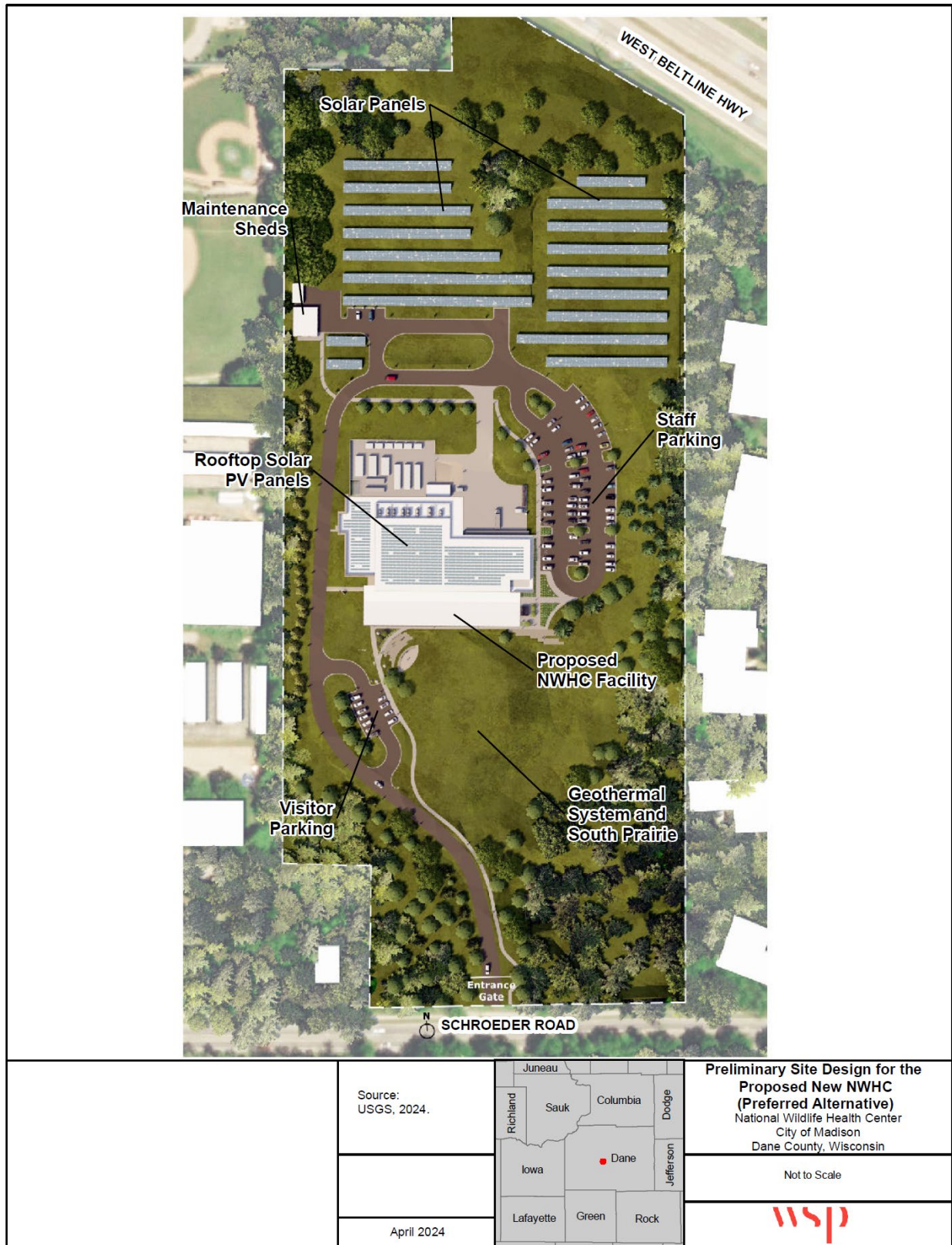


Exhibit 2-2: Preliminary Site Design for the Proposed New NWHC – (Preferred Alternative)

- **Building Erection**

This stage involves erection of structural elements (steel, concrete, reinforced concrete, etc.); the building façade (exterior walls and cladding); and floors and the roof structure. Installation of the structure's core, comprising mechanical, electrical, and plumbing systems, as well as the electrical and mechanical equipment rooms, and plumbing components, would occur during this stage and continue through the interior construction and finishing stage. These activities typically involve the use of cranes, exterior hoists, delivery trucks, forklifts, manlifts, and other similar equipment. Cranes would be used to lift structural components, façade elements, large pieces of equipment, etc. Trucks would continue to deliver materials and equipment and licensed carters would continue to remove construction-related wastes. Construction of the structure's exterior shell could overlap with interior construction.

- **Interior Construction and Finishing**

Installation of interior mechanical, electrical, and plumbing systems would continue during this stage and include HVAC equipment and ducting, installation of electric lines and water supply and wastewater piping and fixtures. Installation and inspection of life safety, security, and voice and data systems would also take place at this time as would construction of interior walls systems and interior finishes using low volatile organic compounds (e.g., flooring, carpeting, painting). Interior offices, conference rooms, laboratories, storage areas, and other spaces would also be furnished and equipment to be used during operation would be installed.

- **Typical Construction Equipment and Staging**

Typical equipment used for site clearing, grading, and foundation excavation and construction includes excavators, bulldozers, backhoes, cranes, and concrete pumping trucks. These would be supplemented by hoists, dump trucks and loaders, and other equipment. Trucks would arrive with pre-mixed concrete and other building materials and would remove any excess material and construction wastes. Equipment used during construction of the structure would include cranes, hoists, compressors, and hand tools. During roof construction, hoists and cranes would be used while trucks would continue to deliver building materials and remove wastes.

Temporary offices for construction contractors and a staging area would be provided within the NWHC property. While placement of trailers, building materials, and equipment would not be determined until a detailed development program and schedule is prepared, it is anticipated that all of the construction activity can be accommodated on-site, with no off-site staging necessary.

Once construction of the new NWHC is completed, the Main Building and TIB would be decommissioned and demolished. The current site of the Main Building would be used for employee parking, while the site of the TIB would be redeveloped with a solar photovoltaic (PV) field and would be revegetated with low-growing grasses and prairie species. Stormwater from the parking areas and new NWHC would be directed to the south prairie area, where it would be allowed to infiltrate naturally into the soil, similar to how stormwater is currently handled on the property.

2.3.2.3 Facility Description

The new NWHC is envisioned as a three-story structure with a basement and would contain administrative offices; BSL-2 and BSL-3 laboratories; vivarium ABSL-2, ABSL-3, and BSL3-AG; and support spaces. The NWHC's current animal program meets high standards for animal welfare, and animal care and protocols are reviewed with an emphasis on the Three Rs—replacement, reduction, and refinement—which provide an ethical framework for laboratory animal welfare. The new NWHC would provide purpose-built and highly flexible vivarium room designs that would improve the efficiency of NWHC staff in meeting the needs of housed species by removing the need to manually manipulate room environments to achieve optimal conditions for housed animals. NWHC staff, including highly trained and experienced wildlife biologists and wildlife veterinarians, would be involved in the design of the vivarium

and would continue to work together to develop husbandry and enrichment protocols that would provide optimal environments for animals used in research studies.

The new NWHC would present a contemporary and visually unified physical structure that is compatible with its surroundings, would be fire-resistant, and would meet applicable building code requirements. The main entrance and southern elevation of the building would be visible from the access driveway while remaining shielded from view by travelers on Schroeder Road. Existing trees along the northern and southern site boundaries would be maintained to the maximum extent possible as visual buffers to screen views of the facility from these directions (Exhibit 2-2). Individual trees would be removed adjacent to the driveway entrance to the property to allow for construction of a sidewalk leading to Schroeder Road.

Visitor parking would be located southwest of the new facility with employee parking placed east of the facility. Visitors would enter the building via a main entrance on the southern side of the building with employees entering from the eastern side. Approximately 12 parking spaces would be equipped with duplex outlet electric vehicle charging stations. New directional signage would be installed on the property, and energy-efficient exterior lighting would be installed in parking areas and along walkways. The existing access driveway from Schroeder Road would be maintained, and a right turn lane would be added for traffic exiting the facility to separate traffic turning left and right on Schroeder Road.

Visitor parking also would provide access for members of the community to the prairie and recreational trail. Driveway access to the prairie for visitors would be maintained during hours when the NWHC is open.

The proposed design for the new NWHC includes the following components and systems to meet biosafety requirements and the sustainability and energy efficiency requirements of EO 14057:

- Replacement of incinerators with more energy-efficient systems for biological waste disposal;
- A utility yard containing emergency generators;
- Modern containment systems within NWHC laboratories to prevent staff exposure to biological agents and chemicals; the escape of harmful pathogens; contamination of assay systems, reagents, and other materials; and cross-contamination between investigations;
- Simultaneous heat recovery chillers and exhaust air energy recovery;
- Atomizing humidification, coupled with low temperature heat source;
- A high-performance building envelope; including triple pane glazing and additional roof and wall insulation;
- On-site solar PV systems to provide for a portion of the energy required to operate the new NWHC;
- Installation of a geothermal system, including two geothermal fields, one in the northern part of the property and one in the southern prairie area, to supplement the mechanical and solar PV systems in meeting a portion of the new NWHC's energy requirements;
- Water reclamation and reuse system;
- All-electric space heating and domestic water heating systems; and
- For resiliency of operations: backup air-cooled chillers and natural gas boilers provided for the ground source heating and cooling system, a redundant electrical utility source, and emergency electric generators onsite to ensure safe operation during grid outage or failure.

The proposed facility would accommodate 122 staff, approximately equal to the number of staff currently working in the Main Building and TIB. The USGS is not proposing to change (increase or decrease) employment at the NWHC as part of the action. Commercial and personal vehicle traffic to the proposed facility would be similar to current traffic levels.

2.4 USGS Preferred Alternative (New NWHC Facility on Existing Location)

From evaluation of alternatives identified in early planning studies and during the scoping of the NEPA process, USGS has identified a Preferred Alternative for the construction of a new NWHC on the existing NWHC property in Madison. Construction of a new facility would allow for USGS to provide sufficient lab space and install modern, more efficient, and secure building envelope technologies and systems, including systems for treatment and disposal of biological waste and building utilities, in compliance with current and future biosafety requirements and the requirements of EO 14057. Multiple benefits are associated with the proposed site on the NWHC property. Construction and operation of the new NWHC on this site would:

- Allow the Main Building and TIB to continue to operate during construction with only minimal disruption to utility services;
- Allow space for installation of geothermal and solar PV systems;
- Avoid the ice fall zone associated with the Channel 15 broadcast antenna located northwest of the property;
- Allow the existing access driveway from Schroeder Road to be maintained;
- Minimize potential impacts to the prairie area and other environmental resources; and
- Minimize overall development costs.

Construction of a new facility on the existing property would avoid the drawbacks of relocating the NWHC or partnering with a higher education institution, including lack of facility ownership; potential loss of direct oversight, monitoring, and maintenance for critical mechanical systems associated with biosafety and security and vivarium spaces; and the potential to incur increasing lease costs over time. Furthermore, relocation of the NWHC outside of the Madison area could result in the loss of NWHC personnel, including highly specialized experts, and increased costs for relocating staff who are changing duty stations. Constructing a purpose-built facility for the NWHC would avoid drawbacks associated with consolidating other area DOI organizations at the NWHC with or without building improvements, including a complex and lengthy phased construction process, the inability to fully incorporate modern building envelope technologies and systems, and inefficient use of space. The reasons these alternatives were eliminated from detailed study in the DEIS are further described in Section 2.2.

3.0 AFFECTED ENVIRONMENT, POTENTIAL IMPACTS, AND MITIGATION

3.1 Introduction

This chapter examines environmental resources that have the potential to be affected by implementation of the alternatives, including the No Action Alternative and Preferred Alternative. Natural resources, including topographic features, geology and soils, hydrological and biological resources among others, as well as community resources such as social and economic factors, environmental justice, land use, utility services, and transportation networks, are addressed. Each resource description focuses on the relevant attributes and characteristics of that resource with the potential to be affected by the alternatives or that could affect implementation of the alternatives.

NEPA regulations direct federal agencies to discuss any direct and/or indirect adverse environmental effects which cannot be avoided should the Proposed Action be implemented, and the means to mitigate adverse impacts if they occur. The NEPA regulations instruct federal agencies to consider both beneficial and adverse impacts of the Proposed Action and alternatives in terms of public health, unique features of the geographic area, the precedential effect of the action, public opinion concerning the action, and the degree to which the impacts are uncertain. Mitigation measures are identified as those actions that would reduce or eliminate potential environmental impacts that could occur from implementation of the alternatives. Mitigation, as defined by the NEPA regulations (40 CFR §1508.1(s)), includes:

- “Avoiding the impact altogether by not taking a certain action or parts of an action”;
- “Minimizing impacts by limiting the degree or magnitude of the action and its implementation”;
- “Rectifying the impact by repairing, rehabilitating, or restoring the affected environment”;
- “Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action”; and
- “Compensating for the impact by replacing or providing substitute resources or environments.”

The analyses that follow address the potential impacts associated with the No Action Alternative and Preferred Alternative and proposed mitigation, where appropriate. Cumulative impacts are addressed in Section 3.2.

3.2 Cumulative Impacts

3.2.1 Background and Methodology

CEQ regulations implementing NEPA require the assessment of cumulative impacts in the decision-making process for federal projects and actions. Cumulative impacts are defined as: “*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 such other actions (40 CFR § 1508.7).*” Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The cumulative impact analysis serves to determine the magnitude and significance of past, present, and reasonably foreseeable future actions, both beneficial and adverse, in combination with the Proposed Action in terms of context and intensity.

3.2.2 Past, Present, and Reasonably Foreseeable Future Actions

This section identifies past, present, and reasonably foreseeable future actions not related to the Preferred Alternative that have the potential to cumulatively impact the resources in the affected environment and surrounding area. Geographic distribution, intensity, duration, and historical effects of similar activities were considered when determining whether a particular activity may contribute cumulatively to the impacts of the Preferred Alternative on the resources identified in this document.

The City of Madison is a large and dynamic urban area that is expected to grow in population. Background levels of growth and planned projects citywide have been accounted for in existing environment discussions where appropriate, including for utilities and transportation systems. Identification of past, present, and reasonably foreseeable future actions that have the potential cause cumulative impacts with the Preferred Alternative focused on projects within the city's Southwest Neighborhood planning area and were identified based on research and communications with City of Madison officials.

Southwest Neighborhood Plan Update

The City of Madison Planning Division is expecting to begin an update of the Southwest Neighborhood Plan ("the plan") in 2024. Specific information on the plan update was not publicly available online as of December 2023. However, based on similar neighborhood plan updates currently underway, the planning process will identify issues, opportunities, and priorities in the neighborhood to inform plan recommendations that will guide growth and development over the planning horizon. The plan update is expected to address land use, transportation, housing, parks and open space, stormwater management, economic development, historic and cultural resources, and facilities and utilities in areas of the city near the NWHC property.

Proposed Multi-Family Residential Development

A developer is proposing to construct a multi-family residential development at 6110 Schroeder Road and 1-15 Ellis Potter Court, at the corner of Ellis Potter Court and Schroeder Road and adjacent to the southwestern corner of the NWHC property. This planned project would include demolition of an existing office building and construction of a three-story, 54-unit apartment building, a two-story 11-unit townhouse building, and an accessory garage on one lot (City of Madison DPCED 2023a). The development is intended to provide affordable housing for seniors over 55 years and families. The developer anticipates that construction will start in the fall of 2024 and be completed in the fall of 2025 (Knothe & Bruce Architects, LLC 2022).

Zoning Change

A property owner is proposing to create two lots zoned Suburban Employment at 1 Exact Lane, located approximately 0.25 miles west of the western boundary of the NWHC property and south of the Beltline Highway. No change in use is currently identified for this property (City of Madison DPCED 2023b).

3.3 Topographic Features

3.3.1 Existing Conditions

Dane County lies within the Glaciated, Dissected Till Plains physiographic division of the central United States, an area of rolling hills formed by glacial drift deposited during the last two Ice Ages (Lauver 1989; McCauley 1998). Topographic maps depict the NWHC property to be at an average elevation of approximately 1,050 feet above mean sea level (msl) with the highest elevations, ranging from 1,066 to 1,072 feet above msl, found to the northwest and towards the Beltline Highway (U.S. Route 14) and the lowest elevations, ranging from 1,028 to 1,042 feet above msl, found to the southeast towards Schroeder Road (Exhibit 3-1). The developed portion of the property is located at elevations of 1,040 to 1,056 feet above msl.

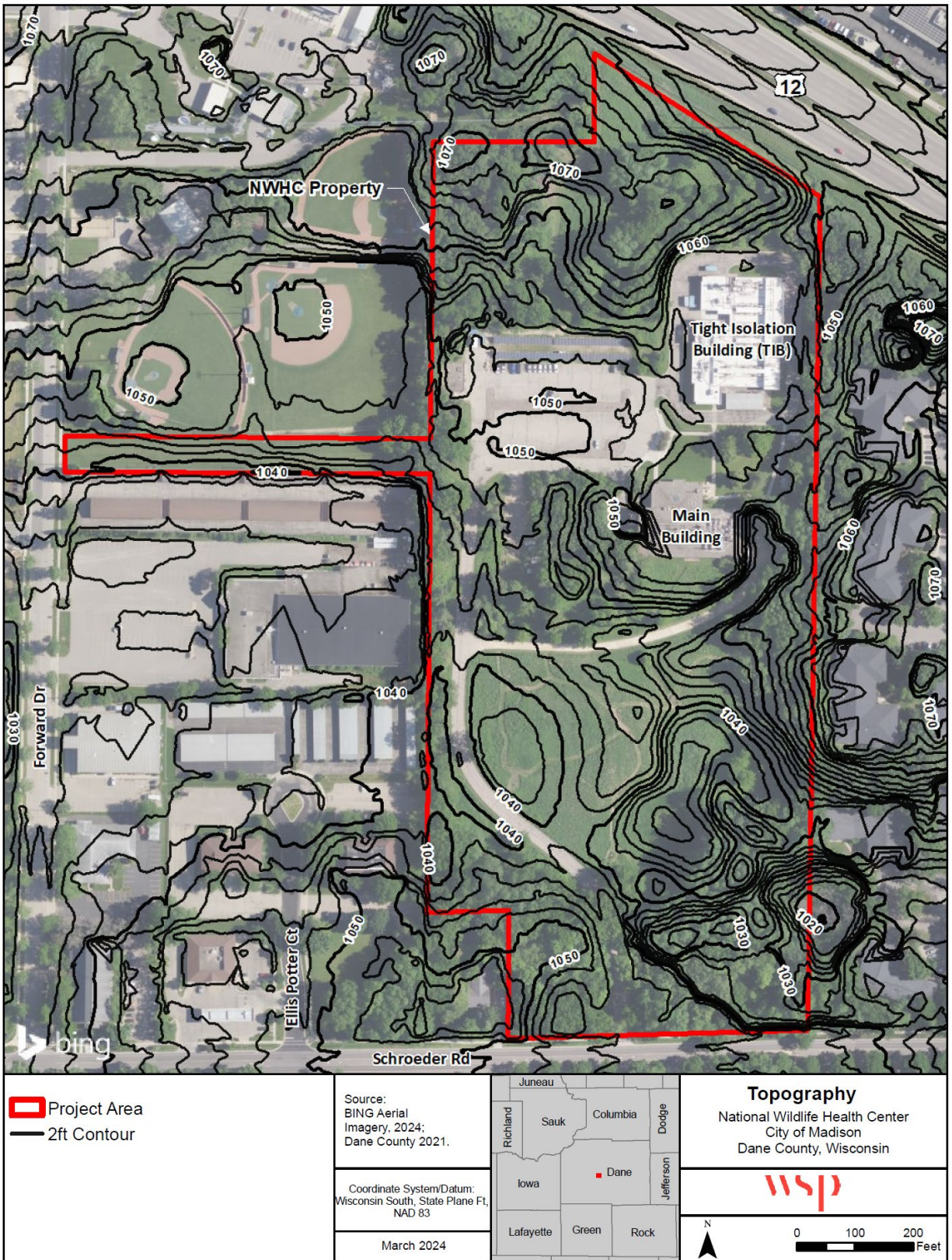


Exhibit 3-1: Topographic Conditions

3.3.2 Potential Impacts

No Action Alternative

Under the No Action Alternative, the property and structures comprising the NWHC in Madison would remain in their current condition, topographic conditions would be unaffected, and mitigation measures would not be necessary.

Preferred Alternative (New NWHC)

Construction of the new NWHC would require ground clearing, coarse and fine grading, and excavations for building, parking lot, and access driveway construction which would reshape existing topographic conditions within the central portion of the property. While the full extent of surface alterations would be determined once a detailed site development plan is finalized, the proposed site for the new NWHC is relatively flat, and only minor modifications would be necessary to provide the level surfaces required for NWHC development.

It should be noted that placing the new NWHC on the south-central portion of the property was driven in part by the need to avoid the ice fall zone surrounding the 1,248-foot tall Channel 15 broadcast antenna located to the northwest. With the relatively level conditions within the south-central portion of the property, NWHC construction is not expected to involve substantial cutting or grading to achieve the level surfaces necessary for development, drainage, etc. In addition, potential impacts to topography would be minimized by developing the new NWHC floor plates in a manner that reflects and respects the site's topography.

Site preparation, grading, and excavations would also be performed using conventional equipment. Furthermore, efforts will be made during the design phase to balance the volume of cut and fill to avoid having to import fill to the site or export excess stockpiled soils off the site. Additional grading or other topographic modifications are not anticipated once NWHC construction is completed.

3.3.3 Recommended Mitigation

To minimize potential adverse topographic impacts, efforts would be made to locate the new NWHC building footprint, access and internal service driveways, parking areas, utility corridors, and drainage facilities in a manner generally compatible with existing topography and drainage patterns. Doing so would serve to minimize topographic alterations while unifying the overall layout of the new NWHC. Areas to be excavated, graded, or otherwise disturbed for NWHC development would be built upon, paved, or stabilized and seeded once construction is complete. A soil erosion and sediment control plan would be prepared and best management practices (BMPs) would be implemented as described in Section 3.4.3 to minimize potential erosion and sedimentation. No other mitigation measures for topographic impacts are warranted.

3.3.4 Cumulative Impacts

Topographic impacts resulting from the Preferred Alternative would be limited to construction areas on the NWHC property. The surrounding Southwest Neighborhood planning area is largely developed, and planned projects in the area, including the proposed multi-family residential development on Ellis Potter Court and the proposed zoning change on Exact Lane, would affect properties that are currently graded and developed. The City's Southwest Neighborhood Plan Update would influence development in the planning area in the future; however, future development in the area is likely to occur in areas that have previously been developed, limiting impacts to topography. Because the topographic impacts of the Preferred Alternative would be limited to the NWHC property, the Preferred Alternative would not contribute substantially to cumulative impacts to topographic features off the property.

3.4 Geology

3.4.1 Existing Conditions

Geologic Features

The Green Bay lobe of the Laurentide ice sheet reached its maximum extent about 18,000 years ago, just a few miles southwest of the NWHC property. About 15,000 years ago, the glacier began to recede, in a somewhat erratic fashion. For some time, the rate of melting balanced the rate of ice flow toward the margin, and the glacial rubble that accumulated at the stationary edge of the glacier created a series of recessional moraines. The NWHC property lies atop one of these moraines, known as the Milton moraine. The moraine curves through the county just south of the Yahara chain of lakes, dividing the county into a glaciated landscape to the east and north and the unglaciated Driftless Zone to the west and south. Four major Wisconsin ecological zones intersect in Dane County, including the Southeast Glacial Plains, Central Sand Hills, Western Coulee and Ridges, and Southwest Savanna (Denzel Cline 1965).

Dane County obtains its water supply from sandstones, dolomites, and shales of Cambrian and Ordovician ages and sand and gravel deposits of Quaternary age. The rocks of Cambrian age, principally sandstone and dolomite, were deposited in shallow seas on an uneven and arched surface of igneous and metamorphic rocks of Precambrian age. Dolomite of the Prairie du Chien Group of Ordovician age was deposited on the rocks of Cambrian age.

A long period of emergence and erosion followed, leaving an uneven surface that locally has a relief of as much as 200 feet over half a mile. The St. Peter Sandstone of Ordovician age was deposited on the irregular surface. Dolomite of the Platteville, Decorah, and Galena Formations (Platteville-Galena unit) and the Maquoketa Shale, all of Ordovician age, were subsequently deposited. Dolomite and shale of Silurian and Devonian age were probably deposited in Dane County, as indicated by evidence in other parts of Wisconsin, but were subsequently eroded away.

Seismicity

Based on historical earthquake locations and the recurrence rate of fault ruptures, USGS has produced seismic hazard maps that show, by contours, earthquake ground motions that have a common probability of being exceeded in a specified time period under specific geological site conditions (USGS 2022a). The predicted maximum amount of earthquake-induced shaking with a two percent probability of being exceeded in 50 years is shown on these maps. Ground motion is expressed as a percentage of the force of gravity (percent g) and is proportional to the hazard faced by a particular type of building.

In general, little or no damage can be expected at values less than 10 percent g, moderate damage at 10 to 20 percent g, and major damage at values greater than 20 percent g. Dane County and much of Central Wisconsin, including the proposed site in Madison, is situated on contours ranging from 2 to 4 percent g (Exhibit 3-2).

3.4.2 Potential Impacts

No Action Alternative

Under the No Action Alternative, the property and structures comprising the NWHC in Madison would remain in their current condition, geologic features and conditions would be unaffected, and mitigation measures would not be necessary.

Preferred Alternative (New NWHC)

- **Geologic Features**

Construction of the new NWHC would require excavations for building footings and a foundation, parking areas, internal access driveways, underground utility installations, stormwater management facilities, etc. with disturbance of natural geologic features limited to those areas where deep excavations or borings, such as those for the geothermal system, would occur. Subsurface excavations will be performed using

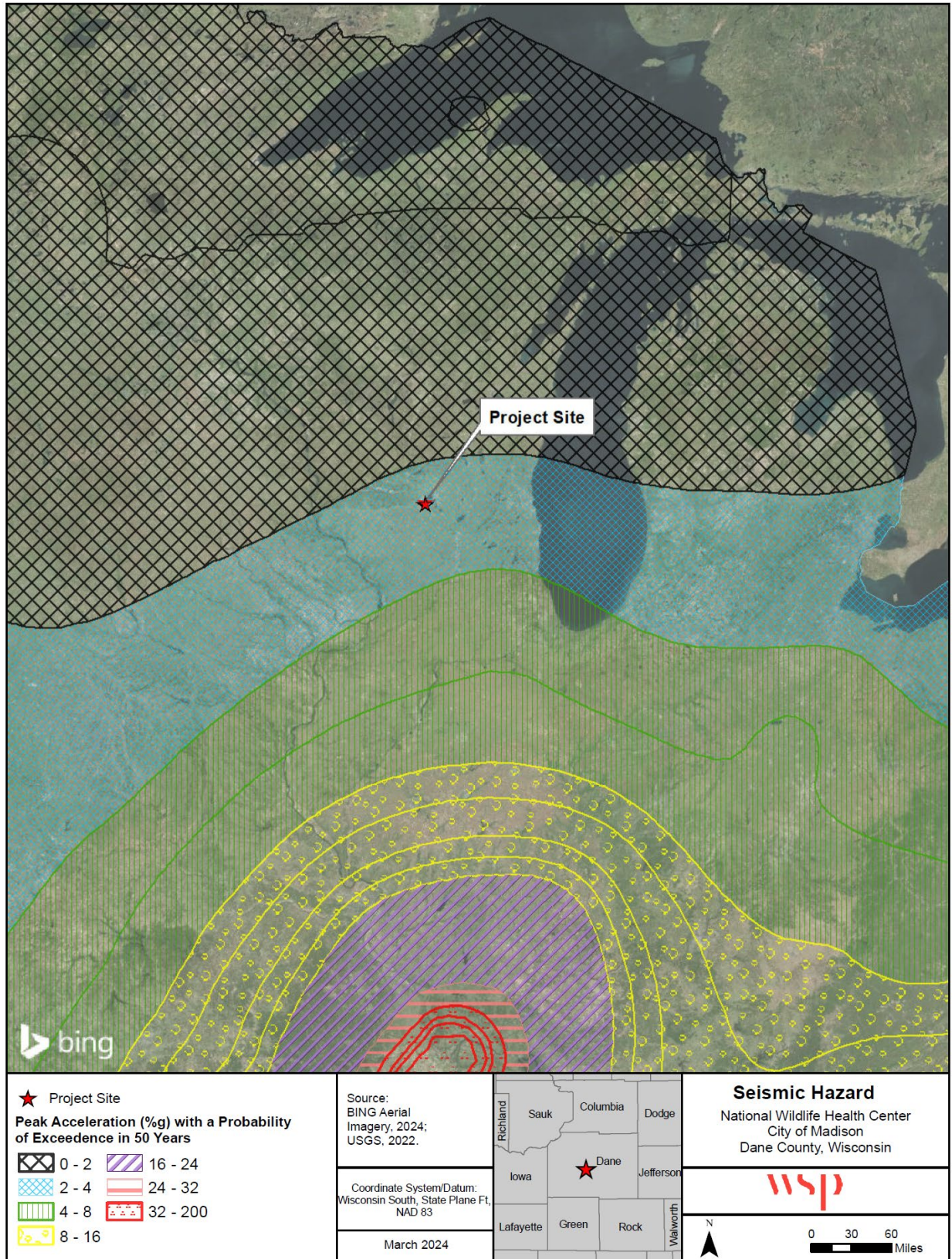


Exhibit 3-2: Seismic Hazard

conventional equipment. The shallow nature of new NWHC development is not expected to result in adverse impacts to geologic features and no additional impacts are anticipated once construction is completed.

- **Geothermal Energy**

The new NWHC would be developed in accordance with EO 14057 (Catalyzing Clean Energy Industries and Jobs through Federal Sustainability), and in support of the goals of EO 14057, the new NWHC would include installation of a geothermal system, composed of two geothermal fields in the northern and southern portions of the property, to supplement other systems for heating and cooling. The proposed geothermal system is a renewable energy source that draws heat energy from the earth. This is done by drilling bore holes to install geoechange wells to use the relatively constant temperature of the earth to transfer heat to and from the ground for direct heating and cooling purposes.

The system would utilize ground source heat pumps and circulation pumps to circulate geothermal fluid (typically a mix of potable water and food grade glycol) and extract or reject heat from the heating and cooling process. Ground source heat pumps for heating and cooling use approximately 75 percent less energy than traditional heating and cooling systems. The bore holes act as a ground heat exchanger and recondition the loop water. The proposed system has an estimated maximum heat rejection tonnage of 700 tons cooling, the annual heat rejection (cooling demand of the building) is estimated at 1,030,000 one thousand British Thermal Units (kBtu) per year, and the annual heat extraction (heating demand of the building) is estimated at 1,120,000 kBtu per year (USGS 2022).

The proposed geothermal system would be a closed loop system of approximately 220 vertical bore holes installed to a depth of up to 750 feet below the ground surface and divided into two connected clusters. The clusters of vertical bore holes would be connected to lateral piping. Depending upon site conditions, the spacing of the bore holes is typically no less than 15 feet with 20 to 25 feet a more ideal arrangement. The system would be constructed as two geothermal fields, one in the northern part of the property in the area currently occupied by the staff parking area and existing solar PV field (approximately 1.15 acres [50,000 square feet]), and one in the southern prairie area (approximately 1.31 acres [56,875 square feet]).

Due to the need to install horizontal piping to connect supply and return lines between the new facility and the geothermal field, construction of the system would disturb the ground surface to a depth of approximately six feet. Once construction of the system is completed, the ground surface would be revegetated with native prairie species or developed with solar PV panels with little to no visible evidence of the underground system (see Section 3.7.2 for additional discussion). Construction and operation of a geothermal system for ground-source heating and cooling is not expected to adversely impact subsurface features or conditions because no resources would be extracted and no hazardous materials or wastes would be used in the geothermal system.

- **Seismic Hazards**

Potential seismic hazards affecting development of the new NWHC are discussed below.

- **Ground Shaking.** The intensity of ground shaking is highly dependent upon the distance to a fault, the magnitude of the earthquake, and the soil conditions beneath the site. The NWHC property is located in an area of low seismic risk and is not susceptible to ground shaking. The potential to experience ground shaking at the proposed site is considered low.
- **Primary Ground Rupture.** Primary ground rupture is ground deformation along the surface trace of the causative fault during an earthquake. The proposed site is not known to be located on or near an active fault and, therefore, is not susceptible to primary ground rupture.
- **Liquefaction.** Liquefaction is the transformation of a cohesionless (sandy) soil from a solid to a liquid state caused by an increase in pore pressure and a reduction in effective stress. It

can occur when sandy soils are subjected to strong ground shaking. The proposed site does not contain sandy soils, therefore, the potential for liquefaction is low.

- **Seismically Induced Settlement and Differential Compaction.** Seismically induced settlement and differential compaction occur when relatively soft or loose soils experience a reduction in strength caused by strong ground motion. With the potential to experience ground shaking at the proposed site considered low, seismically induced settlement is not likely to be experienced.
- **Other Phenomena.** Other phenomena include earthquake-induced flooding and tsunamis. Since the NWHC property is not located near or at elevations below lakes, dams, or other large surface water bodies, these phenomena are not likely to occur.

The potential for damage to the new NWHC from seismic activity is a low concern.

3.4.3 Recommended Mitigation

In the absence of adverse impacts, no mitigation measures are warranted.

3.4.4 Cumulative Impacts

No mining or other extractive uses occur in the geographic study area for cumulative impacts. The reasonably foreseeable future projects identified in Section 3.2.2 would not require deep excavations that could affect geologic features. Existing and planned development in the Southwest Neighborhood planning area and the City of Madison as a whole would be subject to similar seismic hazards as the new NWHC, including a low risk of damaging ground shaking, liquefaction, and other seismic hazards. Conformance to current building codes would minimize the risk to buildings and other structures from seismic hazards. Based on the above, the Preferred Alternative would not contribute substantially to cumulative impacts to geologic features or resulting from seismic hazards.

3.5 Soils

3.5.1 Existing Conditions

The “Custom Soil Resource Report for Dane County, Wisconsin” prepared by the USDA, Soil Conservation Service (2011), was reviewed to identify the types, locations, and characteristics of soils located within the proposed site. According to the soil report, three soil mapping units are found within the NWHC property: Dodge silt loam (2-6 percent slopes), Kidder loam (6-12 and 12-20 percent slopes), and McHenry silt loam (6-12 percent slopes) as shown in Exhibit 3-3.

- **Dodge silt loam (2-6 percent slopes):** This soil covers areas located along the eastern boundary and the western half of the prairie area to the site boundary. It is a deep, well drained, gently sloping and sloping soil on glaciated uplands. The soil has high fertility, available water capacity is high, and permeability is moderate. The seasonal high-water table is found at a depth of more than five feet. The soil has low bearing capacity in the subsoil, moderate shrink-swell potential, and moderate stability. The only limitation of this soil is the moderate hazard of erosion. The soil is not considered hydric but is considered a prime farmland soil by the USDA.
- **Kidder loam (6-12 and 12-20 percent slopes):** This soil is found in the eastern portion of the prairie area and the southern portion of the site to Schroeder Road. It is a deep, well drained, gently sloping and very steep soil on glaciated uplands. The soil has medium-high fertility, available water capacity is medium, and permeability is moderate. The seasonal high-water table is found at a depth of more than five feet. The soil has moderate bearing capacity in the subsoil, moderate shrink-swell potential, and moderate stability. The only limitation of this soil is the severe hazard of erosion. The soil is not considered hydric but is considered a farmland soil of statewide importance.

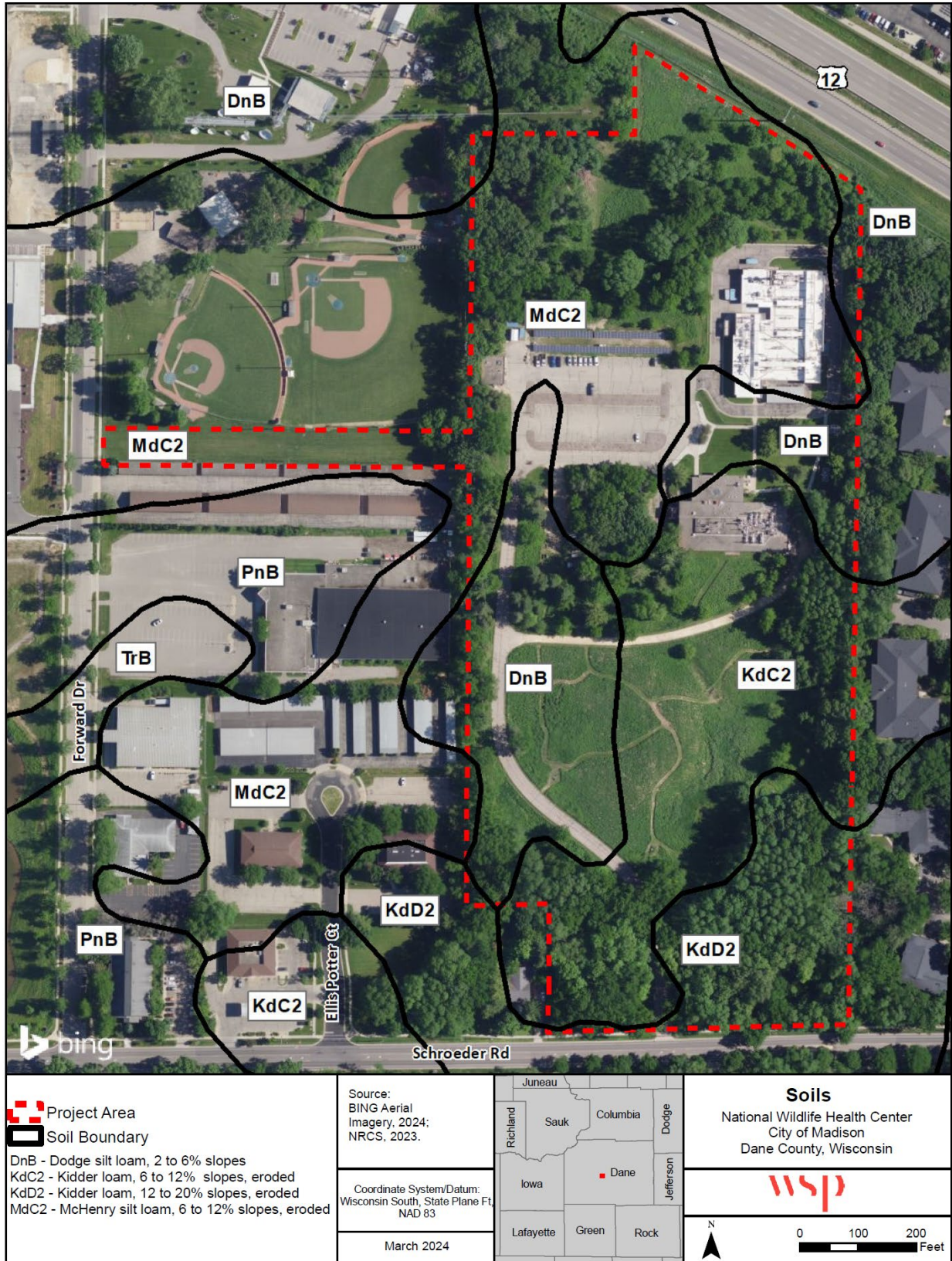


Exhibit 3-3: Soil Types

- McHenry silt loam (6-12 percent slopes): This soil covers the northern half of the property, which includes the area where the current NWHC facilities and parking lot are located. It is a deep, well drained, gently sloping, and moderately steep soil on glaciated uplands. The soil has low bearing capacity in the subsoil, moderate shrink-swell potential, and moderate stability. Limitations of this soil are the severe hazard of erosion and a medium available water capacity. While the soil is not considered hydric, it is considered a farmland soil of statewide importance.

