Collection System Improvements- North
Mashpee, MA

General Contractor: Robert B. Our Co., Inc.
Engineer: Environmental Partners Group
Submittal Number: 01546-002 SWPPP
Deviations: None: __X__ ; As Listed:
Reference Specification Section: 01546-1.04
Reference Drawing Number:
Space Requirements: As Designed: _X_ Different, As Listed:

Representation is made to the Owner and Engineer that the Contractor has (a) reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents; (b) determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto; (c) determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and (d) determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

Contractor: Robert B. Our Co., Inc.

Signature: *Samantha Williams*

Date: November 14, 2022

ENGINEER STAMP

24 Great Western Rd., P.O. Box 1539, Harwich, MA 02645 - Tel. 508-432-0530 Fax. 508-432-4385

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

FOR CONSTRUCTION ACTIVITIES AT:

Collection System Improvements – North & South

Mashpee, Massachusetts

SWPPP Preparation Date:
October 2022

Estimated Project Dates:
Project Start Date: November 2022
Project Completion Date: December 2024

SWPPP PREPARED FOR:
MassDOT Highway Division
1000 County Street
Taunton, MA 02780
&
Robert B. Our Co., Inc.
24 Great Western Road, P.O. Box 1539
Harwich, MA 02645

SWPPP PREPARED BY:

Green Seal Environmental, LLC
114 State Road, Building B
Sagamore Beach, MA 02562

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INTRODUCTION

This Stormwater Pollution Prevention Plan (SWPPP) has been developed in accordance with the requirements of the Environmental Protection Agency's (EPA) National Pollutant Discharge Elimination System (NPDES) 2022 Construction General Permit (2022 CGP) for Stormwater Discharges from Construction Activities.

This SWPPP has been prepared for work associated with the Town of Mashpee and the Mashpee Sewer Commission for portions of a sewer system to be located on several streets north of Falmouth Road (State Route 28) and a portion of Falmouth Road to the east of the Mashpee Rotary. The Project Area also includes several streets south of Falmouth Road, opposite the North Side Project Area. Work is per Contract No. WNMP-2021-02: Collection System improvements – North and Contract No. WNMP-2021-03: Collection System Improvements – South. The following table provides a summary of streets in both areas.

Street Name Summary by Project Area

Project Area	Street Name
South	Yardarm Drive
	Simons Narrow Road
	Mashpee Neck Road
	Shipwreck Drive
	Ship's Anchor Drive
	Porthole Drive
	Ship's Wheel Drive
	Ship's Rudder Drive
	Compass Drive
	Ship's Lantern Drive
	Rainbow Lane
	Egret Court
	Quinaquisset Avenue
	Orchard Road
	Antune's Avenue
	Pine Road
	Christopher Lane
	Chatham Lane
	Brewster Road
	Harwich Road
	Dennis Road
	Truro Road
	Strawberry Avenue
	Summerwood Condominiums

Street Name Summary by Project Area,
continued

Project Area	Street Name
North	Falmouth Road (State Route 28)
	High Sachem Road
	Papnomett Road
	Matchewuttah Road
	Asher's Path East
	Carleton Drive
	Swain Circle
	Sewall Drive
	Drew Lane
	Butler Lane
	Hanson Drive
	Meetinghouse Road
	Sea Oaks Condominiums

In addition, certain properties along roadways in the South Project Area will be used to construct two force main pumping stations. A third pumping station will be constructed in the center of a divided road entrance.

The general scope of work includes the construction of various sized gravity and low-pressure sewer mains, force mains, construction of three pump stations, connections to the pump stations and associated appurtenances, and relocation of existing utilities, as required.

Discharges authorized under the 2022 CGP include stormwater, snowmelt, and surface runoff and drainage associated with construction and support activities as well as other non-stormwater related discharges as outlined in Section 1.2.2 of the 2022 CGP.

This document has been prepared based on best available information and review of the following:

- Project Area Plans entitled "Town of Mashpee, Massachusetts, Mashpee Sewer Commission, Collection System Improvements - North" and "Town of Mashpee, Massachusetts, Mashpee Sewer Commission, Collection System Improvements - South" both prepared by GHD, Inc., dated February 2022.

- Construction Specifications entitled "Project Manual for Collection System Improvements" prepared by GHD, Inc., dated February 2022.

Portions of this document have been derived from the above. These plans and other figures can be found in Appendix A. An EPA eNOI approval for the project Construction General Permit can be found in Appendix C.

The 2022 CGP (refer to Appendix B) and referenced documents of the 2022 CGP are hereby made a part of this SWPPP. Although EPA does not specifically require the 2022 CGP be appended to the SWPPP, it

has been included for reference. All parties responsible for implementation of this SWPPP are required to review and become familiar with the 2022 CGP and referenced documents. Where discrepancies between this and other referenced documents exist, the more stringent shall apply.

Modifications to the SWPPP

The SWPPP is intended to outline minimum requirements for controlling erosion and sedimentation and preventing pollution that may occur during construction activities as a result of stormwater or other potential conveyances. Modifications to the SWPPP may be necessary to accommodate changing Project Area constraints or unforeseen circumstances as the project progresses.

The following items, at a minimum, will require significant modifications to the SWPPP:

- Change in or addition of operators active in construction activities;
- Transfer of operational control;
- Changes to construction plans, stormwater control measures, pollution prevention measures, or other activities not accurately reflected in the current SWPPP;
- Action required at the direction of officials of the EPA or other regulatory agencies;
- Any change in chemical treatment systems or controls if applicable;
- Action required due to revision of any regulatory requirements that may affect stormwater controls at the Project Area.

Where modifications to the SWPPP are required, they will be completed within seven (7) calendar days following the occurrence of any conditions listed above. Records will be kept of all modifications to the SWPPP. Records will include, at minimum, the following:

- Date of modification;
- Reason for modification;
- Description of modification;
- Person authorizing the modification;
- Representative photographs of the modification.

Project Area plans will be updated as appropriate to reflect any changes to or use of additional controls. If modifications are required, all operators and appropriate regulatory authorities will be notified immediately.

Availability of SWPPP

A current copy of the SWPPP will be kept at the Project Area in the Project Superintendent's truck. The SWPPP will be kept in a format that is easily accessible and can be made readily available to the EPA or other regulatory agency upon request.

1.0 CONTACT INFORMATION / RESPONSIBLE PARTIES

1.1 Operator(s) / Subcontractors

The Contractor, Robert B. Our Company, Inc. and the Massachusetts Department of Transportation (MassDOT) are both Operators for the Project. The Contractor is responsible for roadway reconstruction (earth disturbance activities, construction, maintenance, and records of all erosion control measures) as well as contract compliance with regards to the SWPPP. MassDOT will oversee contract compliance.

Operator(s):

Robert B. Our Co., Inc.
24 Great Western Road
Harwich, MA 02645

Contact: Craig Trombly, Project Manager
Phone: (508) 326.9988
Email: ctrombly@robertbour.com

MassDOT – Highway Division District 5
1000 County Street
Taunton, MA. 02780

Contact: Nicole Berthiaume, Highway Maintenance Engineer
Cellphone: 857-368-5240
Email: nicole.m.berthiaume@dot.state.ma.us

Subcontractor(s):
TBD

Emergency 24-Hour Contact:
Robert B. Our Co., Inc.
(508) 432-0530

1.2 Stormwater Team

The Stormwater Team includes individuals who are responsible for the design, installation, maintenance, and/or repair of stormwater controls, the application and storage of treatment chemicals (if applicable), conducting inspections as required in CGP Part 4.1, and taking corrective actions as required in CGP Part 5. Each member of the stormwater team must have access to this SWPPP and understand the requirements of the 2022 CGP and their specific responsibilities with respect to those requirements. A list of Stormwater Team Members is detailed below.

Team Members
Craig Trombly, Project Manager – (508) 737-1109
Bill Foster, Project Area Superintendent – (774) 259-0545

SWPPP Contact
Craig Trombly, Project Manager – (508) 737-1109

Robert B Our Company 24-Hr. Emergency Phone Number
(508) 432-0530

For projects that receive coverage under the 2022 CGP prior to February 17, 2023, any personnel conducting Project Area inspections pursuant to Part 4 on the Project Area must, at a minimum:

- Be knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention,
- Possess the appropriate skills and training in conditions at the construction Project Area that could impact stormwater quality, and
- Possess the appropriate skills and training in the effectiveness of any stormwater controls selected and installed to meet the requirements of the 2022 CGP.

Please see Appendix I for a list of the individuals on the stormwater team, their responsibilities, and qualifications.

2.0 PROJECT AREA EVALUATION, ASSESSMENT, AND PLANNING

2.1 Project Area / Information

Project Name and Address

Project/Project Area Name: Collection System Improvements – North and South

Street/Location: Various Roads

City: Mashpee

State: Massachusetts

ZIP Code: 02649

County or Similar Government Division: Barnstable

Project Latitude/Longitude

Latitude: 41° 37’ 38.69” N Longitude: -70° 28’ 31.84” W

Latitude/longitude data source: ☒ Map ☐ GPS

Horizontal Reference Datum: ☐ NAD 27 ☐ NAD 83 ☒ WGS 84

Additional Project Area Information

Is your Project Area located on Indian country lands, or on a property of religious or cultural significance to an Indian Tribe? ☐ Yes ☒ No

2.2 Discharge Information

Does your project/Project Area discharge stormwater into a Municipal Separate Storm Sewer System (MS4)? ☒ Yes ☐ No

Are there any waters of the U.S. within 50 feet of your project’s earth disturbances? ☐ Yes ☒ No

There are no unauthorized non-stormwater discharges proposed as part of this project. There are no FEMA flood hazard zones on or near the Project Area.

In the North part of the Project Area, the Quaker River is the closest Water of the United States and is approximately 380 feet northeast of the Project Area. A Bordering Vegetated Wetland (BVW) associated with the river is approximately 350 feet northeast of the closest work area of the project. This river discharges into the nearby Shoestring Bay.

The Mashpee River is located approximately 1,070 feet the west of the closest portion of the Project Area. There are also a BVW associated with the river approximately 1,050 feet to the west of the Project Area. The work proposed is outside of the state regulated 100-foot buffer to the BVWs and state regulated Inner (100 feet) and Outer (200 feet) Riparian Zones from the Quaker River and Mashpee River.

In the South part of the Project Area, the Mashpee River and associated BVW are closest to work areas. The Mashpee River is approximately 600 feet from the closest area of work and the BVW associated with the river is approximately 570-feet away.

Based on a review of the USGS National Hydrography Map and the Mashpee GIS Map of the Project Area, migrant construction period stormwater runoff from the North Project Area is likely to pond near the Project Area or flow southward across Falmouth Road toward wooded areas (both residential and utility properties). Migrant construction period stormwater from the South Project Area is likely to flow to the Mashpee River in the west side of this area and to the Quaker River on its eastern side, which eventually leads to Shoestring Bay.

Mashpee River and Shoestring Bay are listed as a Category 4a Water on the Department of Environmental Protection's 2018/2020 Integrated List of Waters (303(d) list), indicating that the water is impaired and that a TMDL has been completed. The impairments listed are Estuarine Bioassessments and Fecal Coliform for both waterbodies. Other surface waters within 1 mile of the Project Area are unlikely to receive construction period stormwater runoff due to the natural topography and hydrographic characteristics of the area.

The table below describes the receiving waters for each point of discharge from the Project Areas.

Point of Discharge	Receiving Water	Impaired?	If yes, list pollutants.	TMDL?	If yes, list TMDL Name, ID, and pollutant.	Is receiving water Tier 2, 2.5, or 3?
001	Mashpee River MA96-24	☒ Yes ☐ No	Estuarine Bioassessments, Fecal coliform	☒ Yes ☐ No	Action 33965 Action 36771	☐ Yes ☒ No
002	Shoestring Bay MA96-111	☒ Yes ☐ No	Estuarine Bioassessments Fecal Coliform	☒ Yes ☐ No	Action 33966 Action 36771	☐ Yes ☒ No

2.3 Nature of the Construction Activities

General Description of Project

The Town of Mashpee is constructing sewer infrastructure in the Project Area that includes various sized gravity and low-pressure sewer mains, force mains, construction of and connections to pump stations and associated appurtenances, and relocation of existing utilities, as required.

Are you conducting earth-disturbing activities in response to a public emergency (e.g., mud slides, earthquake, extreme flooding conditions, etc.)? ☐ Yes ☒ No

Size of Construction Project Area

Size of Property (acres):	~18.85 acres
Total Area Expected to be Disturbed by Construction Activities:	~4.25 acres
Maximum Area Expected to be Disturbed at Any One Time:	~4.25 acres

Type of Construction Project Area

☐ Single-Family Residential ☐ Multi-Family Residential ☐ Commercial ☐ Industrial

☐ Institutional ☒ Highway or Road ☒ Utility ☒ Other Sewer Collection System

Will you be discharging dewatering water from your Project Area? ☐ Yes ☒ No

If yes, will you be discharging dewatering water from a current or former Federal or State remediation Project Area? **N/A** ☐ Yes ☒ No

Construction Support Activities

Construction support activities will include designated stockpiling and storage areas. At no time will any amount of disturbed construction and staging areas exceed five acres. Final staging area locations will be determined with the Owner prior to construction. The Contractor is responsible for security of all materials and equipment left in the Project Area. Any existing pavement or other landscaped areas within the Project Area disturbed during construction will be restored to equal or better condition.

2.4 Sequence and Estimated Dates of Construction Activities

Contact Dig Safe (811 or 1-888-344-7233) and obtain clearance at least 72 hours before initiating any excavation activities.

The anticipated construction start date is November 2022. The anticipated completion date is December 2024.

Work will be sequenced in accordance with the Contractor's Construction Schedule as prepared per the Project Specifications. The order of work activities for each construction phase will be generally as follows:

1. Mobilization and pre-construction conference;
2. Install erosion and sedimentation control measures, and project signage;
3. Establish equipment and supplies lay down area (Orchard Road);
4. Clear work areas and install drainage structure sediment collection devices;
5. Excavate for roadway and private homeowner sewer pipes, manholes and other equipment;
6. Relocate utilities, as required;
7. Install equipment and backfill roadway trenches daily. Use protective covers for open trenches;
8. Temporarily store and protect from migration excavated material in areas where backfilling the same day is not possible;
9. Excavate and grade for new pump station foundations. Store excavated materials and protect from migrating;
10. Excavate utility trenches and install rough utilities/manholes/chambers at pump stations;
11. Install new pump station foundations;
12. Backfill pump station foundations and rough grade;
13. Frame and construct building envelopes, interior walls, and roofs;
14. Furnish and install process piping, valves, filters, HVAC, plumbing, electrical and instrumentation and control equipment;
15. Connect sewer lines, electricity and controls to pump stations;
16. Final grading, repair roadway surface and berms, and install gravel driveways;
17. Install temporary erosion control blankets and/or temporary seeding on disturbed unpaved surface areas;
18. Install final topsoil replacement and surface restorations;
19. Clean accumulated sediment from catch basins, silt traps, and hay bales or silt fences;
20. Complete final landscaping and restoration;
21. Submit Notice of Termination (NOT) to EPA using EPA's electronic NOI system.

Remove temporary erosion control devices only after permanent stabilization measures have been fully established.

2.5 Authorized Non-Stormwater Discharges

List of authorized non-stormwater discharges present at the Project Area:

Type of Allowable Non-Stormwater Discharge	Likely to be Present at Your Project Area?
Discharges from emergency fire-fighting activities	☐ YES ☒ NO
Fire hydrant flushing	☒ YES ☐ NO
Landscape irrigation	☒ YES ☐ NO
Waters used to wash vehicles and equipment	☐ YES ☒ NO
Water used to control dust	☒ YES ☐ NO
Potable water including uncontaminated water line flushing(s)	☒ YES ☐ NO
Routine external building wash down	☐ YES ☒ NO
Pavement wash waters	☒ YES ☐ NO
Uncontaminated air conditioning or compressor condensate	☐ YES ☒ NO
Uncontaminated, non-turbid discharges of groundwater or spring water	☒ YES ☐ NO
Foundation or footing drains	☐ YES ☒ NO
Construction dewatering water	☒ YES ☐ NO

2.6 Project Area Maps and Plans

Project Area maps, plans, details, and other pertinent information are shown on the attached maps and plans included in Appendix A.

3.0 DOCUMENTATION OF COMPLIANCE WITH OTHER FEDERAL REQUIREMENTS

3.1 Endangered Species Protection

The National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Services (USFWS) lists of Endangered Species Act-listed (ESA-listed) species and designated critical habitat were examined for information pertaining to sensitive habitats as they may exist within this project's Action Area. Documentation of this review is included as Appendix K. See Figure 7 – Action Area Map for details.

The USFWS Information for Planning and Consultation (IPaC) species list indicated that the Northern Long-eared Bat (*Myotis septentrionalis*, threatened), Monarch Butterfly (*Danaus plexippus*, candidate species), Sandplain Gerardia (*Agalinis acuta*, endangered), and American Chaffseed (*Schwalbea americana L*., endangered) may be present in the Project Area. No critical habitat has been designated for these species.

The Massachusetts Division of Fisheries and Wildlife's (MassWildlife) Natural Heritage Endangered Species Program (NHESP) Regulatory Mapping was examined for information of sensitive habitats as they may exist within the limits of the project. As shown in Appendix A, Figure 4, both the North and South Project Areas (west side) abut a Priority Habitat Mapped Area for species PH 239. The rest of the project is not located within or near any sensitive habitats. The U.S. Fish and Wildlife Service Species list for the Project Areas is included in Appendix K. The work proposed will not disturb the typical habitats for the species listed, as construction is limited to existing paved roadways. As discharges are not likely to adversely affect ESA-listed species and/or designated critical habitat, this project is eligible for coverage under Criterion C of the CGP Permit. Documentation supporting this determination is provided in Appendix K.

3.2 Historic Property Screening Process

The Massachusetts Cultural Resource Information System (MACRIS) was examined for information pertaining to historic properties and cultural resources as they may exist within this project's action area. The South Mashpee School located at 410 Meetinghouse Road was identified as a nearby historical feature. It is located approximately 500 feet northwest of the Project Area and is not expected to be disturbed during construction. In addition, the Old Indian Meeting House Burial Ground, located between Falmouth Road, Old Cemetery Road, and Meetinghouse Road is another nearby historical feature. It is located approximately 170 feet north west of the Project Area and is not expected to be disturbed during construction (see Appendix L). No other historical structures or areas were identified near the Project Area by MACRIS.

3.3 Safe Drinking Water Act Underground Injection Control (UIC) Requirements

Per the CGP and Safe Drinking Water Act UIC requirements, if any of the following controls are to be installed as part of the proposed project, coordination with the state agency contact as listed at https://www.epa.gov/uic or EPA regional office is required:

- Infiltration trenches (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)
- Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate stormwater flow

If the following controls are being installed as part of this project, the requirements for Underground Injection Control must be met:

- Drywells, seepage pits, or improved sinkholes (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)

Although the previous UIC statements are requirements of the CGP if utilized, the Contractor does not intend to use them for this project.

4.0 EROSION AND SEDIMENT CONTROLS

A stormwater Best Management Practice (BMP) is defined as any program, technology, process, siting criteria, operating method and measure of device that controls, removes, or reduces pollution. Appropriate BMPs are selected based upon an assessment of the construction operations and potential stormwater impacts. Areas of actual or potential pollutant contact are evaluated and applicable BMPs are implemented to eliminate or minimize the release and transport of pollutants.

This project has been designed to minimize earth disturbances to the fullest extent practicable. Tree, vegetation, and soil removal have been designed to be minimized wherever possible. Any necessary BMPs will be installed prior to any earth-moving activities to ensure sediment will not enter nearby wetlands or the stormwater drainage system. This project is designed to avoid any direct impact to wetland resource areas and maintain natural stormwater drainage patterns wherever possible and practicable. Several BMPs are listed in the Project Specifications. However, only those lokely to be employed are discussed in this section.

The Contractor's approach will emphasize preventing erosion before it occurs rather than treating sediment-laden stormwater runoff. A minimum surplus of 25 feet of erosion control barrier (silt fence, straw/hay bale, and/or silt sock with biodegradable casings if feasible) will be stored within the Project Area at all times.

Specific BMPs to be used for the project are provided in the sections below. See Appendix A for Project Area Plans depicting the proposed BMP details. Certain BMPs will require routine inspections to verify suitable operational conditions. Instructions for Project Area inspections and qualifications for inspection personnel are included in Section 6 of this document. A Project Area Inspection Report template is included as Appendix D.

4.1 Natural Buffers or Equivalent Sediment Controls

There is no work proposed within wetland resource areas. Construction, Project Area improvements, contractor parking, and stockpiling areas will be limited to appropriate areas agreed upon with the Town and Engineer, and will be delineated with temporary erosion and sedimentation controls. Erosion and sedimentation controls will be installed prior to commencement of earth disturbing activities, and adjusted and maintained throughout construction until all areas are permanently stabilized to ensure protection of downstream wetland resource areas.

In areas of earth disturbance within proximity to wetland resource areas, a 50-foot natural buffer will be maintained. In areas where this is not feasible, the natural buffer will be supplemented with double erosion and sediment controls to achieve sediment load reduction equivalent to a 50-foot undisturbed natural buffer, an allowed compliance alternative per Section 2.2.1.a.ii of the 2022 CGP. It is not anticipated that this will be necessary for this project. Stormwater runoff from the Project Area will be directed to existing drainage collection systems.

4.2 Perimeter Controls

Specific Perimeter Control # 1 - Compost Filter Tubes, or "Silt Socks"

Compost filter tubes, or "silt socks," will be used to prevent the migration of soil and silt from the Project Area where there are downgradient wetland resource areas that require protection. These erosion controls will define the limit of work in areas where they are installed, and no construction activities will occur downgradient of the installed perimeter erosion controls. Tubes for compost filters will be made of jute mesh or an approved biodegradable material. Mulch material for the filter tubes will be made of weed-free straw, wood excelsior, compost, wood chips, or coir.

- **Installation**

  Prior to construction commencement, the Contractor must stake or flag the limits of any adjacent bordering vegetated wetland or other wetland resource areas such that the proposed upgradient erosion controls are not placed within the limits of the wetland resource area. Tubes will be installed along, toes of slopes, contours and perpendicular to sheet or concentrated flow and configured around existing Project Area features to minimize disturbances and maximize capture area of stormwater runoff. Ends of tubes will be overlapped and staked snugly against each other to create a continuous barrier and prevent unfiltered flow between them. In areas where staking is not possible, heavy concrete blocks may be used on the undisturbed side to secure tubes in place.

- **Maintenance Requirements**

  These erosion and sedimentation controls will be visually inspected daily and within 24 hours of a precipitation event. Sediment accumulations will be removed as necessary and will not be allowed to exceed one half the perimeter erosion control device height. In addition to any sediment accumulation, close inspection will be made for undercutting beneath perimeter controls. Any repairs or replacement of damaged areas will be noted in the inspection report. If any erosion issues occur, the Contractor must repair the erosion immediately and consider different or additional erosion controls for that area.

Specific Perimeter Control # 2 - Silt Fence

Silt fencing may be used to prevent the migration of soil and silt from the Project Area where there are downgradient wetland resource areas that require protection. Filter fabric for silt fencing will consist of pervious sheets of woven polypropylene, nylon, polyester, or ethylene yarn. The filter fabric will contain a carbon black stabilizer to make the filaments resistant to deterioration resulting from exposure to sunlight or heat.

- **Installation**

  Prior to construction commencement, the Contractor must stake or flag the limits of any adjacent bordering vegetated wetland such that the proposed upgradient erosion controls are not placed within the limits of the wetland resource area.

- **Maintenance Requirements**

Silt fencing will be visually inspected weekly and within 24 hours of a precipitation event. Sediment accumulations will be removed as necessary, but not to exceed one half the perimeter erosion control device height. Close inspection will be made for undercutting beneath perimeter controls in addition to any sediment accumulation. Any repairs or replacement of damaged areas will be noted in the inspection report. If any erosion issues occur, the Contractor must repair the erosion immediately and consider different or additional erosion controls for that area.

Specific Perimeter Control # 3 - Vegetated Buffer Strips

Vegetated buffer strips will be maintained beyond the limits of the project to act as living sediment filters that intercept and detain stormwater runoff. Vegetation will be left wherever practicable during construction. All efforts will be made to revegetate disturbed areas as soon as practicable. If conditions or time of year do not allow final revegetation, wood chips or mulch will be used to stabilize disturbed slopes. Any temporarily placed mulch or wood chips will be removed and the ground surface re-seeded at the beginning of the following growing season.

- **Installation**

Not required/Pre-existing

- **Maintenance Requirements**

The vegetated buffers will be inspected daily and after rain events to ensure there is no wash-out or accumulation of sediment. Washed out areas will be dressed with clean soil and straw/hay or natural biodegradable blankets will be placed over the washed-out areas. Any areas of accumulated sediment will be removed and all areas of exposed soil from sediment or wash-outs will be seeded with an appropriate native seed mix as directed by the Engineer.

Specific Perimeter Control # 4 – Soil Stabilization

Stabilization measures including seeding will be initiated as soon as practicable on portions of the Project Area where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the Project Area has temporarily or permanently ceased. These measures may include soil roughening, hydroseeding, mulching, and/or erosion control blankets. Outside the growing season, exposed soil will be covered with mulch, straw, or hay until conditions allow for seeding.

- **Installation**

A loam topsoil mix with a minimum thickness of 4 inches will be placed over compacted subgrade and hydroseeded as needed. Erosion control blankets will be used on all slopes greater than 2.5H:1V.

- **Maintenance Requirements**

Temporarily stabilized areas will be inspected to assess the effectiveness of temporary stabilization BMPs and replace/repair them as necessary.

4.3 Sediment Track-Out

A stabilized temporary construction entrance is to be utilized by exiting trucks and construction equipment at the project Laydown Area on Orchard Road to minimize sediment track-out (please see the Project drawings in Appendix A for the laydown area location). Contractor ingress and egress will be limited to the stabilized construction entrance/exit at the location designated on the plan or as agreed upon with the Engineer. The Contractor is to coordinate truck access and anti-tracking entrance location. Robert B. Our Company intends to:

1. Live load excavation materials into trucks while digging,
2. Complete an area of work for that day, and
3. Return excavated materials at the end of the work day and backfill directly from trucks.

Regardless of this process, which is used to minimize sediment from migrating from work areas, Robert B. Our Company will follow the procedures listed below.

Specific Track-Out Control # 1- Good Housekeeping

Any sediment tracked out of the work area will be removed by sweeping, shoveling, vacuuming, or other effective method. Tracked-out sediments will not be hosed into any stormwater conveyances, storm drain inlets, or waterbody/wetland resource areas, as it is prohibited.

- **Installation**

N/A

- **Maintenance Requirements**

Good housekeeping activities should be conducted a minimum of once per day, at the end of the working day. If excessive piles of sediment are created and cause a nuisance condition, they will be managed immediately.

Specific Track-Out Control # 2 – Vehicle Monitoring

Trucks delivering or removing soils, materials, and/or equipment to and from Project Areas must be cleaned of any excess soil prior to leaving to ensure that no significant amount of sediment is carried Project Area. Debris, excess soil, and sediment will be removed from sideboards and wheel flaps of all vehicles leaving Project Areas in a designated location. Every effort will be made to adequately remove sediment and debris without the use of water. Debris and sediment dry-removed from vehicles and equipment should be cleaned and disposed of immediately to prevent further tracking. Trucks must close and lock dump body gate prior to leaving a Project Area.

- **Installation**

N/A

- **Maintenance Requirements**

Monitoring of trucks leaving Project Areas.

Specific Track-Out Control # 3 – Anti-Tracking Pad (Construction Entrance/Exit)

A stabilized temporary construction entrance will be installed to remove debris from tires as vehicles leave the Laydown Area on Orchard Road.

- **Installation**

The construction entrance will be constructed prior to the start of earth disturbing or material stockpiling activities. It will consist of crushed stone at a minimum depth of 8 inches placed over geotextile fabric.

- **Maintenance Requirements**

Construction entry will, at a minimum, be inspected weekly and within 24 hours of a precipitation even that produces 0.25 inches of rain or more during a 24-hour period. A minimum 8-inch-thick pad will be maintained and top-dressed as needed to prevent tracking or flow of mud onto public roads.

4.4 Stockpiled Sediment or Soil

The Contractor, Robert B. Our Company does not intend to stockpile excavated materials anywhere in the Project Area for this project. However, if stockpiling becomes necessary, stockpiles will not interfere with construction equipment and will be located away from any areas of concentrated flow or pavement. The slopes of the stockpiles will be roughened by equipment tracking and will not exceed 2H:1V to prevent erosion. All soil, aggregate, debris, fill, excavated material, construction material, and building material stockpiling will occur far enough from designated wetlands or other wetland resource areas, and at a location to prevent sediment from surface runoff entering these wetland resource areas. At no time will any debris or other material be buried or disposed outside the limit of work referenced plans. At no time should soils or sediments be swept or hosed into any stormwater conveyance systems, storm drain inlets, or surface water/wetland resource areas.

Specific Stockpile Control # 1

Stockpiling of soils will be minimized to the maximum extent possible. All stockpiles will be a minimum of 100 feet from any wetland resource area (rivers, BVWs, etc.), rain garden, wet swale, or infiltration leaching basin, preserving a 50-foot natural buffer. Perimeter erosion and sedimentation controls will be installed surrounding the boundary of stockpiled materials on the downgradient sides to prevent downgradient sedimentation.

- **Installation**

Ongoing throughout construction, as needed.

- **Maintenance Requirements**

Stockpiles will be inspected prior to and immediately after a storm event to assess if erosion is occurring. Areas of erosion will be stabilized immediately. Temporary seeding, mulching, or the covering of soil stockpiles with plastic tarps may be required as directed by the Contractor.

Specific Stockpile Control # 2

When it is anticipated that any stockpile will remain inactive for an extended period of time, stockpiles will be covered or temporarily stabilized to avoid direct contact with precipitation and to minimize sediment discharge.

- **Installation**

  Ongoing throughout construction, as needed.

- **Maintenance Requirements**

  During routine stormwater inspection, temporary seeding, mulching, or the covering of soil stockpiles with plastic tarp may be directed by the Contractor.

4.5 Dust Control

BMP's will be installed to treat, trap, and remove sediment from water that flows from Project Area. Street sweeping may be necessary to supplement sediment removal from adjacent roadways.

Dust control will be implemented as needed after ground disturbance has begun and during windy conditions (forecasted or actual wind conditions of 20 mph or greater) while ground disturbance is occurring or if dust is creating a nuisance condition to nearby receptors such as residents, traffic, pedestrians, etc. Dust control should follow the requirements in the project specifications.

Specific Dust Control # 1 - Water

The Contractor will have immediate access to a water truck for the duration of the project to control dust. Paved areas will be sprayed to minimize dust as needed.

Specific Dust Control # 2 - Street Sweeping

Paved areas will be swept at a minimum of once per week or more frequently as necessary or directed by the Engineer. Any soil left on the pavement at the end of the day from work activities must be swept and removed from the roadways. Any changes to the frequency of sweeping should be agreed upon by all members of the Stormwater Team.

Specific Dust Control # 3 - Other

Soil delivery trucks entering Project Areas will be required to have tarpaulins and appropriate tailgates. Tarpaulins must not be retracted until the truck loads out and must be in place prior to leaving the Project Area. Tailgates must be closed and secured upon arriving and prior to leaving the Project Area.

4.6 Steep Slope Disturbances

From Appendix A of the 2022 Construction General Permit - Definitions:

> *"Steep Slopes" – where a state, tribe, local government, or industry technical manual (e.g., stormwater BMP manual) has defined what is to be considered a "steep slope", this permit's definition automatically adopts that definition. Where no such definition exists, steep slopes are automatically defined as "those that are 15 percent or greater in grade."*

Generally, the existing topography of the Project Area where work is to occur does not contain steep slopes. Any installations in steeply-sloping areas will be mitigated by the installation of temporary erosion control blankets immediately after disturbance. A combination of silt fence with silt sock and erosion control blanket will be used to provide temporary stabilization and erosion control when these areas are disturbed and until they are permanently stabilized.

4.7 Topsoil

Topsoil stripped from the immediate area of construction will be reused Project Area to the maximum extent practicable. Topsoil will be stockpiled in a designated staging area until reused. The stockpile will be located in an area that will not interfere with construction equipment and away from any areas of concentrated flow or pavement. Slopes of the topsoil stockpile, or any other stockpile, will not exceed 2H:1V to minimize the potential for erosion. All soils, aggregate, debris, fill, excavated material, construction material, and building material stockpiling will be stockpiled far enough from surface waters and at a location to prevent sediment from surface runoff from entering these wetland resource areas.

4.8 Soil Compaction

During construction, heavily compacting soils around the construction Project Area will be avoided to the maximum extent possible, especially within areas of proposed infiltration and where landscaping is to be installed. Construction within areas of undisturbed soils will be minimized. Specific soil compaction control measures will be selected by the Contractor during construction.

Specific Soil Compaction Control

Insofar as possible, construction activities will be confined to those areas defined by the plans and specifications. The Contractor will limit the traffic of construction vehicles and avoid the use of areas outside of these agreed-upon areas for equipment storage, material storage, and vehicle parking to prevent excessive compaction, especially within areas of proposed infiltration and where landscaping is to be installed. No heavy construction machinery shall be allowed within a wetlands area.

- **Installation**

N/A

- **Maintenance Requirements**

Areas sensitive to excessive compaction will be monitored for construction vehicle traffic, stockpiling, equipment and material storage, and other construction related activities that would compact underlying soils by the Contractor. If soil is compacted to the point where infiltration is infeasible, the Contractor may consider the use of aeration machines such as coulters or rollers with spikes to mechanically roughen the soil and allow infiltration. If excessive compaction occurs in areas where topsoil has been spread, prior to planting, the area will be raked and scored to a minimum 2-inch depth prior to seeding or planting.

4.9 Catch Basin (Storm Drain) Inlets

Specific Catch Basin Inlet Control # 1- Inlet Protection

Catch Basins will be fitted with inlet protection consisting of fabric silt bags to trap any sediment generated from construction activities. Inlet protection will be installed according to project specifications and will be installed prior to construction commencement.

- **Installation**

Install prior to construction commencement. Install per the manufacturer's instructions.

- **Maintenance Requirements**

Inspect silt bags daily and within 24 hours of a rain event. Remove sediment when the bag is half full and replace bags when wear becomes evident to avoid rips and tears.

Specific Catch Basin Inlet Control # 2 – Compost Filter Tubes/Wattles

Prior to anticipated extreme storm events or when there is increased potential for sediment loading at the catch basins, compost filter tubes can be temporarily placed around catch basins to provide additional sediment filtering.

- **Installation**

  Install as needed in addition to silt bags prior to extreme storm events or when there is an increased potential for sediment loading to the catch basins. Overlap ends by at least one foot.

- **Maintenance Requirements**

  Inspect compost filter tubes/ wattles weekly within 24 hours of a precipitation even. Remove sediment when accumulation height reaches approximately one-half the height of the erosion control device. Replace when wear becomes evident to avoid breaches.

4.10 Dewatering Practices

Although not anticipated during this project, dewatering (if necessary) will occur in accordance with the requirements in Section 2.4 of the CGP. Appropriate dewatering controls such as a dewatering basin, sedimentation bags, velocity dissipation measures, silt socks, and silt fencing will be employed to control downgradient erosion and sedimentation from all dewatering activities. Any water that is pumped and discharged from an excavation will be filtered through a sedimentation bag, silt sock, or temporary sedimentation basin to trap any sediments. Any dewatering system utilized will be removed when no longer required for work activities.

Specific Dewatering Practices

Common dewatering methods include, but are not limited to, sump pumping, deep wells, well points, vacuum well points, or a combination of these techniques. Direct discharge into wetland resource areas or surface water bodies is not allowed.

The Contractor is responsible for implementing erosion and sedimentation control measures for disposing of discharge water. The Contractor will continuously monitor and maintain dewatering operations to ensure erosion and sedimentation control, stability of excavations and constructed slopes, hydrostatic pressure, that excavation does not flood, and that damage to subgrades and permanent structures is prevented.

Surface flow that could lead to out of the Project Area discharge is not permitted. If ground infiltration or collection and transport from the Project Area is not feasible, treated water will be directly or indirectly discharged to a surface water in accordance with a National Pollutant Discharge Elimination System (NPDES) permit issued by the U.S. Environmental Protection Agency (EPA).

The Contractor is responsible for retaining a Massachusetts Registered Professional Engineer to design an appropriate dewatering system suited to handle groundwater conditions across the Project Area, if determined dewatering is necessary.

4.11 Other Stormwater Controls

In addition to the previously described controls, construction will conform to all specifications as designated in the project specifications, on the Project Area plan, and in any other associated contract documents or permits.

The following control measures and best practices will be implemented:

- The smallest area of land practicable will be exposed at any one time by phasing the construction.
- Wherever feasible, existing vegetation will be retained and protected.
- All Project Area drainage systems/BMPs and adjacent roadway drainage systems/BMPs will be maintained in proper working condition during and after construction.
- The Contractor will attend a pre-construction meeting to discuss the erosion and sedimentation control plan and how it relates to the Contractor's intended construction schedule.
- If other stormwater control types are planned to be implemented, this SWPPP will be amended as necessary.

4.12 Chemical Treatment

The use of treatment chemicals (e.g., polymers, flocculants, coagulants) is not proposed at the Project Area during construction. The use of chemicals to treat water drawn from the municipal wells will be permitted under a separate NPDES Multi Sector General Permit.

4.13 Project Area Stabilization

The project is not located in an arid or semi-arid area. According to the State of Massachusetts, as of their October 7, 2022 Drought Declaration the Project Area is within an area of Significant Drought, but outside of a Persistent Drought area. Please note that Robert B. Our Company does not anticipate dewatering during this project, which eliminates discharging directly to a sediment or nutrient impaired water or a Tier 2, Tier 2.5, or Tier 3 water. The stabilization practices will include vegetative and non-vegetative methods for both temporary and permanent stabilization.

The CGP requires that Project Area stabilization be conducted when work in an area of the project has permanently or temporarily stopped (for a period of 14 or more consecutive calendar days) and to complete stabilization activities within 14 calendar days. Vegetative practices will be used to stabilize exposed soils where construction activities have temporarily or permanently ceased. Stabilization activities will be logged in Appendix H.

Specific Project Area Stabilization Control # 1- Seeding

Seeding will be initiated immediately after earth-disturbing activities have permanently or temporarily ceased (where construction will not resume for a period of 14 or more consecutive calendar days) in all pervious landscaped Project Areas to provide either temporary or permanent stabilization. When stabilization is required outside of the growing season, temporary controls such as straw/hay mulch, erosion control blankets, sod, or other control approved by the Engineer or Owner will be applied and maintained until the weather allows vegetative stabilization.

- **Installation**

Ongoing throughout construction, as needed.

- **Maintenance Requirements**

Areas will be inspected regularly as a part of the stormwater inspections to ensure erosion is minimized. Re-seeding will occur as necessary to ensure stabilization.

Specific Project Area Stabilization Control # 2 – Erosion Control Blankets

Installation of erosion control blankets (e.g., straw mats, jute netting) will occur in conjunction with permanent seeding on slopes steeper than 3:1 immediately after earth disturbing activities have permanently or temporarily ceased. Where construction will not resume for a period of 14 or more consecutive calendar days and seeding is not feasible due to weather conditions, erosion control blankets can be installed as a soil stabilization and erosion control measure in all pervious Project Areas on steep slopes to provide either temporary or permanent stabilization.

- **Installation**

Ongoing throughout construction, as needed.

- **Maintenance Requirements**

Areas will be inspected regularly as a part of the stormwater inspections to ensure erosion is minimized. Damaged erosion control blankets will be replaced as necessary to ensure stabilization.

5.0 POLLUTION PREVENTION STANDARDS

5.1 Potential Sources of Pollution

Construction Project Area Pollutants

The following sections provide a description of pollution prevention measures used to control litter, construction chemicals, and construction debris from becoming a pollutant source to stormwater discharges. Storage practices to minimize the exposure of materials to stormwater and spill prevention and response measures are described in this section.

Personnel responsible for the oversight of the petroleum products and hazardous or controlled substances include the following:

a. Contractor

b. Project Area coordinators designated by the Contractor

The Contractor will be responsible for overseeing all the requirements of this plan and all efforts described herein to prevent spills, as well as be responsible to address the timely remediation of any accidental spill in accordance with applicable federal, state, and local regulations. The Contractor will identify an appropriately trained Project Area employee(s) involved with day-to-day operations to be the spill prevention and cleanup coordinator. The name(s) of the responsible spill prevention and cleanup coordinator(s) will be posted in the Project Area office. Each employee will be instructed that spills are to be reported to the spill prevention and cleanup coordinator.

Will this pollutant-generating activity occur at the Project Area?	Areas of Work		Other Pollutants					
		Sediment	Nutrients	PAHs	pH	Oil & Grease	Bacteria	Trash, Debris and Solids
☒ Yes ☐ No	Clearing, grading, excavating and presence of unstabilized areas	√	√					√
☒ Yes ☐ No	Paving operations	√	√	√		√		√
☒ Yes ☐ No	Concrete washout and waste	√			√			√
☒ Yes ☐ No	Structure construction/painting							√
☒ Yes ☐ No	Demolition and debris disposal	√						√
☐ Yes ☒ No	Dewatering operations							
☒ Yes ☐ No	Material delivery and storage	√						√
☒ Yes ☐ No	Use of Materials during construction process	√						√

Will this pollutant-generating activity occur at the Project Area?	Areas of Work		Other Pollutants					
		Sediment	Nutrients	PAHs	pH	Oil & Grease	Bacteria	Trash, Debris and Solids
☒ Yes ☐ No	Solid waste (trash and debris)							√
☒ Yes ☐ No	Sanitary/septic waste		√				√	
☒ Yes ☐ No	Vehicle/equipment use and storage	√				√		
☒ Yes ☐ No	Vehicle/equipment fueling and maintenance	√				√		
☒ Yes ☐ No	Landscaping operations	√	√					√
☒ Yes ☐ No	Stockpiles of materials (gravel, loam, etc.)	√	√					

5.2 Spill Prevention and Response

The Contractor will use the utmost care in minimizing the risk of spills in the Project Area. The potential risk for spills will be minimized by storing chemicals and petroleum products in locked, labeled, and properly ventilated storage containers. In the unlikely event of a spill, the Contractor will immediately clean up any and all spills of fuel, oil, or other potentially hazardous materials. Any and all reportable spills will be reported to the proper authorities within the required timeframe(s). The appropriate materials to respond and cleanup a spill will be maintained Project Area at all times by the Contractor. Appropriate equipment for a spill kit may include oil booms, gloves, goggles, speedy dry or equivalent, sand, sawdust, plastic and metal containers, rags and mops.

Pollution Prevention Practice # 1 – Spill Kits

Spill kits will be located at strategic locations throughout the Project Area where work is active and near potential pollutant storage areas. All construction workers will be notified of the location of spill kits. If a reportable spill occurs, proper notification(s) will be made in accordance the Massachusetts Contingency Plan (310 CMR 40.000). The Contractor will be responsible for complete cleanup of any accidental spills.

- **Installation**

  As part of pre-construction project activities.

- **Maintenance Requirements**

  Spill kits will be inspected as part of the regularly scheduled stormwater inspections and will be restocked as needed.

Pollution Prevention Practice # 2- Storage Requirements

All fuels, oil, solvents, and chemicals will be stored in original containers or in comparable containers manufactured for storing such material in the temporary staging areas and away from catch basins or stormwater conveyance swales. Containers will be clearly labeled as to the contents. Portable secondary containment will be used.

- **Installation**

  Ongoing throughout construction, as needed.

- **Maintenance Requirements**

  Potential pollutants/chemicals will be inspected as part of the regularly scheduled stormwater inspections and any defective containers will be replaced immediately.

Pollution Prevention Practice # 3 - Training

All employees will be trained on how to properly prevent spills and containment methods in the unlikely event of a spill.

- **Installation**

  As part of pre-construction project activities.

- **Maintenance Requirements**

  Additional training will be given to employees as needed or deemed necessary by the Contractor.

5.3 Fueling and Maintenance of Equipment or Vehicles

Maintenance and cleaning of construction vehicles (beyond removal of loose soil) is not anticipated to be conducted at the Project Area. All major equipment/vehicle maintenance or repairs will be performed outside of the Project Area. Construction equipment will be inspected daily to minimize risk of an accidental discharge of oil or fuel at the Project Area. Routine equipment refueling activities will not be conducted within 50 feet of a catch basin or within 100 feet of a wetland resource area (river, BVW, etc.). A spill kit will be nearby and easily accessible during refueling activities. Drip pans and absorbents will be used under and/or around leaky vehicles. All used oil and oily waste will be recycled or disposed of in accordance with Federal, State, and local requirements. The ground surface in the vicinity of refueling activities should be inspected following refueling. Any spills will be cleaned up immediately.

Pollution Prevention Practice # 1- Storage Requirements

Fuel, oil, and other potentially hazardous materials needed for equipment maintenance will be kept secured and have secondary containment (e.g., spill berms, decks, spill containment pallets). All stored petroleum products will be stored off of the ground, properly contained and labeled. Any fuel or other lubricants stored overnight will be covered and secured. The Contractor will take all necessary precautions to avoid leakage and spillage of all petroleum products.

- **Installation**

  Ongoing throughout construction, as needed.

- **Maintenance Requirements**

  Secondary containment should be kept clean and inspected daily or more frequently, if necessary.

Pollution Prevention Practice # 2 – Secondary Containment

Secondary containment is required for any Project Area vehicle and equipment refueling. No maintenance activities will occur within 100 feet of a regulated wetland area, surface water, or other wetland resource area.

- **Installation**

  Ongoing throughout construction, as needed.

- **Maintenance Requirements**

  Secondary containment should be kept clean and inspected daily or more frequently, if necessary.

Pollution Prevention Practice # 3 – Spill Kits

At each vehicle staging area, spill clean-up equipment (shovels, mats, booms, absorbent pads, and materials) will be maintained for use in the event of an accidental spill.

- **Installation**

  Prior to construction commencement.

- **Maintenance Requirements**

  Spill kits will be inspected as part of the regularly scheduled stormwater inspections and will be restocked as needed.

5.4 Washing of Equipment and Vehicles

All major equipment and vehicle washing and maintenance will be performed outside of the Project Area. Minor cleaning of equipment and vehicles (i.e., removal of loose dirt) is to be performed in a designated staging/storage area away from surface waters, stormwater drain inlets, and not within 100 feet of a wetland resource area.

5.5 Storage, Handling, and Disposal of Building Products, Materials, and Wastes

5.5.1 Building Materials and Building Products

Materials and temporary equipment will be stored in the designated staging areas. Stockpiles will not be located in or near wetland resource areas. Construction products will be kept in sealed containers and stockpiles will be adequately covered to minimize the exposure of these materials to precipitation and to stormwater so as to minimize the discharge of pollutants from these areas. These materials will be properly stored and routinely inspected. Storage and covering of building products will be ongoing throughout construction.

Pollution Prevention Practice # 1- Proper Storage
All construction products which contain asphalt and sealants will be stored in weatherproof areas. This will include within temporary structures erected to support construction, or within vehicles at designated staging areas.

- **Maintenance Requirements**
  Regular inspections will assess containment and check for any leaks or other impacts.

5.5.2 Pesticides, Herbicides, Insecticides, Fertilizers, and Landscape Materials

The storage and handling of pesticides, herbicides, insecticides, fertilizers, and landscape materials will be kept to a minimum. These products will be stored or covered in a manner that will prevent rainwater from coming into contact with harmful chemicals. Pesticides and/or herbicides of any type will not be used unless authorized by the Owner and local regulatory authority. The application of any herbicides in the Project Area shall be conducted by a licensed professional. Use of fertilizers, if necessary, will be limited to slow release, low nitrogen (<5%), organic-based fertilizers. Fertilizer storage requires sealed bins under cover from weather. Fertilizers will be stored outside of buffer zones to wetland resource areas.

Specific Pollution Prevention Practices
Refer to Section 5.2 herein for pollution prevention practices relevant to chemical storage.

5.5.3 Diesel Fuel, Oil, Hydraulic Fluids, Other Petroleum Products, and Other Chemicals

Diesel fuel, motor oil, hydraulic oil, gasoline, machine grease, other petroleum products, and other related chemicals will be stored temporarily on a daily basis in appropriate water-tight and clearly marked containers, segregated from other non-water materials, covered from precipitation by roof or plastic sheeting, and will have secondary containment (e.g., spill berms, decks, spill containment pallets). Any hazardous or toxic materials will be stored in accordance with all local, state, and federal regulations and placed in secondary containment on a commercially available spill pallet. Proper storage, covering, and inspection of these materials will be ongoing throughout construction. Any spills must be cleaned immediately using dry clean-up methods where possible. Used materials must be properly disposed. Do not clean surfaces or spills by flushing the area with water. Eliminate the source of the spill to prevent further release.

Specific Pollution Prevention Practices
Refer to Section 5.3 herein for pollution prevention practices relevant to diesel/oil/hydraulic fluids, etc.

5.5.4 Hazardous or Toxic Waste

Use of hazardous or toxic wastes, including but not limited to, paints, solvents, sealants, caulk, adhesives, additives, acids, and curing compounds may be present in the Project Area as part of the project. They will be separated from construction and domestic waste and stored in tightly sealed containers constructed of suitable materials to prevent leakage and corrosion and labelled in accordance with applicable regulatory requirements. All hazardous waste materials will be disposed of appropriately by the Contractor in the manner specified by local, state, and/or federal regulations and by the manufacturer of such products. Project personnel will be instructed in these practices by the Contractor, who will also be responsible for seeing that these practices are followed.

5.5.5 Construction and Domestic Waste

All construction and domestic waste materials, including but not limited to packaging, scrap construction materials, masonry, timber, pipe, electrical, plastics, styrofoam, and concrete will be collected and stored securely in covered metal dumpsters. Dumpsters must be kept closed when not in use and closed at the end of the business day. Cover (e.g., tarps) must be provided for dumpsters without lids to minimize exposure to precipitation. Dumpsters will meet local and state solid waste management regulations and will be emptied as necessary. Dumpsters will not be allowed within the 100-foot buffer zone to any wetland resource area. A company licensed in accordance with applicable federal, state, and local regulations will transport the waste. No trash, stumps, or construction debris will be buried in the Project Area. Individuals working on the Project will be informed of the appropriate procedure for waste disposal. The Contractor will be responsible for seeing that these procedures are followed properly.

Pollution Prevention Practice # 1- Proper Collection and Storage

Construction and Demolition Debris (C&D) will be stored in closed-top dumpsters or roll-off dumpsters where closed tops are not feasible due to debris size. Domestic solid waste generated from construction activities will be collected and stored in secure, covered dumpsters separate from C&D debris. The dumpsters will meet all local and state solid waste management regulations. The dumpsters will be located at the temporary staging areas. Only construction debris and trash will be deposited in their respective dumpsters. No construction materials will be buried. All personnel will be instructed, during training sessions, regarding the correct disposal of trash and construction debris and anti-littering policies. Notices that state these practices will be posted in the office trailer and the individual who manages day-to-day operations will be responsible for enforcing these practices.

- **Installation**

  Dumpsters will be provided prior to construction commencement.

- **Maintenance Requirements**

  Debris storage areas will be inspected as part of the regularly scheduled stormwater inspections and after storm events. Dumpsters will be emptied when full. Windblown and/or construction generated litter will be collected as necessary.

5.5.6 Sanitary Waste

Portable sanitary facilities will be provided for Project staff. They will not be allowed to be placed within the 100-foot buffer zone to any wetland resource area. They shall be accessible for maintenance and general use and located in an area that is generally out of the way of construction activities, and pose the

least impact to natural resources or potential receptors. Portable sanitary facilities will be serviced weekly, kept clean, and supplied throughout the course of the work. The portable facilities will be stabilized (such as sandbags around the base) to prevent overturning during storms or due to vandalism which prevents wastes from contributing to stormwater discharges. The Contractor will enforce proper use of sanitary facilities.

5.6 Washing of Applicators and Containers used for Paint, Concrete, or Other Materials

Concrete trucks will be allowed to wash out or discharge surplus concrete or drum wash water in the Project Area, but only in specifically designated diked areas which have been prepared to prevent contact between stormwater and the concrete and/or washout water.

Hardened residue from the concrete washout station will be disposed of in the same manner as other non-hazardous construction waste materials or may be broken up and used in the Project Area as deemed appropriate by the Engineer and/or Owner. The Contractor will be responsible for seeing that these procedures are followed.

Concrete washout areas will not be allowed within the 100-foot buffer to any wetland resource area. They shall be located where the likelihood of the area contributing to stormwater discharges is negligible. The actual layout of the concrete washout stations is to be determined during construction. If required, additional BMPs may be implemented to prevent concrete wastes from contributing to stormwater discharges. No discharges will be allowed in work areas within the buffer zones to or within any wetland resource areas.

5.7 Fertilizers

If fertilizers are required in the Project Area, they will be applied at a rate and in an amount consistent with the manufacturer's specifications and at the appropriate time of year, timed to coincide as closely as possible to the period of maximum vegetation uptake and growth. The Contractor will avoid applying fertilizers prior to forecasted heavy rains that could cause excess nutrients to be discharge. Never apply to frozen ground or within constructed or natural Project Area drainage features. Follow all applicable Federal, State, and local requirements regarding fertilizer application.

5.8 Contaminated Soil / Urban Fill

If contaminated soil and /or urban fill soils are encountered during trenching and excavation activities, these soils will be handled in accordance with the Massachusetts Contingency Plan (MCP, 310 CMR 40.000) and the Solid Waste Management Regulations (SWMR, 310 CMR 19.000). Impacted soil stockpiling must be conducted in accordance with stockpiling requirements set forth in Section 4.5 of this SWPPP, be stockpiled separate from other non-impacted soils, and be covered with polyethylene sheeting to prevent contact with precipitation. Stormwater that may contact oil or hazardous materials, polychlorinated biphenyls (PCBs), lead, asbestos, or other types of contaminated soil will be collected within the immediate area of the contact, treated (as determined by sampling and testing), and disposed of in accordance with all local, state, and federal regulations.

5.9 Asbestos Containing Materials Removal and Disposal

If encountered, the excavation of soil, fill, and/or waste containing potential asbestos-containing material will be handled in accordance with the project specifications; Massachusetts Division of Occupational Safety (MassDOS) regulations (The Removal, Containment, or Encapsulation of Asbestos; 453 CMR 6.00); Massachusetts Department of Environmental Protection (MassDEP) Asbestos Regulations (310 CMR 7.00); Asbestos Disposal Regulations (310 CMR 19.061), and the Massachusetts Contingency Plan (310 CMR 40.000).

No Project Area staging of asbestos cement pipe, asbestos materials, or asbestos containing soils will be allowed. Storage of removed asbestos containing material (ACM) is not permitted without prior MassDEP approval. Asbestos cement pipe that has been properly wetted, sealed, and labeled is permitted to be stored for up to 30 days Project Area with prior approval from MassDEP.

5.10 Other Pollution Prevention Practices

If other pollution prevention practices are deemed necessary during the Project, the SWPPP will be amended to include these added practices.

5.11 Emergency Response Contacts

Contact the following in the event of an emergency:

Mashpee Fire Department
911 (emergency)
(508) 539-1454 (non-emergency)

Mashpee Police Department
911 (emergency)
(508) 539-1486 (non-emergency)

Mashpee Conservation Office
For conservation related emergencies:
(508) 539-1400
Andrew McManus, Conservation Agent

6.0 INSPECTION, MAINTENANCE, AND CORRECTIVE ACTION

6.1 Inspection Personnel and Procedures

All pollution prevention controls and equipment will be inspected to maintain such controls and equipment in effective operating conditions and to protect them from activities that may reduce their effectiveness.

Personnel Responsible for Inspections
Inspections will be conducted by a "qualified person" who is knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention. The qualified person will possess appropriate skills and training to assess conditions during construction that could impact stormwater quality and the ability to assess the effectiveness of any stormwater control measures selected and installed for the Project.

Inspection Frequency
The inspection schedule will meet the requirements of the 2022 Construction General Permit, Section 4.2, which states the inspections will occur at least:

- once every 7 calendar days or
- once every 14 calendar days *and:*
    - within 24 hours of the occurrence of a storm event that produces 0.25 inches or more of rain within a 24-hour period, or
    - after a discharge caused by snowmelt from a storm event that produces 3.25 inches or more of snow within a 24-hour period.

Rain Gauge Location
A rain gauge at a local weather station will be used for Project Area rainfall data. NOAA reports will be used for weather forecasts.

Reductions in Inspection Frequency
Reductions in inspection frequencies can occur under the following circumstances:

1. Inspections may be suspended when all disturbed areas have been adequately stabilized.
2. Inspections can be temporarily suspended during frozen conditions where construction activities are suspended.

The Stormwater Team should agree upon making any reductions in accordance with these conditions. Any inspection reduction periods must be documented with a start and end date in the SWPPP.

Inspection Report Forms
An Inspection Report Form is located in Appendix D.

6.2 Corrective Action

Per Section 5 of the 2022 Construction General Permit, on the same day a condition requiring corrective action is identified, all reasonable steps to minimize or prevent the discharge of pollutants will be made until a permanent solution is implemented and made operational. However, if the problem identified

does not require a new or replacement control or significant repair and is identified at the end of a work day, the initiation of corrective action will begin on the following work day.

All corrective actions must be documented in the Corrective Action Log, provided in Appendix E.

6.3 Delegation of Authority

The Contractor will be responsible for signing inspection reports, certifications or other information for this Project. The Contractor will act as the Operator and may assign a duly authorized representative to act in this role during the project work. Both Contractor and assigned duly authorized representative must complete and sign the Delegation of Authority form, provided in Appendix J.

Duly Authorized Representative:
TBD

7.0 TURBIDITY BENCHMARK MONITORING FROM DEWATERING DISCHARGES

There will be no dewatering discharge to receiving waters listed as impaired for sediment or a sediment-related parameter, or directly to receiving waters designated as Tier 2, Tier 2.5, or Tier 3. Therefore, pursuant to CGP Part 3.3, this Project is not required to comply with turbidity benchmark monitoring.

8.0 CERTIFICATION AND NOTIFICATION

I certify under penalty of law that this document and all appendices were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: Craig Trombly (Contractor Printed) **Title:** P.M.

Signature: **Date:** 11.16.2022

APPENDIX B

2022 CONSTRUCTION GENERAL PERMIT (CGP)

National Pollutant Discharge Elimination System (NPDES)
Construction General Permit (CGP) for Stormwater Discharges from Construction Activities

In compliance with the provisions of the Clean Water Act, 33 U.S.C. §1251 et. seq., (hereafter CWA), as amended by the Water Quality Act of 1987, P.L. 100-4, "operators" of construction activities (defined in Appendix A) that meet the requirements of Part 1.1 of this National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP), are authorized to discharge pollutants in accordance with the effluent limitations and conditions set forth herein. Permit coverage is required from the "commencement of construction activities" (see Appendix A) until one of the conditions for terminating CGP coverage has been met (see Part 8.2).

This permit becomes effective on 12:00 am, February 17, 2022.

This permit and the authorization to discharge expire at 11:59pm, February 16, 2027.

Signed and issued this 18 day of January 2022

DEBORAH SZARO
Digitally signed by DEBORAH SZARO
Date: 2022.01.18 08:31:14 -05'00'

Deborah Szaro,
Acting Regional Administrator, EPA Region 1.

Signed and issued this 18 day of January 2022

JAVIER LAUREANO
Digitally signed by JAVIER LAUREANO
Date: 2022.01.18 11:21:16 -05'00'

Javier Laureano,
Director, Water Division, EPA Region 2.

Signed and issued this 18 day of January 2022

CARMEN GUERRERO PEREZ
Digitally signed by CARMEN GUERRERO PEREZ
Date: 2022.01.18 10:19:51 -04'00'

Carmen Guerrero-Perez,
Director, Caribbean Environmental Protection Division, EPA Region 2.

Signed and issued this 18 day of January 2022

CATHERINE LIBERTZ
Digitally signed by CATHERINE LIBERTZ
Date: 2022.01.18 12:05:24 -05'00'

Catherine A. Libertz,
Director, Water Division, EPA Region 3.

Signed and issued this 18 day of January 2022

JEANEANNE GETTLE
Digitally signed by JEANEANNE GETTLE
Date: 2022.01.18 13:09:48 -05'00'

Jeaneanne Gettle,
Director, Water Division, EPA Region 4.

Signed and issued this 18 day of January 2022

Digitally signed by TERA FONG
Date: 2022.01.18 13:03:49 -06'00'

Tera Fong,
Director, Water Division, EPA Region 5.

Signed and issued this 18 day of January 2022

CHARLES MAGUIRE
Digitally signed by CHARLES MAGUIRE
DN: c=US, o=U.S. Government, ou=Environmental Protection Agency, cn=CHARLES MAGUIRE, 0.9.2342.19200300.100.1.1=68001003650036
Date: 2022.01.18 14:06:55 -06'00'

Charles W. Maguire,
Director, Water Division, EPA Region 6.

Signed and issued this 18 day of January 2022

JEFFERY ROBICHAUD
Digitally signed by JEFFERY ROBICHAUD
Date: 2022.01.18 14:41:37 -06'00'

Jeffery Robichaud,
Director, Water Division, EPA Region 7.

Signed and issued this 18 day of January 2022

DARCY OCONNOR
Digitally signed by DARCY OCONNOR
Date: 2022.01.18 14:00:05 -07'00'

Darcy O'Connor,
Director, Water Division, EPA Region 8.

Signed and issued this 18 day of January 2022

TOMAS TORRES
Digitally signed by TOMAS TORRES
Date: 2022.01.18 13:30:16 -08'00'

Tomás Torres,
Director, Water Division, EPA Region 9.

Signed and issued this 18 day of January 2022

DANIEL OPALSKI
Digitally signed by DANIEL OPALSKI
Date: 2022.01.18 15:10:20 -08'00'

Daniel D. Opalski,
Director, Water Division, EPA Region 10.

CONTENTS

1 HOW TO OBTAIN COVERAGE UNDER THE CONSTRUCTION GENERAL PERMIT (CGP)

To be covered under this permit, you must meet the eligibility conditions and follow the requirements for obtaining permit coverage in this Part.

1.1 ELIGIBILITY CONDITIONS

1.1.1 You are an "operator" of a construction site for which discharges will be covered under this permit. For the purposes of this permit and in the context of stormwater discharges associated with construction activity, an "operator" is any party associated with a construction project that meets either of the following two criteria:

- **a.** The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or
- **b.** The party has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Where there are multiple operators associated with the same project, all operators must obtain permit coverage.[1] Subcontractors generally are not considered operators for the purposes of this permit.

1.1.2 Your site's construction activities:

- **a.** Will disturb one or more acres of land, or will disturb less than one acre of land but are part of a common plan of development or sale (as defined in Appendix A) that will ultimately disturb one or more acres of land; or
- **b.** Have been designated by EPA as needing permit coverage under 40 CFR § 122.26(a)(1)(v) or 40 CFR § 122.26(b)(15)(ii);

1.1.3 Your site is located in an area where EPA is the permitting authority and where coverage under this permit is available (see Appendix B);

1.1.4 Discharges from your site are not:

- **a.** Already covered by a different NPDES permit for the same discharge; or
- **b.** In the process of having coverage under a different NPDES permit for the same discharge denied, terminated, or revoked.[2, 3]

1.1.5 You can demonstrate you meet one of the criteria in the Endangered Species Protection section of the Notice of Intent (NOI) that you submit for coverage under this permit, per Part 1.4, with respect to the protection of Federally listed endangered or threatened species and Federally designated critical habitat under the Endangered Species Act

[1] If the operator of a "construction support activity" (see Part 1.2.1c) is different than the operator of the main site, that operator must also obtain permit coverage. See Part 7.1 for clarification on the sharing of permit-related functions between and among operators on the same site and for conditions that apply to developing a SWPPP for multiple operators associated with the same site.

[2] Parts 1.1.4a and 1.1.4b do not include sites currently covered under the 2017 CGP that are in the process of obtaining coverage under this permit, nor sites covered under this permit that are transferring coverage to a different operator.

[3] Notwithstanding a site being made ineligible for coverage under this permit because it falls under the description of Parts 1.1.4a or 1.1.4b, above, EPA may waive the applicable eligibility requirement after specific review if it determines that coverage under this permit is appropriate.

(ESA). If the EPA Regional Office grants you a waiver from electronic reporting per Part 1.4.2, you must complete the ESA worksheet in Appendix D to demonstrate you meet one of the criteria and submit it with your paper NOI (Appendix I).

1.1.6 You have completed the screening process in Appendix E relating to the protection of historic properties; and

1.1.7 You have complied with all requirements in Part 9 imposed by the applicable State, Indian Tribe, or Territory in which your construction activities and/or discharge will occur.

1.1.8 For "new sources" (as defined in Appendix A) only:

a. EPA has not, prior to authorization under this permit, determined that discharges from your site will not meet applicable water quality standards. Where such a determination is made prior to authorization, EPA may notify you that an individual permit application is necessary. However, EPA may authorize your coverage under this permit after you have included appropriate controls and implementation procedures designed to bring your discharge into compliance with this permit, specifically the requirement to meet water quality standards. In the absence of information demonstrating otherwise, EPA expects that compliance with the requirements of this permit, including the requirements applicable to such discharges in Part 3, will result in discharges that meet applicable water quality standards.

b. Discharges from your site to a Tier 2, Tier 2.5, or Tier 3 water[4] will not lower the water quality of the applicable water. In the absence of information demonstrating otherwise, EPA expects that compliance with the requirements of this permit, including the requirements applicable to such discharges in Part 3.2, will result in discharges that will not lower the water quality of such waters.

1.1.9 If you plan to add "cationic treatment chemicals" (as defined in Appendix A) to stormwater and/or authorized non-stormwater prior to discharge, you may not submit your NOI until you notify your applicable EPA Regional Office (see Appendix J) in advance and the EPA Regional Office authorizes coverage under this permit after you have included appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will result in discharges that meet applicable water quality standards.

[4] Note: Your site will be considered to discharge to a Tier 2, Tier 2.5, or Tier 3 water if the first receiving water to which you discharge is identified by a State, Tribe, or EPA as a Tier 2, Tier 2.5, or Tier 3 water. For discharges that enter a storm sewer system prior to discharge, the first receiving water to which you discharge is the waterbody that receives the stormwater discharge from the storm sewer system. The current list of Tier 2, Tier 2.5, and Tier 3 waters located in the areas eligible for coverage under this permit can be found at https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates. You can also use EPA's Discharge Mapping Tool (https://www.epa.gov/npdes/epas-stormwater-discharge-mapping-tools) to assist you in identifying whether any receiving waters to which you discharge are listed as impaired (and the pollutant for which it is impaired) and whether an approved total maximum daily load (TMDL) exists for that waterbody.

1.2 TYPES OF DISCHARGES AUTHORIZED[5]

1.2.1 The following stormwater discharges are authorized under this permit provided that appropriate stormwater controls are designed, installed, and maintained (see Parts 2 and 3):

- **a.** Stormwater discharges, including stormwater runoff, snowmelt runoff, and surface runoff and drainage, associated with construction activity under 40 CFR § 122.26(b)(14) or § 122.26(b)(15)(i);
- **b.** Stormwater discharges designated by EPA as needing a permit under 40 CFR §122.26(a)(1)(v) or § 122.26(b)(15)(ii);
- **c.** Stormwater discharges from on or off-site construction support activities (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) provided that:
  - **i.** The support activity is directly related to the construction site required to have permit coverage for stormwater discharges;
  - **ii.** The support activity is not a commercial operation, nor does it serve multiple unrelated construction sites;
  - **iii.** The support activity does not continue to operate beyond the completion of the construction activity at the site it supports; and
  - **iv.** Stormwater controls are implemented in accordance with Part 2 and Part 3 for discharges from the support activity areas; and
- **d.** Stormwater discharges from earth-disturbing activities associated with the construction of staging areas and the construction of access roads conducted prior to active mining.

1.2.2 The following non-stormwater discharges associated with your construction activity are authorized under this permit provided that, with the exception of water used to control dust and to irrigate vegetation in stabilized areas, these discharges are not routed to areas of exposed soil on your site and you comply with any applicable requirements for these discharges in Parts 2 and 3:

- **a.** Discharges from emergency fire-fighting activities;
- **b.** Fire hydrant flushings;
- **c.** Landscape irrigation;
- **d.** Water used to wash vehicles and equipment, provided that there is no discharge of soaps, solvents, or detergents used for such purposes;
- **e.** Water used to control dust;
- **f.** Potable water including uncontaminated water line flushings;

[5] See "Discharge" as defined in Appendix A. Note: Any discharges not expressly authorized in this permit cannot become authorized or shielded from liability under CWA Section 402(k) by disclosure to EPA, State, or local authorities after issuance of this permit via any means, including the Notice of Intent (NOI) to be covered by the permit, the SWPPP, or during an inspection.

g. External building washdown, provided soaps, solvents, and detergents are not used, and external surfaces do not contain hazardous substances (as defined in Appendix A) (e.g., paint or caulk containing polychlorinated biphenyls (PCBs));

h. Pavement wash waters, provided spills or leaks of toxic or hazardous substances have not occurred (unless all spill material has been removed) and where soaps, solvents, and detergents are not used. You are prohibited from directing pavement wash waters directly into any receiving water, storm drain inlet, or constructed or natural site drainage features, unless the feature is connected to a sediment basin, sediment trap, or similarly effective control;

i. Uncontaminated air conditioning or compressor condensate;

j. Uncontaminated, non-turbid discharges of ground water or spring water;

k. Foundation or footing drains where flows are not contaminated with process materials such as solvents or contaminated ground water; and

l. Uncontaminated construction dewatering water[6] discharged in accordance with Part 2.4.

1.2.3 Also authorized under this permit are discharges of stormwater listed above in Part 1.2.1, or authorized non-stormwater discharges listed above in Part 1.2.2, commingled with a discharge authorized by a different NPDES permit and/or a discharge that does not require NPDES permit authorization.

1.3 PROHIBITED DISCHARGES[7]

The discharges listed in this Part are prohibited outright or authorized only under the identified conditions. To prevent the discharges in Parts 1.3.1 through 1.3.5, operators must comply with the applicable pollution prevention requirements in Part 2.3 or ensure the discharge is authorized by another NPDES permit consistent with Part 1.2.3 for commingled discharges.

1.3.1 Wastewater from washout of concrete, unless managed by an appropriate control as described in Part 2.3.4;

1.3.2 Wastewater from washout and/or cleanout of stucco, paint, form release oils, curing compounds, and other construction materials;

1.3.3 Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;

1.3.4 Soaps, solvents, or detergents used in vehicle and equipment washing or external building washdown; and

1.3.5 Toxic or hazardous substances from a spill or other release.

[6] EPA notes that operators may need to comply with additional procedures to verify that the dewatering discharge is uncontaminated. Operators should review Part 9 to determine if any of these requirements apply to their discharge and should ensure that they have complied with any State, Tribal, or local dewatering requirements that apply.

[7] EPA includes these prohibited non-stormwater discharges here as a reminder to the operator that the only non-stormwater discharges authorized by this permit are at Part 1.2.2. Any unauthorized non-stormwater discharges must be covered under an individual permit or alternative general permit.

1.4 SUBMITTING YOUR NOTICE OF INTENT (NOI)

All "operators" (as defined in Appendix A) associated with your construction site who meet the Part 1.1 eligibility conditions, and who seek coverage under this permit, must submit to EPA a complete and accurate NOI in accordance with the deadlines in Table 1 prior to commencement of construction activities (as defined in Appendix A).

Exception: If you are conducting construction activities in response to a public emergency (e.g., mud slides, earthquake, extreme flooding conditions, widespread disruption in essential public services), and the related work requires immediate authorization to avoid imminent endangerment to human health, public safety, or the environment, or to reestablish essential public services, you may discharge on the condition that a complete and accurate NOI is submitted within 30 calendar days after commencing construction activities (see Table 1) establishing that you are eligible for coverage under this permit. You must also provide documentation in your Stormwater Pollution Prevention Plan (SWPPP) to substantiate the occurrence of the public emergency pursuant to Part 7.2.3i.

1.4.1 Prerequisite for Submitting Your NOI

You must develop a SWPPP consistent with Part 7 before submitting your NOI for coverage under this permit.

1.4.2 How to Submit Your NOI

You must use EPA's NPDES eReporting Tool (NeT) to electronically prepare and submit your NOI for coverage under the 2022 CGP unless you received a waiver from your applicable EPA Regional Office.

To access NeT, go to https://cdx.epa.gov/cdx.

Waivers from electronic reporting may be granted based on one of the following conditions:

a. If your operational headquarters is physically located in a geographic area (i.e., ZIP code or census tract) that is identified as under-served for broadband Internet access in the most recent report from the Federal Communications Commission; or

b. If you have limitations regarding available computer access or computer capability.

If the EPA Regional Office grants you approval to use a paper NOI, and you elect to use it, you must complete the form in Appendix H.

1.4.3 Deadlines for Submitting Your NOI and Your Official Date of Permit Coverage

Table 1 provides the deadlines for submitting your NOI and the official start date of your permit coverage, which differ depending on when you commence construction activities.

Table 1 NOI Submittal Deadlines and Official Start Date for Permit Coverage.

Type of Operator	NOI Submittal Deadline[8]	Permit Authorization Date[9]
Operator of a new site (i.e., a site where construction activities commence on or after February 17, 2022)	At least 14 calendar days before commencing construction activities.	14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization is delayed or denied.
Operator of an existing site (i.e., a site with 2017 CGP coverage where construction activities commenced prior to February 17, 2022)	No later than May 18, 2022.	14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization is delayed or denied. Provided you submit your NOI no later than May 18, 2022, your authorization under the 2017 CGP is automatically continued until you have been granted coverage under this permit or an alternative NPDES permit, or coverage is otherwise terminated.
New operator of a permitted site (i.e., an operator that through transfer of ownership and/or operation replaces the operator of an already permitted construction site that is either a "new site" or an "existing site")	At least 14 calendar days before the date the transfer to the new operator will take place.	14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization is delayed or denied.
Operator of an "emergency-related project" (i.e., a project initiated in response to a public emergency (e.g., mud slides, earthquake, extreme flooding conditions, disruption in essential public services), for which the related work requires immediate authorization to avoid imminent endangerment to human health or the environment, or to reestablish essential public services)	No later than 30 calendar days after commencing construction activities.	You are considered provisionally covered under the terms and conditions of this permit immediately, and fully covered 14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization is delayed or denied.

[8] If you miss the deadline to submit your NOI, any and all discharges from your construction activities will continue to be unauthorized under the CWA until they are covered by this or a different NPDES permit. EPA may take enforcement action for any unpermitted discharges that occur between the commencement of construction activities and discharge authorization.

[9] Discharges are not authorized if your NOI is incomplete or inaccurate or if you are not eligible for permit coverage.

1.4.4 Modifying your NOI

If after submitting your NOI you need to correct or update any fields, you may do so by submitting a "Change NOI" form using NeT. Waivers from electronic reporting may be granted as specified in Part 1.4.2. If the EPA Regional Office has granted you approval to submit a paper NOI modification, you may indicate any NOI changes on the same NOI form in Appendix H.

When there is a change to the site's operator, the new operator must submit a new NOI, and the previous operator must submit a Notice of Termination (NOT) form as specified in Part 8.3.

The following modifications to an NOI form will result in a 14-day review process:

- Changes to the name of the operator;
- Changes to the project or site name;
- Changes to the estimated area to be disturbed;
- Changes to the name of the receiving water[10], or additions to the applicable receiving waters;
- Changes to eligibility information related to endangered species protection or historic preservation;
- Changes to information provided related to the use of chemical treatment at your site; and
- Changes to answers provided regarding the demolition of structures over 10,000 square feet of floor space built or renovated before January 1, 1980.

During the 14-day review process, you may continue to operate based on the information provided in your original NOI, but you must wait until the review period has ended before you may commence or continue activities on any portion of your site that would be affected by any of the above modifications, unless EPA notifies you that the authorization is delayed or denied.

1.4.5 Your Official End Date of Permit Coverage

Once covered under this permit, your coverage will last until the date that:

a. You terminate permit coverage consistent with Part 8; or

b. You receive permit coverage under a different NPDES permit or a reissued or replacement version of this permit after expiring on February 16, 2027; or

c. You fail to submit an NOI for coverage under a reissued or replacement version of this permit before the deadline for existing construction sites where construction activities continue after this permit has expired.

1.5 REQUIREMENT TO POST A NOTICE OF YOUR PERMIT COVERAGE

You must post a sign or other notice of your permit coverage at a safe, publicly accessible location in close proximity to the construction site. The notice must be located so it is visible from the public road that is nearest to the active part of the construction

[10] As defined in Appendix A, a "receiving water" is "a "Water of the United States" as defined in 40 CFR §122.2 into which the regulated stormwater discharges.

site, and it must use a font large enough to be readily viewed from a public right-of-way.[11] At a minimum, the notice must include:

a. The NPDES ID (i.e., permit tracking number assigned to your NOI and the EPA webpage where a copy of the NOI can be found (https://permitsearch.epa.gov/epermit-search/ui/search));

b. A contact name and phone number for obtaining additional construction site information;

c. The Uniform Resource Locator (URL) for the SWPPP (if available), or the following statement: "If you would like to obtain a copy of the Stormwater Pollution Prevention Plan (SWPPP) for this site, contact the EPA Regional Office at [*include the appropriate CGP Regional Office contact information found at* https://www.epa.gov/npdes/contact-us-stormwater#regional];" and

d. The following statement "If you observe indicators of stormwater pollutants in the discharge or in the receiving water, contact the EPA through the following website: https://www.epa.gov/enforcement/report-environmental-violations."

2 TECHNOLOGY-BASED EFFLUENT LIMITATIONS

You must comply with the following technology-based effluent limitations in this Part for all authorized discharges.[12]

2.1 GENERAL STORMWATER CONTROL DESIGN, INSTALLATION, AND MAINTENANCE REQUIREMENTS

You must design, install, and maintain stormwater controls required in Parts 2.2, 2.3, and 2.4 to minimize the discharge of pollutants in stormwater from construction activities.[13] To meet this requirement, you must:

2.1.1 Account for the following factors in designing your stormwater controls:

a. The expected amount, frequency, intensity, and duration of precipitation;[14]

b. The nature of stormwater runoff (i.e., flow) and run-on at the site, including factors such as expected flow from impervious surfaces, slopes, and site drainage features. You must design stormwater controls to control stormwater volume, velocity, and peak flow rates to minimize discharges of pollutants in stormwater and to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points; and

c. The soil type and range of soil particle sizes expected to be present on the site.

[11] If the active part of the construction site is not visible from a public road, then place the notice of permit coverage in a position that is visible from the nearest public road and as close as possible to the construction site.

[12] For each of the effluent limits in Part 2, as applicable to your site, you must include in your SWPPP (1) a description of the specific control(s) to be implemented to meet the effluent limit; (2) any applicable design specifications; (3) routine maintenance specifications; and (4) the projected schedule for installation/implementation. See Part 7.2.6.

[13] The permit does not recommend or endorse specific products or vendors.

[14] Stormwater controls must be designed using the most recent data available to account for recent precipitation patterns and trends.

If your site is exposed to or has previously experienced major storms, such as hurricanes, storm surge, extreme/heavy precipitation, and flood events, you should also include consideration of and contingencies for whether implementing structural improvements, enhanced/resilient stormwater controls, and other mitigation measures may help minimize impacts from stormwater discharges from such major storm events.

2.1.2 Design and install all stormwater controls in accordance with good engineering practices, including applicable design specifications.[15]

2.1.3 Complete installation of stormwater controls by the time each phase of construction activities has begun.

a. By the time construction activity in any given portion of the site begins, install and make operational any downgradient sediment controls (e.g., buffers, perimeter controls, exit point controls, storm drain inlet protection) that control discharges from the initial site clearing, grading, excavating, and other earth-disturbing activities.[16]

b. Following the installation of these initial controls, install and make operational all stormwater controls needed to control discharges prior to subsequent earth-disturbing activities.

2.1.4 Ensure all stormwater controls are maintained and remain in effective operating condition during permit coverage and are protected from activities that would reduce their effectiveness.

a. Comply with any specific maintenance requirements for the stormwater controls listed in this permit, as well as any recommended by the manufacturer.[17]

b. If at any time you find that a stormwater control needs routine maintenance (i.e., minor repairs or other upkeep performed to ensure the site's stormwater controls remain in effective operating condition, not including significant repairs or the need to install a new or replacement control), you must immediately initiate the needed work, and complete such work by the close of the next business day. If it is infeasible to complete the routine maintenance by the close of the next business day, you must document why this is the case and why the repair or other upkeep to be performed should still be considered routine maintenance in your inspection report under Part 4.7.1c and complete such work no later than seven (7) calendar days from the time of discovery of the condition requiring maintenance.

c. If you must repeatedly (i.e., three (3) or more times) make the same routine maintenance fixes to the same control at the same location, even if the fix can be completed by the close of the next business day, you must either:

   i. Complete work to fix any subsequent repeat occurrences of this same problem under the corrective action procedures in Part 5, including keeping any records

[15] Design specifications may be found in manufacturer specifications and/or in applicable erosion and sediment control manuals or ordinances. Any departures from such specifications must reflect good engineering practices and must be explained in your SWPPP. You must also comply with any additional design and installation requirements specified for the effluent limits in Parts 2.2, 2.3, and 2.4.

[16] Note that the requirement to install stormwater controls prior to each phase of construction activities for the site does not apply to the earth disturbance associated with the actual installation of these controls. Operators should take all reasonable actions to minimize the discharges of pollutants during the installation of stormwater controls.

[17] Any departures from such maintenance recommendations made by the manufacturer must reflect good engineering practices and must be explained in your SWPPP.

of the condition and how it was corrected under Part 5.4; or

ii. Document in your inspection report under Part 4.7.1c why the specific reoccurrence of this same problem should still be addressed as a routine maintenance fix under this Part.[18]

d. If at any time you find that a stormwater control needs a significant repair or that a new or replacement control is needed, you must comply with the corrective action deadlines for completing such work in in Part 5.2.1c.

2.2 EROSION AND SEDIMENT CONTROL REQUIREMENTS

You must implement erosion and sediment controls in accordance with the following requirements to minimize the discharge of pollutants in stormwater from construction activities.

2.2.1 Provide and maintain natural buffers and/or equivalent erosion and sediment controls for discharges to any receiving waters that is located within 50 feet of the site's earth disturbances.

a. **Compliance Alternatives.** For any discharges to receiving waters located within 50 feet of your site's earth disturbances, you must comply with one of the following alternatives:

i. Provide and maintain a 50-foot undisturbed natural buffer; or

ii. Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve, in combination, the sediment load reduction equivalent to a 50-foot undisturbed natural buffer; or

iii. If infeasible to provide and maintain an undisturbed natural buffer of any size, implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

See Appendix F, Part F.2 for additional conditions applicable to each compliance alternative.

b. **Exceptions.** See Appendix F, Part F.2 for exceptions to the compliance alternatives.

2.2.2 Direct stormwater to vegetated areas and maximize stormwater infiltration and filtering to reduce pollutant discharges, unless infiltration would be inadvisable due to the underlying geology (e.g., karst topography) and ground water contamination concerns, or infeasible due to site conditions.[19]

[18] Such documentation could include, for example, that minor repairs completed within the required timeframe are all that is necessary to ensure that the stormwater control continues to operate as designed and installed and that the stormwater control remains appropriate for the flow reaching it.

[19] Operators should consider whether factors such as specific contaminant concerns from the construction site, the underlying soils or geology, hydrology, depth to the ground water table, or proximity to source water or wellhead protection area(s) make the site unsuitable for infiltrating construction stormwater. Site conditions that may be of particular concern include proximity to: a current or future drinking water aquifer; a drinking water well or spring (including private/household wells); highly conductive geology such as karst; known pollutant hot spots, such as hazardous waste sites, landfills, gas stations, brownfields; an on-site sewage system or underground storage tank; or soils that do not allow for infiltration. Operators may find it helpful to consult EPA's Drinking Water Mapping Application to Protect Source Waters (DWMAPS). DWMAPS is an online mapping tool that can be used to locate drinking water providers, potential sources of contamination, polluted waterways, and information on protection initiatives in the site area.

2.2.3 Install sediment controls along any perimeter areas of the site that are downslope from any exposed soil or other disturbed areas.[20]

a. The perimeter control must be installed upgradient of any natural buffers established under Part 2.2.1, unless the control is being implemented pursuant to Part 2.2.1a.ii-iii;

b. To prevent stormwater from circumventing the edge of the perimeter control, install the perimeter control on the contour of the slope and extend both ends of the control up slope (e.g., at 45 degrees) forming a crescent rather than a straight line;

c. After installation, to ensure that perimeter controls continue to work effectively:

   i. Remove sediment before it has accumulated to one-half of the above-ground height of any perimeter control; and

   ii. After a storm event, if there is evidence of stormwater circumventing or undercutting the perimeter control, extend controls and/or repair undercut areas to fix the problem.

d. **Exception**. For areas at "linear construction sites" (as defined in Appendix A) where perimeter controls are infeasible (e.g., due to a limited or restricted right-of-way), implement other practices as necessary to minimize pollutant discharges to perimeter areas of the site.

2.2.4 Minimize sediment track-out.

a. Restrict vehicle use to properly designated exit points;

b. Use appropriate stabilization techniques[21] at all points that exit onto paved roads;

   i. **Exception**: Stabilization is not required for exit points at linear utility construction sites that are used only episodically and for very short durations over the life of the project, provided other exit point controls[22] are implemented to minimize sediment track-out;

c. Implement additional track-out controls[23] as necessary to ensure that sediment removal occurs prior to vehicle exit; and

d. Where sediment has been tracked-out from your site onto paved roads, sidewalks, or other paved areas outside of your site, remove the deposited sediment by the end of the same business day in which the track-out occurs or by the end of the next business day if track-out occurs on a non-business day. Remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. You are prohibited from hosing or sweeping tracked-out

[20] Examples of perimeter controls include filter berms; different types of silt fence such as wire-backed silt fence, super silt fence, or multi-layer geotextile silt fence; compost filter socks; gravel barriers; and temporary diversion dikes.

[21] Examples of appropriate stabilization techniques include the use of aggregate stone with an underlying geotextile or non-woven filter fabric, and turf mats.

[22] Examples of other exit point controls include preventing the use of exit points during wet periods; minimizing exit point use by keeping vehicles on site to the extent possible; limiting exit point size to the width needed for vehicle and equipment usage; using scarifying and compaction techniques on the soil; and avoiding establishing exit points in environmentally sensitive areas (e.g., *karst areas; steep slopes).*

[23] Examples of additional track-out controls include the use of wheel washing, rumble strips, and rattle plates.

sediment into any constructed or natural site drainage feature, storm drain inlet, or receiving water.[24]

2.2.5 Manage stockpiles or land clearing debris piles composed, in whole or in part, of sediment and/or soil:[25]

a. Locate the piles outside of any natural buffers established under Part 2.2.1 and away from any constructed or natural site drainage features, storm drain inlets, and areas where stormwater flow is concentrated;

b. Install a sediment barrier along all downgradient perimeter areas of stockpiled soil or land clearing debris piles;[26]

c. For piles that will be unused for 14 or more days, provide cover[27] or appropriate temporary stabilization (consistent with Part 2.2.14);

d. You are prohibited from hosing down or sweeping soil or sediment accumulated on pavement or other impervious surfaces into any constructed or natural site drainage feature, storm drain inlet, or receiving water.

2.2.6 Minimize dust. On areas of exposed soil, minimize dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged in stormwater from the site.

2.2.7 Minimize steep slope disturbances. Minimize the disturbance of "steep slopes" (as defined in Appendix A).[28]

2.2.8 Preserve native topsoil, unless infeasible.[29]

2.2.9 Minimize soil compaction.[30] In areas of your site where final vegetative stabilization will occur or where infiltration practices will be installed:

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[24] Fine grains that remain visible (e.g., staining) on the surfaces of off-site streets, other paved areas, and sidewalks after you have implemented sediment removal practices are not a violation of Part 2.2.4.

[25] The requirements in Part 2.2.5 do not apply to the storage of rock, such as rip rap, landscape rock, pipe bedding gravel, and boulders. Refer to Part 2.3.3a for the requirements that apply to these types of materials.

[26] Examples of sediment barriers include berms, dikes, fiber rolls, silt fences, sandbags, gravel bags, or straw bale.

[27] Examples of cover include tarps, blown straw and hydroseeding.

[28] Where disturbance to steep slopes cannot be avoided, operators should consider implementing controls suitable for steep slope disturbances that are effective at minimizing erosion and sediment discharge (e.g., preservation of existing vegetation, hydraulic mulch, geotextiles and mats, compost blankets, earth dikes or drainage swales, terraces, velocity dissipation devices). To identify slopes and soil types that are of comparatively higher risk for sediment discharge in areas of the country where the CGP is in effect, operators can use the tables in Appendix F (see Tables F-2 thru F-6).

[29] Stockpiling topsoil at off-site locations, or transferring topsoil to other locations, is an example of a practice that is consistent with the requirements in Part 2.2.8. Preserving native topsoil is not required where the intended function of a specific area of the site dictates that the topsoil be disturbed or removed. For example, some sites may be designed to be highly impervious after construction, and therefore little or no vegetation is intended to remain, or may not have space to stockpile native topsoil on site for later use, in which case it may not be feasible to preserve topsoil.

[30] Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted.

a. Restrict vehicle and equipment use in these locations to avoid soil compaction; and

b. Before seeding or planting areas of exposed soil that have been compacted, use techniques that rehabilitate and condition the soils as necessary to support vegetative growth.

2.2.10 Protect storm drain inlets.

a. Install inlet protection measures that remove sediment from discharges prior to entry into any storm drain inlet that carries stormwater from your site to a receiving water, provided you have authority to access the storm drain inlet.[31] Inlet protection measures are not required for storm drain inlets that are conveyed to a sediment basin, sediment trap, or similarly effective control; and

b. Clean, or remove and replace, the inlet protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, remove the deposited sediment by the end of the same business day in which it is found or by the end of the following business day if removal by the same business day is not feasible.

2.2.11 Control stormwater discharges, including both peak flowrates and total stormwater volume, to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points.[32]

2.2.12 If you install a sediment basin or similar impoundment:

a. Situate the basin or impoundment outside of any receiving water. and any natural buffers established under Part 2.2.1;

b. Design the basin or impoundment to avoid collecting water from wetlands;

c. Design the basin or impoundment to provide storage for either:

i. The calculated volume of runoff from a 2-year, 24-hour storm;[33] or

ii. 3,600 cubic feet per acre drained.

d. Utilize outlet structures that withdraw water from the surface of the sediment basin or similar impoundment, unless infeasible;[34]

e. Use erosion controls and velocity dissipation devices to prevent erosion at inlets and outlets; and

[31] Inlet protection measures can be removed in the event of flood conditions or to prevent erosion.

[32] Examples of stormwater controls that can be used to comply with this requirement include the use of erosion controls and/or velocity dissipation devices (e.g., check dams, sediment traps), within and along the length of a constructed site drainage feature and at the outfall to slow down stormwater.

[33] Operators may refer to https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates for guidance on determining the volume of precipitation associated with their site's local 2-year, 24-hour storm event.

[34] The circumstances in which it is infeasible to design outlet structures in this manner are rare. Exceptions may include areas with extended cold weather, where using surface outlets may not be feasible during certain time periods (although they must be used during other periods). If you determine that it is infeasible to meet this requirement, you must provide documentation in your SWPPP to support your determination, including the specific conditions or time periods when this exception will apply.

f. Remove accumulated sediment to maintain at least one-half of the design capacity and conduct all other appropriate maintenance to ensure the basin or impoundment remains in effective operating condition.

2.2.13 If using treatment chemicals (e.g., *polymers, flocculants, coagulants*):

a. **Use conventional erosion and sediment controls before and after the application of treatment chemicals.** Chemicals may only be applied where treated stormwater is directed to a sediment control *(*e.g., *sediment basin, perimeter control)* before discharge.

b. **Select appropriate treatment chemicals***.* Chemicals must be appropriately suited to the types of soils likely to be exposed during construction and present in the discharges being treated *(*i.e., *the expected turbidity, pH, and flow rate of stormwater flowing into the chemical treatment system or area).*

c. **Minimize discharge risk from stored chemicals.** Store all treatment chemicals in leak-proof containers that are kept under storm-resistant cover and surrounded by secondary containment structures *(*e.g., *spill berms, dikes, spill containment pallets),* or provide equivalent measures designed and maintained to minimize the potential discharge of treatment chemicals in stormwater or by any other means *(*e.g., *storing chemicals in a covered area, having a spill kit available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill)*.

d. **Comply with State/local requirements.** Comply with applicable State and local requirements regarding the use of treatment chemicals.

e. **Use chemicals in accordance with good engineering practices and specifications of the chemical provider/supplier.** Use treatment chemicals and chemical treatment systems in accordance with good engineering practices, and with dosing specifications and sediment removal design specifications provided by the provider/supplier of the applicable chemicals, or document in your SWPPP specific departures from these specifications and how they reflect good engineering practice.

f. **Ensure proper training.** Ensure all persons who handle and use treatment chemicals at the construction site are provided with appropriate, product-specific training prior to beginning application of treatment chemicals. Among other things, the training must cover proper dosing requirements.

g. **Perform additional measures specified by the EPA Regional Office for the authorized use of cationic chemicals.** If you have been authorized to use cationic chemicals at your site pursuant to Part 1.1.9, you must perform all additional measures as conditioned by your authorization to ensure the use of such chemicals will not result in discharges that do not meet water quality standards.

2.2.14 Stabilize exposed portions of the site. Implement and maintain stabilization measures (*e.g., seeding protected by erosion controls until vegetation is established,*[35] *sodding, mulching, erosion control blankets, hydromulch, gravel*) that minimize erosion from any areas of exposed soil on the site in accordance with Part.

[35] If you will be evaluating the use of some type of erosion control netting to the site as part of your site stabilization, EPA encourages you to consider employing products that have been shown to minimize

a. Stabilization Deadlines:[36]

Table 2 Deadlines for Initiating and Completing Site Stabilization.

Total Amount of Land Disturbance Occurring At Any One Time[37]	Deadline
i. Five acres or less (≤5.0) **Note: this includes sites disturbing more than five acres (>5.0) total over the course of a project, but that limit disturbance at any one time *(i.e., phase the disturbance)* to five acres or less (≤5.0)**	• Initiate the installation of stabilization measures immediately[38] in any areas of exposed soil where construction activities have permanently ceased or will be temporarily inactive for 14 or more calendar days;[39] and • Complete the installation of stabilization measures as soon as practicable, but no later than 14 calendar days

impacts on wildlife. For instance, the U.S. Fish & Wildlife Service provides recommendations on the type of netting practices that are considered "wildlife friendly," including those that use natural fiber or 100 percent biodegradable materials and that use a loose weave with a non-welded, movable jointed netting, as well as those products that are not wildlife friendly including square plastic netting that are degradable (e.g., photodegradable, UV-degradable, oxo-degradable), netting made from polypropylene, nylon, polyethylene, or polyester. Other recommendations include removing the netting product when it is no longer needed. See https://www.fws.gov/midwest/eastlansing/library/pdf/WildlifeFriendlyErosionControlProducts_revised.pdf for further information. There also may be State, Tribal, or local requirements about using wildlife friendly erosion control products.

[36] EPA may determine, based on an inspection carried out under Part 4.8 and corrective actions required under Part 5.3, that the level of sediment discharge on the site makes it necessary to require a faster schedule for completing stabilization. For instance, if sediment discharges from an area of exposed soil that is required to be stabilized are compromising the performance of existing stormwater controls, EPA may require stabilization to correct this problem.

[37] Limiting disturbances to five (5) acres or less at any one time means that at no time during the project do the cumulative earth disturbances exceed five (5) acres. The following examples would qualify as limiting disturbances at any one time to five (5) acres or less:

1. The total area of disturbance for a project is five (5) acres or less.
2. The total area of disturbance for a project will exceed five (5) acres, but the operator ensures that no more than five (5) acres will be disturbed at any one time through implementation of stabilization measures. In this way, site stabilization can be used to "free up" land that can be disturbed without exceeding the five (5)-acre cap to qualify for the 14-day stabilization deadline. For instance, if an operator completes stabilization of two (2) acres of land on a five (5)-acre disturbance, then two (2) additional acres could be disturbed while still qualifying for the longer 14-day stabilization deadline.

[38] The following are examples of activities that would constitute the immediate initiation of stabilization:

1. Prepping the soil for vegetative or non-vegetative stabilization as long as seeding, planting, and/or installation of non-vegetative stabilization products takes place as soon as practicable, but no later than one (1) calendar day of completing soil preparation;
2. Applying mulch or other non-vegetative product to the exposed area;
3. Seeding or planting the exposed area;
4. Starting any of the activities in # 1 – 3 on a portion of the entire area that will be stabilized; and
5. Finalizing arrangements to have stabilization product fully installed in compliance with the deadlines for completing stabilization.

[39] The requirement to initiate stabilization immediately is triggered as soon as you know that construction work on a portion of the site is temporarily ceased and will not resume for 14 or more days, or as soon as you know that construction work is permanently ceased. In the context of this provision, "immediately" means as soon as practicable, but no later than the end of the next business day, following the day when the construction activities have temporarily or permanently ceased.

Total Amount of Land Disturbance Occurring At Any One Time[37]	Deadline
	after stabilization has been initiated.[40]
ii. More than five acres (>5.0)	• Initiate the installation of stabilization measures immediately[41] in any areas of exposed soil where construction activities have permanently ceased or will be temporarily inactive for 14 or more calendar days;[42] and • Complete the installation of stabilization measures as soon as practicable, but no later than seven (7) calendar days after stabilization has been initiated.[43]

b. Exceptions:

i. Arid, semi-arid, and drought-stricken areas (as defined in Appendix A)**.** If it is the seasonally dry period (as defined in Appendix A)[44] or a period in which drought is occurring, and vegetative stabilization measures are being used:

(a) Immediately initiate and, within 14 calendar days of temporary or permanent cessation of work in any portion of your site, complete the installation of temporary non-vegetative stabilization measures to the extent necessary to prevent erosion;

(b) As soon as practicable, given conditions or circumstances on the site, complete all activities necessary to seed or plant the area to be stabilized; and

(c) If construction is occurring during the seasonally dry period, indicate in your SWPPP the beginning and ending dates of the seasonally dry period and your site conditions. Also include the schedule you will follow for initiating and completing vegetative stabilization.

ii. Unforeseen circumstances. Operators that are affected by unforeseen circumstances[45] that delay the initiation and/or completion of vegetative stabilization:

[40] If vegetative stabilization measures are being implemented, stabilization is considered "installed" when all activities necessary to seed or plant the area are completed, including the application of any non-vegetative protective cover (e.g., mulch, erosion control blanket), if applicable. If non-vegetative stabilization measures are being implemented, stabilization is considered "installed" when all such measures are implemented or applied.

[41] See footnote 38.

[42] See footnote 39.

[43] See footnote 40.

[44] The term "seasonally dry period" as defined in Appendix A refers to a month in which the long-term average total precipitation is less than or equal to 0.5 inches. Refer to EPA's Seasonally Dry Period Locator Tool at https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates and supporting maps for assistance in determining whether a site is operating during a seasonally dry period for the area.

[45] Examples include problems with the supply of seed stock or with the availability of specialized equipment and unsuitability of soil conditions due to excessive precipitation and/or flooding.

(a) Immediately initiate and, within 14 calendar days, complete the installation of temporary non-vegetative stabilization measures to prevent erosion;

(b) Complete all soil conditioning, seeding, watering or irrigation installation, mulching, and other required activities related to the planting and initial establishment of vegetation as soon as conditions or circumstances allow it on your site; and

(c) Document in the SWPPP the circumstances that prevent you from meeting the deadlines in Part 2.2.14a and the schedule you will follow for initiating and completing stabilization.

iii. Discharges to a sediment- or nutrient-impaired water or to a water that is identified by your State, Tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes. Complete stabilization as soon as practicable, but no later than seven (7) calendar days after stabilization has been initiated.

c. Final Stabilization Criteria (for any areas not covered by permanent structures)**:**

i. Establish uniform, perennial vegetation *(*i.e.*, evenly distributed, without large bare areas)* to provide 70 percent or more of the vegetative cover native to local undisturbed areas; and/or

ii. Implement permanent non-vegetative stabilization measures[46] to provide effective cover of any areas of exposed soil.

iii. Exceptions:

(a) **Arid, semi-arid, and drought-stricken areas** (as defined in Appendix A). Final stabilization is met if the area has been seeded or planted to establish vegetation that provides 70 percent or more of the vegetative cover native to local undisturbed areas within three (3) years and, to the extent necessary to prevent erosion on the seeded or planted area, non-vegetative erosion controls have been applied to provide cover for at least three years without active maintenance.

(b) **Disturbed areas on agricultural land that are restored to their preconstruction agricultural use.** The Part 2.2.14c final stabilization criteria do not apply.

(c) **Areas that need to remain disturbed.** In limited circumstances, stabilization may not be required if the intended function of a specific area of the site necessitates that it remain disturbed, and only the minimum area needed remains disturbed *(*e.g., *dirt access roads, utility pole pads, areas being used for storage of vehicles, equipment, materials).*

2.3 POLLUTION PREVENTION REQUIREMENTS[47]

You must implement pollution prevention controls in accordance with the following requirements to minimize the discharge of pollutants in stormwater and to prevent the discharge of pollutants from spilled or leaked materials from construction activities.

[46] Examples of permanent non-vegetative stabilization measures include riprap, gravel, gabions, and geotextiles.

[47] Under this permit, you are not required to minimize exposure for any products or materials where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

2.3.1 For equipment and vehicle fueling and maintenance:

a. Provide an effective means of eliminating the discharge of spilled or leaked chemicals, including fuels and oils, from these activities;[48]

b. If applicable, comply with the Spill Prevention Control and Countermeasures (SPCC) requirements in 40 CFR part 112 and Section 311 of the CWA;

c. Ensure adequate supplies are available at all times to handle spills, leaks, and disposal of used liquids;

d. Use drip pans and absorbents under or around leaky vehicles;

e. Dispose of or recycle oil and oily wastes in accordance with other Federal, State, Tribal, or local requirements; and

f. Clean up spills or contaminated surfaces immediately, using dry clean up measures (do not clean contaminated surfaces by hosing the area down), and eliminate the source of the spill to prevent a discharge or a continuation of an ongoing discharge.

2.3.2 For equipment and vehicle washing:

a. Provide an effective means of minimizing the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other types of wash waters;[49]

b. Ensure there is no discharge of soaps, solvents, or detergents in equipment and vehicle wash water; and

c. For storage of soaps, detergents, or solvents, provide either (1) cover *(*e.g., *plastic sheeting, temporary roofs)* to minimize the exposure of these detergents to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas.

2.3.3 For storage, handling, and disposal of building products, materials, and wastes:[50]

a. *For building materials and building products*,[51] provide either (1) cover (e.g., *plastic sheeting, temporary roofs*) to minimize the exposure of these products to

[48] Examples of effective means include:

- Locating activities away from receiving waters, storm drain inlets, and constructed or natural site drainage feature so that stormwater coming into contact with these activities cannot reach waters of the U.S.;
- Providing secondary containment (e.g., *spill berms, dikes, spill containment pallets*) and cover where appropriate; and
- Having a spill kit available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill.

[49] Examples of effective means include locating activities away from receiving waters and storm drain inlets or constructed or natural site drainage features and directing wash waters to a sediment basin or sediment trap, using filtration devices, such as filter bags or sand filters, or using other similarly effective controls.

[50] Compliance with the requirements of this permit does not relieve compliance requirements with respect to Federal, State, or local laws and regulations governing the storage, handling, and disposal of solid, hazardous, or toxic wastes and materials.

[51] Examples of building materials and building products typically present at construction sites include asphalt sealants, copper flashing, roofing materials, adhesives, concrete admixtures, and gravel and mulch stockpiles.

precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas.

Exception: Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

b. *For pesticides, herbicides, insecticides, fertilizers, and landscape materials:*

i. In storage areas, provide either (1) cover (e.g., *plastic sheeting, temporary roofs*) to minimize the exposure of these chemicals to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas; and

ii. Comply with all application and disposal requirements included on the registered pesticide, herbicide, insecticide, and fertilizer label (see also Part 2.3.5).

c. *For diesel fuel, oil, hydraulic fluids, other petroleum products, and other chemicals:* The following requirements apply to the storage and handling of chemicals on your site. If you are already implementing controls as part of an SPCC or other spill prevention plan that meet or exceed the requirements of this Part, you may continue to do so and be considered in compliance with these provisions provided you reference the applicable parts of the SPCC or other plans in your SWPPP as required in Part 7.2.6b.viii.

i. If any chemical container has a storage capacity of less than 55 gallons:

(a) The containers must be water-tight, and must be kept closed, sealed, and secured when not being actively used;

(b) If stored outside, use a spill containment pallet or similar device to capture small leaks or spills; and

(c) Have a spill kit available on site that is in good working condition (i.e., not damaged, expired, or used up) and ensure personnel are available to respond immediately in the event of a leak or spill.

ii. If any chemical container has a storage capacity of 55 gallons or more:

(a) The containers must be water-tight, and must be kept closed, sealed, and secured when not being actively used;

(b) Store containers a minimum of 50 feet from receiving waters, constructed or natural site drainage features, and storm drain inlets. If infeasible due to site constraints, store containers as far away from these features as the site permits. If site constraints prevent you from storing containers 50 feet away from receiving waters or the other features identified, you must document in your SWPPP the specific reasons why the 50-foot setback is infeasible, and how you will store containers as far away as the site permits;

(c) Provide either (1) cover (e.g., temporary roofs) to minimize the exposure of these containers to precipitation and to stormwater, or (2) secondary containment (e.g., curbing, spill berms, dikes, spill containment pallets, double-wall, above-ground storage tank); and

(d) Have a spill kit available on site that is in good working condition (i.e., not

damaged, expired, or used up) and ensure personnel are available to respond immediately in the event of a leak or spill. Additional secondary containment measures are listed at 40 CFR § 112.7(c)(1).

iii. Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly. You are prohibited from hosing the area down to clean surfaces or spills. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge.

d. *For hazardous or toxic wastes:*[52]

i. Separate hazardous or toxic waste from construction and domestic waste;

ii. Store waste in sealed containers, constructed of suitable materials to prevent leakage and corrosion, and labeled in accordance with applicable Resource Conservation and Recovery Act (RCRA) requirements and all other applicable Federal, State, Tribal, or local requirements;

iii. Store all outside containers within appropriately-sized secondary containment (e.g., *spill berms, dikes, spill containment pallets*) to prevent spills from being discharged, or provide a similarly effective means designed to prevent the discharge of pollutants from these areas *(*e.g., *storing chemicals in a covered area, having a spill kit available on site);*

iv. Dispose of hazardous or toxic waste in accordance with the manufacturer's recommended method of disposal and in compliance with Federal, State, Tribal, and local requirements;

v. Clean up spills immediately, using dry clean-up methods, and dispose of used materials properly. You are prohibited from hosing the area down to clean surfaces or spills. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge; and

vi. Follow all other Federal, State, Tribal, and local requirements regarding hazardous or toxic waste.

e. *For construction and domestic wastes:*[53]

i. Provide waste containers *(*e.g., *dumpster, trash receptacle)* of sufficient size and number to contain construction and domestic wastes;

(a) For waste containers with lids, keep waste container lids closed when not in use, and close lids at the end of the business day and during storm events. For waste containers without lids, provide either (1) cover *(*e.g., *a tarp, plastic sheeting, temporary roof)* to minimize exposure of wastes to precipitation, or (2) a similarly effective means designed to minimize the discharge of pollutants *(*e.g., *secondary containment)*;

(b) On business days, clean up and dispose of waste in designated waste

[52] Examples of hazardous or toxic waste that may be present at construction sites include paints, caulks, sealants, fluorescent light ballasts, solvents, petroleum-based products, wood preservatives, additives, curing compounds, and acids.

[53] Examples of construction and domestic wastes include packaging materials, scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, styrofoam, concrete, demolition debris; and other trash or discarded materials.

containers; and

(c) Clean up immediately if containers overflow, and if there is litter elsewhere on the site from escaped trash.

ii. Waste containers are not required for the waste remnant or unused portions of construction materials or final products that are covered by the exception in Part 2.2.3a provided that:

(a) These wastes are stored separately from other construction or domestic wastes addressed by Part 2.3.3e.i (i.e., wastes not covered by the exception in Part 2.3.3a). If the wastes are mixed, they must be stored in waste containers as required in Part 2.3.3e.i; and

(b) These wastes are stored in designated areas of the site, the wastes are described in the SWPPP (see Part 7.2.6b.ix), and identified in the site plan (see Part 7.2.4i).

f. *For sanitary waste*, position portable toilets so they are secure and will not be tipped or knocked over, and are located away from receiving waters, storm drain inlets, and constructed or natural site drainage features.

2.3.4 For washing applicators and containers used for stucco, paint, concrete, form release oils, curing compounds, or other materials:

a. Direct wash water into a leak-proof container or leak-proof and lined pit designed so no overflows can occur due to inadequate sizing or precipitation;

b. Handle washout or cleanout wastes as follows:

i. For liquid wastes:

(a) Do not dump liquid wastes or allow them to enter into constructed or natural site drainage features, storm inlets, or receiving waters;

(b) Do not allow liquid wastes to be disposed of through infiltration or to otherwise be disposed of on the ground;

(c) Comply with applicable State, Tribal, or local requirements for disposal

ii. Remove and dispose of hardened concrete waste consistent with your handling of other construction wastes in Part 2.3.3e; and

c. Locate any washout or cleanout activities as far away as possible from receiving waters, constructed or natural site drainage features, and storm drain inlets, and, to the extent feasible, designate areas to be used for these activities and conduct such activities only in these areas.