Dodge silt loam (2-6 percent slopes) is considered a prime farmland soil with Kidder loam (6-12 and 12-20 percent slopes) and McHenry silt loam (6-12 percent slopes) considered farmland soil of statewide importance. The presence of prime farmland soil is a necessary component of prime farmland, which is protected under the Farmland Protection Policy Act (FPPA) of 1981 (7 U.S. Code [USC] 4201 et seq.), and is the primary indicator used to determine where potential prime farmland occurs. Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. The soil qualities, growing season, and moisture supply are those needed for a well-managed soil to produce a sustained high yield of crops in an economic manner. The land could be cropland, pasture, rangeland, or other land, but not urban built-up land or water.

3.5.2 Potential Impacts

No Action Alternative

Under the No Action Alternative, the property and structures comprising the NWHC in Madison would remain in their current condition, soil types, conditions, and characteristics would be unaffected, and mitigation measures would not be necessary.

Preferred Alternative (New NWHC)

Construction activities associated with site preparation (e.g., ground clearing, grading, excavation) would directly affect the three native soil types found within the limits of the NWHC development area and along new internal driveways, utility corridors, drainage systems, etc. Construction of the new NWHC would also expose soils to potential wind and water erosion and therefore, some slight, temporary adverse effects to native soils would be expected.

Construction of the new NWHC would temporarily impact approximately 6.36 acres (277,000 square feet) of soil and permanently impact approximately 4.05 acres (176,600 square feet) of soil. With the relatively level conditions within the central portion of the property, NWHC construction is not expected to involve substantial cutting or grading to achieve the level surfaces necessary for development, drainage, etc. In addition, potential impacts to soils would be minimized by developing the new NWHC in a manner that reflects and respects the site's topography. This would result in only limited alteration or redistribution of native soils within the building zone.

Fill would be required during demolition of the Main Building to level the site for construction of additional parking. Approximately 455,000 cubic feet of fill would be required to fill the Main Building's existing basement area. Clean (uncontaminated) soils stockpiled on site would be used as fill to the degree possible. If additional fill is needed, clean fill material would be obtained from a source close to the site. Long-term impacts to soils on the NWHC property would occur in those areas where soils would be excavated, compacted or covered by structures, internal driveways, walkways, and parking areas.

There are no agricultural activities underway within the NWHC property or its surroundings and, therefore, the Preferred Alternative poses no adverse impact to agricultural activities in Madison or Dane County. In accordance with the FPPA, preparation and submission of Form AD1006 has occurred to document potential impacts to prime farmland soils. The Natural Resources Conservation Service (NRCS) reviewed the Preferred Alternative with respect to requirements of the FPPA and determined that it is exempt from the FPPA because it is located in an urban geographical area (see Appendix D).

3.5.3 Recommended Mitigation

Engineering studies would be conducted prior to initiating NWHC construction to ensure proper building placement, layout, and design. During these studies, attention would be directed toward erosion potential and other engineering characteristics of soils found within the development zone.

To minimize potential adverse impacts to soils and the erosion and sedimentation which can result during development, a soil erosion and sediment control plan would be prepared, and USGS would see that appropriate soil erosion and sediment control measures defined in the plan are implemented prior to initiating construction. The plan would outline measures for controlling erosion and sedimentation such as placement of silt fencing and/or use of hay bales to minimize the dispersal of sediment within and around the construction zone, stabilization of exposed earth, and methods to control stormwater runoff during construction. BMPs, as applicable to site conditions, would also be implemented to prevent the migration of sediment off site to adjoining properties, surface waters, or natural areas. Upon completion of construction, re-vegetation of disturbed areas using native species would occur to minimize erosion of exposed soil. A copy of the soil erosion and sediment control plan would also be maintained on-site throughout the duration of construction.

Erosion control measures would be inspected periodically and replaced or repaired as required. It would be the responsibility of the construction contractors, with appropriate oversight and monitoring by USGS, to install and maintain measures from among those described below to control erosion and sedimentation.

Construction Entrance

As needed, a stabilized (stone) entrance may be established at the proposed construction site and be periodically inspected during NWHC construction. Among the purposes of the stabilized entrance would be to avoid having sediment from construction vehicles tracked onto internal NWHC service roads and off-site onto public thoroughfares. Additional stone would also be available so that the minimum dimensions can be maintained throughout the construction period.

Sediment Basins

A sediment basin, if incorporated within the erosion control plan, would be inspected periodically during construction. Sediment which accumulates within the basin would be removed when it reaches the clean-out elevation. Filters around riser pipes would also be maintained throughout construction as would the dimensions of the basin.

Filter Fabric Fences

Filter fabric fences would be installed where and when appropriate and would be inspected periodically. Sediment would be removed when the buildup reaches approximately one-half the height of the fence. Filter fabric fences damaged during construction would be replaced in-kind.

Swales and Berms

Swales and berms, if utilized, would also be inspected periodically to ensure functioning. Proper berm heights and swale depths would also be maintained throughout the construction phase.

Inlet Protection

Inlets would be inspected periodically during construction. Sediment accumulating around inlets would be removed when the build-up reaches one half the height of the inlet filter. Additional stone would also be available so that the minimum dimensions can be maintained throughout the construction phase.

Other Measures

When trenching for underground utilities, constructing internal access driveways, and during basement excavation or similar work, soil would be deposited on the upgrade side wherever possible to minimize soil migration. Soil preparation, fertilizing, and temporary and permanent seeding would also follow the construction phase as soon as practicable. If weather conditions affect planting, exposed earth would be covered with hay, straw mulch, or other suitable protective covering. Additional measures to be considered include protecting slopes and channels, promoting infiltration where practical, and minimizing the area and duration of exposed soils.

Erosion control measures that would be implemented include seeding temporarily disturbed areas with native prairie species or landscaping these areas with plantings of native and climate adapted species of trees, shrubs, and perennials. USGS will ensure that such measures are employed where appropriate to minimize potential adverse impacts and to ensure compliance with applicable regulations. No other mitigation measures involving soils are warranted.

3.5.4 Cumulative Impacts

Soils in the Southwest Neighborhood planning area, including soils identified as prime farmland and farmland of statewide or local importance, have been impacted by previous development. Planned development in this area would occur on properties that have been previously developed, which would minimize impacts to soils. However, soil disturbance would occur during construction, and soils would be covered and compacted by new buildings and structures. Impacts to soils resulting from the Preferred Alternative would be limited to the NWHC property and would be mitigated as described above to prevent erosion and sedimentation of soils or migration of soils off the property. Because planned and proposed development would occur in previously developed and disturbed areas and implementation of standard construction BMPs would minimize erosion and sedimentation, cumulative impacts to soils would be minimized.

3.6 Water Resources

3.6.1 Existing Conditions

Surface Water Resources

The water surface area in Dane County totals approximately 23,000 acres, or about three percent of the county's total area with 21,600 acres distributed among 70 named lakes and ponds, and 475 miles of named streams. The western and central portions of the NWHC property lie within the Sugar River Watershed (Hydrologic Unit Code 0709000402) while the remainder of the property lies within the Lake Mendota-Yahara River Watershed (Hydrologic Unit Code 0709000206). There are no streams, tributaries, springs, wells, or permanent water bodies located within the NWHC property. The NWHC property is considered an internally drained area, which means that it does not have a constructed outlet. Stormwater originating from existing building roofs, parking lot and driveways, walkways, and other impervious surfaces makes its way through overland flow or the property's storm drain system to the localized depressions found within the southern portion of the property (i.e., south prairie area) where it is retained and eventually infiltrates into the earth below. A portion of stormwater runoff is also dispersed via overland flow to undeveloped areas within the property for infiltration. No stormwater leaves the property and therefore does not contribute to stream or river flooding which may be experienced elsewhere in Madison and Dane County.

Floodplain Considerations

EO 11988 directs federal agencies to avoid construction in floodplains and establishes a process for analysis and public notice if development is unavoidable. There are no streams, tributaries, or permanent water bodies within the NWHC property which is located well beyond the limits of any 100-year or 500-year floodway, floodplain, or flood hazard area as depicted on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (Exhibit 3-4). Zone X (unshaded) is a flood insurance zone used for areas outside the 0.2-percent-annual-chance floodplain (500-year). No Base Flood Elevations

(100-year elevations) or depths are shown in this zone, and insurance purchase is not required (FEMA 2022).

Groundwater Resources

Surface water, shallow groundwater, and deep groundwater are closely connected in Dane County with almost all groundwater originating from surface recharge. Most lakes and streams in the county are discharge points for groundwater where the water table intersects the land surface. The depth to groundwater in the county ranges from zero at the fringes of lakes and wetlands to over 200 feet beneath the ridges in the southwest. The water table is highest (over 1,000 feet above msl) in the western part of the county near Mt. Horeb and Blue Mounds and is lowest (less than 840 feet above msl) along the Yahara River in the southeast. Depth to groundwater on the NWHC property is expected to vary with seasonal variations in precipitation, infiltration, evapotranspiration, and other factors. There are no wells tapping groundwater located within the NWHC property.

3.6.2 Potential Impacts

No Action Alternative

Under the No Action Alternative, the property and structures comprising the NWHC in Madison would remain in their current condition, water resources and hydrologic features would be unaffected, and mitigation measures would not be necessary.

Preferred Alternative (New NWHC)

Development of the new NWHC would result in a change in impervious surfaces over that which currently exists within the property. The change would be a result of construction of the new NWHC structure, employee and visitor parking areas, walkways, etc. However, the area of impervious surface following NWHC development will be largely offset by the eventual removal of the current Main Building, TIB, parking lot, and walkways and restoration of the formerly disturbed areas with grass lawns. The current NWHC comprises approximately 4.26 acres (185,500 square feet) of impervious surfaces. The new NWHC, based on the preliminary development plan, is projected to total approximately 4.51 acres (196,500 square feet) of impervious surfaces, including 4.05 acres (176,600 square feet) of new impervious surfaces. Implementation of the Preferred Alternative would result in a net increase of approximately 0.25 acres (11,000 square feet) of impervious surfaces, excluding any at-grade solar panels. The new NWHC structure and associated impervious surfaces would be sited to overlap to the greatest extent possible with existing paved surfaces to limit the amount of site disturbance required during construction. The building floor line would be selected to minimize the amount of grading and site disturbance required.

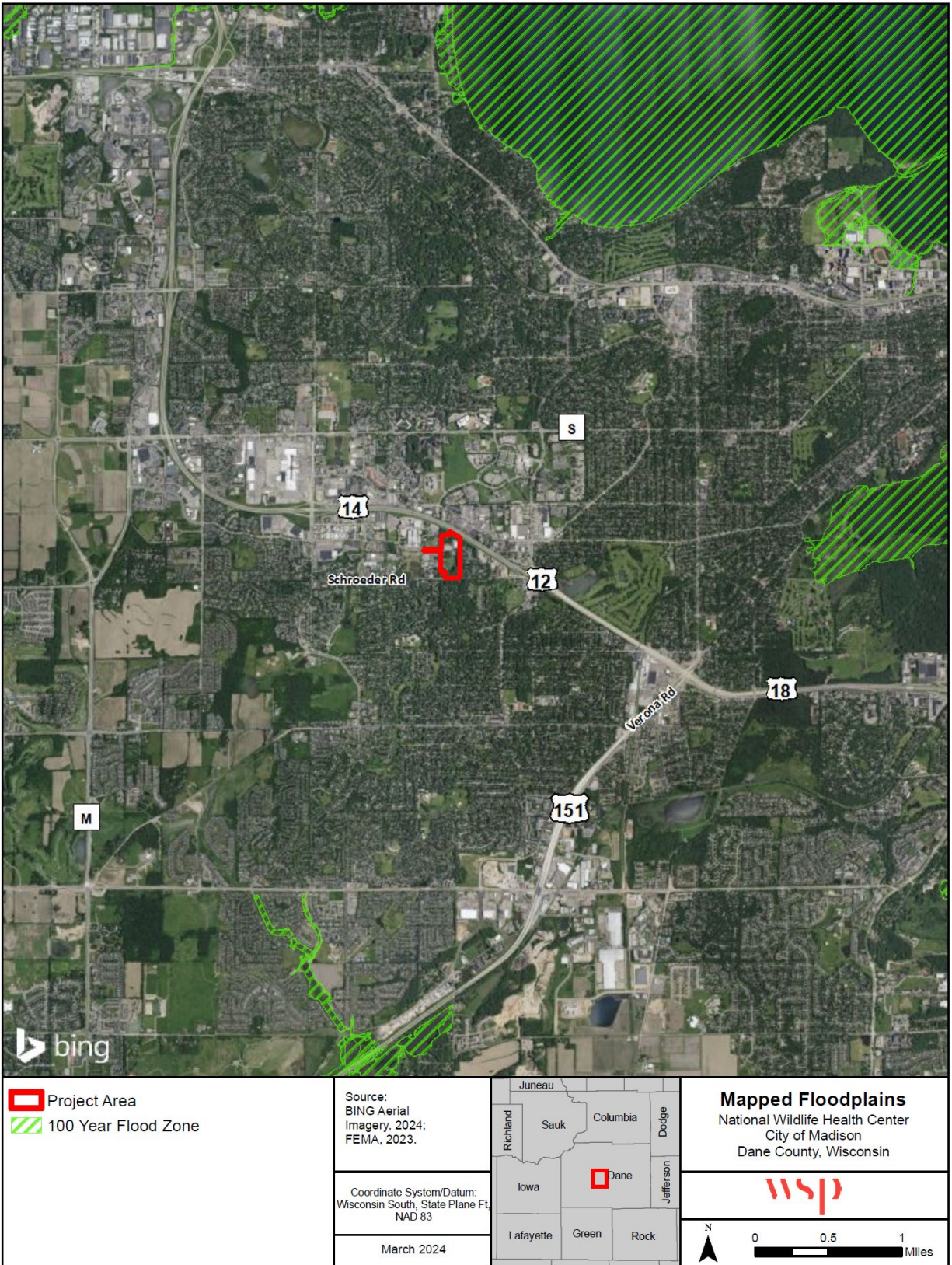


Exhibit 3-4: FEMA Floodplain Map

In general, increases in impervious surface contribute to increases in stormwater runoff which can contribute to water pollution, environmental degradation, impacts on local infrastructure, property damage, and public safety risks from flooding. In recognition of this concern, Section 438 of the Energy Independence and Security Act (EISA) of 2007 was enacted with the goal to prevent stormwater runoff impacts associated with federal developments involving more than 5,000 square feet of land that is redesigned, reconfigured, or reconstituted in any manner that diverges from the present-day use and composition. EISA Section 438 requires federal projects or actions to maintain or restore the stormwater runoff characteristics of the site in its natural state, prior to development.

Stormwater is currently conveyed to depressions within the southern portion of the property where it eventually infiltrates to the earth below. Plans for the new NWHC anticipate a stormwater collection system consisting of storm sewer piping and inlets, a bioretention basin, rainwater harvesting tanks and continued use of the localized depressions within the southern portion of the property to retain future stormwater runoff so that no stormwater leaves the property and the potential for adversely impacting neighboring properties and downstream infrastructure is avoided. It is expected that the overall site development would result in post-development runoff conditions that are equal to or less than pre-development conditions, an approach consistent with EISA Section 438.

Groundwater would not be used during construction or operation of the new NWHC. Shallow groundwater may be encountered during excavations or borings required to construct the new NWHC and geothermal system. Potential impacts to groundwater quality during construction would be avoided or mitigated through proper storage and containment of potentially hazardous materials as described in Section 3.9.2. As noted above, implementation of the Preferred Alternative would increase the area of impervious surface on the property. However, because stormwater from impervious surfaces would be conveyed to the southern portion of the property and allowed to infiltrate and the existing Main Building and TIB would be demolished and the sites of these buildings revegetated, groundwater recharge on the property would remain substantially unchanged.

No surface waters or mapped floodplains are located on the property; therefore, the Proposed Action would not affect these resources. No other hydrologic alterations are expected once construction of the new NWHC is completed.

3.6.3 Recommended Mitigation

The new NWHC would include a stormwater collection system consisting of storm sewer piping and inlets, a bioretention basin, rainwater harvesting tanks, and use of existing localized depressions in the south prairie area. The stormwater system would serve the dual function of avoiding discharges to off-site receiving streams while retaining runoff on site and providing a water source to maintain the prairie area.

Recommendations contained in the USDA document entitled "Water Management and Sediment Control for Urbanizing Areas" would be considered in planning for stormwater management. This would be in addition to other U.S. Environmental Protection Agency (USEPA) stormwater guidance materials and measures required by applicable federal and State of Wisconsin regulations including use of appropriate BMPs; a grading plan that maintains the existing hydrologic drainage patterns where possible, and adequately sized inlets and discharge outfalls to avoid erosive point discharge conditions. Consideration is also being given to the use of porous pavers/pavements that would allow stormwater to drain into a stone recharge bed and infiltrate into the soils below the pavement.

3.6.4 Cumulative Impacts

The Preferred Alternative would have no direct impacts on surface waters or floodplains. Stormwater runoff would be directed to vegetated areas in the southern part of the property and allowed to infiltrate, similar to how stormwater is managed on the property currently; therefore, the Preferred Alternative would not contribute to cumulative impacts to surface waters as a result of stormwater management. As noted above, groundwater may be encountered during construction; however, impacts to groundwater quality would be mitigated to prevent contamination of groundwater resources. Because potential construction

impacts would be mitigated and stormwater would be allowed to infiltrate and replenish groundwater resources, the Preferred Alternative would not contribute substantially to cumulative impacts to groundwater resources.

3.7 Biological Resources

3.7.1 Existing Conditions

Biological resources that may be affected by the Proposed Action have been determined through the use of agency contacts, available database inventories and maps, previous studies, and direct field observations. Maps utilized included USGS topographic quadrangle maps, USFWS National Wetlands Inventory (NWI) maps, and USDA aerial photographs. Databases accessed include the USFWS IPaC system, the Wisconsin Department of Natural Resources (DNR) Natural Heritage Inventory (NHI) Public Portal, and the Wisconsin DNR Surface Water Data Viewer.

Detailed information about vegetative communities within the property was extracted from the Site Assessment for National Wildlife Health Center, 6006 Schroeder Road, Madison, WI (Quercus Land Stewardship Services 2013) and Recommend Plan for Prairie Reconstruction at National Wildlife Health Laboratory (Coenen 1983). Habitats were analyzed and compared to habitat requirements of species known to occur in the vicinity, including species of special status, to assess their potential for area use. Direct observations of wildlife and/or their sign were also recorded during the field visit.

Vegetation

Vegetation includes terrestrial plant communities, and the analysis will focus on vegetation types that are important to the function of the ecosystem or are protected under federal or state law. The NWHC property is located within the Southeastern Wisconsin Savanna and Till Plain ecoregion which supports a mix of agriculture (cropland, and dairy operations) and woodland. Crops include forage crops to support the dairy operations and a wide range of truck and specialty crops. Most of the original vegetation has been cleared with forested areas remaining only on steeper end moraines and poorly drained depressions. Irregular till plains, end moraines, kettles, and drumlins are common, and wetlands are found throughout the region, especially along end morainal ridges. Natural vegetation of this region is transitional with a mosaic of sugar maple, basswood, oak to the east, and an increasing amount of white, black, and bur oak, oak savanna, prairie, and sedge meadows toward the west (Wisconsin DNR 2008).

The developed portion of the NWHC property consists of a mix of impervious surfaces (parking lot, access driveways, walkways) and grass lawn with scattered landscape plantings. The undeveloped portion of the property consists of wooded areas and remnants of restored prairie habitat, predominantly in the southern portion of the property. A prairie restoration was carried out on the property from 1985 to 1986. The restored land was historically prairie prior to being cleared for agriculture and subsequently converting to old field habitat. The prairie restoration consisted of a 5.7-acre area south of the existing NWHC facilities (south prairie) and a 3.1-acre area north of the facility (north prairie). The restored prairie areas were treated with herbicide, burned, and plowed before being planted with grasses such as big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), and Indian grass (*Sorghastrum nutans*) and herbaceous plants such as goldenrods (*Solidago spp.*), yellow coneflower (*Ratibida pinnata*), and black-eyed susan (*Rudbeckia hirta*). Trails were incorporated into the south prairie for passive recreation. A perched wetland with a runoff control system was created at the southern end of the south prairie in 1992, but this system has not been used in recent years.

By 2013, both prairie areas had been invaded by trees and brush and many of the original species were not present. Native plant diversity has continued to decrease and currently both prairies are degraded by invasion of black locust (*Robinia pseudoacacia*), sumac (*Rhus spp.*), black walnut (*Juglans nigra*), aspen (*Populus spp.*), gray dogwood (*Cornus racemosa*), wild grape (*Vitis spp.*), crownvetch (*Securigera varia*), reed canary grass (*Phalaris arundinacea*), and poison ivy (*Toxicodendron radicans*). The north prairie is more heavily invaded by woody species – predominantly black locust, black walnut, and aspen – than in the south. Big bluestem and Indian grass is still present throughout the South Prairie, while extensive areas of the north prairie are dominated by Kentucky bluegrass (*Poa pratensis*). Native herbaceous

plants are infrequent and widely scattered and include yellow coneflower, stiff goldenrod (*Solidago rigida*), New England aster (*Symphyotrichum novae-angliae*), and cup plant (*Silphium perfoliatum*). The perched wetland on the south edge of the south prairie is predominantly vegetated with invasive reed canary grass with some lake sedge (*Carex lacustris*).

Aspen have invaded from the adjacent woods, and the area is vulnerable to exotic species from the adjacent Beltline Highway corridor. The wooded areas that surround the NWHC and prairie are dominated by exotic and invasive trees and brush such as black locust, box elder (*Acer negundo*), black walnut, buckthorn (*Rhamnus cathartica*), honeysuckle (*Lonicera spp.*), and sumac with a ground layer of herbaceous weeds, especially garlic mustard (*Alliaria petiolata*). The NWHC currently mows the prairie areas occasionally to control invasive species.

Common Wildlife

Wildlife includes all vertebrate animals (i.e., mammals, reptiles, amphibians, birds, and fish) and invertebrate species or species groups such as snails or insects. Virtually all birds are protected under the Migratory Bird Treaty Act which was intended to protect migratory birds (including their eggs, nests, and feathers) and their habitats.

Wisconsin is host to 668 native vertebrates, including fish, amphibians, reptiles, birds and mammals, as well as many more species of invertebrates such as snails, dragonflies, and mussels (Wisconsin DNR n.d.). The developed grounds of the NWHC property are paved or maintained as lawns which provides minimal habitat for wildlife. Common wildlife species expected to be found on the developed portion of the property include gray squirrel, eastern cottontail rabbits (*Sylvilagus floridanus*), and passerine birds. Mammals observed on the NWHC property include white-tailed deer (*Odocoileus virginianus*), red fox (*Vulpes vulpes*), and groundhog (*Marmota monax*). Avian species observed on the NWHC property include common species such as house sparrow (*Passer domesticus*), song sparrow (*Melospiza melodia*), Savannah sparrow (*Passerculus sandwichensis*), American robin (*Turdus migratorius*), gray catbird (*Dumetella carolinensis*), mourning dove (*Zenaida macroura*), rock pigeon (*Columba livia*), American goldfinch (*Spinus tristis*), house finch (*Haemorhous mexicanus*), purple finch (*Haemorhous purpureus*), northern cardinal (*Cardinalis cardinalis*), tufted titmouse (*Baeolophus bicolor*), cedar waxwing (*Bombycilla cedrorum*), eastern phoebe (*Sayornis phoebe*), dark-eyed junco (*Junco hyemalis*), downy woodpecker (*Dryobates pubescens*), hairy woodpecker (*Leuconotopicus villosus*), red-bellied woodpecker (*Melanerpes carolinus*), red-headed woodpecker (*Melanerpes erythrocephalus*), red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*), and wild turkey (*Meleagris gallopavo*).

Prairies have a diverse and specialized fauna, especially among prairie invertebrates, prairie and grassland herptiles and grassland birds. Species expected to utilize prairie habitats within the property include moles, mice, rabbits, foxes, birds, bats, gophers, garter snakes, and various bees, moths, butterflies, beetles, and leafhoppers. Due to the invasion by woody species and the surrounding development, the remaining prairie habitat within the NWHC property is not expected to support extensive populations of grassland birds that are typically found in more expansive and open prairies. According to the USFWS IPaC, there are 16 species of migratory birds that are on the Bird of Conservation Concern (BCC) list that may occur within the vicinity of the property, including grassland species such as Henslow's sparrow (*Ammodramus henslowii*) and bobolink (*Dolichonyx oryzivorus*), shrub-savanna species like red-headed woodpecker, and forest species like wood thrush (*Hylocichla mustelina*). Wildlife observed during field investigations of the remnant prairie habitat on the property includes plains pocket gopher (*Geomys bursarius*).

USGS officials were contacted by a neighbor whose property adjoins the NWHC. The individual raised a concern about tree removal associated with NWHC construction potentially impacting flying squirrels which have been observed inhabiting oak trees (*Quercus spp.*) in the southwestern portion of the NWHC property. Flying squirrels are nocturnal and are distinguished from tree squirrels by the presence of extremely large eyes, flattened tail, and a furry loose flap of skin that allows for gliding.

Two species of flying squirrels inhabit portions of Wisconsin: the northern flying squirrel (*Glaucomys sabrinus*) which is a State of Wisconsin species of special concern found primarily in the northern third of the state in remote, old growth forests; and southern flying squirrel (*Glaucomys volans*) which is a common species found statewide, including in residential areas. According to Wisconsin DNR, there are no records of northern flying squirrels in the vicinity of the NWHC property. Northern flying squirrels are associated with old-growth forests and are typically restricted to northern Wisconsin. The NWHC property is located outside the range of the northern flying squirrel and does not provide the suitable habitat for this species. Based on habitat requirements, the flying squirrels observed in the vicinity of the NWHC property are the common southern flying squirrel species. Furthermore, tree removal is not anticipated to occur on the southwestern portion of the property.

Wetlands and Waters of the U.S.

According to the NWI maps, there are no wetlands or waterbodies mapped on or adjacent to the USGS property (Exhibit 3-5). The nearest NWI mapped wetlands are isolated palustrine emergent persistent wetlands approximately 0.4 miles northeast and approximately 0.5 miles southeast of the property. The nearest waterbody mapped by NWI is a small pond in the Oakwood Wildlife Preserve located approximately 0.6 miles to the north. Two NWI mapped ponds are located approximately 0.7 miles to the southeast in Greentree-Chapel Hill Park and a residential development and another larger pond is approximately 0.75 miles southwest within Odana Hills Park. A tributary of Badger Mill Creek, mapped by NWI as riverine unknown perennial, ends approximately 0.5 miles south of the NWHC property. Unnamed streams mapped by Dane County GIS run through Greentree-Chapel Hill Park approximately 0.5 miles to the southwest of the property and approximately 0.5 miles to the northeast within University Research Park. As noted earlier, a perched wetland with a runoff control system was created at the southern end of the south prairie, but this system is not in use.

Species of Special Status

Special status species include plant and animal species that are listed or proposed for listing by the USFWS under the ESA or listed as a threatened or endangered species by the State of Wisconsin under Wisconsin State Statute 29.604. The USFWS Official Species List indicates that five federally listed, one proposed for listing, and one candidate species of plant or wildlife may occur within the vicinity of the NWHC property: northern long-eared bat (*Myotis septentrionalis* – endangered); tricolored bat (*Perimyotis subflavus* – proposed endangered), whooping crane (*Grus americana* – Experimental Population, Non-Essential); monarch butterfly (*Danaus plexippus* – candidate); rusty patched bumble bee – (*Bombus affinis* – endangered); eastern prairie fringed orchid (*Platanthera leucophaea* – threatened); and prairie bush-clover (*Lespedeza leptostachya* – threatened). The property does not contain critical habitat or proposed critical habitat for these or any other species. A request for an Endangered Resources Review was submitted to the Wisconsin DNR. On January 5, 2024, the Wisconsin DNR responded to this request, providing information on special status species that may occur in the project area or surrounding area and recommended follow-up actions (Wisconsin DNR 2024; see Appendix D). According to the Wisconsin DNR Endangered Resources Review, the following two state special status species were previously recorded from within or surrounding the NWHC property: rusty patched bumble bee, which is a state special concern species) and ornate box turtle (*Terrapene ornata ornata*), which is state listed as endangered. Descriptions of these species and their habitats, as well as the likelihood that they would occur within the property, are summarized below from Wisconsin DNR and USFWS species profiles.

- **Northern long-eared bat:** The federally endangered northern long-eared bat is a medium-sized bat that is distinguished by its long ears, particularly as compared to other bats in its genus. The northern long-eared bat is found across much of the eastern and north central United States. White-nose syndrome is the predominant threat to this bat, especially throughout the northeast where the species has declined by up to 99 percent from pre-white-nose syndrome levels at many hibernation sites. Northern long-eared bats spend winter (November 1 to March 31) hibernating in caves and mines and then emerge in early spring. During the active season (April 1 to October 31), northern long-eared bats utilize a wide variety of forested/ wooded habitats where they roost, forage, and travel. They may also

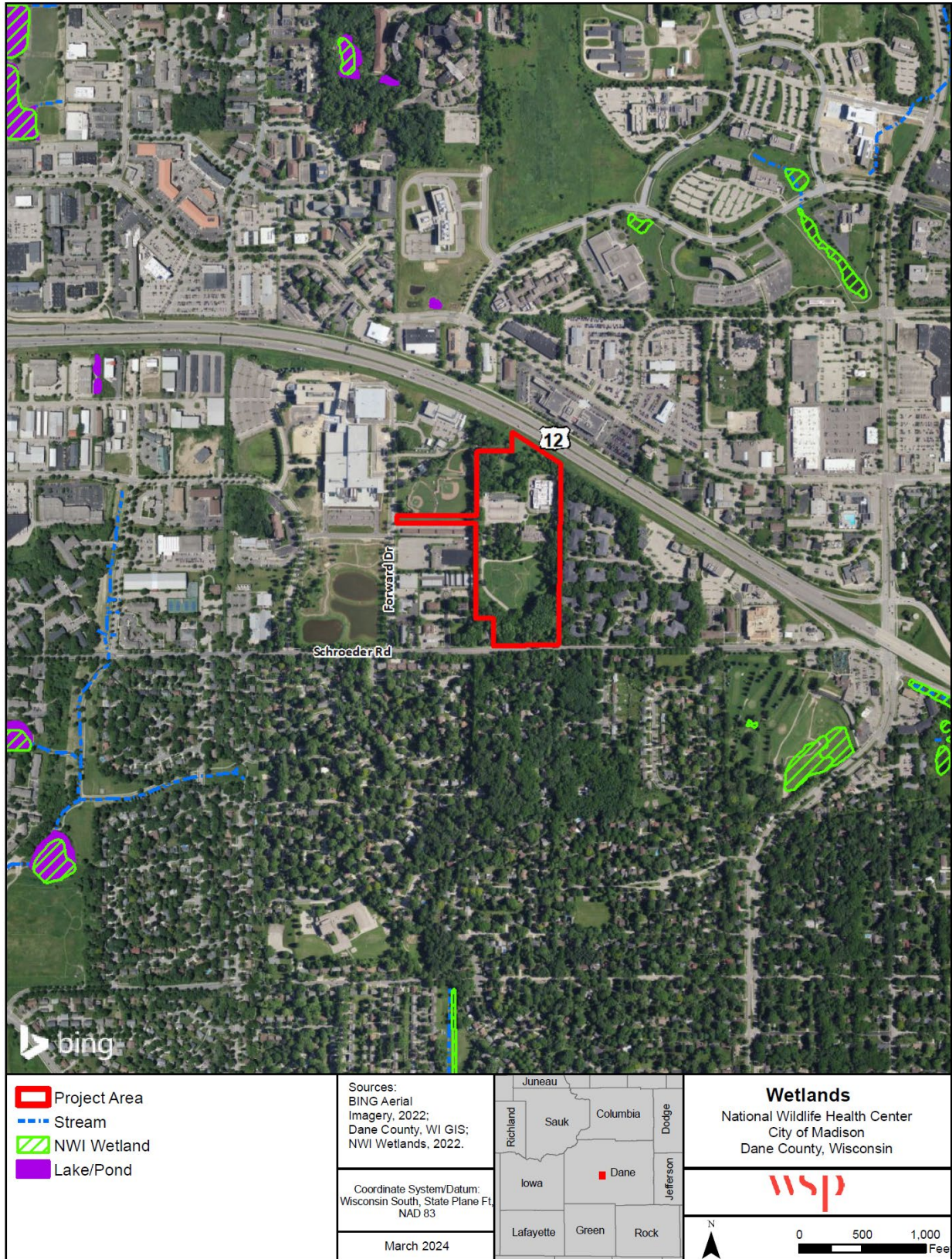


Exhibit 3-5: National Wetland Inventory Map

utilize some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields, and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥ 3 inches dbh that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet of forested/ wooded habitat.

Forested portions of the NWHC property may provide suitable roosting habitat for northern long-eared bat. The Wisconsin Natural Heritage Inventory (NHI Portal) database contains all current northern long-eared bat roost sites and hibernacula in Wisconsin based on verified survey results from Wisconsin DNR, USFWS, and private organizations. The NHI Portal was consulted as part of the Wisconsin DNR's Endangered Resources Review, and it was determined that there is no known maternity roost or hibernaculum within one mile of the NWHC property.

- **Tricolored bat:** On September 23, 2022, the UFSWS announced a proposal to list the tricolored bat as endangered due to the range-wide impacts of white-nose syndrome. The tricolored bat is one of the smallest bats native to North America. As its name suggests, the tricolored bat is distinguished by its unique tricolored fur that appears dark at the base, lighter in the middle, and dark at the tip. The once common species is wide ranging across the eastern and central United States and portions of southern Canada, Mexico, and Central America. Tricolored bats are primarily found in the western half of Wisconsin, but hibernaculum surveys show hibernating tricolored bats in Door County and northeastern Wisconsin. During the winter, tricolored bats hibernate in caves and mines. Most mating occurs in the fall, with delayed fertilization and twin pups born in spring. During the spring, summer and fall, tricolored bats are found in forested habitats where they roost in trees, primarily among leaves. Their preferred foraging habitat is forest edges and waterways. Forested portions of the NWHC property may provide suitable roosting habitat for tricolored bat.
- **Whooping crane:** The whooping crane is North America's tallest bird, with males approaching five feet (1.5 meters) when standing erect. The whooping crane adult plumage is snowy white except for black primaries, black or grayish specialized feathers attached to the upper leading end of the wing, sparse black bristly feathers on the side of the head from the bill to the angle of the jaw, and a dark gray-black wedge-shaped patch on the nape. They depend on large, open wetland ecosystems to eat, roost, and make their nests. Whooping cranes were extirpated from the Midwest and are listed as federally endangered. The Wisconsin DNR, along with other members of the Whooping Crane Eastern Partnership, is working to restore an eastern migratory population of whooping cranes that migrates annually between its Wisconsin breeding grounds and its wintering habitat in the southern United States.

The whooping crane is not expected to occur on the NWHC property due to lack of appropriate habitat. Whooping cranes in Wisconsin are designated as a non-essential experimental population, and consultation under Section 7 of the ESA is only required if activities would occur within a National Wildlife Refuge or National Park.

- **Monarch butterfly:** Monarch butterflies are a bright orange color with black and white markings and a wingspan between 3.5 and 4 inches. The caterpillars have many yellow, black and white bands and antenna-like appendages at each end of their body. Monarch caterpillars feed almost exclusively on milkweed and as adults feed on nectar from a wide range of flowers. They lay their eggs on milkweed; there are about 3 to 5 generations born each spring and summer and most of the offspring do not live beyond five weeks. Wisconsin monarchs are migratory, journeying to central Mexico for the winter each year. In the spring,

summer and early fall, they can be found wherever there are nectar-producing plants. While the maintained areas and existing impervious areas on the NWHC property would not be considered suitable habitats for monarch butterfly, they may utilize the prairie and surrounding areas that contain milkweed or other native nectar plants.

- **Rusty patched bumble bee:** The rusty patched bumble bee is a state species of Special Concern and is federally listed as endangered. Since 2000, this bumble bee has been reported in only 13 states, including Wisconsin. All rusty patched bumble bees have entirely black heads, but only workers and males have a rusty reddish patch centrally located on the back. This bee relies on diverse and abundant flowering plant species in proximity to suitable overwintering sites for hibernating queens, which include, but are not limited to non-compacted and often sandy soils or woodlands. Suitable active season habitat includes but is not limited to prairies, woodlands, marshes/wetlands, agricultural landscapes, and residential parks and gardens. While the maintained areas and existing impervious areas on the NWHC property would not be considered suitable habitats for rusty patched bumble bee, the prairie and wooded portions of the property may contain suitable habitat. The NWHC property also overlaps the Rusty Patched Bumble Bee Federal High Potential Zone (RPBB HBZ), indicating there is a high likelihood for the species to be present.
- **Eastern prairie fringed orchid:** The Eastern prairie white fringed orchid is a state endangered and federally threatened plant found in moist, undisturbed, deep-soiled and/or calcareous prairies and rarely in tamarack fens. This plant is 8 to 40 inches tall and has an upright leafy stem with one single flower spike composed of 5 to 40 white flowers. Blooming occurs early July through early August; fruiting occurs throughout August. It requires full sun for optimum growth and flowering and a grassy habitat with little or no woody encroachment. The NWHC property lacks the moist soils and grassy habitat without woody encroachment that is preferred by this species; the disturbed remnant prairie habitat has been heavily invaded by woody and invasive vegetation. The Wisconsin DNR did not report any records of this species occurring on the property. Therefore, this species is not expected to occur within the NWHC property.
- **Prairie bush-clover:** Prairie bush-clover is state endangered and federally threatened plant found in gravelly or sandy hillside prairies. It has a clover-like leaf comprised of three leaflets about an inch long and a quarter inch wide. Flowering plants are generally between nine and 18 inches tall with the flowers loosely arranged on an open spike. The entire plant has a grayish-silver sheen. The pale pink or cream colored flowers bloom in mid-July and fruiting occurs early August through early September. The NWHC property does not contain gravelly or sandy hillside prairies. The disturbed remnant prairie habitat has been heavily invaded by woody and invasive vegetation. The Wisconsin DNR did not report any records of this species occurring on the property. Therefore, this species is not expected to occur within the NWHC property.
- **Ornate box turtle:** The ornate box turtle is listed as endangered in the state of Wisconsin. This species is not federally listed. Ornate box turtles prefer mesic prairies, dry-mesic prairies, sand prairies, oak savannas, and open to semi-open woodlands. They overwinter in deep sand and/or well drained soils in open canopy microhabitats supporting sparse vegetation and in areas of disturbed soils such as the edges of sand blows. Ornate box turtles are not expected to occupy the NWHC property. According to the Wisconsin DNR Endangered Resources Review, it is unlikely that sufficient suitable habitat is present since the area has been previously disturbed and is surrounded by urban development.

3.7.2 Potential Impacts

No Action Alternative

Under the No Action Alternative, the property and structures comprising the NWHC in Madison would remain in their current condition, biological resources would be unaffected, and mitigation measures would not be necessary. Occasional mowing of the prairie areas would be used to control invasive species; however, invasive species may continue to spread in these areas without additional management.

Preferred Alternative (New NWHC)

Impacts to biological resources would occur as a result of construction of the new NWHC and associated solar PV and geothermal systems. Existing vegetation and wildlife habitat would be disturbed as a result of construction and operation of the new NWHC, which would temporarily impact approximately 6.36 acres (277,000 square feet) and permanently impact approximately 4.05 acres (176,600 square feet) of the property. The discussion of impacts to biological resources focuses on unmaintained vegetated habitat, including the prairie areas in the northern and southern parts of the property and wooded habitat near the center of the property. While some permanent impacts to vegetated habitat would occur as detailed below, the Preferred Alternative also includes conversion of existing built/impervious surface to native vegetated area as well as restoration of degraded prairie habitat. The current NWHC Main Building, TIB, parking lot, and walkways would eventually be removed, and portions of their footprints that would not be developed would be restored with native vegetation or vegetated with maintained lawn in areas adjacent to the new facility.