2.3.5 For the application of fertilizers:

a. Apply at a rate and in amounts consistent with manufacturer's specifications, or document in the SWPPP departures from the manufacturer specifications where appropriate in accordance with Part 7.2.6b.x;

b. Apply at the appropriate time of year for your location, and preferably timed to coincide as closely as possible to the period of maximum vegetation uptake and growth;

c. Avoid applying before heavy rains that could cause excess nutrients to be discharged;

d. Never apply to frozen ground;

e. Never apply to constructed or natural site drainage features; and

f. Follow all other Federal, State, Tribal, and local requirements regarding fertilizer application.

2.3.6 Emergency Spill Notification Requirements

Discharges of toxic or hazardous substances from a spill or other release are prohibited, consistent with Part 1.3.5. Where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR part 110, 40 CFR part 117, or 40 CFR part 302 occurs during a 24-hour period, you must notify the National Response Center (NRC) at (800) 424-8802 or, in the Washington, DC metropolitan area, call (202) 267-2675 in accordance with the requirements of 40 CFR part 110, 40 CFR part 117, and 40 CFR part 302 as soon as you have knowledge of the release. You must also, within seven (7) calendar days of knowledge of the release, provide a description of the release, the circumstances leading to the release, and the date of the release. State, Tribal, or local requirements may necessitate additional reporting of spills or discharges to local emergency response, public health, or drinking water supply agencies.

2.4 CONSTRUCTION DEWATERING REQUIREMENTS

Comply with the following requirements to minimize the discharge of pollutants from dewatering[54] operations.

2.4.1 Route dewatering water through a sediment control (e.g., sediment trap or basin, pumped water filter bag) designed to prevent discharges with visual turbidity; [55]

2.4.2 Do not discharge visible floating solids or foam;

2.4.3 The discharge must not cause the formation of a visible sheen on the water surface, or visible oily deposits on the bottom or shoreline of the receiving water. Use an oil-water separator or suitable filtration device (such as a cartridge filter) designed to remove oil, grease, or other products if dewatering water is found to or expected to contain these materials;

2.4.4 To the extent feasible, use well-vegetated (e.g., grassy or wooded), upland areas of the site to infiltrate dewatering water before discharge.[56] You are prohibited from using receiving waters as part of the treatment area;

2.4.5 To prevent dewatering-related erosion and related sediment discharges:

a. Use stable, erosion-resistant surfaces (e.g., well-vegetated grassy areas, clean filter stone, geotextile underlayment) to discharge from dewatering controls;

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[54] "Dewatering" is defined in Appendix A as "the act of draining accumulated stormwater and/or ground water from building foundations, vaults, and trenches, or other similar points of accumulation."

[55] For the purposes of this permit, visual turbidity is present where there is a sediment plume in the discharge or the discharge appears cloudy, or opaque, or has a visible contrast that can be identified by an observer.

[56] See footnote 19.

b. Do not place dewatering controls, such as pumped water filter bags, on steep slopes (as defined in Appendix A); and

c. At all points where dewatering water is discharged, comply with the velocity dissipation requirements of Part 2.2.11.

2.4.6 For backwash water, either haul it away for disposal or return it to the beginning of the treatment process;

2.4.7 Replace and clean the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications; and

2.4.8 Comply with dewatering-specific inspection requirements in Part 4.

3 WATER QUALITY-BASED EFFLUENT LIMITATIONS

3.1 GENERAL EFFLUENT LIMITATION TO MEET APPLICABLE WATER QUALITY STANDARDS

Discharges must be controlled as necessary to meet applicable water quality standards. Discharges must also comply with any additional State or Tribal requirements that are in Part 9.

In the absence of information demonstrating otherwise, EPA expects that compliance with the conditions in this permit will result in stormwater discharges being controlled as necessary to meet applicable water quality standards. If at any time you become aware, or EPA determines, that discharges are not being controlled as necessary to meet applicable water quality standards, you must take corrective action as required in Parts 5.1 and 5.2, and document the corrective actions as required in Part 5.4.

EPA may insist that you install additional controls (to meet the narrative water quality-based effluent limit above) on a site-specific basis, or require you to obtain coverage under an individual permit, if information in your NOI or from other sources indicates that your discharges are not controlled as necessary to meet applicable water quality standards. This includes situations where additional controls are necessary to comply with a wasteload allocation in an EPA-established or approved TMDL.

If during your coverage under a previous permit, you were required to install and maintain stormwater controls specifically to meet the assumptions and requirements of an EPA-approved or established TMDL (for any parameter) or to otherwise control your discharge to meet water quality standards, you must continue to implement such controls as part of your coverage under this permit.

3.2 WATER QUALITY-BASED CONDITIONS FOR SITES DISCHARGING TO CERTAIN IMPAIRED AND HIGH QUALITY RECEIVING WATERS

For any portion of the site that discharges to a sediment or nutrient-impaired water or to a water that is identified by your State, Tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes,[57] you must comply with the inspection frequency specified in Part 4.3 and you must comply with the stabilization deadline specified in Part 2.2.14b.iii.[58]

[57] Refer to Appendix A for definitions of "impaired water" and "Tier 2," "Tier 2.5," and "Tier 3" waters. For assistance in determining whether your site discharges to impaired waters, EPA has developed a tool that is available at https://www.epa.gov/npdes/epas-stormwater-discharge-mapping-tools. For assistance in determining whether your site discharges to a Tier 2, 2.5, or 3 water, refer to the list of such waters at https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates.

[58] If you qualify for any of the reduced inspection frequencies in Part 4.4, you may conduct inspections in

If you discharge to a water that is impaired for a parameter other than a sediment-related parameter or nutrients, EPA will inform you if any additional controls are necessary for your discharge to be controlled as necessary to meet water quality standards. These controls might include those necessary for your discharge to be consistent with the assumptions of any available wasteload allocation in any applicable TMDL. In addition, EPA may require you to apply for and obtain coverage under an individual NPDES permit.

In addition, on a case-by-case basis, EPA may notify operators of new sites or operators of existing sites with increased discharges that additional analyses, stormwater controls, and/or other measures are necessary to comply with the applicable antidegradation requirements, or notify you that an individual permit application is necessary.

If you discharge to a water that is impaired for polychlorinated biphenyls (PCBs) and are engaging in demolition of any structure with at least 10,000 square feet of floor space built or renovated before January 1, 1980, you must:

a. Implement controls[59] to minimize the exposure of PCB-containing building materials, including paint, caulk, and pre-1980 fluorescent lighting fixtures, to precipitation and to stormwater; and

b. Ensure that disposal of such materials is performed in compliance with applicable State, Federal, and local laws.

3.3 TURBIDITY BENCHMARK MONITORING FOR SITES DISCHARGING DEWATERING WATER TO PROTECT THE WATER QUALITY OF SENSITIVE WATERS

For sites discharging dewatering water to "sensitive waters" (i.e., receiving waters listed as impaired for sediment or a sediment-related parameter (as defined in Appendix A), or receiving waters designated as a Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes) you are required to comply with the benchmark monitoring requirements in this Part and document the procedures you will use at your site in your SWPPP pursuant to Part 7.2.8. A summary of these requirements is included in Table 1.

EPA notes that the benchmark threshold is not an effluent limitation, rather it is an indicator that the dewatering controls may not be working to protect water quality, which the operator must investigate and correct as appropriate. A benchmark exceedance is not a permit violation. However, if a benchmark exceedance triggers corrective action in Part 5.1.5a, failure to conduct any required action is a permit violation.

Where there are multiple operators associated with the same site, the operators may coordinate with one another to carry out the monitoring requirements of this Part in order to avoid duplicating efforts. Such coordinating arrangements must be described in the SWPPP consistent with Part 7.2.8. Regardless of how the operators divide the

accordance with Part 4.4 for any portion of your site that discharges to a sensitive water.

[59] Examples of controls to minimize exposure of PCBs to precipitation and stormwater include separating work areas from non-work areas and selecting appropriate personal protective equipment and tools, constructing a containment area so that all dust or debris generated by the work remains within the protected area, and using tools that minimize dust and heat (<212°F). For additional information, refer to Part 2.3.3 of the CGP Fact Sheet.

responsibilities for monitoring and reporting, each operator remains responsible for compliance with these requirements.[60]

3.3.1 Turbidity monitoring requirements[61]

a. **Sampling frequency.** You must collect at least one turbidity sample from your dewatering discharge each day a discharge occurs.

b. **Sampling location.** Samples must be taken at all points where dewatering water is discharged. Samples must be taken after the dewatering water has been treated by installed treatment devices pursuant to Parts 2.4.1 and 2.4.3 and prior to its discharge off site into a receiving water, constructed or natural site drainage feature, or storm drain inlet.

c. **Representative samples.** Samples taken must be representative of the dewatering discharge for any given day as required in Appendix G (standard permit conditions), Part G.10.2.

d. **Test methods.** Samples must be measured using a turbidity meter that reports results in nephelometric turbidity units (NTUs) and conforms with a Part 136-approved method (e.g., methods 180.1 and 2130). You are required to use the meter, and conduct a calibration verification prior to each day's use, consistent with the manufacturer's instructions.

3.3.2 Turbidity benchmark

a. The benchmark threshold for turbidity for this permit is 50 NTUs (referred to elsewhere in this permit as the "standard 50 NTU benchmark") unless EPA has authorized the use of an alternate benchmark in accordance with Part 3.3.2b.

b. **Request for alternate benchmark threshold.**

i. At any time prior to or during your coverage under this permit, you may request that EPA approve a benchmark for your site that is higher than 50 NTUs if you have information demonstrating the higher number is the same as your receiving water's water quality standard for turbidity. Unless EPA approves an alternate benchmark, you will be required to use the standard 50 NTU benchmark. To request approval of an alternate benchmark, you must submit the following information to your applicable EPA Regional Office (see Appendix K):
(a) The current turbidity water quality standard that applies to your receiving

[60] For instance, if Operator A relies on Operator B to meet the Part 3.3.1 turbidity monitoring requirements, the Part 3.3.4 reporting and recordkeeping requirements, and the Part 5.2.2 corrective action provisions when applicable, Operator A does not have to duplicate these same functions if Operator B is implementing them for both operators to be in compliance with the permit. However, Operator A remains responsible for complying with these permit requirements if Operator B fails to take actions that were necessary for Operator A to comply with the permit. See also footnote 83. EPA notes that both Operator A and B are required to submit turbidity monitoring reports as required under Part 3.3.4, however, Operator A's report does not need to include the data collected by Operator B as long as Operator B submits the required data and Operator A's report indicates that it is relying on Operator B to report the data. See Part 3.3.4a.

[61] Operators may find it useful to consult EPA's *Monitoring and Inspection Guide for Construction Dewatering*, available at https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates, which provides guidelines on how to correctly monitor for turbidity, determine if the weekly average exceeds the benchmark, and, if so, how to proceed with corrective action.

water and the source/citation.[62]

(b) If the applicable turbidity water quality standard requires information on natural or background turbidity levels (e.g., "no more than 10 NTU above natural turbidity levels") to determine the specific standard for the receiving water, include available data that can be used to establish the natural turbidity levels of your receiving water (including literature studies or Federal, State, Tribal, or local government data). Data must be representative of the natural turbidity levels of your specific receiving water. Identify the source(s) of all data provided, including if the data are from samples you collected of the receiving water.

ii. EPA will inform you of its decision on whether to approve the requested alternate benchmark within 30 days. EPA may approve your request, request additional time (e.g., if additional information is needed to substantiate the data you provided), or deny your request. Unless and until EPA approves your request to use an alternate benchmark, you are required to use the standard benchmark of 50 NTUs and take any required corrective actions if an exceedance occurs.

3.3.3 Comparison of turbidity samples to benchmark. Compare the weekly average[63] of your turbidity monitoring results to the standard 50 NTU benchmark, or alternate benchmark if approved by EPA.

a. If the weekly average of your turbidity monitoring results exceeds the standard benchmark (or your approved alternate benchmark), you are required to conduct follow-up corrective action in accordance with Part 5.2.2 and document any corrective action taken in your corrective action log in accordance with Part 5.4**.**

b. For averaging purposes, a "monitoring week" starts with a Monday and ends on Sunday. Once a new monitoring week starts, you will need to calculate a new average for that week of turbidity monitoring results.[64] A weekly average may consist of one or more turbidity monitoring results.

c. Although you are not required to collect and analyze more than one turbidity sample per day from your dewatering discharge, if you do collect and analyze more than one sample on any given day, you must include any additional results in the

[62] For instance, if your site is located in Washington, DC, and you are discharging to a Class B water, for which the water quality standard is that turbidity may not increase above ambient levels by more than 20 percent, you would reference "Water Quality Standards for the District of Columbia, Chapter 11, Section 1104.8."

[63] A "weekly average" is defined as the sum of all of the turbidity samples taken during a "monitoring week" divided by the number of samples measured during that week. Average values should be calculated to the nearest whole number.

[64] For example, if turbidity samples from your dewatering discharge in week 1 result in values of 30 NTU on Tuesday, 40 NTU on Wednesday, and 45 NTU on Thursday, your weekly average turbidity value would be 38.33 NTU ((30+40+45) ÷ 3 = 38 NTU). If in week 2, your turbidity samples resulted in values of 45 NTU on Monday, 30 NTU on Tuesday, 25 NTU on Wednesday, and 15 NTU on Thursday, you would calculate a new average for that week, which would yield an average turbidity value of 28.75 NTU ((45+30+25+15) ÷ 4 = 29 NTU). By comparison, if your samples on consecutive days from Friday to Monday were 60 NTU, 45 NTU, 40 NTU, and 43 NTU, respectively, and there are no other dewatering discharges for the remainder of the week, you would calculate one weekly average for the Friday to Sunday to be 48 NTU ((60+45+40) ÷ 3 = 48 NTU), and a separate weekly average for the one Monday to be 43 NTU (43 ÷ 1 = 43 NTU).

calculation of your weekly average (i.e., add all individual results for that monitoring week and divide by the total number of samples).[65]

d. If you are conducting turbidity monitoring for more than one dewatering discharge point, you must calculate a weekly average turbidity value for each discharge point and compare each to the turbidity benchmark.

3.3.4 Reporting and recordkeeping.

a. You must submit reports of your weekly average turbidity data to EPA no later than 30 days following the end of each monitoring quarter. If there are monitoring weeks in which there was no dewatering discharge, or if there is a monitoring quarter with no dewatering discharge, indicate this in your turbidity monitoring report. If another operator associated with your same site is conducting turbidity monitoring on your behalf pursuant to Part 3.3, indicate this in your turbidity monitoring report.

b. For the purposes of this permit, the following monitoring quarters and reporting deadlines apply:

Table 3. Monitoring Quarters and Deadlines for Reporting Turbidity Benchmark Monitoring Data.

Monitoring Quarter #	**Months**	**Reporting Deadline** (no later than 30 days after end of the monitoring quarter)
1	January 1 – March 31	April 30
2	April 1 – June 30	July 30
3	July 1 – September 30	October 30
4	October 1 – December 31	January 30

c. You must use EPA's NPDES eReporting Tool (NeT) to electronically submit your quarterly turbidity data, unless, consistent with Part 1.4.2, you received a waiver from your applicable EPA Regional Office. If the EPA Regional Office grants you approval to use a paper turbidity monitoring report form, and you elect to use it, you must complete the form in Appendix K. If EPA approves of your request to use an alternate turbidity benchmark pursuant to Part 3.3.2b, EPA will substitute the alternate benchmark in your NeT account.

d. For each day in which you are required to monitor, you must record the monitoring information required by Appendix G, Parts G.10.2 and G.10.3 and retain all such information for a period of at least three years from the date this permit expires or from the date your authorization is terminated.

[65] For example, if during a monitoring week you take two turbidity samples on Tuesday with a value of 30 NTU and 35 NTU, three samples on Wednesday with a value of 40 NTU, 45 NTU, and 48 NTU, and one sample on Thursday with a value of 45 NTU, your weekly average turbidity value for this week would be 41 NTU ((30+35+40+45+48+45) ÷ 6 = 41 NTU).

Table 4. Summary of Turbidity Benchmark Monitoring Requirements.

Applicability	Sampling Requirement	Turbidity Benchmark	Corrective Action	Reporting
Sites discharging dewatering water to a sediment-impaired water or to a water designated as a Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes.	Collect at least one turbidity sample per day, from each discharge point, on any day there is a dewatering discharge. Use turbidity sampling procedures specified in Part 3.3.1.	Compare the weekly average of your turbidity monitoring results to the 50 NTU benchmark (or alternate benchmark if approved by EPA).	If the weekly average of turbidity monitoring results exceeds the 50 NTU turbidity benchmark (or alternate benchmark if approved by EPA), you are required to take follow-up corrective action in accordance with Part 5.2.2.	Report all weekly average turbidity monitoring results on a quarterly basis via NeT-CGP (unless use of the paper monitoring form in Appendix K is approved by EPA) no later than 30 days following the end of each monitoring quarter.

4 INSPECTION REQUIREMENTS

4.1 PERSON(S) RESPONSIBLE FOR CONDUCTING SITE AND DEWATERING INSPECTIONS

The person(s) inspecting your site may be a person on your staff or a third party you hire to conduct such inspections. You are responsible for ensuring that any person conducting inspections pursuant to this Part is a "qualified person." A qualified person is someone who has completed the training required by Part 6.3.

4.2 FREQUENCY OF INSPECTIONS.[66]

At a minimum, you must conduct a site inspection in accordance with one of the two schedules listed below, unless you are subject to the Part 4.3 site inspection frequency for discharges to sediment or nutrient-impaired or high quality waters, or qualify for a Part 4.4 reduction in the inspection frequency:

4.2.1 At least once every seven (7) calendar days; *or*

4.2.2 Once every 14 calendar days *and* within 24 hours[67] of the occurrence of:

- **a.** A storm event that produces 0.25 inches or more of rain within a 24-hour period.
  - **i.** If a storm event produces 0.25 inches or more of rain within a 24-hour period (including when there are multiple, smaller storms that alone produce less than 0.25 inches but together produce 0.25 inches or more in 24 hours), you are required to conduct one inspection within 24 hours of when 0.25 inches of rain or more has fallen.

[66] Inspections are only required during the site's normal working hours.

[67] For the purposes of the inspection requirements in this Part, conducting an inspection "within 24 hours" means that once either of the two conditions in Parts 4.2.2a or 4.2.2b are met you have 24 hours from that time to conduct an inspection. For clarification, the 24 hours is counted as a continuous passage of time, and not counted by business hours (e.g., 3 business days of 8 hours each). When the 24-hour inspection time frame occurs entirely outside of normal working hours, you must conduct an inspection by no later than the end of the next business day.

ii. If a storm event produces 0.25 inches or more of rain within a 24-hour period on the first day of a storm and continues to produce 0.25 inches or more of rain on subsequent days, you must conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the last day of the storm that produces 0.25 inches or more of rain (i.e., only two inspections would be required for such a storm event).[68]

b. A discharge caused by snowmelt from a storm event that produces 3.25 inches[69] or more of snow within a 24-hour period. You are required to conduct one inspection once the discharge of snowmelt from a 3.25-inch or more snow accumulation occurs. Additional snowmelt inspections are only required if following the discharge from the first snowmelt, there is a discharge from a separate storm event that produces 3.25 inches or more of snow.

4.2.3 To determine whether a storm event meets either of the thresholds in Parts 4.2.2a or 4.2.2b:

a. For rain, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any 24-hour period during which there is 0.25 inches or more of rainfall, you must record the total rainfall measured for that day in accordance with Part 4.7.1d.

b. For snow, you must either take measurements of snowfall at your site,[70] or rely on similar information from a local weather forecasting provider that is representative of your location.

4.3 INCREASE IN INSPECTION FREQUENCY FOR CERTAIN SITES.

The increased inspection frequencies established in this Part take the place of the Part 4.2 inspection frequencies for the portion of the site affected.

4.3.1 For any portion of the site that discharges to a sediment or nutrient-impaired water or to a water that is identified by your State, Tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes (see Part 3.2), you must conduct an once every seven (7) calendar days *and* within 24 hours of the occurrence of a storm event that produces 0.25 inches or more of rain within a 24-hour period, or within 24 hours of a snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period.

[68] For example, if 0.30 inches of rain falls on Day 1, 0.25 inches of rain falls on Day 2, and 0.10 inches of rain fall on Day 3, you would be required to conduct a first inspection within 24 hours of the Day 1 rainfall and a second inspection within 24 hours of the Day 2 rainfall, but a third inspection would not be required within 24 hours of the Day 3 rainfall.

[69] This is the amount of snow that is equivalent to 0.25 inches of rain, based on information from the National Oceanic and Atmospheric Administration (NOAA) indicating that 13 inches of snow is, on average, equivalent to 1 inch of rain. See https://www.nssl.noaa.gov/education/svrwx101/winter/faq/.

[70] For snowfall measurements, EPA suggests use of NOAA's National Weather Service guidelines at https://www.weather.gov/jkl/snow_measurement. These guidelines recommend use of a "snowboard" (a piece of wood about 16 inches by 16 inches) that is placed in an unobstructed part of the site on a hard surface.

Refer to Parts 4.2.3a and 4.2.3b for the requirements to determine if a storm event produces enough rain or snow to trigger the inspection requirement.

4.3.2 **For sites discharging dewatering water,** you must conduct an inspection in accordance with Part 4.6.3 during the discharge once per day on which the discharge occurs. The Part 4.2 inspection frequency still applies to all other portions of the site, unless the site is affected by either the increased frequency in Part 4.3.1 or the reduced frequency in Part 4.4.

4.4 REDUCTIONS IN INSPECTION FREQUENCY

4.4.1 Stabilized areas.

a. You may reduce the frequency of inspections to twice per month for the first month, no more than 14 calendar days apart, then once per month until permit coverage is terminated consistent with Part 8 in any area of your site where the stabilization steps in Part 2.2.14a have been completed. If construction activity resumes in this portion of the site at a later date, the inspection frequency immediately increases to that required in Parts 4.2 and 4.3, as applicable. You must document the beginning and ending dates of this period in your SWPPP.

b. **Exception.** For "linear construction sites" (as defined in Appendix A) where disturbed portions have undergone final stabilization at the same time active construction continues on others, you may reduce the frequency of inspections to twice per month for the first month, no more than 14 calendar days apart, in any area of your site where the stabilization steps in Part 2.2.14a have been completed. After the first month, inspect once more within 24 hours of the occurrence of a storm event that produces 0.25 inches of rain or more within a 24-hour period, or within 24 hours of a snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period. If there are no issues or evidence of stabilization problems, you may suspend further inspections. If "wash-out" of stabilization materials and/or sediment is observed, following re-stabilization, inspections must resume at the inspection frequency required in Part 4.4.1a. Inspections must continue until final stabilization is visually confirmed following a storm event that produces 0.25 inches of rain or more within a 24-hour period.

4.4.2 **Arid, semi-arid, or drought-stricken areas** (as defined in Appendix A). If it is the seasonally dry period[71] or a period in which drought is occurring, you may reduce the frequency of inspections to once per month and within 24 hours of the occurrence of a storm event that produces 0.25 inches of rain or more within a 24-hour period, or within 24 hours of a snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period. You must document that you are using this reduced schedule and the beginning and ending dates of the seasonally dry period in your SWPPP. Follow the procedures in Part 4.2.3a and 4.2.3b, accordingly, to determine if a storm event occurs that produces 0.25 inches or more of rain or 3.25 inches or more of snow within a 24-hour period. For any 24-hour period during which there is 0.25 inches or more of rainfall, or 3.25 inches or more of snow, you must record the total rainfall or snow measured for that day in accordance with Part 4.7.1d.

[71] See footnote 44.

4.4.3 Frozen conditions:

a. If you are suspending construction activities due to frozen conditions, you may temporarily suspend inspections on your site until thawing conditions (as defined in Appendix A) begin to occur if:

   i. Discharges are unlikely due to continuous frozen conditions that are likely to continue at your site for at least three (3) months based on historic seasonal averages.[72] If unexpected weather conditions (such as above freezing temperatures or rain events) make discharges likely, you must immediately resume your regular inspection frequency as described in Parts 4.2 and 4.3, as applicable;

   ii. Land disturbances have been suspended; and

   iii. All disturbed areas of the site have been stabilized in accordance with Part 2.2.14a.

b. If you are still conducting construction activities during frozen conditions, you may reduce your inspection frequency to once per month if:

   i. Discharges are unlikely due to continuous frozen conditions that are likely to continue at your site for at least three (3) months based on historic seasonal averages. If unexpected weather conditions (such as above freezing temperatures or rain events) make discharges likely, you must immediately resume your regular inspection frequency as described in Parts 4.2 and 4.3, as applicable; and

   ii. Except for areas in which you are actively conducting construction activities, disturbed areas of the site have been stabilized in accordance with Part 2.2.14a.

You must document the beginning and ending dates of this period in your SWPPP.

4.5 AREAS THAT MUST BE INSPECTED

During your site inspection, you must at a minimum inspect the following areas of your site:

4.5.1 All areas that have been cleared, graded, or excavated and that have not yet completed stabilization consistent with Part 2.2.14a;

4.5.2 All stormwater controls, including pollution prevention controls, installed at the site to comply with this permit;[73]

4.5.3 Material, waste, borrow, and equipment storage and maintenance areas that are covered by this permit;

4.5.4 All areas where stormwater typically flows within the site, including constructed or natural site drainage features designed to divert, convey, and/or treat stormwater;

4.5.5 All areas where construction dewatering is taking place, including controls to treat the dewatering discharge and any channelized flow of water to and from those controls;

[72] Use data sets that include the most recent data available to account for recent precipitation patterns and trends.

[73] This includes the requirement to inspect for sediment that has been tracked out from the site onto paved roads, sidewalks, or other paved areas consistent with Part 2.2.4.

4.5.6 All points of discharge from the site; and

4.5.7 All locations where stabilization measures have been implemented.

You are not required to inspect areas that, at the time of the inspection, are considered unsafe to your inspection personnel.

4.6 REQUIREMENTS FOR INSPECTIONS

4.6.1 During each site inspection, you must at a minimum:

a. Check whether all stormwater controls *(*i.e.*, erosion and sediment controls and pollution prevention controls)* are properly installed, appear to be operational, and are working as intended to minimize pollutant discharges.

b. Check for the presence of conditions that could lead to spills, leaks, or other accumulations of pollutants on the site.

c. Identify any locations where new or modified stormwater controls are necessary to meet the requirements of Parts 2 and/or 3.

d. Check for signs of visible erosion and sedimentation *(*i.e.*, sediment deposits)* that have occurred and are attributable to your discharge at points of discharge and, if applicable, on the banks of any receiving waters flowing within or immediately adjacent to the site;

e. Check for signs of sediment deposition that are visible from your site and attributable to your discharge (e.g., sand bars with no vegetation growing on top in receiving waters or in other constructed or natural site drainage features, or the buildup of sediment deposits on nearby streets, curbs, or open conveyance channels).

f. Identify any incidents of noncompliance observed.

4.6.2 If a discharge is occurring during your inspection:

a. Identify all discharge points at the site; and

b. Observe and document the visual quality of the discharge, and take note of the characteristics of the stormwater discharge, including color; odor; floating, settled, or suspended solids; foam; oil sheen; and other indicators of stormwater pollutants. Check also for signs of these same pollutant characteristics that are visible from your site and attributable to your discharge in receiving waters or in other constructed or natural site drainage features.

4.6.3 For dewatering inspections conducted pursuant to Parts 4.3.2, record the following in a report within 24 hours of completing the inspection:

a. The inspection date;

b. Names and titles of personnel making the inspection;

c. Approximate times that the dewatering discharge began and ended on the day of inspection;[74]

d. Estimates of the rate (in gallons per day) of discharge on the day of inspection;

[74] If the dewatering discharge is a continuous discharge that continues after normal business hours, indicate that the discharge is continuous.

e. Whether or not any of the following indications of pollutant discharge were observed at the point of discharge to any receiving waters flowing through or immediately adjacent to the site and/or to constructed or natural site drainage features or storm drain inlets:[75]

i. a sediment plume, suspended solids, unusual color, presence of odor, decreased clarity, or presence of foam; and/or

ii. a visible sheen on the water surface or visible oily deposits on the bottom or shoreline of the receiving water; and

f. Photographs of (1) the dewatering water prior to treatment by a dewatering control(s) and the final discharge after treatment; (2) the dewatering control(s); and (3) the point of discharge to any receiving waters flowing through or immediately adjacent to the site and/or to constructed or natural site drainage features, storm drain inlets, and other conveyances to receiving waters.

You must also comply with the Part 4.7.2, 4.7.3, and 4.7.4 requirements for signing the reports, keeping them available on site, and retaining copies.

4.6.4 Based on the results of your inspection:

a. Complete any necessary maintenance repairs or replacements under Part 2.1.4 or under Part 5, whichever applies; and

b. Modify your SWPPP site map in accordance with Part 7.4.1 to reflect changes to your stormwater controls that are no longer accurately reflected on the current site map.

4.7 INSPECTION REPORT

4.7.1 You must complete an inspection report within 24 hours of completing any site inspection. Each inspection report (except for dewatering inspection reports, which are covered in Part 4.6.3) must include the following:

a. The inspection date;

b. Names and titles of personnel making the inspection;

c. A summary of your inspection findings, covering at a minimum the observations you made in accordance with Part 4.6, including any problems found during your inspection that make it necessary to perform routine maintenance pursuant to Part 2.1.4b or corrective action pursuant to Part 5. Include also any documentation as to why the corrective action procedures under Part 5 are unnecessary to fix a problem that repeatedly occurs as described in Part 2.1.4c;

d. If you are inspecting your site at the frequency specified in Part 4.2.2, Part 4.3, or Part 4.4.1b, and you conducted an inspection because of a storm event that produced rainfall measuring 0.25 inches or more within a 24-hour period, you must include the applicable rain gauge or weather station readings that triggered the inspection. Similarly, if you conducted an inspection because of a snowmelt discharge from a storm event that produced 3.25 inches or more of snow within a 24-hour period, you must include any measurements taken of snowfall at your site, or weather station information you relied on; and

[75] If the operator observes any of these indicators of pollutant discharge, corrective action is required consistent with Parts 5.1.5b and 5.2.2.

e. If you determined that it is unsafe to inspect a portion of your site, you must describe the reason you found it to be unsafe and specify the locations to which this condition applies.

4.7.2 Each inspection report must be signed by the operator's signatory in accordance with Appendix G, Part G.11 of this permit.

4.7.3 You must keep a copy of all inspection reports at the site or at an easily accessible location, so that it can be made immediately available at the time of an on-site inspection or upon request by EPA.[76]

4.7.4 You must retain all inspection reports completed for this Part for at least three (3) years from the date that your permit coverage expires or is terminated.

4.8 INSPECTIONS BY EPA

You must allow EPA, or an authorized representative of EPA, to conduct the following activities at reasonable times. To the extent that you are utilizing shared controls, that are not on site, to comply with this permit, you must make arrangements for EPA to have access at all reasonable times to those areas where the shared controls are located.

4.8.1 Enter onto all areas of the site, including any construction support activity areas covered by this permit, any off-site areas where shared controls are utilized to comply with this permit, discharge locations, adjoining waterbodies, and locations where records are kept under the conditions of this permit;

4.8.2 Access and copy any records that must be kept under the conditions of this permit;

4.8.3 Inspect your construction site, including any construction support activity areas covered by this permit (see Part 1.2.1c), any stormwater controls installed and maintained at the site, and any off-site shared controls utilized to comply with this permit; and

4.8.4 Sample or monitor for the purpose of ensuring compliance.

5 CORRECTIVE ACTIONS

5.1 CONDITIONS TRIGGERING CORRECTIVE ACTION.

You must take corrective action to address any of the following conditions identified at your site:

5.1.1 A stormwater control needs a significant repair or a new or replacement control is needed, or, in accordance with Part 2.1.4c, you find it necessary to repeatedly (i.e., three (3) or more times) conduct the same routine maintenance fix to the same control at the same location (unless you document in your inspection report under Part 4.7.1c that the specific reoccurrence of this same problem should still be addressed as a routine maintenance fix under Part 2.1.4); or

5.1.2 A stormwater control necessary to comply with the requirements of this permit was never installed, or was installed incorrectly; or

[76] Inspection reports may be prepared, signed, and kept electronically, rather than in paper form, if the records are: (a) in a format that can be read in a similar manner as a paper record; (b) legally dependable with no less evidentiary value than their paper equivalent; and (c) immediately accessible to the inspector during an inspection to the same extent as a paper copy stored at the site would be, if the records were stored in paper form. For additional guidance on the proper practices to follow for the electronic retention of inspection report records, refer to the Fact Sheet discussion related to Part 4.7.3.

5.1.3 Your discharges are not meeting applicable water quality standards;

5.1.4 A prohibited discharge has occurred (see Part 1.3); or

5.1.5 During discharge from site dewatering activities:

a. The weekly average of your turbidity monitoring results exceeds the 50 NTU benchmark (or alternate benchmark if approved by EPA pursuant to Part 3.3.2b); or

b. You observe or you are informed by EPA, State, or local authorities of the presence of the conditions specified in Part 4.6.3e.

5.2 CORRECTIVE ACTION DEADLINES

5.2.1 If responding to any of the Part 5.1.1, 5.1.2, 5.1.3, or 5.1.4 triggering conditions, you must:

a. Immediately take all reasonable steps to address the condition, including cleaning up any contaminated surfaces so the material will not discharge in subsequent storm events; and

b. When the problem does not require a new or replacement control or significant repair, the corrective action must be completed by the close of the next business day; or

c. When the problem requires a new or replacement control or significant repair, install the new or modified control and make it operational, or complete the repair, by no later than seven (7) calendar days from the time of discovery. If it is infeasible to complete the installation or repair within seven (7) calendar days, you must document in your records why it is infeasible to complete the installation or repair within the 7-day timeframe and document your schedule for installing the stormwater control(s) and making it operational as soon as feasible after the 7-day timeframe. Where these actions result in changes to any of the stormwater controls or procedures documented in your SWPPP, you must modify your SWPPP accordingly within seven (7) calendar days of completing this work.

5.2.2 If responding to either of the Part 5.1.5 triggering conditions related to site dewatering activities, you must:

a. Immediately take all reasonable steps to minimize or prevent the discharge of pollutants until you can implement a solution, including shutting off the dewatering discharge as soon as possible depending on the severity of the condition[77] taking safety considerations into account;

b. Determine whether the dewatering controls are operating effectively and whether they are causing the conditions; and

c. Make any necessary adjustments, repairs, or replacements to the dewatering controls to lower the turbidity levels below the benchmark or remove the visible plume or sheen.

[77] For instance, if the weekly average of your turbidity monitoring results or a single sample is extremely high (e.g., a single turbidity sample results in 355 NTUs or higher), you should take action to safely shut off the discharge so that you can evaluate the cause of the high turbidity. Note: A single turbidity sample of 355 NTUs or higher means that the weekly average turbidity value will exceed 50 NTU regardless of the turbidity values the other days during the week.

When you have completed these steps and made any changes deemed necessary, you may resume discharging from your dewatering activities.

5.3 CORRECTIVE ACTION REQUIRED BY EPA

You must comply with any corrective actions required by EPA as a result of permit violations found during an inspection carried out under Part 4.8.

5.4 CORRECTIVE ACTION LOG

5.4.1 For each corrective action taken in accordance with this Part, you must record the following in a corrective action log:

- **a.** Within 24 hours of identifying the corrective action condition, document the specific condition and the date and time it was identified.
- **b.** Within 24 hours of completing the corrective action (in accordance with the deadlines in Part 5.2), document the actions taken to address the condition, including whether any SWPPP modifications are required.

5.4.2 Each entry into the corrective action log, consisting of the information required by both Parts 5.4.1a and 5.4.1b, must be signed by the operator's signatory in accordance with Appendix G, Part G.11.2 of this permit.

5.4.3 You must keep a copy of the corrective action log at the site or at an easily accessible location, so that it can be made immediately available at the time of an on-site inspection or upon request by EPA.[78]

5.4.4 You must retain the corrective action log for at least three (3) years from the date that your permit coverage expires or is terminated.

6 STORMWATER TEAM FORMATION/STAFF TRAINING REQUIREMENTS

6.1 STORMWATER TEAM

Each operator, or group of multiple operators, must assemble a "stormwater team" that will be responsible for carrying out activities necessary to comply with this permit. The stormwater team must include the following people:

- **a.** Personnel who are responsible for the design, installation, maintenance, and/or repair of stormwater controls (including pollution prevention controls);
- **b.** Personnel responsible for the application and storage of treatment chemicals (if applicable);
- **c.** Personnel who are responsible for conducting inspections as required in Part 4.1; and
- **d.** Personnel who are responsible for taking corrective actions as required in Part 5.

Members of the stormwater team must be identified in the SWPPP pursuant to Part 7.2.2.

[78] The corrective action log may be prepared, signed, and kept electronically, rather than in paper form, if the records are: (a) in a format that can be read in a similar manner as a paper record; (b) legally dependable with no less evidentiary value than their paper equivalent; and (c) immediately accessible to the inspector during an inspection to the same extent as a paper copy stored at the site would be, if the records were stored in paper form. For additional guidance on the proper practices to follow for the electronic retention of corrective action log records, refer to the Fact Sheet discussion related to Part 4.7.3.

6.2 GENERAL TRAINING REQUIREMENTS FOR STORMWATER TEAM MEMBERS

Prior to the commencement of construction activities, you must ensure that all persons[79] assigned to the stormwater team understand the requirements of this permit and their specific responsibilities with respect to those requirements, including the following related to the scope of their job duties:

a. The permit requirements and deadlines associated with installation, maintenance, and removal of stormwater controls, as well as site stabilization**;**

b. The location of all stormwater controls on the site required by this permit and how they are to be maintained;

c. The proper procedures to follow with respect to the permit's pollution prevention requirements; and

d. When and how to conduct inspections, record applicable findings, and take corrective actions. Specific training requirements for persons conducting site inspections are included in Part 6.3.

You are responsible for ensuring that all activities on the site comply with the requirements of this permit. You are not required to provide or document formal training for subcontractors or other outside service providers (unless the subcontractors or outside service providers are responsible for conducting the inspections required in Part 4, in which case you must provide such documentation consistent with Part 7.2.2), but you must ensure that such personnel understand any requirements of this permit that may be affected by the work they are subcontracted to perform.

6.3 TRAINING REQUIREMENTS FOR PERSONS CONDUCTING INSPECTIONS

For projects that receive coverage under this permit on or after February 17, 2023, to be considered a qualified person under Part 4.1 for conducting inspections under Part 4, you must, at a minimum, either:

a. Have completed the EPA construction inspection course developed for this permit and have passed the exam; or

b. Hold a current valid construction inspection certification or license from a program that, at a minimum, covers the following:[80]

i. Principles and practices of erosion and sediment control and pollution prevention practices at construction sites;

ii. Proper installation and maintenance of erosion and sediment controls and pollution prevention practices used at construction sites; and

iii. Performance of inspections, including the proper completion of required reports and documentation, consistent with the requirements of Part 4.

[79] If the person requiring training is a new employee who starts after you commence construction activities, you must ensure that this person has the proper understanding as required above prior to assuming particular responsibilities related to compliance with this permit. For emergency-related projects, the requirement to train personnel prior to commencement of construction activities does not apply, however, such personnel must have the required training prior to NOI submission.

[80] If one of the following topics (e.g., installation and maintenance of pollution prevention practices) is not covered by the non-EPA training program, you may consider supplementing the training with the analogous module of the EPA course (e.g., Module 4) that covers the missing topic.

For projects that receive coverage under this permit prior to February 17, 2023, any personnel conducting site inspections pursuant to Part 4 on your site must, at a minimum, be a person knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention, who possesses the appropriate skills and training to assess conditions at the construction site that could impact stormwater quality, and the appropriate skills and training to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit.[81]

6.4 STORMWATER TEAM'S ACCESS TO PERMIT DOCUMENTS

Each member of the stormwater team must have easy access to an electronic or paper copy of applicable portions of this permit, the most updated copy of your SWPPP, and other relevant documents or information that must be kept with the SWPPP.

7 STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

7.1 GENERAL REQUIREMENTS

All operators associated with a construction site under this permit must develop a SWPPP consistent with the requirements in Part 7 prior to their submittal of the NOI.[82, 83, 84] The SWPPP must be kept up-to-date throughout coverage under this permit.

If a SWPPP was prepared under a previous version of this permit, the operator must review and update the SWPPP to ensure that this permit's requirements are addressed prior to submitting an NOI for coverage under this permit.

7.2 SWPPP CONTENTS

At a minimum, the SWPPP must include the information specified in this Part and as specified in other parts of this permit.

7.2.1 All Site Operators. Include a list of all other operators who will be engaged in construction activities at the site, and the areas of the site over which each operator has control.

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[81] If you receive coverage for a project prior to February 17, 2023, and construction activities for the same project will continue after February 17, 2023, the personnel conducting inspections do not need to take the additional training specified in Parts 6.3a and 6.3b for inspections conducted on the project site. If the same operator obtains coverage for a different project on or after February 17, 2023, personnel conducting inspections would be required to meet the requirements for a qualified person by completing the training in either Part 6.3a or Part 6.3b.

[82] The SWPPP does not establish the effluent limits and/or other permit terms and conditions that apply to your site's discharges; these limits, terms, and conditions are established in this permit.

[83] Where there are multiple operators associated with the same site, they may develop a group SWPPP instead of multiple individual SWPPPs. Regardless of whether there is a group SWPPP or multiple individual SWPPPs, each operator is responsible for compliance with the permit's terms and conditions. In other words, if Operator A relies on Operator B to satisfy its permit obligations, Operator A does not have to duplicate those permit-related functions if Operator B is implementing them such that both operators are in compliance with the permit. However, Operator A remains responsible for permit compliance if Operator B fails to take actions necessary for Operator A to comply with the permit. In addition, all operators must ensure, either directly or through coordination with other operators, that their activities do not cause a violation or compromise any other operators' controls and/or any shared controls. See also footnote 60.

[84] There are a number of commercially available products to assist operators in developing the SWPPP, as well as companies that can be hired to help develop a site-specific SWPPP. The permit does not state which are recommended, nor does EPA endorse any specific products or vendors. Where operators choose to rely on these products or services, the choice of which ones to use to comply with the requirements of this Part is a decision for the operator alone.

7.2.2 Stormwater Team. Identify the personnel (by name and position) that you have made part of the stormwater team pursuant to Part 6.1, as well as their individual responsibilities, including which members are responsible for conducting inspections.

Include verification that each member of the stormwater team has received the training required by Part 6.2. Include documentation that members of the stormwater team responsible for conducting inspections pursuant to Part 4 have received the training required by Part 6.3. If personnel on your team elect to complete the EPA inspector training program pursuant to Part 6.3a, you must include copies of the certificate showing that the relevant personnel have completed the training and passed the exam. If personnel on your team elect to complete a non-EPA inspector training program pursuant to Part 6.3b, you must include documentation showing that these persons have successfully completed the program and their certification or license is still current. You must also confirm that the non-EPA inspector training program satisfies the minimum elements for such programs in Part 6.3b.

7.2.3 Nature of Construction Activities. Include the following:

- **a.** A description of the nature of your construction activities, including the age or dates of past renovations for structures that are undergoing demolition;
- **b.** The size of the property (in acres or length in miles if a linear construction site);
- **c.** The total area expected to be disturbed by the construction activities (to the nearest quarter acre or nearest quarter mile if a linear construction site);
- **d.** A description of any on-site and off-site construction support activity areas covered by this permit (see Part 1.2.1c);
- **e.** The maximum area expected to be disturbed at any one time, including on-site and off-site construction support activity areas;
- **f.** A description and projected schedule for the following:[85]
  - **i.** Commencement of construction activities in each portion of the site, including clearing and grubbing, mass grading, demolition activities, site preparation (i.e., excavating, cutting and filling), final grading, and creation of soil and vegetation stockpiles requiring stabilization;
  - **ii.** Temporary or permanent cessation of construction activities in each portion of the site;
  - **iii.** Temporary or final stabilization of exposed areas for each portion of the site; and
  - **iv.** Removal of temporary stormwater controls and construction equipment or vehicles, and the cessation of construction-related pollutant-generating activities.

[85] If plans change due to unforeseen circumstances or for other reasons, the requirement to describe the sequence and estimated dates of construction activities is not meant to "lock in" the operator to meeting these dates. When departures from initial projections are necessary, this should be documented in the SWPPP itself, or in associated records, as appropriate.

g. A list and description of all pollutant-generating activities[86] on the site. For each pollutant-generating activity, include an inventory of pollutants or pollutant constituents (e.g., *sediment, fertilizers, pesticides, paints, caulks, sealants, fluorescent light ballasts, contaminated substrates, solvents, fuels*) associated with that activity, which could be discharged in stormwater from your construction site. You must take into account where potential spills and leaks could occur that contribute pollutants to stormwater discharges, and any known hazardous or toxic substances, such as PCBs and asbestos, that will be disturbed or removed during construction;

h. Business days and hours for the project;

i. If you are conducting construction activities in response to a public emergency (see Part 1.4), a description of the cause of the public emergency *(*e.g.*, mud slides, earthquake, extreme flooding conditions, widespread disruption in essential public services)*, information substantiating its occurrence *(*e.g.*, State disaster declaration or similar State or local declaration)*, and a description of the construction necessary to reestablish affected public services.

7.2.4 Site Map. Include a legible map, or series of maps, showing the following features of the site:

a. Boundaries of the property;

b. Locations where construction activities will occur, including:

i. Locations where earth-disturbing activities will occur (note any phasing), including any demolition activities;

ii. Approximate slopes before and after major grading activities (note any steep slopes (as defined in Appendix A));

iii. Locations where sediment, soil, or other construction materials will be stockpiled;

iv. Any receiving water crossings;

v. Designated points where vehicles will exit onto paved roads;

vi. Locations of structures and other impervious surfaces upon completion of construction; and

vii. Locations of on-site and off-site construction support activity areas covered by this permit (see Part 1.2.1c).

c. Locations of any receiving waters within the site and all receiving waters within one mile downstream of the site's discharge point(s). Also identify if any of these receiving waters are listed as impaired or are identified as a Tier 2, Tier 2.5, or Tier 3 water;

d. Any areas of Federally listed critical habitat within the action area of the site as defined in Appendix A;

e. Type and extent of pre-construction cover on the site (e.g., vegetative cover, forest, pasture, pavement, structures);

f. Drainage patterns of stormwater and authorized non-stormwater before and after major grading activities;

[86] Examples of pollutant-generating activities include paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal; and dewatering activities.

g. Stormwater and authorized non-stormwater discharge locations, including:

i. Locations where stormwater and/or authorized non-stormwater will be discharged to storm drain inlets, including a notation of whether the inlet conveys stormwater to a sediment basin, sediment trap, or similarly effective control;[87]

ii. Locations where stormwater or authorized non-stormwater will be discharged directly to receiving waters (i.e., not via a storm drain inlet); and

iii. Locations where turbidity benchmark monitoring will take place to comply with Part 3.3, if applicable to your site.

h. Locations of all potential pollutant-generating activities identified in Part 7.2.3g;

i. Designated areas where construction wastes that are covered by the exception in Part 2.3.3e.ii because they are not pollutant-generating will be stored;

j. Locations of stormwater controls, including natural buffer areas and any shared controls utilized to comply with this permit; and

k. Locations where polymers, flocculants, or other treatment chemicals will be used and stored.

7.2.5 Non-Stormwater Discharges. Identify all authorized non-stormwater discharges in Part 1.2.2 that will or may occur.

7.2.6 Description of Stormwater Controls.

a. For each of the Part 2.2 erosion and sediment control requirements, Part 2.3 pollution prevention requirements, and Part 2.4 construction dewatering requirements, as applicable to your site, you must include the following:

i. A description of the specific control(s) to be implemented to meet these requirements;

ii. The design specifications for controls described in Part 7.2.6a.i (including references to any manufacturer specifications and/or erosion and sediment control manuals/ordinances relied upon);[88]

iii. Routine stormwater control maintenance specifications; and

iv. The projected schedule for stormwater control installation/implementation.

b. You must also include any of the following additional information as applicable.

i. Natural buffers and/or equivalent sediment controls (see Part 2.2.1 and Appendix F). You must include the following:

(a) The compliance alternative to be implemented;

(b) If complying with alternative 2, the width of natural buffer retained;

[87] The requirement to show storm drain inlets in the immediate vicinity of the site on your site map only applies to those inlets that are easily identifiable from your site or from a publicly accessible area immediately adjacent to your site.

[88] Design specifications may be found in manufacturer specifications and/or in applicable erosion and sediment control manuals or ordinances. Any departures from such specifications must reflect good engineering practice and must be explained in the SWPPP.

(c) If complying with alternative 2 or 3, the erosion and sediment control(s) you will use to achieve an equivalent sediment reduction, and any information you relied upon to demonstrate the equivalency;

(d) If complying with alternative 3, a description of why it is infeasible for you to provide and maintain an undisturbed natural buffer of any size;

(e) For "linear construction sites" where it is infeasible to implement compliance alternative 1, 2, or 3, a rationale for this determination, and a description of any buffer width retained and/or supplemental erosion and sediment controls installed; and

(f) A description of any disturbances that are exempt under Part 2.2.1 that occur within 50 feet of a receiving water.

ii. Perimeter controls for a "linear construction site" (see Part 2.2.3d). For areas where perimeter controls are not feasible, include documentation to support this determination and a description of the other practices that will be implemented to minimize discharges of pollutants in stormwater associated with construction activities.

Note: Routine maintenance specifications for perimeter controls documented in the SWPPP must include the Part 2.2.3c.i requirement that sediment be removed before it has accumulated to one-half of the above-ground height of any perimeter control.

iii. Sediment track-out controls (see Parts 2.2.4b and 2.2.4c)**.** Document the specific stabilization techniques and/or controls that will be implemented to remove sediment prior to vehicle exit.

iv. Inlet protection measures (see Part 2.2.10a). Where inlet protection measures are not required because the storm drain inlets to which your site discharges are conveyed to a sediment basin, sediment trap, or similarly effective control, include a short description of the control that receives the stormwater flow from the site.

v. Sediment basins (see Part 2.2.12). In circumstances where it is infeasible to utilize outlet structures that withdraw water from the surface, include documentation to support this determination, including the specific conditions or time periods when this exception will apply.

vi. Treatment chemicals (see Part 2.2.13), you must include the following:

(a) A listing of the soil types that are expected to be exposed during construction in areas of the project that will drain to chemical treatment systems. Also include a listing of soil types expected to be found in fill material to be used in these same areas, to the extent you have this information prior to construction;

(b) A listing of all treatment chemicals to be used at the site and why the selection of these chemicals is suited to the soil characteristics of your site;

(c) If the applicable EPA Regional Office authorized you to use cationic treatment chemicals for sediment control, include the specific controls and implementation procedures designed to ensure that your use of cationic

treatment chemicals will not lead to a discharge that does not meet water quality standards;

(d) The dosage of all treatment chemicals to be used at the site or the methodology to be used to determine dosage;

(e) Information from any applicable Safety Data Sheet (SDS);

(f) Schematic drawings of any chemically enhanced stormwater controls or chemical treatment systems to be used for application of the treatment chemicals;

(g) A description of how chemicals will be stored consistent with Part 2.2.13c;

(h) References to applicable State or local requirements affecting the use of treatment chemicals, and copies of applicable manufacturer's specifications regarding the use of your specific treatment chemicals and/or chemical treatment systems; and

(i) A description of the training that personnel who handle and apply chemicals have received prior to permit coverage, or will receive prior to use of the treatment chemicals at your site.

vii. Stabilization measures (see Part 2.2.14). You must include the following:

(a) The specific vegetative and/or non-vegetative practices that will be used;

(b) The stabilization deadline that will be met in accordance with Part 2.2.14;

(c) If complying with the deadlines for sites in arid, semi-arid, or drought-stricken areas, the beginning and ending dates of the seasonally dry period (as defined in Appendix A)[89] and the schedule you will follow for initiating and completing vegetative stabilization; and

(d) If complying with deadlines for sites affected by unforeseen circumstances that delay the initiation and/or completion of vegetative stabilization, document the circumstances and the schedule for initiating and completing stabilization.

viii. Spill prevention and response procedures (see Parts 1.3.5, 2.3.3c, 2.3.3d, and 2.3.6). You must include the following:

(a) Procedures for expeditiously stopping, containing, and cleaning up spills, leaks, and other releases. Identify the name or position of the employee(s) responsible for detection and response of spills or leaks; and

(b) Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity consistent with Part 2.3.6 and established under either 40 CFR part 110, 40 CFR part 117, or 40 CFR part 302, occurs

[89] See footnote 44.

during a 24-hour period. Contact information must be in locations that are readily accessible and available to all employees.

You may also reference the existence of SPCC plans developed for the construction activity under Section 311 of the CWA, or spill control programs otherwise required by an NPDES permit for the construction activity, provided that you keep a copy of that other plan on site.[90]

ix. **Waste management procedures** (see Part 2.3.3). Describe the procedures you will follow for handling, storing, and disposing of all wastes generated at your site consistent with all applicable Federal, State, Tribal, and local requirements, including clearing and demolition debris, sediment removed from the site, construction and domestic waste, hazardous or toxic waste, and sanitary waste. You must also include the following additional information:

(a) If site constraints prevent you from storing chemical containers 50 feet away from receiving waters or the other site drainage features as required in Part 2.3.3c.ii(b), document in your SWPPP the specific reasons why the 50-foot setback is not feasible, and how you will store containers as far away as the site permits; and

(b) If there are construction wastes that are subject to the exception in Part 2.3.3e.ii, describe the specific wastes that will be stored on your site.

x. **Application of fertilizers** (see Part 2.3.5). Document any departures from the manufacturer specifications where appropriate.

7.2.7 Procedures for Inspection, Maintenance, and Corrective Action. Describe the procedures you will follow for maintaining your stormwater controls, conducting site inspections, and, where necessary, taking corrective actions, in accordance with Part 2.1.4, Part 4, and Part 5 of this permit, accordingly. Also include:

a. The inspection schedule you will follow, which is based on whether your site is subject to Part 4.2 or Part 4.3, or whether your site qualifies for any of the reduced inspection frequencies in Part 4.4;

b. If you will be conducting inspections in accordance with the inspection schedule in Part 4.2.2, Part 4.3, or Part 4.4.1b, the location of the rain gauge or the address of the weather station you will be using to obtain rainfall data;

c. If you will be reducing your inspection frequency in accordance with Part 4.4.1b, the beginning and ending dates of the seasonally defined arid period for your area or the valid period of drought;

d. If you will be reducing your inspection frequency in accordance with Part 4.4.3, the beginning and ending dates of frozen conditions on your site; and

e. Any maintenance or inspection checklists or other forms that will be used.