Vegetation

Temporary impacts to vegetation would result from construction mobilization, equipment staging and material storage areas, geothermal drilling, and installation of PV panels. Approximately 1.31 acres (56,875 square feet) of vegetation within the existing 3.65 acre (158,933 square foot) south prairie would be temporarily disturbed for construction staging and geothermal well drilling. Approximately 0.80 acre (34,763 square feet) of vegetation within the north prairie would be temporarily disturbed for installation of PV panels. All temporarily disturbed vegetated areas would be restored by removal of invasive species and revegetation with native prairie vegetation.

Permanent impact to approximately 0.60 acre (26,336 square feet) of vegetation within the south prairie would result from construction of the new building footprint, sidewalks, and visitor parking. In the northern part of the property, the proposed solar PV system would consist of two fields, one overlapping the current site of the TIB and the other located north of the existing staff parking lot. All areas under the PV panels would be reseeded with lower-growing native grasses and prairie species. Approximately 0.74 acres (32,140 square feet) of existing building/impervious surface at the site of the TIB would be converted to vegetated prairie habitat. An additional 0.51 acres (22,360 square feet) of existing vegetated area that currently contains solar panels would be redeveloped with a new solar PV field and reseeded. This 0.51 acres overlaps with the geothermal system that would be constructed in the northern part of the property below the solar PV field and in the area of the existing staff parking lot, which would be redeveloped with the extended access road. With the 0.74 acre of existing impervious surface that would be converted to vegetated prairie habitat, there would be a net increase of approximately 0.13 acre (5,804 square feet) of vegetated prairie habitat within the NWHC site.

During construction of the new NWHC facility, approximately 1.43 acres of trees would be removed from the footprint of the new facility. Individual trees may be removed from the footprints of the geothermal field in the northern part of the property, and at the site entrance to accommodate a sidewalk connecting the property to the sidewalk and bus stop on Shroeder Road.

Common Wildlife

Temporary impacts to wildlife would result from increased noise and visual disturbance from construction machinery operations and the presence of humans. Wildlife may be harmed or displaced, primarily during

initial site clearing and similar earthwork. More mobile species such as avian species, rabbits, and squirrels are expected to disperse to adjacent habitat when disturbed by construction activities, while less mobile species or individuals may incur mortality. Nearby habitats that would not be disturbed during construction are expected to accommodate any displaced wildlife.

The oak trees in which flying squirrels have been observed in the southwestern portion of the NWHC property would not be removed or otherwise impacted during construction. Additionally, the planned seasonal restriction for tree clearing to protect bats (see Section 3.7.3) would provide similar protection to flying squirrels if they are utilizing other trees within the NWHC property since flying squirrels have a similar pup rearing season to bats.

Increased noise levels, as a result of construction activities, can affect wildlife by inducing physiological changes, nest or habitat abandonment, behavioral modifications, or disrupting vocalization of species required for breeding or defense (Larkin 1996). Continuous noise levels from construction activities would range from 71 to 98 A-weighted decibels (dBA) at 50 feet from the source (see Section 3.21, Noise). The Environmental Impact Data Book (Golden et al. 1980) suggests that noise levels higher than 80 to 85 dBA are sufficient to startle or frighten birds and small mammals. At 800 feet from the noise source, the level would be reduced to 65 dBA, and little potential for disturbing wildlife would occur. As a result, impacts on wildlife from construction noise are expected to be temporary, lasting only for the duration of construction (approximately 36 months), and be negligible. Construction noise would not be continuous but would occur intermittently when equipment is operating. Following construction there would be no change in NWHC operation and maintenance activities that would temporarily displace wildlife species occupying areas in and around the new facility, including small mammals, reptiles, and birds, all or most of which already tolerate human activity.

Wetlands and Waters of the U.S.

Impacts to wetlands or waterbodies would not occur as none are present within the NWHC property.

Special Status Species

No maternity roosts or hibernaculum have been identified within the vicinity of the NWHC property. Any northern long-eared or tricolored bats occasionally foraging in the wooded areas of the property would be capable of relocating to avoid disturbance during construction. While approximately 1.43 acres of trees would be removed as described above, the project would not result in demolition of structures known to be used by bats, or any activity near a cave or mine. Seasonal restrictions for tree removal will be adhered to as discussed in Section 3.7.3 Recommended Mitigation. A determination of not likely to adversely affect was reached for northern long-eared bat and tricolored bat using the IPaC system and Minnesota-Wisconsin Determination Key.

There is no suitable habitat for whooping crane or the state-listed ornate box turtle on the NWHC property; therefore, the Preferred Alternative would have no effect on these species. Eastern prairie fringed orchid and prairie bush clover are not expected to occur within the NWHC due to lack of habitat and/or heavy invasion of habitat by woody species. A determination of no effect was reached for the federally listed whooping crane, eastern prairie fringed orchid, and prairie bush clover using the IPaC system and Minnesota-Wisconsin Determination Key. The potential for impacts to monarch butterfly and rusty patched bumble bee is limited to disturbance within the existing prairie habitat as the remainder of the NWHC property consists of previously developed land or maintained lawn that does not provide habitat for these species. As described above in the discussion of impacts to vegetation, approximately 0.60 acre of the existing south prairie, which may provide suitable habitat for these pollinators, will be permanently impacted by construction. However, approximately 0.74 acre of existing impervious surface would be converted to prairie habitat, adjacent to the existing prairie, for a net increase of approximately 0.14 acres of prairie habitat. The approximately 0.60 acre of prairie habitat that would be permanently removed represents approximately 17 percent of the total existing south prairie habitat, and the area to be lost consists of degraded habitat adjacent to existing development. Approximately 1.31 acre of the south

prairie habitat and approximately 0.80 acre of the north prairie habitat would be temporarily disturbed but would be replanted with native prairies species after construction is completed.

Conservation measures described below in Section 3.7.3 would be employed to minimize potential impacts to the rusty patched bumble bee during construction, and temporarily disturbed areas would be restored following completion of construction. Additionally, approximately 2.10 acres (91,638 square feet) of the existing north and south prairie habitat that would be temporarily disturbed would be restored through the planned removal of invasive species and revegetation with native prairie species. Based on the proposed conservation and minimization measures, the net increase in prairie habitat, and the planned restoration of existing prairie habitat, the Preferred Alternative is not likely to adversely affect rusty patched bumble bee. The USGS has consulted with the USFWS regarding potential impacts to listed species that may occur on the property. A determination of not likely to adversely affect for rusty patched bumble bee was reached using the IPaC system and Minnesota-Wisconsin Determination Key. The USFWS concurred with this determination in an email communication dated May 10, 2024.

The ESA does not establish protections or consultation requirements for candidate species such as monarch butterfly, but the USFWS encourages implementing measures that will remove or reduce threats to these species. The USGS has determined that Preferred Alternative is not likely to adversely affect monarch butterfly, while a determination of no effect was reached for monarch butterfly using the IPaC system and Minnesota-Wisconsin Determination Key. The conservation measures to be employed to minimize impacts to rusty patched bumble bee will also avoid or minimize impacts to monarch butterfly. Additionally, the planned restoration of existing prairie habitat and the net increase in prairie habitat would benefit this pollinator.

3.7.3 Recommended Mitigation

NWHC development plans include use of native or adapted trees, shrubs and flowering plants that bloom from spring through fall in landscape plans. In addition, impacts to vegetation would be minimized by incorporating BMPs to avoid the spread or introduction of invasive plants during construction and re-vegetating temporarily disturbed areas that would remain undeveloped following completion of construction using native species. Approximately 2.10 acres of prairie habitat that would be temporarily disturbed would be restored through invasive plant removal and revegetation with native prairie species.

There is no known northern long-eared bat maternity roost tree or hibernaculum within one mile of the NWHC property. However, a June 1 – August 15 restriction on tree clearing will be implemented to avoid the highly vulnerable maternity period for bats and would also provide protection for the proposed endangered tricolored bat and the common southern flying squirrel.

Since the NWHC property overlaps the RPBB HBZ, the following USFWS recommended conservation measures for the rusty patched bumble bee, included in the Wisconsin DNR Endangered Resources Review, would be employed during construction:

- Implement BMPs, especially those that serve to minimize the spread of invasive species and to avoid or minimize soil compaction.
- Avoid or minimize soil disturbance and heavy equipment operation during overwintering (mid-October to mid-March).
- Avoid or minimize forest management that may destroy spring blooming flowers during their bloom periods.
- Consider thinning or single tree selection and dense invasive shrub removal that may improve overwintering and spring foraging habitat.
- Use native trees, shrubs and flowering plants in landscaping.

- Provide plants that bloom from spring through fall (refer to the USFWS RPBB Midwest Plant Guide).
- Remove and control invasive plants in any habitat used for foraging, nesting, or overwintering.

The conservation measures listed above for rusty patched bumble bee would also minimize potential impacts to monarch butterfly. As noted above, the USGS consulted with the USFWS on potential effects to threatened and endangered species. The USFWS concurred with the USGS's effects determinations and proposed mitigation measures in correspondence dated April 10 and May 10, 2024.

According to Wisconsin DNR, erosion control netting used to prevent erosion during the establishment of vegetation can have detrimental effects on local snake and other wildlife populations. Plastic netting without independent movement of strands can easily entrap snakes moving through the area, leading to dehydration, desiccation, and eventually mortality. Netting that contains biodegradable thread with the "leno" or "gauze" weave appears to have the least impact on snakes and should be used in areas adjacent to or near any waterbody. If erosion matting is to be installed, the following matting (or equivalent) is recommended for use: American Excelsior "FibreNet" or "NetFree" products; East Coast Erosion biodegradable jute products; ErosionControlBlanket.com biodegradable leno weave products; North American Green S75BN, S150BN, SC150BN or C125BN; Erosion Tech biodegradable jute products; or Western Excelsior "All Natural" products.

3.7.4 Cumulative Impacts

As noted above, wildlife may be disturbed or harmed during construction of the new NWHC, and vegetation would be removed or disturbed in construction areas. The Preferred Alternative would not affect mapped wetlands or waters of the U.S. Similar impacts to wildlife would occur as a result of the other planned development projects identified in Section 3.2.2. The planned update of the Southwest Neighborhood Plan would address various aspects of development in the planning area, including parks and open space, and may include recommendations that adversely affect or benefit biological resources.

Wildlife present on the NWHC property is adapted to urban areas, and habitat exists in the surrounding area for wildlife to use during construction. Following construction, the prairie areas on the property would be restored, providing habitat for native vegetation and wildlife. The Proposed Action would contribute to cumulative impacts to biological resources as a result of development and continuation of urban land uses in the planning area. However, impacts during construction and operation of the new NWHC would be confined to the NWHC property and mitigated as described above, which would minimize these impacts.

3.8 Cultural Resources

Cultural resource investigations in support of the Preferred Alternative were undertaken pursuant to Section 106 of the National Historic Preservation Act of 1966 (as amended); the Archaeological and Historical Preservation Act of 1974; EO 11593; and Title 36 of the Code of Federal Regulations, Parts 660-66 and 800 (as appropriate). Field investigations and related work met the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (Federal Register 48:190:44716-44742) (U.S. Department of the Interior 1983).

3.8.1 Existing Conditions

The Green Bay lobe of the Laurentide ice sheet reached its maximum extent about 18,000 years ago, just a few miles southwest of the NWHC property. About 15,000 years ago, the glacier began to recede. For some time, the rate of melting balanced the rate of ice flow toward the margin, and the glacial rubble that accumulated at the stationary edge of the glacier created a series of recessional moraines. The NWHC property lies atop one of these moraines, known as the Milton moraine.

Over the next several millennia as the glacier receded far to the north and the climate warmed, the landscape of southern Wisconsin became predominantly covered with prairie. Fires moved across the

land nearly every year, maintaining the fire-adapted prairie vegetation. In draws and on north-facing slopes that burned less often, pockets of savanna and open oak woodlands developed, but occasional fires still limited the vegetation to fire-tolerant species. These communities evolved over thousands of years, developing a complex and intricate balance among the many plant, insect, and animal species.

Native American occupancy of southern Wisconsin can be documented to roughly 10,000 years ago. Archaeological evidence suggests that settlement in the Madison “four lakes” region became popular in the Paleo-Indian period between 8,000 to 2,000 years ago. The development of advanced tools, farming, and permanent settlements emerged during the Woodland Tradition that followed. It is likely that Native American people first built earthen mounds in Wisconsin approximately 1,000 years ago with over 1,500 found in the Madison, Dane County area with only 200 remaining (City of Madison 1996). Most, although not all, of these mounds are thought to have been used for burials, and mounds were built in a wide variety of size, shapes, and arrangements – typically in places of scenic beauty – and used for a variety of social, religious, political, and economic activities (City of Madison 1996). Twelve Native American nations are federally recognized within the state of Wisconsin; all twelve of which are historically represented in the Madison area. The Ho-Chunk Tribe traces their ancestry to the Woodland society present in Wisconsin that built the mounds. Ho-Chunk settlements are recorded throughout the city of Madison (Lehrke et al. 2020).

Archaeologists generally agree that European contact and conflict with Native American Tribes, first occurring in the 1630s in Wisconsin, is in part the cause of a significant decline in population of Native American people. The Ho-Chunk Tribe managed to recover in the 1700s, growing with other Tribes and establishing their territory as a center for trade. Beginning in 1832, the Federal government attempted to forcibly remove the Ho-Chunk people from Wisconsin; many people were sent to a reservation in Nebraska (Lehrke et al. 2020).

When European immigrants moved into the area, prairies were plowed and running wildfires were suppressed. Converting the prairies to agricultural use eliminated the native vegetation from all but a few remnant acres. The steeper slopes grew up in oak woods, though for many years, use of these areas for pasturing livestock kept them relatively open. Pastures that were not heavily grazed are the most likely areas for native vegetation to persist. In more recent times, with the cessation of grazing, trees and brush encroached on these former pastures.

Ansul Chemical Company, also known as Ansul Laboratories or the Ansul Research Center, constructed a laboratory at 6006 Schroeder Road in 1968-1969 to conduct research on fire extinguisher agents and agricultural chemicals. The company was formed in 1916 in Marinette, Wisconsin where its headquarters remains today. Ansul operated from the Schroeder Road property until 1974 and did not make alterations to the laboratory building during its period of ownership. In 1978, the USFWS purchased the property to serve as the permanent site of the NWHC (then called the National Fish and Wildlife Health Laboratory).

Renovations to the Ansul laboratory began in 1979 and included plans for extensive remodeling of the interior and exterior of the Main Building, construction of a separate Tight Isolation Building (TIB), and development of an access driveway and landscaping. Renovations to the Main Building were completed in 1983. The TIB opened in 1985 with state of the art biocontainment facilities required for live animal work with highly infectious and hazardous disease agents. A third, administrative building proposed by the USFWS was never constructed.

In 1993, DOI transferred the NWHC from the USFWS to the National Biological Survey (NBS), later changed to National Biological Service. The NBS was formed in 1993 through the consolidation of certain biological research functions of the USFWS (including the NWHC), NPS, Bureau of Land Management, Minerals Management Service, Office of Surface Mining Reclamation and Enforcement, USGS, and Bureau of Reclamation. In 1996, DOI transferred NBS to the USGS and renamed NBS to the Biological Resources Division. Since 1996, NWHC has been operated by USGS.

Architectural Resources

The NWHC consists of three buildings constructed between 1969 and 1985: the Main Building constructed in 1969; TIB, constructed in 1985; and a garage constructed in 1985. Additional structures on the property include three small sheds, a temporary, modular office building, entrance gate, and informational sign; all constructed less than 50 years ago.

An in-person review of the Wisconsin Historic Preservation Database was performed to identify previously recorded architectural resources or previously conducted surveys at the NWHC. No architectural surveys or evaluations have been previously conducted at the NWHC facility. Therefore, to determine the presence of historic properties and potential impacts to such properties as a result of the Preferred Alternative, an architectural survey and National Register of Historic Places (NRHP) evaluation of the facility was conducted.

The NWHC was evaluated for eligibility for inclusion in the NRHP within the context of federal wildlife disease research and by applying the four Criteria of Evaluation as set forth in 36 CFR § 60.4. The Main Building was constructed in 1969 by a private company under the name of Ansul Chemical Co., just over 50 years ago, and qualifies for evaluation under the standard criteria; however, the significance of the facility is not associated with the period of ownership by Ansul Chemical Co. Rather, the significance of the facility is associated with its function and use by the federal government as a wildlife disease research center, which began in 1978 (less than 50 years ago) and continues to the present. Therefore, the NWHC was evaluated under Criteria Consideration G for properties achieving significance within the past 50 years, requiring exceptional significance for listing in the NRHP. The NRHP evaluation is provided in Appendix E while a summary of the evaluation under each NRHP Criteria for Evaluation is provided below.

The NWHC is the location of scientific studies and discoveries significant to national history. For example, the NWHC played a major role in the surveillance, die-off investigations, and experimental studies of West Nile Virus immediately following its detection in the New York City area in 1999. Since 1999, the NWHC has continually contributed to the understanding of the disease and its effects, not only on wildlife, but on public health. The NWHC is also known for its discovery in 2008 of the fungus that causes White-Nose Syndrome in bats, a renowned disease affecting millions of bats to date. These events, however, are either only moderately associated with the NWHC or occurred within the last 20 years and sufficient historical perspective does not exist to consider their significance within the context of historic federal wildlife disease research.

The NWHC is recommended as not eligible under Criterion A as it does not have sufficient associations with significant federal building programs and is not associated with events important to the national history of federal wildlife disease research. The resource does not meet Criteria Consideration G as the events from the recent past do not rise to a level of exceptional significance as they relate to the NWHC Madison facility.

To be eligible under NRHP Criterion B for significance of an individual associated with the property, the person must be individually significant within the historic context of the resource. Research revealed one notable individual associated with the history of the NWHC during its period of significance beginning in 1978: Milton Friend, the first director of the facility. Friend developed the concept for the NWHC and is well known across the country for his contributions to wildlife conservation and environmental stewardship. He began his career as an assistant waterfowl biologist for Vermont Fish and Game in 1956, served as director of the NWHC from 1975 to 1998, and ended his career as the executive director of the Salton Sea Sciences Subcommittee for the U.S. Department of the Interior (Friend n.d.). Although Milton Friend's contributions to wildlife research are important to the field, the events that occurred at the NWHC as associated with Friend, and as evaluated above under Criterion A, are either only moderately associated with the NWHC or do not rise to a level of exceptional significance as required under Criteria Consideration G. Additionally, properties associated with living persons are usually not eligible for inclusion in the NRHP as sufficient time has not passed to consider their significant within the respective

historic context. Therefore, the NWHC is recommended as not eligible under Criterion B as it does not meet the requirements for listing in the NRHP for associations with significant individuals.

Although the Main Building and TIB are adequate examples of modern-era architecture, they are undistinguished and typical examples that use standard technology and materials. The renovation of the Main Building and construction of the TIB are typical of the 1980s, lacking exceptional design qualities, and do not represent ground-breaking design locally, regionally, or nationally. Therefore, the NWHC is recommended as not eligible under Criterion C. The NWHC also does not meet Criteria Consideration G as it does not rise to an exceptional level of architectural distinction from the recent past.

The NWHC retains good integrity. The period of significance for the facility begins in 1978, less than 50 years ago, when the property was acquired by the USFWS and renovations to the existing laboratory building were planned. Since the renovations to the Main Building, no exterior or major interior alterations have been made. The remaining buildings and structures at the NWHC have not been altered since their construction. Therefore, the NWHC retains its integrity of location, setting, design, materials, workmanship, feeling and association with its period of historic significance.

Although the NWHC represents a degree of historical significance as the location of significant scientific studies and discoveries related to wildlife disease and federal wildlife disease research, it does not rise to a level of exceptional significance as required by Criteria Consideration G for resources less than 50 years of age for achieving significance within the last 50 years. Therefore, the USGS concluded that the NWHC is not eligible for listing in the NRHP.

On December 14, 2022, the Wisconsin State Historic Preservation Office (SHPO) completed its review of the NRHP evaluation of the NWHC (WHS #22-1752, Modernization of National Wildlife Health Center) and found that no eligible properties would be affected by the Preferred Alternative as none are present (Appendix D).

Archaeological Resources

An archaeological survey was conducted at NWHC in 1977 ahead of the renovations to the Main Building and construction of the TIB: Archaeological Survey of Ansel Laboratory Site and Adjacent Woods (Price 1977, Appendix E). Prior to the field investigations, the surveyors conducted background research and determined that no previously recorded archaeological resources were located within the area, as the only recorded site within Section 30 was located 1.5 miles to the east.

The survey involved the surface inspection of the entire area proposed for the construction of the TIB, an approximately 12-acre area north of the Main Building, and subsurface investigation at 20-meter intervals. An additional 10-acre tract of woods was inspected on the surface and with six test pits at the south end of the tract near Schroeder Road. The archaeological investigation did not locate any archaeological or historical resources in the area, and it was determined that no cultural resources would be damaged as a result of the proposed undertaking (Price 1977).

In December 2022, the USGS sent letters to Tribal leaders and Tribal Historic Preservation Officers (THPOs) representing federally recognized Tribes that have cultural and/or historic ties to the NWHC property to request government-to-government consultation on the EIS and Proposed Action, including the Ho-Chunk Nation; Ho-Chunk Nation, Menominee Indian Tribe of Wisconsin; Red Cliff Band of Lake Superior Chippewa, Forest County Potawatomi Community; Miami Tribe of Oklahoma; Kickapoo Tribe of Oklahoma; Bad River Band of Lake Superior Tribe of Chippewa Indians; Lac Courte Oreilles Band of Lake Superior Chippewa Indians; Fort Belknap Indian Community of the Fort Belknap Reservation of Montana; Sokaogon Chippewa Community; Stockbridge-Munsee Community Band of Mohican Indians; Forest County Potawatomi Community, Wisconsin; Menominee Indian Tribe of Wisconsin; Oneida Nation of Wisconsin; Winnebago Tribe of Nebraska; Lac du Flambeau Band of Lake Superior Chippewa Indians; and St. Croix Band of Lake Superior Chippewa. The USGS received responses to this correspondence from the Osage Nation; Red Cliff Band of Lake Superior Chippewa, Forest County Potawatomi Community; and Miami Tribe of Oklahoma. The Forest County Potawatomi and Miami Tribe of Oklahoma

requested to be included as consulting parties under section 106. Consultation with these Tribes is ongoing during development of the EIS.

3.8.2 Potential Impacts

No Action Alternative

Under the No Action Alternative, the property and structures comprising the NWHC in Madison would remain in their current condition, archaeological and architectural resources would be unaffected, and mitigation measures would not be necessary.

Preferred Alternative (New NWHC)

Following construction of the new NWHC, both the Main Building and TIB would be decommissioned and demolished. The Wisconsin SHPO has concurred with USGS's recommendation that the NWHC is not eligible for inclusion in the NRHP and a finding that "no eligible properties will be affected, [as] none are present" (WHS 2022, Appendix D).

Based on the description of the 1977 archaeological survey provided in the report, those investigations focused on the portion of the parcel located to the north and east of the original Ansul Laboratory facility, which would include the current location of the existing NWHC facilities and parking lot. Much of the proposed development would be confined to the area adjoining the existing building and parking lot footprint, where little to no potential to impact intact archaeological resources remains due to disturbance from past construction activities. A small section of the parcel to the north of the NWHC parking lot totaling less than one acre would have been covered by the 1977 survey, and therefore no impacts are anticipated in this area as no archaeological resources were identified during the survey.

Though the original survey used a 20-meter interval, rather than the current standard of 15 meters, the entire area was subjected to both a surface inspection and subsurface testing, and therefore the previous investigations would have been adequate to identify any archaeological resources within the surveyed area. The proposed internal access driveway would follow the route of the existing facility entrance, and therefore no impacts to archaeological resources are anticipated for this component.

A review of available topographic mapping (USGS 1890, 1892, 1904, 1906, 1959, 1965, 1970) indicates that the vicinity of the NWHC property was undeveloped but cleared of vegetation from the end of the nineteenth century through the third quarter of the twentieth century. Between 1965 and 1970, the quadrangle mapping has been photo-revised with the location of the Ansul building and access road. By 1983, a second service road (still extant) has been developed within the property, while the current NWHC facilities were not yet depicted on the topographic mapping (USGS 1983). A review of the available historic aerial imagery indicates that prior to 1969, the entire area was in use as agricultural fields or pasture. Between 1960 and 1969, the Ansul laboratory facility was constructed on the parcel, as were the baseball fields located to the northwest which are still extant.

The 1969 imagery depicts that a portion of the parcel to the west of the Ansul building was developed as a parking area and access road to the building, although it is not conclusive from the black and white imagery whether this area is dirt or gravel. By 1980, the parking area is mostly overgrown with grasses and shrubs, suggesting that it was a scraped surface or dirt lot. Post 1980 aerial imagery suggests that the parking lot continued to be used as such at least intermittently, and by 2013 it has been paved, though the original access road from the parking lot to the building has reverted to vegetation. The remainder of the areas proposed for development of the staff and visitor parking lots do not appear to have been significantly developed or disturbed between 1960 and the modern day based on the aerial imagery.

The locations of existing underground utility services would remain in place and be used to service the new NWHC and the existing NWHC during construction. Proposed visitor and employee parking lots would be located to the southwest, north and east of the original Ansul Laboratory building. These areas have not been previously subjected to archaeological survey, and therefore potential impacts to

archaeological resources cannot be determined from the available data, though the 1977 survey would suggest that the potential for archaeological resources to be present is low to moderate. Current soil survey data indicates that this part of the project area is situated on moraines or drumlin geological landforms composed of silt loams (McHenry, Dodge) or loam (Kidder), which may be shallow and eroded, with little potential for intact buried cultural depositions (USDA-NRCS 2021).

3.8.3 Recommended Mitigation

It has been determined that there are no historic properties located at NWHC; therefore, no mitigation measures are necessary.

The NWHC does not meet the criteria for evaluation for inclusion in the NRHP as it does not possess an exceptional level of historic significance for properties achieving significance within the past 50 years. Based on a review of historic mapping, aerial imagery, and previous archaeological investigations at the facility, it has also been determined that there is low potential for any significant archaeological sites in the area and an archaeological survey based on the current development plans is not warranted. The Wisconsin SHPO concurred with these findings via letter dated December 14, 2022 (WHS 2022).

Surveys and investigations, no matter how thorough, cannot ensure that cultural materials will not be uncovered during construction. To avoid interrupting, delaying, or halting construction once started, a Cultural Resource Response Plan should be developed prior to initiating ground-disturbing activities. Such a plan would describe the procedures, protocols, responsibilities, and requirements of the USGS and the construction contractors in the event of a discovery. The plan would include measures to address unanticipated discoveries of cultural resources and artifacts, human remains, funerary objects, sacred objects, and objects of cultural patrimony as regulated by the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) and its implementing regulations (43 CFR § 10). Such a plan would be available during all phases of construction that involve ground-disturbing activities.

3.8.4 Cumulative Impacts

The Preferred Alternative would not affect any historic properties eligible for listing in the NRHP because none are present on the NWHC property. Additionally, there is a low potential for significant archaeological sites in the area. As noted above, it is recommended that a response plan be available in the event cultural materials or human remains are found during construction. Based on the previous widespread disturbance in the Southwest Neighborhood planning area, the Preferred Alternative is not likely to contribute to cumulative impacts to cultural resources.

3.9 Hazardous Materials

3.9.1 Existing Conditions

The NWHC property in Madison, acquired by the federal government in 1978, includes the Main Building, TIB, access driveway from Schroeder Road, employee/visitor parking lot, solar panels, a garage/service building, underground utilities, and other ancillary features. The undeveloped portions of the property consist of prairie areas, tree stands, and understory along the northern, southern, eastern, and western borders, and grass lawns located between buildings and the parking lot.

The NWHC property was inspected, and an assessment conducted to determine the potential for hazardous materials contamination. Field inspections of the property conducted during 2022 revealed:

- No evidence of the manufacturing or disposal of hazardous substances or petroleum products was observed within the property.
- No adjoining land uses were identified that would be expected to pose a potential environmental risk to the new NWHC development.

- The Main Building and TIB are provided with emergency generators which are each equipped with a 5,000-gallon underground fuel storage tank (replaced in 2021). No evidence of leaking fuel storage tanks was observed during replacement.
- No surficial evidence or visual signs of contamination, stained soils, previous spills, stressed vegetation, unusual mounds, or other indication of the on-site disposal of hazardous materials was identified.
- NWHC is equipped with two permitted incinerators with annual compliance reports submitted to the Wisconsin DNR.

With federal government ownership and control over NWHC's operation and maintenance since 1978, the potential for contamination from hazardous materials is considered low. No evidence of contamination or obvious indication of the disposal of hazardous substances was observed during field studies of the property. To further ensure the property has not experienced past contamination, historical research typically conducted for a Phase I Environmental Site Assessment has been performed in addition to the collection and analysis of soil samples (described below) to confirm the presence/absence of contamination. If contamination is found from testing soil samples, additional investigations may be necessary. Given the age of the Main Building (circa 1960s), the building is expected to contain some asbestos-containing materials (ACM) and lead-based paint.

Because NWHC diagnoses and studies the impact of disease in North American wildlife they perform bio-secure handling and disposal of wildlife carcasses. Proper handling, disposal procedures, and systems are especially important to prevent release of disease agents.

Laboratory and animal wastes are separated into two categories: pathology waste and medical/infectious waste. The NWHC currently relies upon two permitted infectious waste incinerators in the Main Building and the TIB to neutralize pathology waste, most of which originates from NWHC necropsy and research activities. Small quantities of pathology waste are also accepted from the Wisconsin DNR-Wildlife Disease Group and the USFWS-Law Enforcement department. The majority of the medical/infectious waste, consisting of plastics, glass, metals, and other materials, is steam sterilized and not incinerated. Waste consisting of animal carcasses, animal feed, bedding and associated containers is classified as pathology waste and comprises nearly all of the waste that is incinerated. Only pathology/infectious waste is incinerated, and no hazardous waste or recyclable items are accepted for incineration.

Incinerator operation is carried out in accordance with stringent operating policies and procedures and regulatory requirements. Incinerator operation averages approximately 15 to 18 hours per month (depending upon the level of activities) with the highest combined usage in 2021 recorded in March at 23.3 hours. Ash resulting from incineration is collected and transported by a licensed contractor to Dane County's Rodefild Landfill. To document its activities, the NWHC submits an Incinerator Ash Report annually to the Wisconsin DNR (Waste and Materials Management Program) summarizing incinerator ash test results and disposal for the Main Building and TIB incinerators. To date, ash test results are below action limits.

The NWHC's diagnostic necropsy suite also disposes of liquid chemical and biological waste from laboratory decontamination via the wastewater system. Although not a requirement, this wastewater can be treated in a steam-jacketed, batch, effluent decontamination system (EDS) or wastewater treatment system. On January 12, 2019, the EDS experienced weather-related damage from frozen pipes. While the EDS was inoperable, liquid waste containing biological materials was treated with disinfectant for decontamination prior to release to the sanitary sewer system. The EDS was repaired in April 2022, and in May 2022, the USGS was again able to monitor the volume of wastewater reaching the EDS. It was at this time that concerns were raised about underground wastewater piping blockages or degradation between the diagnostic necropsy suite and the wastewater accumulator. Chemical products commonly used in the necropsy suite that may have been released beneath the Main Building during this time included bleach, 70 percent ethanol, 10 percent buffered formalin, 24 percent buffered formalin, and

Unicide (a disinfectant cleaner). USGS closed the necropsy in the Main Building and moved it to the TIB, eliminating any use of the wastewater system until repairs were made in 2023.

To assess the potential for soil contamination around the Main Building and TIB, USGS undertook a Phase II Environmental Assessment (2024). Soil samples were collected and analyzed from 10 probes located around the Main Building and TIB and in the area proposed for NWHC development. Samples were analyzed for volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), organochlorine pesticides, chlorinated herbicides, polychlorinated biphenyls (PCBs), and Resource Conservation and Recovery Act metals.

Laboratory results for samples from the 10 probes indicate low concentrations of metals with chromium and lead below NR 720 Wisconsin Administrative Code (WAC) direct contact or protection of groundwater residual contaminant levels (RCLs). Mercury was detected in 5 of the 10 samples with all detections also below NR 720 WAC direct contact or protection of groundwater RCLs.

Arsenic was detected in 6 of the 10 samples at levels that exceed NR 720 WAC direct contact RCL but below the background threshold value for soils in Wisconsin. Barium was detected in all 10 samples, but only 4 of the 10 samples contained barium concentrations that exceed NR 720 WAC direct contact RCLs. All barium concentrations were below the background threshold value for this metal. Results for PAHs indicate low concentrations in 4 of the 10 samples that do not exceed NR 720 WAC direct contact residual contaminant levels. Laboratory results for chlorinated pesticides and herbicides, VOCs, and PCBs were below laboratory method detection limit for all samples.

Based on the results of the Phase II assessment, the soils analyzed do not warrant remediation or trigger regulatory reporting. In addition, the results do not preclude off-site management of soil or warrant special safety concerns for soil management during construction. The findings would assist USGS with soil management plans as part of the proposed NWHC construction. The Phase II Environmental Assessment report is included as Appendix F.

NWHC operation and maintenance also involves the handling, use, and storage of materials considered hazardous including janitorial supplies, sanitizers, disinfectants, laboratory reagents, and cleaning solvents. All such materials are handled in accordance with applicable operating policies and procedures and regulatory requirements. This includes maintaining an inventory of such materials, designating secure areas for storage, storage in approved containers, proper labeling, training staff in the proper handling and use of such materials, collection by a licensed handler, and disposal at only approved disposal facilities.

3.9.2 Potential Impacts

No Action Alternative

Under the No Action Alternative, the property and structures comprising the NWHC in Madison would be maintained in their current condition. The use, storage, handling, and disposal of hazardous materials would not be affected, pathology waste would continue to be incinerated while medical/infectious waste would continue to be steam sterilized, and mitigation measures would not be necessary.

Preferred Alternative (New NWHC)

- **Construction Phase**

Construction of the new NWHC is expected to involve the storage and use of potentially hazardous materials including solvents, fuels, and lubricants to operate and maintain construction equipment. To avoid potential releases of such materials into the environment, an area(s) would be established for the storage and handling of such substances. Materials would be removed from storage by authorized personnel only, and removals would be recorded by personnel overseeing NWHC construction. If on-site liquid storage is necessary, secondary containment systems would be put in place to reduce the risk of spillage or release. The on-site storage of hazardous materials would be minimized or avoided where

practicable (e.g., construction equipment fuels would be transported to the site by tanker trucks when needed).

Wastes considered hazardous generated during construction (e.g., spent lubricants, etc.) would be handled, stored and disposed of in accordance with applicable regulations. Based on actions of a similar nature and scale, the volume of such wastes resulting from NWHC construction is expected to be small and have no adverse impact on the ability or availability of licensed handlers to collect and properly dispose of such wastes.

- **Operation Phase**

Hazardous Materials. Activities associated with operation of the new NWHC would require the continued storage and use of materials considered hazardous as described earlier and result in the generation of small amounts of regulated wastes. All hazardous materials used during NWHC operation and any resulting wastes would continue to be handled in accordance with stringent operating policies and procedures and regulatory requirements. USGS would continue its current practice of proper management, storage, use, and disposal of hazardous materials and wastes.

As a result, the Preferred Alternative is not expected to result in the release of contaminants into the environment and, therefore no adverse impacts are anticipated. In addition, the volume of hazardous wastes generated during NWHC operation should have no adverse impact on the ability or availability of licensed handlers to continue to collect and properly dispose of such wastes. The NWHC would continue to be classified as a Very Small Quantity Generator of hazardous waste as determined by EPA. No mitigation measures, other than continued adherence to regulations governing the proper management, storage, and disposal of hazardous materials and wastes, would be warranted during the facility's operating phase.

Biological Wastes. The NWHC currently relies upon two permitted incinerators in the Main Building and the TIB to dispose of pathology waste (i.e., animal carcasses, animal feed, bedding, and associated containers). To reduce greenhouse gas emissions and the NWHC's reliance on natural gas, plans for the new NWHC include the use of thermal tissue digesters to dispose of animal carcasses. Thermal tissue digestion uses high temperature, agitation, and addition of a caustic agent to break down and sterilize biological wastes, such as animal tissues and carcasses, so that discharged liquid wastes place low biological oxygen demand on the sewer system. Other solid wastes (i.e., bedding and other debris, and associated containers), would be sterilized by autoclaving.

Based on over 40 years of experience operating the NWHC, no adverse impacts to hazardous waste management infrastructure serving the city and county are expected.

- **Demolition and Removal of Existing NWHC**

The Main Building, constructed in the 1960's, was vacant when acquired by the federal government in 1978 and underwent a renovation in 1982 followed by TIB construction in 1985 and the TIB's later modification in 1989. Given the age of the Main Building, the possibility exists that the structure contains ACM, lead-based paint, and transformer oil containing polychlorinated biphenyls (PCBs).

Asbestos-Containing Materials. Asbestos was discovered to be carcinogenic and therefore, the use of asbestos in building and other materials has been discontinued through various production bans. In 1972, the processing and manufacture of spray-applied insulation and fireproofing containing asbestos was banned and in 1973 the application of asbestos spray-applied insulation and fireproofing was banned. The application of molded and wet-applied asbestos building materials was banned in 1975, in 1976, ACM used for mechanical system insulation was prohibited, and in 1978, all acoustical and decorative applications containing asbestos were banned.

The Main Building was constructed in the 1960s when ACM was commonly in use as a building material. The Occupational Safety and Health Administration requires facilities to presume that any surfacing material and thermal system insulation in buildings constructed before December 31, 1980, contain

asbestos, unless testing or other information demonstrates otherwise. Additionally, any vinyl flooring installed before December 31, 1980, is expected to contain asbestos unless testing or other information demonstrates otherwise.

In 2011, USGS engaged a qualified firm with certified personnel to conduct a survey of the Main Building to determine if ACM is present. With TIB construction in 1985 and its later modification in 1989, a survey for ACM was not necessary. All applicable State of Wisconsin and USEPA regulations were followed in conducting the survey, in the gathering samples of suspected ACM, and in conducting the analysis at an accredited laboratory. The results of the sampling and laboratory analysis revealed the presence of ACM in vinyl coated floor tile located throughout the Necropsy Lab, in the first-floor stair landing, and in vinyl sheet flooring on the first floor.

With limited exceptions, the State of Wisconsin requires all ACM be removed from a building to be demolished or renovated and before any activity takes place that would break up, dislodge, or similarly disturb the material. In addition, a trained individual must be on-site during demolition or renovation activities in the event any ACM becomes damaged or rendered friable with proper abatement measures initiated by trained and certified abatement personnel. Additional requirements pertain to the disposal of ACM wastes. To comply, USGS will ensure that ACM is abated in accordance with state and federal regulations by licensed personnel and that the handling, storage, transport, and final disposal of ACM is carried out in accordance with applicable regulations.

Lead-Based Paint. In 1978, the U.S. Consumer Product Safety Commission lowered the permissible levels of lead contained in paints and prohibited application of lead-based paint on housing constructed or rehabilitated with federal assistance. Paint manufacturers complied by lowering or eliminating lead content from paint products, specifically those sold for residential use. Based on the age of the Main Building (constructed in the 1960s and renovated in 1982) and TIB building (constructed in 1985 and later modified in 1989), the potential exists that lead-based paint is present in one or both buildings. While all observed painted surfaces at the Main Building and TIB were generally in good condition (not peeling or chipping) at the time of various site visits, the presence of lead-based paint can only be confirmed through testing of the painted surfaces. As with ACM, USGS will ensure that any lead-based paint found is abated in accordance with state and federal regulations by licensed personnel and that the handling, storage, transport, and final disposal is carried out in accordance with applicable regulations.