7.2.8 Procedures for Turbidity Benchmark Monitoring from Dewatering Discharges (if applicable). If you are required to comply with the Part 3.3 turbidity benchmark

[90] Even if you already have an SPCC or other spill prevention plan in existence, your plans will only be considered adequate if they meet all of the requirements of this Part, either as part of your existing plan or supplemented as part of the SWPPP.

monitoring requirements, describe the procedures you will follow to collect and evaluate samples, report results to EPA and keep records of monitoring information, and take corrective action when necessary. Include the specific type of turbidity meter you will use for monitoring, as well as any manuals or manufacturer instructions on how to operate and calibrate the meter. Describe any coordinating arrangement you may have with any other permitted operators on the same site with respect to compliance with the turbidity monitoring requirements, including which parties are tasked with specific responsibilities. If EPA has approved of an alternate turbidity benchmark pursuant to Part 3.3.2b, include any data and other documentation you relied on to request use of the specific alternative benchmark.

7.2.9 Compliance with Other Requirements.

a. **Threatened and Endangered Species Protection.** Include documentation required in the Endangered Species Protection section of the NOI in NeT, or the ESA worksheet in Appendix D, supporting your eligibility with regard to the protection of threatened and endangered species and designated critical habitat.

b. **Historic Properties.** Include documentation required in Appendix E supporting your eligibility with regard to the protection of historic properties.

c. **Safe Drinking Water Act Underground Injection Control (UIC) Requirements for Certain Subsurface Stormwater Controls.** If you are using any of the following stormwater controls at your site, document any contact you have had with the applicable State agency[91] or EPA Regional Office responsible for implementing the requirements for underground injection wells in the Safe Drinking Water Act and EPA's implementing regulations at 40 CFR § 144 -147. Such controls would generally be considered Class V UIC wells:

   i. Infiltration trenches (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system);

   ii. Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate stormwater flow; and

   iii. Drywells, seepage pits, or improved sinkholes (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system).

7.2.10 SWPPP Certification. Your signatory must sign and date your SWPPP in accordance with Appendix G, Part G.11.

7.2.11 Post-Authorization Additions to the SWPPP. Once you are authorized for coverage under this permit, you must include the following documents as part of your SWPPP:

a. A copy of your NOI submitted to EPA along with any correspondence exchanged between you and EPA related to coverage under this permit;

b. A copy of the acknowledgment letter you receive from NeT assigning your NPDES ID (i.e., *permit tracking number*);

[91] For State UIC program contacts, refer to the following EPA website: https://www.epa.gov/uic.

c. A copy of this permit (an electronic copy easily available to the stormwater team is also acceptable).

7.3 ON-SITE AVAILABILITY OF YOUR SWPPP

You must keep a current copy of your SWPPP at the site or at an easily accessible location so that it can be made available at the time of an on-site inspection or upon request by EPA; a State, Tribal, or local agency approving stormwater management plans; the operator of a storm sewer system receiving discharges from the site; or representatives of the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS).[92]

EPA may provide access to portions of your SWPPP to a member of the public upon request. Confidential Business Information (CBI) will be withheld from the public, but may not be withheld from EPA, USFWS, or NMFS.[93]

If an on-site location is unavailable to keep the SWPPP when no personnel are present, notice of the plan's location must be posted near the main entrance of your construction site.

7.4 SWPPP MODIFICATIONS

7.4.1 You must modify your SWPPP, including the site map(s), within seven (7) days of any of the following conditions:

a. Whenever new operators become active in construction activities on your site, or you make changes to your construction plans, stormwater controls, or other activities at your site that are no longer accurately reflected in your SWPPP. This includes changes made in response to corrective actions triggered under Part 5. You do not need to modify your SWPPP if the estimated dates in Part 7.2.3f change during the course of construction;

b. To reflect areas on your site map where operational control has been transferred (and the date of transfer) since initiating permit coverage;

c. If inspections or investigations by EPA or its authorized representatives determine that SWPPP modifications are necessary for compliance with this permit;

d. Where EPA determines it is necessary to install and/or implement additional controls at your site in order to meet the requirements of this permit, the following must be included in your SWPPP:

i. A copy of any correspondence describing such measures and requirements; and

[92] The SWPPP may be prepared, signed, and kept electronically, rather than in paper form, if the records are: (a) in a format that can be read in a similar manner as a paper record; (b) legally dependable with no less evidentiary value than their paper equivalent; and (c) immediately accessible to the inspector during an inspection to the same extent as a paper copy stored at the site would be, if the records were stored in paper form. For additional guidance on the proper practices to follow for the electronic retention of the SWPPP, refer to the Fact Sheet discussion related to Part 4.7.3.

[93] Information covered by a claim of confidentiality will be disclosed by EPA only to the extent of, and by means of, the procedures set forth in 40 CFR part 2, Subpart B. In general, submitted information protected by a business confidentiality claim may be disclosed to other employees, officers, or authorized representatives of the United States concerned with implementing the CWA. The authorized representatives, including employees of other executive branch agencies, may review CBI during the course of reviewing draft regulations.

ii. A description of the controls that will be used to meet such requirements.

e. To reflect any revisions to applicable Federal, State, Tribal, or local requirements that affect the stormwater controls implemented at the site; and

f. If applicable, if a change in chemical treatment systems or chemically enhanced stormwater control is made, including use of a different treatment chemical, different dosage rate, or different area of application.

7.4.2 You must maintain records showing the dates of all SWPPP modifications. The records must include the name of the person authorizing each change (see Part 7.2.9 above) and a brief summary of all changes.

7.4.3 All modifications made to the SWPPP consistent with Part 7.4 must be authorized by a person identified in Appendix G, Part G.11.b.

7.4.4 Upon determining that a modification to your SWPPP is required, if there are multiple operators covered under this permit, you must immediately notify any operators who may be impacted by the change to the SWPPP.

8 HOW TO TERMINATE COVERAGE

Until you terminate coverage under this permit, you must comply with all conditions and effluent limitations in the permit. To terminate permit coverage, you must submit to EPA a complete and accurate Notice of Termination (NOT), which certifies that you have met the requirements for terminating in Part 8.

8.1 MINIMUM INFORMATION REQUIRED IN NOT

8.1.1 NPDES ID (i.e., *permit tracking number)* provided by EPA when you received coverage under this permit;

8.1.2 Basis for submission of the NOT (see Part 8.2);

8.1.3 Operator contact information;

8.1.4 Name of site and address (or a description of location if no street address is available); and

8.1.5 NOT certification.

8.2 CONDITIONS FOR TERMINATING CGP COVERAGE

You may terminate CGP coverage only if one or more of the conditions in Parts 8.2.1, 8.2.2, or 8.2.3 has occurred. Until your termination is effective consistent with Part 8.5, you must continue to comply with the conditions of this permit.

8.2.1 You have completed all construction activities at your site and, if applicable, construction support activities covered by this permit (see Part 1.2.1c), and you have met all of the following requirements:

a. For any areas that (1) were disturbed during construction, (2) are not covered by permanent structures, and (3) over which you had control during the construction activities, you have met the requirements for final vegetative or non-vegetative stabilization in Part 2.2.14c.

To document that you have met these stabilization requirements, you must take either ground or aerial photographs that show your site's compliance with the Part 2.2.14 stabilization requirements and submit them with your NOT. If any portion of your

site is covered by one of the exceptions in Part 2.2.14c.iii, indicate which exception applies and include a supplementary explanation with your photographs that provides the necessary context for why this portion of the site is in compliance with the final stabilization criteria even though it appears to be unstabilized. You are not required to take photographs of every distinct part of your site that is being stabilized, however, the conditions of the site portrayed in any photographs that are submitted must be substantially similar[94] to those of the areas that are not photographed. You must also comply with the following related to these photographs:

i. Take photographs both before and after the site has met the final stabilization criteria in Part 2.2.14c;

ii. All photographs must be clear and in focus, and in the original format and resolution; and

iii. Include the date each photograph was taken, and a brief description of the area of the site captured by the photograph (e.g., photo shows application of seed and erosion control mats to remaining exposed surfaces on northeast corner of site).

b. You have removed and properly disposed of all construction materials, waste and waste handling devices, and have removed all equipment and vehicles that were used during construction, unless intended for long-term use following your termination of permit coverage;

c. You have removed all stormwater controls that were installed and maintained during construction, except those that are intended for long-term use following your termination of permit coverage or those that are biodegradable (as defined in Appendix A); and

d. You have removed all potential pollutants and pollutant-generating activities associated with construction, unless needed for long-term use following your termination of permit coverage; or

8.2.2 You have transferred control of all areas of the site for which you are responsible under this permit to another operator, and that operator has submitted an NOI and obtained coverage under this permit; or

8.2.3 Coverage under an individual or alternative general NPDES permit has been obtained.

8.3 HOW TO SUBMIT YOUR NOT

You must use EPA's NPDES eReporting Tool (NeT) to electronically prepare and submit an NOT for the 2022 CGP.

To access NeT, go to https://cdx.epa.gov/cdx.

Waivers from electronic reporting may be granted as specified in Part 1.4.2. If the EPA Regional Office grants you approval to use a paper NOT, and you elect to use it, you must complete the form in Appendix I.

[94] Stabilization conditions that are substantially similar would include areas that are using the same type of stabilization measures and that have similar slopes, soils, and topography, and have achieved the same level of stabilization.

8.4 DEADLINE FOR SUBMITTING THE NOT

You must submit an NOT within 30 calendar days after any one of the conditions in Part 8.2 occurs.

8.5 EFFECTIVE DATE OF TERMINATION OF COVERAGE

Your authorization to discharge under this permit terminates at midnight of the calendar day that a complete NOT is submitted to EPA.

9 PERMIT CONDITIONS APPLICABLE TO SPECIFIC STATES, INDIAN COUNTRY LANDS, OR TERRITORIES

The provisions in this Part provide additions to the applicable conditions of this permit to reflect specific additional conditions required as part of the State or Tribal CWA Section 401 certification process, or the Coastal Zone Management Act (CZMA) certification process, or as otherwise established by the permitting authority. The specific additional revisions and requirements only apply to activities in those specific States, Indian country, and areas in certain States with Federal Facilities or areas subject to construction projects by Federal Operators. States, Indian country, and other areas not included in this Part do not have any additions to the applicable conditions of this permit.

9.1 EPA REGION 1

9.1.1 NHR100000 State of New Hampshire

a. Should the permit coverage for an individual applicant be insufficient to achieve water quality standards, the New Hampshire Department of Environmental Services (NHDES) may prepare additional 401 certification conditions for that applicant. Any additional 401 certification conditions will follow all required NHDES public participation requirements.

b. If you disturb 100,000 square feet or more of contiguous area, you must also comply with RSA 485-A:17 and Env-Wq 1500, and, unless exempt, apply for an Alteration of Terrain (AoT) permit from NHDES. This requirement also applies to a lower disturbance threshold of 50,000 square feet or more when construction occurs within the protected shoreline under the Shoreland Water Quality Protection Act (see RSA 483-B and Env-Wq 1400). A permit application must also be filed if your project disturbs an area of greater than 2,500 square feet, is within 50 feet of any surface water, and has a flow path of 50 feet or longer disturbing a grade of 25 percent or greater. Project sites with disturbances smaller than those discussed above, that have the potential to adversely affect state surface waters, are subject to the conditions of an AoT General Permit by Rule (Env-Wq 1503.03).

c. You must determine that any excavation dewatering discharges are not contaminated before they will be authorized as an allowable non-stormwater discharge under this permit (see Part 1.2.2 of the Construction General Permit or CGP). In the absence of information demonstrating otherwise, the water is considered uncontaminated if there is no groundwater contamination within 1,000 feet of the groundwater dewatering location. Information on groundwater contamination can be generated over the Internet via the NHDES web site http:// des.nh.gov/ by using the One Stop Data Mapper. For a toxic substance included in the New Hampshire surface water quality standards, see Env-Wq 1703.21 (see https://www.des.nh.gov/sites/g/fi1es/ehbemt 341/files/documents/2020-01/Env-Wg

1700.pdf). If it is determined that the groundwater to be dewatered is near a remediation or other waste site, you must apply for the Remediation General Permit (see https://www3.epa.gov/region1/npdes/rgp.html)

d. As a minimum, you must treat any uncontaminated excavation "dewatering" discharges and "stormwater" discharges, as those terms are defined in Appendix A of the CGP, as necessary, to remove suspended solids and turbidity so that the surface waters receiving the construction discharges[95] meet New Hampshire surface water quality standards for turbidity (Env-Wq 1703.11 and Env-Wq 1703.03(c)(1)c), benthic deposits (Env-Wq 1703.03(c)(1)a), and Env-Wq 1703.08) and foam, debris, scum or other visible substances (i.e., plumes or visual turbidity)[96] (Env-Wq 1703.03(c)(1)b).

i. For all Construction Activities covered under this CGP, the following shall apply to ensure compliance with the aforementioned regulations for turbidity, benthic deposits and visible substances:

Unless otherwise specified, site inspection requirements shall comply with Part 4 of the CGP. As a minimum site inspection frequency shall be in accordance with Part 4.2.2 of the CGP (and Part 4.3.2 of the CGP for sites discharging dewatering water). Site inspection frequency may be reduced in accordance with Part 4.4 of the CGP (Reductions in Inspection Frequency). Monitoring of the receiving water for visible turbidity and benthic sediment deposits shall be conducted each site inspection and results reported in the Inspection Report required in Part 4.7 of the CGP. Should visible turbidity or benthic sediment deposits attributable or partly attributable to your construction activities be present in the receiving water, the "Corrective Actions" specified in Part 5 shall be immediately implemented to correct the water quality standard violations. In addition, daily monitoring (including photographs) of the receiving water shall be conducted until there is no visible turbidity or benthic deposits. Inspection Reports required in Part 4.7 of the CGP shall include, but not be limited to, the distance downstream and the percent of the river width[97] where visible turbidity was observed, and the period of time that the visible turbidity persisted. A copy of the Inspection Report(s) shall be made available to NHDES within 24 hours of receiving a written request from NHDES.

ii. For Construction Activities, disturbing 5 acres or more of land at any one time (excluding areas that have been completely stabilized in accordance with the final stabilization criteria specified in Part 2.2.14.c of the CGP), the following shall

[95] Construction Discharges include uncontaminated "dewatering" and "stormwater" discharges as those terms are defined in Appendix A of the CGP. Controlled construction discharges are construction discharges where the rate of flow can be regulated such as from a construction settling basin or NHDES approved flocculation system.

[96] For the definition of visual turbidity, see the definition for "Non-Turbid" in Appendix A of the CGP, which states the following:" "Non-Turbid" - a discharge that is free from visual turbidity. For the purposes of this permit, visual turbidity refers to a sediment plume or other cloudiness in the water caused by sediment that can be identified by an observer." *[EPA interprets the text of this footnote as intending to reference the Appendix A definitions of "visual turbidity" and "non-turbid" in the final permit.]*

[97] The distance downstream and the percent of river width where visible turbidity (i.e., plume) is observed is required to determine the extent of the river affected and to determine if there was a "zone of passage" (i.e., a portion of the receiving water where there was no visible turbidity where mobile organisms could pass without being adversely impacted). The percent of river width affected is equal 100 multiplied by the width of the plume (in feet) divided by the width of the receiving water (in feet).

apply to ensure compliance with the aforementioned regulations for turbidity, benthic deposits and visible substances.

Item 9.1.1.d.i) above shall apply to all construction discharges and the minimum site inspection frequency shall comply with Part 4.3.1 of the CGP (and Part 4.3.2 of the CGP for sites discharging dewatering water). Site inspection frequency may be reduced in accordance with Part 4.4 of the CGP (Reductions in Inspection Frequency).

With regards to controlled construction discharges, if there is no visible turbidity (i.e., plumes) or benthic deposits, and, in the absence of information demonstrating otherwise, turbidity measurements of less than or equal to 50 nephelometric turbidity units (NTU) in the controlled construction discharges at the outlet prior to mixing with the receiving surface waters, shall be presumed to meet New Hampshire surface water quality standards for the parameters listed above. As a minimum, the controlled construction discharges must be sampled at each site inspection.

If any controlled construction discharge exceeds 50 NTU, or if visible turbidity or benthic sediment deposits attributable or partly attributable to any construction discharge are observed in the receiving water, then the "Corrective Actions" specified in Part 5 of the CGP shall be immediately implemented.

In addition, should such violation occur, and, in order to determine compliance with surface water quality standards for turbidity (Env-Wq 1703.11 and Env-Wq 1703.03(c)(1)c), benthic deposits (Env-Wq 1703.03(c)(1)a), and Env-Wq 1703.08) and foam, debris, scum or other visible substances (Env-Wq 1703.03(c)(1)b)), turbidity monitoring shall be immediately implemented as specified below:

Turbidity samples of the receiving water shall be immediately taken in the receiving water upstream and beyond the influence of the construction activity, and, unless a mixing zone[98] is approved by NHDES, no more than 75 feet downstream of each controlled construction discharge that exceeded 50 NTU and no more than 75 feet downstream of each construction discharge that caused visible turbidity.

Downstream samples shall be taken at locations in the receiving water that are most likely influenced by the discharge (e.g., if visible turbidity (i.e., a plume) is present, the sample shall be taken in the plume). Samples shall be collected a minimum of 2 times per day during the daylight hours at times when construction activities are most likely to cause turbidity in the receiving water and shall continue until the turbidity water quality standards are met in the receiving water (i.e., the difference between the upstream and downstream turbidity level is no greater than 10 NTU).

[98] Permittees may request a distance greater than 75 feet downstream of a construction discharge for determining compliance with turbidity standards in Class B surface waters, by submitting a mixing zone request to NHDES that complies with Env-Wq 1707.02. If a mixing zone is approved, NHDES is required to include conditions to ensure that the criteria on which the approval is based are met (Env-Wq 1707.03).

If water quality standards are not met during daylight hours on any day, sampling shall resume the next day and continue no fewer than 2 times per day until water quality standards are met. The date, time, location and results of turbidity measurements, as well as a summary identifying the cause of the violations, corrective actions that were implemented, the period of time that the receiving water exceeded turbidity standards and the distance downstream and the percent of the river width where visible turbidity was observed, and the period of time that the visible turbidity persisted, shall be recorded and included in the Inspection Report required in Part 4.7 of the CGP. Turbidity measurements shall be conducted via a field meter in accordance with the requirements for turbidity specified in Table 1B in 40 CFR 136.3 (see 40 CFR §136.3 Identification of test procedures - Code of Federal Regulations ecfr.io). Field meters shall be calibrated every day sampling is conducted and prior to the first sample.

e. Construction site owners and operators are encouraged to consider opportunities for post- construction groundwater recharge using infiltration best management practices (BMPs) during site design and preparation of the SWPPP in order to assure compliance with Env-Wq 1703.03 and Env-Wq 1703.11. If your construction site is in a town that is required to obtain coverage under the NPDES General Permit for discharges from Municipal Separate Storm Sewer Systems (MS4) you may be required to use such practices. The SWPPP must include a description of any on-site infiltration that will be installed as a post-construction stormwater management measure or reasons for not employing such measures such as 1) The facility is located in a wellhead protection area as defined in RSA 485- C:2; or 2) The facility is located in an area where groundwater has been reclassified to GAA, GA1 or GA2 pursuant to RSA 485-C and Env-DW 901; or 3) Any areas that would be exempt from the groundwater recharge requirements contained in Env-Wq 1507.04, including all land uses or activities considered to be a "High-load Area" (see Env-Wq 1502.30). For design considerations for infiltration measures see Env-Wq 1508.06. Note that there may be additional local requirements that fall under the NH MS4 permittee's Authorization to Discharge Permit for those regulated areas.

f. Appendix F of the CGP contains information regarding Tier 2, or high quality waters in the various states. ***[EPA notes that this information has now been moved to https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates]*** Although there is no official list of tier 2 waters for New Hampshire, it can be assumed that all New Hampshire surface waters are tier 2 for turbidity unless 1) the surface water that you are proposing to discharge into is listed as impaired for turbidity in the states listing of impaired waters (see https://nhdes-surface-water-quality-assessment-site-nhdes.hub.arcgis.com/) or 2) sampling upstream of the proposed discharge location shows turbidity values greater than 10 NTU (Env-Wq 1703.11). A single grab sample collected during dry weather (no precipitation within 48 hours) is acceptable.

g. To ensure compliance with RSA 485-C, RSA 485-A, RSA 485-A:13, I(a), Env-Wq 1700 and Env-Wq 302, the following information may be requested by NHDES. This information must be kept on site unless you receive a written request from NHDES that it be sent to the address shown below in 9.1.1.h.

i. A list of all non-stormwater discharges that occur at the facility, including their source locations and the control measures being used (see Part 1.2.2 of the CGP).

ii. Records of sampling and analysis required for construction dewatering and stormwater discharges (see 9.1.1.d above).

h. All required or requested documents must be sent to: NH Department of Environmental Services, Watershed Management Bureau, P.O. Box 95 Concord, NH 03302-0095.

9.1.2 MAR100000 Commonwealth of Massachusetts (except Indian country)

a. All discharges covered by the Construction General Permit shall comply with the provisions pursuant to 314 CMR 3.00, 314 CMR 4.00, 314 CMR 9.00, including applicable construction stormwater standards and 310 CMR 10.00.

b. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05(5)(e) to maintain surface waters free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife, permittees are prohibited from discharging dewatering water under the CGP from sites that are designated as Superfund/CERCLA or RCRA, and must make accommodations to dispose of the dewatering discharges appropriately, such as coverage under the Remediation General Permit (RGP).

c. Pursuant to 314 CMR 3.11 (2)(a), and in accordance with MassDEP's obligation to protect Outstanding Resource Waters under 314 CMR 4.04(3), applicants seeking coverage under the 2022 CGP that propose to carry out construction activities near Outstanding Resource Waters as identified in 314 CMR 4.06, shall submit to MassDEP for review:

i. a copy of the Stormwater Pollution Prevention Plan (SWPPP),

ii. a copy of the EPA NOI, and

iii. MassDEP's Stormwater BMP Checklist.

For purposes of this review, the permittee shall submit these documents to MassDEP at the same time they are submitted to EPA. Instructions on how to submit these documents to MassDEP and where to find the MassDEP Stormwater BMP Checklist and obtain authorization to discharge can be found here: https://www.mass.gov/how-to/wm-15-npdes-general-permit-notice-of- intent.

d. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05(5)(e) to maintain surface waters free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife, applicants that propose to dewater under the 2022 CGP and plan to discharge to certain waters as described below, shall determine that any dewatering discharges are not contaminated by testing the proposed discharge as described below as part of the application for WM15 authorization. Unless otherwise specified, testing described in this section should be conducted using the methods in 40 CFR 136.

i. Applicants for sites that plan to discharge to Outstanding Resource Waters as identified in 314 CMR 4.06 shall test one sample of the proposed dewatering discharge water for pH, E. Coli (for discharges to freshwater), fecal coliform (for

discharges to salt water), Enterococci (for discharges to salt water), total suspended solids, oil and grease, total nitrogen, total phosphorus, and all parameters with numeric criteria listed in the Massachusetts Surface Water Quality Standards at 314 CMR 4.05(e). Results shall be reported to MassDEP as part of the WM15 application. To determine if the dewatering discharge could be covered under the 2022 CGP, the effluent at zero dilution must meet numeric water quality criteria. If the effluent does not meet numeric water quality criteria, the applicant shall contact EPA Region 1 to discuss coverage under the Remediation General Permit.

ii. Applicants for sites that propose to discharge to Public Water Supplies (314 CMR 4.06(1)(d)1) shall also test one sample of the proposed dewatering discharge water for per- and polyfluoroalkyl substances (PFAS), as outlined in the table below. Results shall be reported to MassDEP as part of the WM15 application. If any PFAS compounds are detected, the applicant shall apply for coverage under the NPDES Remediation General Permit for Massachusetts if required.

PFAS Testing Parameters for Discharges to Public Drinking Water Supplies[99]	
Perfluorohexanesulfonic acid (PFHxS), grab	Report ng/L
Perfluoroheptanoic acid (PFHpA), grab	Report ng/L
Perfluorononanoic acid (PFNA), grab	Report ng/L
Perfluorooctanesulfonic acid (PFOS), grab	Report ng/L
Perfluorooctanoic acid (PFOA), grab	Report ng/L
Perfluorodecanoic acid (PFDA), grab	Report ng/L

iii. Applicants for sites that propose to discharge to an impaired water as identified in the most recent final Massachusetts Integrated List of Waters,shall test one sample of the proposed dewatering discharge water for the parameter(s) for which the waterbody is impaired. To determine if the dewatering discharge could be covered under the 2022 CGP, the effluent at zero dilution must meet numeric water quality criteria. If the effluent does not meet numeric water quality criteria, the applicant shall contact EPA Region 1 to discuss coverage under the Remediation GeneralPermit and shall apply for RGP coverage if required.

iv. For dewatering discharges to all other waters, if any pollutants are knownor believed present in the proposed dewatering discharge water, the applicant shall apply for coverage under the NPDES Remediation General Permit for Massachusetts if required. For the purposes of this condition, a pollutant is "known present" if measured above the analytical detection limit using a sufficiently sensitive test method in an environmental sample, and "believed present" if a pollutant has not been measured in an environmental sample but will be added or generated prior to discharge, such as through a treatment process. Consequently, a pollutant is "known absent" if measured as non-detect relative to the analytical detection limit using a sufficiently sensitive test method in an environmental sample, and "believed absent" if a pollutant has not been measured in an environmentalsample but will not be added or generated prior to discharge and is not a parameter that applies to the applicable activity category for a site. If any pollutants are known or believed present in the

[99] PFAS testing shall follow established EPA methods 537 or 537.1 for drinking water until EPA Method 3512 for non-potable water becomes available.

proposed dewatering discharge water, the applicant shall test one sample of the proposed dewatering discharge water for the pollutants known or believed to be present. To determine if the dewatering discharge could be covered under the 2022 CGP, the effluent at zero dilution must meet numeric water quality criteria. If the effluent does not meet numeric water quality criteria, the applicant shall contact EPA Region 1 to discuss coverage under the Remediation General Permit.

e. Pursuant to 314 CMR 3.11 (2)(a), and in accordance with MassDEP's obligation to protect Outstanding Resource Waters under 314 CMR 4.04(3), applicants that propose to dewater under the 2022 CGP and discharge to Outstanding Resource Waters as identified in 314 CMR 4.06, shall submit the SWPPP and associated documents to MassDEP to review. MassDEP shall complete review within 30 daysof receipt.

f. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05 to maintain surface waters free from color and turbidity in concentrations or combinations that are aesthetically objectionable or would impair any use assigned to the waterbody, permittees that have been authorized to dewater under the 2022 CGP and that discharge to Outstanding Resource Waters as identified in 314 CMR 4.06 shall carry out daily benchmark monitoring for turbidity[100] for the duration of dewatering. Permittees shall compare the weekly average of the turbidity monitoring results with the established benchmark turbidity value of 25 Nephelometric Turbidity Units (NTU). If a permittee's weekly average turbidity results exceed the benchmark, the operator shall conduct follow-up corrective action to determine the source of the problem and to make any necessary repairs or upgrades to the dewatering controls to lower the turbidity levels. The permittee shall document any corrective action taken in its corrective action log. Furthermore, permittees at these sites shall carry out inspections at higher frequency, specifically, daily inspections of the dewatering discharge treatment for the duration of the discharge. The permittee shall inspect the site for sediment plume or whether a hydrocarbon sheen is visible at the point of discharge, estimate the flow rate at the point of discharge, and inspect the site downstream to assess whether sedimentation is attributable to the dewatering discharges.

g. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05 to maintain surface waters free from color and turbidity in concentrations or combinations that are aesthetically objectionable or would impair any use assigned to the waterbody, permittees shall store materials outside the Base Flood Elevation[101] when feasible to prevent displacing runoff and erosion.

h. Pursuant to 314 CMR 3.11 (2)(a), and in accordance with MassDEP's obligation to maintain surface waters free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses under 314 CMR 4.05(5)(c), all applicants who apply for coverage under the 2022 CGP shall follow guidelines on fertilizer application, including use of fertilizer containing no phosphorus, in accordance with 330 CMR 31.00 Plant Nutrient Application Requirements for

[100] Applicants shall follow EPA Method 180.1 to monitor for turbidity

[101] Base Flood Elevation (BFE) is the elevation of surface water resulting from a flood that has a 1% chance of equaling or exceeding that level in any given year. The BFE is shown on the Flood Insurance Rate Map (FIRM) for zones AE, AH, A1–A30, AR, AR/A, AR/AE, AR/A1– A30, AR/AH, AR/AO, V1–V30 and VE. (Source: https://www.fema.gov/node/404233).

Agricultural Land and Non-Agricultural Turf and Lawns. Further, fertilizer shall never be applied to a site when a rain event greater than 0.5 inches is forecast in the next 48 hours.

i. Pursuant to 314 CMR 3.11 (2)(a), all applicants who apply for coverage under the 2022 CGP and elect to carry out site inspections every 14 days shall also inspect sites within 24 hours of 0.25 inches of precipitation events or greater over 24 hours,or within 24 hours of a discharge that occurred due to snowmelt from 3.25 inches or greater of snow accumulation.[102] During the high flow periods in spring (i.e., months of April to June), inspection frequency shall be increased to once per week for all sites.

  i. To determine whether 3.25 inches or greater of snow accumulation has occurred at a site, snowfall measurements can be taken at the site,[103] or theoperator can rely on similar information from a local weather forecast.

j. Implementing structural improvements, enhanced/resilient pollution prevention measures, and other mitigation measures can help to minimize impacts from stormwater discharges from major storm events such as hurricanes, storm surge, extreme/heavy precipitation,[104] and flood events. Pursuant to 314 CMR 3.11 (2)(a), if such stormwater control measures are already in place due to existing requirements mandated by other state, local or federal agencies, the SWPPP shall include a brief description of the controls and a reference to the existing requirement(s). If the site may be exposed to or has previously experienced suchmajor storm events[105], additional stormwater control measures that may be considered, and implemented as necessary, include, but are not limited to:

  i. Reinforce materials storage structures to withstand flooding and additional exertion of force;

  ii. Prevent floating of semi-stationary structures by elevating to the Base Flood Elevation (BFE) level or securing with non-corrosive device;

  iii. When a delivery of exposed materials is expected, and a storm is anticipated within 48 hours, delay delivery until after the storm or storematerials as appropriate (refer to emergency procedures);

[102] This is the amount of snow that is equivalent to 0.25 inches of rain, based on information from the National Oceanic and Atmospheric Administration (NOAA) indicating that 13 inches of snow is, on average, equivalent to 1 inch of rain. See https://www.nssl.noaa.gov/education/svrwx101/winter/faq/.

[103] NOAA's National Weather Service has guidelines on snowfall measurements at https://www.weather.gov/jkl/snow_measurement. These guidelines recommend use of a "snowboard" (a piece of wood about 16 inches by 16 inches) that is placed in an unobstructed part of the site on a hard surface.

[104] Heavy precipitation refers to instances during which the amount of rain or snow experienced in a location substantially exceeds what is normal. What constitutes a period of heavy precipitation varies according to location and season. Heavy precipitation does not necessarily mean the total amount of precipitation at a location has increased— just that precipitation is occurring in more intense or more frequent events.

[105] To determine if your facility is susceptible to an increased frequency of major storm events that could impact the discharge of pollutants in stormwater, you may reference FEMA, NOAA, or USGS flood map products at https://www.usgs.gov/faqs/where-can-i-find-flood-maps?qt-news_science_products=0#qtnews_science_products.

iv. Temporarily store materials and waste above the Base Flood Elevation ***[EPA notes that it has deleted a footnote reference to the term "Base Flood Elevation" since the same footnote is already included in Part 9.1.2.g, above.]*** level;

v. Temporarily reduce or eliminate outdoor storage;

vi. Temporarily relocate any mobile vehicles and equipment to higher ground;

vii. Develop scenario-based emergency procedures for major storms that are complementary to regular stormwater pollution prevention planning andidentify emergency contacts for staff and contractors; and

viii. Conduct staff training for implementing your emergency procedures atregular intervals.

k. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05(5)(e) to maintain surface waters free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife, permittees who seek coverage under the 2022 CGP and anticipate to carry out dust control shall limit their dust control methodology to using water only and specifically avoid using other techniques, such as solutions containing calcium chloride.

l. If MassDEP requests a copy of the Stormwater Pollution Prevention Plan (SWPPP) for any construction site at any time, the permittee shall submit the SWPPP to MassDEP within 14 days of such a request. MassDEP may conduct an inspection of any site covered by this permit to ensure compliance with state lawrequirements, including state water quality standards.

9.1.3 MTR10F000 Areas in the State of Vermont located at a federal facility

a. Earth disturbance at any one time is limited to five acres.

b. All areas of earth disturbance must have temporary or final stabilization within 14 days of the initial disturbance. After this time, disturbed areas must be temporarily or permanently stabilized in advance of any runoff producing event. A runoff producing event is an event that produces runoff from the construction site. Temporary stabilization is not required if precipitation is not forecast and work is to continue in the next 24-hours or if the work is occurring in a self-contained excavation (i.e. no outlet) with a depth of two feet or greater (e.g. house foundation excavation, utility trenches). Areas of a construction site that drain to sediment basins are not considered eligible for this exemption, and the exemption applies only to the excavated area itself.

c. Site inspections on active construction sites shall be conducted daily during the period from October 15 through April 15.

d. The use of chemical treatments (e.g. polymers, flocculants, and coagulants) for the settling and/or removal of sediment from stormwater runoff associated with construction and construction-related activities requires prior written approval and an approved site and project-specific plan, from the Vermont Agency of Natural Resources. In addition, the use of cationic polymers is prohibited unless approved by the Vermont Agency of Natural Resources under a site and project-specific plan.

e. Any applicant under EPA's CGP shall allow authorized Vermont Agency of Natural Resources representatives, at reasonable times and upon presentation of credentials, to enter upon the project site for purposes of inspecting the project and determining

compliance with this Certification.

f. The Vermont Agency of Natural Resources may reopen and alter or amend the conditions of this Certification over the life of the EPA 2022 Construction General Permit when such action is necessary to assure compliance with the VWQS.

9.2 EPA REGION 2

9.2.1 NYR10I000 Indian country within the State of New York

a. Saint Regis Mohawk Tribe

i. Any Responsible-Person/Decision-Maker required under the CGP to submit a Notice of Intent (NOI) to EPA for coverage under the CGP, must concurrently submit an electronic copy of the NOI to the SRMT Environmental Division, Water Resource Program Manager. Additionally, an electronic copy of the Notice of Termination (NOT) must be provided within three business days after electronic confirmation is received from EPA that the NOT has been accepted. The NOI and NOT must be electronically provided to the following addresses:

Mr. Tieman W. Smith
Water Resources Program Manager Saint Regis Mohawk Tribe
449 Frogtown Road
Akwesasne, NY 13655 Tiernan.Smith@srmt-nsn.gov 518.358.2272 ext. 5073

ii. Any Responsible-Person/Decision-Maker that is required as part of the CGP to prepare a Discharge Management Plan (OMP) or Storm Water Management Plan (SWMP) and/or Storm Water Pollution Prevention Plan (SWPPP) must submit an electronic copy of the DMP, SWMP and/or SWPPP to the SRMT Environment Division, Water Resources Program Manager IO business days prior to the start of construction of any work to be conducted under the CGP. The applicable documents must be provided to the electronic address listed above.

iii. Any Responsible-Person/Decision-Maker that is required under the CGP to submit an annual report to EPA must submit an electronic copy of the annual report concurrently to the SRMT Water Resource Program. Additionally, any correspondences between the applicant and EPA related to analytical data, written reports, corrective action, enforcement, monitoring, or an adverse incident must likewise be routed to the SRMT Water Resources Program at the above electronic address.

iv. An "Authorization to Proceed Letter" with site-specific mitigation requirements may be sent out to the permittee when a review of the NOI and OMP, SWMP and /or SWPPP on a case-by-case basis, is completed by the SRMT Environment Division, Water Resource Program. This approval will allow the application to proceed if all mitigation requirements are met.

b. Seneca Nation

i. Under Part 1.1.5 of the CGP, the Seneca Nation requests that an applicant must demonstrate that they meet the eligibility criteria listed in Appendix D (certify in your Notice of Intent (NOI) that you meet one of the eligibility criteria [Criterion A-F]) as well as species and critical habitats that are listed under the Seneca Nation's "Fishing and Conservation Laws" and the "Seneca Nation of Indians Comprehensive Conservation Law".

ii. The Tribal Historic Preservation Office (THPO) was established in 2000 after the Seneca Nation received a recognition letter from the National Park Service (NPS); therefore under Part 1.1.6 of the CGP (Appendix E) and prior to submitting a Notice of Intent (NOI) operators must complete the Nation's TPHO, Project Review Form (https://sni.org/media/246603/sni-thpo-project-review-form.pdf) and submit the completed form with associated information to the Tribal Historic Preservation Officer at 90 Ohi:yo' Way, Salamanca, NY 14779. Federal agencies engaging in construction activities must provide for construction review by a certified construction reviewer in accordance with 7 Del. C. §§4010 & 4013 and 7 DE Admin. Code 5101, subsection 6.1.6.

iii. Under Part 1.2 of the CGP, discharges must also follow the Section 13 of the Guide for Construction (Seneca Nation of Indians Source Water Code) and respectively, Council Resolution, dated April 13, 2013 (CN: R-04-13-13-11) to ensure that the health, safety and welfare of the citizens of the Seneca Nation, and all other within the Lands and Territories of the Seneca Nation of Indians, and to facilitate the adequate provisions of water through the elimination or prevention of ground water contamination in the vicinity of wells that supply drinking water for the Nation. The area is known as the Source Water Protection Area (SWPA) and specified activities are regulated within this SWPA, as cited in Section 13 of the Guide for Construction and Section VI, of CN: R-04-13-13-11.

iv. Under Part 1.4, any operator who seeks coverage of the CGP, and is required to submit a notice of intent NOI and Notice of Termination (NOT) (as necessary) to the EPA for coverage, under Part 1.4.2 must also submit a copy of the NOI to the Seneca Nation's Environmental Protection Department (EPD) within three business days of submittal to the EPA, (address shown below). Respectively, a copy of the NOT (as described under Part 8.3 of the CGP), which certifies that you have met the requirements of Part 8, must be provided within three business days after electronic confirmation is received from the EPA that the NOT has been accepted. In addition to a NOI and NOT, the Seneca Nation (Environmental Protection Department [EPD]) would require an Environmental Impact Assessment (EA) (Long Form), as shown in Section 2 of the Seneca Nation of Indians Laws, Ordinances & Policies (Guide for Construction), to be completed and submitted to the EPD prior to any project to determine whether the impacts from a project would create significant and detrimental effects to the Nation's lands, water (violate WQS), and environment. The NOI, NOT, and EA must be submitted electronically to epd@sni.org and provided to the following address:

Seneca Nation
Environmental Protection Department (EPD) Attn: Director of EPD
12837 Route 438
Irving, NY 14081

v. Under Part 3.0 of the CGP, discharges must be controlled as necessary to meet applicable WQS. The Seneca Nation is working actively towards finalizing and implementing the; therefore, the EPD would require an applicant to submit or grant access to the permit to obtain information on the impact of effluents on receiving waters, including the capability of receiving waters to support future designated uses and achieve the WQS of the Nation; and to advise prospective dischargers of discharge requirements, and coordinate with the appropriate

permitting agencies. As stated in the Decision Document, under Section 303(c) of the CWA, 33 U.S.C. § 1313(c), states develop, review, and revise (as appropriate) water quality standards for surface waters of the United States. At a minimum, such standards are to include designated water uses, water quality criteria to protect such uses, and an antidegradation policy. 40 C.F.R. § 131.6. In addition, under Section 401 of the CWA states may grant, condition, or deny "certification" for federally permitted or licensed activities that may result in a discharge to the waters of the United States 33 U.S.C. § 1341.

vi. Under Part 7.2.8(a)(b)(c) and for Part 9 of the CGP, the following Sections of the Seneca Nation's Guide for Construction shall be considered, in conjunction with the CGP:

(a) Section 1. Executive Order - To Establish a Policy for Governing Access to Nation Territories and Facilities by Officials of Foreign Government, dated March 31, 2011

(b) Section 3. Natural Resources Committee, Sand and Gravel Law (CN: R-06-24-05-08)

(c) Section 4. Fishing and Conservation Laws - Part 1.1.5 of the CGP

(d) Section 5. Seneca Nation of Indians Comprehensive Conservation Law, adopted January 14, 2012

(e) Section 9. Food is Our Medicine (FIOM) Program/Native Planting Policy (CN: R-03- 08-14-14)

(f) Section 10. Forestry Management Plan (CN: R-08-14-10-23)

(g) Section 11. Timber Ordinance #411-092, dated May 8, 1982

(h) Section 14. Flood Damage Prevention Local Law, dated September 27, 1988

(i) Section 16. Utilities Ordinance No. 87-100

(j) Authorizing Emergency Action and Contingency Plan to Restrain Pollution of Nations Waters, (Council Resolution: R-03-01-18-10), dated March 10, 2018 Seneca Nation of Indians Permit Application for Construction within Waterways Permit, Form NR98-01.00

9.3 EPA REGION 3

9.3.1 DCR100000 District of Columbia

a. Discharges authorized by this permit shall comply with the District of Columbia Water Pollution Control Act of 1984, as amended (DC Official Code § 8-103.01 and § 8-103.06, et seq.) to ensure that District of Columbia waters, waters in adjacent and downstream states, and the beneficial uses of these waters will not be harmed or degraded by the discharges.

b. Discharges authorized by this permit must comply with §§ 1104.1 and 1104.8 of Chapter 11 and the provisions of Chapter 19 of Title 21of District of Columbia Municipal Regulations in order to attain and maintain designated uses of the District of Columbia waters.

c. The permittee shall comply with the District of Columbia Stormwater Management and Soil Erosion and Sediment Control regulations in Chapter 5 of Title 21 of the District of Columbia Municipal Regulations.

d. The permittee shall comply with the District of Columbia Flood Management Control regulations in Chapter 31 of Title 20 of the District of Columbia Municipal Regulations.

e. The permittee shall submit a copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Regulatory Review Division, Department of Energy & Environment, Government of the District of Columbia, 1200 First Street, NE, 5th Floor, Washington, DC 20002, during the review and approval of the permittee's DOEE Erosion and Sediment Control Plan in accordance with the provisions of Chapter 542 of Title 21 of the District of Columbia Municipal Regulations.

f. Upon request, the permittee shall submit all inspection and monitoring reports as required by this permit and 40 CFR § 122.41 to the Associate Director, Inspection and Enforcement Division, Department of Energy & Environment, Government of the District of Columbia, 1200 First Street, NE, 5th Floor, Washington, DC 20002; telephone (202) 535-2226, or by email at Joshua.Rodriguez@dc.gov.

g. In the event the permittee intends to discharge dewatering water, groundwater, or groundwater comingled with stormwater from a known contaminated site, the permittee shall contact the Regulatory Review Division, Department of Energy & Environment, Government of the District of Columbia, 1200 First Street, NE, 5th Floor, Washington, DC 20002; telephone (202) 535-2600, or by email at MS4DischargeAuthorization@dc.gov to request authorization to discharge dewatering water, groundwater, or groundwater comingled with stormwater to the District's Municipal Separate Storm Sewer System (MS4) or to a surface water body pursuant to §§ 8-103.02, 8-103.06, and 8-103.07 of the District of Columbia Water Pollution Control Act of 1984, as amended.

9.3.2 DER10F000 Areas in the State of Delaware located at a federal facility (as defined in Appendix A)

a. Federal agencies must submit a sediment and stormwater management plan (SSMP) and receive Department approval prior to undertaking any land clearing, soil movement or construction activity unless conducting an exempt activity.

b. Federal construction activities are required to have a third-party Certified Construction Reviewer (CCR) perform weekly reviews to ensure the adequacy of construction activities pursuant to the approved SSMP and regulations.

Implementation of approved SSMPs requires the daily oversight of construction activity by certified responsible personnel.

c. Implementation of approved SSMPs requires the daily oversight of construction activity by certified responsible personnel.

d. A current copy of the SSMP must be maintained at the construction site.

e. Unless authorized by the Department, not more than 20 acres may be disturbed at any one time.

9.4 EPA REGION 4

No additional conditions

9.5 EPA REGION 5

9.5.1 MIR10I000 Indian country within the State of Minnesota

a. Fond du Lac Reservation

i. New dischargers wishing to discharge to an Outstanding Reservation Resource Water (ORRW)[106] must obtain an individual permit from EPA for storm water discharges from large and small construction activities.

ii. A copy of the Storm Water Pollution Prevention Plan (SWPPP) must be submitted to the Office of Water Protection at least fifteen (15) days in advance of sending the Notice of Intent to EPA. The SWPPP can be submitted electronically to richardgitar@FDLREZ.com or by hardcopy sent to:

Fond du Lac Reservation
Office of Water Protection
1720 Big Lake Road
Cloquet, MN 55720

iii. Copies of the Notice of Intent (NOI) and the Notice of Termination (NOT) must be sent to the Fond du Lac Office of Water Protection at the same time they are submitted to EPA. [The condition helps the Office of Water Protection keep track of when a project is about to start and when it has ended. FDL Water Quality Certification Ordinance, Section 204 (a) (2)).

iv. If the project will entail a discharge to any watercourse or open water body, the turbidity limit shall NOT exceed 10% of natural background within the receiving water(s) as determined by Office of Water Protection staff. For such discharges, turbidity sampling must take place within 24 hours of a ½-inch or greater rainfall event. The results of the sampling must be reported to the Office of Water Protection within 7 days of the sample collection. All sample reporting must include the date and time, location (GPS: UTM/Zone 15), and NTU. CGP applicants are encouraged to work with the Office of Water Protection in determining the most appropriate location(s) for sampling. [This condition helps both the Office of Water Protection and the project proponent in knowing whether or not their erosion control efforts are effective. FDL Water Quality Certification, Section 204 (b) (1)).

v. Receiving waters with open water must be sampled for turbidity prior to any authorized discharge as determined by Office of Water Protection staff. This requirement only applies to receiving waters which no ambient turbidity data exists. [This condition allows the Office of Water Protection to obtain a baseline turbidity sample in which to compare to other samples. FDL Water Quality Certification Ordinance, Section 204 (b) (2)].

vi. All work shall be carried out in such a manner as will prevent violations of water quality criteria as stated in the Water Quality Standards of the Fond du Lac Reservation, Ordinance #12/98, as amended. This includes, but is not limited to, the prevention of any discharge that causes a condition in which visible solids, bottom deposits, or turbidity impairs the usefulness of water of the Fond du Lac

[106] Although additional waters may be designated in the future, currently Perch Lake, Rice Portage Lake, Miller Lake, Deadfish Lake, and Jaskari Lake are designated as ORRWs.

Reservation for any of the uses designated in the Water Quality Standards of the Fond du Lac Reservation. These uses include wildlife, aquatic life, warm water fisheries, cold water fisheries, subsistence fishing (netting), primary contact recreation, secondary contact recreation, cultural, wild rice areas, aesthetic waters, agriculture, navigation, commercial and wetlands. It also includes the designated uses of wetlands including, but not limited to, baseflow discharge, cultural opportunities, flood flow attenuation, groundwater recharge, indigenous floral and fauna) diversity and abundance, nutrient cycling, organic carbon export/cycling, protection of downstream water quality, recreation, resilience against climactic effects, sediment/shoreline stabilization, surface water storage, wild rice, and water dependent wildlife. [In addition to listing the designated uses of waters of the Fond du Lac Reservation, this condition also limits the project proponent to discharges that will not violate our Water Quality Standards. FDL Water Quality Certification Ordinance, Section 204 (a) (7)).

vii. Appropriate steps shall be taken to ensure that petroleum products or other chemical pollutants are prevented from entering waters of the Fond du Lac Reservation. All spills must be reported to the appropriate emergency management Agency (National Response Center AND the State Duty Officer), and measures shall be taken immediately to prevent the pollution of waters of the Fond du Lac Reservation, including groundwater. The Fond du Lac Office of Water Protection must also be notified immediately of any spill regardless of size. [This condition helps protect water quality and also reminds project proponents of their responsibility in reporting spill events. FDL Water Quality Certification Ordinance, Section 204 (b) (3)).

viii. All seed mixes, whether used for temporary stabilization or permanent seeding, shall NOT contain any annual ryegrass (Lolium species). Wild rye (Elymus species) or Oats (Avena species) may be used as a replacement in seed mixes. [This condition prevents the use of annual ryegrass on the Reservation. Annual ryegrass is allelopathic, which means it produces biochemical in its roots that inhibit the growth of native plants. If used in seed mixes, annual ryegrass could contribute to erosion, especially on slopes. However, the condition also specifies substitute grasses that germinate almost as fast as annual ryegrass for use as a cover crop to help prevent erosion. FDL Water Quality Certification Ordinance, Section 204 (t) (1)).

ix. To prevent the introduction of invasive species, ALL contractors and subcontractors MUST disclose information stating prior equipment location(s) and ALL known invasive species potentially being transported from said location(s). All equipment MUST undergo a high pressure wash (including any equipment mats) BEFORE ENTERING the Fond du Lac Reservation. Personal equipment such as work boots, gloves, vest, etc. MUST be clean of debris, dirt and plant and animal material BEFORE ENTERING the Fond du Lac Reservation. Equipment being transported from known infested areas MUST undergo a high pressure wash as soon as possible after leaving the infested site and again BEFORE ENTERING the Fond du Lac Reservation, to avoid transport of invasive species into areas surrounding the Reservation. Written certification of equipment cleaning MUST be provided to the Fond du Lac Office of Water Protection. Upon arrival, ALL contractor and subcontractor equipment will be inspected by appointed Fond du Lac staff. If equipment is deemed unsatisfactory, the equipment MUST

undergo a high pressure washing until the equipment is cleared by the inspector, until such time, minimal travel will be allowed through the Reservation. The contractor shall be held responsible for the control of any invasive species introduced as a result of their project. [This condition requires the project proponent to prevent the inadvertent introduction of invasive species by taking an active role in cleaning all vehicles, equipment, and equipment mats before entering the Reservation. This condition has been placed in certifications since 2012, due to the introduction of Wild Parsnip in 2011 from a pipeline contractor. It is much easier to prevent the introduction of an invasive species than it is to eradicate it once it has been introduced. Many invasive plant species form monocultures, preventing native plants from growing. This situation often leads to cases of erosion, which in turn effects water quality. FOL Water Quality Certification Ordinance, Section 204 (g) (1)].

x. A copy of this certification MUST be kept by the contractor on-site at all times and be available for viewing by all personnel, including inspectors. [This condition ensures that the information contained in the certification, especially the conditions, is readily available onsite for reference. FOL Water Quality Certification Ordinance, Section 204 (a) (9)].

b. The Grand Portage Band of Lake Superior Chippewa

i. The CGP authorization is for construction activities that may occur within the exterior boundaries of the Grand Portage Reservation in accordance to the Grand Portage Land Use Ordinance. The CGP regulates stormwater discharges associated with construction sites of one acre or more in size. Only those activities specifically authorized by the CGP are authorized by this certification (the "Certification").

ii. All construction stormwater discharges authorized by the CGP must comply with the Water Quality Standards and Water Resources Ordinance, as well as Applicable Federal Standards (as defined in the Water Resources Ordinance).

iii. All appropriate steps must be taken to ensure that petroleum products or other chemical pollutants are prevented from entering the Waters of the Reservation. All spills must be reported to the appropriate emergency-management agency, and measures must be taken to prevent the pollution of the Waters of the Reservation, including groundwater.

iv. The 2022 CGP requires inspections and monitoring reports of the construction site stormwater discharges by a qualified person. Monitoring and inspection reports must comply with the minimum requirements contained in the 2022 CGP. The monitoring plan must be prepared and incorporated into the Storm Water Pollution Prevention Plan (the "SWPP"). A copy of the SWPP must be submitted to the Board at least 30 days in advance of sending the requisite Notice of Intent to EPA. The SWPP should be sent to:

Grand Portage Environmental Resources Board

P.O. Box 428

Grand Portage, MN 55605

Copies of the Notice of Intent and Notice of Termination required under the General Permit must be submitted to the Board at the address above at the same time they are submitted to the EPA.

v. If requested by the Grand Portage Environmental Department, the permittee must provide additional information necessary for a case-by-case eligibility determination to assure compliance with the Water Quality Standards and any Applicable Federal Standards. The burden is on the applicant to demonstrate compliance with the Water Quality Standards, the Water Resources Ordinance, and Applicable Federal Standards whether or not the application is ultimately eligible for the CGP.

vi. CGP discharges must not cause nuisance conditions as defined in Grand Portage Water Quality Standards.

vii. The Board retains full authority to ensure compliance with and to enforce the provisions of the Water Resource Ordinance and Water Quality Standards, Applicable Federal Standards, and these Certification conditions. Nothing herein affects the scope or applicability of other controlling tribal or federal requirements, including but not limited to impacts to cultural, historical, or archeological features or sites, or properties that may be eligible for listing on the National Register of Historic Places under the National Historic Preservation Act, 54 U.S.C. §§ 300101 et seq.

viii. Appeals related to Board actions taken in accordance with any of the preceding conditions may be heard by the Grand Portage Tribal Court.

c. Leech Lake Band of Ojibwe

i. The water quality standards that apply to the construction site are the standards at the time the operator submits its Notice of Intent (NOI) to EPA and the LLBO WRP (see conditions # 2 and # 3).

ii. A copy of the Stormwater Pollution Prevention Plan (SWPPP) must be submitted to the LLBO WRP at least 30 days in advance of sending the NOI for the project to EPA. See attached LLBO 401 Water Quality Certification Ordinance. Section 304(a)(1). The SWPPP should be submitted electronically to Jeff.Harper@llojibwe.net and by hardcopy sent to:

Leech Lake Band of Ojibwe
ATTN: Water Resources Program - 401 Cert
Division of Resource Management
190 Sailstar Drive NW
Cass Lake, Minnesota 56633

iii. Copies of the NOI and the Notice of Termination (NOT) must be submitted to the LLBO WRP at the same time they are submitted to EPA. See attached LLBO 401 Water Quality Certification Ordinance, Section 304(a)(2). The NOI and NOT should be submitted electronically to Jeff.Harper@llojibwe.net and sent by hardcopy to the address cited in condition # 2.

iv. Any and all other conditions listed in Section 304 of the attached LLBO 401 Water Quality Certification Ordinance shall be observed unless the LLBO WRP deems that certain conditions therein are not applicable to the project in need of a permit under this certification.

v. A copy of this certification MUST be kept by the contractor on-site at all times and be available for viewing by all personnel, including inspectors.

vi. Upon consideration of the NOI, if the LLBO WRP finds that the discharge will not be controlled as necessary to meet applicable water quality standards, the LLBO WRP may insist, consistent with Part 3.1 of the CGP, that additional controls are installed to meet applicable water quality standards, or recommend to EPA that the operator obtain coverage under an individual permit.

9.5.2 WIR10I000 Indian country within the State of Wisconsin

a. Bad River Band of Lake Superior Tribe of Chippewa Indians

i. Only those activities specifically authorized by the CGP are authorized by this Certification. This Certification does not authorize impacts to cultural properties, orhistorical sites, or properties that may be eligible for listing as such.

ii. All projects which are eligible for coverage under the CGP and are located within the exterior boundaries of the Bad River Reservation shall be implemented in such a manner that is consistent with the Tribe's Water Quality Standards (WQS). The Tribe's WQS can be viewed at: http://www.badriver-nsn.gov/wp-content/uploads/2020/01/NRD_WaterQualityStandards_2011.pdf

iii. Operators are not eligible to obtain authorization under the CGP for all new discharges to an Outstanding Tribal Resource Water (OTRW or Tier 3 water). OTRWs, or Tier 3 waters, include the following: Kakagon Slough and the lower wetland reaches of its tributaries that support wild rice, Kakagon River, Bad River Slough, Honest John Lake, Bog Lake, a portion of Bad River, from where it enters the Reservation through the confluence with the White River, and Potato River. OTRWs can be viewed at: https://www.arcgis.com/apps/View/index.html?appid=6f44c371217e4ee8b5f1c2c705c 7c7c5

iv. An operator proposing to discharge to an Outstanding Resource Water (ORW or Tier 2.5 water) under the CGP must comply with the antidegradation provisions of the Tribe's WQS. ORWs, or Tier 2.5 waters, include the following: a portion of Bad River, from downstream the confluence with the White River to Lake Superior, White River, Marengo River, Graveyard Creek, Bear Trap Creek, Wood Creek, Brunsweiler River, Tyler Forks, Bell Creek, and Vaughn Creek. ORWs can be viewed at: https://www.arcgis.com/apps/View/index.html?appid=6f44c371217e4ee8b5f1c2c705c 7c7c5. The antidegradation demonstration materials described in provision E.4.iii., and included on the antidegradation demonstration template found at: https://www.badriver-nsn.gov/natural-resources/projectreviews/, must be submitted to the following address:

Bad River Tribe's Natural Resources Department

Attn: Water Regulatory Specialist

P.O. Box 39 Odanah, WI 54861

WaterReg@badriver-nsn.gov

v. An operator proposing to discharge to an Exceptional Resource Water (ERW or Tier 2 water) under the CGP must comply with the antidegradation provisions of the Tribe's WQS. ERWs, or Tier 2 waters, include the following: any surface water within the exterior boundaries of the Reservation that is not specifically classified as an Outstanding Resource Water (Tier 2.5 water) or an Outstanding Tribal Resource Water (Tier 3 water). ERWs can be viewed at:

https://www.arcgis.com/apps/View/index.html?appid=6f44c371217e4ee8b5f1c2c705c 7c7c5. The antidegradation demonstration materials described in provision E.4.ii., and included on the antidegradation demonstration template found at: https://www.badriver-nsn.gov/natural-resources/projectreviews/, must be submitted to the following address:

Bad River Tribe's Natural Resources Department
Attn: Water Regulatory Specialist
P.O. Box 39 Odanah, WI 54861
WaterReg@badriver-nsn.gov

vi. Projects utilizing cationic treatment chemicals within the Bad River Reservation boundaries are not eligible for coverage under the CGP.

vii. A discharge to a surface water within the Bad River Reservation boundaries shall not cause or contribute to an exceedance of the turbidity criterion included in the Tribe's WQS, which states: Turbidity shall not exceed 5 NTU over natural background turbidity when the background turbidity is 50 NTU or less, or turbidity shall not increase more than 10% when the background turbidity is more than 50 NTU.

viii. All projects which are eligible for coverage under the CGP within the exterior boundaries of the Bad River Reservation must comply with the Bad River Reservation Wetland and Watercourse Protection Ordinance, or Chapter 323 of the Bad River Tribal Ordinances, including the erosion and sedimentation control, natural buffer, and stabilization requirements. Questions regarding Chapter 323 and requests for permit applications can be directed to the Wetlands Specialist in the Tribe's Natural Resources Department at (715) 682-7123 or wetlands@badriver-nsn.gov.

ix. An operator of a project, which is eligible for coverage under the CGP, that would result in an allowable discharge under the CGP occurring within the exterior boundaries of the Bad River Reservation must notify the Tribe prior to the commencing earth-disturbing activities. The operator must submit a copy of the Notice of Intent (NOI) to the following addresses at the same time it is submitted to the U.S. EPA:

Bad River Tribe's Natural Resources Department
Attn: Water Regulatory Specialist
P.O. Box 39 Odanah, WI 54861
WaterReg@badriver-nsn.gov

Bad River Tribe's Natural Resources Department
Attn: Tribal Historic Preservation Officer (THPO)
P.O. Box 39 Odanah, WI 54861
THPO@badriver-nsn.gov

The operator must also submit a copy of the Notice of Termination (NOT) to the above addresses at the same time it is submitted to the U.S. EPA. Photographs showing the current site conditions must be included as part of the NOT to document the stabilization requirements have been met.

x. The THPO must be provided 30 days to comment on the project.

xi. The operator must obtain THPO concurrence in writing. This written concurrence will outline measures to be taken to prevent or mitigate effects to historic properties. For more information regarding the specifics of the cultural resources process, see 36 CFR Part 800. A best practice for an operator is to consult with the THPO during the planning stages of an undertaking.

xii. An operator of a project, which is eligible for coverage under the CGP, that would result in an allowable discharge under the CGP occurring within the exterior boundaries of the Bad River Reservation must submit a copy of the Stormwater Pollution Prevention Plan (SWPPP) to the following address at the same time as submitting the NOI:

Bad River Tribe's Natural Resources Department

Attn: Water Regulatory Specialist

P.O. Box 39 Odanah, WI 54861

WaterReg@badriver-nsn.gov

xiii. Any corrective action reports that are required under the CGP must be submitted to the following address within one (1) working day of the report completion:

Bad River Tribe's Natural Resources Department

P.O. Box 39 Odanah, WI 54861

WaterReg@badriver-nsn.gov

xiv. An operator of a project, which is eligible for coverage under the CGP, that would result in an allowable discharge under the CGP occurring within the exterior boundaries of the Bad River Reservation must submit a copies of the inspection reports (including photographs) to the following address within 24 hours of completing any site inspection required:

Bad River Tribe's Natural Resources Department Attn: Water Regulatory Specialist

P.O. Box 39 Odanah, WI 54861

WaterReg@badriver-nsn.gov

xv. An operator shall be responsible for meeting any additional permit requirements imposed by the U.S. EPA necessary to comply with the Tribe's antidegradation policies if the discharge point is located upstream of waters designated by the Tribe.

9.6 EPA REGION 6

9.6.1 NMR100000 State of New Mexico, except Indian country

a. In Outstanding National Resource Waters (ONRWs) in New Mexico, no degradation is permitted except in limited, specifically defined instances. Therefore, Operators are not eligible to obtain authorization under this general permit for stormwater discharges to waters classified as ONRWs listed in Paragraph D of 20.6.4.9 New Mexico Administrative Code (NMAC), also referred to as "Tier 3 waters" as defined in Appendix A of this permit. Exception: When construction activities are in response to a public emergency (e.g., wildfire, extreme flooding, etc.) and the related work requires immediate authorization to avoid a threat to public health or safety.

i. Operators who conduct construction activities in response to a public emergency to mitigate an immediate threat to public health or safety shall

adhere to the requirements in 20.6.4.8(A)(3)(c) NMAC, including notifying the New Mexico Environment Department (NMED) within seven days of initiation of the emergency action and providing NMED with a summary of the action taken within 30 days of initiation of the emergency action.

ii. For all other scenarios, Operators with proposed discharges to ONRWs in New Mexico shall obtain coverage from EPA under an NPDES Individual Permit and will comply with the additional standards and regulations related to discharges to ONRWs in 20.6.4.8(A) NMAC. Additional information is available from:

New Mexico Environment Department Surface Water Quality Bureau

P.O. Box 5469

Santa Fe, NM 87502-5469 Telephone: 505-827-0187

https://www.env.nm.gov/surface-water-quality/wqs/
https://gis.web.env.nm.gov/oem/?map=swqb

b. If construction dewatering activities are anticipated at a construction site and non-stormwater discharges of groundwater, subsurface water, spring water, and/or other dewatering water are anticipated, the Operators/Permittees must complete the following steps:

1. Review the state's Ground Water Quality Bureau Mapper (https://gis.web.env.nm.gov/GWQB/) and Petroleum Storage Tank Bureau Mapper (https://gis.web.env.nm.gov/GWQB/).

   Check if the following sources are located within the noted distance from the anticipated construction dewatering activity. At a minimum, a list of the following potential sources of contaminants and pollutants at the noted distance is to be kept in the SWPPP.

Source of Potential Contamination or Pollutants*	Constituents likely to be required for testing*
Within 0.5 mile of an open Leaking Underground Storage Tank (LUST) site	BTEX (Benzene, Toluene, Ethylbenzene, and Xylene) plus additional parameters depending on site conditions**
Within 0.5 mile of an open Voluntary Remediation site	All applicable parameters or pollutants listed in 20.6.4.13, 20.6.4.52, 20.6.4.54, 20.6.4.97 thru 20.6.4.99, 20.6.4.101 through 20.6.4.899, and 20.6.4.900 NMAC (or an alternate list approved by the NMED-SWQB)*
Within 0.5 mile of an open RCRA Corrective Action Site	
Within 0.5 mile of an open Abatement Site	
Within 0.5 mile of an open Brownfield Site	
Within 1.0 mile or more of a Superfund site or National Priorities List (NPL) site with associated groundwater contamination.	
Construction activity contaminants and/or natural water pollutants	Additional parameters depending on site activities and conditions (Contact NMED- SWQB for an alternate list)*

*For further assistance determining whether dewatering may encounter contaminated sources, please contact the NMED Ground Water Quality Bureau at 505-827-2965 or NMED Surface Water Quality Bureau (SWQB) at 505-827-0187.

** EPA approved sufficiently sensitive methods must be used. For known PCB sources and analysis, EPA Method 1668C must be used (see https://www.epa.gov/cwa-methods).

2. If dewatering activities are anticipated, information on the flow rate and potential to encounter contaminated groundwater, subsurface water, spring water, or dewatering water must be provideddirectly to NMED at the following address:

   NMED Surface Water Quality Bureau

   Program Manager, Point Source Regulation
   SectionPO Box 5469, Santa Fe, NM 87502

   Please call the SWQB to obtain the appropriate email address (505-827-0187).

3. In addition, the Operator/Permittee must characterize the quality of the groundwater and subsurface water, spring water, or dewatering water being considered for discharge according to the table above and including dissolved hardness and pH. Considering the contaminant sources listed in the table above, water quality data may already be available. For further assistance, contactthe

NMED Surface Water Quality Bureau (505-827-0187), Ground Water Quality Bureau (505-827- 2965), Petroleum Storage Tank Bureau (505-476-4397), or Hazardous Waste Bureau (505-476- 6000).

i. The Operator/Permittee must submit recent analytical test results (i.e., within the past 5 years) according to the table above, and including dissolved hardness and pH, to the EPA Region 6 Stormwater Permit Contact and the NMED Surface Water Quality Bureau (see contact information in #2 above). If the test data exceed applicable water quality standards, then the groundwater, subsurface water, spring water, or dewatering water cannot be discharged into surface waters under this general permit. Operators/Permittees may submit an NPDES Individual Permit application to treat and discharge to waters of the U.S. or find alternative disposal measures. No discharges to surface waters are allowed until authorized.

ii. If the discharge has the potential to affect groundwater (e.g., land application), the Operator/Permittee must submit an NOI to the NMED Ground Water Quality Bureau (see 20.6.2.1201 NMAC – Notice of Intent to Discharge).

4. The Operator/Permittee must document any findings and all correspondence with NMED and EPA in the SWPPP.

c. Operators who intend to obtain authorization under this permit for new and existing storm water dischargesfrom construction sites must satisfy the following condition:

i. The SWPPP must include site-specific interim and permanent stabilization, managerial, and structural solids, erosion and sediment control best management practices (BMPs) and/or other controls that are designed to prevent to the maximum extent practicable an increase in the sediment yield and flow velocity from pre-construction, pre-development conditions to assure thatapplicable standards in 20.6.4 NMAC, including the antidegradation policy, and TMDL waste load allocations (WLAs) are met. This requirement applies to discharges both during construction and after construction operations have been completed. The SWPPP must identify and document the rationale for selecting these BMPs and/or other controls. The SWPPP must also describe design specifications, construction specifications, maintenance schedules (including a long-term maintenance plan), criteria for inspections, and expected performance and longevity of these BMPs.For sites greater than 5 acres in size, BMP selection must be made based on the use of appropriatesoil loss prediction models (i.e. SEDCAD, RUSLE, SEDIMOT, MULTISED, etc.) OR equivalent generallyaccepted (by professional erosion control specialists) soil loss prediction tools.

ii. For all sites, the Operator(s) must demonstrate, and include documentation in the SWPPP, that implementation of the site-specific practices will ensure that the applicable standards and TMDL WLAs are met, and will result in sediment yields and flow velocities that, to the maximum extent practicable, will not be greater than the sediment yield levels and flow velocities from preconstruction, pre-development conditions.

iii. All SWPPPs must be prepared in accordance with good engineering practices by qualified (e.g., CPESC certified, engineers with appropriate training) erosion control specialists familiar with the use of soil loss prediction models and design of erosion and sediment control systems based on these models (or equivalent soil

loss prediction tools). Qualifications of the preparer (e.g., professional certifications, description of appropriate training) must be documented in the SWPPP.The Operator(s) must design, implement, and maintain BMPs in the manner specified in the SWPPP.

NMED supports the use of EPA's small residential lot template if a site qualifies to use it as explained inthe permit, as long as it is consistent with the above requirements. NMED's requirement does not preclude small residential sites from using the template, but it may require an additional short paragraphto justify the selection of specific BMPs for the site.

d. Operators must notify NMED when discharges of toxic or hazardous substances or oil from a spill or other release occurs - see Emergency Spill Notification Requirements, Part 2.3.6 of the permit. For emergencies, Operators can call 505-827-9329 at any time. For non-emergencies, Operators can call 866-428-6535 (voice mail 24-hours per day) or 505-476-6000 during business hours from 8am-5pm, Monday through Friday. Operators can also call the NMED Surface Water Quality Bureau directly at 505-827-0187.

e. Operators of small construction activities (i.e., 1-5 acres) are not eligible to qualify for a waiver in lieu of needing to obtain coverage under this general permit based on Item C.3 of Appendix C (Equivalent Analysis Waiver) in the State of New Mexico.

9.6.2 NMR10I000 Indian country within the State of New Mexico, except Navajo Reservation Lands that are covered under Arizona permit AZR10000I and Ute Mountain Reservation Lands that are covered under Colorado permit COR10000I.

a. Nambe Pueblo

i. The operator must provide a copy of the Notice of Intent (NOI) and Notice of Termination (NOT) to the Nambe Pueblo Governor's Office at the same time it is provided to the US Environmental Protection Agency. The NOI and NOT should be provided to the following address:

Office of the Governor Nambe Pueblo

!SA NPI02 WEST

Nambe Pueblo, New Mexico 87506

ii. The operator must provide a copy of the Storm Water Pollution Prevention Plan (SWPPP) to Nambe Pueblo at the same time it is submitted to the EPA, either by email to governor@nambepueblo.org or mailed to the above address.

iii. The operator must provide copies of inspection reports, a copy of the corrective action log, and modifications made to the SWPPP as a result of inspection findings, upon request by the Nambe Pueblo Department of Environmental and Natural Resources or Nam be Governor.

b. Ohkay Owingeh Tribe

i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Ohkay Owingeh Office of Environmental Affairs, a copy of NOI modifications and the Notice of Termination (NOT), must be provided within three business days after EPA provides electronic confirmation that the submission has been received. The NOI and NOT must be provided to the following address:

Naomi L. Archuleta - Environmental Programs Manager Ohkay Owingeh Office of Environmental Affairs
P.O. Box 717
Ohkay Owingeh, NM 87566
naomi.archuleta@ohkay.org

Noah Kaniatobe - Environmental Specialist Ohkay Owingeh, Office of Environmental Affairs
P.O. Box 717
Ohkay Owingeh, NM 87566
noah.kaniatohe@ohkay.org

ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copy of the Storm Water Pollution Prevention Plan (SWPPP) to Ohkay Owingeh Office of Environmental Affairsat the same time that the NOI is submitted to the tribe (see contact information listed above).

iii. Following each incident where the operator takes a corrective action the operator must provide thecorrective action log to the Ohkay Owingeh Office of Environmental Affairs.

iv. The operator must notify Ohkay Owingeh Office of Environmental Affairs within 24 hours, in the event of an emergency spill in addition to the notification requirements at Part 2.3.6 of the CGP. Please contact: Ohkay Owingeh Tribal Police Department at 505.852.2757.

Please contact:
Ohkay Owingeh
Tribal Police Department
505.852.2757

c. Pueblo of Isleta

i. All operators obtaining permit coverage under the EPA CGP must submit a copy of the certified Notice ofIntent (NOI) to the Pueblo of Isleta at the same time it is submitted to EPA for projects occurring within the exterior boundaries of the Pueblo of Isleta. Additionally, a copy of NOI modifications and the Notice of Termination (NOT), must be provided within three business days after EPA provides electronic confirmation that the submission has been received. The Notices must be provided to the following address:

Water Quality Control OfficerPueblo of Isleta
Environment DepartmentPO Box 1270
Isleta NM 87022
505-869-7565
WQCO@isletapueblo.com

ii. The operator must notify the Pueblo of Isleta's Dispatch at 505-869-3030 as soon as possible and thePueblo of Isleta Water Quality Control Officer within 10 hours, in the event of a spill of hazardous ortoxic substances or if health or the

environment become endangered in addition to the notification requirements at Part 2.3.6 and at I.12.6.1 of the CGP.

iii. All operators obtaining permit coverage under the EPA CGP must submit an electronic copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Pueblo of Isleta Water Quality Control Officer atthe above address, 30 days prior to submitting the certified NOI to EPA. If the electronic file is too largeto send through e-mail, a zip file or flash drive may be submitted.

iv. All operators obtaining permit coverage under the EPA CGP must give 2 days advance notice to the Pueblo of Isleta Water Quality Control Officer of any planned changes in the permitted activity whichmay result in noncompliance with permit requirements.

v. All operators obtaining permit coverage under the EPA CGP must post a sign or other notice of permit coverage at a safe, publicly accessible location in close proximity to the construction site. The notice mustbe located so that it is visible from the public road or tribal road that is nearest to the active part of the construction site. The sign must be maintained on-site from the time construction activities begin until final stabilization is met.

vi. Erosion and sediment controls shall be designed to retain sediment on-site and project-generatedwaste materials that have the potential to discharge pollutants shall not be placed on open soil oron a surface that is not stabilized. Volumes of sediment over five (5) cubic yards must be removed from the active construction site; additionally, if sediment is placed for disposal withinthe exterior boundaries of the Pueblo of Isleta, disposal must be within a tribally approved sediment disposal site.

d. Pueblo of Laguna

i. All operators obtaining permit coverage under the EPA CGP must submit an electronic copy of the certified (signed) Notice of Intent (NOI) to the Pueblo of Laguna's Environmental & Natural Resources Department (ENRD) within three business days of submittal to the EPA. Additionally, a copy of NOI modifications and the Notice of Termination (NOT), must be provided within three business days after the EPA provides electronic confirmation that the submission has been received. The NOI and NOT must be electronically submitted to info.environmental@pol-nsn.gov.

ii. All operators obtaining permit coverage under the EPA CGP must submit an electronic copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Pueblo of Laguna's ENRD 14 days prior to the submittal of the NOI (see contact information listed above).

iii. The operator must provide copies of corrective actions logs and modifications made to the SWPPP as a result of inspection findings to the Pueblo of Laguna ENRD (see contact information above).

iv. In addition to the notification requirements of Part 2.3.6 of the CPG ***[EPA interprets this intending to refer to the CGP]***, the operator must notify the Pueblo of Laguna ENRD at 505-552-7512 in the event of an emergency spill as soon as possible.

e. Pueblo of Sandia. The following conditions apply only to discharges on the Pueblo of Sandia Reservation:

i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Pueblo of Sandia Environment Department concurrently with submittal to the EPA. Additionally, a copy of NOI modifications and the Notice of Termination (NOT), must be provided concurrently with submittal to the EPA. The NOI and NOT must be provided electronically to the following addresses:

Electronic Addresses:

Amy Rosebrough (Water Quality Manager): rosebrough@sanidapueblo.nsn.us
Greg Kaufman (Environment Director):gkaufman@sandiapueblo.nsn.us

ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Pueblo of Sandia Environment. Department at least 14 days prior to submittal of the NOI to the Pueblo (see contact information listed above).

iii. If requested by the Pueblo of Sandia Environment Department, the permittee must provide additional information necessary on a case-by-case basis to assure compliance with the Pueblo of Sandia Water Quality Standards and/or applicable Federal Standards.

iv. An "Authorization to Proceed Letter" with site specific mitigation requirements may be sent out to the permittee when a review of the NOI and SWPPP, on a case-by-case basis, is completed by the Pueblo of Sandia Environment Department. This approval will allow the application to proceed if all mitigation requirements are met.

v. The Pueblo of Sandia will not allow Small Construction Waivers (Appendix C) to be granted for any small construction activities.

vi. The operator must provide copies of inspection reports, a copy of the corrective action log, and modifications made to the SWPPP as a result of inspection findings to the Pueblo of Sandia Environment Department upon request. An inspection report and corrective action log must be submitted to the Pueblo within 3 days of any inspection that results in corrective action (see contact information listed above).

vii. The operator must notify the Pueblo of Sandia within 24 hours in the event of an emergency spill, in addition to the notification requirements at Part 2.3.6 of the COP (see contact information listed above).

viii. Before submitting a Notice of Termination (NOT) to the EPA, permittees must clearly demonstrate to the Pueblo of Sandia Environment Department through a site visit or documentation that requirements for site stabilization have been met and any temporary erosion control structures have been removed. A short letter stating that the NOT is acceptable and all requirements have been met will be sent to the permittee to add to the permittee's NOT submission to the EPA.

f. **Pueblo of Santa Ana. The following conditions apply only to discharges on the Pueblo of Santa Ana Reservation:**

i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Pueblo's Department of Natural Resources within three business days of submittal to EPA. Additionally, a copy of NOI modifications and the Notice of Termination (NOT), must be

provided within three business days after EPA provides electronic confirmation that the submission has been received. The NOI and NOT must be provided to the following address:

Regular U.S. Delivery Mail:

Pueblo of Santa Ana

Department of Natural Resources Water Resources Division

Attn: Andrew Sweetman 02 Dove Rd

Santa Ana Pueblo, NM 87004

Electronically:

Andrew Sweetman

Water Resources Division Manager Andrew.Sweetman@santaana-nsn.gov

Tammy Montoya Hydrologist

Tammy.Montoya@santaana-nsn.gov

ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copyof the Stormwater Pollution Prevention Plan (SWPPP) to the to the Pueblo's Department of Natural Resources at the same time that the NO! is submitted to the tribe (see contact information listed above).

iii. The operator must provide copies of inspection reports, a copy of the corrective action log, and modifications made to the SWPPP as a result of inspection findings, upon request by the Pueblo's Department of Natural Resources.

iv. The operator must notify the Pueblo's Department of Natural Resources within 24 hours in the event of an emergency spill, in addition to the notification requirements at Part 2.3.6 of the CGP.

g. Pueblo of Taos

i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOi) to the Taos Pueblo Environmental Office and Taos Pueblo Governor's Office within three business days of submittal to EPA. Additionally, a copy of NOi modifications and the Notice of Termination (NOT), must be provided within three business days after EPA provides electronic confirmation that the submission has been received. The NOi and NOTmust be provided to the following addresses:

Honorable Governor of Taos Pueblo PO Box 1846

Taos, New Mexico 87571

Taos Pueblo Environmental Office PO Box 1846

Taos, New Mexico 87571

ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copy of theStormwater Pollution Prevention Plan (SWPPP) to the Taos Pueblo Environmental Office when the NOI is submitted to the tribe. Electronic copy of SWPPP downloaded on flash drive may be sent to the above address for the Taos Pueblo Environmental Office.

iii. The operator must provide a copy of the corrective action log following each corrective action undertaken and modifications made to the SWPPP as a result of

a corrective action to the Taos Pueblo Environmental Office at address listed above.

h. Pueblo of Tesuque.

i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Pueblo of Tesuque Department of Environment and Natural Resources (DENR) and the Pueblo's Governor within three business days of submittal to EPA. Additionally, a copy of any NOi modifications and the Notice of Termination (NOT), must be provided within three business days after EPA provides electronic confirmation that the submission has been received. The NOI and NOT must be provided to the following address:

Governor Mark Mitchell Pueblo of Tesuque
20 TP 828
Santa Fe, NM 87506 governor@puebloftesuque.org

Sage Mountain.flower Pueblo of Tesuque
Department of Environment and Natural Resources Director
20 TP 828

ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copyof the Stormwater Pollution Prevention Plan (SWPPP) to Pueblo of Tesuque DENR and the Pueblo's Governor at the same time that the NO! is submitted to the EPA (see contact information listed above).

iii. The operator must provide a copy of the corrective action log, and any modifications made tothe SWPPP as a result of inspection findings, or upon request by the Pueblo of Tesuque DENR.

iv. The operator must notify the Pueblo of Tesuque DENR within 24 hours in the event of an emergency spill, in addition to the notification requirements at Part 2.3.6 of the CGP (seecontact information listed above).

i. Santa Clara Indian Pueblo.

i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Santa Clara Pueblo Office of Environmental Affairs at the same time the NOI is submitted to the U.S. EPA. Additionally, a copy of the NOI modifications and the Notice of Termination (NOT), must be provided at the same time after electronic confirmation is received from EPA that the NOT has been accepted. The NOI and NOT shall be provided to the following address in electronic format:

Dino Chavarria,
Santa Clara Pueblo
Office of Environmental Affairs
dinoc@santaclarapueblo.org

ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copy of the Stormwater Pollution Prevention Plan to the Santa Clara Pueblo Office of Environmental Affairs at the same time the NOI is submitted to the U.S. EPA (see contact information listed above).

iii. The operator must notify the Santa Clara Pueblo Office of Environmental Affairs at the address above within 24 hours, in the event of an emergency spill, in addition to the notification requirements at Part 2.3.6 of the CGP

9.6.3 OKR10I000 Indian country within the State of Oklahoma, except areas of Indian country covered by an extension of state program authority pursuant to Section 10211 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA).

a. Pawnee Nation. The following conditions apply only to discharges within Pawnee Indian country:

i. Copies of the Notice of Intent (NOI) and Notice of Termination (NOT) must be provided to the Pawnee Nation at the same time it is submitted to the Environmental Protection Agency to the following address:

Pawnee Nation Department of Environmental Conservation and Safety
P.O. Box 470
Pawnee, OK 74058
Or email to dnrs@pawneenation.org

ii. An electronic copy of the Storm Water Pollution Prevention Plan (SWPPP) must be submitted to the Pawnee Nation Department of Environmental Conservation and Safety at the same time the NOI is submitted.

iii. The operator must provide access to the site for inspections and for copies of inspection reports, copy of the corrective action log and modifications, made to the SWPPP because of inspection findings, upon request by the Pawnee Nation DECS.

iv. The Pawnee Nation Department of Environmental Conservation and Safety must be notified at 918.762.3655 immediately upon discovery of any noncompliance with any provision of the permit conditions.

9.6.4 OKR10F000 Discharges in the State of Oklahoma that are not under the authority of the Oklahoma Department of Environmental Quality, or the Oklahoma Department of Agriculture and Forestry including activities associated with oil and gas exploration, drilling, operations, and pipelines (includes SIC Groups 13 and 46, and SIC codes 492 and 5171), and point source discharges associated with agricultural production, services, and silviculture (includes SIC Groups 01, 02, 07, 08, 09).

a. For activities located within the watershed of any Oklahoma Scenic River, including the Illinois River, Flint Creek, Barren Fork Creek, Upper Mountain Fork, Little Lee Creek, and Lee Creek or any water or watershed designated "ORW" in Oklahoma's Water Quality Standards, this permit may only be used to authorize discharges from temporary construction activities. Certification is denied for any on-going activities such as sand and gravel mining or any other mineral mining.

b. For activities located within the watershed of any Oklahoma Scenic River, including the Illinois River, Flint Creek, Barren Fork Creek, Upper Mountain Fork, Little Lee Creek, and Lee Creek or any water or watershed designated "ORW" in Oklahoma's Water Quality Standards, certification is denied for any discharges originating from support activities, including, but not limited to, concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, or borrow areas.

c. Dewatering discharges into sediment or nutrient-impaired waters, and waters identified as Tier 2, Tier 2.5, or Tier 3 (OAC 785:46-13) shall be controlled to meet water quality standards for turbidity in those waters as follows:

i. Cool Water Aquatic Community/Trout Fisheries: 10 NTUs (OAC 785: 45-5-12(f)(7)(A)(i)

ii. Lakes: 25 NTUs (OAC 785: 45-5-12(f)(7)(A)(ii)

iii. In waters where background turbidity exceeds these values, turbidity from dewatering discharges should be restricted to not exceed ambient levels (OAC 785: 45-5-12(f)(7)(B)

9.7 EPA REGION 7

No additional conditions.

9.8 EPA REGION 8

9.8.1 MTR10I000 Indian country within the State of Montana

a. Blackfeet Nation.

i. The Applicant and applicants for projects authorized under the NWPs should obtain all other permits, licenses, and certifications that may be required by federal, state, or tribal authority. Primary relevant tribal permit will be ALPO (Ordinance 117). Others may apply. It is the applicant's responsibility to know the tribal and local ordinances and complete all necessary permissions before they can commence work.

ii. If a project is unable to meet the enclosed conditions, or if certification is denied for an applicable NWP, the Applicant may request an individual certification from Blackfeet. An individual certification request must follow the requirements outlined in 40 CFR 121.5 of EPA's CWA § 401 Certification Rule, effective September 11, 2020.

iii. Copies of this certification should be kept on the job site and readily available for reference.

iv. If the project is constructed and/or operated in a manner not consistent with the applicable NWP, general conditions, or regional conditions, the permittee may be in violation of this certification.

v. Blackfeet and EPA representatives may inspect the authorized activity and any mitigation areas to determine compliance with the terms and conditions of the NWP.

vi. This NWP Reissuance does not reduce Tribal authority under any other rule.

vii. The project, including any stream relocations and restoration, must be built as shown and as otherwise described in the application, the construction plans, cross sections, mitigation plans and other supporting documents submitted to this office. Impacts to aquatic systems and restoration efforts will be monitored by an appropriate aquatic resource professional to ensure that disturbed areas are restored to at least their original condition.

viii. All existing water uses will be fully maintained during and after the completion of the project. (If applicable)

ix. Where practicable, perform all in-channel and wetland work during periods of low flow or drawn—down or when dry

x. Equipment staging areas must be located out of all delineated wetlands

xi. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during and immediately after construction, and all exposed soil and other fills, as well as any work below the ordinary high-water mark or in a wetland, must be permanently stabilized as soon as possible

xii. Materials such as piling, culverts, sandbags, fabric, mats, timbers used for temporary facilities in wetlands or below the high- water mark of Waters of the US must be free from oil, gas, excess dirt, loose paint and other pollutants.

xiii. Equipment staging areas in wetlands or in stream or river channels must be placed on mats, or other measures must be taken to minimize soil disturbance and compaction.

xiv. Clearing of riparian or wetland vegetation for the sole purpose of constructing work bridges, detours, staging areas or other temporary facilities must be limited to the absolute minimum necessary. When temporary impacts to native riparian or wetland vegetation are unavoidable, it must be mowed or cut above ground with the topsoil and root mass left intact.

xv. Remove all temporary fills and structures in the entirety when they are no longer needed. Restore affected areas to the appropriate original and planned contours where possible. Re-vegetate disturbed areas with appropriate native species when native species are impacted.

xvi. Construction methods and best management practices (BMPs) must minimize aquatic resource impacts to the maximum extent possible. Any BMPs described in the Joint Application must be followed. BMPs should include installation and maintenance of sediment control measures; separation, storage and reuse of any topsoil; and recovery of all disturbed areas where possible. All best management practices must in place prior to the onset of construction or as soon as practicable during the construction process.

xvii. Best available technology and/or best management practices must be utilized to protect existing water uses and maintain turbidity and sedimentation at the lowest practical level.

xviii. Applicant/contractor should manage disturbed streambank topsoil in a manner that optimizes plant establishment for the site.

xix. When operating equipment or otherwise undertaking construction in wetlands and water bodies the following conditions apply:

(a) Work should be done in dry conditions if possible.

(b) All equipment is to be inspected for oil, gas, diesel, anti-freeze, hydraulic fluid or other petroleum leaks. All such leaks will be properly repaired and equipment cleaned prior to being allowed on the project site. Leaks that occur after the equipment is moved to the project site will be fixed the same day or the next day or removed from the project area. The equipment is not allowed to continue operation once a leak is discovered.

(c) All equipment is to be inspected and cleaned before and after use to minimize the spread or introduction of invasive or undesirable species.

(d) Construction equipment shall not operate below the existing water surface except as follows:

- Impacts from construction should be minimized through the use of best management practices submitted in the permit application.
- Essential work below the waterline shall be done in a manner to minimize impacts to aquatic system and water quality.

(e) Containment booms and/or absorbent material must be available onsite. Any spills of petroleum products must be reported to the Army Corps, Blackfeet Nation BEO Office and the US EPA within 24 hours.

xx. Upland, riparian and in-stream vegetation should be protected except where its removal is necessary for completion of work. Revegetation should be completed as soon as possible. Applicant/contractor should revegetate disturbed soil in a manner that optimizes plant establishment for the site. Revegetation must include topsoil replacement, planting, seeding, fertilization, liming and weed-free mulching as necessary. Applicant must use native plant material and soils where appropriate and feasible. This certification does not allow for the introduction of non-native flora and fauna. All disturbed surface areas must be restored to pre-construction contours and elevation.

xxi. Spoils piles should not be placed or stored within the delineated wetlands or streams unless protected by a temporary structure designed to divert and handle high flows that can be anticipated during permit activity. Spoils piles should be placed on landscaping fabric or some other material to separate spoils material and allow retrieval of spoils material with minimal impact.

xxii. Impacts to wetlands shall not exceed 4.92 acres.

xxiii. Any unexpected and additional impacts to waters of the US should be reported to the

xxiv. Army Corps, Blackfeet Environmental Office Water Quality Coordinator and the US EPA.

xxv. All instream and stream channel reconstruction work must be completed before the stream is diverted into the new channel.

xxvi. Any temporary crossings, bridge supports, cofferdams, or other structures that are necessary during permit activity should be designed to handle high flows that can be anticipated during permit activity. All temporary structures should be completely removed from the water body at the conclusion of the permitted activity and the area restored to a natural function and appearance.

xxvii. The certification does not authorize any unconfined discharge of liquid cement into the waters of the United States. Grouting riprap must occur under dry conditions with no exposure of wet concrete to the water body.

xxviii. BMPs shall include application of certified weed-free straw or hay across all disturbed wetland areas that are temporarily impacted; installation and maintenance of sediment control measures during construction and if necessary, after construction is completed; use of heavy mud mats if necessary; separation,

storage and reuse of all streambank topsoil and wetland topsoil, as appropriate; and recovery of all disturbed wetland and streambank areas where possible. All conditions set by the Blackfeet Tribe and US Army Corps must be followed.

xxix. All applicants, including federal agencies, must notify EPA and the Blackfeet Environmental Office of the use of all NWPs for which certification has been granted prior to commencing work on the project. Notifications must include:

(a) project location (lat. Long., exact point on map);

(b) NWP that will be used and the specific activity that will be authorized under the NWP;

(c) amount of permanent and temporary fills;

(d) a short summary of the proposed activity, and all other federal, state, tribal or local permits or licenses required for the project;

(e) complete contact information of both the applicant and contractor (name, name of the company or property if applicable, telephone, mobile, and email); and,

(f) Summary of best management practices that will be used.

(g) A summary of communications with the affected Tribe's water quality staff regarding the project, including any concerns or issues.

(h) Notify Blackfeet and EPA at least 7 days before the completion of construction and operations begin.

xxx. Point source discharges may not occur: (1) in fens, bogs or other peatlands; (2) within 100 feet of the point of discharge of a known natural spring source; or (3) hanging gardens.

xxxi. Except as specified in the application, no debris, silt, sand, cement, concrete, oil or petroleum, organic material, or other construction related materials or wastes shall be allowed to enter into or be stored where it may enter into waters of the U.S.

xxxii. Silt fences, straw wattles, and other techniques shall be employed as appropriate to protect waters of the U.S. from sedimentation and other pollutants.

xxxiii. Water used in dust suppression shall not contain contaminants that could violate water quality standards.

xxxiv. Erosion control matting that is either biodegradable blankets or loose-weave mesh must be used to the maximum extent practicable.

xxxv. All equipment used in waters of the U.S. must be inspected for fluid leaks and invasive species prior to use on a project. All fluid leaks shall be repaired and cleaned prior to use or when discovered, or if the fluid leak can't be repaired, the equipment shall not be used on site. Equipment used in waters with the possibility of aquatic nuisance species infestation must be thoroughly cleaned and effectively decontaminated before they are used on the project.

xxxvi. Vegetation should be protected except where its removal is necessary for completion of the work. Locations disturbed by construction activities should be revegetated with appropriate native vegetation in a manner that optimizes plant establishment for the specific site.

xxxvii. Revegetation may include topsoil replacement, planting, seeding, fertilization, liming, and weed-free mulching, as necessary. Where practical, stockpile weed- seed-free topsoil and replace it on disturbed areas. All revegetation materials, including plants and plant seed shall be on site or scheduled for delivery prior to or upon completion of the earth moving activities.

xxxviii. Activities may not result in any unconfined discharge of liquid cement into waters of the U.S. Grouting riprap must occur under dry conditions with no exposure of wet concrete to the waterbody.

xxxix. Activities that may result in a point source discharge shall occur during seasonal low flow or no flow periods to the extent practicable.

xl. The placement of material (discharge) for the construction of new dams is not certified, except for stream restoration projects.

xli. Any decision-maker that is required under 7.0 of the CGP to prepare a Stormwater Pollution Prevention Plan (SWPPP), must submit an electronic copy of the SWPPP to the Blackfeet Environmental Office at least 30 days before construction starts for review and approval. Any modifications to the SWPPP should be submitted to the Blackfeet Environmental Office.

xlii. Any Decision-maker required under Part 1.4 of the CGP to submit a Notice of Intent (NOI) to EPA for coverage under the CGP, must submit a copy of the NOI to the Blackfeet Environmental Office within three business days of submittal to EPA. Additionally, a copy of the Notice of Termination (NOT) must be provided within three business days after electronic confirmation is received from EPA that the NOT has been accepted. The NOI and NOT must be provided to the following address Gerald Wagner, Blackfeet Environmental Office Director.

62 Hospital Drive, Browning, MT 59417

beo.director@gmail.com

b. Fort Peck Tribes.

i. Any Decision-maker required under Part 1.4 of the CGP to submit a Notice of Intent (NOI) to EPA for coverage under the CGP, must submit a copy of the NOI to the Fort Peck Tribes Office of Environmental Protection within three business days of submittal to EPA. Additionally, a copy of the Notice of Termination (NOT) must be provided within three business days after electronic confirmation is received from EPA that the NOT has been accepted. The NOI and NOT must be provided to the following address:

Martina Wilson, Office of Environmental Protection Director

501 Medicine Bear Rd Poplar, MT 59255

martinawilson@fortpecktribes.net

ii. Any Decision-maker that is required under Part 7.0 of the CGP to prepare a Stormwater Pollution Prevention Plan (SWPPP), must submit an electronic copy of the SWPPP to the Fort Peck Tribes Office of Environmental Protection at least 30 days before construction starts for review and approval. Any modifications to the

SWPPP should be submitted to the Fort Peck Tribes Office of Environmental Protection.

iii. Any Decision-maker that is required under Part 8.0 of the CGP to submit a weekly, bi-weekly, and/or annual report to EPA, must submit an electronic copy of the annual report to the Fort Peck Tribes Office of Environmental Protection within three business days after submittal to EPA.

9.9 EPA REGION 9

9.9.1 CAR10I000 Indian country within the State of California

a. Morongo Band of Mission Indians

i. A copy of the Stormwater Pollution Prevention Plan (SWPPP) must be submitted (either mailed or electronically) to the MEPD no less than thirty (30) days before commencing construction activities:

Morongo Band of Mission Indians
Environmental Protection Department
12700 Pumarra Road
Banning, CA 92220
Email: epd@morongo-nsn.gov

ii. Copies of the Notice of Intent (NOI) and the Notice of Termination (NOT) must be sent to the MEPD at the same time they are submitted to EPA.

iii. Operators of an "emergency-related project" must submit notice to the MEPD within twenty- four (24) hours after commencing construction activities.

iv. Spills, leaks, or unpermitted discharges must be reported to the MEPD within twenty-four (24) hours of the incident, in addition to the reporting requirements of the CGP.

v. Projects utilizing cationic treatment chemicals (as defined in Appendix A of the CGP) within the Morongo Reservation are not eligible for coverage under this certification of the CGP.

vi. Facilities covered under the CGP will be subject to compliance inspections by MEPD staff, including compliance with final site stabilization criteria prior to submitting an NOI ***[EPA assumes this intended to refer to an NOT]***.

9.9.2 GUR100000 Island of Guam

a. For purposes of this Order, the term "Project Proponent" shall mean U.S. Environmental Protection Agency, and its agents, assignees, and contractors.

b. For purposes of this Order, the permit "Operator" shall mean any party associated with a construction project that meets either of the following two criteria:

i. The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications (e.g. in most cases this is the owner of the site); or

ii. The party has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the permit; in most cases this is the general contractor of the project).

Subcontractors generally are not considered operators for the purposes of this permit.

c. The Project Proponent shall enforce the proposed 2022 CGP and ensure that the Operator complies with the conditions of the permit at all times.[107] (40 CFR §121.11(c))

d. All submittals required by this Order shall be sent to the Guam Environmental Protection Agency Attn: 401 Federal Permit Manager, Non-Point Source Program, EMAS Division, 3304 Mariner Avenue, Bldg. 17-3304, Barrigada, Guam 96913, AND via email to jesse.cruz@epa.guam.gov. The submittals shall be identified with WQC Order #2021- 04 and include the COP Permit Number, certifying representative's name, title, mailing address and phone number. (§51060)(4) 2017 GWQS)

e. A copy of the Operator's signed Stormwater Pollution Prevention Plan (SWPPP) and signed Notice of Intent (NOI) and Notice of Termination (NOT) submitted to EPA for review and approval, shall concurrently be submitted to Guam EPA, consistent with condition A4. Coordination with Guam EPA is encouraged when the receiving water(s) for the proposed discharge is/are being identified. (§10105.B.5.d.) GSESCR; (§51060)(4) 2017 GWQS)

f. The Operator must comply with the conditions and requirements set forth in 22 GAR 10, Guam Soil Erosion and Sediment Control Regulations (GSESCR).

g. Before submitting the NOT to EPA, Operators shall comply with GSESC regulations at §10105.B10. (Stabilization of Affected Areas) and §10107.B. {Final Inspection and Approval)

h. All operators/owners shall comply with the general design criteria for best management practices (BMPs) acceptable for meeting the Construction and Post-construction stormwater criteria in the 2006 CNMI and Guam Stormwater Management Manual. (E.O. 2012-02)

i. Operating reports and monitoring and analytical data (e.g. Discharge Monitoring Reports (DMRs), follow-up monitoring reports, Exceedance Reports for Numerical Effluent Limits, etc.) submitted to EPA shall be concurrently submitted to Guam EPA, consistent with condition A4. §51060)(4) 2017 GWQS

j. The Operators who install a sediment basin or similar impoundment shall maintain the storage capacity of five thousand cubic feet {5,000 cu. ft.) per acre of project area tributary to the basin. (§10105.B.5.i.) GSESCR

k. (1) This Order does not authorize EPA to qualify Rainfall Erosivity Waivers to stormwater discharges associated with small construction activities (i.e. 1-5 acres). Operators are required to apply for an NOI for those projects eligible for coverage under the proposed 2022 CGP. An Erosion and Sediment Control Plan is required for every site that would be covered by the proposed 2022 CGP. (22 GAR §10104) The average annual rainfall for Guam and the CNMI exceeds l00 inches per year in many locations. These climatic conditions combined with the region's unique limestone, volcanic geologic formations, sensitive water resources and significant land

[107] By incorporating this condition into the permit, EPA acknowledges receipt of Guam's certification conditions.

development forces make stormwater discharges a very significant environmental and economic issue. (2006 CNMJ/Guam Stormwater Management Manual) E.O. 2012-02

(2) This Order does not authorize EPA to approve a Sediment TMDL Waiver for the Ugum River. Operators of construction activities eligible for a TMDL Waiver in lieu of coverage under the proposed 2022 CGP, shall submit a complete and accurate waiver certification as described in C.2., Appendix C - (Small Construction Waivers) to Guam EPA per condition A4., prior to notifying EPA of its intention to obtain a waiver. §51060)(4) 2017 GWQS

l. The Project Proponent shall submit to Guam EPA a signed Statement of Understanding of Water Quality Certification Conditions.[108] (see Attachment A for an example) per condition A4. §51060)(4) 2017 GWQS

m. The Operator shall comply with applicable provisions of the Guam Pesticides Act of2007 (10 GCA Chapter 50) and implementing regulations at Title 22 GAR Chapter 15 for any use and application of pesticides.

n. Point source discharge(s) to waterbodies under the jurisdiction of Guam EPA must be consistent with the antidegradation policy in 22 GAR §510l(b).

o. The operator shall carry out construction activities in such a manner that will not violate Guam Water Quality Standards (GWQS). Proposed 2022 CGP discharges are prohibited as follows:

- **i.** In Marine Waters, Category M-1 Excellent 22 GAR Chapter 5 §5102(b)(l); and
- **ii.** In Surface Waters, Category S-1 High 22 GAR Chapter 5 §5102(c)(l)

p. In addition to complying with construction dewatering requirements in Part 2.4 and site inspection requirements for all areas where construction dewatering is taking place in Part 4 of the proposed 2022 CGP, Operators shall comply with all dewatering conditions and requirements set forth in 22 GAR 7, Water Resources Development and Operating Regulations, to include securing Guam EPA permits prior to any dewatering activities.

q. The Operator shall develop and implement a Spill Prevention and Containment Plan.

r. The Operator shall have adequate and appropriate spill response materials on hand to respond to emergency release of oil, petroleum or any other material into waters of the territory.

s. Any unpermitted discharge into territorial waters or onto land with a potential for entry into territorial waters, is prohibited. If this occurs, the Operator shall immediately take the following actions:

- **i.** Cease operations at the location of the violation or spill.
- **ii.** Assess the cause of the water quality problem and take appropriate measures to correct the problem and/or prevent further environmental damage.
- **iii.** Notify Guam EPA of the failure to comply. All petroleum spills shall be reported immediately to:

[108] By incorporating this condition into the permit, EPA acknowledges receipt of Guam's certification conditions.

(a) Guam's Emergency 911 system

(b) Guam EPA's 24-Hour Spill Response Team at (671) 888-6488 or during working hours (671) 300-4751

(c) US Coast Guard Sector Guam (671) 355-4824

(d) National Response Center 1-800-424-8802

iv. Submit a detailed written report to Guam EPA within five days of noncompliance that describes the nature of the event corrective action taken and/or planned, steps to be taken to prevent a recurrence, results of any samples taken, and any other pertinent information.

t. Compliance with this condition does not relieve the Operator from responsibility to maintain continuous compliance with the terms and conditions of this Order or the resulting liability from failure to comply.

u. Submittal or reporting of any of this information does not provide relief from any subsequent enforcement actions for unpermitted discharges to waters of the United States.

v. This Order is valid for five (5) Years from Date of Certification, unless otherwise approved by the Guam EPA Administrator.

w. The Operator shall be required to adhere to the current Guam Coral Spawning Moratorium dates for both hard and soft corals where in-water activities and/or construction activity in close proximity with marine waters may impair water quality. These dates can be obtained from the Guam Department of Agriculture, Division of Aquatic and Wildlife Resources, or the NOAA NMFS Pacific Islands Regional Office Habitat Conservation Division.

x. The Operator shall provide notice to Guam EPA consistent with Condition A4:

(a) Immediately upon discovery of noncompliance with the provisions of this Order.

y. A Notice of Violation/Work Stop Order will be issued if certification conditions are not adhered to or when significant or sustained water quality degradation occurs. Work or discharge shall be suspended or halted until the Operator addresses environmental problems/concerns to Guam EPA's satisfaction. Guam EPA may also levy penalties and fines (10 GCA §47111). Invalidity or enforceability of one or more provisions of this certification shall not affect any other provision of this certification.

9.10 EPA REGION 10

9.10.1 IDR10I000 Indian country within the State of Idaho, except Duck Valley Reservation lands (see Region 9)

a. Shoshone-Bannock Tribes

i. Copies of the following information must be sent to the SBT-WRD:

(a) Notice of Intents (NOI)

The Notice of Intent shall be forwarded to the SBT-WRD within thirty (30) days of receipt of submitting NOI to the USEPA.

Shoshone-Bannock Tribes Water Resources Department
PO Box 306 Pima Drive
Fort Hall, ID 83203 Phone: (208) 239-4582
Fax: (208) 239-4592
Or Email ctanaka@sbtribes.com

b. If requested by the SBT-WRD, the permittee must submit a copy of the SWPPP to SBT-WRD within fourteen (14) days of the request.

9.10.2 ORR10I000 Indian country within the State of Oregon, except Fort McDermitt Reservation lands (see Region 9)

a. Confederated Tribes of Coos, Lower Umpqua, and Siuslaw

i. No activities allowed under the CGP shall result in the degradation of any Tribal waters or affect resident aquatic communities or resident or migratory wildlife species at any life stage.

ii. The operator shall be responsible for achieving compliance with CTCLUSI Water Quality Standards and all other tribal codes, regulations, and laws as they exist at the time that the permit is submitted.

iii. The operator shall submit a copy of the Notice of Intent (NOI) to be covered by the general permit to the CTCLUSI Water Quality Program before, or at the same time as, it is submitted to EPA.

iv. The operator shall be responsible for submitting all Stormwater Pollution Prevention Plans (SWPPP) required under this general permit to the CTCLUSI Water Quality Program for review and determination that the SWPPP is sufficient to meet Tribal Water Quality Standards, prior to the beginning of any discharge activities taking place.

v. The operator shall be responsible for reporting an exceedance to Tribal Water Quality Standards to the CTCLUSI Water Quality Program at the same time it is reported to EPA.

vi. The THPO will be provided 30 days to comment on the APE as defined in the permit application.

vii. If the project is an undertaking, a cultural resource assessment must occur. All fieldwork must be permitted by the THPO (as appropriate), conducted by qualified personnel (as outlined by the Secretary of Interior's Standards and Guidelines; http://www.nps.gov/history/local-law/arch_stnds_O.htm) and documented according to Oregon Reporting Standards (Reporting_Guidelines.pdf) (oregon.gov). The resulting report must be submitted to the THPO and the THPO must concur with the finding of effect and recommendations before any ground disturbing work can occur. The THPO requires 30 days to review all reports.

viii. The operator must obtain THPO concurrence in writing. If historic properties are present, this written concurrence will outline measures to be taken to prevent or mitigate adverse effects to historic properties.

b. Confederated Tribes of the Umatilla Indian Reservation

i. The operator shall be responsible for achieving compliance with the

Confederated Tribes of the Umatilla Indian Reservation's (CTUIR) Water Quality Standards.

ii. The operator shall submit a copy of the Notice of Intent (NOI) to be covered by the general permit to the CTUIR Water Resources Program at the address below, at the same time it is submitted to EPA.

iii. The operator shall be responsible for submitting all Stormwater Pollution Prevention Plans (SWPPP) required under this general permit to the CTUIR Water Resources Program for review and determination that the SWPPP is sufficient to meet Tribal Water Quality Standards, prior to the beginning of any discharge activities taking place.

iv. The operator shall be responsible for reporting an exceedance to Tribal Water QualityStandards to the CTUIR Water Resources Program at the same time it is reported to EPA.

Confederated Tribes of the Umatilla Indian Reservation
Water Resources Program
46411 Timíne Way
Pendleton, OR 97801
(541) 429-7200

v. The THPO will be provided 30 days to comment on the APE as defined in the permit application.

vi. If the project is an undertaking, a cultural resource assessment must occur. All fieldwork must be permitted by the Tribal Historic Preservation Office (as appropriate), conducted by qualified personnel (as outlined by the Secretary of Interior's Standards and Guidelines; http://www.nps.gov/history/local-law/arch_stnds_0.htm) and documented according to Oregon Reporting Standards (Reporting_Guidelines.pdf (oregon.gov). The resulting report must be submitted to the THPO and the THPO must concur with the finding of effect and recommendations before any ground disturbing work can occur. The THPO requires 30 days to review all reports.

vii. The operator must obtain THPO concurrence in writing. If historic properties are present, this written concurrence will outline measures to be taken to prevent or mitigate adverse effects to historic properties.

9.10.3 WAR10F000 Areas in the State of Washington, except those located on Indian country, subject to construction activity by a Federal Operator

a. For purposes of this Order, the term "Project Proponent" shall mean those that are seeking coverage under this permit, and its agents, assignees and contractors.

b. The Federal Agency shall mean the US Environmental Protection Agency. The Federal Agency shall enforce the permit and ensure that the Project Proponent complies with the conditions of the permits at all times.

c. Failure of any person or entity to comply with this Certification may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce the terms of this Certification.

d. The Certification conditions within this Order must be incorporated into EPA's final NPDES permit. Per 40 CFR 121.10(a), all certification conditions herein that satisfy the

requirements of 40 CFR 121.7(d) must be incorporated into the permit. Per 40 CFR 121.10(b), the permit must clearly identify all certification conditions.

e. This Certification does not authorize exceedances of water quality standards established in chapter 173-201A WAC.

f. Discharges from construction activity must not cause or contribute to violations of the Water Quality Standards for Surface Water of the State of Washington (chapter 173-201A WAC), Ground Water Quality Standards (chapter 173- 200 WAC), Sediment Management Standards (chapter 173-204 WAC), and standards in the EPA's Revision of certain Federal water quality criteria applicable to Washington (40 CFR 131.45). Discharges that do not comply with these standards are prohibited.

g. Prior to discharge of stormwater and non-stormwater to waters of the State, the Permittee must apply all known, available, and reasonable methods of prevention, control, and treatment (AKART). This includes the preparation and implementation of an adequate Stormwater Pollution Prevention Plan (SWPPP), with all appropriate Best Management Practices (BMPs) installed and maintained in accordance with the SWPPP and the terms and conditions of the permit.

i. BMPs must be consistent with:

(a) The Stormwater Management Manual for Western Washington (most current approved edition at the time this permit was issued), for sites west of the crest of the Cascade Mountains; or

(b) The Stormwater Management Manual for Eastern Washington (most current approved edition at the time this permit was issued), for sites east of the crest of the Cascade Mountains; or

(c) Revisions to either manual, or other stormwater management guidance documents or manuals which provide equivalent level of pollution prevention, that are approved by Ecology and incorporated into this permit in accordance with the permit modification requirements of WAC 173-226-230. (For purposes of this section, the stormwater manuals listed in Appendix 10 of the Phase I Municipal Stormwater Permit are approved by Ecology); or

(d) Documentation in the SWPPP that the BMPs selected provided an equivalent level of pollution prevention, compared to the applicable stormwater management manuals, including:

- The technical basis for the selection of all stormwater BMPs (scientific, technical studies, and/or modeling) that support the performance claims for the BMPs being selected.
- An assessment of how the selected BMP will satisfy AKART requirements and the applicable federal technology-based treatment requirements under 40 CFR part 125.3.