Polychlorinated Biphenyls. PCBs are highly carcinogenic chemical compounds, formerly used in industrial and consumer products, whose production was banned in the U.S. in 1976 by the Toxic Substances Control Act. The USEPA requires building owners/operators to presume that any mineral oil filled electrical equipment manufactured before July 2, 1979, contains PCBs, unless testing or other information demonstrates otherwise. With the Main Building in operation since 1978, USGS requested Madison Gas and Electric, Co. (MG&E), the electricity provider to the NWHC, to inspect and document conditions involving the company's transformers located on the property. The inspection revealed five transformers, a single-phase (18H13-C27), a three-phase (18H13-C28), and three additional transformers (18h13-C41) located in a locked vault in the Main Building.

According to company officials, MG&E has replaced all transformers across its territory originating from the PCB oil era. Nameplates on the transformers also indicate that they were manufactured after the date PCB oil was discontinued, further confirming the absence of PCBs on site. During recent field visits, no leaks or stains were observed in the vicinity of the transformers and as a result, the transformers are not considered an environmental concern.

Other Wastes. Universal waste, consisting of light bulbs, lamps, ballasts, mercury switches, and batteries, are commonly identified in commercial and office buildings. If present at the NWHC, these wastes will be properly identified, disconnected, stored, and disposed of during facility decommissioning and prior to demolition. Any general equipment wastes (e.g., refrigerants, electronics) will also be

addressed by applicable federal/state/county hazardous material programs prior to demolition including the decommissioning and removal of the NWHC incinerators.

3.9.3 Recommended Mitigation

BMPs will be employed during construction to minimize the potential for a spill of hazardous materials such as fuels, oils, or lubricants and immediately respond to a spill if one occurs. These BMPs will include proper storage and handling of hazardous materials in accordance with manufacturer specifications and applicable local, state, and federal regulations. If a spill occurs, it will be contained with booms and/or spill berms, and spill kits, sorbent pads, and/or granular oil sorbents would be used to clean up the spill. Any contaminated soils or materials will be removed and properly disposed of at a licensed disposal facility.

The Phase II assessment found that the soils analyzed do not warrant remediation, trigger regulatory reporting, do not preclude off-site soil management, or warrant special safety concerns for soil management during construction. Nonetheless, construction contractors and their workers will be made aware of areas of the development area that were not assessed. In addition, excavated materials should be monitored for the presence of potentially hazardous waste; buried objects including white goods, tires, railroad ties, drums, etc.; areas of visible ash, coal, or cinders; detectable organic vapors as identified by photoionization detector screening; strong or unusual odors; and unusual soil discoloration.

While asbestos and lead-based paint surveys have been conducted over the years, the USGS will conduct additional comprehensive surveys prior to NWHC demolition to determine the quantities and locations of such materials. The surveys will form the basis for abatement plans to ensure compliance with applicable requirements concerning the identification, abatement, handling, and final disposal of ACM and lead-based paint.

3.9.4 Cumulative Impacts

Construction and operation of the NWHC would require use of hazardous materials, such as solvents, fuels, and lubricants. Demolition of the existing NWHC facilities would generate hazardous wastes such as ACM and lead-based paint. Similar hazardous materials are used and hazardous wastes are generated by other urban land uses and construction projects in the area, both ongoing and planned. Continued handling, storage, and disposal of hazardous materials and wastes in accordance with applicable federal and state regulations would minimize cumulative impacts to the environment.

The Preferred Alternative would improve the way the NWHC treats biological wastes by replacing the existing incinerators with a more efficient batch steam EDS as described above. The NWHC would continue to operate under the public health, safety, and security controls described in Section 1.4, which would minimize risks to USGS personnel, visitors, and members of the public.

3.10 Visual and Aesthetic Resources

3.10.1 Existing Conditions

Aesthetic features of the north-central portion of NWHC property are dominated by the Main Building, TIB, and employee/visitor parking lot, and by the addition of two rows of solar panels which border the parking lot to the north. The portion of the property extending northward to the Beltline Highway is at a slightly higher elevation than the rest of the property and is covered by tall grasses, trees, and dense understory. With the highway located at an elevation below that of the NWHC property, views of the interior of the property from this direction are largely obstructed.

Views of the property from the south are obstructed by a dense stand of trees and other vegetation that extend northward approximately 250 to 300 feet from Schroeder Road. Views from the west along Ellis Potter Court and the length of Forward Drive from Schroeder Road to its terminus near the Beltline Highway are obstructed by the many existing developments including the West Madison Little League baseball fields, Madison Ice Arena, mini-warehouse storage buildings, and several commercial office

buildings which together extend approximately 600 feet westward from the NWHC property boundary to Forward Drive.

Adjacent to the northwest corner of the property is the Channel 15 television studio and its 1,248-foot tall broadcast antenna which towers over the NWHC property and can be seen for many miles in all directions. Adjacent to the southwest corner of the property is a 1.1-acre wooded lot with a residence. The remainder of the property is surrounded in all directions by dense tree stands and understory vegetation which shields from view the NWHC, employee/visitor parking lot, and access driveway and effectively eliminates any direct line of sight (Exhibit 3-6).

A unique landscape feature on the property are the prairie areas; the largest is located south of the NWHC buildings and north of Schroeder Road, and the second is located north of the NWHC buildings and south of the Beltline Highway. Approximately six acres of the property were set aside as prairie and are the centerpiece of an ecological restoration effort that began in 1985. The northern portion of the property is visually isolated from the southern portion by the employee/visitor parking lot, the Main Building and TIB, solar panels, and stands of trees.

Light fixtures are present on the exteriors of the Main Building and TIB and in parking areas on the property. Lighting is oriented downward. The NWHC is located in the urban area of Madison, Wisconsin, and substantial light pollution that obscures views of the night sky is already present in the region.

Security protocols require a chain link fence be maintained along the property's perimeter and that it be accessible for inspection and repair. While the NWHC property is visually screened on all sides from properties outside the site, there is good visibility within the interior portions of the site. Other than the prairie areas, aesthetic features of the property are not unique to the area.

3.10.1 Potential Impacts

No Action Alternative

Under the No Action Alternative, the property and structures comprising the NWHC in Madison would remain in their current condition, visual resources and aesthetic features would be unaffected, and mitigation measures would not be necessary.

Preferred Alternative (New NWHC)

Development of the new NWHC would result in changes to the aesthetic and visual conditions of the property. Potential impacts could arise as described below.

- **Construction Phase**

Immediately following contractor mobilization and throughout the construction phase, conditions within the central portion of the property would be disrupted. The visual and aesthetic characteristics of this area (i.e., construction zone) would be altered by installation of temporary construction trailers, the use of equipment involved in preparing the area for development (i.e., ground clearing, grading, excavating, etc.), the delivery and stockpiling of construction materials and equipment, and construction of the new NWHC building, internal access drives and parking areas, and similar activities. The duration of such impacts would extend for the period of time devoted to construction which is estimated at approximately 36 months and beginning in the spring of 2025.

By maintaining the vegetative buffers that surround the property and limiting construction activities to the central portion of the property, development of the new NWHC would largely be screened from views located adjacent to and in the vicinity of the property. The southern portion of the property containing the access drive from Schroeder Road and stands of trees would be largely unaffected as no development is planned within this area.

Exhibit 3-6: Representative Views of NWHC

		
<p>View of Main Building towards south.</p>	<p>View of Main Building towards south.</p>	<p>View of TIB (background) and parking lot (foreground).</p>
		
<p>NWHC entrance drive northward from Schroeder Road.</p>	<p>NWHC access driveway from Schroeder Road entrance.</p>	<p>Garage/service building located west of parking lot.</p>
		
<p>Shipping containers and metal building used for storage located at Garage.</p>	<p>NWHC employee/visitor parking lot.</p>	<p>Incinerators located at Main Building (left) and TIB (right).</p>

Source: WSP 2022

Exhibit 3-6: Representative Views of NWHC (Continued)

		
<p>Channel 15 broadcast antenna overlooking NWHC property.</p>	<p>One of two outdoor cooling towers located east of Main Building.</p>	<p>View of solar panels located along northern border of parking lot.</p>
		
<p>Emergency generator located at TIB.</p>	<p>Kiosk located at prairie area south of Main Building.</p>	<p>Forest and understory towards northeast from interior of site (typical).</p>
		
<p>Separate storage containers for solid wastes and recyclables at parking lot.</p>	<p>View of trail through south prairie area.</p>	<p>Representative view of south prairie area towards southwest.</p>

Source: WSP 2022

The prairie areas are important biological and aesthetic features within the NWHC property which would remain as part of the proposed development plan. Over time, the widespread growth of invasive species within and around the prairie areas has effectively reduced their ecological value. While the Preferred Alternative includes permanent development of approximately 0.60 acres (26,336 square feet) of the south prairie area, the majority of the south prairie area, including areas used for the geothermal system, would be replaced and rehabilitated during construction to remove invasive species and reestablish native prairie plant communities. The proposed geothermal system would be underground and would not be visible.

Following occupancy of the new NWHC, the existing facility would be decommissioned and demolished. Building materials and other demolition debris would be transported to an approved recycling and/or construction and demolition waste disposal facilities (depending upon the materials). The duration of demolition and restoration of the former building locations with grassed lawns is estimated at approximately three to six months. No additional visual and aesthetic impacts are anticipated once new NWHC construction is completed.

- **Operation Phase**

The Preferred Alternative would result in visual changes to the property with the new NWHC building, tree stands, and prairie areas continuing as the dominant visual features of the property's interior landscape as the current NWHC, tree stands, and prairie areas are today. However, the new NWHC would be a substantial visual upgrade over the current NWHC.

Envisioned as a low-rise structure (three stories or approximately 56 feet in height with a basement), the new NWHC would be designed to be functional and attractive. The arrangement of a single new contemporary structure, adjoining employee and visitor parking areas, and grounds would represent a high quality and visually unified architectural composition compatible with its surroundings in terms of site arrangements, building mass, and exterior building (façade) materials. Internal driveways, parking areas, and pedestrian walkways would also be designed and constructed to a high standard. Conceptual renderings are provided in Exhibit 3-7 with additional renderings provided in Appendix C.

After construction is completed, the visual and aesthetic characteristics of the central portion of the property would be changed; from a developed area with the current facility and parking lot to a developed area with the modern new NWHC facility, solar PV systems, and parking lots. Under the proposed development plan, the majority of the south prairie area would be rehabilitated while the tree stands which surround the property and effectively eliminate direct line of sight would be largely unaffected.

The stand of trees found along the eastern property boundary provides an approximately 50 to 75-foot buffer between the current NWHC and the adjoining residential development, helping shield views to/from the current facility. Conceptual plans for the new NWHC place the new structure approximately 150 to 200 feet from the eastern property boundary, substantially increasing the space between the two developments. With a high quality building design and exterior façade, together with the forested area located along the property's eastern border continuing to provide near complete obstruction, adverse visual impacts would be avoided.

The night sky is also an important component of the visual and aesthetic environment with lighting fixtures used to illuminate the NWHC, parking lots, driveways, and walkways during evening hours having potential for negative impacts. While the lighting plan has not been developed, the plan is expected to include measures to limit unwanted light using fixtures that conceal the light source above the rim of the fixture providing maximum downlighting while minimizing upward dispersal of light to the night-time sky.

Light emitting diode (LED) fixtures mounted on metal poles are gaining increased use as state-of-the-art, energy-efficient illumination by reducing light spread than other fixtures, resulting in lower ambient light pollution levels. To limit potential lighting impacts, USGS would review the proposed lighting plan to ensure selection of fixtures and their locations provide the necessary illumination where needed while being energy efficient and minimizing potential adverse impacts.



Source: USGS 2024c

Exhibit 3-7: Conceptual Renderings of New NWHC



Source: USGS 2024c

Exhibit 3-7: Conceptual Renderings of New NWHC

3.10.2 Recommended Mitigation

Visual impacts would be further minimized by implementing high quality and contemporary design features that are sensitive to the visual resources within and around the property. These features include a low-rise development that rehabilitates and restores the prairie areas and maintains the undeveloped buffer land and tree stands that surround the property. Taken together, views of the new NWHC from public roadways and adjoining properties would reveal a substantial improvement over current conditions. No other mitigation measures are warranted.

3.10.3 Cumulative Impacts

As noted above, visual changes on the NWHC property would largely be screened in views from Schroeder Road and adjoining properties by existing vegetation. Construction could result in temporary cumulative impacts to visual and aesthetic resources in the immediate area, if construction under the Preferred Alternative overlaps with proposed construction of multi-family housing on Ellis Potter Court adjacent to the southwestern corner of the NWHC property. Cumulative visual impacts during construction would cease once construction is completed.

The new NWHC and adjoining employee and visitor parking areas, and grounds would represent a high quality and visually unified architectural composition compatible with their surroundings in terms of site arrangements, building mass, and exterior building (façade) materials. Similarly, the proposed multi-family housing would replace an existing older office building with new housing and may improve the appearance of the property. Based on the above, the Preferred Alternative would contribute to cumulative impacts to visual and aesthetic resources during construction; however, long-term cumulative changes to aesthetic resources are expected to be beneficial.

3.11 Demographic Characteristics

3.11.1 Existing Conditions

To assess the potential effects of the Preferred Alternative, the demographic characteristics of the host area are established and potential impacts are then identified and analyzed. Adverse impacts could result if an action would substantially alter the location, composition and distribution of the population or segment of the population within a given geographic area or cause the population to increase or decrease beyond traditional historical rates. The study areas selected for analysis comprise the City of Madison, within which the existing NWHC is located, and Dane County.

Population Trends

Dane County has experienced steady population growth, increasing 14.0 percent between 2000 and 2010 and 11.1 percent between 2010 and 2020 (Table 3-1). According to projections developed by the University of Wisconsin-Madison Applied Population Laboratory, the populations of Madison and Dane County are expected to continue growing with the county's population increasing from 542,459 in 2020 to 606,620 in 2040 (11.8 percent). According to the same source, the population of Madison is also expected to continue growing with projections showing the city's population increasing from 258,366 in 2020 to 281,150 in 2040 (8.8 percent).

Table 3-1: Population Trends

Jurisdiction	2000	2010	% Change	2020	% Change
City of Madison	208,054	233,209	12.09%	258,366	10.8%
Dane County	426,526	488,073	14.4%	542,459	11.1%

Source: U.S. Census 2000, 2010a, 2010b

Population Characteristics

Of Dane County's 2020 population, approximately 272,699 (50.3 percent) were female and 269,760 (49.7 percent) were male while the City of Madison recorded approximately 130,484 (50.5 percent) females and 127,882 (49.5 percent) males (Table 3-2). Racial characteristics of the county and city's populations are discussed in Section 3.13.2.

Table 3-2: Population Characteristics

Category	Dane County		City of Madison	
	Total	% of Total	Total	% of Total
Population	542,459	100%	258,366	100%
Male	269,760	49.7%	127,882	49.5%
Female	272,699	50.3%	130,484	50.5%

Source: U.S. Census 2020b, 2020i, 2020j

U.S. Census data for 2020 indicates that 30,340 persons (5.6 percent) in Dane County were under the age of five; 29,887 (5.5 percent) ranged between five and nine years of age; 67,535 (12.4 percent) were between 10 and 19 years; 100,969 (18.6 percent) were between 20 and 29 years; 79,633 (14.7 percent) were between 30 and 39 years of age; 64,618 (11.9 percent) were between 40 and 49 years of age; 65,707 (12.1 percent) were between 50 and 59 years of age; 55,992 (10.3 percent) were between 60 and 69 years of age; 30,875 (5.8 percent) were between 70 and 79 years of age; and 16,903 (3.1 percent) were over the age of 80 (Table 3-3).

Table 3-3: Age Characteristics

Age Group (years)	Dane County		City of Madison	
	Total	% of Total	Total	% of Total
All	542,459	100%	258,366	100%
< 5	30,340	5.6%	12,849	5.0%
5 to 9	29,887	5.5%	11,597	4.5%
10 to 19	67,535	12.4%	29,847	11.6%
20 to 29	100,969	18.6%	68,724	26.6%
30 to 39	79,633	14.7%	40,305	15.6%
40 to 49	64,618	11.9%	26,555	10.3%
50 to 59	65,707	12.1%	25,687	9.9%
60 to 69	55,992	10.3%	22,319	8.6%
70 to 79	30,875	5.8%	13,211	5.1%
80+	16,903	3.1%	7,272	2.8%

Source: U.S. Census 2020b

The age breakdown for residents of Madison are similar to that for Dane County with 12,849 persons (5.0 percent) under the age of five; 11,597 (4.5 percent) ranged between five and nine years of age; 29,847 (11.6 percent) ranged between 10 and 19 years; 68,724 (26.6 percent) ranged between 20 and 29 years;

40,305 (15.6 percent) were between 30 and 39 years of age; 26,555 (10.3 percent) were between 40 and 49 years of age; 25,687 (9.9 percent) were between 50 and 59 years of age; 22,319 (8.6 percent) were between 60 and 69 years of age; 13,211 (5.1 percent) were between 70 and 79 years of age; and 7,272 (2.8 percent) were over the age of 80.

Approximately 14.0 percent of persons 25 years of age or older residing in Madison had a high school diploma in 2020, slightly less than in Dane County where approximately 17.3 percent of the population 25 or older had a high school diploma. Of those 25 years and older residing in Madison, approximately 58.4 percent had a bachelor's degree or higher and higher than the 52.4 percent recorded for Dane County (Table 3-4).

Table 3-4: Educational Attainment

Category	Dane County		City of Madison	
	Total	% of Total	Total	% of Total
Population 25 years and older	358,479	100%	162,679	100%
Did not graduate	13,670	3.8%	6,610	4.1%
High School graduate	61,911	17.3%	22,701	14.0%
Some college (no degree)	59,995	16.7%	25,556	15.7%
Associates degree	34,976	9.8%	12,618	7.8%
Bachelor's degree	112,116	31.3%	52,572	32.2%
Graduate or professional degree	75,811	21.1%	42,622	26.2%

Source: U.S. Census, 2020c

According to the U.S. Census, Dane County recorded a median household income of \$75,179 in 2020 which is 18.8 percent higher than the State of Wisconsin (\$63,293) and 15.7 percent higher than the median household income for the U.S. (\$64,994). The U.S. Census recorded per capita income of \$41,755 in 2020 which is 21.2 percent higher than the State of Wisconsin (\$34,450) and 18.0 percent higher than the U.S. (\$35,384).

For the City of Madison, the U.S. Census recorded a median household income of \$67,565 in 2020 which is 6.7 percent higher than that for the State of Wisconsin (\$63,293) and 4.0 percent higher than the median household income for the U.S. (\$64,994). The U.S. Census also recorded per capita income of \$39,595 for city residents in 2020 which is 15.0 percent higher than that for the State of Wisconsin (\$34,450) and 11.9 percent higher than the per capita income for the U.S. (\$35,384).

Approximately 9.6 percent of Dane County's population is living below the poverty line which is comparable to the State of Wisconsin (10.0 percent) and less than the U.S. (12.8 percent). For the City of Madison, the number of persons living below the poverty line is 16.4 percent, considerably higher than Dane County, the State of Wisconsin, and the U.S.

3.11.2 Potential Impacts

No Action Alternative

Under the No Action Alternative, the property and structures comprising the NWHC in Madison would remain in their current condition, the demographic composition of the City of Madison and Dane County would be unaffected, and mitigation measures would not be necessary.

Preferred Alternative (New NWHC)

Development of the new NWHC has the potential to attract temporary and permanent residents to the City of Madison, Dane County, and the south-central region of Wisconsin. A temporary increase in population during the construction phase is possible and is dependent upon the duration of construction, the number of construction jobs created, and the ability of the local labor market to fill those positions. A permanent increase in population during the operation phase is dependent upon whether a change in staff (increase or decrease) will be necessary to carry out the mission and function of the new NWHC and whether the local labor market can fill any new positions.

- **Direct Population Impacts During Construction**

With both a large population base (542,459 residents) and a large construction workforce (14,250 workers) available in Dane County and even greater numbers within south and central Wisconsin, most construction jobs are expected to be filled by residents of the surrounding region. Depending upon the selected contractors however, a small number of managerial and supervisory positions may be filled by individuals from outside the region. Any managerial and supervisory personnel assigned by the construction contractors to oversee development would be expected to relocate in and around Dane County. Persons filling these temporary positions are not expected to relocate permanently because of the limited duration of construction (estimated at 36 months, beginning in the spring of 2025). Given the nature and role of the managerial and supervisory positions, these individuals are typically transferred to subsequent locations following completion of construction and, as a result, employees and their family members are less likely to permanently relocate to each new project site.

During construction, a small contingent of USGS and/or other contractor staff may also be assigned to observe and monitor the development, meet periodically with construction contractors, review construction progress, process payments, and carry out other administration functions. Following completion of construction, these employees would be assigned to other locations or return to their original offices. Given that, population impacts directly attributable to the NWHC construction phase would be temporary and minimal.

With construction confined to the NWHC property in Madison, no sensitive population groups (e.g., children, minorities, low income, seniors) would be displaced, relocated or otherwise adversely affected during this phase. Instead, NWHC construction is expected to support population retention based on the increased economic activity and construction employment opportunities. Taken together, population impacts directly attributable to NWHC construction would be minimal.

- **Induced Population Impacts During Construction**

NWHC construction is expected to lead to the creation of employment from both the direct hiring of construction workers along with the spin-off ("multiplier effects") of construction payrolls and material and supply purchases and lasting for the duration of construction. A review of recent city and county census data concerning working age populations, labor force participation, unemployment rates, and educational attainment has revealed a labor pool within Dane County sufficient to support this demand with any resulting induced population impacts expected to benefit the region as a whole.

- **Direct Population Impacts During the Operation Phase**

Once construction is completed, the approximately 122 staff assigned to the NWHC will be transferred to the new NWHC. With no change (increase or decrease) in the projected number of staff employed at the NWHC, no direct or induced population impacts are expected although continuation of NWHC employment in Madison and Dane County is expected to aid with population retention. A review of recent census data concerning working age populations, labor forces, unemployment rates, and educational attainment revealed that there is an adequate labor pool within Dane County and south-central Wisconsin to maintain that level of staff to the benefit of the region.

3.11.3 Recommended Mitigation

With construction projected to begin in the spring of 2025 and last approximately 36 months, permanent population impacts attributable to new NWHC development would be minimal, and no mitigation is warranted. Following construction, existing staff will be transferred to the new NWHC at which time the existing facility will cease functioning and be demolished. With no direct or induced population impacts expected as a result of implementation of the Preferred Alternative, no mitigation measures are warranted.

3.11.4 Cumulative Impacts

The geographic study area for cumulative impacts to demographic characteristics includes Dane County and the City of Madison. As noted in Section 3.11.1, the populations of the county and city are projected to continue to grow between 2020 and 2040, by 11.8 percent and 8.8 percent, respectively.

Implementation of the Preferred Alternative may cause population changes during construction as members of the construction workforce temporarily relocate to the area. The Preferred Alternative does not include permanent staff changes at the NWHC; however, staff changes over time could result in a small number of individuals and families relocating into or out of the county. Overall, the Preferred Alternative's contribution to population changes would be minimal and would not be expected to contribute substantially to cumulative impacts.

3.12 Economic Characteristics

3.12.1 Existing Conditions

According to 2020 U.S. Census, the civilian labor force (age 16 years and over) residing in the City of Madison totaled 220,845 individuals while the civilian labor force in Dane County totaled 318,152 (Table 3-5). The unemployment rate in the city in 2020 was 2.8 percent compared to 2.5 percent in the county.

According to U.S. Census, the largest percentage of those employed in Madison have jobs in the educational services, health care and social assistance sector (31.8 percent) followed by the professional, scientific, and management, and administrative and waste management services sector (14.9 percent), and the arts, entertainment, and recreation, and accommodation and food services sector (10.0 percent). Approximately 4,475 individuals or 2.9 percent of the city's working population, are engaged in the construction sector.

Table 3-5: Labor Force Data

Category	Dane County	City of Madison
Civilian labor force	317,520	158,042
Employed	309,685	153,579
Unemployed	7,835	4,463
Percent Unemployed	2.5%	2.8%

Source: U.S. Census 2020d, 2020g, 2020h

As shown in Table 3-6, employment is similar for Dane County where the largest percentage of those employed had jobs in the educational services, health care and social assistance sector (28.5 percent) followed by the professional, scientific, and management, and administrative and waste management services sector (14.1 percent), and the manufacturing sector (9.0 percent). Approximately 14,250 individuals or 4.8 percent of the county's working population, are engaged in the construction sector.

Table 3-6: Principal Employment Sectors

Category	City of Madison		Dane County	
	Total	% of Total	Total	% of Total
Civilian employed population 16 years and over	153,579	100%	309,685	100%
Agriculture, forestry, fishing and hunting, and mining	646	0.4%	3,207	1.0%
Construction	4,475	2.9%	14,250	4.8%
Manufacturing	12,198	7.9%	27,717	9.0%
Wholesale trade	2,141	1.4%	6,252	2.0%
Retail trade	13,650	8.8%	29,045	9.4%
Transportation and warehousing, and utilities	3,822	2.5%	9,729	3.1%
Information	5,062	3.3%	9,452	3.1%
Finance and insurance, and real estate and rental and leasing	10,974	7.1%	24,452	7.9%
Professional, scientific, management, administrative and waste management services	22,824	14.9%	43,723	14.1%
Educational services, and health care and social assistance	48,784	31.8%	88,383	28.5%
Arts, entertainment, and recreation, and accommodation and food services	15,300	10.0%	25,214	8.1%
Other services, except public administration	6,166	4.0%	12,908	4.2%
Public administration	7,717	5.0%	15,353	5.0%

Source: U.S. Census 2020d

The NWHC has a current annual operating budget of approximately \$14 million (2023 dollars) of which approximately \$9.1 million represents the annual payroll. Take home wages constitute approximately 70 percent of the annual payroll, with deductions for federal, state and local taxes, social security, as well as other employee benefits. Annual expenditures totaling approximately \$4.9 million are allocated to supplies, equipment, utilities, and other goods and services necessary for NWHC operation and maintenance.

3.12.2 Potential Impacts

No Action Alternative

Under the No Action Alternative, the property and structures comprising the NWHC in Madison would remain in their current condition, there would be no change to the economies of the City of Madison and Dane County, and mitigation measures would not be necessary.

Preferred Alternative (New NWHC)

Development of the new NWHC has the potential to stimulate the local and regional economy during both the construction and operation phases. Economic impacts would result from material purchases in the region generating local sales, from construction and operation payrolls for on- and off-site labor, and from related spending by supplying firms and laborers ("multiplier effects"). The economic impacts associated

with the construction phase would occur for only the period of time while construction is underway, while economic activity generated during the operation phase would continue throughout the life of the new facility. Three types of economic impacts could result from the Preferred Alternative:

- **Direct Impact.** A direct impact is defined as the initial change in demand for materials and labor in the region. The direct impact to the region due to the construction or operation and maintenance is attributable to the local purchase of needed materials and services and the expenditure of payroll by construction workers or the permanent NWHC workforce.
- **Indirect Impact.** Direct expenditures prompt further “indirect” economic activity by industries that furnish materials and services to the businesses directly involved in construction or the vendors supplying goods and services to the facility during operation. These indirect impacts reflect the intermediate production or increased economic activity to supply services, materials, and equipment necessary to support NWHC construction and operation.
- **Induced Impact.** Construction and operating labor forces would re-spend a portion of their salary and wage earnings on various consumer expenditures, producing an “induced” effect. The induced impact is the effect of increased consumer spending by salary and wage earners in the study area. The induced impact is conservatively estimated downward by accounting for potential “leakages” due to taxation, savings, and non-local spending.

The successive rounds of economic activity stimulated by the expenditures during NWHC construction is the “multiplier effect” and can account for a large portion of the total regional economic impact of the Preferred Alternative. Together, the indirect and induced impacts constitute the multiplier effect – the extent to which the direct impact results in additional economic activity. For example, a multiplier of 1.50 indicates that for every \$1.00 of direct expenditures, an additional \$0.50 of ripple effects are experienced within the surrounding region, for a total impact of \$1.50.

Much of the economic impacts associated with NWHC construction and operation would occur primarily within Dane County, since most workers are anticipated to be drawn from Dane County and commute to the facility. Based on U.S. Census Bureau data for 2020, there were 14,250 workers employed in the construction sector and residing within Dane County of which 4,475 were residents of the City of Madison.

Construction Phase

Construction expenditures can be divided into three major components: payroll; materials and services; and contingency, taxes and profits. In determining the potential economic impacts of NWHC construction, a budget of approximately \$125 to \$150 million is anticipated to be expended over a 36-month period. Based on construction projects of a comparable scale, that budget is divided between labor payroll at 43 percent, materials and services at 52 percent, and contingency, indirect business taxes, and profits at five percent.

Assuming average annual wages and benefits of \$100,000 for each member of the construction workforce, development of the NWHC is estimated to directly support approximately 537 total man-years of labor or 179 construction-related jobs annually over a 36-month period. The new NWHC is also estimated to generate total industry sales for construction materials, subcontractors, and other goods and services of approximately \$65 to \$78 million with an additional \$6.25 to \$7.5 million devoted to contingency, indirect business taxes, and profits (2023 dollars).

Operation Phase

Once construction is completed and the new NWHC is commissioned, staff will transfer to the new NWHC after which the existing facility will be decommissioned and demolished. In the absence of any change (increase or decrease) in the number of NWHC employees, no impacts are anticipated although the

continuation of NWHC employment in Madison and Dane County is expected to aid with population retention.

Potential impacts on the local economy during NWHC operation are the result of the continuation of annual direct labor payments (i.e., wages and salaries) to staff as well as annual expenditures for materials, services, utilities, supplies, and other requirements. Estimates of the operating employment and output have been made based on USGS projections for operation of the new NWHC:

- An annual operating budget of approximately \$13.5 million (2023 dollars);
- An annual payroll of approximately \$8.6 million (2023 dollars). Take home wages would constitute approximately 64 percent of the total payroll, with deductions for federal, state and local taxes, social security, as well as other employee benefits; and
- Annual expenditures totaling approximately \$4.9 million (2023 dollars) for supplies, equipment, utilities, and other goods and services necessary for operation and maintenance.

Annual NWHC operation and maintenance will directly support the continued employment of the approximately 122 NWHC staff while injecting over \$13.5 million annually into the local economy for materials, supplies, and services. Local multiplier effects associated with these direct expenditures are expected to continue supporting additional local sales each year, indirectly supporting additional private-sector employment.

In assessing the economic impacts associated with development of the new NWHC, attention was given to local employment and economic goals and objectives. Doing so reveals an action consistent and compatible with goals and objectives as expressed by community leaders representing the City of Madison and Dane County. Development of the new NWHC would also be consistent with the goals of local planning and economic development officials to maintain current and potentially grow employment in the life sciences sector, maintain current levels of economic activity while potentially stimulating new economic activities, and to direct such activities toward areas served by or near existing infrastructure.

3.12.3 Recommended Mitigation

In the absence of adverse impacts, no mitigation measures are warranted.

3.12.4 Cumulative Impacts

The geographic study area for cumulative impacts to the local and regional economy is Dane County. As discussed above, construction of the new NWHC would result in temporary beneficial economic effects. Continued operation of the NWHC in Madison over the long-term would directly support the continued employment of the approximately 122 NWHC staff while injecting over \$13.5 million annually into the local economy for materials, supplies, and services. Local multiplier effects associated with these direct expenditures are expected to continue indirectly supporting additional private-sector employment. Based on the above, the Preferred Alternative would contribute beneficial effects to the local and regional economy.

3.13 Housing Characteristics

Impacts to local and regional housing markets could be expected if an action would substantially alter the supply of housing, either by reducing the number of housing units or increasing the population above the capacity of the available housing stock. The study area for housing is the City of Madison and Dane County.

3.13.1 Existing Conditions

According to the U.S. Census there were 236,202 housing units in Dane County in 2020 and of this total, approximately 226,518 units (95.9 percent) were occupied and 9,684 units (4.1 percent) were vacant

(Table 3-7). Of the occupied units, approximately 133,784 (59.0 percent) were owner-occupied and 92,969 (41.0 percent) were renter occupied. The median value of housing units in Dane County in 2020 was estimated to be \$277,000 and the median monthly gross rent (with utilities) was estimated to be \$1,118. Median home value in Dane County is above that for the State of Wisconsin at \$189,200 and the U.S. at \$229,800.

Table 3-7: Housing Characteristics

Category	Dane County		City of Madison	
	Total	% of Total	Total	% of Total
Housing Units (total)	236,202	100%	116,810	100%
Occupied Units	226,518	95.9%	111,787	95.7%
Vacant Units	9,684	4.1%	5,023	4.3%
Owner-Occupied Units	133,784	59.0%	55,718	47.7%
Renter-Occupied Units	92,969	41.0%	61,092	52.3%
Median Monthly Gross Rent*	\$1,118	-	\$1,147	-
Median Value**	\$277,000	-	\$262,400	-

Source: U.S. Census 2020e

*Renter-Occupied Units

** Owner-Occupied Units

In the City of Madison, there were a total of 116,810 housing units of which 111,787 (95.7 percent) were occupied and 5,023 (4.3 percent) were vacant. Of the occupied units in Madison, approximately 53,826 (47.7 percent) were owner-occupied and 58,312 (52.3 percent) were renter occupied. In the city, the median value of individual housing units in 2020 was estimated to be \$262,400 and the median monthly gross rent (with utilities) was estimated to be \$1,147. This compares favorably with Dane County which has a median home value of \$277,000 and above that for the State of Wisconsin at \$189,200.

Approximately 52.6 percent of the housing units in Dane County were single-family detached units while the City of Madison has a lower (42.2 percent) percentage of single-family detached units (Table 3-8). The highest percentage of housing with two or more units was found in the City of Madison.

Table 3-8: Units in Structures

Units in Structure	Dane County		City of Madison	
	Total	% of Total	Total	% of Total
Total Housing Units	236,202	100%	116,810	100%
Single-Family Detached	124,242	52.6%	49,294	42.2%
Duplex	15,353	6.5%	5,724	4.9%
2 Units	8,976	3.8%	5,373	4.6%
3 or 4 Units	13,227	5.6%	8,294	7.1%
5 to 9 Units	13,700	5.8%	8,410	7.2%
10 to 19 Units	14,881	6.3%	9,111	7.8%

Units in Structure	Dane County		City of Madison	
	Total	% of Total	Total	% of Total
20 to More Units	43,697	18.5%	29,903	25.6%
Mobile Home	2,126	0.9%	701	0.6%

Source: U.S. Census 2020f

3.13.2 Potential Impacts

No Action Alternative

Under the No Action Alternative, the property and structures comprising the NWHC in Madison would remain in their current condition, the supply, availability, and cost of housing in the local and regional housing markets would be unaffected, and mitigation would not be necessary.

Preferred Alternative (New NWHC)

- **Construction Phase**

The new NWHC has the potential to attract workers to the City of Madison, Dane County, and the south-central region of Wisconsin to participate in its construction. An increase (temporary) in employment, and the resulting demand for housing, during the construction phase is possible and is dependent upon the duration of construction, the number of construction jobs created, and the ability of the local labor market to fill those positions.

As described earlier, construction of the new NWHC is estimated to directly support approximately 179 construction-related jobs annually over a 36-month period. With a large population base (542,459 residents) and a large construction workforce (14,250 workers) available in Dane County and greater numbers within south and central Wisconsin, most construction jobs are expected to be filled by workers already residing in the City of Madison, Dane County, and/or south-central Wisconsin who would commute to the facility from their current place of residence.

While the majority of the construction workforce will be involved in various trades, a small number of managerial and supervisory personnel is expected to be assigned by contractors to oversee construction. Depending upon the contractors selected and their methods for overseeing construction, this portion of the workforce could relocate to work at the NWHC site. Because of the limited period devoted to construction (36 months), persons filling these positions would be unlikely to permanently relocate to the area. The individuals in these positions are typically transferred to fill managerial and supervisory roles on subsequent projects elsewhere following completion of construction and as a result, they and their family members are unlikely to permanently relocate to each new location.

A small contingent of staff working on behalf of USGS is also expected to be on-site to observe and monitor development, periodically meet with contractors, review construction progress, process payments, and conduct other construction administration functions. They too are unlikely to relocate permanently because of the limited period devoted to construction. Following completion of construction, these employees would be assigned to other locations or return to their original offices.

According to the 2020 U.S. Census, there were 9,684 total vacant housing units in Dane County with 5,023 of the vacant units in the City of Madison alone. Given the number of vacant housing units in Dane County in addition to those in the surrounding region, the available supply of vacant housing should easily accommodate any temporary demands from the NWHC construction workforce without adverse impacts.

Housing impacts directly attributable to NWHC construction would be temporary and minimal, having no lasting impacts on the supply, availability, and cost of housing in the region. In addition, with construction confined to the NWHC property in Madison, there is no need to vacate, demolish, or otherwise alter any

existing housing units to accommodate new NWHC development. No existing housing units would be displaced, relocated or otherwise adversely affected during this phase.

- **Operation Phase**

Any changes to the demand for housing during the operating phase is dependent upon the number of staff needed to carry out the mission of the new NWHC and whether the local labor market can fill these positions. Once construction is completed, the current staff of approximately 122 employees will be transferred to the new NWHC with no change (increase or decrease) in the number of staff needed to operate and maintain the new NWHC. Current NWHC employees are already residents of the City of Madison, Dane County, and/or south-central Wisconsin and with the new NWHC to be developed at the same location as the current NWHC, staff relocations will not be required or expected.

With no change in the number of staff, the new NWHC remaining at its current location, and the large number of available housing units in Madison and Dane County, no adverse impacts to the availability, supply, and cost of housing in the region are anticipated from implementation of the Preferred Alternative. As noted earlier, there is also no need to vacate, demolish, or otherwise alter any existing housing units to accommodate the new NWHC.

3.13.3 Recommended Mitigation

In the absence of adverse impacts, no mitigation measures are warranted.

3.13.4 Cumulative Impacts

The geographic study area for potential impacts to housing includes Dane County and the City of Madison. Based on the above, housing impacts during construction would be temporary and minimal, and because no changes are planned in the number of permanent staff employed at the NWHC, no adverse impacts to the availability, supply, and cost of housing in the region are anticipated as a result of the Preferred Alternative. Staff changes could occur in the long-term during operation of the NWHC; however, these changes would fall within background variations in the region's population and would not result in notable effects on housing. Therefore, the Preferred Alternative would not substantially contribute to cumulative impacts on housing.

3.14 Environmental Justice

The USEPA defines environmental justice as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies” (USEPA 2022a). EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, issued in 1994 by President Clinton, directs federal agencies to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, or activities on minority or low-income populations.

The sections presented below outline the methodology used for the stakeholder mapping component of this report, the identification of the socioeconomic makeup of the communities within the study area, and the identification of environmental justice populations within the study area.

3.14.1 Methodology

The potential for the Proposed Action and alternatives to result in disproportionately high and adverse effects on minority or low-income populations has been assessed following recommendations made in the 2016 report, Promising Practices for EJ Methodologies in NEPA Reviews (Federal Interagency Working Group on Environmental Justice & NEPA Committee 2016). Existing conditions and potential effects on American Indian Tribes and Tribal cultural resources are discussed in Section 3.8.

The USGS assessed potential environmental justice effects within the study area, which generally follows the boundaries of the City of Madison's Southwest Neighborhood planning area (City of Madison DPCED 2008). The study area includes block groups 1, 2, 3, and 4 in Census Tract 4.07; block groups 1 and 2 in Census Tract 4.08; and block group 4 in Census Tract 5.01 (Exhibit 3-8). A small part of the planning area west of McKenna Boulevard and north of Elver Park falls within Census Tract 4.09. This area was not included in the study area due to its distance from the NWHC site, and the study area was limited to block groups located entirely within the planning area.

Within the study area, data for minority and low-income populations were collected at the block group level and compared to data for the reference geography, the City of Madison, to determine minority or low-income in the study area that may have environmental justice concerns. The reference community is a larger geographic unit or population that is used as a point of comparison to identify minority or low-income communities in the geographic unit of analysis (study area). When addressing the issue of environmental justice, low-income and minority populations that meet certain thresholds relative to the reference community are considered environmental justice communities that may be disproportionately affected by the Proposed Action and alternatives.