The Stormwater Management Manuals for Eastern and Western Washington can be found at: https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Stormwater-manuals.

ii. An adequate SWPPP must include a narrative and drawings. All BMPs must be clearly referenced in the narrative and marked on the drawings. The SWPPP

narrative must include documentation to explain and justify the pollution prevention decisions made for the project. Documentation must include:

(a) Information about existing site conditions (topography, drainage, soils, vegetation, etc.).

(b) Potential erosion problem areas.

(c) The 13 elements of a SWPPP, including BMPs used to address each element. Unless site conditions render the element unnecessary and the exemption is clearly justified in the SWPPP, the 13 elements are as follows:

- Preserve Vegetation/Mark Clearing Limits
- Establish Construction Access
- Control Flow Rates
- Install Sediment Controls
- Stabilize Soils
- Protect Slopes
- Protect Drain Inlets
- Stabilize Channels and Outlets
- Control Pollutants
- Control Dewatering
- Maintain BMPs
- Manage the Project
- Protect Low Impact Development (LID) BMPs

h. Discharges of stormwater and authorized non-stormwater must be monitored for turbidity (or transparency) and, in the event of significant concrete work or engineered soils, pH must also be monitored. As applicable based on project specifics, monitoring, benchmarks, and reporting requirements contained in Condition S.4. (pp.10-16) of the Washington State Construction Stormwater General Permit, effective January 1, 2021, shall apply.

i. Discharges to segments of waterbodies listed as impaired by the State of Washington under Section 303(d) of the Clean Water Act for turbidity, fine sediment, phosphorus, or pH must comply with the following numeric effluent limits:

Parameter identified in 303(d) listing	Parameter Sampled	Unit	Analytical Method	Numeric Effluent Limit
• Turbidity • Fine Sediment • Phosphorus	Turbidity	NTU	SM2130	25 NTUs at the point where the stormwater is discharged from the site.
High pH	pH	su	pH meter	In the range of 6.5 – 8.5

All references and requirements associated with Section 303(d) of the Clean Water Act mean the most current EPA-approved listing of impaired waters that exists on the

effective date of the permit, or the date when the operator's complete permit application is received by EPA, whichever is later.

The EPA approved WQ Assessment can be found at: https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-improvement/Assessment-of-state-waters-303d

j. Discharges to a waterbody that is subject to a Total Maximum Daily Load (TMDL) for turbidity, fine sediment, high pH, or phosphorus must be consistent with the TMDL.

- **i.** Where an applicable TMDL sets specific waste load allocations or requirements for discharges covered by this permit, discharges shall be consistent with any specific waste load allocations or requirements established by the applicable TMDL.
- **ii.** Where an applicable TMDL has established a general waste load allocation for construction stormwater discharges, but no specific requirements have been identified, compliance with this permit will be assumed to be consistent with the approved TMDL.
- **iii.** Where an applicable TMDL has not specified a waste load allocation for construction stormwater discharges, but has not excluded these discharges, compliance with this permit will be assumed to be consistent with the approved TMDL.
- **iv.** Where an applicable TMDL specifically precludes or prohibits discharges from construction activity, the operator is not eligible for coverage under this permit.

Applicable TMDL means a TMDL for turbidity, fine sediment, high pH, or phosphorus which has been completed and approved by EPA as of the effective date of the permit, or prior to the date of the operator's complete application for permit coverage is received by EPA, whichever is later.

k. Discharges to waters of the state from the following activities are prohibited:

- **i.** Concrete wastewater.
- **ii.** Wastewater from washout and clean-up of stucco, paint, form release oils, curing compounds and other construction materials.
- **iii.** Process wastewater as defined by 40 Code of Federal Regulations (CFR) 122.2.
- **iv.** Slurry materials and waste from shaft drilling, including process wastewater from shaft drilling for construction of building, road, and bridge foundations unless managed to prevent discharge to surface water.
- **v.** Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance.
- **vi.** Soaps or solvents used in vehicle and equipment washing.
- **vii.** Wheel wash wastewater, unless managed to prevent discharge to surface water.
- **viii.** Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, unless managed according to appropriate controls described within the permit.

l. This Certification is valid until the expiration date including any administrative extension or termination date of the NPDES 2022 Construction General Permit. (40 CFR § 122.46)

m. The Federal Agency shall enforce and the Project Proponent must comply with all the reporting and notification conditions of the NPDES 2022 Construction General Permit in order to comply with this Order and the certification conditions herein (40 CFR § 121.11).

n. You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by chapter 43.21B RCW and chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do all of the following within 30 days of the date of receipt of this Order:

- File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person (see addresses below). E-mail is not accepted.

You must also comply with other applicable requirements in chapter 43.21B RCW and chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503 **Pollution Control Hearings Board** 1111 Israel RD SW STE 301 Tumwater, WA 98501	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608 **Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

CONTACT INFORMATION

Please direct all questions about this Order to:

Noel Tamboer
Department of Ecology
P.O. Box 47600
Olympia, WA 98503-7600

(360) 701-6171
noel.tamboer@ecy.wa.gov

9.10.4 WAR10I000 Indian country within the State of Washington

a. Lummi Nation

i. This certification does not exempt and is provisional upon compliance with other applicable statutes and codes administered by federal and Lummi tribal agencies. Pursuant to Lummi Code of Laws (LCL) 17.05.020(a), the operator must also obtaina land use permit from the Lummi Planning Department as provided in Title 15 of theLummi Code of Laws and regulations adopted thereunder.

ii. Pursuant to LCL 17.05.020(a), each operator shall develop and submit a Storm WaterPollution Prevention Plan to the Lummi Water Resources Division for review and approval by the Water Resources Manager prior to beginning any discharge activities.

iii. Pursuant to LCL Title 17, each operator shall be responsible for achieving compliance with the Water Quality Standards for Surface Waters of the Lummi

iv. Indian Reservation (Lummi Administrative Regulations [LAR] 17 LAR 07.010 through 17 LAR 07.210 together with supplements and amendments thereto).

v. Each operator shall submit a signed copy of the Notice of Intent (NOI) to the Lummi Water Resources Division at the same time it is submitted electronically to the Environmental Protection Agency (EPA) and shall provide the Lummi Water Resources Division the acknowledgement of receipt of the NOI from the EPA and the associated NPDES tracking number provided by the EPA within 7 calendar days of receipt from the EPA.

vi. Each operator shall submit a signed copy of the Notice of Termination (NOT) to the Lummi Water Resources Division at the same time it is submitted electronically to the EPA and shall provide the Lummi Water Resources Division the EPA acknowledgement of receipt of the NOT.

vii. Storm Water Pollution Prevention Plans, Notice of Intent, Notice of Termination and associated correspondence with the EPA shall be submitted to:

Lummi Natural Resources Department
ATTN: Water Resources Manager 2665 Kwina Road
Bellingham, WA 98226-9298

b. Port Gamble S'Klallam Tribe

i. No discharge from the project site shall cause exceedances of Port Gamble S'KlallamSurface Water Quality Standards narrative or numeric criteria in Tribal waters. This includes activities outside of Tribal lands that occur upstream of Tribal waters.

(a) If any exceedance of these water quality standards occurred, the Natural Resources Department shall be notified immediately.

- The Department shall additionally be provided a complete draft of the proposed corrective action within a reasonable timeframe and its approval will be required before any corrective action may be taken.

ii. Operators performing activities under the CGP that may affect Tribal waters will requirea permit and shall submit their plans to the Port Gamble S'Klallam Natural Resources Department for review.

- The Department has the right to require conditions outside of this Water QualityCertification prior to permit approval.

iii. No activities allowed under the CGP shall result in the degradation of any Tribal watersor change in designated uses.

iv. No activities allowed under the CGP shall affect resident aquatic communities or resident/migratory wildlife species at any life stage.

- Biological assessment methods used to determine the effect of an activity allowedunder the CGP shall be approved by the PGST Natural Resources Department.

v. No activities allowed under the CGP shall be conducted within wetland and stream bufferzones, nor shall said activities affect in any way wetland or stream buffers, as defined by *PGST Law and Order Code 24.08.01(c).*

vi. Concentrations for substances listed within the table in *Water Quality Standards for Surface Waters* sec. 7(7) shall not be exceeded by activities allowed under the CGP.

c. Spokane Tribe of Indians

i. Pursuant to Tribal Law and Order Code (TLOC) Chapter 30 each operator shall be responsible for achieving compliance with the Surface Water Quality Standards of the Spokane Tribe. The operator shall notify the Spokane Tribe, Water Control Board (WCB) of any spills of hazardous material and;

ii. Each operator shall submit a signed hard copy of the Notice of Intent (NOI) to the WCB at the same time it is submitted to EPA.

iii. The permittee shall allow the Tribal Water Control Board or its designee to inspect and sample at the construction site as needed.

iv. Each operator shall submit a signed copy of the Notice of Termination (NOT) to the WCB at the same time it is submitted to EPA

The correspondence address for the Spokane Tribe Water Control Board is:

Water Control Board c/o Brian Crossley PO Box480
Wellpinit WA 99040
(509)626-4409
crossley@spokanetribe.com

d. Swinomish Tribe

i. Owners and operators seeking coverage under this permit must submit a copy of the Notice of Intent (NOI) to the DEP at the same time the NOI is submitted to EPA.

ii. Owners and operators must also submit to the DEP changes in NOI and/or Notices of Termination at the same time they are submitted to EPA.

iii. Owners and operators seeking coverage under this permit must also submit a Stormwater Pollution Prevention Plan to the DEP for review and approval by DEP prior to beginning any discharge activities.

e. Tulalip Tribes

i. Submission of NOI: Copies of the Notice of Intent (NOI),) Certification shall be submitted to the Tribe's Natural Resources Department to notify the Tribes of the

pending project and in order for the Tribes to review the projects potential impacts to endangered or threatened species.

ii. Submission of SWPPP: A copy of the Stormwater Pollution Plans (SWPPPs) shall be submitted to the Tribe's Natural Resources Department along with the NOI during the 30 day waiting period.

iii. Submission of Monitoring Data and Reports: The results of any monitoring required by this permit and reports must be sent to the Tribe's Natural Resources Depa1tment,

iv. The Tulalip Tribes are federally recognized successors in the interest to the Snohomish, Snoqualmie, Skykomish, and other allied tribes and bands signatory to the Treaty of Point Elliott.

v. including a description of the corrective actions required and undertaken to meet effluent limits or benchmarks (as applicable).

vi. Authorization to Inspect: The Tribe's Natural Resources Department may conduct an inspection of any facility covered by this permit to ensure compliance with tribal water quality standards. The Department may enforce its certification conditions.

vii. Submission of Inspection Reports: Inspection reports must be sent to the Tribe's Natural Resources Department, including a description of the corrective actions required and undertaken to meet effluent limits or benchmarks (as applicable).

viii. Permits on-site: A copy of the pe1mit shall be kept on the job site and readily available for reference by the construction supervisor, construction managers and foreman, and Tribal inspectors.

ix. Project Management: The applicant shall ensure that project managers, construction managers and foreman, and other responsible parties have read and understand conditions of the permit, this certification, and other relevant documents, to avoid violations or noncompliance with this certification.

x. Emergency Spill Notification Requirements: In the event of a spill or the contractor shall immediately take action to stop the violation and correct the problem, and immediately repo1t spill to the Tulalip Tribes Police Department (425) 508-1565. Compliance with this condition does not relieve the applicant from responsibility to maintain continuous compliance with the tem1S and conditions of this certification or the resulting liability from failure to comply.

xi. Discharges to CERCLA Sites: This permit does not autho1ize direct stormwater discharges to certain sites undergoing remedial cleanup actions pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) unless first approved by the appropriate EPA Regional office. In the case of the Tulalip Landfill site (WAD980639256), the Tulalip Tribes also requests notification by the facility and consultation with EPA prior to discharge. Contaminants at this site may include but are not limited to: dioxins, furans, arsenic, copper, lead, zinc, 4- methyl-phenol, Hex-CB, HPAHs, PCBs, PCE, cadmium, mercury, and LPAHs.

xii. Discharge-related Activities that have Potential to Cause an Adverse Effect on Historic Properties: Installation of stormwater controls that involve subsurface disturbances may potentially have an adverse impact on historic properties.

xiii. Procedures detailed in the permit shall be completed. Richard Young, of the Tulalip Tribe's Cultural Resources Department shall be contacted prior to initiating discharge- related activities that may have an impact on historic properties. His contact information is (360) 716-2652, ryoung@tulaliptribes-nsn.gov.

xiv. Invalidation: This certification will cease to be valid if the project is constructed and/or operated in a manner not consistent with the project description contained in

xv. the permit. This certification will also cease to be valid and the applicant must reapply with an updated application if info1mation contained in the permit is voided by subsequent submittals.

xvi. Modification: Nothing in this certification waives the Tulalip Tribes of Washington's authority to issue modifications to this ce1iification if additional impacts due to operational changes are identified, or if additional conditions are necessary to protect water quality or further protect the Tribal Communities interest.

xvii. incorporation by reference: TI1is certification does not exempt the applicant from compliance with other statues and codes administered by the Tribes, county, state and federal agencies.

xviii. Compliance with Tribe's I996 Water Quality Standards: Each permittee shall be responsible for controlling discharges and achieving compliance with the T1ibe's Water Quality Standards.

xix. Compliant with Tulalip Tribes Tidelands Management Policy: Permittee shall be responsible for achieving compliance with applicable sections of the Tulalip Tribe's Tidelands Management Policy. (Tulalip Tribal Code Title 8 Chapter 8.30).

xx. Compliant with Tulalip Tribes Environmental Infractions: Permittee shall be responsible for achieving compliance with applicable sections of the Tulalip Tribe's Environmental Infractions. (Tulalip Tribal Code Title 8 Chapter 8.20).

xxi. Where to Submit information and for further Coordination: All requested documents should be sent to the: Tulalip Tribes Natural Resources Environmental Department c/o Kurt Nelson and Valerie Streeter, 6704 Marine Drive, Tulalip, Washington 98271. For further 40 I Certification coordination with the Tulalip Tribes Natural Resources Department, please contact Mr. Kurt Nelson (360) 716-4617 knelson@tu1aliptribes- nsn.gov. 6406 Marine Dr., Tulalip WA 98271.

f. Makah Tribe

i. The permittee shall be responsible for meeting any additional permit requirements imposed by EPA necessary to comply with the Makah Tribe's Water Quality Standards if the discharge point is located within the Makah's U&A treaty reserved areas.

ii. Each permittee shall submit a copy of the Notice of Intent (NOI) to be covered by the general permit to Makah Fisheries Management, Water Quality Department at the address listed below at the same time it is submitted to the EPA.

Makah Water Quality
Makah Fisheries Management (MFM)
ray.colby@makah.com

PO Box 115

Neah bay, WA 98357

iii. All supporting documentation and certifications in the NOI related to coverage under the general permit for Endangered Species Act purposes shall be submitted to the Tribe's Habitat programs for their review.

iv. If EPA requires coverage under an individual or alternative permit, the permittee shall submit a copy of the permit to Assistant Fisheries Director, ray.colby@makah.com.

v. The permittee shall submit all Stormwater Pollution Prevention plan (SWPP) to MFM for review and approval prior to beginning any activities resulting in a discharge to Makah tribal waters.

vi. The permittee shall notify Ray Colby, ray.colby@makah.com (360) 645-3150 prior to conducting inspections at construction sites generating stormwater discharges to tribal waters.

vii. The operator shall treat dewatering discharges with controls necessary to minimize discharges of pollutants to surface waters, or ground waters, and from stormwater runoff onsite from excavations, trenches, foundations, or storage areas. To the extent feasible, at all points where dewatering is discharged, comply with the velocity dissipation using check dams, sediment traps, and grouted outlets.

g. Puyallup Tribe of Indians

i. The permittee shall be responsible for meeting any additional permit requirements imposed by EPA necessary to comply with the Puyallup Tribe's antidegradation procedures.

ii. Each permittee shall submit a copy of the Notice of Intent (NOI) to be covered by the general permit to Char Naylor, Tribal Water Quality Manager at the following e-mail address: (char.naylor@puyalluptribe-nsn.gov) at the same time it is submitted to EPA.

iii. All supporting documentation and certifications in the NOI related to coverage under the general permit for Endangered Species Act purposes shall be submitted to Char Naylor, Tribal Water Quality Manager/Assistant Fisheries Director (char.naylor@puyalluptribe-nsn.gov) for review.

iv. If EPA requires coverage under an individual or alternative permit, the permittee shall submit a copy of the permit to Char Naylor at the email address listed above.

v. The permittee shall submit all stormwater pollution prevention plans to Char Naylor for review and approval prior to beginning any activities resulting in a discharge to Puyallup tribal waters.

vi. The permittee shall contact Brandon Reynon (Brandon.reynon@puyalluptribe-nsn-gov), Tribe's Historic Preservation Officer or Jennifer Keating (Jennifer.keating@puyalluptribe-nsn.gov), Tribe's Assistant Historic Preservation Officer regarding historic properties and cultural resources.

vii. To minimize the discharge of pollutants to groundwater or surface waters from stormwater that is removed from excavations, trenches, foundations, vaults, or

other storage areas, treat dewatering discharges with controls necessary to minimize discharges of pollutants. Examples of appropriate controls include sediment basins or sediment traps, sediment socks, dewatering tanks, tube settlers, weir tanks, and filtration systems (e.g., bag or sand filters) that are designed to remove sediment.

To the extent feasible, utilize vegetated, upland areas of the site to infiltrate dewatering water before discharge. At all points where dewatering water is discharged, utilize velocity dissipation controls. Examples of velocity dissipation devices include check dams, sediment traps, riprap, and grouted riprap at outlets.

viii. The permittee shall provide and maintain natural buffers to the maximum extent possible (and/or equivalent erosion and sediment controls) when tribal waters are located within 100 feet of the boundaries. If infeasible to provide and maintain an undisturbed 100 foot natural buffer, erosion and sediment controls to achieve the sediment load reduction equivalent to a 100-foot undisturbed natural buffer shall be required.

APPENDIX D

SITE INSPECTION REPORT

Site Inspection Report

Section A – General Information (If necessary, complete additional inspection reports for each separate inspection location.)	
Inspector Information	
Inspector Name:	Title:
Company Name:	Email:
Address:	Phone Number:
Inspection Details	
Inspection Date:	Inspection Location:
Inspection Start Time:	Inspection End Time:
Current Phase of Construction:	Weather Conditions During Inspection:

Did you determine that any portion of your site was unsafe for inspection per CGP Part 4.5? ☐ Yes ☐ No

If "Yes," provide the following information:

Location of unsafe conditions:

The conditions that prevented you inspecting this location:

Indicate the required inspection frequency:

(Check all that apply. You may be subject to different inspection frequencies in different areas of the site.)

Standard Frequency (CGP Part 4.2):

☐ At least once every 7 calendar days; **OR**

☐ Once every 14 calendar days *and* within 24 hours of the occurrence of either:

- A storm event that produces 0.25 inches or more of rain within a 24-hour period, or
- A snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period

Increased Frequency (CGP Part 4.3.1) (If site discharges to sediment or nutrient-impaired waters or to waters designated as Tier 2, Tier 2.5, or Tier 3):

☐ Once every 7 calendar days *and* within 24 hours of the occurrence of either:

- A storm event that produces 0.25 inches or more of rain within a 24-hour period, or
- A snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period

Reduced Frequency (CGP Part 4.4):

☐ For stabilized areas: Twice during first month, no more than 14 calendar days apart; then once per month after first month until permit coverage is terminated

☐ For stabilized areas on "linear construction sites": Twice during first month, no more than 14 calendar days apart; then once more within 24 hours of the occurrence of either:

- A storm event that produces 0.25 inches or more of rain within a 24-hour period, or
- A snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period

☐ For arid, semi-arid, or drought-stricken areas during seasonally dry periods or during drought: Once per month and within 24 hours of the occurrence of either:

- A storm event that produces 0.25 inches or more of rain within a 24-hour period, or
- A snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period

☐ For frozen conditions where construction activities are being conducted: Once per month

Was this inspection triggered by a storm event producing 0.25 inches or more of rain within a 24-hour period? ☐ Yes ☐ No

If "Yes," how did you determine whether the storm produced 0.25 inches or more of rain?

☐ On-site rain gauge

☐ Weather station representative of site.
Weather station location:

Total rainfall amount that triggered the inspection (inches):

Was this inspection triggered by a snowmelt discharge from a storm event producing 3.25 inches or more of snow within a 24-hour period? ☐ Yes ☐ No

If "Yes," how did you determine whether the storm produced 3.25 inches or more of snow?

☐ On-site rain gauge

☐ Weather station representative of site.
Weather station location:

Total snowfall amount that triggered the inspection (inches):

Section B – Condition and Effectiveness of Erosion and Sediment (E&S) Controls (CGP Part 2.2)					
Type and Location of E&S Control	**Conditions Requiring Routine Maintenance?[1]**	**If "Yes," How Many Times (Including This One) Has This Condition Been Identified?**	**Conditions Requiring Corrective Action?[2, 3]**	**Date First Observed?**	**Description of Conditions Observed**
1.	☐ Yes ☐ No		☐ Yes ☐ No		
2.	☐ Yes ☐ No		☐ Yes ☐ No		
3.	☐ Yes ☐ No		☐ Yes ☐ No		
4.	☐ Yes ☐ No		☐ Yes ☐ No		
5.	☐ Yes ☐ No		☐ Yes ☐ No		
If the same routine maintenance was found to be necessary three or more times for the same control at the same location (including this occurrence), follow the corrective action requirements and record the required information in your corrective action log, or describe here why you believe the specific condition should still be addressed as routine maintenance:					

[1] Routine maintenance includes minor repairs or other upkeep performed to ensure that the site's stormwater controls remain in effective operating condition, not including significant repairs or the need to install a new or replacement control. Routine maintenance is also required for specific conditions: (1) for perimeter controls, whenever sediment has accumulated to half or more the above-ground height of the control (CGP Part 2.2.3.c.i); (2) where sediment has been tracked-out from the site onto paved roads, sidewalks, or other paved areas (CGP Part 2.2.4.d); (3) for inlet protection measures, when sediment accumulates, the filter becomes clogged, and/or performance is compromised (CGP Part 2.2.10.b); and (4) for sediment basins, as necessary to maintain at least half of the design capacity of the basin (CGP Part 2.2.12.f)

[2] Corrective actions are triggered only for specific conditions (CGP Part 5.1):

1. A stormwater control needs a significant repair or a new or replacement control is needed, or, in accordance with Part 2.1.4.c, you find it necessary to repeatedly (i.e., three (3) or more times) conduct the same routine maintenance fix to the same control at the same location (unless you document in your inspection report under Part 4.7.1.c that the specific reoccurrence of this same problem should still be addressed as a routine maintenance fix under 2.1.4); or
2. A stormwater control necessary to comply with the requirements of this permit was never installed, or was installed incorrectly; or
3. Your discharges are not meeting applicable water quality standards; or
4. A prohibited discharge has occurred (see CGP Part 1.3); or
5. During the discharge from site dewatering activities:
   a. The weekly average of your turbidity monitoring results exceeds the 50 NTU benchmark (or alternate benchmark if approved by EPA pursuant to Part 3.3.2.b); or
   b. You observe or you are informed by EPA, State, or local authorities of the presence of the conditions specified in Part 4.6.3.e.

[3] If a condition on your site requires a corrective action, you must also fill out a corrective action log.

Section C – Condition and Effectiveness of Pollution Prevention (P2) Practices and Controls (CGP Part 2.3)					
Type and Location of P2 Practices and Controls	**Conditions Requiring Routine Maintenance?[1]**	**If "Yes," How Many Times (Including This One) Has This Condition Been Identified?**	**Conditions Requiring Corrective Action?[2, 3]**	**Date First Observed?**	**Description of Conditions Observed**
1.	☐ Yes ☐ No		☐ Yes ☐ No		
2.	☐ Yes ☐ No		☐ Yes ☐ No		
3.	☐ Yes ☐ No		☐ Yes ☐ No		
4.	☐ Yes ☐ No		☐ Yes ☐ No		
5.	☐ Yes ☐ No		☐ Yes ☐ No		
If the same routine maintenance was found to be necessary three or more times for the same control at the same location (including this occurrence), follow the corrective action requirements and record the required information in your corrective action log, or describe here why you believe the specific condition should still be addressed as routine maintenance:					

Section D – Stabilization of Exposed Soil (CGP Part 2.2.14)					
Specific Location That Has Been or Will Be Stabilized	**Stabilization Method and Applicable Deadline**	**Stabilization Initiated?**	**Final Stabilization Criteria Met?**	**Final Stabilization Photos Taken?**	**Notes**
1.		☐ Yes ☐ No If "Yes," date initiated:	☐ Yes ☐ No If "Yes," date criteria met:	☐ Yes ☐ No	
2.		☐ Yes ☐ No If "Yes," date initiated:	☐ Yes ☐ No If "Yes," date criteria met:	☐ Yes ☐ No	
3.		☐ Yes ☐ No If "Yes," date initiated:	☐ Yes ☐ No If "Yes," date criteria met:	☐ Yes ☐ No	
4.		☐ Yes ☐ No If "Yes," date initiated:	☐ Yes ☐ No If "Yes," date criteria met:	☐ Yes ☐ No	
5.		☐ Yes ☐ No If "Yes," date initiated:	☐ Yes ☐ No If "Yes," date criteria met:	☐ Yes ☐ No	

Section E – Description of Discharges (CGP Part 4.6.2)	
Was a discharge (not including dewatering) occurring from any part of your site at the time of the inspection?[4] ☐ Yes ☐ No **If "Yes," for each point of discharge, document the following:** • The visual quality of the discharge. • The characteristics of the discharge, including color; odor; floating, settled, or suspended solids; foam; oil sheen; and other indicators of stormwater pollutants. • **Signs of the above pollutant characteristics that are visible from your site and attributable to your discharge in receiving waters or in other constructed or natural site drainage features.**	
Discharge Location	**Observations**
1.	
2.	
3.	
4.	
5.	

[4] If a dewatering discharge was occurring, you must conduct a dewatering inspection pursuant to CGP Part 4.3.2 and complete a separate dewatering inspection report.

Section F – Signature and Certification (CGP Part 4.7.2)	
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."	
MANDATORY: Signature of Operator or "Duly Authorized Representative:"	
Signature:	**Date:**
Printed Name:	**Affiliation:**
OPTIONAL: Signature of Contractor or Subcontractor	
Signature:	**Date:**
Printed Name:	**Affiliation:**

APPENDIX E

CORRECTIVE ACTION LOG

Corrective Action Log

Section A – Individual Completing this Log	
Name:	Title:
Company Name:	Email:
Address:	Phone Number:
Section B – Details of the Problem (CGP Part 5.4.1.a) Complete this section within 24 hours of discovering the condition that triggered corrective action.	
Date problem was first identified:	Time problem was first identified:
What site conditions triggered this corrective action? *(Check the box that applies. See instructions for a description of each triggering condition (1 thru 6).)* ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5a ☐ 5b ☐ 6	
Specific location where problem identified:	
Provide a description of the specific condition that triggered the need for corrective action and the cause (if identifiable):	
Section C – Corrective Action Completion (CGP Part 5.4.1.b) Complete this section within 24 hours after completing the corrective action.	
For site condition # 1, 2, 3, 4, or 6 (those not related to a dewatering discharge) confirm that you met the following deadlines (CGP Part 5.2.1):	
☐ Immediately took all reasonable steps to address the condition, including cleaning up any contaminated surfaces so the material will not discharge in subsequent storm events. **AND**	
☐ Completed corrective action by the close of the next business day, unless a new or replacement control, or significant repair, was required. **OR**	
☐ Completed corrective action within seven (7) calendar days from the time of discovery because a new or replacement control, or significant repair, was necessary to complete the installation of the new or modified control or complete the repair. **OR**	
☐ It was infeasible to complete the installation or repair within 7 calendar days from the time of discovery. Provide the following additional information: Explain why 7 calendar days was infeasible to complete the installation or repair:	
Provide your schedule for installing the stormwater control and making it operational as soon as feasible after the 7 calendar days:	

For site condition # 5a, 5b, or 6 (those related to a dewatering discharge), confirm that you met the following deadlines:

- ☐ Immediately took all reasonable steps to minimize or prevent the discharge of pollutants until a solution could be implemented, including shutting off the dewatering discharge as soon as possible depending on the severity of the condition taking safety considerations into account.
- ☐ Determined whether the dewatering controls were operating effectively and whether they were causing the conditions.
- ☐ Made any necessary adjustments, repairs, or replacements to the dewatering controls to lower the turbidity levels below the benchmark or remove the visible plume or sheen.

Describe any modification(s) made as part of corrective action:	Date of completion:	SWPPP update necessary?	If yes, date SWPPP was updated:
1.		☐ Yes ☐ No	
2.		☐ Yes ☐ No	
3.		☐ Yes ☐ No	

Section D - Signature and Certification (CGP Part 5.4.2)

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

MANDATORY: Signature of Operator or "Duly Authorized Representative:"	
Signature:	**Date:**
Printed Name:	**Affiliation:**
OPTIONAL: Signature of Contractor or Subcontractor	
Signature:	**Date:**
Printed Name:	**Affiliation:**

APPENDIX F

SWPPP AMENDMENT LOG

SWPPP Amendment Log

Instructions (see CGP Part 7.4):

- Create a log here of changes and updates to the SWPPP. You may use the table below to track these modifications.
- SWPPP modifications are required pursuant to CGP Part 7.4.1 in the following circumstances:
  - ✓ Whenever new operators become active in construction activities on your site, or you make changes to your construction plans, stormwater controls, or other activities at your site that are no longer accurately reflected in your SWPPP (this includes changes made in response to corrective actions triggered under CGP Part 5);
  - ✓ To reflect areas on your site map where operational control has been transferred (and the date of transfer) since initiating permit coverage;
  - ✓ If inspections or investigations determine that SWPPP modifications are necessary for compliance with this permit;
  - ✓ *Where EPA determines it is necessary to install and/or implement additional controls at your site in order to meet requirements of the permit;*
  - ✓ To reflect any revisions to applicable Federal, State, Tribal, or local requirements that affect the stormwater control measures implemented at the site; and
  - ✓ If applicable, if a change in chemical treatment systems or chemically-enhanced stormwater control is made, including use of a different treatment chemical, different dosage rate, or different area of application.

No.	Description of the Amendment	Date of Amendment	Amendment Prepared By (Name(s) and Title)

APPENDIX G

SUBCONTRACTOR CERTIFICATION

Subcontractor Certification

Project Number:	
Project Title:	
Operator(s):	
As a subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.	
Company:	Address:
Telephone Number:	Email:
Description of Construction Service to be Provided:	
Signature and Certification	
Each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement: "I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the practices described in the SWPPP."	
Signature:	**Date:**
Printed Name:	**Title:**

APPENDIX H

GRADING AND STABILIZATION ACTIVITIES LOG

Grading and Stabilization Activities Log

Date Grading Activity Initiated	Description of Grading Activity	Description of Stabilization Measure(s) and Location	Date Grading Activity Ceased	Date Stabilization Measures Initiated
			☐ Temporary ☐ Permanent	
			☐ Temporary ☐ Permanent	
			☐ Temporary ☐ Permanent	
			☐ Temporary ☐ Permanent	
			☐ Temporary ☐ Permanent	
			☐ Temporary ☐ Permanent	

APPENDIX I

STORMWATER TEAM TRAINING AND CERTIFICATIONS

Stormwater Team Member Training and Certifications

Instructions (see CGP Parts 6 and 7.2.2):

- Identify the individuals (by name and position) that you have made part of the project's stormwater team pursuant to CGP Part 6.1, their individual responsibilities, and which members are responsible for inspections. At a minimum the stormwater team is comprised of individuals who are responsible for the design, installation, maintenance, and/or repair of stormwater controls; the application and storage of treatment chemicals (if applicable); conducting inspections as required in CGP Part 4.1; and taking corrective actions as required in Part 5.
- Each member of the stormwater team must have ready access to either an electronic or paper copy of applicable portions of the 2022 CGP and the SWPPP.
- Each member of the stormwater team must understand the requirements of the 2022 CGP and their specific responsibilities with respect to those requirements, including the information in Part 6.2.
- For projects that receive coverage under the 2022 CGP on or after February 17, 2023, to be considered a qualified person under Part 4.1 to conduct inspections under Part 4, you must, at a minimum, either:
  - ✓ Have completed the EPA construction inspection course developed for this permit and have passed the exam; or
  - ✓ Hold a current valid construction inspection certification or license from a program that, at a minimum, covers the following:
    - Principles and practices of erosion and sediment control and pollution prevention practices at construction sites;
    - Proper installation, and maintenance of erosion and sediment controls and pollution prevention practices used at construction sites; and
    - Performance of inspections, including the proper completion of required reports and documentation, consistent with the requirements of Part 4.

    Note that if one of the following topics (e.g., installation and maintenance of pollution prevention practices) is not covered by the non-EPA training program, you may consider supplementing the training with the analogous module of the EPA course (e.g., Module 4) that covers the missing topic.
- Include documentation showing completion of trainings in Appendix I of this SWPPP template.
- For projects that receive coverage under the 2022 CGP prior to February 17, 2023, any personnel conducting site inspections pursuant to Part 4 on your site must, at a minimum:
  - ✓ Be knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention,
  - ✓ Possess the appropriate skills and training in conditions at the construction site that could impact stormwater quality, and
  - ✓ Possess the appropriate skills and training in the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit.

Stormwater Team Member Responsible for Inspections	
SW Team Member Name/ Title:	
SW Team Member Responsibilities:	
Name of Course:	
Instructor's Name/ Title:	
Course Location:	
Course Length:	
Date and Results of Exam:	

Stormwater Training Topic: *(Check as appropriate)*

- ☐ Sediment and Erosion Controls
- ☐ Emergency Procedures
- ☐ Stabilization Controls
- ☐ Inspections / Corrective Actions
- ☐ Pollution Prevention Measures

List Specific Training Objective(s):

Stormwater Team Member	
SW Team Member Name/ Title:	
SW Team Member Responsibilities:	
Name of Course:	
Instructor's Name/ Title:	
Course Location:	
Course Length:	
Date and Results of Exam:	

Stormwater Training Topic: *(Check as appropriate)*

- ☐ Sediment and Erosion Controls
- ☐ Emergency Procedures
- ☐ Stabilization Controls
- ☐ Inspections / Corrective Actions
- ☐ Pollution Prevention Measures

List Specific Training Objective(s):

Stormwater Team Member	
SW Team Member Name/ Title:	
SW Team Member Responsibilities:	
Name of Course:	
Instructor's Name/ Title:	
Course Location:	
Course Length:	
Date and Results of Exam:	

Stormwater Training Topic: *(Check as appropriate)*

- ☐ Sediment and Erosion Controls
- ☐ Emergency Procedures
- ☐ Stabilization Controls
- ☐ Inspections / Corrective Actions
- ☐ Pollution Prevention Measures

List Specific Training Objective(s):

Stormwater Team Member	
SW Team Member Name/ Title:	
SW Team Member Responsibilities:	
Name of Course:	
Instructor's Name/ Title:	
Course Location:	
Course Length:	
Date and Results of Exam:	

Stormwater Training Topic: *(Check as appropriate)*

- ☐ Sediment and Erosion Controls
- ☐ Emergency Procedures
- ☐ Stabilization Controls
- ☐ Inspections / Corrective Actions
- ☐ Pollution Prevention Measures

List Specific Training Objective(s):

APPENDIX J

DELEGATION OF AUTHORITY

Delegation of Authority

I, _____ (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the EPA's Construction General Permit (CGP), at the _____ construction site. The designee is authorized to sign any reports, stormwater pollution prevention plans and all other documents required by the permit.

Name of Person or Position:	Company:
Address:	Phone:

Signature and Certification

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in Appendix G of EPA's CGP, and that the designee above meets the definition of a "duly authorized representative" as set forth in Appendix G.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature:	**Date:**
Printed Name:	**Title:**

IPaC User Contact Information

Agency: Green Seal Environmental
Name: Courtney Beckwith
Address: 114 State Road
City: Sagamore Beach
State: MA
Zip: 02562
Email c.beckwith@gseenv.com
Phone: 5088886034

Drawn Action Area & Overlapping S7 Consultation Areas

Area of Interest (AOI) Information

Area : 29.31 acres

Aug 16 2022 8:24:56 Eastern Daylight Time

Summary

Name	Count	Area(acres)	Length(mi)
Atlantic Sturgeon	0	0	N/A
Shortnose Sturgeon	0	0	N/A
Atlantic Salmon	0	0	N/A
Sea Turtles	0	0	N/A
Atlantic Large Whales	0	0	N/A
In or Near Critical Habitat	0	0	N/A

APPENDIX C

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eNOI AND EPA AUTHORIZATION

NPDES FORM 3510-9

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460
NOTICE OF INTENT (NOI) FOR THE 2022 NPDES CONSTRUCTION PERMIT

FORM Approved OMB No. 2040-0305

Submission of this Notice of Intent (NOI) constitutes notice that the operator identified in Section III of this form requests authorization to discharge pursuant to the NPDES Construction General Permit (CGP) permit number identified in Section II of this form. Submission of this NOI also constitutes notice that the operator identified in Section III of this form meets the eligibility requirements of Part 1.1 CGP for the project identified in Section IV of this form. Permit coverage is required prior to commencement of construction activity until you are eligible to terminate coverage as detailed in Part 8 of the CGP. To obtain authorization, you must submit a complete and accurate NOI form. Discharges are not authorized if your NOI is incomplete or inaccurate or if you were never eligible for permit coverage. Refer to the instructions at the end of this form.

Permit Information

NPDES ID: MAR1004C4

State/Territory to which your project/site is discharging: MA

Is your project/site located on federally recognized Indian Country lands? No

Are you requesting coverage under this NOI as a *"Federal Operator"* or a *"Federal Facility"* as defined in Appendix A (https://www.epa.gov/system/files/documents/2022-01/2022-cgp-final-appendix-a-definitions.pdf)?

No

Have stormwater discharges from your current construction site been covered previously under an NPDES permit? No

Will you use polymers, flocculants, or other treatment chemicals at your construction site? No

Has a Stormwater Pollution Prevention Plan (SWPPP) been prepared in advance of filling this NOI, as required? Yes

Are you able to demonstrate that you meet one of the criteria listed in Appendix D (https://www.epa.gov/system/files/documents/2022-01/2022-cgp-final-appendix-d-endangered-species-protection.pdf) with respect to protection of threatened or endangered species listed under the Endangered Species Act (ESA) and federally designated critical habitat?

Yes

Have you completed the screening process in Appendix E (https://www.epa.gov/system/files/documents/2022-01/2022-cgp-final-appendix-e-historic-properties.pdf) relating to the protection of historic properties?

Yes

Indicating "Yes" below, I confirm that I understand that CGP only authorized the allowable stormwater discharges in Part 1.2.1 and the allowable non-stormwater discharges listed in Part 1.2.2. Any discharges not expressly authorized in this permit cannot become authorized or shielded from liability under CWA section 402(k) by disclosure to EPA, state or local authorities after issuance of this permit via any means, including the Notice of Intent (NOI) to be covered by the permit, the Stormwater Pollution Prevention Plan (SWPPP), during an inspection, etc. If any discharges requiring NPDES permit coverage other than the allowable stormwater and non-stormwater discharges listed in Parts 1.2.1 and 1.2.2 will be discharged, they must be covered under another NPDES permit.

Yes

Operator Information

Operator Information

Operator Name: Robert B. Our Company, Inc.

Operator Mailing Address:

Address Line 1: 24 Great Western Road

Address Line 2:

City: Harwich

ZIP/Postal Code: 02645

State: MA

County or Similar Division: Barnstable

Operator Point of Contact Information

First Name Middle Initial Last Name: Craig Trombly

Title: Project Manager

Phone: 508-326-9988 **Ext.:**

Email: ctrombly@robertour.com

NOI Preparer Information

☑ **This NOI is being prepared by someone other than the certifier.**

First Name Middle Initial Last Name: Terry Bauer

Organization: Green Seal Environmental LLC

Phone: 508-888-6034 **Ext.:**

Email: t.bauer@gseenv.com

Project/Site Information

Project/Site Name: Mashpee Sewer System Collection System Improvements - North and South

Project/Site Address

Address Line 1: Various Roads

Address Line 2:

City: Mashpee

ZIP/Postal Code: 02649 **State:** MA

County or Similar Division: Barnstable

Latitude/Longitude: 41.62741°N, 70.47551°W

Latitude/Longitude Data Source: Google Earth **Horizontal Reference Datum:** WGS 84

Project Start Date: 11/17/2022 **Project End Date:** 12/01/2024 **Estimated Area to be Disturbed:** 4.25

Types of Construction Sites:

- Highway or Road

Will there be demolition of any structure built or renovated before January 1, 1980? No

Will you be discharging dewatering water from your site? Yes

Was the pre-development land use used for agriculture? No

Are there other operators that are covered under this permit for the same project site? No

Have earth-disturbing activities commenced on your project/site? No

Is your project/site located on federally recognized Indian Country lands? No

Is your project/site located on a property of religious or cultural significance to an Indian tribe? No

Discharge Information

Does your project/site discharge stormwater into a Municipal Separate Storm Sewer System (MS4)? No

Are there any waters of the U.S. within 50 feet of your project's earth disturbances? No

Are any of the waters of the U.S. to which you discharge designated by the state or tribal authority under its antidegradation policy as a Tier 2 (or Tier 2.5) water (water quality exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water) or as a Tier 3 water (Outstanding National Resource Water)? See Resources, Tools and Templates (https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates)

No

001: Mashpee River Mashpee River MS4 Area

Latitude/Longitude: 41.622067°N, 70.480681°W

Tier Designation: N/A

Is this receiving water impaired (on the CWA 303(d) list)? Yes

Impaired Pollutants:

- Coliform, fecal general

Has a TMDL been completed for this receiving waterbody? Yes

TMDL ID: 9624 **Name:** Mashpee River MA 96-24

TMDL Pollutants:

- Coliform, fecal general

Stormwater Pollution Prevention Plan (SWPPP)

Will all required personnel, including those conducting inspections at your site, meet the training requirements in Part 6 of this permit? Yes

First Name Middle Initial Last Name: Craig Trombly

Title: Project Manager

Phone: 508-326-9988 **Ext.:**

Email: ctrombly@robertbour.com

Endangered Species Protection Worksheet: Criterion E

Determine ESA Eligibility Criterion

Are your discharges and discharge-related activities already addressed in another operator's valid certification of eligibility for your "action area" under the current 2022 CGP? No

Has consultation between you, a Federal Agency, and the USFWS and/or the NMFS under section 7 of the Endangered Species Act (ESA) concluded? Yes

The result of the consultation was:

Option ii. Written concurrence (e.g., letter of concurrence) from the applicable Service(s) with a determination that your site's discharges and discharge-related activities are not likely to adversely affect ESA-listed species and/or designated critical habitat. The concurrence letter must have included the effects of your site's discharges and discharge-related activities on all the ESA-listed species and/or designated critical habitat on your species list(s) acquired from USFWS and/or NMFS as part of this worksheet.

➔ **The consultation does not warrant reinitiation under 50 CFR §402.16; or, if reinitiation of consultation is required (e.g., due to a new species listing, critical habitat designation, or new information), the federal action agency has reinitiated the consultation and the result of the consultation is consistent with the statements above. Include any reinitiation documentation from the Services or consulting federal agency with your NOI.**

True

You are eligible under **Criterion E**.

Identify the federal action agency or agencies involved (i.e. the federal agencies seeking coverage):

US Fish and Wildlife Service

Identify the Service(s) field or regional offices providing the consultation:

Concord, NH

Identify any tracking numbers associated with the consultation (e.g., IPaC number, ECO number):

2023-0006654

Provide the date the consultation was completed: 2022-10-20

Attach correspondence with USFWS and/or NMFS documenting the Biological Opinion, conference opinion (IPaC or ECO tracking number) or concurrence.

Name	Uploaded Date	Size
USFWS - Long Eared Bat Biological Opinion.pdf (attachment/1594417)	10/20/2022	2.55 MB

Historic Preservation

Are you installing any stormwater controls as described in Appendix E (https://www.epa.gov/system/files/documents/2022-01/2022-cgp-final-appendix-e-historic-properties.pdf) that require subsurface earth disturbances? (Appendix E (https://www.epa.gov/system/files/documents/2022-01/2022-cgp-final-appendix-e-historic-properties.pdf), Step 1)

No

Certification Information

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. Signing an electronic document on behalf of another person is subject to criminal, civil, administrative, or other lawful action.

Certified By: Abigail O. Rose

Certifier Title: project manager

Certifier Email: ajour@robertbour.com

Certified On: 10/26/2022 11:29 AM ET

APPENDIX K

ENDANGERED SPECIES DOCUMENTATION

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: October 20, 2022
Project code: 2023-0006654
Project Name: Sewer System Collection System Improvements - Nort and South

Subject: Consistency letter for the 'Sewer System Collection System Improvements - Nort and South' project indicating that any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Dear Terry Bauer:

The U.S. Fish and Wildlife Service (Service) received on October 20, 2022 your effects determination for the 'Sewer System Collection System Improvements - Nort and South' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. You indicated that no Federal agencies are involved in funding or authorizing this Action. This IPaC key assists users in determining whether a non-Federal action may cause "take"[1] of the northern long-eared bat that is prohibited under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

Please report to our office any changes to the information about the Action that you entered into IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation.

If your Action proceeds as described and no additional information about the Action's effects on species protected under the ESA becomes available, no further coordination with the Service is required with respect to the northern long-eared bat.

The IPaC-assisted determination for the northern long-eared bat **does not** apply to the following ESA-protected species that also may occur in your Action area:

- American Chaffseed *Schwalbea americana* Endangered

- Monarch Butterfly *Danaus plexippus* Candidate
- Sandplain Gerardia *Agalinis acuta* Endangered

You may coordinate with our Office to determine whether the Action may cause prohibited take of the animal species listed above.

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[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Sewer System Collection System Improvements - Nort and South

2. Description

The following description was provided for the project 'Sewer System Collection System Improvements - Nort and South':

> several Roads will be excavated to install sewer pipelines. Three pumping stations will be constructed from November2022 until December 2024. The area impacted by trenches for sewer pipe, subsurface equipment, pump station foundations and grading/landscaping is approximately 4.25 acres.

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.62605005,-70.47402149131739,14z

Determination Key Result

This non-Federal Action may affect the northern long-eared bat; however, any take of this species that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o).

Determination Key Description: Northern Long-eared Bat 4(d) Rule
This key was last updated in IPaC on **May 15, 2017**. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for non-Federal actions is to assist determinations as to whether proposed actions are excepted from take prohibitions under the northern long-eared bat 4(d) rule.

If a non-Federal action may cause prohibited take of northern long-eared bats or other ESA-listed animal species, we recommend that you coordinate with the Service.

Determination Key Result

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   No

2. Will your activity purposefully **Take** northern long-eared bats?

   No

3. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered
   No

4. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

   Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/media/nleb-roost-tree-and-hibernacula-state-specific-data-links-0.

   Yes

5. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

   No

6. Will the action involve Tree Removal?

   No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type ‘0’ in questions 1-3.

1. Estimated total acres of forest conversion:

0

2. If known, estimated acres of forest conversion from April 1 to October 31

0

3. If known, estimated acres of forest conversion from June 1 to July 31

0

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type ‘0’ in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type ‘0’ in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type ‘0’ in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0

IPaC User Contact Information

Agency:	Green Seal Environmental LLC
Name:	Terry Bauer
Address:	114 State Road
Address Line 2:	Suite B
City:	Sagamore Beach
State:	MA
Zip:	02562
Email	t.bauer@gseenv.com
Phone:	5082807325

Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions

U.S. Fish and Wildlife Service
Regions 2, 3, 4, 5, and 6

Prepared by:
U.S. Fish and Wildlife Service
Midwest Regional Office
Bloomington, Minnesota
January 5, 2016

Lynn Lewis
Lynn Lewis, Assistant Regional Director, R3

1/5/16
Date

Table of Contents

EXECUTIVE SUMMARY

This Endangered Species Act (Act) Biological Opinion (BO) addresses the effects to the northern long-eared bat (NLEB) resulting from the Service's finalization of a special rule under the authority of section 4(d) of the Act. It also evaluates activities that the Service proposes to prohibit and except from take prohibitions under the final 4(d) rule. In the request for intra-Service consultation, the Service proposes a framework for streamlined section 7 consultation for other federal actions that may affect the NLEB and are consistent with the provisions of the 4(d) rule. This is a programmatic intra-Service consultation, because it addresses multiple actions on a program basis conducted under the umbrella of the final 4(d) rule. The Service has not designated or proposed critical habitat for the NLEB; therefore, this BO does not address effects to critical habitat. Because we anticipate continued NLEB declines as white-nose syndrome (WNS) spreads, this BO will cover the next 7 years that the disease is minimally expected to spread and impact the NLEB throughout its entire range. The Service will reinitiate consultation by the end of 2022 or earlier if the standard reinitiation criteria are triggered.

The final rule addresses both purposeful take and incidental taking of the NLEB, with certain differences distinguished based on the occurrence of WNS as follows:

- The final 4(d) rule prohibits purposeful take of NLEBs throughout the species' range, except when (1) necessary to protect human health; (2) in instances of removal of NLEBs from human structures; or (3) the authorized capture and handling of NLEBs by individuals permitted to conduct these same activities for other bat species until May 3, 2016.
- The final 4(d) rule does not prohibit incidental take resulting from otherwise lawful activities in areas not yet affected by WNS (i.e., areas outside of the WNS zone).
- Within the WNS zone, the final 4(d) rule prohibits incidental take of NLEBs in their hibernacula, which may be caused by activities that disturb or disrupt hibernating individuals when they are present as well as the physical or other alteration of the hibernaculum's entrance or environment when bats are not present.
- Incidental take of NLEBs outside of hibernacula resulting from activities other than tree removal is not prohibited provided they do not result in the incidental take of NLEBs inside hibernacula.
- Incidental take resulting from tree removal is prohibited if it: (1) occurs within 0.25 miles (0.4 km) of known NLEB hibernacula; or (2) cuts or destroys known, occupied maternity roost trees or any other trees within a 150-foot (45-meter) radius around the known, occupied maternity tree during the pup season (June 1 to July 31).
- Removal of hazardous trees for the protection of human life and property is not prohibited.

Federal agencies can rely upon the finding of this BO to fulfill their project-specific section 7(a)(2) responsibilities if they utilize the optional framework as described. The framework requires prior notification of activities that may affect the NLEB, along with a determination that the action would not cause prohibited incidental take. Service concurrence with the action agency determination is not required, but the Service may advise the action agency whether additional information indicates project-level consultation for the NLEB is required. If the Service does not respond within 30 days, the action agency may consider its project responsibilities under section 7(a)(2) with respect to the NLEB fulfilled through this programmatic BO. Action agencies must also report if actions deviate from the determination, along with the surveys of any surveys.

The Action Area addressed in this BO includes the entire range of the NLEB within the United States, which includes all or portions of 37 States and the District of Columbia from Maine west to Montana, south to eastern Kansas, eastern Oklahoma, Arkansas, and east to South Carolina. Within the Action Area, the WNS zone currently includes all or most of the states within the species' range except North Dakota, Montana, South Dakota, and Wyoming.

Status of the NLEB

The disease WNS is the primary factor affecting the status of the NLEB, which has caused dramatic and rapid declines in abundance. Data support substantial declines in the Eastern range and portions of the Midwest range. We expect further declines as the disease continues to spread across the species' range. NLEBs continue to be distributed across much of the historical range, but there are many gaps where bats are no longer detected or captured, and in other areas, their occurrence is sparse given local declines and extirpations. Although significant NLEB population declines have only been documented due to the spread of WNS, other sources of mortality could further diminish the species' ability to persist as it experiences ongoing dramatic declines.

We estimate that the range-wide population of NLEBs is comprised of about 6.5 million adults. This population estimate was calculated for the purposes of assessing the potential relative impact of activities contemplated in this BO, and it has limitations and a substantial amount of uncertainty.

Effects of the Action

The NLEB is likely to be affected by many activities which are not prohibited in the final 4(d) rule. We address the general effects of different activities, which we categorized into 7 general groups: (1) capture and handling of NLEBs by individuals with section 10(a)(1)(A) permits for other listed bats or State permits until May 3, 2016; (2) removal from human structures; (3)

timber harvest; (4) prescribed fire; (5) forest conversion; (6) wind turbine operation; and (7) other activities that may affect the NLEB. The effects of category #1 are not addressed in this consultation.

Based on the available scientific literature, we identified various pathways by which environmental changes (stressors) caused by the Action may affect individual NLEB and the expected responses of individuals exposed to the stressors. General response categories include potentially increased fitness, reduced fitness, disturbance, and harm. We do not have enough information to quantify the effects of removal from human structures and the "other" category of activities that may affect the NLEB. For pathways associated with timber harvest, prescribed fire, and forest conversion, we estimate the number of NLEB individuals exposed by computing the expected overlap between the activities and NLEB-occupied habitats in each state. For wind turbine operation, we estimate the number of bats that could be killed using the current and projected amount of wind energy development and information on bat mortality rates.

Based on these estimations, we anticipate that up to 117,267 NLEB (1.2% of the total population) will be disturbed and 3,285 pups (0.1% of the total pup population) and 980 adults (less than 0.02% of the total adult population) will be harmed annually from timber harvest, prescribed fire, forest conversion, and wind turbine operation. We consider these numbers to be overestimates based on our methodology. Additional harm is anticipated for the unquantified effects from removal from human structures and "other" activities that may affect the NLEB; however, we do not expect the additional impacts to substantially change the total numbers estimated. In addition, we also expect that the numbers affected over time will be reduced as WNS continues to affect the range-wide population.

Although local populations could be affected by the implementation of the final 4(d) rule, most of the states have larger populations and more maternity colonies. In addition, less than 2.3% of NLEBs will be disturbed in all states, less than 1% of pups will be harmed in all states, and less than 1% of adults will be harmed in all states. Therefore, the vast majority of individuals and populations that survive WNS will be unaffected by these activities. Based on the relatively small numbers affected annually compared to the state population sizes, we conclude that adverse effects from timber harvest, prescribed fire, forest conversion, wind energy, and other activities will not lead to population-level declines in this species.

Conclusion

WNS is the primary factor affecting the status of the NLEB, which has caused dramatic and rapid declines in abundance, resulting in the local extirpation of the species in some areas. Our analysis of the effects of activities that may affect the NLEB, but do not cause prohibited take, indicates that the additional loss of individual NLEB resulting from these activities would not

exacerbate the effects of WNS at the scale of states within its range. Even if all anthropogenic activities that might adversely affect NLEB ceased, we do not believe that the resulting reduction in adverse effects would materially change the devastating impact WNS has had, and will continue to have, on NLEB at the local population level or at larger scales.

After reviewing the current status of the NLEB, environmental baseline, effects of the Action, and cumulative effects, it is the Service's biological opinion that the Action, as proposed, is not likely to jeopardize the continued existence of the NLEB.

This BO has evaluated major categories of actions that may affect the NLEB, but for which incidental take is not prohibited. Accordingly, there are no reasonable and prudent measures or terms and conditions that are necessary and appropriate for these actions. Federal agencies may rely on this BO to fulfill their project-specific section 7(a)(2) responsibilities under the framework specified in this BO. Prohibited incidental take requires either a separate consultation (federal actions) or an incidental take permit (non-federal actions).

BIOLOGICAL OPINION

A Biological Opinion (BO) is the document required under the Endangered Species Act of 1973 (Act), as amended, that states the opinion of the U.S. Fish and Wildlife Service (Service) as to whether a proposed federal action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of designated critical habitat.

The action evaluated in this BO is the Service's finalization of a special rule under the authority of section 4(d) of the Act for the northern long-eared bat (*Myotis septentrionalis*) (NLEB). Section 9 of the Act generally prohibits the "take" of a species listed as endangered. The Act and its implementing regulations (50 CFR 17) define take as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. The Act does not specify particular prohibitions for threatened species. Instead, under section 4(d), the Secretary of the Interior has the discretion to issue such regulations to provide for the conservation of threatened species, which may include prohibitions under section 9. This BO also evaluates activities that the Service proposes to prohibit and except from take prohibitions under the final 4(d) rule. In the request for intra-Service consultation, the Service proposes a framework for streamlined section 7 consultation for other federal actions that may affect the NLEB and are consistent with the provisions of the 4(d) rule. This is a programmatic intra-Service consultation, because it addresses multiple actions on a program basis under the umbrella of activities excepted from take prohibitions in the Service's final 4(d) rule.

"To jeopardize the continued existence of a listed species" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of the species (50 CFR §402.02). This BO examines whether projects and activities implemented that are likely to adversely affect the NLEB, but would not cause take prohibited under the final 4(d) rule , are likely to jeopardize the continued existence of the NLEB.

The Service anticipates that white-nose syndrome (WNS), the disease causing the decline of the species, will spread throughout the range of the NLEB by 2023-2028 (Federal Register [FR]80[63]:17974). In listing rule, we determined that the NLEB is not currently in danger of extinction throughout all of its range, but if similar declines occur after WNS spreads throughout its entire range, the NLEB may be in danger of extinction. We expect that the status of the species will continue to decline as WNS reaches new areas; therefore, this BO will cover the next 7 years that the disease is minimally expected to spread and impact the NLEB throughout its entire range. The Service will reinitiate consultation by the end of 2022 or earlier if the reinitiation criteria described in Section 7 (Reinitiation Notice) of this BO are triggered. We believe this is a reasonable approach given that the range-wide decline of the NLEB due to WNS

may reveal that the action may affect the NLEB in a manner or to an extent not previously considered.

1 DESCRIPTION OF THE PROPOSED ACTION

1.1 BACKGROUND

The proposed action is the finalization of the interim 4(d) rule for the NLEB and evaluation of activities excepted from take prohibitions. This rule replaces an interim 4(d) rule established concurrently with the listing of the NLEB as a threatened species on April 2, 2015 (FR 80[63]:17974), under the Act. The interim 4(d) rule:

(1) prohibits purposeful take of NLEBs throughout the species' range, except in instances of removal of NLEBs from human structures;
(2) authorized capture and handling of NLEB by individuals permitted to conduct these same activities for other bats (for a period of 1 year after the effective date of the interim 4(d) rule);
(3) in areas not yet affected by white-nose syndrome (WNS), all incidental take resulting from any otherwise lawful activity is excepted from prohibition;
(4) in areas currently known to be affected by WNS, all incidental take prohibitions apply, except take attributable to forest management practices, maintenance and limited expansion of transportation and utility rights-of-way, prairie habitat management, and limited tree removal projects, provided these activities protect known maternity roosts and hibernacula; and
(5) removal of hazardous trees for the protection of human life or property is excepted from the take prohibition.

The listing and interim 4(d) rule went into effect on May 4, 2015, and the interim 4(d) rule remains in effect until a final 4(d) rule is published in the Federal Register.

1.2 U.S. FISH AND WILDLIFE SERVICE ACTION

The Service is finalizing the interim 4(d) rule for the NLEB. The final rule will address both purposeful take and incidental taking of the NLEB, with certain differences distinguished based on the occurrence of WNS. The final 4(d) rule prohibits purposeful take of NLEBs throughout the species' range, except when:

- necessary to protect human health;
- in instances of removal of NLEBs from human structures; or

- the authorized capture and handling of NLEBs by individuals permitted to conduct these same activities for other bat species until May 3, 2016.

After May 3, 2016, a permit pursuant to Section 10(a)(1)(A)[1] of the Act is required for the capture and handling of NLEBs outside of human structures. We define human structures as houses, garages, barns, sheds, and other buildings designed for human entry.

"Incidental taking" is defined at 50 CFR 17.3 as "any taking otherwise prohibited, if such taking is incidental to, and not the purpose of, an otherwise lawful activity." Incidental take within the context of the final 4(d) rule is regulated in distinct and separate manners relative to the geographic location of the proposed activity and the occurrence of WNS. The WNS zone provides the boundary for implementation of the final rule. It is defined as the set of counties with confirmed evidence of the fungus causing the disease (*Pseudogymnoascus destructans*, or Pd) or WNS, plus a 150-mile (241 km) buffer from the Pd-positive county line to account for the spread of the fungus from one year to the next. In instances where the 150-mile (241 km) buffer line bisects a county, the entire county is included in the WNS zone. The final 4(d) rule does not prohibit incidental take resulting from otherwise lawful activities in areas not yet affected by WNS (i.e., areas outside of the WNS zone).

Within the WNS zone, the final 4(d) rule prohibits incidental take of NLEBs in their hibernacula (which includes caves, mines, and other locations where bats hibernate in winter). Take of NLEBs inside of hibernacula may be caused by activities that disturb or disrupt hibernating individuals when they are present as well as the physical or other alteration of the hibernaculum's entrance or environment when bats are not present, if the activity will impair essential behavioral patterns (e.g., sheltering) and cause harm. Known hibernacula are defined as locations where one or more NLEBs have been detected during hibernation or detected at the entrance during fall swarming or spring emergence. Any hibernaculum with NLEBs observed at least once is considered a known hibernaculum as long as it remains suitable for NLEB use. A hibernaculum remains suitable for NLEBs even when Pd or WNS has been detected.

For NLEBs outside of hibernacula within the WNS zone, the final 4(d) rule establishes separate incidental take prohibitions for activities involving tree removal and those that do not involve tree removal. Incidental take of NLEBs outside of hibernacula resulting from activities other than tree removal is not prohibited provided they do not result in the incidental take of NLEBs inside hibernacula or otherwise impair essential behavioral patterns at known hibernacula. Incidental take resulting from tree removal is prohibited if it: (1) occurs within 0.25 miles (0.4 km) of known NLEB hibernacula; or (2) cuts or destroys known, occupied maternity roost trees or any other trees within a 150-foot (45-meter) radius around the known, occupied maternity tree during the pup season (June 1 to July 31). Removal of hazardous trees for the protection of human life

[1] Section 10(a)(1)(A) describes recovery/scientific permits issued for the enhancement of the survival of the species.

and property is not prohibited. Known, occupied maternity roost trees are defined as trees that have had female NLEBs or juvenile bats tracked to them or the presence of female or juvenile bats is known as a result of other methods. Known, occupied maternity roost trees are considered known roosts as long as the tree and surrounding habitat remain suitable for the NLEB.

The final 4(d) rule individually sets forth prohibitions on possession and other acts with unlawfully taken NLEBs, and on import and export of NLEBs. Under this rule, take of the NLEB is also not prohibited for the following: removal of hazardous trees for protection of human life and property; take in defense of life; and take by an employee or agent of the Service, of the National Marine Fisheries Service, or of a State conservation agency that is operating a conservation program pursuant to the terms of a cooperative agreement with the Service.

Section 4(d) of the Act states that the Secretary shall issue such regulations as she deems "necessary and advisable to provide for the conservation" of species listed as threatened species. The Service determined that the final 4(d) rule is necessary and advisable to provide for the conservation of the NLEB, because it provides for temporary protection of known maternity roost trees during the pup season and to known hibernacula within the WNS zone, and it prohibits most forms of purposeful take throughout the species range. The final rule describes how prohibiting certain types of take is not necessary for the long-term survival of the species, and it acknowledges the importance of addressing the threat of WNS as the primary measure to arrest and reverse the decline of the species.

1.3 OTHER FEDERAL AGENCY ACTIONS

Federal agency actions that involve activities that involve activities not prohibited under the final 4(d) rule may result in effects to the NLEB if the species is exposed to action-caused stressors. Incidental take resulting from these activities is not prohibited; however, the final 4(d) rule does not alter the requirements for consultation under section 7 of the Act, which apply to all federal actions that may affect listed species and designated critical habitat. Section 7(a)(2) of the Act, directs federal agencies, in consultation with the Secretary, to insure that their actions are not likely to jeopardize the continued existence of any listed species, or result in the destruction or adverse modification of designated critical habitat. Therefore, the purpose of section 7(a)(2) is broader than an evaluation of anticipated take and issuance of an Incidental Take Statement.

To address the broader purpose of 7(a)(2) for federal actions that may affect the NLEB but would not cause take prohibited under the final 4(d) rule, the Service's Headquarters Office has requested intra-agency formal consultation with the Service's Midwest Regional Office on the effects of all such federal actions. Because the Service has determined with the final 4(d) rule that regulating incidental take associated with the excepted activities is not necessary or advisable for the conservation of the NLEB, Service Headquarters proposes an optional

framework for subsequent federal agency reliance on the findings of an intra-Service consultation that would streamline section 7(a)(2) compliance for such activities. The primary objective of the framework is to provide an efficient means for Service verification of federal agency determinations that their proposed actions are consistent with those evaluated in the intra-Service consultation and do not require an incidental take statement for the NLEB. Such verification is necessary because incidental take is prohibited in the vicinity of known hibernacula and known roosts, and these locations are continuously updated. We do not include specific action agencies or their specific actions in this BO; rather, we focus on the types of activities that may affect the NLEB and conduct our jeopardy analysis on these activities. Federal agencies may rely on this BO to fulfill their project-specific section 7(a)(2) responsibilities under the following framework:

1. For all federal activities that may affect the NLEB, the action agency will provide project-level documentation describing the activities that are excepted from incidental take prohibitions and addressed in this consultation. The federal agency must provide written documentation to the appropriate Service Field Office when it is determined their action may affect (i.e., not likely to adversely affect or likely to adversely affect) the NLEB, but would not cause prohibited incidental take. This documentation must follow these procedures:

    a. In coordination with the appropriate Service Field Office, each action agency must make a determination as to whether their activity is excepted from incidental taking prohibitions in the final 4(d) rule. Activities that will occur within 0.25 mile of a known hibernacula or within 150 feet of known, occupied maternity roost trees during the pup season (June 1 to July 31) are not excepted pursuant to the final 4(d) rule. This determination must be updated annually for multi-year activities.
    b. At least 30 days in advance of funding, authorizing, or carrying out an action, the federal agency must provide written notification of their determination to the appropriate Service Field Office.
    c. For this determination, the action agency will rely on the definitions of prohibited activities provided in the final 4(d) rule and the activities considered in this consultation.
    d. The determination must include a description of the proposed project and the action area (the area affected by all direct and indirect project effects) with sufficient detail to support the determination.
    e. The action agency must provide its determination as part of a request for coordination or consultation for other listed species or separately if no other species may be affected.
    f. Service concurrence with the action agency determination is not required, but the Service may advise the action agency whether additional information indicates consultation for the NLEB is required; i.e., where the proposed project includes an activity not covered by the 4(d) rule and thus not addressed in the Biological Opinion and is subject to additional consultation.
    g. If the Service does not respond within 30 days under (f) above, the action agency

may presume its determination is informed by best available information and consider its project responsibilities under section 7(a)(2) with respect to the NLEB fulfilled through this programmatic Biological Opinion.

2. Reporting
    a. For monitoring purposes, the Service will assume all activities are conducted as described. If an agency does not conduct an activity as described, it must promptly report and describe such departures to the appropriate Service Field Office.
    b. The action agency must provide the results of any surveys for the NLEB to the appropriate Service Field Office within their jurisdiction.
    c. Parties finding a dead, injured, or sick NLEB must promptly notify the appropriate Service Field Office.

If a Federal action agency chooses not to follow this framework, standard section 7 consultation procedures will apply.

Section 7(a)(1) of the Act directs Federal agencies, in consultation with and with the assistance of the Secretary (a function delegated to the Service), to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Service Headquarters provides to federal action agencies who choose to implement the framework described above several conservation recommendations for exercising their 7(a)(1) responsibility in this context. Conservation recommendations are discretionary federal agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. Service Headquarters recommends that the following conservation measures to all Federal agencies whose actions may affect the NLEB:

1. Perform NLEB surveys according to the most recent Range-wide Indiana Bat/NLEB Summer Survey Guidelines. Benefits from agencies voluntarily performing NLEB surveys include:
    a. Surveys will help federal agencies meet their responsibilities under section 7(a)(1) of the Act. The Service and partners will use the survey data to better understand habitat use and distribution of NLEB, track the status of the species, evaluate threats and impacts, and develop effective conservation and recovery actions. Active participation of federal agencies in survey efforts will lead to a more effective conservation strategy for the NLEB.
    b. Should the Service reclassify the species as endangered in the future, an agency with a good understanding of how the species uses habitat based on surveys within its action areas could inform greater flexibility under section 7(a)(2) of the Act. Such information could facilitate an expedited consultation and incidental take statement that may, for example, exempt taking associated with tree removal during the active season, but outside of the pup season, in known occupied habitat.
2. Apply additional voluntary conservation measures, where appropriate, to reduce the

impacts of activities on NLEBs. Conservation measures include:

a. Conduct tree removal activities outside of the NLEB pup season (June 1 to July 31) and/or the active season (April 1 to October 31). This will minimize impacts to pups at roosts not yet identified.
b. Avoid clearing suitable spring staging and fall swarming habitat within a 5-mile radius of known or assumed NLEB hibernacula during the staging and swarming seasons (April 1 to May 15 and August 15 to November 14, respectively).
c. Manage forests to ensure a continual supply of snags and other suitable maternity roost trees.
d. Conduct prescribed burns outside of the pup season (June 1 to July 31) and/or the active season (April 1 to October 31). Avoid high-intensity burns (causing tree scorch higher than NLEB roosting heights) during the summer maternity season to minimize direct impacts to NLEB.
e. Perform any bridge repair, retrofit, maintenance, and/or rehabilitation work outside of the NLEB active season (April 1 to October 31) in areas where NLEB are known to roost on bridges or where such use is likely.
f. Do not use military smoke and obscurants within forested suitable NLEB habitat during the pup season (June 1 to July 31) and/or the active season (April 1 to October 31).
g. Minimize use of herbicides and pesticides. If necessary, spot treatment is preferred over aerial application.
h. Evaluate the use of outdoor lighting during the active season and seek to minimize light pollution by angling lights downward or via other light minimization measures.
i. Participate in actions to manage and reduce the impacts of white-nose syndrome on NLEB. Actions needed to investigate and manage white-nose syndrome are described in a national plan the Service developed in coordination with other state and federal agencies (Service 2011).

1.4 ACTION AREA

The action area is defined as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (50 CFR 402.02). In delineating the action area, we evaluated the farthest reaching physical, chemical, and biotic effects of the action on the environment.

The "Action Area" for this consultation includes the entire range of the NLEB within the United States, which includes all or portions of the following 37 States and the District of Columbia: Alabama, Arkansas, Connecticut, Delaware, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming. Within the Action Area, the WNS

zone currently includes all or most of the states within the species' range except North Dakota, Montana, South Dakota, and Wyoming (Figure 1.1) (note: tables and figures for each major section of this BO appear at the end of the section). The WNS zone map is updated on the first of every month (http://www.fws.gov/midwest/endangered/mammals/nleb/pdf/WNSZone.pdf).

1.5 ACTIVITIES NOT EVALUATED IN THIS BIOLOGICAL OPINION

The following general categories of activities are prohibited under the final 4(d) rule within the WNS zone:

1. Activities resulting in the disruption or disturbance of NLEBs in their hibernacula.
2. Activities resulting in the physical or other alteration of a hibernaculum's entrance or its environment at any time of year.
3. Tree clearing activities within 0.25 miles of a known NLEB hibernaculum.
4. Tree clearing activities that result in cutting or destroying known, occupied maternity roost trees or any other trees within a 150 ft radius around the roost tree during the pup season (June 1 – July 31).

Separate project-specific section 7 consultation is required for these activities; therefore, they are not addressed further in this consultation.

1.6 TABLES AND FIGURES FOR DESCRIPTION OF THE ACTION

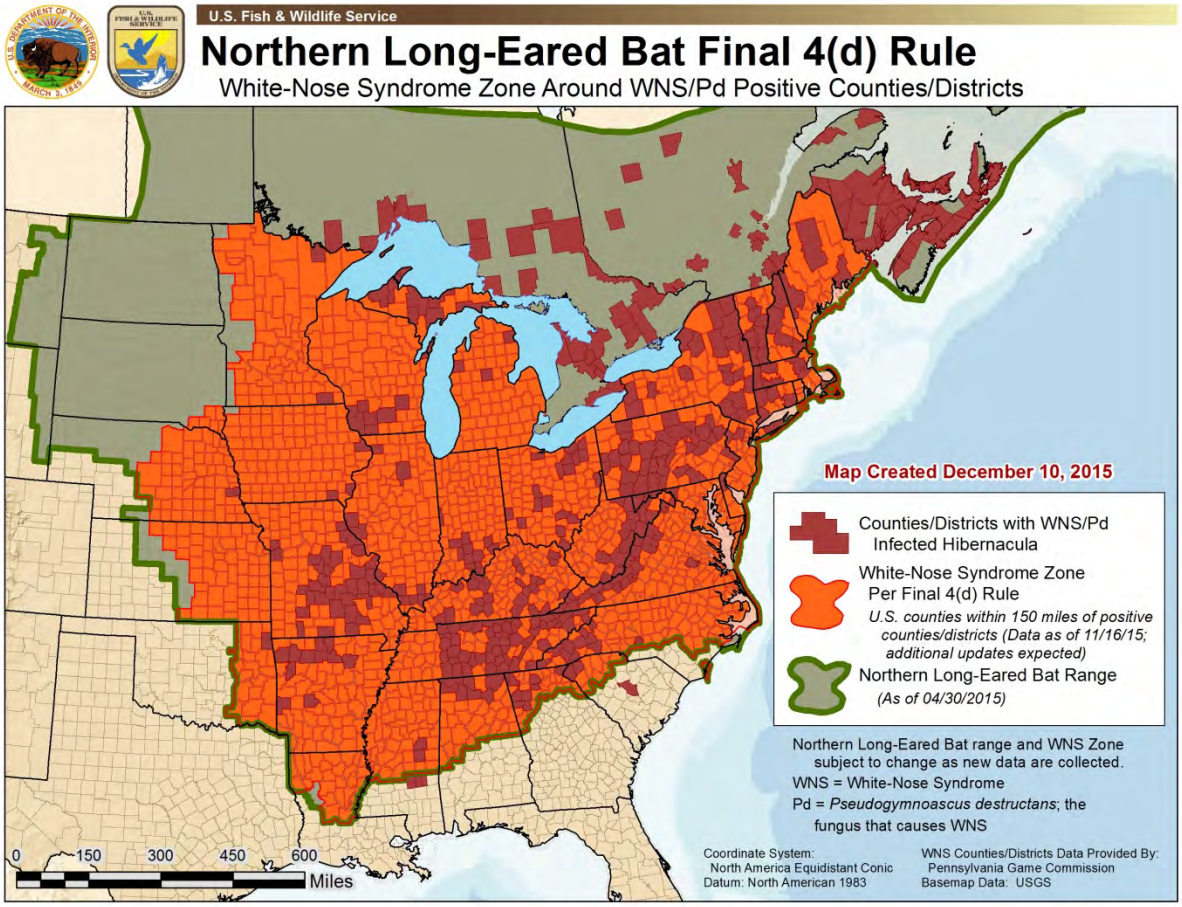

Figure 1.1. The NLEB WNS Zone around WNS/Pd positive counties or districts.

2 STATUS OF THE SPECIES/CRITICAL HABITAT

As described in Section 1, the Service listed the NLEB as a threatened species on April 2, 2015. The final rule determined that critical habitat designation for the NLEB was prudent, but not determinable at the time. The final listing rule describes the status of the species in detail and is hereby incorporated by reference. We summarize and paraphrase portions of the final rule in this section that are most relevant to an evaluation of the proposed Action. Additional information and citations can be found in the final listing rule.

2.1 SPECIES BACKGROUND & HABITAT

The NLEB is a temperate, insectivorous, migratory bat that hibernates in mines and caves in the winter and spends summers in wooded areas. The key stages in its annual cycle are: hibernation, spring staging and migration, pregnancy, lactation, volancy/weaning, fall migration and swarming. NLEB generally hibernate between mid-fall through mid-spring each year. The spring migration period likely runs from mid-March to mid-May each year, as females depart shortly after emerging from hibernation and are pregnant when they reach their summer area. Young are born between June and early July, with nursing continuing until weaning, which is shortly after young become volant (able to fly) in mid- to late-July. Fall migration likely occurs between mid-August and mid-October.

2.1.1 SUMMER HABITAT AND ECOLOGY

Suitable summer habitat for NLEB consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats. This includes forests and woodlots containing potential roosts, as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure.

After hibernation ends in late March or early April (as late as May in some northern areas), most NLEB migrate to summer roosts. For purposes of this BO, we define the NLEB active season as the period between emergence and hibernation from April 1 – October 31. We recognize that the active season is variable across the action area depending on latitude, elevation, and weather conditions; however, we believe this range captures most of the period throughout the range in most years. The spring migration period typically runs from mid-March to mid-May (Caire et al. 1979; Easterla 1968; Whitaker and Mumford 2009). The NLEB is not considered to be a long distance migrant (typically 40-50 miles). Males and non-reproductive females may summer near hibernacula, or migrate to summer habitat some distance from their hibernaculum.

After emergence, female NLEBs actively form colonies in the summer (Foster and Kurta 1999) and exhibit fission-fusion behavior (Garroway and Broders 2007), where members frequently coalesce to form a group, but composition of the group is in flux (Barclay and Kurta 2007). As part of this behavior, NLEBs switch tree roosts often (Sasse and Pekins 1996), typically every 2 to 3 days (Foster and Kurta 1999; Owen et al. 2002; Carter and Feldhamer 2005; Timpone et al. 2010). NLEB maternity colonies range widely in size (reported range of 7 to 100; Owen et al. 2002; Whitaker and Mumford 2009), although about 30-60 may be most common (Whitaker and Mumford 2009; Caceres and Barclay 2000; Service 2014).

NLEBs show interannual fidelity to roost trees and/or maternity areas. They use networks of roost trees often centered around one or more central-node roost trees (Johnson et al. 2012) with multiple alternate roost trees. NLEB roost in cavities, underneath bark, crevices, or hollows of both live and dead trees and/or snags (typically ≥3 inches dbh). NLEB are known to use a wide variety of roost types, using tree species based on presence of cavities or crevices or presence of peeling bark. NLEBs have also been occasionally found roosting in structures like buildings, barns, sheds, houses, and bridges (Benedict and Howell 2008; Krochmal and Sparks 2007; Timpone et al. 2010; Service 2014).

Summer home range includes both roosting and foraging areas, and range size may vary by sex. Maternity roosting areas have been reported to vary from mean of 21 to 179 acres (Owen et al. 2003; Broders et al. 2006; Lacki et al. 2009) to a high of 425 acres (Lacki et al. 2009). Foraging areas are six or more times larger (Broders et al. 2006; Henderson and Broders 2008). The distance traveled between consecutive roosts varies widely from 20 ft (Foster and Kurta 1999) to 2.4 miles (Timpone et al. 2010). Likewise, the distance traveled between roost trees and foraging areas in telemetry studies varies widely, e.g., a mean of 1,975 ft (Sasse and Perkins 1996) and a mean of 3,609 ft (Henderson and Broders 2008). Circles with a radius of these distances have an area of 281 and 939 acres. Based on reported maximum individual home range (425 acres) and travel distances between roosts and foraging areas described above (939 acres), we use 1,000 acres for purposes of this BO as the area a colony uses. An analysis of mist net survey data in Kentucky (Service 2014, unpublished data cited in the final listing rule) shows that most males and non-reproductive females are captured in the same locations as reproductively active females, suggesting substantial overlap in the summer home range of reproductive females and other individuals (94%).

NLEBs are typically born in late-May or early June, with females giving birth to a single offspring. Lactation then lasts 3 to 5 weeks, with pups becoming volant between early July and early August. For purposes of this BO and the final 4(d) rule, we define the pup season (i.e., the period of non-volancy) as June 1 – July 31.

2.1.2 WINTER HABITAT AND ECOLOGY

Suitable winter habitat (hibernacula) includes underground caves and cave-like structures (e.g. abandoned or active mines, railroad tunnels). There may be other landscape features being used by NLEB during the winter that have yet to be documented. Generally, NLEB hibernate from October to April depending on local climate (November-December through March in southern areas with emergence as late as mid-May in some northern areas).

Hibernacula for NLEB typically have significant cracks and crevices for roosting; relatively constant, cool temperatures (0-9 degrees Celsius) and with high humidity and minimal air currents. Specific areas where they hibernate have very high humidity, so much so that droplets of water are often seen on their fur. Within hibernacula, surveyors find them in small crevices or cracks, often with only the nose and ears visible.

NLEB tend to roost singly or in small groups (Service 2014), with hibernating population sizes ranging from just a few individuals to around 1,000 (Service unpublished data). NLEB display more winter activity than other cave species, with individuals often moving between hibernacula throughout the winter (Griffin 1940; Whitaker and Rissler 1992; Caceres and Barclay 2000). NLEB have shown a high degree of philopatry (i.e., using the same site multiple years) to the hibernacula used, returning to the same hibernacula annually.

2.1.3 SPRING STAGING AND FALL SWARMING HABITAT AND ECOLOGY

Upon arrival at hibernacula in mid-August to mid-November, NLEB “swarm,” a behavior in which large numbers of bats fly in and out of cave entrances from dusk to dawn, while relatively few roost in caves during the day. Swarming continues for several weeks and mating occurs during the latter part of the period. After mating, females enter directly into hibernation but not necessarily at the same hibernaculum at which they had been mating. A majority of bats of both sexes hibernate by the end of November (by mid-October in northern areas).

Reproductively active females store sperm through the winter from autumn copulations. Ovulation takes place after the bats emerge from hibernation in spring. The period after hibernation and just before spring migration is typically referred to as “staging,” a time when bats forage and a limited amount of mating occurs. This period can be as short as a day for an individual, but not all bats emerge on the same day.

In general, NLEB use roosts in the spring and fall similar to those selected during the summer. Suitable spring staging/fall swarming habitat consists of the variety of forested/wooded habitats where they roost, forage, and travel, which is most typically within 5 miles of a hibernaculum.

2.2 DISTRIBUTION AND RANGE

The NLEB ranges across much of the eastern and north central United States, and all Canadian provinces west to the southern Yukon Territory and eastern British Columbia (Figure 2.1) (Nagorsen and Brigham 1993; Caceres and Pybus 1997; Environment Yukon 2011). In the United States, the species' range reaches 37 states from Maine west to Montana, south to eastern Kansas, eastern Oklahoma, Arkansas, and east to South Carolina (Whitaker and Hamilton 1998; Caceres and Barclay 2000; Amelon and Burhans 2006). Historically, the species has been most frequently observed in the northeastern United States and in Canadian Provinces, Quebec and Ontario. However, throughout the majority of the species' range it is patchily distributed, and historically was less common in the southern and western portions of the range than in the northern portion of the range (Amelon and Burhans 2006).

The U.S. portion of the NLEB's range is discussed in this BO in four parts: Eastern, Midwest, Southern, and Western. This is done solely for purposes of analysis and discussion; there is currently no indication that these are distinct populations. The Eastern range comprises Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. The Midwest range includes Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. The Southern range comprises Alabama, Arkansas, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, and Tennessee, and the Western range includes Kansas, Montana, Nebraska, North Dakota, South Dakota, and Wyoming.

Although NLEBs are typically found in low numbers in inconspicuous roosts, most records of NLEB are from winter hibernacula surveys (Caceres and Pybus 1997). There are currently 1,508 hibernacula known throughout the species' range in the United States (Table 2.1). The majority of the known hibernacula occur within the Eastern (39%) and the Midwest range (38), followed by 21 percent in the Southern range, and 2 percent in the Western range. Even prior to WNS, many hibernacula contained only a few (1 to 3) individuals (Whitaker and Hamilton 1998). There are likely many more unknown hibernacula.

There have also been many summer mist-net and acoustic surveys conducted within the range of the NLEB, but the surveys have not been complied into a central database across the species' range. The data is housed with the state natural resources programs, state natural heritage programs, or the local Service field offices. We are unable to report the total number of locations with NLEBs; however, we have compiled the total number of known maternity roost trees in each state (Table 2.1). There are 1,744 known maternity roost trees in 19 of 37 states, with 42% occurring in the Southern range, 30% in the Midwest, and 28% in the Eastern range. There are no known maternity roost trees in the Western range. There are limitations to these data because

most states and natural heritage programs have not been tracking NLEB occurrences or individual roosts.

The current range and distribution of NLEB must be described and understood within the context of the impacts of WNS. Prior to the onset of WNS, the best available information on NLEB came primarily from surveys (primarily focused on Indiana bat or other bat species) and some targeted research projects. In these efforts, NLEB was very frequently encountered and was considered the most common myotid bat in many areas. Overall, the species was considered to be widespread and abundant throughout its historic range (Caceres and Barclay 2000). NLEBs continue to be distributed across much of the historical range, but there are many gaps within the range where bats are no longer detected or captured, and in other areas, their occurrence is sparse given local declines and extirpations.

2.3 STATUS AND THREATS

2.3.1 WHITE-NOSE SYNDROME

WNS is an emerging infectious wildlife disease caused by a fungus of European origin, Pd, which poses a considerable threat to hibernating bat species throughout North America, including the NLEB (Service 2011). WNS is responsible for unprecedented mortality of insectivorous bats in eastern North America (Blehert et al. 2009; Turner et al. 2011). No other threat is as severe and immediate for the NLEB as the disease WNS. There is no doubt that NLEB populations would be declining so dramatically without the impact of WNS. Since the disease was first observed in New York in 2007 (later biologists found evidence from 2006 photographs), WNS has spread rapidly in bat populations from the East to the Midwest and the South. As of November 2015, WNS or Pd was confirmed in 30 of the 37 states within the species' range (Figure 1.1; Table 2.2). Data support substantial declines in the Eastern range and portions of the Midwest range. In addition, there are apparent population declines at most hibernacula with WNS in the Southern range. We expect further declines as the disease continues to spread across the species' range.

Post-WNS hibernacula counts available from the northeast U.S. show the most substantial population declines for the NLEB. Turner et al. (2011) compared the most recent pre-WNS count to the most recent post-WNS count for six cave bat species and reported a 98 percent total decline in the number of hibernating NLEB at 30 hibernacula in New York, Pennsylvania, Vermont, Virginia, and West Virginia through 2011. For the final listing rule, the Service conducted an analysis of additional survey information at 103 sites across 12 U.S. States and Canadian provinces (New York, Pennsylvania, Vermont, West Virginia, Virginia, New Hampshire, Maryland, Connecticut, Massachusetts, North Carolina, New Jersey, and Quebec)

and found comparable declines in winter colony size. At these sites, total NLEB counts declined by an average of 96 percent after the arrival of WNS; 68 percent of the sites declined to zero NLEB, and 92 percent of sites declined by more than 50 percent. Frick et al. (2015) consider the NLEB now extirpated from 69 percent of the hibernacula in Vermont, New York, Pennsylvania, Maryland, Virginia, and West Virginia that had colonies of NLEB prior to WNS. Langwig et al. (2012) reported that 14 populations of NLEB in New York, Vermont, and Connecticut became locally extinct within 2 years due to disease.

Long-term summer survey data (including pre- and post-WNS) for the NLEB, where available, corroborate the population decline evident in hibernacula survey data. For example, summer surveys from 2005 – 2011 near Surry Mountain Lake in New Hampshire showed a 98 percent decline in capture success of NLEB post-WNS, which is similar to the hibernacula data for the State (a 95 percent decline) (Moosman et al. 2013). Mist-netting data from Pennsylvania indicate that NLEB captures declined by 46 percent in 2011, 63 percent in 2012, 76 percent in 2013, and 94 percent in 2014, compared to the average pre-WNS capture rate between 2001 to 2007 (Butchkoski 2014; Pennsylvania Game Commission, unpublished data). The NLEB is more commonly encountered in summer mist-net surveys in the Midwest; however, similar rates of population decline are already occurring in Ohio and Illinois. Early reports also indicate declines in Missouri and Indiana (80 FR 17979-17980). Other data, much of it received as comments on the proposed listing rule from State wildlife agencies, demonstrate that various measures of summer NLEB abundance and relative abundance (mist net surveys, acoustic surveys) have declined following detection of WNS in the state.

Although the dispersal rate of Pd across the landscape and the onset of WNS after the fungus arrives at a new site are variable, it appears unlikely that any site within the range of the NLEB is not susceptible to WNS. Some evidence suggests that certain microclimatic conditions may hinder disease progression at some sites, but given sufficient exposure time, WNS has had similar impacts on NLEB everywhere the disease is documented. Absent direct evidence that some NLEB exposed to the fungus do not contract WNS, available information suggests that the disease will eventually spread throughout the species' range. As described in Section 1 of this BO, we anticipate that WNS will spread throughout the range of the NLEB by 2023-2028.

2.3.2 OTHER THREATS

Although significant NLEB population declines have only been documented due to the spread of WNS, other sources of mortality could further diminish the species' ability to persist as it experiences ongoing dramatic declines. The final listing rule for the NLEB describes known threats to the species under each of the five statutory factors for listing decisions, of which disease/predation, discussed above, is the dominant factor. We summarize here the findings of the final listing rule regarding the other four factors that are relevant to this consultation.

Human and non-human modification of hibernacula, particularly altering or closing hibernacula entrances, is considered the next greatest threat after WNS to the NLEB. Some modifications, e.g., closure of a cave entrance with structures/materials besides a bat-friendly gate, can cause a partial or complete loss of the utility of a site to serve as hibernaculum. Humans can also disturb hibernating bats, either directly or indirectly, resulting in an increase in energy-consuming arousal bouts during hibernation (Thomas 1995; Johnson et al. 1998).

During the summer, NLEB habitat loss is primarily due to forest conversion and forest management. Throughout the range of NLEB, forest conversion is expected to increase due to commercial and urban development, energy production and transmission, and natural changes. The 2010 Resources Planning Act Assessment projects forest losses of 16–34 million acres (or 4–8 percent of 2007 forest area) across the conterminous United States, and forest loss is expected to be concentrated in the southern United States, with losses of 9–21 million acres (USFS 2012). Forest conversion causes loss of potential habitat, fragmentation of remaining habitat, and if occupied at the time of the conversion, direct injury or mortality to individuals. Forest management activities, unlike forest conversion, typically result in temporary impacts to the habitat of NLEB, but like forest conversion, may also cause direct injury or mortality to individuals. The net effect of forest management may be positive, neutral, or negative, depending on the type, scale, and timing of various practices. The primary potential benefit of forest management to the species is perpetuating forests on the landscape that provide suitable roosting and foraging habitat.

Wind energy facilities are known to cause mortality of NLEB. While mortality estimates vary between sites and years, sustained mortality at particular facilities could cause declines in local populations. Wind energy development within portions of the species' range is projected to continue.

Climate change may also affect this species, as NLEB are particularly sensitive to changes in temperature, humidity, and precipitation. Climate change may indirectly affect the NLEB through changes in food availability and the timing of hibernation and reproductive cycles.

Environmental contaminants, in particular insecticides, other pesticides, and inorganic contaminants, such as mercury and lead, may also have detrimental effects on NLEB. Contaminants may bio-accumulate (become concentrated) in the tissues of bats, potentially leading to a myriad of sub-lethal and lethal effects. NLEBs may also be indirectly affected through a reduction in available insect prey.

Fire is one of the environmental stressors that contribute to the creation of snags and damaged trees on the landscape, which NLEB frequently use as summer roosts. Fire may also kill or injure

bats, especially flightless pups. Prescribed burning is a common tool for forest management in many parts of the species' range.

There is currently no evidence that the natural or manmade factors discussed above (hibernacula modification, forest conversion, forest management, wind energy, climate change, contaminants, fire) have separately or cumulatively contributed to significant range-wide population effects on the NLEB prior to the onset of WNS. However, declines due to WNS have significantly reduced the number and size of NLEB populations in some areas of its range. This has reduced these populations to the extent that they may be increasingly vulnerable to other stressors that they may have previously had the ability to withstand. These impacts could potentially be seen on two levels. First, individual NLEB sickened or struggling with infection by WNS may be less able to survive other stressors. Second, NLEB populations impacted by WNS, with smaller numbers and reduced fitness among individuals, may be less able to recover making them more prone to extirpation. The status and potential for these impacts will vary across the range of the species.

2.4 POPULATION DYNAMICS

Hibernacula counts are generally the best census method for most bats that hibernate, because individuals are concentrated and relatively stationary. However, because the NLEB is difficult to detect in hibernacula, moves between hibernacula during the winter, and many hibernacula are likely not known, a range-wide population estimate for the species is not available. The NLEB is most widely dispersed on the landscape during the summer where it is most likely exposed, directly or indirectly (i.e., later in time), to the widely dispersed (i.e., not concentrated in a given area) activities that are excepted from take prohibitions under the 4(d) rule.

For purposes of this BO, we estimate NLEB numbers based on total forested acres in each state and assumptions about:

- state-specific occupancy rates;
- forested acres in each state;
- maternity colony home-range size;
- number of adult females per colony;
- overlap between adult male home range and maternity colony home range;
- overlap between maternity colonies; and
- landscape-scale adult sex ratio (we assume 1:1).

We explain these data and assumptions in the following sub-sections.

2.4.1 OCCUPANCY RATES

We requested summer survey results from the three most recent years available from our field offices to provide an estimate of recent occupancy rates. Field offices provided the total number of survey sites (typically mist-net surveys), by state and by year, and the number of sites that captured at least one NLEB. Occupancy rates were calculated using the proportion of sites occupied with NLEB from the total number of sites sampled (Table 2.3). Where no data were available, we used the post-WNS survey data provided by the Forest Service for National Forests within the respective state (Table 2.3). Some states have only 1 or 2 years of data, and others have 8 or more consecutive years of data. In most cases, the numbers and locations of these survey sites do not constitute a representative sample of the available forest habitat in each state. Regardless, the alternative to using these data is to consider the NLEB ubiquitous within forested habitat in each state, which would greatly overestimate occupancy. Instead, we use these data as the best available information from which to make inferences about the extent of NLEB occupancy in each state[2].

Table 2.2 identifies the years in which WNS was detected in the state. We compute pre- and post-WNS occupancy rates as the number of net sites with NLEB divided by the total number of bat capture sites in each state. We applied the occupancy rate listed in Table 2.3 to each state.

2.4.2 TOTAL FORESTED ACRES IN EACH STATE

We compiled the total forested acres for each state from the U.S. Forest Service's 2015 State and Private Forestry Fact sheets (available at http://stateforesters.org/regional-state). We assumed that all forested acres within each state are suitable for the NLEB, which probably overestimates habitat availability but it is not unreasonable given the NLEB's ability to use very small trees (≥ 3 in dbh). We could have estimated the amount of forest in each state in more detail, but our analysis of other factors unrelated to forest cover was limited to statewide data, so we used statewide data throughout the analysis for all factors.

[2] The occupancy data used in this analysis has many limitations and a substantial amount of uncertainty. Occupancy as used here is the proportion of suitable habitat that is likely to have NLEB present. This is sensitive to the accuracy of the suitable habitat data, the accuracy of the survey data used to estimate the occupancy, and biases in the survey data collection methodology. The definition of suitable habitat used for this analysis is necessarily very general (forested areas) to be applicable across the entire species range. The surveys used to generate the occupancy data were often very sparse and not designed for this purpose. Repurposing of the data may increase the effects of bias in distribution of sample points (in relation to both suitable habitat and bat distributions), sampling methodologies, and sampling timing. We believe that because much of the sampling was not targeted specifically at NLEB and often involves surveys for development or construction projects, survey locations are unlikely to be closely correlated to NLEB distributions, which may minimize the influence of some biases. However, the limitations of the available data and its biases are potentially significant to the occupancy estimates, and this creates uncertainty that we acknowledge. Given these factors, our estimates of population are meant as tool for assessing potential relative impact by providing a scale for comparison, not as a precise estimate of the northern long-eared bat populations.

Not every state is wholly within the range of the NLEB (Figure 2.1), and including the total forested acreage from states not fully within the species' range could greatly overestimate the population size. Therefore, we excluded states with less than 50% of its area within the species range, which eliminated Montana, Wyoming, Oklahoma, Louisiana, Alabama, Georgia, and South Carolina. The inclusion of the full states of Nebraska, Kansas, Mississippi, and North Carolina should compensate for any individuals not included in the excluded states. The list of states included, along with the total forested acres are reported in Table 2.4.

2.4.3 COLONY SIZE (NUMBERS OF BATS AND OCCUPIED AREA)

In addition to the occupancy rates described above, we rely in this BO primarily on colony characteristics reported in the literature to estimate state-wide bat numbers. NLEB colonies are comprised of variable numbers of adult females. Two important studies give a range of 30–60 adult females per colony (see Section 2.1.1). Given the number of colonies that a state likely supports (see Section 2.4.4) (see Section 2.4.4), we then estimate total NLEB numbers in the occupied available habitat using the number of females per colony and assuming a 1:1 adult female/adult male ratio and a maximum of 1 pup per female.

While colony sizes of 30-60 bats may be typical in areas unaffected by WNS, in areas with clear declines in bat populations, these estimates may no longer be appropriate. Declines in total population appear to exceed what could be explained by declines in occupancy rates alone. The total reproductive female population can be described as the product of the average colony size in females and the number of colonies:

[Total female reproductive population = Number of colonies * Mean females per colony] OR
N=C*F

If the rate of total population decline exceeds the rate of decline in number of colonies (as described by declines in occupancy) there must also be an additional reduction in the average colony size as well.

Information about total population sizes or average colony sizes is not available on a wide scale. However, there are a few instances where we have obtained data that could be used to approximate rates of population decline without knowing the actual sizes of populations. In Pennsylvania, captures of bats per unit effort have been tracked for several years. Changes in this number of bats per unit effort captured across a wide area could be assumed to mirror changes in the total population for that area. So if the total population declined by 50%, we would expect to see a 50% decline in captures of bats per unit effort as well. The number of bats per unit effort in Pennsylvania declined to 22.3% of pre-WNS levels (averaging capture rates across 2012-2014). Over the same time period, occupancy declined 49.8%. Pre-WNS occupancy was 67.9% of

suitable habitat, while the last three years of data indicate an occupancy rate of 33.8% of suitable habitat (0.338/0.679=0.498).

The change over time of the total female population is going to be a function of the change in the number of colonies and the change in the mean number of females per colony. Or, put another way, the change in females per colony over time can be described by the change in the number of colonies in relation to the change in total female population. So:

$N_t/N_0 = (C_t*F_t)/(C_0*F_0)$ OR $C_t = (N_t/N_0)*(C_0*F_0)/ F_t$ OR $C_t = (N_t/N_0)*C_0/(F_t/ F_0)$

Assuming changes in captures per unit effort is a good approximation for changes in the proportion of remaining bats, and using the decline in occupancy to represent the decline in the number of colonies, with a decline in occupancy of 49.8%, the average colony size is likely to have declined by 55% to approximately 20 bats per colony. (((0.223/1)*45)/(0.498)=20.2)

Similarly, Ohio has seen declines in captures per mist net site to 91.2% of pre-WNS levels, using the average of 2012-2014 rates. While likely to be less accurate to represent population declines than captures per unit effort, captures per mist net site may be a reasonable approximation for total population changes as well. Occupancy rates have been relatively stable in Ohio, increasing slightly from 39.6% over 2007-2010 to 42.1% over 2012-2014 (although with a large drop in 2014). Assuming the captures per mist net site is also a reasonable estimate of the rate of total population decline, a slightly increasing occupancy indicates that declines must be occurring within colonies. The average colony is likely to have declined 14%, to about 39 bats. (((0.912/1)*45)/(1.06) = 38.7)

WNS was first documented in Pennsylvania in 2008-2009 and in Ohio in 2010-2011 (Table 2.2). For the purposes of this BO, we assume that colonies are comprised of 20 females in all states where WNS was documented prior to the winter of 2010-2011 (Table 2.4). Rhode Island does not have any hibernacula; therefore, WNS has not been confirmed in the state. We assume that bats in summer habitat in Rhode Island have been affected by WNS in the surrounding states, and colonies are comprised of 20 females. For all states with WNS documented during or after the winter of 2010-2011, we assume colonies are comprised of 39 females. For states that do not have WNS (including states that have only documented Pd), we use 45 females per colony (the mid-point of the 30–60 range) as the basis for estimating bat numbers. For each colony present in a state, we assume a NLEB population is comprised of 20, 39, or 45 adult females and the same number of sympatric adult males and juveniles following parturition, depending on the status of WNS (Table 2.4).

As described in Section 2.1.1, we use 1,000 acres for purposes of this BO as the area a colony uses. Within this area, one or more members of a colony and sympatric adult males would likely appear in mist net or acoustic surveys. Such appearance is the basis for the occupancy rates we

use to estimate the acreage of available forested habitat that NLEB may use during the active season in the states, which are given in Table 2.4.

Maternity roosting areas are a subset of the 1,000-acre colony size we use in this BO. As described above, Broders et al. (2006) and Henderson and Broders (2008) found that foraging areas were six or more times larger than maternity roosting areas. One sixth of our 1,000-acre colony size is 167 acres, which is within the range of other maternity roosting areas reported (Carter and Feldhamer 2005; Silvis et al. 2015). For purposes of this BO, we use a maternity roosting area of 167 acres. Table 2.5 shows our estimates of the percentage of each state that is used as maternity roost areas based on the number of expected colonies (Table 2.4) and 167 acres per colony.

2.4.4 OVERLAP

Lacking information about the degree of spatial overlap between NLEB maternity colonies, for this BO we assume that colonies do not overlap, e.g., we assume that 1,000 acres of occupied habitat supports one colony. Estimated or assumed occupancy rates in all of the states are all less than 70 percent (Table 2.3); therefore, it is unlikely that limited habitat availability would contribute to substantial colony-range overlap. If incorrect, the possible effect of this assumption is to underestimate the population size in each state (i.e., 1,000 acres supports more than 1 colony).

As described in Section 2.1.1, mist net survey data in Kentucky indicate substantial overlap in the summer home range of reproductive females and males and non-reproductive females (1,712 of 1,825 capture records, or 94 percent). The Service further analyzed this data to determine the percentage of capture locations for males and non-reproductive females that were not capture locations for reproductive female captures or within 3 miles of a reproductive female capture location (Service 2015b). Of 909 capture locations, 87 (9.57 percent) did not have reproductively active females and were more than 3 miles away from captures of reproductive females, suggesting a 100 – 9.57 = 90.43 percent overlap between the home range of individuals belonging to maternity colonies and other individuals. We lack state-specific information about the overlap between reproductively active females and other bats; therefore, for this BO, we assume the 90.43 percent overlap suggested by the Kentucky data. We multiply occupied forest acres by 0.9043 to compute the number of probable maternity colonies; e.g., 100,000 occupied acres × 0.9043 = 90,430 acres supporting 90,430 ÷ 1000 = 91 maternity colonies, rounding up any fractional remainder.

2.4.5 POPULATION ESTIMATES

Table 2.4 provides our estimates of the summer adult population size of NLEB in the 30 states included in the analysis. It relies on the total forested acres and the other assumptions described above; i.e., occupancy rates for each state in Table 2.3, 90.43 percent overlap between the range of males and maternity colonies, 1,000 acres per colony, no overlap between colonies, the number of adult females per colony (20, 39, or 45 depending on WNS), and a 1:1 male/female sex ratio. Here are example calculations for Iowa as reported in Table 2.4:

- 3,013,759 forested acres × 0.417 occupancy rate = 1,256,738 occupied acres;
- 1,256,738 occupied acres × 0.9043 overlap with males = 1,136,467 colony-occupied acres;
- 1,136,467 acres ÷ 1,000 acres per colony = 1,137 colonies;
- 1,137 colonies × 45 adult females per colony = 51,165 adult females; and
- 51,165 adult females + 1 adult male per female (or 51,165 adult males) = 102,330 total adults.

We estimate that the range-wide population of NLEBs is comprised of 6,546,718 adults based on these calculations and the assumption that the 30 states included in the analysis represent the range-wide population. Arkansas supports the largest population (863,850 adults; 13%), followed by Minnesota with 829,890 (13%). Delaware and Rhode Island support the smallest populations with 640 and 1,240 adults, respectively. Based on these estimates, the Midwest supports 43% of the total population followed by the Southern range (38%), the Eastern range (17%), and the Western range (2%).

It is likely that the state populations are overestimates in areas affected by WNS. We used the occupancy data from the last 3 years, but in nearly all WNS areas there is a clear downward trend and most data are at least a year old. Therefore, the occupation rates and resulting population estimates are likely lower in many areas.

2.5 ANALYSIS OF THE SPECIES/CRITICAL HABITAT LIKELY TO BE AFFECTED

As described in Section 1, the NLEB is likely to be adversely affected by the activities which are excepted from incidental take prohibitions in the final 4(d) rule. Many federally listed, proposed, and candidate species, and their designated or proposed critical habitats, occur within the Action Area for this consultation. However, the Service Headquarters has determined that the proposed action will have no effect on any other listed, proposed, or candidate species or designated or proposed critical habitats. The action is the Service's finalization the 4(d) rule for the NLEB. It sets forth the prohibitions for take under section 9(a)(1) of the Act and the exceptions to those

prohibitions. It does not alter in any way the consultation requirements under section 7(a)(2) of the Act. Although this BO provides a framework for streamlined section 7 consultation for federal actions that are consistent with the provisions of the 4(d) rule, the framework only applies to the NLEB. Federal agencies will still be required to consult on activities that may affect other listed species within the Action Area. Therefore, only the NLEB will be considered further in this BO.

2.6 TABLES AND FIGURES FOR STATUS OF THE SPECIES

Table 2.1. Known NLEB hibernacula and known maternity roosts trees by state.

Range	State	Known Hibernacula	Known Occupied Maternity Roost Trees
Midwest	Iowa	2	14
Midwest	Illinois	44	39
Midwest	Indiana	69	193
Midwest	Michigan	77	25
Midwest	Minnesota	15	102
Midwest	Missouri	269	58
Midwest	Ohio	32	4
Midwest	Wisconsin	67	84
Eastern	Connecticut	8	0
Eastern	Delaware	2	0
Eastern	Maine	3	0
Eastern	Maryland	8	0
Eastern	Massachusetts	7	16
Eastern	New Hampshire	11	0
Eastern	New Jersey	9	47
Eastern	New York	90	27
Eastern	Pennsylvania	322	157
Eastern	Rhode Island	0	0
Eastern	Vermont	16	0
Eastern	Virginia	11	12
Eastern	West Virginia	104	231
Southern	Alabama	11	0
Southern	Arkansas	77	310
Southern	Georgia	6	20
Southern	Kentucky	122	254
Southern	Louisiana	0	0
Southern	Mississippi	0	0
Southern	North Carolina	29	101
Southern	Oklahoma	9	0
Southern	South Carolina	3	0
Southern	Tennessee	61	50
Western	Kansas	1	0
Western	Montana	0	0
Western	Nebraska	2	0
Western	North Dakota	0	0
Western	South Dakota	21	0
Western	Wyoming	0	0
	Total	1,508	1,744

Table 2.2. White-nose syndrome (WNS) and *Pseudogymnoascus destructans* (Pd) occurrence in the 37 States.

REGION	STATE	WNS or Pd Present?	First Winter WNS Confirmed	Documented WNS Mortality in Bats?
Midwest	Iowa	Pd	Pd only (2011-2012)	No
Midwest	Illinois	WNS	2012-2013	Yes
Midwest	Indiana	WNS	2010-2011	Yes
Midwest	Michigan	WNS	2014-2015	Yes
Midwest	Minnesota	Pd	Pd only (2011-2012)	No
Midwest	Missouri	WNS	2011-2012	Yes
Midwest	Ohio	WNS	2010-2011	Yes
Midwest	Wisconsin	WNS	2013-2014	Yes
Eastern	Connecticut	WNS	2008-2009	Yes
Eastern	Delaware	WNS	2009-2010	Yes
Eastern	Maine	WNS	2010-2011	Yes
Eastern	Maryland	WNS	2009-2010	Yes
Eastern	Massachusetts	WNS	2007-2008	Yes
Eastern	New Hampshire	WNS	2008-2009	Yes
Eastern	New Jersey	WNS	2008-2009	Yes
Eastern	New York	WNS	2006-2007	Yes
Eastern	Pennsylvania	WNS	2008-2009	Yes
Eastern	Rhode Island	No	NA	NA
Eastern	Vermont	WNS	2007-2008	Yes
Eastern	Virginia	WNS	2008-2009	Yes
Eastern	West Virginia	WNS	2008-2009	Yes
Southern	Alabama	WNS	2011-2012	Yes
Southern	Arkansas	WNS	2013-2014	Yes
Southern	Georgia	WNS	2012-2013	Yes
Southern	Kentucky	WNS	2010-2011	Yes
Southern	Louisiana	No	NA	NA
Southern	Mississippi	Pd	Pd only (2013-2014)	No
Southern	North Carolina	WNS	2010-2011	Yes
Southern	Oklahoma	Pd	Pd only (2014-2015)	No
Southern	South Carolina	WNS	2012-2013	Yes
Southern	Tennessee	WNS	2009-2010	Yes
Western	Kansas	No	NA	NA
Western	Montana	No	NA	NA
Western	Nebraska	Pd	Pd only (2014-2015)	No
Western	North Dakota	No	NA	NA
Western	South Dakota	No	NA	NA
Western	Wyoming	No	NA	NA

Table 2.3. NLEB summer state-wide occupancy estimates, based on summer survey results.