Data from the U.S. Census Bureau were used to define minority and low-income populations. Minority populations were defined based on 2020 decennial census data. For the purposes of this analysis, minorities are defined as individuals who identify themselves as one or more of the following races or ethnicities: Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian, or Hispanic or Latino.

Minority environmental justice communities were identified using both the 50 percent and "meaningfully greater" analyses. If the aggregate minority population (including all minority and Hispanic or Latino individuals) in a block group exceeded 50 percent of the total population, an environmental justice community was identified in that block group. When the majority of the population in a given geographic area identifies as a race other than white or as Hispanic or Latino, that population is classified as a "majority-minority" population. Separately, the "meaningfully greater" analysis requires use of a reasonable, subjective threshold (e.g., 5 percent or 10 percent greater than the reference community). What constitutes "meaningfully greater" varies by agency. For this analysis, "meaningfully greater" is defined as a minority population that exceeds the minority population in the reference community (i.e., the City of Madison) by more than 5 percent. This threshold is large enough to take into account natural variations in demographic populations within a community.

Data from the U.S. Census Bureau's (2021) American Community Survey 5-year estimates were used to identify low-income populations. Low-income populations are defined using the percent of all individuals for whom poverty status has been determined, as defined by the U.S. Census Bureau, for each specific geographic area. Poverty status is a measure of an individual or household's financial ability to meet basic living needs. Poverty status is calculated by the U.S. Census Bureau and varies based on the number of individuals in a household.

Data from the U.S. Census Bureau's (2021) American Community Survey 5-year estimates were used to identify low-income populations. Low-income populations are defined using the percent of all individuals for whom poverty status has been determined, as defined by the U.S. Census Bureau, for each specific geographic area. Poverty status is a measure of an individual or household's financial ability to meet basic living needs. Poverty status is calculated by the U.S. Census Bureau and varies based on the number of individuals in a household.

In 2020, the poverty line ranged from \$13,171 for a single individual to \$50,035 for a family of nine or more (U.S. Census Bureau 2020). Low-income environmental justice communities were identified by comparing the percentage of individuals with incomes below the poverty level in the study area to the percentage of individuals with incomes below the poverty level in the City of Madison. American

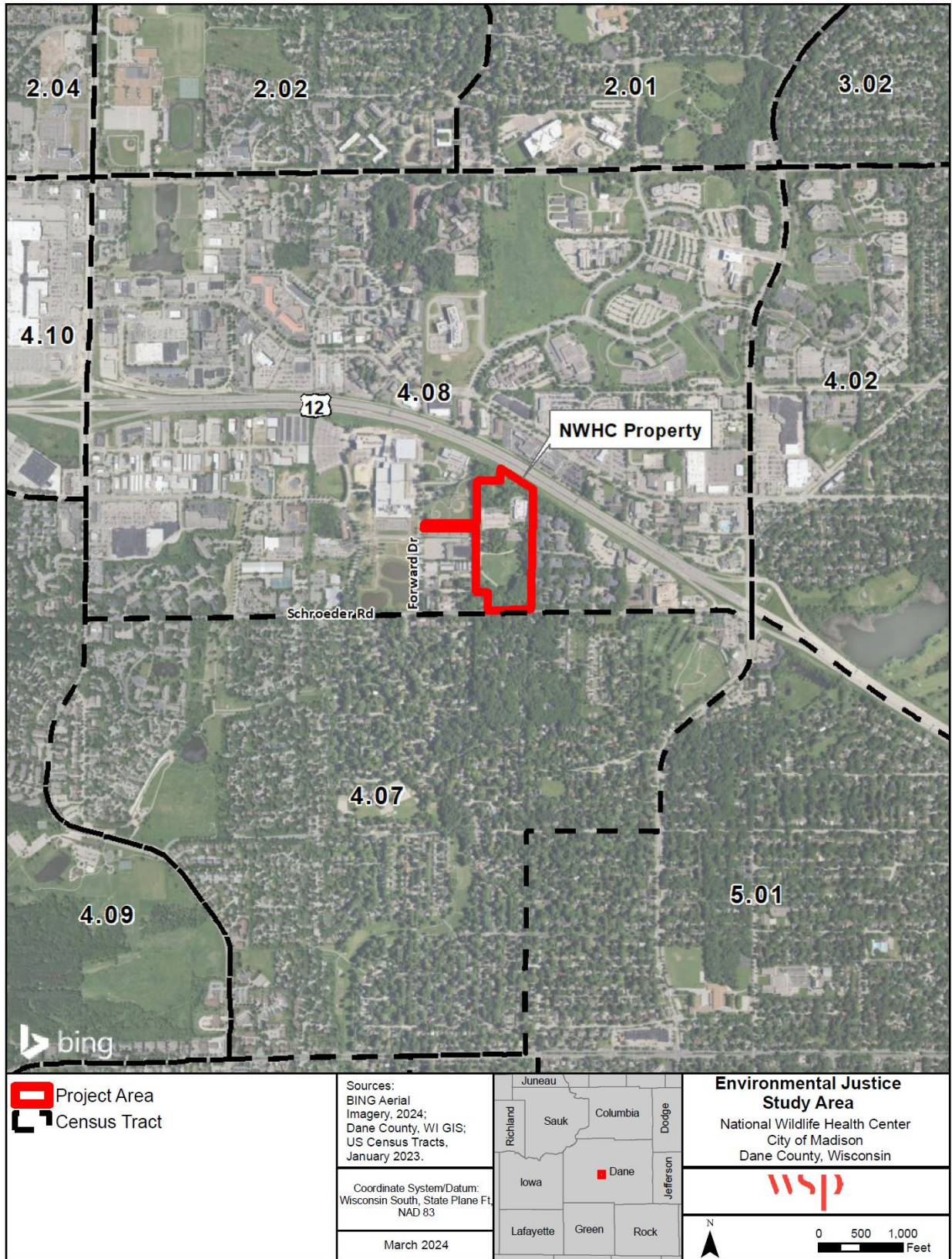


Exhibit 3-8: Census Tracts Encompassing the Study Area for Environmental Justice

Community Survey 5-year estimates are not available at the block group level; therefore, data at the Census tract level was used as a proxy for block groups in the study area. If the percentage in the block group is greater than the percentage in the reference community, a low-income environmental justice community was identified.

This environmental justice analysis is also based on the compilation of data collected using USEPA's Environmental Justice Screening and Mapping Tool; the U.S. Department of Housing and Urban Development Tribal Directory Assessment Tool; the White House CEQ's Climate and Economic Justice Screening Tool; the Department of Energy's Energy Justice Mapping Tool's Disadvantaged Communities Reporter, as well as initial research on the local community to gain insight into community context and equity-priority community members within the study area. Initial research and engagement included the development of an equity-priority stakeholder database, a project kick-off listening session with federally recognized Tribes that have cultural and/or historic ties to the project site, and outreach to local environmental justice community leaders, including representatives of Community Outreach and Resource Education and the City of Madison Equity Office, to help guide equity-priority outreach efforts and ensure early and meaningful public participation in the USGS's decision-making process throughout the project scoping process. A description of public outreach activities conducted during the scoping phase is provided in Sections 1.7.2 and 4.2.

3.14.2 Existing Conditions

The populations of Wisconsin, Dane County, and the City of Madison are predominately white, however, as shown in Table 3-9, the City of Madison has a higher percentage of minorities compared to the state or county. The City of Madison's Comprehensive Plan Imagine Madison: People Powered Planning (2018) notes the city is becoming more diverse and identifies challenges related to providing housing options, opportunities for education and economic advancement, and cultural opportunities for all residents regardless of race or income level (City of Madison DPCED 2018). Madison's Southwest Neighborhoods, like the city, are becoming more diverse. The plan notes these neighborhoods had a minority population of 6 percent in 1990 and 18 percent in 2000 (City of Madison DPCED 2008). Additionally, these neighborhoods provide an array of housing options for households of different income levels (City of Madison DPCED 2008).

Based on 2020 Census data, two of the block groups in the study area, block group 1 and block group 2 in Census tract 4.07, contain majority-minority populations, with populations that are 51.9 percent and 55.6 percent minority, respectively. These block groups have relatively large percentages of individuals who identify as Black or African American or Hispanic/Latino. A minority environmental justice community also has been identified in Census tract 4.07, block group 4, which has a meaningfully greater percentage of Hispanic/Latino residents than the city as a whole. Census tract 4.07 is located south of Schroeder Road and the NWHC property.

Block groups 1, 2, 3, and 4 in Census tract 4.07 were determined to have low-income environmental justice communities based on data available at the Census tract level (American Community Survey data are not available at the block group level). No other block groups in the study area have percentages of individuals living below the poverty level that are greater than the percentage in the city.

Environmental justice communities identified in the study area are listed in Table 3-9 and shown on Exhibit 3-9. Minority and low-income populations meeting the criteria for environmental justice communities as discussed above are shown in bold text in Table 3-9. Minority and low-income information for Dane County and Wisconsin is also provided for reference.

The USGS additionally used data gathered and cross-referenced from the U.S. Census Bureau, the Department of Energy's Energy Justice Mapping Tool's Disadvantaged Communities Reporter, the USEPA's Environmental Justice Screening and Mapping Tool, and the White House CEQ's Climate and Economic Justice Screening Tool to assess environmental justice and disadvantaged communities in the study area and indicators of socioeconomic and environmental conditions.

Table 3-9: Environmental Justice Communities in the Study Area, Madison, Wisconsin

Geographic Area	Percent of Individuals Identifying as Minority or Hispanic/Latino							Total Percent Minority	Percent of Individuals Below Poverty Level
	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some Other Race	Two or More Races	Hispanic/Latino		
Wisconsin	6.2	0.8	3.0	< 0.1	0.3	3.5	7.6	21.5	10.7
Dane County	5.3	0.2	6.3	< 0.1	0.4	4.3	7.5	24.1	10.8
City of Madison	7.2	0.3	9.5	0.1	0.4	4.7	8.7	30.9	16.6
Census Tract 4.07, Block Group 1	23.3	0.5	7.6	0.1	0.2	5.7	14.5	51.9	17.4 ¹
Census Tract 4.07, Block Group 2	25.8	0.3	8.4	0.1	0.3	5.1	15.6	55.6	17.4 ¹
Census Tract 4.07, Block Group 3	8.3	0.6	5.5	0.1	0.4	4.1	10.9	29.9	17.4 ¹
Census Tract 4.07, Block Group 4	8.7	0.4	3.0	0	0	6.1	20.8	39.0	17.4 ¹
Census Tract 4.08, Block Group 1	2.4	0.3	0.8	0	0.3	2.0	4.1	9.9	11.8 ¹
Census Tract 4.08, Block Group 2	10.7	0.3	7.8	0	0.2	1.9	11.6	32.5	11.8 ¹
Census Tract 5.01, Block Group 4	10.3	0	5.7	0	1.0	5.9	12.4	35.3	8.1 ¹
Sources: U.S. Census Bureau 2020(a–d).									
¹ Data on the percentage of individuals below poverty level is not available at the block group level. The percent of individuals below poverty level for each respective census tract is used as a proxy for the percent of individuals below poverty level within the block group.									

Utilizing the USEPA EJScreen Community Report, the USGS identified that there are three schools; two subsidized housing complexes; one public housing complex; no hospitals; and no places of worship in the area encompassed by Census tracts 4.07, 4.08, and 5.01. Within this area, there are no American Indian Reservation Lands or Justice40 (CEJST) disadvantaged communities (see Exhibit 3-10). EJScreen also indicates there is relevant public health data and cumulative exposure to environmental hazards for populations in the study area, including two hazardous waste, treatment, storage, and disposal facilities; eight wastewater discharge sites; one air pollution site; and one Superfund site that are reporting to the USEPA within Census tracts 4.07, 4.08, and 5.01. In addition, this area is reporting positive for containing impaired waters (see Exhibit 3-11) (USEPA 2023).

According to EJScreen, American Community Survey (ACS) 2017 - 2021 (Census) data indicate that 8 percent of the population in the study area speaks Spanish at home (USEPA 2023). See Table 3-10 for a breakdown of languages spoken at home within the study area by percent.

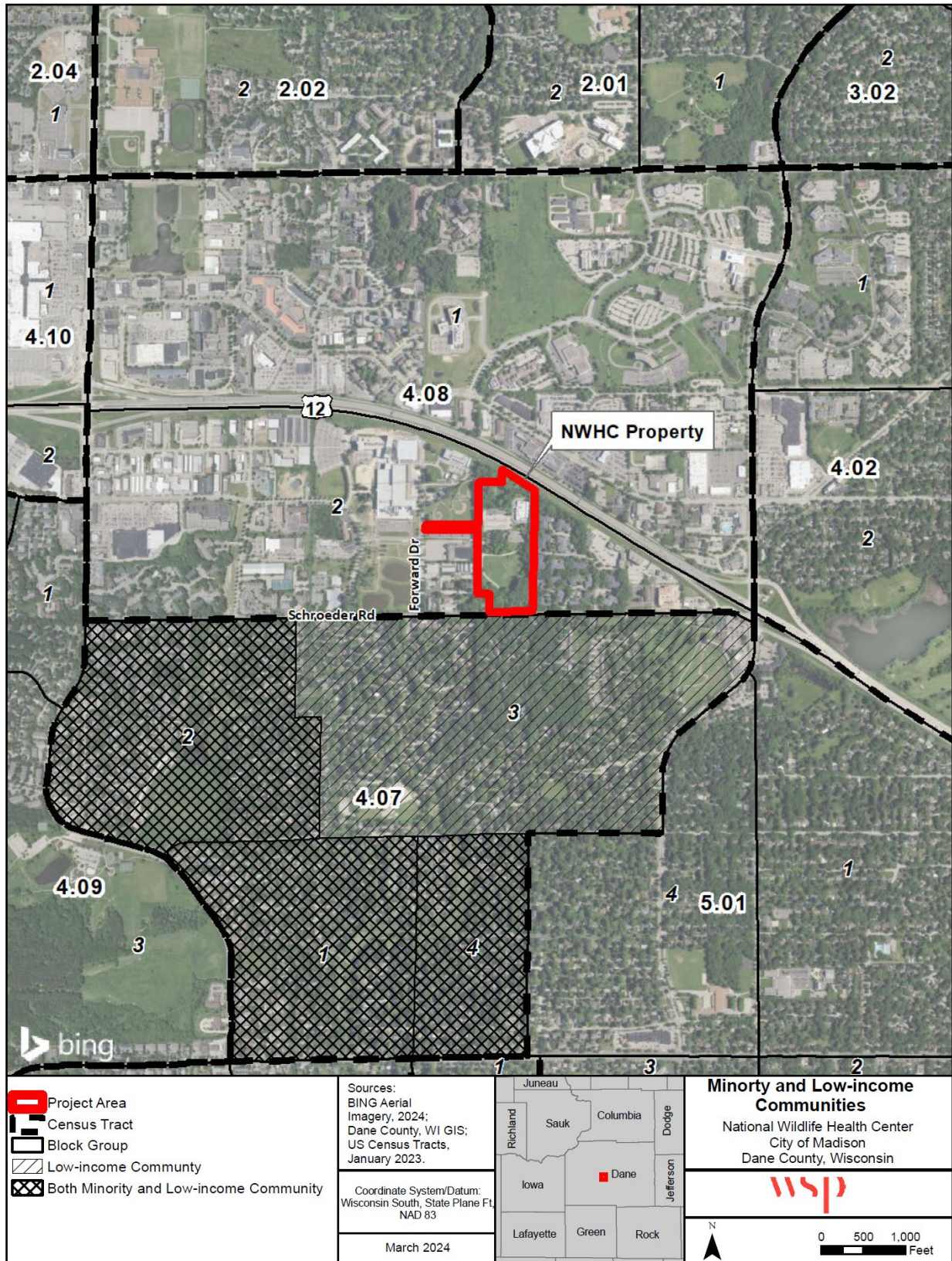
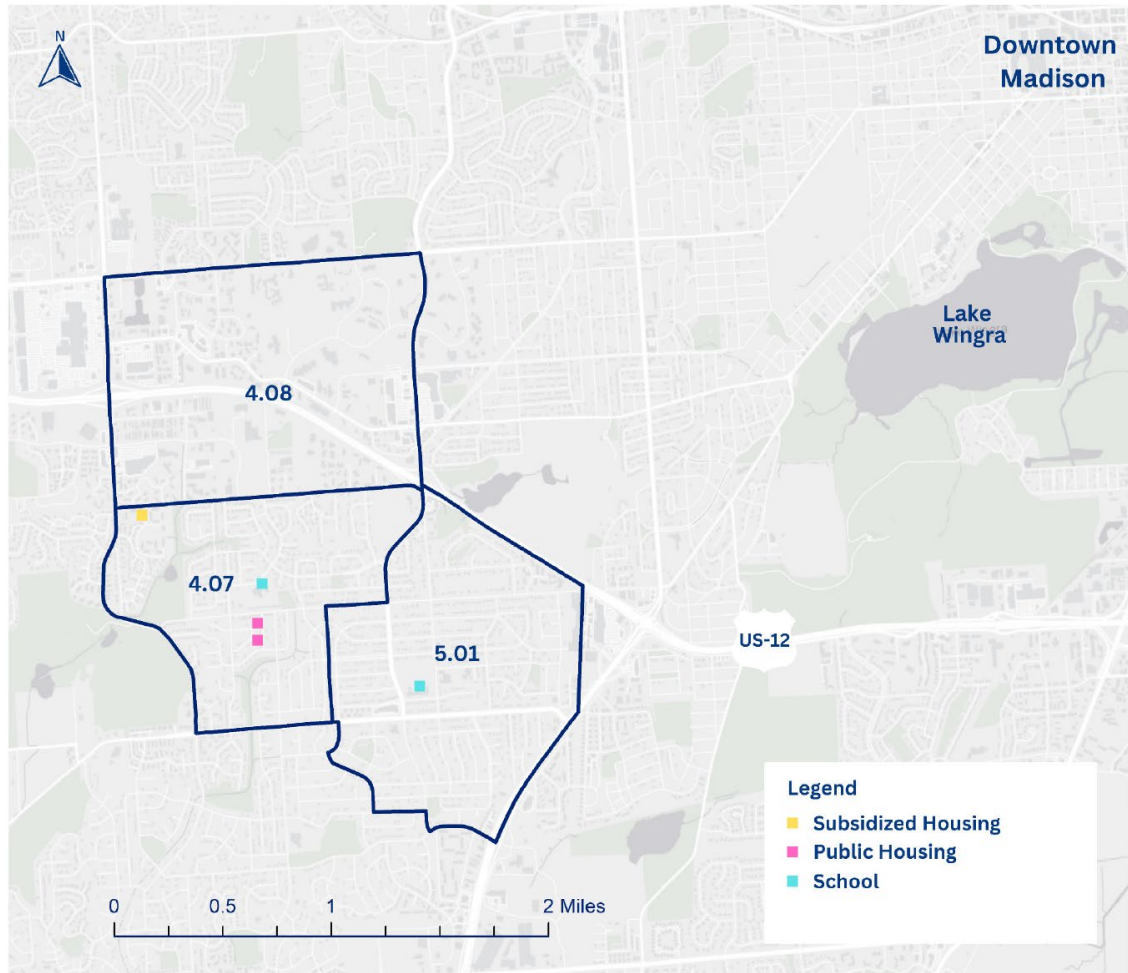


Exhibit 3-9: Minority and Low-Income Communities in the Environmental Justice Study Area

Map of Madison, WI- Public Housing & Schools Census Tracts 4.07; 4.08; 5.01




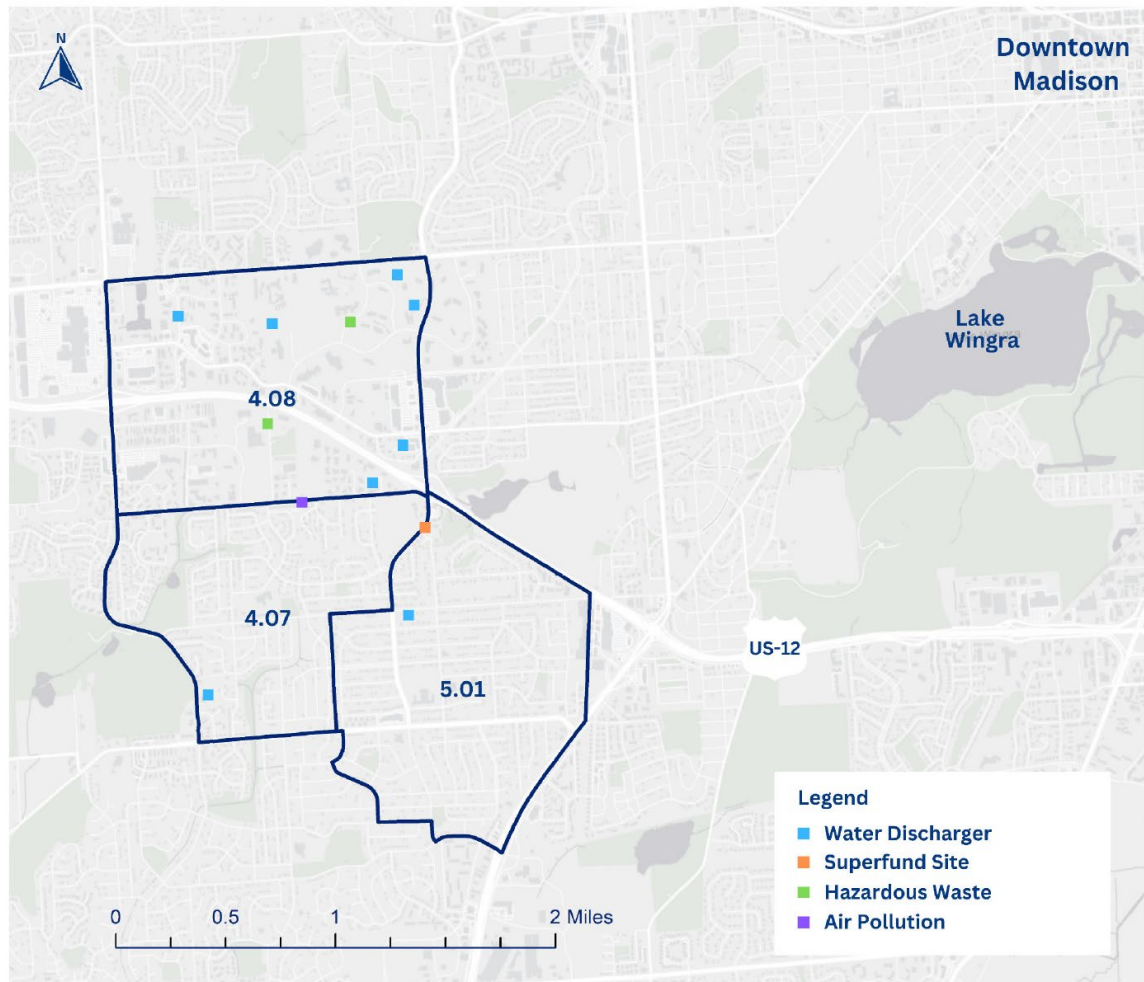
	Source: USEPA, 2023.		Subsidized and Public Housing and Schools in EJ Study Area National Wildlife Health Center City of Madison Dane County, Wisconsin
	March 2024		

Exhibit 3-10: Subsidized and Public Housing and Schools in the Environmental Justice Study Area

Map of Madison, WI- EPA Regulated Facilities Census Tracts 4.07; 4.08; 5.01



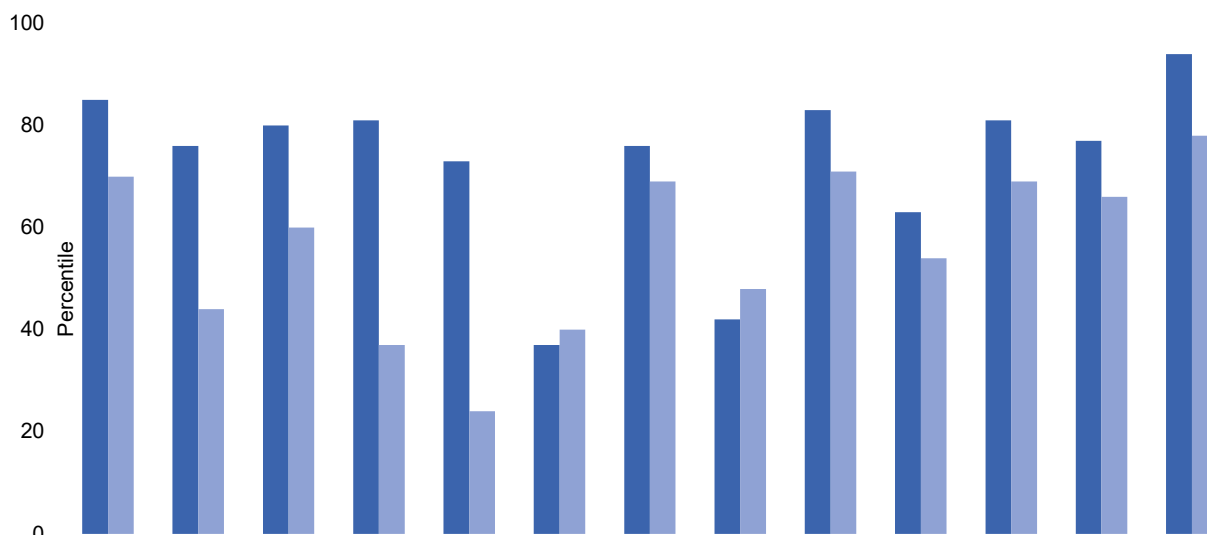
	Source: USEPA, 2023.		USEPA Regulated Facilities in the in EJ Study Area National Wildlife Health Center City of Madison Dane County, Wisconsin
	March 2024		

Exhibit 3-11: USEPA Regulated Facilities in the Environmental Justice Study Area

Table 3-10: Languages Spoken (By Percent) Within Census Tracts 4.07, 4.08, and 5.01

Languages	Percentage
English	88%
Spanish	8%
German or other West Germanic	1%
Other Indo-European	1%
Other Asian and Pacific Island	1%
Other and Unspecified	1%
Total Non-English	12%

Of the 13 environmental justice indices delineated in EJScreen, the study area scored at or above the 80th percentile threshold set by EJScreen for the following markers when compared to other areas of the state of Wisconsin: particulate matter, diesel particulate matter, air toxics cancer risk, proximity to Superfund sites, hazardous waste proximity, and wastewater discharge (Exhibit 3-12). This means that the population in the study area experiences levels of exposure to the pollutants identified above greater than 80 percent of areas in Wisconsin or is closer to Superfund sites, hazardous waste sites or facilities, or wastewater discharge points than 80 percent of areas in the state (USEPA 2023). The study area did not score above the 80th percentile threshold for any indices at the national level.



	Particulate Matter	Ozone	Diesel Particulate Matter	Air Toxics Cancer Risk	Air Toxics Respiratory Hazard Indices	Toxic Releases to Air	Traffic Proximity	Lead Paint	Superfund Proximity	RMP Facility Proximity	Hazardous Waste Proximity	Underground Storage Tanks	Wastewater Discharge
State Percentile	85	76	80	81	73	37	76	42	83	63	81	77	94
National Percentile	70	44	60	37	24	40	69	48	71	54	69	66	78

Exhibit 3-12: Environmental Justice Index Percentiles for the Tracts Surrounding the Study Area, Compared to State and National Averages

3.14.3 Potential Impacts

No Action Alternative

Under the No Action Alternative, the property and structures comprising the NWHC in Madison would remain in their current condition, members of environmental justice communities would be unaffected, and mitigation would not be necessary. The NWHC would continue to employ the public health, safety, and security controls discussed in Section 1.4 to minimize risks to USGS personnel, visitors, and members of the public during operations.

Preferred Alternative (New NWHC)

- **Construction Phase**

As discussed in Section 3.14.2, minority and low-income environmental justice communities are present in the study area, which generally encompasses the boundaries of the Southwest Neighborhood planning area (City of Madison DPCED 2008). The study area includes block groups 1, 2, 3, and 4 in Census Tract 4.07; block groups 1 and 2 in Census Tract 4.08; and block group 4 in Census Tract 5.01. Based on data provided by the USEPA EJ Screen tool, populations in the study area are in the 80th percentile or above in the state of Wisconsin for exposure to particulate matter, diesel particulate matter, air toxics cancer risk and proximity to Superfund sites, hazardous waste, and wastewater discharge. Within the study area, there are two hazardous waste, treatment, storage, and disposal facilities; eight wastewater discharge sites; one air pollution site; one brownfield; and three release inventory sites that report to the USEPA.

As discussed in Sections 3.21 and 3.22, below, construction of the new NWHC would result in air emissions from equipment and vehicle use and fugitive dust and elevated noise levels. Construction would occur over an approximately 36-month period. Temporary air quality and noise impacts would be concentrated in areas in the immediate vicinity of the proposed construction site, including the NWHC property and adjacent properties. Within this area, sensitive receptors include the West Madison Little League baseball fields adjacent to the NWHC property to the northwest, the Madison Ice Arena adjacent to the property to the west, single-family residential properties south of the NWHC property along Schroeder Road, and multi-family housing east of the property.

Air emissions from construction equipment and vehicles would occur during working hours when equipment is operating. Fugitive dust emissions could occur during dry weather conditions, periods of maximum construction activity, and high wind conditions. Air emissions would be similar in magnitude and duration to other recent and planned urban construction projects in the City of Madison. However, these air emissions would occur in an area that currently experiences higher exposure to particulate matter, diesel particulate matter, air toxics cancer risk from existing land uses and activities, according to EJScreen.

During construction activities, elevated noise levels would be experienced in the vicinity of the proposed site. Noise would typically be limited to daylight hours. Construction noise would also generally be intermittent and depend on the type of operation, the type of equipment being used and its location relative to sensitive receptors, and the equipment usage cycle. Construction noise would be expected to attenuate to 62 to 65 dBA at a distance of 800 feet from the source, or similar to ambient noise levels in an urban area (USEPA Office of Noise Abatement and Control 1974). Sensitive receptors including the West Madison Little League baseball fields, Madison Ice Arena, multi-family housing east of the NWHC property, and single-family residences adjacent to Schroeder Road would be within 800 feet of construction activities and would likely experience average noise levels higher than 65 dBA intermittently during construction activities. Noise levels would be attenuated for receptors inside buildings, especially if windows are closed.

Transportation impacts during construction are discussed in Section 3.19.2. The volume and timing of construction traffic would vary during construction. However, during peak construction periods, up to 50 to 75 construction workers could travel to the site with arrival and departure times generally occurring between the hours of 7:00 AM and 4:00 PM. An indeterminate number of trucks delivering construction

materials, supplies, and equipment would access the site throughout the workday, with the number of trips depending on the stage of construction. Construction traffic would access the site via the entrance to the NWHC property on Schroeder Road. As noted in Section 3.19.3, traffic movements into and out of the property would be coordinated with the appropriate traffic control agencies, and the temporary increase in construction traffic would be small relative to daily traffic volumes (approximately 10,000 to 11,000 vehicles per day) on Schroeder Road.

During construction of the new NWHC and demolition of the existing facilities, trucks accessing the site may carry hazardous materials. Transportation of hazardous materials, such as fuel, or hazardous wastes, such as ACM and lead-based paint containing materials, would occur using enclosed vehicles to eliminate any exposure to the ambient environment. Trucks traveling to the site would travel along the Beltline Highway to its interchange with either S. Gammon Road or S. Whitney Way, then travel along Schroeder Road to the NWHC property. Trucks leaving the site would follow this route in the opposite direction. Land uses adjacent to Schroeder Road, S. Gammon Road, and S. Whitney Way along this route include single-family and multi-family housing, commercial and recreational facilities, open space, and two schools. The Beltline Highway is a major arterial highway that carries similar heavy truck traffic. The construction contractor would be responsible for identifying safe haul routes to and from the project site. All drivers would be required to comply with traffic laws, and traffic control measures would be established at the entrance to the NWHC property if necessary to maintain safe driving conditions.

Section 3.9 discusses hazardous materials that would be used during construction and hazardous wastes that may be encountered during demolition of the existing facilities. The NWHC property is fenced, and access to construction sites would be controlled through fencing and other security measures as needed to prevent public access. Mitigation measures discussed in Section 3.9.3 describe measures that would be put into place for the safe transport, storage, and handling of hazardous materials and wastes. These measures would further reduce the risk of a spill or release.

Temporary impacts to environmental justice and disadvantaged communities during construction would be similar in magnitude and duration to other construction and redevelopment projects in the Madison area and would occur largely in the immediate vicinity of the proposed site. However, because environmental justice communities are present in the surrounding area and these communities experience higher levels of exposure to environmental hazards, the Preferred Alternative would result in disproportionately high and adverse impacts during construction for these communities. These temporary impacts would include elevated noise levels, traffic, and emissions of air pollutants during construction and the potential for accidental releases of hazardous materials.

- **Operation Phase**

As discussed in Section 3.20.2, operation of the new NWHC is not expected to produce a greater volume of air emissions than the current facility and would not be an additional source of emissions. Incinerators used in the current facility would be replaced in the new NWHC with a batch steam EDS, which would produce no air emissions. Therefore, the Preferred Alternative would eliminate air emissions from the existing incinerators.

Noise levels during operation of the new NWHC are expected to be similar to levels experienced during current NWHC operations, as discussed in Section 3.21.2. This would include noise which may result from infrequent testing and operation of new emergency generators that would replace generators currently serving the existing NWHC. The new emergency generators would be housed within sound attenuated enclosures. Two outdoor cooling towers located between the Main Building and the TIB would be replaced with two air cooled chillers which would produce little to no noise during normal operations. Based on the above and considering ambient noise from vehicle traffic on the Beltline Highway and the vegetated buffers that would be between the new NWHC and surrounding properties, any noise resulting from routine operation of the new NWHC is expected to be imperceptible beyond the boundaries of the property.

Traffic generated by the new NWHC would be similar to traffic generated by the existing facility, as discussed in Section 3.19.2. Small amounts of hazardous wastes generated by NWHC operations, including biological wastes, would continue to be stored, handled, collected and transported by a licensed handler and disposed of only at approved disposal facilities.

Activities associated with operation of the new NWHC would require the continued storage and use of materials considered hazardous and result in the generation of small amounts of regulated wastes. All hazardous materials used during NWHC operation and any resulting wastes would continue to be handled in accordance with stringent operating policies and procedures and regulatory requirements. USGS would continue its current practice of proper management, storage, use, and disposal of hazardous materials and wastes. As discussed in Section 3.9.2, the two permitted incinerators currently used to dispose of pathology waste (i.e., animal carcasses, animal feed, bedding, and associated containers) would be replaced with thermal tissue digesters, which use high temperature, agitation, and addition of a caustic agent to break down and sterilize biological wastes. The NWHC would continue to apply the public health, safety, and security controls discussed in Section 1.4 to minimize biosafety and biosecurity risks to USGS personnel, visitors, and members of the public.

Based on the above, operation of the new NWHC would reduce long-term air quality and noise impacts compared to the No Action Alternative. The new NWHC would incorporate modern, more efficient systems to sterilize and treat biological wastes and would continue to incorporate multiple engineering and programmatic controls to address biosafety and biosecurity. The Preferred Alternative also includes restoration of the prairie areas on the property and continued public access to the south prairie area for passive recreational use during the NWHC's operating hours. Therefore, operation of the new NWHC is not expected to result in disproportionately high or adverse impacts to environmental justice or disadvantaged communities.

3.14.4 Recommended Mitigation

Construction Phase

Mitigation measures discussed in Sections 3.9.3, 3.19.3, 3.20.3, and 3.21.3 describe how construction impacts would be mitigated to minimize potential impacts to environmental justice and disadvantaged communities.

In order to ensure meaningful community engagement, minimize adverse community impacts, and avoid disproportionate impacts to communities with environmental justice concerns the USGS has emphasized outreach to the NWHC's neighbors, environmental justice and disadvantaged communities, and Tribes during scoping and development of the DEIS. These outreach activities are described in Sections 1.7 and 4.2. The USGS will continue to engage environmental justice and disadvantaged communities and Tribes during the environmental review and planning phase, and, if the Preferred Alternative is implemented, during construction and operation.

Operation Phase

Sections 3.9.2, 3.19.2, 3.21.2, and 3.22.2 describe mitigation measures that would be employed during operation of the new NWHC to avoid or reduce long-term impacts to environmental justice and disadvantaged communities.

3.14.5 Cumulative Impacts

If construction under the Preferred Alternative overlaps with construction of the proposed multi-family residential development on Ellis Potter Court, cumulative impacts as a result of air emissions, noise, and traffic generated by construction would affect sensitive receptors in the surrounding area. As noted above, temporary impacts during construction would be disproportionately high and adverse for environmental justice and disadvantaged communities in the study area.

Construction of the multi-family housing development and recommendations included in the updated Southwest Neighborhood Plan may result in additional sensitive receptors being present on properties adjacent to the new NWHC. However, implementation of the Preferred Alternative would reduce noise and air emissions during operations, improve treatment of biological wastes, and maintain traffic levels similar to existing levels. Therefore, the Preferred Alternative is not expected to contribute to long-term cumulative impacts to environmental justice and disadvantaged communities.

3.15 Land Use

3.15.1 Existing Conditions

Land Use

The NWHC property is located within Madison's Southwest Neighborhood planning area, a large and diverse area of the city encompassing residential neighborhoods and an active commercial zone. The Southwest Neighborhood planning area, bounded by Mineral Point Road on the north, South Whitney Way on the east, Raymond Road on the south, and McKenna Boulevard and South Gammon Road on the west, has been the subject of various plans and studies from which information concerning land use has been gathered (City of Madison DPCED 2008).

- **Residential:** Single family residences comprise approximately 373 acres of the Southwest Neighborhood planning area with all such housing located south of Schroeder Road in the neighborhoods of Park Ridge, Greentree, Prairie Hills, Meadowood, and Orchard Ridge. Additional acreage is devoted to two-family homes (56 acres), multi-family residences of three or more units (151 acres), and group homes, retirement centers, and other types of housing (30 acres).
- **Commercial:** Commercial uses comprise approximately 500 acres with most such development located between Schroeder Road and the Beltline where a mix of retail, commercial, and research uses can be found. North of the Beltline there is a large retail corridor along Odana Road extending north to Mineral Point Road, with University Research Park situated in the southwest of corner of the Mineral Point Road and Whitney Way intersection.
- **Institutional:** Institutional uses comprise approximately 56 acres and include the 24-acre NWHC property at 6006 Schroeder Road, Falk Elementary School at 6323 Woodington Way, and Wisconsin Youth and Family Center at 1201 McKenna Boulevard.
- **Industrial:** Industrial uses comprise approximately 27 acres which are concentrated south of the Beltline Highway near the intersection of Gammon Road and the Beltline. Industrial lands are also found north of the Beltline.
- **Park, Open Space, and Drainage:** Lands dedicated for parks, open space, and drainage purposes comprise approximately 130 acres and include Greentree-Chapel Hills Park, Hammersley Park, Lucy Lincoln Hiestand Park, Meadowood Park, Sherwood Forest, Sunridge Park, and Elver Park.
- **Vacant or Undeveloped:** The Southwest Neighborhood planning area also includes approximately 146 acres of vacant or undeveloped land.

The portion of the Southwest Neighborhood planning area north of Schroeder Road and south of the Beltline Highway, which includes the NWHC property, is predominantly commercially zoned with multi-family residences lining a portion of the road.

The plan outlines a vision for the area, goals for future development, land use principles of redevelopment and infill, conceptual redevelopment ideas, and revitalization strategies for improving the area (City of

Madison DPCED 2008). According to the plan USGS is encouraged to further develop the NWHC property; “On the USGS National Wildlife Health Center site, we encourage the federal government to consider adding office buildings on this site. Presently, only 4 of the 24 acres are used and this site could accommodate new buildings. Any new site development should include preservation of greenspace along Schroeder Road as a visual amenity and a buffer from the housing on the south side of the road.” The City is planning to update the Southwest Neighborhood Plan in 2024.

Zoning

Zoning designations in the Southwest Neighborhood planning area are generally consistent with existing land uses. According to the City of Madison Zoning Map, the NWHC property is zoned SE (Suburban Employment), with properties owned by the federal government typically exempt from zoning regulations (City of Madison DPCED 2024). The NWHC property also is within the City’s Urban Design District No. 2, which establishes design requirements and guidelines for properties in the area of Schroeder Road and Watts Road and adjacent properties between Gammon Road and Whitney Way and requires design review for all development in the district (City of Madison DPCED 2012).

3.15.2 Potential Impacts

No Action Alternative

Under the No Action Alternative, the property and structures comprising the NWHC in Madison would remain in their current condition, adjoining and nearby land uses would be unaffected, and mitigation measures would not be necessary.

Preferred Alternative (New NWHC)

The NWHC property is located north of Schroeder Road in an area that is predominantly commercial in nature with multi-family residential developments located east of the NWHC property. In addition, the property is in federal government ownership, and given its large (24-acre) area, implementation of the Preferred Alternative would avoid the need to acquire additional property. The proposed facility would also rely on existing available transportation and utility infrastructure.

Developing the new facility within the NWHC property in Madison would continue the current government/institutional use which has existed at that location for over 40 years. While NWHC development would have a direct impact on land use by transforming a small portion of the property from its current condition (parking lot and vacant) into an institutional use, it would be offset by the eventual demolition and removal of the existing NWHC. By maintaining NWHC operation at the current location, potential direct land use impacts would be limited to a small portion of the overall property. No adverse impacts in the form of changes to land uses or new developments are expected to occur on adjoining/ nearby properties or elsewhere in Madison as a result of the Preferred Alternative.

In planning for the new NWHC, consideration was given to the relationship of the NWHC to land use plans and policies of the City of Madison. Doing so has revealed an action consistent with the planning and development goals expressed in the city’s Southwest Neighborhood Plan to promote economic opportunities and workforce development while maintaining connections to living wage jobs in the area. The plan is also explicit in its support for developing the NWHC property. Local planning and economic development goals also support the employment and economic benefits provided by the Preferred Alternative and its contribution to achieving the social, economic, and land use development goals of the city.

3.15.3 Recommended Mitigation

Federal agencies such as USGS are not subject to zoning and land use development regulations. Nonetheless, USGS will seek to maximize the benefits afforded to the surrounding neighborhood and the city as a whole by:

- Developing a site plan that maintains the long-established and harmonious relationship between the NWHC facility and its surroundings.
- Ensuring that the building design contributes positively to the aesthetic character of the City of Madison and the Southwest Neighborhood area.
- Limiting the portion of the property subject to disturbance to the degree possible.
- Maintaining setbacks and wooded buffer areas between the new facility and neighboring properties to ensure visual compatibility.
- Maintaining public access to the south prairie area and restoring this area with native vegetation.

3.15.4 Cumulative Impacts

Implementation of the Preferred Alternative would not result in a change in land use on the NWHC property and would be consistent with the planning and development goals expressed in the city's previous plan (City of Madison DPCED 2008) to promote economic opportunities and workforce development while maintaining connections to living wage jobs in the area. Therefore, the Preferred Alternative would not contribute to cumulative impacts on land use.

3.16 Fiscal Considerations

3.16.1 Existing Conditions

Fiscal considerations are those having to do with the public treasury or revenue. Potential fiscal impacts could, but do not always, include removal of property from the public tax rolls; acquisition of property through use of public funds; and other public expenditures related to a Proposed Action (e.g., public infrastructure improvements).

Fiscal considerations of federal government-sponsored projects or actions, such as development of the new NWHC, are of interest to local governments. This is due to the possible loss of tax revenues since federal agencies typically do not contribute property taxes or make similar payments to local governments for federal institutions or facilities. In this case, the NWHC property is under federal ownership having been removed from the property tax rolls at the time it was acquired in 1978 by the USFWS and has not contributed property tax revenues or similar payments since its acquisition.

3.16.2 Potential Impacts

No Action Alternative

Under the No Action Alternative, the property and structures comprising the NWHC in Madison would remain in their current condition, there would be no changes to property ownership that would affect the city and county's fiscal conditions, and mitigation measures would not be necessary.

Preferred Alternative (New NWHC)

The NWHC property has been in federal government ownership for over 40 years and throughout that time has been exempt from property tax payments. New NWHC development will continue that tradition resulting in no change to tax revenues collected by the City of Madison, Dane County, or the State of Wisconsin. Conversely, positive fiscal impacts in the form of tax revenues will result from construction and the economic activity associated with the new facility and its employees. Expenditures for utility services and similar operating expenses are recouped through payment of user fees and, therefore, pose no adverse impact.

3.16.3 Recommended Mitigation

In the absence of adverse impacts, no mitigation measures are warranted.

3.16.4 Cumulative Impacts

As noted above, the Preferred Alternative would not result in adverse fiscal impacts to the City of Madison, Dane County, or the State of Wisconsin. Therefore, the Preferred Alternative would not contribute to cumulative fiscal impacts.

3.17 Community Facilities and Services

3.17.1 Existing Conditions

Emergency Communications

The Dane County Department of Public Safety Communications operates a centralized 9-1-1 emergency dispatch center for the Dane County Sheriff's Office, 21 town, city, and village police forces, 26 municipal and volunteer fire departments, and 21 Emergency Medical Service (EMS) agencies. Dane County and the City of Madison have established the county-operated consolidated dispatch center using computer-aided dispatch and enhanced 9-1-1 systems. Located at 210 Martin Luther King Jr. Boulevard in Madison, 65 employees operate the center 24/7 to provide public safety communications services for all user agencies, visitors and residents of Dane County.

City of Madison Police Department

The City of Madison Police Department is comprised of approximately 479 commissioned and 119 non-commissioned personnel (total 598) who are responsible for providing law enforcement services to residents and businesses of the city. The Department is organized around six geographic districts with detectives, lieutenants and captains assigned to each district in addition to patrol officers and sergeants manning five shifts to provide 24/7 coverage. Each district also has a Community Policing Team which collaborates with community stakeholders, external partners, and units within the Department to address issues unique to neighborhoods within each district. The Madison Police Department, headquartered at 21 S. Carroll Street (6.5 miles from NWHC), responded to approximately 137,450 service calls in 2021 (City of Madison Police Department 2022).

The NWHC is located within the Department's West Police District, operating from offices at 1710 McKenna Boulevard (1.9 miles from the NWHC). The West District covers the western-most portion of Madison, comprising over 33 percent of the city's total area and with approximately 79,000 residents within its boundaries. According to NWHC staff, there have been no emergencies or incidents that have required a response by the Madison Police Department since NWHC operations began.

Dane County Sheriff's Office

With over 425 sworn officers and 100 civilian support staff, the Dane County Sheriff's Office is the fourth largest in the State of Wisconsin. The Sheriff's Office, serving over 542,000 residents across 1,200 square miles, is organized around four divisions: the Security Services Division, Field Services Division, Support Services Division, and the Executive Services Division.

The Security Services Division is the largest of the four divisions with approximately 206 sworn deputies and 65 civilian support staff. Division personnel hold pre-trial detainees for all Dane County law enforcement agencies, house sentenced prisoners, and administer the work release program. The Security Services Division is also responsible for operation of county's maximum security jail located in the City-County Building; temporary holding facilities for inmates in the Dane County Courthouse; the minimum security jail located in the Ferris Center; and the Public Safety Building Jail which is a maximum security intake center and a medium security jail.

The Field Services Division, operating from three decentralized precinct locations, is responsible for primary response and follow-up to all calls for assistance; promoting highway safety; providing emergency care to accident victims; investigating crimes; aiding in the prosecution of offenders; providing explosive and tactical response assistance; providing water rescue and recovery services; and participating in arson investigations.

The primary functions of the Support Services Division include attending to the courts of Dane County, maintaining the integrity of records, civil process, conveyances, crime scene response, evidence and property management, and providing resources and equipment to meet the office's current and future needs. The Executive Services Division handles all employee services including scheduling, payroll, disability, worker's compensation, leaves of absence, benefits, orientation, backgrounds, training and personnel changes.

During the years the NWHC has been operating, there have been no occasions for the Dane County Sheriff's Office to respond to an incident or emergency at the NWHC.

City of Madison Fire Protection Services

There are 34 municipal fire departments and fire districts serving Dane County. Municipal departments are an agency of local government while fire districts have independent taxing authority and governing boards. Most fire departments in Dane County consist entirely of volunteers, while several operate with a combination of paid and volunteer staff; the Madison Fire Department consists entirely of paid employees. All Dane County fire protection services operate under a mutual aid pact, which requires inter-departmental cooperation and mutual backup assistance.

Fire companies operate from 14 fire stations located across the City of Madison with each company consisting of one lieutenant (company officer), one apparatus engineer (driver), and two firefighter/Emergency Medical Technicians (EMTs). Life safety (search and rescue) is each company's top priority, followed by incident stabilization, and property conservation. In addition to fire suppression, the Madison Fire Department provides emergency medical services, hazardous material response, lake rescue, and heavy urban rescue. With approximately 70 percent of the Department's emergency calls medical in nature, all firefighters are trained and licensed as Wisconsin EMTs. In addition, there are nine Advanced Life Support ambulances operating across the city with each staffed by two paramedics.

There are two fire stations located in proximity to the NWHC: Fire Station 2 and Fire Station 7. Fire Station 2 is located at 421 Grand Canyon Drive, approximately 2.4 miles (8-minute drive time) from the NWHC. The firehouse was built in 1979 and is staffed daily with four firefighters and two firefighter/paramedics working 24-hour shifts. Station 2 houses Ladder Company 2 and Medic 2 which are equipped with a 2010 Pierce Quantum 105-foot aerial ladder with a 1,500 gallons per minute (gpm) fire pump as well as ground ladders, fire hoses, tools, and extrication equipment. The station is also home to a 2020 Demers ambulance with advanced life support medicine and equipment including a cardiac 12-lead defibrillator, oxygen, and immobilization gear (City of Madison Fire Department 2022).

Fire Station 7 is located at 1810 McKenna Boulevard, approximately 1.9 miles (5-minute drive time) from the NWHC. The firehouse, built in 1997 to replace an older firehouse located on Raymond Road, is staffed daily with eight firefighters and two firefighters/paramedics who work 24-hour shifts. Station 7 houses Engine Company 7 which is equipped with a 2012 Pierce Quantum-H with a 1,250 gpm fire pump and emergency medical equipment. Station 7 is also the location of Ladder Company 7 which relies on a 2018 Pierce Quantum Aerial Platform featuring a 100-foot aerial ladder with water tower. It also carries ground ladders, a 1,500 gpm pump with a 300-gallon booster tank, fire hoses, ventilation equipment, hand tools, extrication apparatus, and emergency medical equipment.

Station 7 is also the location of Medic 7 which utilizes a 2018 Demers ambulance equipped with advanced life support medicine and equipment. Station 7 is also the location of one of Wisconsin's Regional Hazmat Response Teams with firefighters based at Station 7 also trained Hazardous Materials Technicians who will respond to chemical spills for mitigation and containment.

Additional fire stations are located in proximity to the NWHC providing extra resources in the event of an emergency. This includes Station 9 located at 210 Midvale Boulevard (approximately 3.1 miles or a 9 minute travel time) and Station 12 located at 400 South Point Road (approximately 4.7 miles or an 11 minute travel time). During the years the NWHC has been operating, there have been no incidents or emergencies that required a response by the Madison Fire Department.

Emergency Medical Services

The Madison Fire Department has nine paramedic ambulances in service 24/7 assigned to Stations 2, 3, 4, 5, 6, 7, 8, 10, and 14 with each ambulance staffed with two paramedics. In addition, all city firefighters are licensed EMTs and partner with paramedics to provide initial emergency care at most incidents. Over 90 firefighters are also licensed as State of Wisconsin paramedics who receive extensive training in order to provide advanced life support to those in need. On any given day, ambulances are the busiest units in the department (City of Madison Fire Department 2022).

Individuals go through rigorous training to become firefighter/paramedics. Paramedics receive their initial training through established programs at nearby educational institutions, then undergo extensive field training at local Madison area hospitals as well as alongside members of the Madison Fire Department. In addition, they study department protocols and procedures that are used throughout the process.

The Madison Fire Department works closely with other county-wide EMS services. This consortium of Advanced life Support (ALS) providers assures Dane County residents and visitors of a system providing consistent level, high-level patient care. Under a county-wide agreement, all ALS care is provided by the closest available ALS ambulance without regard to jurisdictional boundaries; an approach that ensures patients receive the quickest response to the most life-threatening situations.

While there have been several occasions when emergency medical assistance was necessary to assist a NWHC staff member or visitor experiencing a non-work related emergency (e.g., pre-existing medical condition), there have been no work-related incidents that required an emergency medical response. The NWHC maintains a Medical Emergency Response Team of four to eight people who are trained and certified at the Emergency Medical Responder level who are able to provide initial emergency care.

3.17.2 Potential Impacts

No Action Alternative

Under the No Action Alternative, the property and structures comprising the NWHC in Madison would remain in their current condition, law enforcement, fire protection, and emergency medical services would be unaffected, and mitigation measures would not be necessary.

Preferred Alternative (New NWHC)

- **Construction Phase**

Law Enforcement Services. The Madison Police Department has primary responsibility for law enforcement in the area of the NWHC with additional back-up support available via the Dane County Sheriff's Office. Emergency responses by the Madison Police Department and County Sheriff's Office are dispatched through a central 911 system. Individually and together, these law enforcement agencies provide ample police protection coverage throughout the area surrounding the NWHC.

During NWHC construction, fencing would be installed around the construction zone with security of the site provided by the contractor. Security would be implemented in such a manner to allow for the current NWHC to continue operating during this phase. Schroeder Road and other public roads that lead to and from the NWHC construction site would remain open, accessible, and available for law enforcement patrols throughout the construction period. Once the new NWHC is activated and staff move to the new facility, the current NWHC will cease operations and be decommissioned and demolished. NWHC

construction and operation is not expected to place an undue burden upon law enforcement agencies operating in the vicinity of the NWHC property or within the greater Madison and Dane County areas.

Fire Protection Services. Fire protection services to the residents and businesses in the city are provided by the Madison Fire Department. During NWHC construction, the safety of the workforce and the security of the construction site would be the responsibility of the construction contractor. USGS would ensure a health and safety plan is developed prior to initiating construction so that proper safety measures are implemented to protect against injuries, fires, and similar emergencies. Throughout this phase, Schroeder Road and other public roadways leading to and from the NWHC site would remain open, accessible, and available for emergency fire department response. Therefore, construction activities are not expected to adversely affect fire protection services in the area of the NWHC property or place an undue burden upon the Madison Fire Department.

Emergency Medical Services. During NWHC construction, the health and safety of the workforce would be the responsibility of the construction contractor which would implement measures to protect against accidents and similar emergencies. Public roads would remain accessible to ambulances and other emergency vehicles during construction and would be available for emergency response. There is no reason to expect that injuries and accidents which may occur during the construction and later demolition stages would adversely affect emergency medical services and health care facilities or place an undue burden upon medical responders or health care providers operating in the City of Madison and Dane County.

- **Operation Phase**

Law Enforcement Services. USGS is responsible for the NWHC and relies upon a trained and equipped workforce to ensure the safe and secure operation of the NWHC and to respond to emergency situations as they may arise. In addition:

- The property would be fenced with grounds and buildings monitored 24/7 using CCTV.
- Access to all BSL-3 and ABSL-3 spaces would be restricted with all infectious agents stored in locked freezers.
- Laboratories with higher risk agents would have intrusion devices such that alarms are triggered in the event of unauthorized access.

In the event of an emergency requiring a police response, NWHC personnel would contact the appropriate law enforcement agencies, advise them of the situation, and request their assistance and response as necessary. Based on over 40 years of experience operating the NWHC, no adverse impacts to law enforcement agencies and services serving the city and county are expected as a result of the Preferred Alternative.

Fire Protection Services. The NWHC employs stringent precautions to guard against fire emergencies during operation which will also be employed at the new NWHC. Among the precautions are those involving policies and procedures; inspections, and fire prevention, control and evacuation planning as described below. NWHC staff would continue to provide tours of the new facility to fire protection services every two to four years and provide opportunities for firefighters to ask questions about the facility.

- **Policies and Procedures**

The new NWHC will incorporate a fire protection system. The design and construction of the new NWHC will also comply with the most current edition of applicable fire safety codes, standards and regulations. The structure would be fire-resistant and meet applicable building code requirements.

- **Inspections**

Fire and safety inspections would be conducted regularly with corrective actions taken, if needed, with a review of the NWHC's fire/safety program conducted by USGS on a periodic basis. The Fire Marshal would complete a walkthrough inspection of the NWHC twice a year. NWHC staff would complete an internal fire drill annually.

- **Fire Prevention, Control, and Evacuation Planning**

The NWHC maintains a fire prevention, control, and evacuation plan which includes periodic inspections and testing of fire equipment; placement of fire extinguishers and other protective equipment throughout the facility, and use of fire exit signs and directional arrows for pedestrian traffic flow during emergency evacuations. All areas of the NWHC also have an individual exit diagram posted in a conspicuous location.

The NWHC proposes to continue its relationships for emergency fire protection response as needs arise. Based on over 40 years of experience operating the NWHC in Madison, there is no reason to expect such situations would place an undue burden upon the Madison Fire Department or other area fire departments. Once constructed and activated, staff will transfer to the new NWHC which will be designed and constructed to current fire and related codes. Soon thereafter, the existing NWHC will cease operation and be demolished.

Emergency Medical Services. Staff, visitor, and overall public health and safety at the NWHC are achieved through the combined use of engineering controls, administrative controls, and PPE to achieve the desired results with redundancy. Adherence to these controls is evaluated and maintained through both internal and external inspections and evidenced by the strong health and safety culture at the NWHC.

The NWHC relies upon a trained and equipped workforce to handle emergency situations as they may arise. In the event of a medical emergency requiring outside assistance, NWHC personnel would contact the county's emergency dispatch center and request assistance from the Fire Department which has ambulances staffed with two paramedics in service 24/7 and assigned to Fire Station 2 (2.4 miles) and Fire Station 7 (1.9 miles). Based on many years of experience operating the NWHC, there is no reason to expect that situations requiring medical assistance during operation of the proposed facility would place an undue burden upon emergency medical responders in the City of Madison.

3.17.3 Recommended Mitigation

Law Enforcement

Adverse impacts to law enforcement capabilities and resources are not anticipated as a result of construction and operation of the new NWHC. Consequently, no mitigation measures, outside of communicating and coordinating construction and operating activities with local and county law enforcement agencies as necessary, would be warranted.

Fire Protection

Because no adverse impacts to fire protection services are expected, no mitigating measures, outside the need to coordinate design, construction, and operation with the appropriate fire protection and building code agencies, are warranted.

Emergency Medical Services

With no adverse impacts to emergency medical responders resulting from operation of the new NWHC, no mitigation measures are warranted. However, to protect the health and safety of staff, visitors, and the public at large, primary, secondary, and tertiary biosafety and security systems and measures would be instituted as part of NWHC operation.

These barriers are defined as engineering controls, safety equipment, and PPE that provide protection to the individual and the environment. Examples include use of HVAC system design with negative pressure and HEPA filtration; high security locks and access points; biosafety cabinets; individually ventilated animal housing cages; powered air purifying respirators; and Tyvek suits, gloves, and shoe coverings. The new facility would follow the engineering controls, safety equipment recommendations, security recommendations, and PPE recommendations for work with risk group 2 and 3 pathogens in BSL-2 and BSL-3 containment.

3.17.4 Cumulative Impacts

The geographic study area for cumulative impacts to community facilities and services includes Dane County and the City of Madison. With implementation of the mitigation measures noted above, construction and operation of the new NWHC would not result in adverse effects to community facilities and services. With projected population growth in the county and city, demand for community services is expected to grow; however, construction and operation of the new NWHC would not contribute substantially to cumulative impacts on these services.

3.18 Utilities

3.18.1 Existing Conditions

Water Supply Service

Groundwater is the source of nearly all the water used for domestic, commercial, and industrial purposes in Dane County. Water supplies are drawn from the upper sandstone and unconsolidated aquifers, which provide water for shallow domestic wells in rural areas, and the deep sandstone (Mt. Simon) aquifer, which is a source of water for nearly all of the deep municipal wells in the county. Over 60 million gallons are withdrawn daily with most of this water returned as surface water after use. Public water supplies account for about 75 percent of total groundwater use and include water withdrawn by municipal and private systems for residential, industrial, and commercial purposes. Urban areas account for 80 percent of groundwater use with the City of Madison the largest single consumer, accounting for over half of the total use in the county.

Founded as a public utility in 1882, the Madison Water Utility is a public water system owned and operated by the City of Madison. The utility supplies approximately 24.5 million gallons of potable water daily to more than 250,000 people across Madison, Shorewood Hills, Blooming Grove, Maple Bluff, parts of Fitchburg, the Town of Madison, and the Town of Burke. Raw water originates from a deep sandstone aquifer beneath Madison and is pumped 500 to 1,100 feet to the surface by 22 wells located across the city. The deep aquifer provides high quality water that requires little treatment (chlorine is used in very small amounts to remove harmful water-borne viruses, bacteria and microbes). During 2021, the utility collected 29,735 water quality samples with no reportable water quality citations or violations (Madison Water Utility 2022).

The utility operates 916 miles of water main with 9,000 hydrants, 21,728 valves, 29 booster stations, and 33 reservoirs providing over 43 million gallons of storage. Wells #16 and #26 are the primary wells supplying the portion of the city within which the current NWHC is located. At present, the Madison Water Utility's infrastructure is sufficient to meet the water supply needs of its customers.

Water is supplied to the NWHC from distribution mains extending north from Schroeder Road and east from Forward Drive. Static pressures in the water mains are approximately 50 to 70 pounds per square inch (psi). For the period from September 2021 through May 2022 (nine months), water consumption at the NWHC totaled approximately 1.206 million gallons or 4,467 gallons per day with water consumption varying daily depending on the type of laboratory work being conducted at the time (USGS 2023).

Wastewater Treatment Service

The Madison Metropolitan Sewerage District was established in 1930 to protect water quality in the lakes and streams of the upper Yahara watershed. The District, serving approximately 407,000 customers in 25 Madison-area communities, owns and operates 145 miles of sanitary sewers and force mains and 18 regional pumping stations that convey approximately 36 million gallons per day (mgd) of wastewater to the Nine Springs Wastewater Treatment Plant. The plant, located approximately 6.3 miles east of the NWHC at 1610 Mooreland Road in Madison, has a rated average flow capacity of 57 mgd and a peak flow capacity of 140 mgd. The treatment plant uses a combination of physical and biological processes to treat wastewaters with biodegradable, organic solids removed from the wastewater stream, treated and reused by farmers as a fertilizer as part of the District's Metrogro program (Madison Metropolitan Sewerage District 2023). At present, the District's treatment infrastructure is sufficient to meet the needs of its customers.

Wastewater collection in the city is the responsibility of the Madison Engineering Division, Sanitary Sewer Utility Section. The city operates and maintains over 790 miles of sewer main with 29 lift stations, 10 miles of force mains, and 20,000 manholes through which approximately 28.1 mgd of wastewater is collected and conveyed for treatment at the Nine Springs Wastewater Treatment Plant (Madison Engineering Division 2023). Overall, the city's wastewater collection and treatment infrastructure is sufficient to meet the needs of its residents and businesses.

The largest sources of water consumption at the NWHC are process steam for building humidification during winter, and evaporative loss through cooling tower use during spring and summer. These are both loss-based processes that do not generate wastewater. Assuming that approximately 70 percent of the water supplied to the NWHC is returned as wastewater, approximately 3,000 gallons of wastewater is generated during an average day. The primary sources are the domestic wastewater generated by staff and visitors, steam-boiler blow down-water generated through production of process steam for laboratory and building operations, and wastewater resulting from research studies. Wastewater resulting from the research studies is heat treated and pasteurized in effluent decontamination systems, or chemically disinfected, prior to discharge to a sanitary sewer lateral which extends westward from the Main Building, TIB, and garage to an 8-inch gravity collection main located within the Forward Drive right-of-way. The Forward Drive sewer line then connects to an 8-inch gravity main located within the Schroeder Road right-of-way with wastewater eventually reaching the Nine Springs Wastewater Treatment Plant.

Electric Power Service

Electric power provided to customers in Dane County originates from two sources – local generation and transmission lines that deliver power from sources outside of Dane County. Currently, over 80 percent of the electricity used in Dane County comes from non-local sources. Madison Gas & Electric Co. (MG&E) is the area's principal electricity provider generating and distributing electricity to more than 159,000 residential, commercial, and industrial customers in Dane County and elsewhere in southern Wisconsin.

MG&E utilizes various facilities to generate electricity including the Blount Generating Station, the West Campus Cogeneration facility, and combustion turbines and solar units located in Madison. MG&E estimates that 56 percent of its power originates from burning coal, 38 percent from purchased power and from the Midcontinent Independent System Operator energy market, 4 percent from gas and oil resources, and 2 percent from renewable sources (MG&E 2023). At present, the company's electric power generating and distribution infrastructure is sufficient to meet the needs of its customers.

Overhead electric lines, owned and operated by MG&E, are located along Schroeder Road and Forward Drive and connect with above ground and underground power lines that serve the Main Building, TIB, and garage. For the period from January 1, 2022, through September 30, 2022 (nine months), electric power consumption at the NWHC totaled approximately 1.220 million kilowatt-hours (kWh) or 4,470 kWh per day (USGS 2023).

Natural Gas Service

Natural gas service is provided by MG&E to 169,000 customers in a territory that includes Columbia, Crawford, Dane, Juneau, Monroe and Vernon counties in Wisconsin. MG&E purchases gas on the open market from more than 25 marketers and producers with natural gas supplies originating from the Texas and Oklahoma panhandle region, the Gulf of Mexico, and Canada. Natural gas supplies are transported to MG&E's distribution system through two pipelines operated by the ANR Pipeline Co. and the Northern Natural Gas Co. (MG&E 2023) At present, the company's natural gas supplies and infrastructure are sufficient to meet the needs of its customers.

An underground natural gas main extends eastward from Forward Drive to provide service to the Main Building, TIB, and garage. During the period from January 1, 2022, through September 30, 2022 (nine months), natural gas consumption at the NWHC totaled approximately 14,318 million cubic feet (MCF) or 52.44 MCF per day with natural gas requirements varying depending upon the nature and scope of daily operations, weather conditions, and other factors (USGS 2023).

Telecommunications

Telecommunication services in Madison and Dane County are available via various providers utilizing underground and/or aboveground infrastructure. Currently, AT&T is the telecommunications provider to the NWHC and operates and maintains the telecommunication infrastructure in the area (i.e., poles, copper wire, and fiber optic). At present, the company's network infrastructure is sufficient to meet the needs of its customers.

An underground fiber optic service line, owned and operated by AT&T traverses the property, providing voice and data service to the NWHC. NWHC operation relies upon voice circuits or optical carrier circuits and the availability of primary rate interface service.

Solid Waste Management

The Dane County Department of Waste and Renewables is responsible for solid waste management in the county including landfill operation, recycling programs, recycling and disposal of construction and demolition wastes, and other related activities. The Department accepts, on average, over 290,000 tons of waste per year from county residents and businesses for recycling and/or final disposal at the county landfill (Rodefild Landfill). The landfill, located at 7102 U.S. Route 12 in Madison approximately 12 miles east of the NWHC, opened in 1985 and was expanded in 1994 and 2015. Tires, shingles, bicycles, household chemicals, electronics, construction and demolition debris, and other wastes are recycled at this location to reduce the volume requiring final disposal (Dane County Department of Waste and Renewables 2023).

While the county landfill is expected to continue operating for another 10 years, plans are underway to develop additional landfill space at the Yahara Hills Golf Course located south of the current landfill. The Department is proposing a 230-acre development at 6701 U.S. Highway 12-18, which would include both a landfill and a campus of recycling facilities and sustainable businesses to reduce the volume of waste entering the landfill. Early plans for the development include mattress recycling, a food waste compost program, office space, educational classrooms and a business park with sustainable businesses. Initial construction of the landfill infrastructure is not anticipated until approximately 2028-2029, or after the completion of several permitting steps. Initial stages of landfill development would have sufficient space to allow for solid waste disposal until 2045.

The NWHC currently relies upon a private, commercial carter (Pellitteri Waste Systems) for solid waste collection and disposal. The company collects wastes from a variety of commercial, industrial and institutional customers including hospitals, schools, retail operations, manufacturers, office complexes, and other facilities including the NWHC. Two dumpsters, each with a five cubic yard capacity, are provided at the NWHC, one for common office-type trash and a second for recyclables which the NWHC separates from the waste stream.

An important aspect of the NWHC's work in studying pathogens and diseases in wildlife is the bio-secure handling and disposal of wildlife carcasses. In its work, the NWHC utilizes two permitted infectious waste incinerators at the Main Building and TIB with most materials to be incinerated originating from necropsy and research activities. Laboratory and animal wastes are separated into two categories; pathology waste and medical/infectious waste. The majority of the medical/infectious waste is steam sterilized and not incinerated. Waste consisting of animal carcasses, animal feed, bedding and associated containers and classified as pathology waste is incinerated. Ash resulting from incinerator operation is collected and transported by a licensed contractor to the Rodefild Landfill for final disposal.

3.18.2 Potential Impacts

No Action Alternative

Under the No Action Alternative, the property and structures comprising the NWHC in Madison would remain in their current condition. The utility providers and the infrastructure that supply potable water, wastewater collection and treatment, electric power, natural gas, telecommunications, and solid waste services would be unaffected and mitigation measures would not be necessary.

Preferred Alternative (New NWHC)

- **Water Supply**

The Madison Water Utility operates a potable water system currently supplying on average approximately 24.8 mgd to its customers. According to the Water Utility, the city's raw water sources and water storage and distribution system are sufficient to meet the needs of its customers.

Design of the new NWHC would incorporate modern water-conserving fixtures and highly efficient heating and cooling equipment that will utilize water more economically than the current NWHC, pursuant to the requirement to reduce potable water use intensity in EO 14057. Although precise water requirements are dependent on a final facility design and selection of various fixtures and equipment, it is conservatively estimated that average daily water demand at the new NWHC would be approximately 18,300 gallons with a peak water demand of approximately 450 to 605 gpm, fire flow requirements of approximately 7,000 gpm for 240 minutes, and a minimum water pressure of 20 psi (USGS 2024). Once development is completed, staff would be transferred to the new NWHC and the existing facility would be decommissioned and demolished. With no increase in the NWHC workforce, an increase in water demands attributable to NWHC staff and their families is also not expected. There is no plan to use groundwater from an on-site well to supplement water supplies for potable or irrigation purposes.

With little to no net increase following NWHC development, the Preferred Alternative is not expected to result in adverse impacts to water supply infrastructure, services, or customers in the city. However, to accommodate development of the NWHC (while maintaining operation of the existing NWHC), new on-site underground water lines would be installed which may result in potential temporary noise, fugitive dust, and soil erosion impacts.

- **Wastewater Collection and Treatment**

The city's Sanitary Sewer Utility Section operates and maintains the wastewater collection system which conveys flows to the Nine Springs Wastewater Treatment Plant for treatment. Overall, wastewater collection and treatment infrastructure is sufficient to meet the needs of Madison's residents and businesses.

Although precise wastewater flows are dependent in part on a final facility design and selection of various fixtures and equipment, it is conservatively estimated that average daily wastewater flows resulting from operation of the new NWHC would be approximately 90 percent of its water use or 4,000 gallons per day. As noted earlier, the primary sources of flow are domestic wastewater generated by staff and visitors and wastewater resulting from the research studies performed at the NWHC with the majority of flows

occurring between 8:00 AM and 6:00 PM on weekdays (normal business hours). In addition, USGS intends to decommission and demolish the existing NWHC once the new facility is activated.

By employing modern water-conserving fixtures, little to no net increase in wastewater flow is anticipated following NWHC development. Therefore, improvements to the wastewater collection and treatment systems to service the new NWHC are not anticipated. With no increase in the NWHC workforce, an increase in wastewater flow attributable to staff and their families is also not expected. Based on the above, the Preferred Alternative is not expected to result in adverse impacts to wastewater infrastructure, services, or customers in the city. However, to accommodate development of the NWHC (while maintaining operation of the existing NWHC), new on-site underground wastewater collection lines would be installed which may result in potential noise, fugitive dust, and soil erosion impacts.

- **Electrical Service**

Operation of the current NWHC has an electric service demand of approximately 4,470 kWh per day (USGS 2024b). Once the new NWHC is operational, staff would be transferred to the new facility and the existing NWHC, which employs older, less-efficient electrical and mechanical systems, would be decommissioned and demolished.

The new NWHC would incorporate modern energy-conserving fixtures and highly efficient heating and cooling equipment that will utilize electric power more economically than the current NWHC. In addition, the new NWHC would include PV power production, a geothermal system for heating and cooling, and a high performance façade. Although actual energy demands and load estimates depend on final facility design and selection of mechanical and other equipment, electric use based on energy modeling is estimated at 5,668,000 kWh/year. This does not account for the planned on-site PV power generation which has an estimated maximum production of approximately 2,110,000 kWh/year (USGS 2024b).

Overhead and underground electric lines that supply power to the Main Building, TIB, and garage would be maintained until the new NWHC is activated at which time they would be disconnected. Plans for the new NWHC include placing underground approximately 700 linear feet of overhead power lines that currently extend westward from the existing NWHC facilities to Forward Drive, thereby improving the security and resiliency of the new NWHC.

By ceasing operation of the existing NWHC, employing energy-efficient equipment and renewable energy sources, operation of the new NWHC would not result in adverse impacts to MG&E infrastructure and its residential, commercial, and industrial customers in the area.

- **Natural Gas Service**

Natural gas service to the NWHC is provided by MG&E which reportedly has sufficient supplies and infrastructure to meet the needs of its customers. Operation of the current NWHC consumes natural gas at an average of approximately 52.44 MCF per day. Once the new NWHC is activated, staff would be transferred to the new facility and the existing Main and TIB buildings would be decommissioned and demolished.

The plan for the new NWHC is for full electrification of building systems; including heating, cooling, domestic water heating and as much of the internal laboratory process use as commercially viable. The only natural gas use anticipated is for process use where electrification was determined to be prohibitive or unavailable. Based on energy modeling, natural gas use at the new NWHC is estimated at 2,420 MCF/year (6.63 MCF/day), a volume less than current NWHC usage (USGS 2024b). This lower volume of natural gas demand is expected to be easily accommodated by MG&E's existing natural gas infrastructure in the area.

Other than potential temporary impacts such as noise and soil erosion resulting extending service from MG&E's gas distribution system to the new NWHC, no adverse impacts are anticipated. Extending a service line to the new NWHC and securing any required permits and approvals would be the

responsibility of the construction contractor working with the gas utility. The Preferred Alternative is not expected to disrupt or affect natural gas supplies or services provided to residential, commercial, or industrial customers in the region.

- **Telecommunications**

AT&T is the current telecommunication service provider to the NWHC and operates and maintains the telecommunication infrastructure in the area and serving the facility. At this time, operation of the new NWHC is expected to require four 4-inch conduits and handholes, 48 millimeter/48SM armored indoor/outdoor fiber optic service cable, and approximately 100 pairs of copper voice circuits (USGS 2023).

Telecommunications infrastructure (copper cable, fiber optic cable, etc.) exists in the vicinity of the NWHC and would be routed to the new facility. Extending telecommunications services to the new NWHC would be the responsibility of the local service providers in coordination with the construction contractor and USGS. Other than temporary impacts associated with traffic safety controls which may result while extending telecommunications infrastructure to the new NWHC, no adverse impacts are expected. Any traffic controls implemented off the property would be temporary.

With no change to the nature of NWHC operations and an equivalent number of staff, there would be no notable change in the nature and level of telecommunication services required during operation. As a result, the Preferred Alternative is not expected to result in adverse impacts on telecommunications infrastructure, services, providers, or customers in the region.

- **Solid Waste Management**

Construction of the new NWHC would generate solid waste or recyclable materials requiring collection and disposal by one or more of the licensed commercial haulers which serve the City of Madison and Dane County. During that time, solid wastes of varying types and quantities would be generated by the removal of the current parking lot, foundation and structure construction, interior build-out and finishes, utility installations, etc., with collection and disposal of such wastes the responsibility of the construction contractors. Contractors would be responsible for ensuring that all construction-derived wastes are properly stored in dumpsters on-site until collected and that all such wastes are disposed of only at facilities permitted to accept construction wastes for recycling or disposal.

After the new NWHC becomes operational, the Main Building and TIB would be demolished. Demolition contractors would be responsible for ensuring that all appropriate abatement measures have been performed involving ACM and lead based paint and that all demolition-derived wastes are properly segregated and stored on-site until transported for final disposal. For example, the county's Rodefild Landfill accepts ACM for final disposal in addition to construction and demolition wastes. It is not anticipated that the volumes of demolition-derived wastes will adversely impact collection and disposal services available in the region for that type of waste.

Operation of the new NWHC would result in solid waste requiring collection and disposal. By maintaining an equivalent number of staff there would be no notable change in the nature or volume (increase or decrease) of solid wastes requiring collection and disposal. The volume of solid wastes produced by the new NWHC would continue to represent a small fraction of the total waste load in the region. As with the current facility, operation of the new NWHC would include a program to recycle paper, cardboard, glass and other materials thereby minimizing the volume of waste requiring disposal. Solid waste and recyclables would continue to be separated and stored in individual enclosed dumpsters on-site until collection.

The landfill serving Dane County has sufficient short-term capacity (10 years) to accommodate wastes; during this time, a long-term expansion of the county's landfill disposal capacity is expected. Toxic, hazardous, and/or bio-medical wastes generated during NWHC operation would continue to be handled, stored, and disposed of according to applicable regulations.

The Preferred Alternative is not expected to result in adverse impacts to the environment or to solid waste collection and disposal infrastructure, service providers, or customers in the region.

3.18.3 Recommended Mitigation

Water Supply

Temporary impacts associated with installing new on-site water service lines would be minimized by ensuring that the construction period is kept to the shortest duration possible and effective worker safety, noise, fugitive dust, and soil erosion control measures are implemented. Design and installation of on-site water system infrastructure would follow applicable local and state regulations. No mitigation measures beyond coordination with the Madison Water Utility are warranted.

Wastewater Collection and Treatment

Temporary impacts during installation of wastewater collection lines would be minimized by ensuring effective worker safety and fugitive dust, noise, and soil erosion control measures are implemented.

Design and installation of on-site wastewater infrastructure would follow applicable local and state regulations. No additional mitigation measures beyond coordination with appropriate local authorities are warranted.

Electrical Service

Mitigation measures would include ensuring that new power line installation is carried out in conformance with applicable regulations and with no disruption to service. Any disruption that might occur as a result of the new service connection would be temporary and kept to the shortest duration possible and be mitigated through careful coordination between USGS, its design and construction contractors, and MG&E. Any other potential temporary impacts resulting from placing underground approximately 700 linear feet of electric lines would be minimized by ensuring effective worker safety and that fugitive dust, noise, and soil erosion control measures are implemented. No other mitigation measures involving electric power service are planned or warranted.

Natural Gas Service

Mitigation measures would include ensuring that new on-site natural gas service line and connections are carried out in conformance with applicable regulations and with a minimum of disruption to operation of the current NWHC. Any disruptions that might occur during the construction phase would be temporary, kept to the shortest duration possible, and mitigated through careful coordination among NWHC, the construction contractors, and MG&E. Any other potential temporary impacts due to construction would be minimized by ensuring effective worker safety, noise, and soil erosion control practices are implemented.

Telecommunications

Providing telecommunications service to the new NWHC would not result in adverse impacts to current or future customers of the region. However, temporary impacts such as noise and traffic interruptions may occur during construction to extend telecommunications infrastructure to the new facility. These potential impacts would be minimized by ensuring that construction periods are kept to the shortest duration possible and effective traffic safety measures are implemented. Other than coordinating the telecommunications needs of the proposed NWHC between USGS, the appropriate service provider(s), and the construction contractors, no other mitigation measures are warranted.

Solid Waste Management

During construction of the new NWHC and demolition of the existing facilities, waste materials suitable for recycling would be separated from other wastes and transported to an approved recycling facility. Construction contractors would be required to minimize disposal of solid waste by diverting recyclable materials to approved facilities in accordance with EO 14057 and EO 13834, Efficient Federal Operations.

Operation of the new NWHC would include a recycling program to minimize the volume of solid waste requiring disposal.

Other than coordinating the solid waste disposal and recycling needs of the proposed NWHC with the appropriate collection and disposal service providers, no other mitigation measures are warranted.

3.18.4 Cumulative Impacts

The geographic study area for cumulative impacts to utilities is Dane County and the City of Madison. Construction and operation of the new NWHC and demolition of the current facilities would generate solid waste requiring disposal. Operation of the new NWHC would result in little to no change in potable water, wastewater, electric, natural gas, telecommunications, and solid waste collection services, and would not substantially change the NWHC's demand for these services. During construction, temporary cumulative impacts to utility infrastructure in the immediate vicinity of the NWHC property may occur if construction overlaps with construction of the proposed multi-family housing development on Ellis Potter Court. These impacts would be temporary as new utility lines are installed and would cease once construction is completed.

Projected population change in the city and county may require expansion of utility infrastructure or services. Any expansions would be handled as part of facilities planning undertaken by utility providers and under the land use planning and permitting processes of Dane County or the City of Madison. The Preferred Alternative would not substantially contribute to demand requiring expansion of utilities.

3.19 Transportation Systems

3.19.1 Existing Conditions

Regional Highways

The regional roadway network in Dane County is well developed and comprises major highways and arterials that connect the City of Madison with Milwaukee to the east, Chicago to the southeast, and other population centers in the Upper Midwest region. Included as part of the network is Interstate 90 (I-90), located approximately 11 miles east of the NWHC. I-90 provides a high-speed, north-south route connecting Illinois to the south with Minnesota to the west along with other intra- and interstate highways. The highway is well maintained, has a posted speed limit of 70 miles per hour (mph), and offers four travel lanes in each direction with paved shoulders. Depending upon the location, Wisconsin Department of Transportation (DOT) estimates average annual daily traffic (AADT) on I-90 ranges from 50,000 vehicles to over 100,000 vehicles (Wisconsin DOT 2023).

The regional highway network also includes I-94, located approximately 15 miles east of the NWHC. I-94 provides a high-speed, east-west route connecting Madison with Milwaukee to the east along with other intra- and interstate highways. The highway is well maintained, has a posted speed limit of 70 mph, and provides two travel lanes in each direction with paved shoulders. Depending upon the location, Wisconsin DOT estimates AADT on I-94 ranges from 30,000 vehicles to over 45,000 vehicles (Wisconsin DOT 2023).

The West Beltline Highway (aka U.S. Route 12/14) forms the northern boundary of the NWHC property. Classified as a principal arterial roadway, the Beltline Highway provides high-speed, east-west connections, is well maintained, has a posted speed limit of 55 mph, and varies between two to four travel lanes in each direction with paved shoulders. However, the Beltline Highway limits north-south travel in the vicinity of the NWHC, with no locations for vehicles to travel across the Beltline between South Gammon Road and Whitney Way. There is, however, a bike path underneath the Beltline at Grand Canyon Drive. Wisconsin DOT estimates AADT on the Beltline Highway near the NWHC property to be approximately 83,000 vehicles.

Regional highways serving the Dane County area have been designed and constructed to modern standards and have no reported restrictions on the height and weight of trucks and other vehicles operating on such roadways.

Local Roadways

Access to the NWHC for employees, visitors, and service vehicles is via Schroeder Road which is one of the city's east-west corridors and connects with the Beltline Highway to the east and South Gammon Road to the west. Forming the NWHC's southern border, Schroeder Road is classified as a minor arterial with one travel lane in each direction and a separate dedicated lane for left and right turns located between the eastbound and westbound lanes (three lanes total).

With overall width of 40 feet (curb to curb), Schroeder Road also includes a dedicated bike lane and sidewalks in each direction. The posted speed limit is 30 mph. Signalized intersections are located at South Gammon Road to the west and South Whitney Way to the east. According to recent data, the 24-hour volume of traffic along Schroeder Road in November 2022 was recorded at approximately 10,000 to 11,000 vehicles.

Located approximately 1,000 feet west of the NWHC entrance driveway is Forward Drive, a collector roadway with a stop control at its T-intersection with Schroeder Road. Forward Drive extends northward approximately 2,000 feet from Schroeder Road and terminates in a cul-de-sac before reaching the Beltline Highway. The roadway serves Exact Sciences Laboratories, NBC 15 WMTV Station, West Madison Little League Fields, Madison Ice Arena, and several commercial developments. Forward Drive has one travel lane in each direction, parking along the length of the road, and an overall width of 40 feet (curb to curb). Forward Drive also has sidewalks in each direction and in 2022, carried approximately 2,500 vehicles per day. With no posted speed limit, the speed limit on Forward Drive is assumed to be 25 mph per local ordinance.

Hathaway Drive creates a second T-intersection approximately 150 feet west of Forward Drive, which primarily serves the residential neighborhood south of Schroeder Road. White Oaks Lane and Hampshire Place are also under stop control at their intersections with Schroeder Road and serve a small number of residences located south of Schroeder Road. Ellis Potter Court, located approximately 560 feet west of the NWHC entrance, provides access to several small commercial uses.

Mineral Point Road, Whitney Way, Raymond Road, and Gammon Road are other local arterials that connect the Southwest Area, within which the NWHC is located, to the rest of Madison. Local roadways leading to and from the NWHC have been designed and constructed to modern standards and have no reported restrictions on the height and weight of trucks and other vehicles operating on such roadways. There are no north-south collector or arterial streets through the area between Gammon Road and Whitney Way.

Public Transit Service

Madison Metro Transit operates bus service throughout Madison and its immediate suburbs. Bus service to the NWHC is available via Route 50 which travels along Schroeder Road from Whitney Way to the east to Gammon Road and beyond to the west. Bus stop #8862 is located on the westbound side of Schroeder Road and close to the NWHC entrance driveway while Bus stop #8427 is located on the eastbound side of Schroeder Road and opposite the NWHC entrance driveway. According to NWHC officials, bus use by staff is low due the travel time and inconvenience of having to transfer across multiple routes to arrive and depart from the NWHC.

NWHC Access

Access to the NWHC is provided by a single driveway leading from Schroeder Road. The gated driveway provides one lane in each direction and is under stop control at its T-intersection with Schroeder Road. The driveway leads to a single shared parking lot with over 100 paved spaces located west of the Main Building and TIB.

To document the operation of roadways and intersections that lead to and provide access to the NWHC property, traffic data were collected on November 1, 2022 (Appendix G). Traffic counts were conducted at the intersections of Schroeder Road with Forward Drive and at the NWHC access driveway using traffic video cameras (Miovision Scout Units). 24-hour counts were performed at both locations and included multiple vehicle classifications as well as bicycle and pedestrian volumes. Based on the traffic data collected, the morning peak hour occurred from 7:30 to 8:30 AM while the evening peak hour occurred from 4:15 to 5:15 PM.

The total number of vehicles entering and exiting the NWHC property was determined by the driveway traffic counts summarized in Table 3-10 and depicted on Exhibit 3-13. Both show a limited volume of traffic entering and exiting the facility during each peak hour and throughout the workday.

3.19.2 Potential Impacts

No Action Alternative

Under the No Action Alternative, the property and structures comprising the NWHC in Madison would remain in their current condition. Traffic patterns and volumes along Schroeder Road and other local and regional roadways and public transit networks and ridership would be unaffected and mitigation measures would not be necessary.

Preferred Alternative (New NWHC)

- **Construction Phase**

Construction is expected to increase traffic volumes along the routes leading to and from the NWHC by workers and the delivery of materials, supplies, and equipment. The volume and timing of construction traffic depends upon the number of contractors involved, the construction methods to be used, the schedule and duration of each construction stage, among other factors. These details are left to the discretion of the construction contractor to afford the contractor flexibility to use equipment and personnel as necessary in order to accomplish the work, maintain the schedule, and control costs. However, general conclusions can be drawn based on the nature, scale, and duration of the construction activities.

The number of workers traveling to the site would vary depending on the phase of construction during the approximately 36-month schedule and at peak construction periods could total 50-75 workers with arrival and departure times generally occurring between the hours of 7:00 AM and 4:00 PM. An indeterminate number of trucks delivering construction materials, supplies, and equipment would occur throughout the workday, also depending on the stage of construction.

Table 3-10: Existing NWHC Traffic Volumes

Time Period	Entering Vehicles	Exiting Vehicles	Total Vehicles
AM Peak Hour (7:30 – 8:30 AM)	22 (100%)	0 (0%)	22
PM Peak Hour (4:15 – 5:15 PM)	2 (7%)	28 (93%)	30
Total Daily Traffic Volumes	80 (50%)	80 (50%)	160

Source: WSP 2022

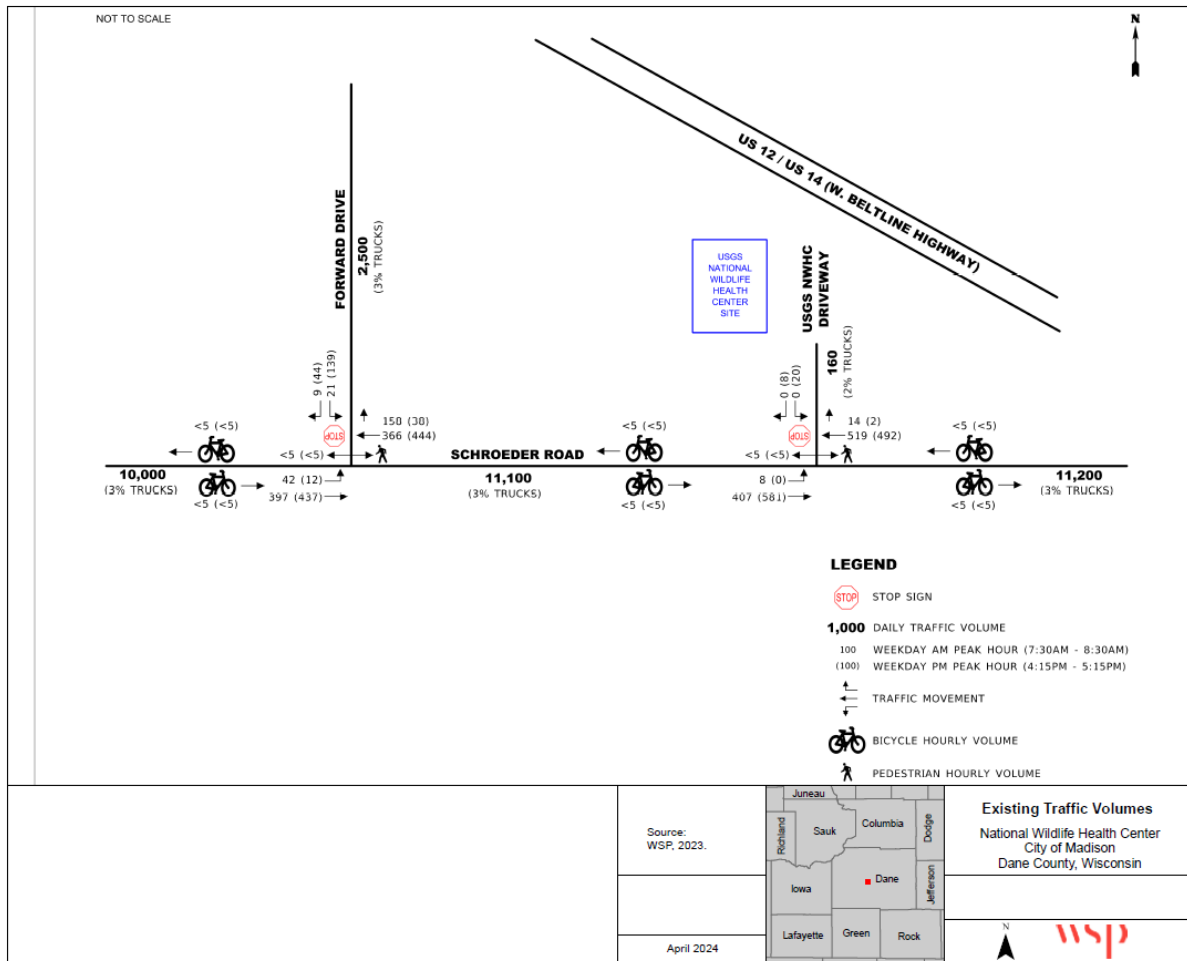


Exhibit 3-13: Existing Traffic Volumes

Construction workers and truck traffic would enter the property via the NWHC access driveway using great care to avoid interfering with staff and visitors arriving and departing during normal NWHC operation. Traffic movements into and out of the NWHC property would be coordinated with the appropriate city and county traffic control agencies. Although a temporary increase in traffic along Schroeder Road is expected during construction, the increase would be small relative to daily traffic volumes recorded on Schroeder Road (approximately 10,000 to 11,000 vehicles) and is not expected to impact normal traffic operations. Periodic traffic plans may be needed to manage construction activity. Any traffic controls implemented off the property would be temporary and coordinated with the appropriate city traffic control agencies.

- **Operation Phase**

Operation of the new NWHC would result in a continuation of traffic on roadways leading to the facility by NWHC staff, visitors, and service vehicles. Staff assigned to the NWHC work a single shift from 8:00 AM to 5:00 PM, Monday through Friday. Employees typically arrive at the facility several minutes prior to the start of work and similarly depart several minutes following the end of the workday. Then, as now, the AM peak hour is expected to be from 7:30 to 8:30 AM and the PM peak hour from 4:15 to 5:15 PM. For a conservative analysis, it is assumed that all employees would rely on single-occupancy vehicles for

commuting. Most trips occur during weekdays as far fewer trips to the NWHC are made by employees, visitors, and service vehicles on weekends.

The NWHC routinely receives visitors who arrive and depart the facility at random times throughout the workday. In addition, service vehicles travel to the NWHC to deliver needed supplies, equipment, samples, and other materials associated with day-to-day operation along with those for mail delivery, equipment repair and maintenance, and waste removal among others. Based on experience operating the current NWHC, and with the new NWHC operating with the same number of staff and in largely the same manner, the total number of visitor and service vehicles traveling on Schroeder Road to the proposed facility is not expected to change from the current volume. In addition, visitor and service vehicle travel would continue to occur largely during off-peak travel periods and thus not contribute to peak-hour traffic volumes.

- **Projected Traffic Volumes**

Existing and projected conditions were analyzed using the Synchro 11 traffic analysis/simulation software during the morning (7:30 AM to 8:30 AM) and evening (4:15 PM to 5:15 PM) peak hours. Traffic operation is characterized according to the amount of control delay at each approach and quantified into a Level of Service (LOS). The LOS grades (A through F), which are defined in the Transportation Research Board's Highway Capacity Manual (HCM), quantify and categorize a driver's discomfort, frustration, fuel consumption, and travel times experienced as a result of intersection control and the resulting traffic delay. The HCM Two-Way Stop Control methodology within the Synchro 11 software package was utilized to calculate the LOS and delay for the intersections under study.

There is no comparable land use provided within the Institute of Transportation Engineer (ITE) Trip Generation Manual to predict the number of trips generated to and from the NWHC. Therefore, the best data available to estimate the number of trips entering and exiting from the new facility is based on the actual traffic data collected at the driveway entrance in 2022. Projected NWHC trip generation is summarized in Table 3-11.

Table 3-11: Projected Trip Generation

Daily Weekday Trips	AM Peak Hour Trips			PM Peak Hour Trips		
	Entering Trips	Exiting Trips	Total AM Trips	Entering Trips	Exiting Trips	Total PM Trips
160 (80 enter/80 exit)	22 (92%)	2 (8%)	24 (100%)	3 (10%)	28 (90%)	31 (100%)

In conducting the analysis, the following conservative conditions were applied:

- Several turning movements at the NWHC driveway recorded zero vehicles during the peak hours, therefore, one vehicle was added to each of these movements to understand how each movement will operate.
- While the number of NWHC employees working remotely on a daily basis may increase over time, no decrease in existing driveway volumes was made.
- While employees and visitors have access to other transportation modes including bicycle, pedestrian, and bus transit, no changes were made to the existing staff or visitor arrival/ departure modes.
- The new NWHC would not affect the volume of recreational traffic from visitors to the prairie area.

- No carpooling among staff or visitors was assumed in that each trip is equal to a single-occupancy vehicle.

Operation of the new NWHC is not expected to vary from current NWHC operation with the number of staff and visitors to remain the same as with the existing NWHC. Therefore, the volume of trips generated by the new facility and the directional distribution of vehicles entering and exiting the area of the facility during a typical weekday were projected to remain unchanged for the future conditions analysis. Based on the recorded traffic data, 67 percent and 33 percent of traffic arrive and depart the facility from/to the east and west, respectively.

To estimate the future Schroeder Road traffic volumes following development, a background traffic growth factor was applied. This growth factor estimates a one percent increase in traffic per year until the new NWHC is fully operating in 2028. Therefore, mainline traffic volumes on Schroeder Road and Forward Drive were projected upwards to the year 2028. Exhibit 3-14 illustrates the projected volumes. The capacity analysis results for both existing and projected conditions for the intersections within the study area are summarized in Table 3-12. Under existing conditions, all intersection movements operate with LOS C or better.

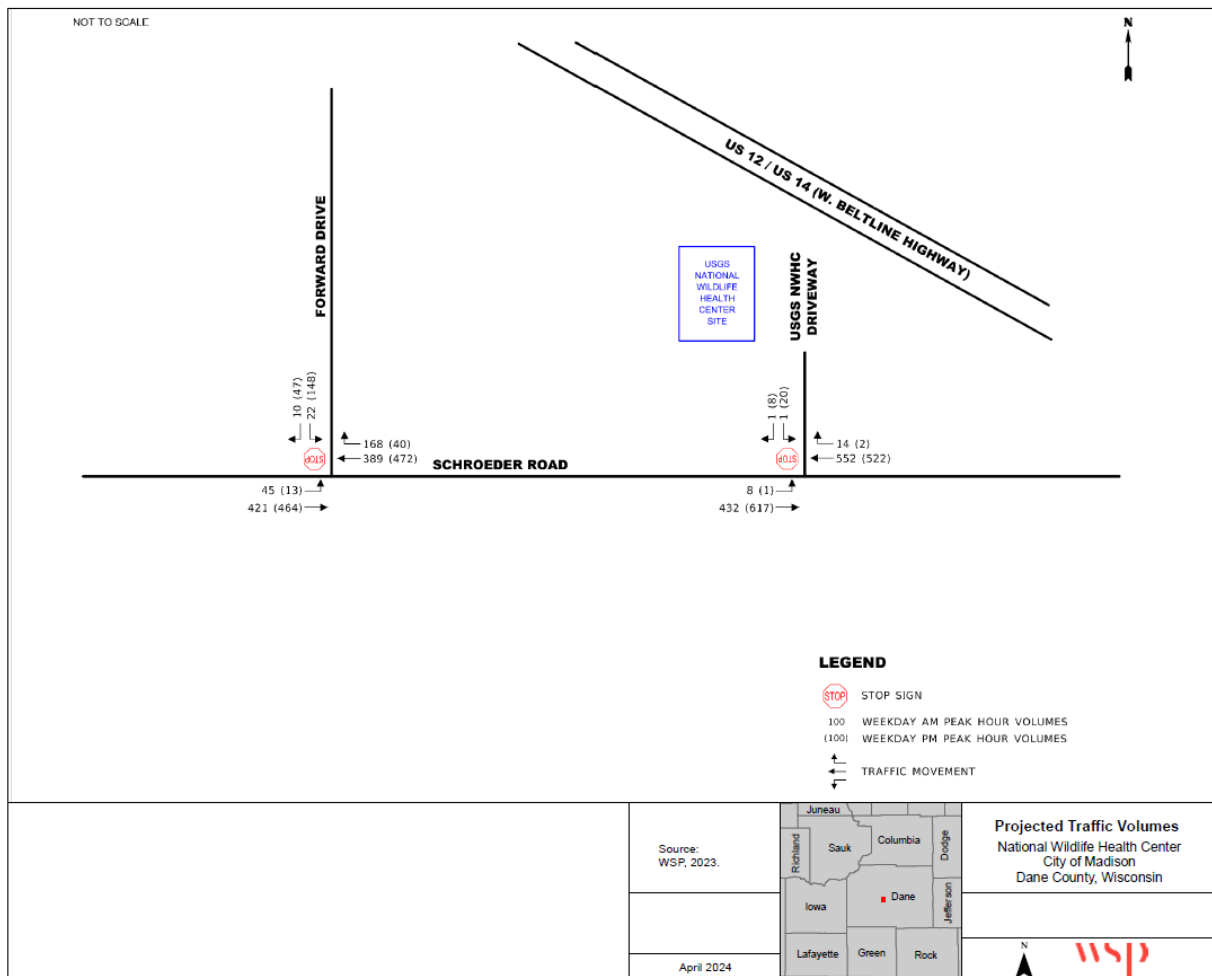


Exhibit 3-14: Projected Traffic Volumes

Table 3-12: Unsignalized Intersection Capacity Analysis Results (Existing and Projected)

Unsignalized Intersection and Movement	AM Peak Hour (7:30 – 8:30 AM)		PM Peak Hour (4:15 – 5:15 PM)
Existing Conditions¹			
Schroeder Road with Forward Drive			
Eastbound Left Turn	LOS A – 8.8		LOS A – 8.6
Southbound Approach	LOS B – 14.3		LOS C – 22.8
Schroeder Road with NWHC Driveway			
Eastbound Left Turn	LOS A – 8.7		N/A ²
Southbound Approach	N/A ²		LOS C – 15.4
Proposed Conditions¹			
Schroeder Road with Forward Drive			
Eastbound Left Turn	LOS A – 9.0		LOS A – 8.7
Southbound Approach	LOS B – 14.8		LOS D – 26.3
Schroeder Road with NWHC Driveway			
Eastbound Left Turn	LOS A – 8.8		LOS A – 8.6
Southbound Approach	LOS B – 13.6		LOS C – 16.0
Proposed Conditions with Improvement^{1,3}			
Schroeder Road with NWHC Driveway			
Eastbound Left Turn	LOS A – 8.8		LOS A – 8.6
Southbound Left Turn	LOS B – 14.9		LOS C – 17.1
Southbound Right Turn	LOS B – 12.3		LOS B – 12.2
Southbound Approach	LOS B – 13.6		LOS C – 15.7
¹ Represents seconds of delay per vehicle. ² No traffic volume was observed on the movement during the time frame indicated, therefore, an average vehicle delay cannot be estimated. ³ Proposed improvement consists of widening and striping the access driveway to provide one inbound lane, one outbound left-turn lane, and one outbound right-turn lane.			

Under projected conditions, the stop sign-controlled T-intersections of Schroeder Road with Forward Drive and Schroeder Road with the NWHC driveway would operate at acceptable LOS and delays. During the evening peak hour, the Forward Drive approach is projected to decrease from LOS C to a marginal LOS D. The increase in delay at this approach is due to the increase in background traffic anticipated from other surrounding land uses as NWHC traffic is not expected to contribute to volumes on Forward Drive.

The NWHC driveway would continue to operate at LOS C and both intersections benefit from the two-way left-turn median on Schroeder Road. The median provides refuge for southbound left-turn traffic, which increases the number of allowable gaps in traffic along Schroeder Road. The two-way left turn lane also provides adequate storage for eastbound left turning vehicles waiting to perform their maneuver without impeding the eastbound through traffic movement.

To improve exiting from the NWHC driveway, the proposed development plan includes the addition of an exclusive southbound right-turn lane. The additional turn lane would provide no operational benefit in the morning as there is negligible traffic exiting the facility at that time; however, during the evening peak hour, exiting right turning traffic would improve from LOS C to LOS B. This improvement requires widening and striping of the driveway to improve egress. As proposed, the NWHC driveway would

provide one inbound lane with exclusive left turn and right turn lanes under one-way stop control during exiting. No alterations to Schroeder Road, the location of the transit stop, sidewalks or the bike lane are necessary or proposed.

Operation of the new NWHC is not expected to notably alter existing traffic operations or the number of employees and visitors. Therefore, future traffic to the NWHC is expected to remain unchanged from current conditions. Appendix G (Traffic Impact Analysis) describes the methodology and results of the traffic impact analysis. The new NWHC will include dedicated on-site parking with approximately 160 spaces devoted to staff parking, visitor parking, and for government vehicles with 12 spaces equipped with duplex outlet electric vehicle charging stations.

3.19.3 Recommended Mitigation

Construction Phase

Communication and coordination between USGS, the construction contractors, and the appropriate city and county traffic control agencies would be used to avoid or minimize temporary traffic disruptions during construction. Any disruption to normal traffic operations during construction would be kept to the shortest duration possible and be coordinated in advance with the appropriate traffic control agencies to ensure the safety and well-being of the traveling public.

Operation Phase

With no change to the overall volume of traffic arriving and departing the new NWHC during operation, no other mitigation measures are required.

3.19.4 Cumulative Impacts

The temporary increase in traffic along Schroeder Road during construction is not expected to impact normal traffic operations on this road. If construction of the proposed multi-family development on Ellis Potter Court overlaps with construction under the Preferred Alternative, this project also would contribute to traffic on Schroeder Road. Daily traffic volumes recorded on Schroeder Road are approximately 10,000 to 11,000 vehicles; therefore, it is unlikely that these projects would result in a noticeable drop in the level of service. Any disruption to normal traffic operations during construction would be kept to the shortest duration possible and be coordinated in advance with the appropriate traffic control agencies.

Operation of the new NWHC is not expected to alter existing traffic operations or the number of employees and visitors. Therefore, future traffic to the NWHC is expected to remain unchanged from current conditions. As discussed above, background traffic in the area is projected to increase. This increase would contribute to a decrease in the level of service at the Forward Drive approach to the T-intersection of Forward Drive and Schroeder Road. NWHC traffic is not expected to contribute to traffic volumes on Forward Drive. Based on the above, the Preferred Alternative would not contribute substantially to cumulative impacts to transportation systems.

3.20 Air Quality

3.20.1 Existing Conditions

Regulatory Responsibilities

The federal government has established primary and secondary ambient air quality standards for carbon monoxide (CO), one-hour and eight-hour ozone (O₃), sulfur dioxide (SO₂), total and inhalable particulates (PM₁₀ and PM_{2.5}), nitrogen dioxide (NO_x), and lead (Pb). Counties in the U.S. that do not meet the National Ambient Air Quality Standards (NAAQS) for a particular pollutant are described as “non-attainment areas” for that criteria pollutant while areas that meet both primary and secondary standards are known as “attainment areas.” Areas determined to be in recent attainment are known as “maintenance areas.” Under the Clean Air Act (CAA) and the Clean Air Act Amendments (CAAA), state and local air pollution control agencies have the authority to adopt and enforce ambient air quality

standards more stringent than the NAAQS. The State of Wisconsin has adopted the NAAQS that specify maximum permissible short-term and long-term emissions of the criteria pollutants. A description of NAAQS pollutants is provided in Appendix H, while national and State of Wisconsin ambient air quality standards are provided in Table 3-13.

Although the USEPA has the ultimate responsibility for protecting ambient air quality, each state and delegated local agency has the primary responsibility for air pollution prevention and control. The CAA requires that each state submit a State Implementation Plan (SIP), which describes how the state will attain and maintain air quality standards in non-attainment areas. The SIP must be approved by the USEPA for each criteria pollutant. The agency responsible for implementing the SIP in Wisconsin is the Wisconsin DNR.

Table 3-13: National and State of Wisconsin Ambient Air Quality Standards

Pollutant	Standards	
	Primary Standard	Secondary Standard
Carbon Monoxide		
Maximum 1-hour Average ^a	35 ppm	---
Maximum 8-hour Average ^a	9 ppm	---
Sulfur Dioxide		
Annual Arithmetic Mean	80 µg/m ³	---
Maximum 24-hour Average ^a	365 µg/m ³	---
Maximum 3-hour Average ^a	---	0.5 ppm or 1,300 µg/m ³
Particulate Matter—PM₁₀		
Maximum 24-hour Average ^b	150 µg/m ³	150 µg/m ³
Particulate Matter—PM_{2.5}		
Annual Geometric Mean	12 µg/m ³	15 µg/m ³
Maximum 24-hour Average ^c	35 µg/m ³	35 µg/m ³
Ozone		
8-hour Average (2015 standard)	0.070 ppm	0.070 ppm
8-hour Average (2008 standard)	0.075 ppm	0.075 ppm
Nitrogen Dioxide		
Annual Arithmetic Mean	53 ppb	53 ppb
Maximum 1-hour Average ^d	100 ppb	---
Lead		
Maximum Arithmetic Mean over a Calendar Quarter	0.15 µg/m ³	0.15 µg/m ³

Notes:

^a Maximum concentration not to be exceeded more than once per year.

^b Not to be exceeded by 99th percentile of 24-hour PM₁₀ concentration in a year (averaged over three years).

^c Not to be exceeded by 99th percentile of 24-hour PM_{2.5} concentration in a year (averaged over three years).

^d Annual 98th percentile value of daily maximum 1-hr concentrations, averaged over 3 years

ppm: parts per million.

ppb: parts per billion.

µg/m³: micrograms per cubic meter.

Source: 40 CFR § 50, and Wisconsin DNR 2021

Baseline Conditions

Wisconsin DNR operates a statewide network of 30 ozone and 18 fine particulate (PM_{2.5}) monitoring stations to measure ambient air quality in Wisconsin. The monitoring network focuses on USEPA's list of the most serious health-related air pollutants: ozone, inhalable particles (PM₁₀), sulfur dioxide, nitrogen dioxide and carbon monoxide with additional monitors measuring mercury and other toxic compounds. The monitoring network is operated under a federally approved network plan to ensure appropriate monitoring in all locations as required by federal regulations. Air pollutant concentrations and meteorological information are continuously monitored by Wisconsin DNR at two stations located in proximity to the NWHC at 2302 Hoard Street in Madison and at 2757 University Avenue in Madison.

Air quality in Wisconsin is improving with concentrations of most criteria pollutants decreasing in all regions of the state since monitoring began. Since the early 2000s,

- PM_{2.5} concentrations have decreased by 35 percent.
- Nitrogen oxide emissions have decreased by 63 percent.
- Volatile organic compound emissions have decreased by 58 percent.
- Emissions of sulfur dioxide have decreased by 89 percent, with the largest reductions coming from the electric utility sector.
- Carbon monoxide emissions have decreased by 58 percent, with most of the reductions coming from highway vehicles and the off-highway sector.

PM_{2.5} concentrations showed substantial reductions with all PM_{2.5} monitors in Wisconsin measuring concentrations well below federal air quality standards. As a result, USEPA considers all of Wisconsin "in attainment" of federal PM_{2.5} standards (USEPA 2022b).

The state has also seen improvements in air quality along the Lake Michigan shoreline, an area historically impacted by elevated ozone concentrations. Ozone forms via chemical reactions in the atmosphere between directly emitted pollutants known as ozone precursors such as nitrogen oxides (NO_x) and VOCs in the presence of sunlight. The 2018-2020 monitoring period shows decreases in ozone levels across the state, but most noticeably in the lakeshore region.

The improvements to Wisconsin's air quality are the result of federal and state control programs that have significantly reduced emissions of most directly emitted pollutants and their precursors. According to the Green Book published by the USEPA (last updated July 31, 2022), Dane County is classified as being in attainment for all NAAQS criteria pollutants. In addition, there are no major stationary air pollution emission sources located in proximity to the NWHC property.

National Wildlife Health Center Emissions

Under Wisconsin Administrative Code, Natural Resources Section 407.09(4)(a)3, all sources issued an air operation permit by the Wisconsin DNR must submit an annual (or more frequent) certification of compliance with all permit terms and conditions over the reporting period specified in the permit. As reported in the NWHC's 2021 Air Pollutant Compliance/Monitoring Summary Report, the NWHC has the following emission sources:

- Main Building Steam Boiler BO1
- Boiler B07
- Boiler B07a
- Steam Boiler B08

- TIB Steam Boiler B09
- TIB Boiler B13
- TIB Boiler B14
- Main Building Diesel Generator P01
- TIB Diesel Generator P02
- Main Building Infectious Waste Incinerator I01
- TIB Infectious Waste Incinerator I02

According to the most recent annual report, the NWHC was in continuous compliance with all permit conditions as contained in Operating Permit #113101890-F20 with emissions determined to be below reporting levels for 2023.

Greenhouse Gases

Greenhouse gases (GHGs) are chemical compounds found in the Earth's atmosphere that absorb and trap infrared radiation as heat. As incoming solar radiation is absorbed and emitted back from the Earth's surface as infrared energy, GHGs in the atmosphere prevent some of this heat from escaping into space, instead reflecting the energy back to further warm the surface (Center for Sustainable Systems 2015). Global atmospheric GHG concentrations are a product of continuous release and storage of GHGs over time. In the natural environment, the release and storage of GHGs are recurring. Anthropogenic (originating from human activity) releases, which include deforestation, soil disturbance, and the burning of fossil fuels, disrupt the natural carbon cycle by increasing the GHG emission rate over the storage rate, resulting in a net increase of GHGs into the atmosphere. The accumulation of increased GHG levels in the atmosphere increases temperatures and warms the planet through a greenhouse effect (USEPA 2024).

The GHGs emitted into the atmosphere through human activities are carbon dioxide (CO₂); methane (CH₄); nitrous oxide (N₂O); and fluorinated gases such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (SF₆) (USEPA 2024). N₂O is emitted during agricultural and industrial activities and during the combustion of fossil fuels and solid waste. Fluorinated gases, particularly SF₆, are often used as an electrical insulator in high-voltage substation equipment such as circuit breakers, transformers, and ground switches. Although fluorinated gases are emitted in small quantities, they have the ability to trap more heat than CO₂ and are considered gases with a high global warming potential (USEPA 2024).

The existing NWHC contributes GHG emissions from operation of staff and visitor motor vehicles, buildings and grounds maintenance equipment, HVAC equipment use, and emergency generator maintenance and use. Facility building and parking/walkway lighting and incinerator operation can also be considered indirect sources of GHG emissions because electricity is often generated by GHG emissions-producing facilities.

Climate change refers to a suite of changes occurring in the Earth's atmospheric, hydrologic, and oceanic systems. Although climate change is a global phenomenon, it manifests itself differently in different places such as sea level rise, temperature increases, hydrologic changes, increased wildfire activity, shifting ocean currents, extreme weather events, and altered terrestrial and marine ecosystems. While the warming trend has been discernable over the past 100 years, the past four to five decades have exhibited an accelerated warming rate with recent years ranking among the warmest on record. Most of the observed temperature increase can be attributed to both natural and anthropogenic activities that contribute heat trapping gases to the atmosphere. These GHGs, particularly CO₂ from the burning of fossil fuels, cause the Earth's atmosphere to trap the sun's heat. While the insulating effect (or GHG effect) of the atmosphere is important to living systems, the rapid increase in GHGs since the mid-19th century has adversely affected nature's systems.

Radon

Radon is a colorless, odorless, tasteless gas produced by the natural breakdown of uranium in soil and rocks. Decay of radon, which has a half-life of 3.8 days, results in such by-products as polonium, bismuth, astatine, and lead. When inhaled over a prolonged period of time, these radioactive by-products can cause lung cancer with up to 22,000 lung cancer deaths attributed to radon each year in the U.S.

Because radon is a gas, it can migrate through rocks and permeable soils such as sand and gravel, escaping into fractures and openings. Radon moving through soil near the ground surface disperses into the atmosphere, although radon gas may migrate into buildings through construction joints and foundation cracks. Even if soils contain only moderate levels of radon, high concentrations can accumulate in enclosed spaces.

The USEPA action level (the level at which measures should be taken to reduce radon concentrations) is four picocuries per liter of air (pCi/L). Dane County is among 27 counties located primarily in central and southern Wisconsin that exhibit a potential for radon at levels averaging over 4 pCi/L while the remainder of the state has a potential of between 2 and 4 pCi/L (USEPA 2022d) (Exhibit 3-15).

Radon levels were monitored following a recent plumbing repair that required the Main Building's basement floor to be penetrated. Monitoring occurred at five locations from November 9 - 13, 2023, to document conditions and ensure staff and visitor safety. The monitoring results showed all levels to be less than 0.5 pCi/L, which is well below the USEPA action threshold of 4.0 pCi/L and equivalent to radon levels found in the ambient environment (USGS 2023).

3.20.2 Potential Impacts

No Action Alternative

Under the No Action Alternative, the property and structures comprising the NWHC in Madison would remain in their current condition, local and regional air quality would be unaffected, and mitigation measures would not be necessary.

Preferred Alternative (New NWHC)

Although operation of the new NWHC would replace the existing NWHC and would not represent an additional source of emissions, potential air quality impacts may occur from construction and later demolition activities, routine NWHC operation and maintenance, and motor vehicle traffic associated with facility operation. These potential impacts and mitigation recommendations if applicable, are discussed below.

- **Construction Phase**

Construction-related air quality impacts could result from emissions of fugitive dust, volatile organic compounds (VOCs), and emissions from the combustion of fossil fuels in construction equipment. Fugitive dust may occur during ground clearing, grading, the stockpiling of topsoil and other materials, on-site movements of construction equipment, and transportation of construction materials to and from the site.

The scale of fugitive dust emissions depends on the nature, extent, and duration of the clearing and grading operations, the type of equipment employed, physical characteristics of the underlying soil, the speed at which construction vehicles are operated, wind direction and speed, and the fugitive dust control methods employed. Fugitive dust generated by construction activities typically consists of relatively large-size particles that settle within a short distance from the work areas.

The potential for fugitive dust impacts would be temporary, occurring only while exterior building construction is underway and during certain weather conditions. Fugitive dust emissions can occur during dry weather periods, periods of maximum construction activity, and high wind conditions. Potential

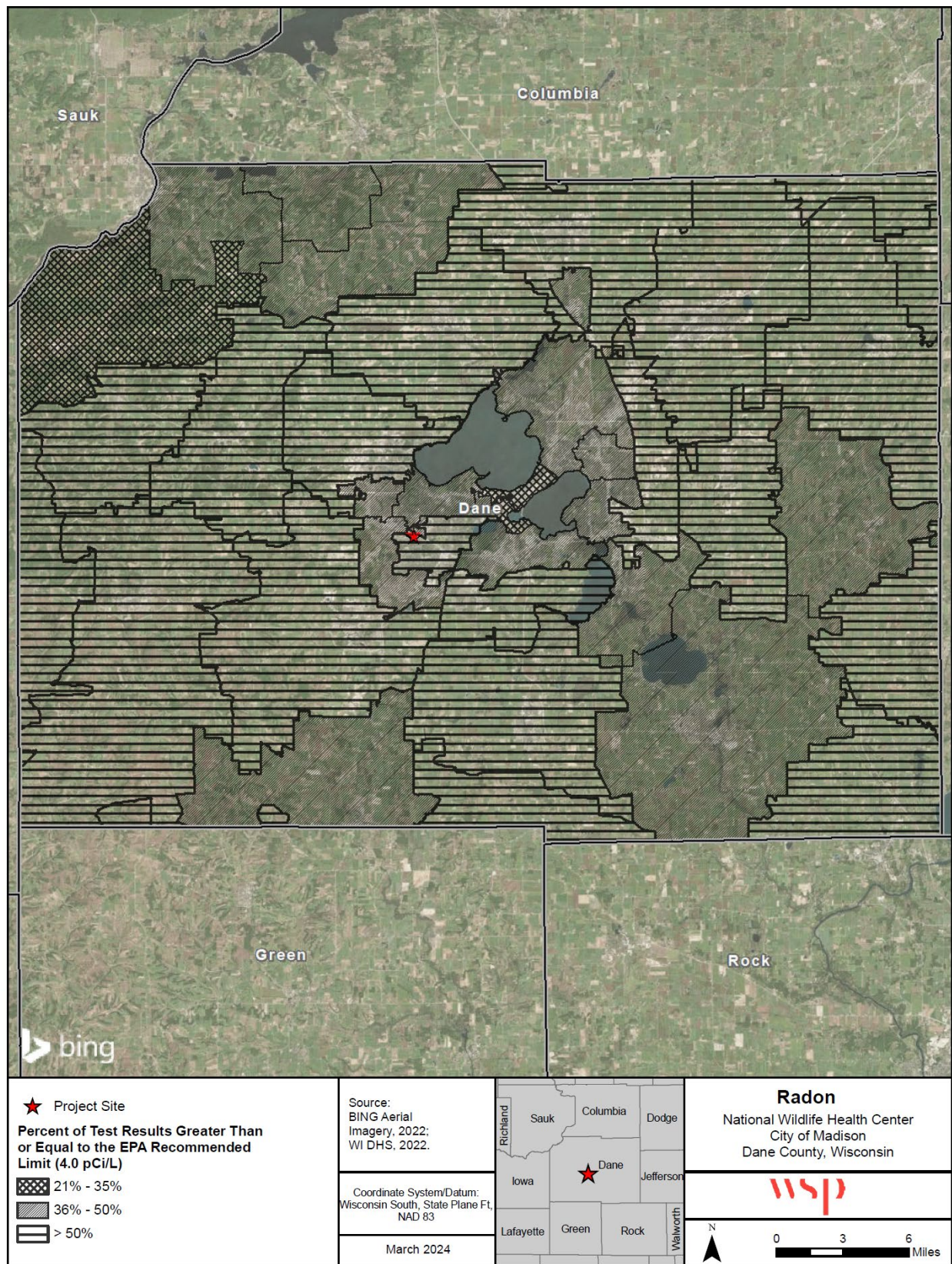


Exhibit 3-15: Radon Concentrations in Dane County

impacts would be intermittent and short-term and would be minimized by properly using and maintaining construction equipment, operating in well-ventilated areas, and by employing BMPs. By employing proper fugitive dust control methods and with the property encircled by dense stands of trees and understory, fugitive dust is not expected to adversely impact neighboring properties or residents living in the vicinity of the construction activities.

Potential air quality impacts may also occur during the paving of parking lots and the access driveway from the emission of VOCs, which are chemical compounds that are emitted as gases from certain solids or liquids. Potential impacts would be minimized by properly operating paving equipment, operating in well-ventilated areas, and minimizing, to the degree possible, the duration of paving operations.

Construction equipment emissions are not expected to require revisions to the NWHC's air operating permit and therefore do not require Prevention of Significant Deterioration or New Source review. Final selection of construction equipment would include a review of permitting requirements, and changes to the permit would be made if required.

Demolition of the existing NWHC Main Building and TIB would result in similar temporary impacts to air quality. These emissions would cease once construction and demolition are completed.

- **Operation Phase**

Potential air quality impacts could arise during operation of the new NWHC from new building energy use, with systems for providing conditioned air and hot water being the primary stationary sources. The choice of mechanical systems and equipment would be determined during the design phase based on availability, costs, and other considerations. However, given the modest size of the new NWHC and the planned use of highly efficient mechanical equipment and PV and geothermal systems, it is not anticipated that the volume of combustion emission by-products would have a adversely impact air quality or exceed permit thresholds.

Once the new NWHC is activated, the existing NWHC, which employs old, less-efficient mechanical systems, would be decommissioned and demolished. The new NWHC is not expected to produce a greater volume of emissions than the current facility and would not be an additional source of emissions.

Pathology wastes consisting of animal carcasses, animal feed, bedding and associated containers, is currently disposed via incinerators located at the Main Building and TIB that are operated approximately 200 hours per year. To reduce greenhouse gas emissions, the new NWHC would use a thermal tissue digester, which can be powered by electricity and produces no onsite air emissions, for disposing of pathology wastes. Therefore, the Preferred Alternative would eliminate air emissions from the existing incinerators.

As with the current NWHC, the proposed facility would be equipped with emergency generators to provide electricity in the event of a power disruption. The generators would be installed in conformance with applicable regulations and be equipped with aboveground fuel storage tanks placed at or below the generator enclosures. Emissions from generator maintenance, periodic testing, and emergency operation are not expected to exceed New Source Review requirements or result in a violation of NAAQS. Once the new NWHC is activated, the existing generators would be disconnected and removed. The new NWHC generators are not expected to produce a higher volume of emissions during periodic testing, maintenance, and emergency use than the current generators and would not be an additional source of emissions.

- **Transportation-Related Activities**

Motor vehicle operations represent another potential source of air quality impacts affecting areas immediately adjacent to roadways and the broader surrounding region. The predominant air emissions associated with motor vehicle operations are CO, HC, and NOx with HC and NOx emissions precursors for the formation of ozone.

NWHC staff travel to and from the facility each weekday, with the total number of employees (122) to remain unchanged following activation of the new NWHC. Assuming a conservative scenario involving use of only single occupancy vehicles and with all employees on site during the workday, approximately 122 total employee trips would occur daily during each AM and PM peak travel hour.

According to USGS officials, the number of visitor and service trips to and from the NWHC currently ranges between two to six daily. Based on experience operating the current NWHC, and with the new NWHC operating in the same manner, the number of visitor and service vehicles traveling daily to the proposed facility is not expected to change (increase or decrease) from its current level of two to six daily.

Operation of the new NWHC would replace the existing NWHC and would not represent an additional source of motor vehicle emissions. With no change in the number of staff, the overall volume of employee, visitor, and service vehicle traffic arriving and departing daily from the NWHC would remain equivalent to current levels. With the relatively low volumes of traffic and no change projected in annual average daily NWHC-related traffic along routes leading to the NWHC, mobile source emissions are not expected to affect compliance with NAAQS, and microscale modeling of vehicular emissions was determined to be unnecessary.

- **Greenhouse Gases**

The potential for the Preferred Alternative to influence global climatic change has been considered during preparation of this document. This includes the potential for increased emissions of chlorofluorocarbons, halons, or other greenhouse gases and for global climate changes to affect the proposed facility. During typical operation, GHG emissions would result from commuting workers, delivery trucks, visitors to the new NWHC, energy consumption associated with the operation of HVAC and other building systems, and the use of emergency generators for backup power and during periodic testing. Operation of the new NWHC is expected to result in reduced emissions of chlorofluorocarbons, halons, and other greenhouse gases compared to the existing facilities because of improvements in the building envelope and incorporation of more efficient mechanical systems.

Climate change is a long-term phenomenon that may result in an increase in extreme weather. However, the new NWHC would be designed to current codes and would incorporate measures designed to increase resiliency, such as buried electrical lines and solar PV and geothermal systems, which would reduce the vulnerability of the NWHC to extreme weather events and changing climate conditions. In addition, the NWHC property is not located in a coastal environment and, therefore, would not be affected by changes in sea levels.

- **Radon**

While most radon disperses harmlessly into the atmosphere, it can migrate through rocks and soil and accumulate in buildings. Dane County is among 27 counties located in central and southern Wisconsin that exhibit a potential for radon at levels averaging over 4 pCi/L. Following a recent plumbing system repair in the Main Building's basement, radon monitoring was performed with all levels recording less than 0.5 pCi/L, which is equivalent to radon levels found in the ambient environment. It is not expected that the presence of radon in the environment will adversely affect development of the new NWHC.

3.20.3 Recommended Mitigation

Construction Phase

To minimize potential air quality impacts, BMPs would be incorporated within standard operating procedures and be specified for NWHC construction activities and later building demolitions. According to the Wisconsin DNR, construction activities must comply with the provisions of Chapter NR 415 regarding the control of particulate emissions. Wisconsin DNR recommends providing adequate measures to minimize air quality impacts including consideration of the following:

- Planning separate phases of construction to minimize the number of dust-generating activities and locating potential dust-generating equipment and material stockpiles in areas of least impact.
- Providing an adequate water source at the site prior to start-up of construction activities and during later building demolition to periodically wetting exposed soil, material stockpiles, and other unpaved surfaces.
- Providing adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities.
- Covering bare areas and exposed surfaces soon after completion of site grading and excavation.
- Restoration of the ground surface by the introduction of grass or native groundcover following completion of construction.
- Limiting on-site vehicular traffic to designated access roads and unnecessary idling of diesel powered engines.
- Using tarp covers on trucks transporting building materials and wastes while being moved on public roads.
- Prohibiting the open burning of construction wastes.

Construction equipment would be operated in accordance with the manufacturer's specifications to further minimize air emissions. Consideration will also be given to cleaning truck tires and truck bodies as needed prior to entering public roadways.

Operation Phase

Other than selection of energy-efficient equipment that meets all applicable permitting and emission control standards and the use of a batch steam effluent decontamination system to replace incinerators, no mitigation measures are warranted. Potential air quality impacts during operation would be minimized by designing and constructing the new facility to be energy-efficient and incorporating PV and geothermal systems, thereby minimizing the use of fossil fuels and the emission of air pollutants. Decommissioning the existing NWHC would off-set emissions from the new NWHC.

Transportation-Related Activities

Agencies of the federal government, including the USGS, encourage the formation of carpools and vanpools, the use of public transit, and active transportation methods (e.g., bicycling or walking) when available, to minimize the potential for air quality impacts from motor vehicle operations. Encouraging ride sharing among NWHC employees is a viable option given the pool of workers traveling daily to the NWHC. The NWHC also encourages use of public transit, which is available along Schroeder Road, and bicycling to work.

The federal government is also mandating agencies, including USGS, to increase the use of electric powered vehicles in its operations. In response, plans for the new NWHC include installation of electric charging stations for use by staff, visitors and government vehicles with 12 parking spaces anticipated to be equipped with duplex outlets for charging. The potential for transportation-related air quality impacts reveals that no mitigation beyond these actions would be warranted.

Greenhouse Gases

The impacts of climate change on Dane County have not been specifically determined and the implications within the lifespan of the new NWHC are not fully known. However, the NWHC property is located in an area that is not considered particularly vulnerable to climate change and associated weather and other physical impacts. The NWHC property is not located within the 100- and 500-year flood zones and therefore is not vulnerable to hydrologic changes resulting from climate change. The NWHC property is also located in south-central Wisconsin, well inland from the Atlantic and Pacific coastlines and Lake Michigan, and therefore is not vulnerable to sea level rise or changes in lake levels.

Radon

Since the new NWHC will include a basement level where radon can collect, USGS would ensure that building designers apply the necessary codes and standards and incorporate features to address the risk and minimize the potential for radon to accumulate in concentrations exceeding the USEPA action level. During NWHC operation, maintenance staff would be informed of the potential to encounter radon and the availability of testing equipment to ensure concentrations do not accumulate in excess of the USEPA action level.

Conformity Applicability Analysis

In order to ensure that federal activities do not hamper local efforts to control air pollution, Section 176(c) of the CAA prohibits federal agencies, departments, or instrumentalities from engaging in, supporting, licensing, or approving any action which does not conform to an approved state or federal implementation plan. With the proposed development of a new NWHC to replace the existing NWHC, compliance with federal regulations is necessary.

The USEPA developed two key rules for determining conformity of federal activities: conformity requirements for transportation plans, programs and projects ("transportation conformity" 40 CFR, Part 51); and all other federal actions ("general conformity" 40 CFR, Part 93). These rules apply to projects and actions located within NAAQS non-attainment areas. The Dane County area, within which the NWHC property is located, is designated in attainment for NAAQS pollutants and in an attainment area, the conformity regulations do not apply.

Federal Operating Permit (Title V)

New and existing facilities are required, pursuant to the CAA, to obtain a Federal Operating Permit, also known as a Title V air permit, if potential and/or actual emissions of air contaminants exceed designated "major source" thresholds. Major source thresholds are determined based upon the attainment status of the area where the facility is located. For Wisconsin, major source thresholds are set at 100 tons per year (tpy) of any regulated pollutants and 25 tpy of any combination of state hazardous air pollutants (SHAPs) or 10 tpy of any single federal HAP. Additionally, pollutants designated as non-attainment may have more stringent thresholds based upon the designation. (Dane County is classified as being in attainment for all NAAQS criteria pollutants.) If the potential and actual emissions from the new NWHC were to exceed the Title V thresholds, then the institution would be required to file a Title V application with the State of Wisconsin.

Operation of the new NWHC would replace the existing NWHC and would not represent an additional source of emissions. In addition, air potential emissions experienced during operation would be minimized by designing and constructing the new facility to be energy-efficient and incorporating PV and geothermal energy sources, thereby minimizing the use of fossil fuels and the emission of air pollutants. As such, the proposed facility would not be a major Title V source and would not be required to file a Title V permit. The USGS would be, however, required to file applications for authority to construct and operate as may be required by state and local regulations.

3.20.4 Cumulative Impacts

Implementation of the Preferred Alternative would result in air emissions from equipment and vehicles during construction as well as potential fugitive dust emissions. The BMPs noted above would be implemented to reduce emissions during construction. If construction of the new NWHC overlaps with the construction period for the proposed multi-family housing development on Ellis Potter Court, the Preferred Alternative would contribute to temporary cumulative impacts on air quality in the immediate surroundings of the NWHC property. Sensitive receptors in this area include the West Madison Little League baseball fields, multi-family housing on Schroeder Road east of the NWHC property, and single-family residences on Schroeder Road south of the property. These impacts would be temporary and would cease once construction is completed.

The new NWHC would incorporate highly efficient mechanical systems and would replace the existing incinerators with thermal tissue digesters, which would reduce emissions and the facility's reliance on natural gas. Therefore, the new NWHC is not expected to produce a greater volume of emissions than the current facility. Operation of the new NWHC is not expected to change annual average daily NWHC-related vehicle traffic. Therefore, operation of the new NWHC is not expected to contribute to cumulative impacts to air quality above existing conditions.

Emissions of greenhouse gases and the potential effects of climate change on the Preferred Alternative are discussed above. Construction and operation of the new NWHC would require emissions of greenhouse gases as a result of operation of construction equipment, vehicles, and building systems that rely on natural gas or electricity generated through use of conventional fuels. The new NWHC would be designed using more efficient mechanical systems pursuant to EO 14057, which is expected to reduce emissions of greenhouse gases compared to emissions from the existing facility. Therefore, the Preferred Alternative would not contribute substantially to regional climate change impacts.

3.21 Noise

3.21.1 Existing Conditions

Background

Noise is traditionally defined as any unwanted sound and is emitted from many sources including aircraft, industrial facilities, railroads, power generating stations, and motor vehicle operations. The volume of sound, whether wanted or unwanted, is usually described by sound pressure, i.e., a dynamic variation in atmospheric pressure. The human auditory system is sensitive to fluctuations in air pressure and these fluctuations are defined as sound when the human ear is able to detect pressure changes within the audible frequency range.

The decibel (dB) is the standard unit for sound measurement and represents acoustical energy present in the environment. Humans are capable of hearing frequencies ranging from 20 hertz (Hz, cycle per sound) to 20,000 Hz; however, they do not hear all frequencies equally well. As a result, a frequency weighting, known as A-weighting, is applied to the sound pressure level, which approximates the frequency response of the human ear. Table 3-14 provides examples of common sounds and noise levels expressed on the A-weighting decibel scale.

Individuals in urbanized environments are often exposed to high noise levels from many sources as they go about their daily activities. The degree of disturbance or annoyance of unwanted sound depends upon several factors: the volume and nature of the intruding noise; the relationship between background noise and the intruding noise; and the type of activity occurring where the noise is heard. It is important to note that individuals have different sensitivities to sound. Loud sounds bother some individuals more than others and some patterns of noise also enter into an individual's judgment of whether or not a noise is offensive. For example, noises occurring during sleeping hours are usually considered to be more objectionable than the same noises during the daytime hours.

Table 3-14: Common Sounds Expressed in Decibels

A-Weighted Sound Level in Decibels (dBA)	Overall Level	Noise Environment
120	Uncomfortably loud (32 times as loud as 70 dBA)	Military jet aircraft takeoff at 50 feet
100	Very loud (8 times as loud as 70 dBA)	Jet flyover at 1,000 feet Locomotive pass-by at 100 feet

A-Weighted Sound Level in Decibels (dBA)	Overall Level	Noise Environment
80	Loud (2 times as loud as 70 dBA)	Propeller aircraft flyover at 1,000 feet Diesel truck at 40 mph at 50 feet
70	Moderately loud	Freeway at 50 feet from pavement edge at 10:00 AM Vacuum cleaner (indoor)
60	Relatively quiet (1/2 as loud as 70 dBA)	Air conditioner unit at 100 feet Dishwasher at 10 feet (indoor)
50	Quiet (1/4 as loud as 70 dBA)	Large transformers Small private office (indoor)
40	Very quiet (1/8 as loud as 70 dBA)	Bird calls Lowest limit of urban ambient sound
10	Extremely quiet (1/64 as loud as 70 dBA)	Just audible
0	--	Threshold of hearing

Source: Federal Agency Review of Select Airport Noise Analysis Issues, 1992.

Since sound is described in a logarithmic scale (i.e., dBs), sound levels cannot be added by ordinary arithmetic means. In fact, a doubling of the noise source produces only a three dB increase in the sound pressure (noise) level. Studies have shown that this increase is barely perceptible to the human ear, whereas a change of five dB is readily perceptible. As a general rule, an increase or decrease of 10 dBs in noise level is perceived by an observer to be a doubling or halving of the sound, respectively.

Current Conditions

Based on field inspections and examination of aerial photographs, there are no industrial facilities, railroads, or airports located near the NWHC property that would influence ambient noise levels in the area. Commercial and residential developments constitute the predominant land uses surrounding the property and none of these uses were observed producing sounds at high or objectionable levels.

Given this backdrop, the acoustic environment at the NWHC is dominated by ambient sounds from trucks and automobiles traveling along the Beltline Highway to the north and to a far lesser extent from traffic using Schroeder Road to the south. While sporadic bird calls and occasional aircraft overflights are also rare contributors to the acoustic environment, it is the constant noise from car and truck traffic using the Beltline Highway that dominates the area's acoustic environment and can be heard within interior portions of the NWHC and adjoining properties.

Noise occurs within the NWHC property from routine grounds maintenance (lawn mowing, leaf blowing, snow removal, etc.) and from operating the emergency generators (an infrequent occurrence). There are also two outdoor cooling towers located between the Main Building and the TIB which produce noise during the cooling season. The NWHC does not use an outdoor public address system or operate any other outdoor noise-producing equipment.

Occasional noise also results from motor vehicle movements occurring within the property, however, on-site speed restrictions (15 mph), the large NWHC property (24 acres), and the vegetative buffers found

along the property's northern, southern, eastern, and western borders, limits vehicle noise experienced beyond the property boundaries. Noise from car and truck traffic using the Beltline Highway far surpasses all other noise sources and levels which are experienced continuously within and around the NWHC property.

The City of Madison's noise control regulation, included in Section 24.08 of the City's Code of Ordinances, establishes maximum permissible sound levels for various zoning districts ranging from 65 to 75 dBA. Construction work between the hours of 7 a.m. and 7 p.m. Monday through Saturday is exempt from these requirements.

3.21.2 Potential Impacts

No Action Alternative

Under the No Action Alternative, the property and structures comprising the NWHC in Madison would remain in their current condition, there would be no changes to noise sources and levels, and mitigation measures would not be necessary.

Preferred Alternative (New NWHC)

- **Construction Phase**

Potential noise impacts resulting from the Preferred Alternative may occur from construction activities, routine operation and maintenance, and vehicle traffic associated with facility operation. These potential impacts and recommendations for mitigation, as applicable, are discussed below.

Elevated noise levels will be experienced in the immediate vicinity of the new NWHC construction site. Potential noise impacts depend upon the types of equipment to be used, the construction methods employed, locations where construction is active, and the scheduling and duration of the work. Such details are left to the discretion of the construction contractor to provide flexibility in the use of equipment and personnel as necessary to accomplish the work, maintain the schedule, and control costs. Nonetheless, conclusions can be drawn based on the nature of the construction work anticipated, typical equipment involved in construction, and their associated range of noise levels.

Noise-generating activities during construction include site preparation and grading, excavations for footings and foundation, erection of the new structure, internal driveway and parking area paving, and utility installations. Noise would occur only for the duration of the construction period and typically be limited to daylight hours. Construction noise would also generally be intermittent and depend on the type of operation, the location and function of the equipment, and the equipment usage cycle.

Construction noise dissipates quickly as the distance from the source increases. For example, noise levels from use of an excavator during site clearing yields a noise level of approximately 80 dBA at 50 feet and 74 dBA at approximately 100 feet (Table 3-15). Furthermore, noise levels would continue to decrease by approximately three to four dBA with every doubling of distance from the source dropping to 62 to 65 dBA at 800 feet. The nearest sensitive receptors to construction and demolition areas would be the West Madison Little League baseball fields west of the property and multi-family housing on Schroeder Road east of the property. The baseball fields are located approximately 130 feet northwest of the site of the new NWHC and 100 feet west of the existing parking that would be demolished. The multi-family housing community is located approximately 295 feet east of the site of the new NWHC and 160 feet east of the site where the existing Main Building would be demolished and parking for the new facility would be constructed. Noise levels at sensitive receptors within 800 feet of construction and demolition sites would be expected to intermittently be noticeable above ambient background noise in the urban area. In addition to the receptors noted above, other sensitive receptors that could be impacted during construction would include single-family residences south of the NWHC property along Schroeder Road the Madison Ice Arena west of the property.

Table 3-15: Typical Noise Levels Generated by Construction Equipment

Equipment Type	Maximum Equipment Noise Level at 50 feet (dBA)	Hourly Equivalent Noise Levels at 50 feet (dBA)	Hourly Equivalent Noise Levels at 100 feet (dBA)
SITE CLEARING/PREPARATION			
Excavator	83	80	74
Backhoe	75	72	66
Heavy Duty Dump Trucks	73	70	64
DEMOLITION			
Front Loader	76	73	67
Hoe Ram	89	86	80
Heavy Duty Dump Trucks	73	70	64
PAVING			
Grader	75	72	66
Water Truck	77	74	68
Vibratory Roller	78	75	69
Compactor	76	73	67
Concrete Pump	74	71	65
Ready Mix Trucks	72	69	63
Asphalt Paver	79	76	70
Asphalt Roller	78	75	69
Sweeper	79	76	70
Heavy Duty Dump Trucks	73	70	64
Flatbed Truck	70	67	61
EARTHWORK			
Excavator	83	80	74
Backhoe	75	72	66
Front Loader	76	73	67
Dozer	85	82	76
Trencher	80	77	71
Heavy Duty Dump Trucks	73	70	64
STRUCTURES			
Excavator	83	80	74
Backhoe	75	72	66

Equipment Type	Maximum Equipment Noise Level at 50 feet (dBA)	Hourly Equivalent Noise Levels at 50 feet (dBA)	Hourly Equivalent Noise Levels at 100 feet (dBA)
Soil Compactor	80	77	71
Crane	78	75	69
Concrete Pump	74	71	65
Compressor	68	65	59
Front Loader	76	73	67
Flatbed Truck	75	72	66
Heavy Duty Dump Trucks	73	70	64
Ready Mix Trucks	81	78	72

Notes: Calculated construction noise levels assume that equipment operates for six hours during an eight-hour day and that equipment is operated at full load 70% of the time. Predicted noise levels are from the center of the construction activity.

Noise during construction and later demolition of the current NWHC would be temporary, occurring intermittently during the 36-month construction and 4 to 6 month demolition phases. Construction noise would be attenuated by the dense tree stands and understory surrounding the property. In addition, existing noise levels from vehicles traveling on Schroeder Road and the Beltline Highway currently contribute to relatively high noise levels in the surrounding area. Following completion of construction and demolition, ambient sound would return to current levels.

• Operation Phase

Sound levels during operation of the new NWHC are expected to be similar to levels experienced during current NWHC operation. This includes noise which may result during testing and operation of new emergency generators that would replace generators currently serving the NWHC. Three 1,500 kW emergency generators would be installed in an outdoor utility yard at the new facility, mounted within sound attenuated enclosures. All three emergency generators would operate simultaneously during any utility power outages, and the generators would be tested monthly for a minimum duration of 30 minutes.

The two continuously operating outdoor cooling towers located between the Main Building and the TIB would also be replaced by two air cooled chillers which would produce little to no noise during normal operations. At this time, conceptual plans place the new NWHC structure approximately 250 feet from the eastern property boundary, an increase of approximately 150 feet from the residential units located to the east. Lastly, the new NWHC would not employ an outdoor public address system or include other outdoor noise-producing equipment.

The absence of noise-producing equipment and outdoor activities is expected to result in post-construction sound levels similar to pre-construction conditions. With the background noise from motor vehicle operation on the Beltline Highway, removal of the two cooling towers, and the forested area located along the property's eastern border providing a buffer to attenuate sound, any noise resulting from routine operation of the new NWHC is expected to be imperceptible beyond the boundaries of the 24-acre property.

3.21.3 Recommended Mitigation

Construction Activities

Measures to minimize potential construction noise impacts may include the following:

- **Source and Site Control**
 - Use equipment with noise attenuation devices, such as mufflers and engine housings.
 - Maintain equipment to manufacturers specifications, ensuring exhaust systems are in good working order, and employing engine enclosures and intake silencers.
 - Locate material and equipment staging areas away from property boundaries to minimize potential for off-site noise impacts.
- **Time and Activity Constraints**
 - Schedule construction activities to coincide with periods when people would least likely be adversely affected. Workdays would be confined to normal business hours (7 a.m. to 4 p.m., Monday through Friday) to the maximum extent possible. Work outside of these hours would be rare.
- **Community Awareness**
 - Notify nearby property owners and the public at large of construction operations and measures to be implemented to minimize noise. Provide contact information for a project representative who would be available to respond to questions or complaints.

Operation Phase

The new emergency generators would be installed within sound attenuated enclosures, which would reduce noise levels that may be experience on the NWHC property and surrounding properties during the infrequent periods when generators would be operating. No other outdoor noise producing equipment would be used during operation of the new NWHC. Therefore, additional mitigation measures to control noise resulting from operation of the new NWHC are not warranted.

3.21.4 Cumulative Impacts

Construction activities would result in elevated noise levels in the vicinity of the NWHC property. Construction noise would typically be limited to daylight hours and would cease once construction is completed. If construction of the new NWHC overlaps with construction of the proposed multi-family housing development on Ellis Potter Court, both construction projects would contribute cumulatively to elevated noise levels that could impact sensitive receptors including the West Madison Little League baseball fields, multi-family housing on Schroeder Road east of the NWHC property, and single-family residences on Schroeder Road south of the property.

Sound levels during operation of the new NWHC would be similar to current sound levels on the property. The main source of noise during operation would be infrequent testing and operation of emergency generators. Based on the absence of noise-producing equipment or activities, the existing noise generated by vehicle traffic on the Beltline Highway, and the retention of vegetated buffers between the new NWHC and surrounding land uses, the Preferred Alternative is not expected to substantially contribute to cumulative noise impacts.

3.22 Relationship Between Short-Term Uses of the Human Environment and the Maintenance and Enhancement of Long-Term Productivity

For approximately 36 months following ground-breaking in spring 2025, a portion of the NWHC property would be used as a construction site. Construction would involve ground clearing, grading, and excavating; erection of a new NWHC building; and installation of parking lots, pedestrian walkways, utility services, light fixtures, and signage among other similar activities. While increases in noise levels, fugitive dust, soil erosion, traffic interruptions and similar construction-related impacts can be anticipated, such impacts would be temporary and mitigated to minimize or avoid their potential adverse effects. Within 4 to 6 months following new NWHC activation, the existing Main Building and TIB would be decommissioned and demolished with similar temporary construction-type impacts expected to occur.

Potential short-term construction-related impacts must be contrasted with the positive economic activity that would result from the employment, payrolls, induced personal income, and the purchases of materials, supplies, and services during construction. The long-term productivity of the City of Madison, Dane County, and the south-central Wisconsin economy would also benefit by maintaining the NWHC workforce of approximately 122 staff and its annual operating budget. These positive productivity gains would be long-term, given the lifespan of the proposed facility, with no long-term adverse impacts from new NWHC operation anticipated.

3.23 Irreversible and Irretrievable Commitment of Resources

Irreversible and irretrievable resource commitments involve use of nonrenewable resources and the effects that use of these resources will have on future generations. Irreversible effects result from use or destruction of a specific resource that cannot be replaced within a reasonable timeframe (e.g., energy and minerals) while irretrievable commitments of resources involve the continued consumption of energy resources and human labor. The use of these resources would be considered enduring, lasting throughout the lifespan of the new NWHC or approximately 40 years or more.

Construction of the new NWHC would result in both direct and indirect commitments of resources. In some cases, the resources committed would be recovered in a relatively short period of time. In other cases, resources would be irreversibly or irretrievably committed by being consumed or by the apparent limitlessness of the period of their commitment to a specific use. Irreversibly and irretrievable commitments of resources can sometimes be compensated for by provision of similar resources with substantially the same use or value.

- **Material Resources:** The Preferred Alternative would require the commitment of construction materials including cement, aggregate, steel, asphalt, lumber, glass, and other building supplies in addition to the manufacture of research, laboratory, and similar equipment. Material resources consumed as a result of NWHC development would be offset by the societal benefits associated with operation of a modern, new facility. A portion of the materials dedicated to NWHC development may also be recycled at some future date.
- **Natural Resources:** In this instance, the land upon which the new NWHC would be developed would be irretrievably committed. With a small portion of the development zone currently wooded and including an area of the south prairie, vegetation and wildlife habitat would also be affected. Mitigation measures would be implemented prior to and during construction to minimize adverse impacts and conform to applicable regulations. Following transfer of operations to the new NWHC, the Main Building and TIB will be decommissioned and demolished with the footprints of each building leveled and restored as grass lawn.
- **Energy Resources:** Electricity and petroleum-based products such as gasoline and diesel fuel, would be irretrievably consumed as workers and equipment are transported to the site and equipment is employed during the construction phase. NWHC employees, visitors, and service vehicles would similarly consume fuels when traveling to and from the facility during routine operation in quantities similar to current levels. Natural gas and electricity would also

be consumed during operation of the new NWHC and be offset by use of PV and geothermal energy systems and by eliminating energy consumption associated with operation of the existing NWHC. Consumption of energy resources would not place undue demand on these resources or affect their availability in the region.

- **Manpower:** The use of human labor for NWHC construction and operation is considered an irretrievable commitment in that it would preclude such personnel from engaging in other productive work activities. Following development, staff would be transferred from the current to the new NWHC with no change (increase or decrease) in the use of human resources estimated to be 122 person-years of staff time annually. Maintaining NWHC employment in Madison and Dane County is also considered beneficial.

4.0 CONSULTATION AND COORDINATION

4.1 Introduction

NEPA requires federal agencies to make diligent efforts to involve other agencies and the public whenever possible (40 CFR § 1506.6). This chapter provides a summary of the opportunities that have been made for public involvement, including government and non-government agencies or organizations in the development of this EIS.

4.2 Public Involvement Strategy

4.2.1 Public Participation – Scoping

Following publication of the NOI to prepare an EIS, the USGS requested public comments during the scoping period from September 5 through October 20, 2023. During the scoping period, the USGS received 13 comment submissions from federal and state agencies and members of the public. Agency and public comment submissions and summaries of the comments received are provided in Appendix B. The USGS carried out the following scoping and associated public engagement activities during preparation of the DEIS:

- Distributed a notice on October 4, 2022, informing local, county, state, and federal officials and relevant agencies, and representatives of Native American Tribes about the proposed development of a new NWHC in Madison, Wisconsin, and plans to prepare a DEIS that addresses the Proposed Action.
- Established a project website to host communications, public announcements, public scoping materials, photographs, reports, and other relevant materials and facilitate public access to such information (<https://www.nwhceis.com/>).
- Published an NOI to prepare an EIS for the Proposed Action in the Federal Register on September 5, 2023. Publication of the NOI initiated a 45-day scoping period lasting from September 5 to October 20, 2023. The NOI invited federal, state, county, and local agencies, officials, organizations, and the public to participate in the scoping and DEIS study process and included information concerning the date, time, and means to participate at public scoping meetings. Readers were also directed to the project website for information.
- Coinciding with publication of the NOI, notices were also published in editions of the Wisconsin State Journal and the Capital Times newspapers inviting federal, state, county, and local agencies, officials, organizations, and the public to participate in the scoping and DEIS study process. The notice included information concerning the date, time, and means to participate during public scoping meetings and directed readers to the project website for additional information.
- In addition to the project website and media outlets used for project-related announcements, a comprehensive database was compiled to expand the audience receiving project-related announcements and materials. The database, consisting of contact information for federal, state, county, and local officials and agencies, community and business organizations, utility providers, Native American Tribes, media outlets, research institutions, and stakeholders among others, was used to distribute announcements coinciding with publication of the NOI informing interested individuals and parties of the date, time, and means to participate during the scoping process and

public scoping meetings. The database was maintained throughout the EIS process to distribute project newsletters, fact sheets, announcements, and information as to how to access the DEIS and eventually the FEIS.

- Hosted in-person and virtual public scoping meetings on September 21 and September 28, 2023. The meetings were held to inform the public about the Proposed Action, describe NEPA and the environmental impact analysis process, and seek public input on the Proposed Action and plans for the DEIS. USGS officials presided at the meetings which were held in-person in Madison, Wisconsin, and via a virtual meeting service. Information provided during the scoping meetings was also made available on the project website. Twenty-six individuals attended the two scoping meetings which were reported by various media outlets over the days that followed.
- During the scoping meetings, information was presented about USGS, the current NWHC, and the Proposed Action and alternatives. Attendees were invited to share questions, comments, and concerns regarding the Proposed Action and preparation of the DEIS. Information provided to meeting participants and the comments and responses received by USGS were made available to all interested individuals and organizations via the project website.
- Individuals, agencies, and organizations submitted comments to USGS during the 45-day scoping period. Issues and concerns raised during the scoping process were compiled, analyzed by USGS, and addressed in the DEIS.
- Determined the scope and significance of issues to be included within the DEIS based on all relevant environmental considerations and information obtained prior to and during the DEIS scoping process. The determination defined the scope and significance of the issues to be included in the DEIS and identified issues that could be eliminated from detailed study as immaterial or irrelevant.
- Conducted additional information/coordination meetings leading up to DEIS publication involving elected and appointed officials, local, state, and federal government agencies, Native American Tribes, community, civic and environmental organizations among others. Information concerning USGS, the NWHC, the purpose and need for the Proposed Action, and alternatives was made available via the NWHC EIS website. Comments, guidance, and recommendations received from meeting participants were incorporated within the scoping and DEIS study process.
- Distributed newsletters to individuals, agencies, and organizations on the project contact list providing updates on the EIS process in October 2023 and March 2024 and published these newsletters on the project website.
- Reached out to leaders in local environmental justice and disadvantaged communities to request informational interviews and conducted interviews with Community Outreach and Resource Education and City of Madison Equity Office.
- Conducted outreach to interested community members at events including the Meadowood Health Partnership Supper Club Event on February 21, 2024; Capital Science and Engineering Fair on March 16, 2024; Greentree Neighborhood Association meeting on April 23, 2024; and Lussier Community Center dinner on June 7, 2024.
- Identified additional data requirements based on information obtained from the scoping process so that analyses and findings could be integrated into the DEIS.

Public outreach and engagement efforts prior to, during, and following the public scoping process have been compiled in Appendix B. Following scoping, and throughout the months of DEIS preparation, USGS officials also reviewed incoming communications, newspaper articles and other indications of interest or

concern on the part of regulatory agencies, local and national organizations, elected and appointed officials, Native American Tribes, and the public regarding the Proposed Action.

4.2.2 Public Participation – Public Review of the DEIS

The DEIS is available for public review and comment from June 14 to July 29, 2024. Individuals with an interest in the Proposed Action have an opportunity to review the evaluations, inquire about any areas of concern, and offer additional information that should be considered by USGS during the planning and decision-making process. During the public review period, the USGS will host an in-person public meeting in Madison, Wisconsin, and a virtual public meeting. The dates and times of these meetings and other meeting information will be provided on the project website (<https://www.nwhceis.com/>) and in notifications published in the Wisconsin State Journal and Capital Times and emailed to individuals on the project contact list. Following the end of the DEIS public comment period, USGS will prepare and publish an FEIS in accordance with NEPA and its guidance, which will incorporate additional data that may come to light into the decision-making process and take into consideration comments received on the DEIS.

4.2.3 Consultation and Coordination

The USGS engaged with multiple federal and state agencies, Tribal governments, and local governments through ongoing consultation and coordination. The USGS engaged in consultation with the following entities during development of the DEIS: federally recognized Tribes, City of Madison Planning Division, elected officials of Dane County and the City of Madison, Wisconsin SHPO, Wisconsin DNR, USFWS, and the USDA-NRCS.

- In December 2022, letters were sent to Tribal leaders and THPOs representing federally recognized Tribes that have cultural and/or historic ties to the NWHC property to request government-to-government consultation on the Proposed Action and EIS with the USGS, including the Ho-Chunk Nation; Ho-Chunk Nation, Menominee Indian Tribe of Wisconsin; Red Cliff Band of Lake Superior Chippewa, Forest County Potawatomi Community; Miami Tribe of Oklahoma; Kickapoo Tribe of Oklahoma; Bad River Band of Lake Superior Tribe of Chippewa Indians; Lac Courte Oreilles Band of Lake Superior Chippewa Indians; Fort Belknap Indian Community of the Fort Belknap Reservation of Montana; Sokaogon Chippewa Community; Stockbridge-Munsee Community Band of Mohican Indians; Forest County Potawatomi Community, Wisconsin; Menominee Indian Tribe of Wisconsin; Oneida Nation of Wisconsin; Winnebago Tribe of Nebraska; Lac du Flambeau Band of Lake Superior Chippewa Indians; and St. Croix Band of Lake Superior Chippewa. The USGS received responses to this correspondence from the Osage Nation; Red Cliff Band of Lake Superior Chippewa, Forest County Potawatomi Community; and Miami Tribe of Oklahoma. The Forest County Potawatomi and Miami Tribe of Oklahoma requested to be included as consulting parties under Section 106. The USGS invited representatives of Native American Tribes to attend meetings held on July 6 and July 7, 2023, to discuss the Proposed Action and the interests and concerns unique to those organizations. Consultation with these Tribes is ongoing during development of the EIS.
- Also in December 2022, a memo was sent to the Wisconsin SHPO initiating the Section 106 process, requesting consultation and coordination on the proposed undertaking. The SHPO completed its review and found that no eligible properties will be affected because none are present.
- The USGS consulted with the USDA-NRCS regarding potential impacts to prime and unique farmland and farmland of statewide and local importance. The USDA-NRCS responded in a letter dated November 21, 2022, that the project is exempt from FPPA regulations because it is located in an urban area.
- Discussions were held in 2022 with the City of Madison Planning Division to discuss the Proposed Action and Preferred Alternative, public scoping, and planned City projects in the Odana area.

- On June 9, 2023, the USGS held a meeting with the Wisconsin DNR to discuss the proposed project and special status wildlife species. The USGS requested renewal of an Endangered Species Review, which was completed in January 2024.
- The USGS consulted with the USFWS regarding potential effects to threatened and endangered species. The USFWS concurred with the USGS's determinations regarding potential effects and proposed mitigation measures in correspondence dated April 10 and May 10, 2024.
- As part of the EIS process, a discussion with the City of Madison's Department of Civil Rights was held in February 2024 to gain an understanding of equity priorities and equity communities.
- Elected officials, including Dane County Commissioners, and the Madison Mayor and City Council members, received periodic updates via email as key milestones in the environmental impact study process were reached.

4.3 List of Recipients of the Draft Environmental Impact Statement

Upon publication of the notice of availability of the DEIS in the *Federal Register*, the USGS notified various stakeholders, including elected officials; Tribes; federal, state, and local agencies; utility providers; non-governmental organizations; state and local media outlets; and other stakeholders, including interested members of the public, of availability of the DEIS on the project website: <https://www.nwhceis.com>. The full distribution list for the notification of the availability of the DEIS is provided in Appendix I.

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