Range	State	Description	Pre-WNS Years (Combined)		Pre-WNS Occupancy Rate	Sum of 3 Most Recent WNS Years	WNS Impacted Occupancy Rate	Occupancy Rate Used
Midwest	IA	Total Mist Net Sites	2009-2011	24		0		
		Sites with NLEB Captures		10	41.7%	0	N/A	41.7%
	IL	Total Mist Net Sites	2009-2011	40		0		
		Sites with NLEB Captures		25	62.5%	0	N/A	62.5%
	IN	Total Mist Net Sites				283		
		Sites with NLEB Captures			N/A	106	37.5%	37.5%
	MI	Total Mist Net Sites	2004-2014	149		0		
		Sites with NLEB Captures		47	31.5%	0	N/A	31.5%
	MN	Total Mist Net Sites	2013-2014	121		0		
		Sites with NLEB Captures		71	58.7%	0	N/A	58.7%
	MO	Total Mist Net Sites				42		
		Sites with NLEB Captures			N/A	11	26.2%	26.2%
	OH	Total Mist Net Sites	2007-2010	733		2485		
		Sites with NLEB Captures		290	39.6%	1046	42.1%	42.1%
	WI	Total Mist Net Sites				78		
		Sites with NLEB Captures			N/A	35	44.9%	44.9%
Eastern	CT[$]	Total Mist Net Sites				0		
		Sites with NLEB Captures			N/A	0	N/A	9.4%
	DE^	Total Mist Net Sites				0		
		Sites with NLEB Captures			N/A	0	5.0%	5.0%
	ME*	Total Acoustic Sites				180		
		Sites with NLEB Captures			N/A	17	9.4%	9.4%
	MD^	Total Mist Net Sites				0		
		Sites with NLEB Captures			N/A	0	5.0%	5.0%
	MA*	Total Acoustic Sites				132		
		Sites with NLEB Captures			N/A	9	6.8%	6.8%
	NH[#]	Total Mist Net Sites	2002-2004	13		173		
		Sites with NLEB Captures		12	92.3%	17	9.8%	9.8%
	NJ	Total Mist Net Sites	1995-2008	132		25		
		Sites with NLEB Captures		89	67.4%	8	32.0%	32.0%
	NY[+#]	Total Mist Net Sites	2000-2005	56		45		
		Sites with NLEB Captures		39	69.6%	15	33.3%	33.3%
	PA	Total Mist Net Sites	2001-2007	1069		1469		
		Sites with NLEB Captures		726	67.9%	497	33.8%	33.8%
	RI[$]	Total Mist Net Sites				0		
		Sites with NLEB Captures			N/A	0	N/A	9.4%
	VT[+#]	Total Mist Net Sites	2000-2005			12		
		Sites with NLEB Captures			See NY	3	25.0%	9.8%
	VA[#]	Total Mist Net Sites	2010	27		60		
		Sites with NLEB Captures		27	100.0%	29	48.3%	48.3%
	WV	Total Mist Net Sites	1997-2008	508		97		
		Sites with NLEB Captures		401	78.9%	52	53.6%	53.6%

Table 3.1. Continued.

Range	State	Description	Pre-WNS Years (Combined)		Pre-WNS Occupancy Rate	Sum of 3 Most Recent WNS Years	WNS Impacted Occupancy Rate	Occupancy Rate Used
Southern	AL[#]	Total Mist Net Sites	2001-2011	179		38		
		Sites with NLEB Captures		48	26.8%	13	34.2%	34.2%
	AR[#]	Total Mist Net Sites	2009-2013	568		95		
		Sites with NLEB Captures		399	70.2%	62	65.3%	65.3%
	GA[#]	Total Mist Net Sites	2001-2011	62		18		
		Sites with NLEB Captures		37	59.7%	10	55.6%	55.6%
	KY	Total Mist Net Sites	2005-2010	503		305		
		Sites with NLEB Captures		263	52.3%	124	40.7%	40.7%
	LA[$]	Total Mist Net Sites				0		
		Sites with NLEB Captures			N/A	0	N/A	34.2%
	MS[$]	Total Mist Net Sites				0		
		Sites with NLEB Captures			N/A	0	N/A	34.2%
	NC[#]	Total Mist Net Sites	2000-2012	244		35		
		Sites with NLEB Captures		199	81.6%	14	40.0%	40.0%
	OK	Total Mist Net Sites	2013-2015	28		0		
		Sites with NLEB Captures		13	46.4%	0	N/A	46.4%
	SC[$]	Total Mist Net Sites				0		
		Sites with NLEB Captures			N/A	0	N/A	34.2%
	TN[#]	Total Mist Net Sites	2000-2008	221		90		
		Sites with NLEB Captures		153	69.2%	37	41.1%	41.1%
Western	KS[+]	Total Mist Net Sites				0		
		Sites with NLEB Captures			N/A	0	N/A	22.5%
	MT[+]	Total Mist Net Sites				0		
		Sites with NLEB Captures			N/A	0	N/A	22.5%
	NE[+]	Total Mist Net Sites				0		
		Sites with NLEB Captures			N/A	0	N/A	22.5%
	ND[+]	Total Mist Net Sites	2009-2014	42		0		
		Sites with NLEB Captures		3	7.1%	0	N/A	22.5%
	SD[+]	Total Mist Net Sites	2003-2006	13		0		
		Sites with NLEB Captures		10	76.9%	0	N/A	22.5%
	WY[+]	Total Mist Net Sites	2010-2014	56		0		
		Sites with NLEB Captures		12	21.4%	0	N/A	22.5%

* Acoustic data used due to limited amount of mist net data

^ Statewide occupancy estimates from a more in-depth analysis used

[#] Based on data from National Forests in the state

[$] Data from nearby states used because statewide data was inadequate or unavailable

[+] Data from multiple states were aggregated due to small datasets

Table 2.4. NLEB adult summer population estimates for the 30 states included in analysis.

Region	State	Forested Acres	Percent Occupancy	Occupied Acres	Maternity Colonies	Maternity Colony Size	Adult Females	Total Adults	Total Pups
Midwest	Iowa	3,013,759	41.7%	1,256,738	1,137	45	51,165	102,330	51,165
Midwest	Illinois	4,847,480	62.5%	3,029,675	2,740	39	106,860	213,720	106,860
Midwest	Indiana	4,830,395	37.5%	1,811,398	1,639	39	63,921	127,842	63,921
Midwest	Michigan	20,127,048	31.5%	6,340,020	5,734	39	223,626	447,252	223,626
Midwest	Minnesota	17,370,394	58.7%	10,196,421	9,221	45	414,945	829,890	414,945
Midwest	Missouri	15,471,982	26.2%	4,053,659	3,666	39	142,974	285,948	142,974
Midwest	Ohio	8,088,277	42.1%	3,405,165	3,080	39	120,120	240,240	120,120
Midwest	Wisconsin	16,980,084	44.9%	7,624,058	6,895	39	268,905	537,810	268,905
Eastern	Connecticut	1,711,749	9.4%	160,904	146	20	2,920	5,840	2,920
Eastern	Delaware	339,520	5.0%	16,976	16	20	320	640	320
Eastern	Maine	17,660,246	9.4%	1,660,063	1,502	39	58,578	117,156	58,578
Eastern	Maryland	2,460,652	5.0%	123,033	112	20	2,240	4,480	2,240
Eastern	Massachusetts	3,024,092	6.8%	205,638	186	20	3,720	7,440	3,720
Eastern	New Hampshire	4,832,408	9.8%	473,576	429	20	8,580	17,160	8,580
Eastern	New Jersey	1,963,561	32.0%	628,340	569	20	11,380	22,760	11,380
Eastern	New York	18,966,416	33.3%	6,315,817	5,712	20	114,240	228,480	114,240
Eastern	Pennsylvania	16,781,960	33.8%	5,672,302	5,130	20	102,600	205,200	102,600
Eastern	Rhode Island	359,519	9.4%	33,795	31	20	620	1,240	620
Eastern	Vermont	4,591,280	9.8%	449,945	407	20	8,140	16,280	8,140
Eastern	Virginia	15,907,041	48.3%	7,683,101	6,948	20	138,960	277,920	138,960
Eastern	West Virginia	12,154,471	53.6%	6,514,796	5,892	20	117,840	235,680	117,840
Southern	Arkansas	18,754,916	65.3%	12,246,960	11,075	39	431,925	863,850	431,925
Southern	Kentucky	12,471,762	40.7%	5,076,007	4,591	39	179,049	358,098	179,049
Southern	Mississippi	19,541,284	34.2%	6,683,119	6,044	45	271,980	543,960	271,980
Southern	North Carolina	18,587,540	40.0%	7,435,016	6,724	39	262,236	524,472	262,236
Southern	Tennessee	13,941,333	41.1%	5,729,888	5,182	20	103,640	207,280	103,640
Western	Kansas	2,502,434	22.5%	563,048	510	45	22,950	45,900	22,950
Western	Nebraska	1,576,174	22.5%	354,639	321	45	14,445	28,890	14,445
Western	North Dakota	759,998	22.5%	171,000	155	45	6,975	13,950	6,975
Western	South Dakota	1,910,934	22.5%	429,960	389	45	17,505	35,010	17,505
	Total	281,528,709	37.8%	106,345,057	96,183		3,273,359	6,546,718	3,273,359

Table 2.5. Estimated acreage of NLEB maternity roosting areas for the 30 states included in analysis.

Region	State	Forested Acres	Maternity Colonies[1]	Maternity Roost Area Acres (167 acres per Colony)	Percent of Forest Habitat Used as Maternity Roost Areas
Midwest	Iowa	3,013,759	1,137	189,879	6.30%
Midwest	Illinois	4,847,480	2,740	457,580	9.44%
Midwest	Indiana	4,830,395	1,639	273,713	5.67%
Midwest	Michigan	20,127,048	5,734	957,578	4.76%
Midwest	Minnesota	17,370,394	9,221	1,539,907	8.87%
Midwest	Missouri	15,471,982	3,666	612,222	3.96%
Midwest	Ohio	8,088,277	3,080	514,360	6.36%
Midwest	Wisconsin	16,980,084	6,895	1,151,465	6.78%
Eastern	Connecticut	1,711,749	146	24,382	1.42%
Eastern	Delaware	339,520	16	2,672	0.79%
Eastern	Maine	17,660,246	1,502	250,834	1.42%
Eastern	Maryland	2,460,652	112	18,704	0.76%
Eastern	Massachusetts	3,024,092	186	31,062	1.03%
Eastern	New Hampshire	4,832,408	429	71,643	1.48%
Eastern	New Jersey	1,963,561	569	95,023	4.84%
Eastern	New York	18,966,416	5,712	953,904	5.03%
Eastern	Pennsylvania	16,781,960	5,130	856,710	5.10%
Eastern	Rhode Island	359,519	31	5,177	1.44%
Eastern	Vermont	4,591,280	407	67,969	1.48%
Eastern	Virginia	15,907,041	6,948	1,160,316	7.29%
Eastern	West Virginia	12,154,471	5,892	983,964	8.10%
Southern	Arkansas	18,754,916	11,075	1,849,525	9.86%
Southern	Kentucky	12,471,762	4,591	766,697	6.15%
Southern	Mississippi	19,541,284	6,044	1,009,348	5.17%
Southern	North Carolina	18,587,540	6,724	1,122,908	6.04%
Southern	Tennessee	13,941,333	5,182	865,394	6.21%
Western	Kansas	2,502,434	510	85,170	3.40%
Western	Nebraska	1,576,174	321	53,607	3.40%
Western	North Dakota	759,998	155	25,885	3.41%
Western	South Dakota	1,910,934	389	64,963	3.40%
	Total	281,528,709	96,183	16,062,561	5.71%

[1] From Table 2.4

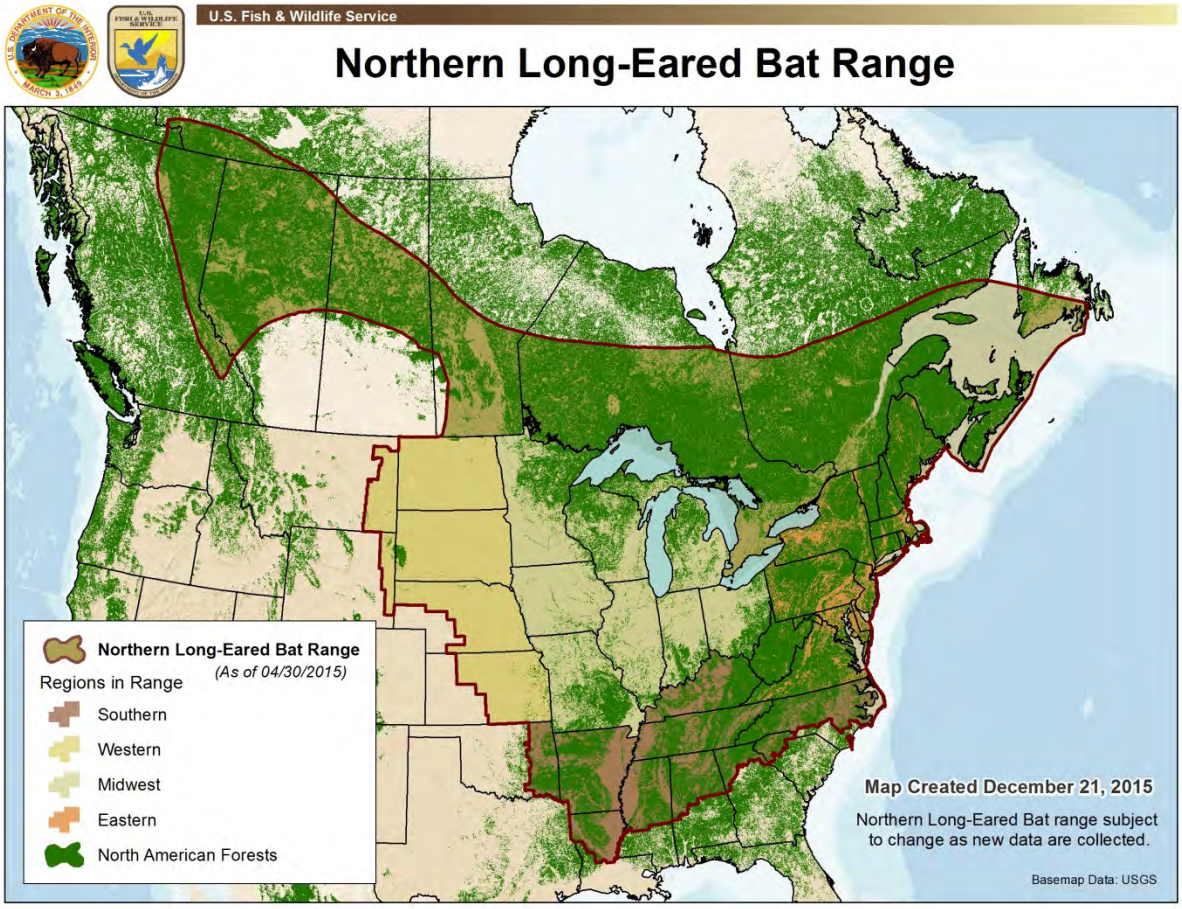

Figure 2.1. Range of the NLEB.

3 ENVIRONMENTAL BASELINE

Regulations implementing the Act (50 CFR 402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the Action Area. Also included in the environmental baseline are the anticipated impacts of all proposed Federal projects in the Action Area that have undergone section 7 consultation, and the impacts of State and private actions which are contemporaneous with the consultation in progress. The environmental baseline is a "snapshot" of the species' health in the Action Area at the time of the consultation, and does not include the effects of the action under review.

Because the Action Area covers the entire range of the species within the United States, the environmental baseline is the same as the status of the species discussed in detail in Section 2. No further discussion is needed in this section.

4 EFFECTS OF THE ACTION

This section addresses the direct and indirect effects of the Action on the NLEB, including the effects of interrelated and interdependent activities. Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the proposed action and are later in time but still are reasonably certain to occur.

The NLEB is likely to be affected by many activities which are excepted from incidental take prohibitions in the final 4(d) rule. Instead of describing all of the activities, we address the general effects of different activities, which we categorized into 7 general groups:

1. Capture and handling of NLEBs by individuals with section 10(a)(1)(A) permits for other listed bats or State permits until May 3, 2016
2. Removal from human structures
3. Timber harvest
4. Prescribed fire
5. Forest conversion
6. Wind turbine operation
7. Other activities that may affect the NLEB

The effects of category #1 are not addressed in this consultation because a separate section 10(a)(1)(A) permit and section 7 consultation will be required for those activities after May 3, 2016, as required by the final 4(d) rule. Until that time, we expect limited effects because NLEBs are currently hibernating and most surveys are conducted during the summer. Winter hibernacula surveys could affect the NLEB until May 3, 2016; however, researchers conducting winter surveys must have a section 10(a)(1)(A) permit for other listed bat species. The Service

completed three BOs for the effects of existing bat section 10(a)(1)(A) permits on the NLEB in the Midwest, Mountain/Prairie and Southeast Regions. The adverse effects from winter hibernacula surveys are addressed in those BOs, which were non-jeopardy opinions.

The final 4(d) rule does not prohibit incidental take outside of the WNS zone. This effects analysis does not address the differences in prohibitions outside of the WNS zone because current actions that may affect the NLEB have not been shown to have significant impacts on NLEBs before WNS was detected. We expect that the impacts will be further reduced in the areas outside of the WNS zone because less than 2% of the total estimated population of NLEB occurs in the areas outside of the WNS zone (Section 2.4.5), and the habitat is more sparse (Figure 2.1). In addition, we anticipate that the WNS zone will expand further into the western states fairly quickly. Therefore, we did not attempt to analyze the different prohibitions between the zones.

4.1 EFFECTS ANALYSIS METHODOLOGY

For each of the remaining six categories of activities described above, we apply the following steps to analyze effects at the programmatic level:

- **Effects of the Activity** – We review best available science and commercial information about how the activity may affect the NLEB. Based on the literature review, we identify the stressor(s) (alteration of the environment that is relevant to the species) that may result from the proposed activity. For each stressor, we identify the circumstances for an individual bat's exposure to the stressor (overlap in time and space between the stressor and a NLEB). Given exposure, we identify the likely individual response(s), both positive and negative. For this consultation, we group responses into one of four categories: (1) potentially increased fitness (e.g., increased access to, or availability of, prey organisms); (2) reduced fitness (e.g., reduced food resources, reduced suitable roosting sites); (3) disturbance (e.g., day-time disturbance in a maternity roosting area, causing bats to flee and increasing the likelihood of injury or predation); and (4) harm (e.g., harvesting a tree occupied by adults and flightless bat pups resulting in death or injury; predation resulting from disturbance). This analysis is captured in the Exposure-Response Table (Table 4.1). This table provides the complete record of the effects analysis for this species and is intended to be read in concert with and support this effects analysis section.
- **Quantifying Effects to Individuals** – Estimating the numbers of individuals of a species exposed to stressors in a programmatic consultation is difficult because programs do not usually specify with sufficient detail when and where projects will occur relative to the species' occurrence. For this consultation, we have very little site-specific data about NLEB distribution and abundance in the Action Area; however, we do not assume that the species is ubiquitous, which would grossly overestimate effects. We do not have

enough information to quantify the effects of the pathways associated with removal from human structures and the "other" category of activities that may affect the NLEB. These effects are discussed in general in the sections below. For pathways associated with timber harvest, prescribed fire, and forest conversion, we apply the annual average acreage of the activity, NLEB occupancy rates, and NLEB density within occupied areas to estimate individual-level effects (numbers of individual bats included in the pathway), which we describe in Section 4.1.2.2 below. For wind turbine operation, we estimate the number of bats that could be killed using the current and projected amount of wind energy development and information on bat mortality rates, which we describe in Section 4.1.5.2 below.

We then aggregate all of the effects to individuals and examine:

- **Population-level Effects** – We evaluate the aggregated consequences of the effects to individuals/habitat on the fitness of the population(s) to which those individuals belong. This step closes with our conclusions on the likely fate or ultimate response of the population(s) and is couched in terms of population fitness (i.e., persistence and reproductive potential, long and short-term).
- **Species Range-wide** - This step determines whether the anticipated reductions in population fitness will reduce the likelihood of survival and recovery of the species by reducing its range-wide reproduction, numbers, or distribution (RND). If the Service and other action agencies have insured that the population-level risks do not noticeably, detectably, or perceivably reduce the likelihood of progressing towards or maintaining the RND needs, then the action is not likely to appreciably reduce the likelihood of both survival and recovery of the species.

4.2 REMOVAL FROM HUMAN STRUCTURES

4.2.1 EFFECTS OF REMOVAL FROM HUMAN STRUCTURES

As described in Section 2.1.1., NLEBs have occasionally been found roosting in human structures such as barns, houses, and sheds. Humans and bats often conflict when bats roost in human structures. Public misconception and health concerns from rabies, bat droppings, and urine often result in the need to remove bats from human structures. Many techniques used to remove bats are harmful and may result in mortality, including poisoning, trapping (e.g., cages, sticky traps), exterminating, and translocating (WNS Conservation and Recovery Working Group 2015). Bats can also be removed through humane methods (if used during the proper time of year) such as eviction/venting and exclusion. Eviction/venting refers to the use of one-way doors and exits to remove bats from a structure by utilizing their natural tendency to leave the roost at night. Exclusion refers to closing gaps and sealing holes to prevent bats from entering or

re-entering a structure (WNS Conservation and Recovery Working Group 2015). Eviction and exclusion are widely-used, popular methods because poisons and traps are messy and might result in dead bats rotting in walls and attics.

Table 4.1 shows the four pathways we identified for NLEB responses to removal from human structures and the range of individual responses expected. The use of rodenticides and sticky traps to remove bats is likely to result in mortality. NLEBs may also be euthanized for rabies testing. Roost closure during the maternity season has been documented to result in lower reproductive success (Brigham and Fenton 1986). Attempts to evict or exclude bats at this time can result in the death of flightless young, as well as an increase in the number of adult bats and orphaned pups that enter the living space, potentially heightening the risk of human/bat contact (WNS Conservation and Recovery Working Group 2015). In addition, NLEBs can be indirectly affected through the loss of the roost by exclusion if additional energy is required during their search for a new roost site when NLEBs return to the site after hibernation.

The WNS Conservation and Recovery Group, in coordination with states and wildlife control operators, recently developed Best Management Practices (BMPs) for bat control activities in human structures (WNS Conservation and Recovery Working Group 2015) to ensure that adverse effects are minimized. The National Wildlife Control Operators Association recently released a new training on bat standards, affecting at least 48 wildlife control operators in 20 States within the NLEB range that are Certified Wildlife Control Professionals. This certification requires training, seminars, and continued education, and we anticipate that these professionals (and probably others) will follow the bat standards.

States within the range of the NLEB vary in requirements for removal of bats from human structures. States with state- or federally-listed bat species may require permits for bat removal or may require wildlife control operators to use BMPs when removing or excluding bats from houses or structures. Within the range of the NLEB, only Maine, Montana, and the Dakotas do not have another state- or federally-listed bat species, so it is likely that many of these states already have a program to recommend or require BMPs for bat removal prior to the NLEB listing in 2014. We surveyed states to determine if: (1) wildlife control operators are required to obtain authorization for bat removal or exclusions; (2) BMPs are required or recommended; and (3) exclusions and evictions are conducted outside of the NLEB maternity season.

We were able to speak with representatives from state natural resource programs in Illinois, Wisconsin, Michigan, Missouri, Minnesota, Ohio, Vermont, and South Carolina. Five of the eight states require authorization for wildlife control operators to remove or exclude bats from buildings. Of these five states, all but Michigan require that evictions and exclusion occur after NLEB pups are capable of flight, unless in the unusual case of a severe health hazard. Even though three states do not require authorization for wildlife control operators, only two states

(Missouri and Michigan) do not communicate or recommend BMPs for bat exclusion or removals.

We also obtained rabies testing data from the state health departments in New York and Missouri. If a single or pair of bats enter a household, wildlife control operators generally trap the bats and euthanize them for rabies testing. These data indicate that an average of 7 NLEBs were killed per year for rabies testing during the most recent three years. In both New York and Missouri, NLEB make up a small fraction (typically less than 2%) of the bats in houses.

Although removal from human structures can result in NLEB mortality, we anticipate that few bats are impacted per year in each state based on the relatively rare use of human structures, the implementation of bat removal BMPs (either required or recommended) throughout most of the range of the NLEB, and the relatively small amount of NLEBs killed for rabies testing.

4.3 TIMBER HARVEST

Timber harvest is one of two categories of forest management described in this BO. Unlike forest conversion, forest management maintains forest habitat on the landscape, and the impacts from management activities are for the most part considered temporary in nature. Impacts from forest management are expected to range from positive (e.g., maintaining or increasing suitable roosting and foraging habitat within NLEB home ranges) to neutral (e.g., minor amounts forest removal, areas outside NLEB summer home ranges or away from hibernacula) to negative (e.g., death of adult females or pups or both).

Timber harvest is the removal of trees associated with forest management. It includes a wide variety of practices from selected harvest of individual trees to clearcutting. Timber harvest is often partitioned according to the forest management treatment type used to accomplish the harvest: even-aged management; uneven-aged management; thinning; and salvage/sanitation. It is conducted for a variety of purposes including, but not limited to, harvests (commercial and non-commercial) for timber production and for ecosystem restoration, endangered/threatened/sensitive species conservation, stand regeneration for forest health, wildlife habitat improvement, insect and disease control, and fuel reduction. All of these activities are categorized under the general category of timber harvest for the purposes of this BO.

4.3.1 EFFECTS OF TIMBER HARVEST

Literature Review

The best available data indicate that the NLEB shows a varied degree of sensitivity to timber-harvesting practices. Menzel et al. (2002) found NLEB roosting in intensively managed stands in West Virginia. At the same study site, Owen et al. (2002) concluded that NLEB roosted in areas with abundant snags, and that in intensively managed forests of the central Appalachians, roost availability was not a limiting factor. Perry and Thill (2007) tracked NLEB in central Arkansas and found roosts in eight different forest classes, of which 89 percent were in three classes of mixed pine-hardwood forest. The mixed pine-hardwood forest stands that supported most of the roosts were partially harvested or thinned, unharvested (50–99 years old), or harvested by group selection.

Timber harvest accomplished through thinning, group selection, and individual selection may create canopy openings in an otherwise densely-forested setting, which may promote more rapid development of bat pups. In central Arkansas, Perry and Thill (2007) found female NLEB bat roosts were more often located in areas with partial harvesting than males, with more male roosts (42 percent) in un-harvested stands than female roosts (24 percent). They postulated that females roosted in relatively more open forest conditions because they may receive greater solar radiation, which may increase developmental rates of young or permit young bats a greater opportunity to conduct successful initial flights (Perry and Thill 2007). Cryan et al. (2001) found several reproductive and non-reproductive female NLEB roosts in recently harvested (less than 5 years) stands in the Black Hills of South Dakota where snags and small stems (dbh of 5 to 15 cm (2 to 6 inches)) were the only trees left standing. In this study, however, the largest colony (n=41) was found in a mature forest stand that had not been harvested in more than 50 years. Lacki and Schwierjohann (2001) stated that silvicultural practices could meet both male and female roosting requirements by maintaining large-diameter snags, while allowing for regeneration of forests.

Forest patch size and contiguity are factors that appear to influence habitat use by NLEB. Henderson et al. (2008) observed gender-based differences in mist-net capture rates of NLEB on Prince Edward Island related to forest patch size. The area of deciduous stands had a consistent positive relationship with the probability of presence of both males and females, but males were found more often in smaller stands than females. In southeastern Missouri, Yates and Muzika (2006) reported that NLEB showed a preference for contiguous tracts of forest cover (rather than fragmented or open landscapes) for foraging or traveling, and that different forest types interspersed on the landscape increased the likelihood of occupancy.

In West Virginia, Owen et al. (2003) radio-tracked nine female NLEB that spent their foraging and travelling time in the following habitat types (in descending order of use):

- 70–90-year-old stands without harvests in more than 10–15 years (“intact forest”) (mean use 52.4 percent);

- 70–90 year-old stands with 30–40 percent of basal area removed in the past 10 years ("diameter-limit harvests") (mean use 42.9 percent);
- open areas (clearcuts and roads) (clear cut = all trees > 2.5 cm (1.0 inch) dbh removed) (mean use 4.6 percent); and
- clearcuts with approximately 4.5 m^2/ha (19.6 ft^2/acre) tree basal area remaining ("deferment harvests") (mean use 0.03 percent).

Habitat selection differed significantly relative to habitat availability, with diameter-limit harvests ranking as the strongest habitat preference, where percent use exceeded percent availability for 7 of the 9 bats.

In Alberta, Canada, NLEB avoided the center of clearcuts and foraged more in intact forest than expected (Patriquin and Barclay 2003). On Prince Edward Island, Canada, female NLEB preferred to forage in areas centered along creeks running through forests (Henderson and Broders 2008). In mature forests on the Sumter National Forest in northwestern South Carolina, 10 of the 11 stands in which NLEB were detected were mature stands (Loeb and O'Keefe 2006). Within those mature stands, NLEB were recorded more often at points with sparse or medium-density vegetation than at points with dense vegetation, suggesting that small openings within forest stands facilitate commuting and/or provide suitable foraging habitat. However, in southwestern North Carolina, Loeb and O'Keefe (2011) found that NLEB rarely used forest openings, but often used roads.

At Fort Knox in Kentucky, Silvis et al. (2014) tracked three maternity colonies of NLEB to evaluate their social and resource networks, i.e., roost trees. Roost and social network structure differed between maternity colonies, and roost availability was not strongly related to network characteristics or space use. In model simulations based on the tracking data, removal of more than 20 percent of roosts initiated social network fragmentation, with greater loss causing more fragmentation. The authors suggested that flexible social dynamics and tolerance of roost loss are adaptive strategies for coping with ephemeral conditions in dynamic forest habitats. Sociality among bats may contribute to reproductive success, and fragmented colonies may experience reduced success.

In the same Fort Knox study area with the same three maternity colonies, Silvis et al. (2015) removed during winter a primary maternity roost tree from one colony, 24 percent of the secondary roosts from another colony, and none from the third. Neither removal treatment altered the number of roosts used by individual bats, but secondary roost removal doubled the distances moved between sequentially used roosts. Overall location and spatial size of colonies was similar pre- and post-treatment. Patterns of roost use before and after removal treatments also were similar. Roost height, diameter at breast height, percent canopy openness, and roost species composition were similar pre- and post-treatment. NLEB use a wide range of tree species and sizes as roosts, and potential roosts were not limited in the treatment areas.

Although the literature we reviewed contains no reports of NLEB mortality resulting from tree harvest, there have been three documented instances of Indiana bat adults and pups killed or injured when an occupied roost tree was felled. Indiana bats and NLEB are closely related and have similar behavior (i.e., forest-dwelling, forming maternity colonies, roosting in trees in the summer). Cope et al. (1974) reported the first felling of an occupied Indiana bat maternity roost tree in Wayne County, Indiana. The landowner observed bats exiting the tree when it was bulldozed down. The original account stated that eight bats (2 adult females and 6 juveniles) were "captured and identified as Indiana bats," and that about 50 bats flew from the tree. Although the original account did not specify how the eight bats were captured, J. Whitaker (Indiana State University, pers. comm., 2005) recounted that those bats were killed or disabled, retrieved by the landowner, and subsequently identified by a biologist. In another case, Belwood (2002) reported on the felling of a dead maple in a residential lawn in Ohio. One dead adult female and 33 non-volant young were retrieved by the researcher. Three of the young bats were already dead when they were picked up, and two more died subsequently. The rest were apparently retrieved by adult bats that had survived. In a third case, 11 dead adult female Indiana bats were retrieved (by people) when their roost was felled in Knox County, Indiana (J. Whitaker, pers. comm., 2005).

These accounts suggest that some individuals, including non-volant pups, can survive the felling of a maternity roost tree. It is not possible to infer injury rates from these studies. It is only possible to crudely estimate mortality rates from the Belwood case. If we assume that there were 66 individuals in the tree (the 33 pups observed plus 1 dead adult female and 32 presumed additional adult females who retrieved their pups), the overall survival rate was high at 91%. Only 1 adult bat was observed dead (about 3% of adults), and the juvenile mortality rate was about 15%. We acknowledge that timber harvest operations in a forest bear little resemblance to these three instances, but available evidence indicates that both adults and pups can be killed when an occupied roost tree is felled. For the purposes of this consultation, we assume that 15% of non-volant bats have the potential to be harmed, and 3% of adult bats could be killed or injured in a felled tree. Adults may be at greater risk during the spring during colder temperatures and increased use of torpor. It is also possible that trees felled adjacent to roost trees could strike roosting bats and result in injury or death.

Disturbance associated with harvest activity could cause NLEB to flee or abandon day-time roosts, which increases the likelihood of predation. This may also result in females aborting or not being impregnated depending on the time of year. Gardner et al. (1991) reported that Indiana bats continued to roost and forage in an area with active timber harvest, but this will depend on the scale of harvest and whether there is any remaining suitable habitat. Callahan (1993) attributed the abandonment of a primary maternity roost tree to disturbance from a bulldozer clearing brush adjacent to the tree.

Surface-disturbing activities in the vicinity of hibernacula may affect bat populations if those activities result in changes to the microclimate (temperature, humidity, and air flow) of the cave or mine (Ellison et al. 2003). Tree removal in karst areas can alter soil characteristics, water quality, local hydrology to the extent that it alters cave microclimates and affects bats (Bilecki 2003, Hamilton-Smith 2001). Bats in hibernation are susceptible to dehydration due to high evaporative loss from their naked wings and large lungs (Perry 2013). Richter et al. (1993) documented temperature increases resulting from structural modifications to a cave entrance that substantially reduced its suitability for bats. The creation of new openings or filling in existing openings could also result from obstructing cave entrances with dirt or logging slash.

Summary of Exposure-Response Table

Table 4.1 shows the five pathways we identified for NLEB responses to timber harvest and the range of individual responses expected. The primary alteration of the environment associated with timber harvest that is relevant to the NLEB is the removal of trees that provide roosts or serve as foraging, spring staging, or fall swarming habitat. Removing occupied trees is likely to kill or injure pups and adults. Loss of forest habitat decreases opportunities for growth and successful reproduction. Alteration of hibernacula can harm NLEBs. The disturbance (noise, exhaust from machinery, etc.) that accompanies harvest activities may result in disturbance because fleeing during daylight increases the likelihood of predation. A small subset of disturbed individuals may be harmed. Thinning mid-story clutter may have a beneficial effect on the suitability of adjacent maternity roost trees when done when bats are not present. The species' responses to these stressors depends on the type of harvest (e.g., thinning, salvage, even-aged management, clear cut, etc.) and the context of exposure, i.e., when and where it occurs.

4.3.2 METHODOLOGY FOR QUANTIFYING EFFECTS OF TIMBER HARVEST

To estimate the potential impacts of timber harvest through 2022, we calculated the average annual amount of timber harvest in states within the NLEB's range using data available through the USDA Forest Service's Forest Inventory Analysis (available only on internet: http://apps.fs.fed.us/Evalidator/evalidator.jsp; accessed November 2015). This database reports the total harvest (acres) of federal, state and local, and private entities by state for various combinations of years. We used the most recent combination of years available and calculated the mean annual harvest (Table 4.2). We assumed that the mean annual harvest from recent years will be consistent through the period of this consultation and recognize that many types of harvest leave a remaining forest that is available for NLEB use. The information in this database may be overestimated for certain states and underestimated for others. For instance, we estimated that 163,971 acres would be harvested on average in National Forests in South Dakota; however, the U.S. Forest Service is currently projecting up 35,000 acres of harvest annually. In Illinois, the

database reports 0 acres of harvest, but the Forest Service projects 1,300 acres of average annual harvest.

Similar to the population estimation methods in Section 2.4.2, we excluded a state from our analyses if less than 50% of it is within the NLEB range. These estimates are likely conservative and underestimate the number of acres harvested; however, some harvest reports may reflect a few tree removals and not necessarily a clear cut or selected harvest. We anticipate that 3,669,077 acres will be harvested annually through 2022, which is 1.3% of the available forested habitat, or 9.1% over seven years (Table 4.2). Timber harvest is expected to occur in similar proportions in the Midwest, Eastern, and Southern ranges (29, 35, and 34%, respectively), but only about 2% of the total harvest will occur in the Western range. We anticipate that habitat losses from timber harvest will be temporary.

We further analyzed these data by partitioning the average annual acreage expected during the NLEB active season and the pup season. Lacking a breakdown of the acres harvested during the active and non-volant seasons, we assume that timber harvest will occur with equal frequency throughout the year. The NLEB active season (April 1 – October 31) is 214 days, or 58.6% of the year. The NLEB non-volant season (June 1 – July 31) is 61 days, or 16.7% of the year. Therefore, the average annual acres of timber harvest during the active season is 58.6% of the total average annual acres, and 16.7% of the total timber harvest is estimated to occur in the non-volant season.

For spatial exposure to stressors, we must consider that timber harvest and NLEB-occupied areas may occur anywhere within the forested acreage of each state, but we recognize there are some forests in National or State Parks or Wilderness areas that may not be subject to harvest. NLEB occupancy estimates vary by state from about 9 to 60 percent (see section 2.4.1). It is possible for timber harvest, which annually affects about 1.3 percent of the available forested habitat, to occur entirely on the 5 to 65 percent of the habitat in each state that we consider occupied, or not at all, because we have no information indicating whether certain activities are more or less likely to occur in occupied areas. Therefore, our effects analyses compute the expected (probable) degree of spatial overlap between activities and occupied areas as the product of two independent probabilities, namely, the percentage of the forested habitat that is proposed for timber harvest multiplied by the percentage of the forested habitat that the NLEB occupies in a particular manner, e.g., for roosting or foraging.

The following example demonstrates our methodology for estimating individual-level direct effects corresponding to the stressor-exposure-response pathway for timber harvest during the non-volant season (June 1–July 31) within a maternity roost, which may kill or injure non-volant pups.

a. State A, with 500,000 acres of forested habitat, will annually harvest 2,500 acres (0.5 percent of the total habitat) during the non-volant season.
b. State A has a 30 percent occupancy rate for NLEB, i.e., 150,000 acres of State A are within the active-season home range of individuals of this species.
c. We assume that individuals belonging to maternity colonies collectively occupy 90 percent (co-capture rate of reproductive females with males and non-reproductive females; see section 2.4 for the basis of this and other NLEB distribution and abundance assumptions) of these 150,000 acres, or 0.90 × 150,000 = 135,000 acres.
d. We assume maternity colonies do not overlap and occupy 1,000 acres each; therefore State A supports 135,000 ÷ 1,000 = 135 colonies.
e. We assume that individuals in a maternity colony roost in trees within an area of 167 acres; therefore, the colonies of State A occupy 135 × 167 acres = 22,545 acres for roosting, which is 4.5 percent of State A.
f. State A has not yet been affected by WNS; therefore, each colony supports 45 non-volant pups during the harvest time frame (1 pup per adult female, section 2.4).

In this example, 2,500 acres (0.5 percent) of the forested acres in the state are proposed for harvest during the non-volant season, and 22,545 acres (4.5 percent) harbors non-volant pups. The mathematically expected (probable) degree of spatial overlap is the product of the two percentages, or 0.5 percent × 4.5 percent = 0.0225 percent, which is 112.7 acres of the 500,000 acres in State A. To estimate the number of bat pups affected, we multiply the density of bat pups in maternity roosting areas (45 pups per 167 acres) by the expected acreage of overlap: (45 ÷ 167) × 112.7 = 30.3, which we round up to 31 pups. We aggregate the results of this type of analysis for all timber harvest actions within a state and across all 30 states included in the analysis, which provides a basis for estimating the total expected effects of multiple project-level actions at a scale not exceeding the total amount of timber harvest estimated per year.

Consistent with the example above, our calculations for estimating the effects corresponding to each stressor-exposure-response pathway that we quantify are presented in tabular form in section 4.3. Each table lists the 30 states with the following six columns of data:

a. annual, active-season, or non-volant-season extent (acres) of timber harvest (or the proposed activity causing the stressor), depending on the pathway;
b. total forest habitat acres;
c. percent of the forest habitat receiving the activity (a ÷ b);
d. percent of the forest habitat that NLEB use at a time and in a manner (from section 2.4) that the stressor could affect causing a specific type of individual response;
e. expected overlap (acres) of the activity and the bat-occupied area (b × c × d); and
f. expected number of individuals affected (e × bat density in the occupied area).

In the final step of the calculations described above, the density we multiply by the expected area of overlap depends on the manner in which NLEB use the habitat exposed to the stressor. In the

preceding example, non-volant pups in maternity roosting areas are the individuals responding to the stressor, and the density is 45 pups per 167 acres (0.2695). Based on the data and assumptions identified in section 2.4 about NLEB populations in the Action Area, we use the following NLEB densities in computing column "e" of each effects estimation table:

Habitat	NLEB individuals	Density for 45 females per Maternity Colony	Density for 39 females per Maternity Colony	Density for 20 females per Maternity Colony
Summer home range	Adult females and sympatric adult males	0.0814	0.0362	0.0705
Maternity roosting areas	Non-volant pups	0.2695	0.1198	0.2335
Roosting areas	Adult females, volant juveniles, and sympatric adult males	0.8084	0.3593	0.7006

This methodology generates results in terms of numbers of individual NLEB affected, but we must acknowledge its inherent imprecision. It relies on assumptions about state-specific occupancy rates and applies values for colony size, sex ratios, etc., that we believe are reasonable and based on best available information, but which are either uncertain or variable across the Action Area. Although it is coarse, this methodology provides a transparent basis for quantifying effects for interpretation relative to the status of the species, which is the purpose of an effects analysis in a BO.

4.3.3 QUANTIFYING EFFECTS OF TIMBER HARVEST

We quantify the two pathways expected to result in direct effects to the NLEB: disturbance from fleeing human activity (Table 4.3), and harm from removing occupied roost trees (Table 4.4 for pups and Table 4.5 for adults). Human disturbance from timber harvest during the active season (April – October) within maternity roosting areas may disturb up to 76,846 volant NLEB annually (Table 4.3). A small subset of these disturbed individuals may be harmed. Timber harvests that remove occupied roost trees during the non-volant season may harm up to 1,109 pups annually (Table 4.4). Removal of occupied roost trees during the active season may harm up to 247 adults annually (Table 4.5).

In addition to these two pathways, timber harvest activities could alter the flow of air and water through unknown hibernacula which could also harm NLEBs. We do not have enough information to quantify the effects of this pathway because we do not know where projects will occur relative to the unknown hibernacula that are likely on the landscape. Although the alteration of unknown hibernacula is reasonably certain to occur, we anticipate that relatively small numbers of bats will be impacted per year in each state based on the widely dispersed (i.e., not concentrated in a given area) nature of timber harvest activities. In addition, the hibernacula often selected by NLEB are "large, with large passages" (Raesly and Gates 1987), and may be less affected by relatively minor surficial micro-climatic changes that might result from timber

harvest around unknown roosts. Further, bats rarely hibernate near the entrances of structures (Grieneisen 2011). Davis et al (1999) reported that partial clearcutting "appears not to affect winter temperatures deep in caves."

We also do not quantify the potential reductions in fitness that may result as indirect effects from loss of habitat. We anticipate that 1.3% (3,669,077 acres) of available habitat will be harvested annually through 2022; however, we anticipate that habitat losses from timber harvest will be temporary. In addition, the NLEB does not appear to be limited by habitat, as demonstrated by a great deal of plasticity within its environment (e.g., living in highly fragmented forest habitats to contiguous forest blocks from the southern United States to Canada's Yukon Territory) in the absence of WNS. Therefore, reductions in fitness from habitat loss are anticipated to be small. Further, timber harvest practices that reduce mid-story clutter likely also benefit NLEB habitat and may increase fitness of local NLEB populations. We do not quantify the potential increases in fitness because we lack the scientific support to interpret the degree to which survival or reproductive success rates of local populations may be influenced; however, management of existing forests is likely to maintain roosting or foraging habitat.

4.4 PRESCRIBED FIRE

Prescribed fire is the other category of forest management described in this BO. Prescribed burning is deliberately burning wild-land fuels under specified environmental conditions in a predetermined area with a predetermined fire-line intensity and rate of movement in order to attain resource management objectives. It is typically classified as dormant-season and growing-season burning. The seasonality varies by latitude and elevation, but the dormant season is generally October –April and the growing season is April 15 – August 15. Dormant-season burning is primarily used to reduce the buildup of hazardous fuels and thereby reduce the likelihood of catastrophic wildfires or to achieve ecological stand objectives. Growing-season burning is used for site preparation, control of undesirable species, and restoration and maintenance of fire-dependent plant communities and associated wildlife. Most growing season burning takes place in the spring and fall; however, growing season burning occurs through the active and pup seasons in the rest of the range. For example, we recently completed programmatic consultations for the NLEB with the U.S. Forest Service on Forest Plans in their Southern and Eastern regions, which includes the Midwest, Southern, and Eastern ranges of the NLEB. Twenty-one and 16 percent of prescribed burning was projected to occur during the pup season (defined by the Forest Service as May 1 to July 30) in the Southern and Eastern regions, respectively.

4.4.1 EFFECTS OF PRESCRIBED FIRE

Literature Review

Perry (2012) provides a review of fire effects on bats in the eastern oak region of the U.S., and Carter et al. (2002) provides a similar review for bats in the southeastern and mid-Atlantic states. Forest-dwelling bats, including the wide-ranging NLEB, were presumably adapted to the fire-driven disturbance regime that preceded European settlement and fire suppression in many parts of the eastern U.S. Concurrent changes in habitat conditions preclude any reasonable inferences about the overall impact of fire suppression on populations of forest-dwelling bats. It is apparent that fire may affect individual bats directly (negatively) through exposure to heat, smoke, and carbon monoxide, and indirectly (both positively and negatively) through habitat modifications and resulting changes in their food base (Dickinson et al. 2009).

Direct Effects – Summer Roosting

Little is known about the direct effects of fire on cavity and bark roosting bats, such as the NLEB, and few studies have examined escape behaviors, direct mortality, or potential reductions in survival associated with effects of fire. Dickinson et al. (2009) monitored two NLEB (one male and one female) in roosts during a controlled summer burn. Within 10 minutes of ignition near their roosts, both bats flew to areas that were not burning. Among four bats they tracked before and after burning, all switched roosts during the fire, with no observed mortality. Rodrigue et al. (2001) reported flushing a *Myotis* bat from an ignited snag during an April controlled burn in West Virginia.

Carter et al. (2002) suggested that the risk of direct injury and mortality to southeastern forest-dwelling bats resulting from summer prescribed fire is generally low. During warm temperatures, bats are able to arouse from short-term torpor quickly. Most adult bats are quick, flying at speeds > 30 km/hour (Patterson and Hardin 1969), enabling escape to unburned areas. NLEB use multiple roosts, switching roost trees often (see *Summer Roosting Behavior* in Section 2.4.3), and could likely use alternative roosts in unburned areas, should fire destroy the current roost. Non-volant pups are likely the most vulnerable to death and injury from prescribed fire. Although most eastern bat species are able to carry their young for some time after they are born (Davis 1970), the degree to which this behavior would allow females to relocate their young if fire threatens the nursery roost is unknown.

Dickinson et al. (2010) used a fire plume model, field measurements, and models of carbon monoxide and heat effects on mammals to explore the risk to the Indiana bat and other tree-roosting bats during prescribed fires in mixed-oak forests of southeastern Ohio and eastern Kentucky. Carbon monoxide levels did not reach critical thresholds that could harm bats in low-

intensity burns at typical roosting heights for the Indiana bat (8.6 m) (28.2 ft). NLEB roost height selection is more variable, but on average lower (6.9 m) (22.8 ft) than the Indiana bat (Lacki et al. 2009b). In this range of heights, direct heat could cause injury to the thin tissue of bat ears. Such injury would occur at roughly the same height as tree foliage necrosis (death) or where temperatures reach 60 °C (140 °F). Most prescribed fires for forest management are planned to avoid significant tree scorch.

Direct and Indirect Effects – Winter Roosting

Little is known about the direct effects of fire on bats in adjacent caves and mines. Smoke and noxious gases could enter caves and mines, depending on airflow characteristics and weather conditions (Carter et al. 2002; Perry 2011). Although smoke from winter fires may not reach toxic levels in caves and mine, introduced gases could arouse bats from hibernation, causing energy expenditure and reduced fitness (Dickinson et al. 2009). Caviness (2003) observed smoke intrusion into hibernacula during winter burning in Missouri, but did not observe any bat arousal. Fire could alter vegetation surrounding the entrances to caves and mines, which could indirectly affect temperature and humidity regimes of hibernacula by modifying airflow (Carter et al. 2002, Richter et al. 1993).

Indirect Effects – Roost Availability/Suitability

Fire can affect the availability of roosting substrate (cavities, crevices, loose bark) by creating or consuming snags, which typically provide these features, or by creating these features in live trees. Although stand-replacing or intense wildfires may create large areas of snags, the effects of multiple, low-intensity prescribed burning on snag dynamics are less obvious, especially for forests consisting mostly of fire-adapted species. Low-intensity, ground-level fire may injure larger hardwood trees, creating avenues for pathogens such as fungi to enter and eventually form hollow cavities in otherwise healthy trees (Smith and Sutherland 2006). Fire may scar the base of trees, promoting the growth of basal cavities or hollowing of the bole in hardwoods (Nelson et al. 1933, Van Lear and Harlow 2002). Repeated burning could potentially create forest stands with abundant hollow trees. Trees located near down logs, snags, or slash may be more susceptible to damage or death, and aggregations of these fuels can create clusters of damaged trees or snags (Brose and Van Lear 1999, Smith and Sutherland 2006).

Bats are known to take advantage of fire-killed snags and continue roosting in burned areas. Boyles and Aubrey (2006) found that, after years of fire suppression, initial burning created abundant snags, which evening bats (*Nycticeius humeralis*) used extensively for roosting. Johnson et al. (2010) found that after burning, male Indiana bats roosted primarily in fire-killed maples. In the Daniel Boone National Forest, Lacki et al. (2009a) radio-tracked adult female NLEB before and after prescribed fire, finding more roosts (74.3 percent) in burned habitats than

in unburned habitats. Burning may create more suitable snags for roosting through exfoliation of bark (Johnson et al. 2009a), mimicking trees in the appropriate decay stage for roosting bats.

In addition to creating snags and live trees with roost features, prescribed fire may enhance the suitability of trees as roosts by reducing adjacent forest clutter (see *Canopy Cover/Closure* in Section 2.4.3). Perry et al. (2007) found that five of six species, including NLEB, roosted disproportionally in stands that were thinned and burned 1-4 years prior but that still retained large overstory trees. Boyles and Aubrey (2006) found evening bats used burned forest exclusively for roosting.

Indirect Effects – Summer Foraging

Adult insects are the predominant prey of NLEB (see Section 2.2.4 Foraging Behavior). On the Daniel Boone National Forest, Lacki et al. (2009a) found that abundance of coleopterans (beetles), dipterans (flies), and all insects combined captured in black-light traps increased following prescribed fires. The mechanism of this increase is presumably the new growth of ground vegetation that a burn stimulates. In fecal samples of NLEB, lepidopterans (moths), coleopterans, and dipterans were the three most important groups of insect prey, with dipteran consumption increasing after burning. NLEB appeared to track the observed changes in insect availability, i.e., home ranges were closer to burned habitats following fires than to unburned habitats, but home range size did not vary before and after fires.

Summary of Exposure-Response Table

Table 4.1 shows the eight pathways we identified for NLEB responses to prescribed fire and the range of individual responses expected. In general, exposure to prescribed burning can cause direct adverse responses (disturbance, injury, death) and indirect adverse and beneficial responses via changes to roosting and foraging resources and forest health maintenance. Stressors caused by burning include heat and smoke during the actual movement of a fire through forested areas and fire-induced changes in vegetation structure and composition. Bat exposure to these direct and indirect stressors depends on timing of the burn and how bats may use the burned area, e.g., for roosting, foraging, spring staging, fall swarming, or hibernation in a cave/mine where the entrance is within or near the burned area.

4.4.2 METHODOLOGY FOR QUANTIFYING EFFECTS OF PRESCRIBED FIRE

To estimate the potential impacts of prescribed fire through 2022, we compiled the mean, minimum, and maximum acres of prescribed burns in each state from 2002 to 2014 (Table 4.6) using data available through the National Interagency Fire Center (available on internet: https://www.nifc.gov/fireInfo/fireInfo_stats_prescribed.html; accessed November 2015). We

assumed the mean annual use of prescribed fire from 2002-2014 will be consistent through the period of this consultation. Similar to the population estimation methods in Section 2.4.2, we excluded a state from our analyses if less than 50% of it is within the NLEB range.

These data represent the total amount of prescribed burning in each state without regard to habitat type. We further parsed these data using information from the 2012 National Prescribed Fire Use Survey Report (Melvin 2012) to exclude burned grassland habitats as these are not relevant to the NLEB. The burn report estimated the percent of prescribed fire used to manage grassland or agriculture habitat and forested land in 2012. We recognize that this percentage likely varies to some degree every year, but we assume that the proportion of prescribed fire in forested habitat is similar. We use the mean annual acres of prescribed fire in forested habitat reported in Table 4.6 for the purposes of this BO. We anticipate that 648,908 acres will be burned annually through 2022, which is 0.2% of the available forested habitat (Table 4.2). The majority of prescribed burning is expected to occur in the Southern range (64%), followed by 29% in the Midwest, 4% and 3% in the Eastern and Western ranges, respectively.

Similar to timber harvest, we lack a breakdown of the acres burned during the active and non-volant seasons, and we assume that prescribed burning will occur with equal frequency throughout the year. Therefore, the average annual acres of prescribed burning during the active season are 58.6% of the total average annual acres, and 16.7% of the total is estimated to occur in the non-volant season. This estimate is similar to the recent estimates from programmatic consultations for the NLEB on U.S. Forest Service lands, where 21 and 16 percent of prescribed burning was projected to occur during the pup season (defined by the Forest Service as May 1 to July 30) in the Southern and Eastern regions, respectively. This may be an overestimate for the western range.

We use the same methods described for timber harvest (see Section 4.1.2.2) to estimate individual-level effects corresponding to the stressor-exposure-response pathways for prescribed burning. Our calculations for each pathway that we quantify are presented in tabular form in Section 4.3.

4.4.3 QUANTIFYING EFFECTS OF PRESCRIBED FIRE

We quantify the two pathways expected to disturb or harm the NLEB: disturbance from fleeing the fire (Table 4.7), and harm to pups from heat and smoke during the non-volant season (Table 4.8). Prescribed fires during the active season within maternity roosting areas may disturb up to 19,417 volant NLEB annually through fleeing and increased predation (Table 4.7). A small subset of disturbed individuals may be harmed. Prescribed burning during the non-volant season may harm up to 1,859 pups annually (Table 4.8).

In addition to these two pathways, prescribed burning could alter the flow of air and water through unknown hibernacula and also harm NLEBs. We do not have enough information to quantify the effects of this pathway because we do not know where projects will occur relative to the unknown hibernacula that are likely on the landscape. Although the alteration of unknown hibernacula may occur, we anticipate that relatively small numbers of bats will be impacted per year in each state based on the widely dispersed nature of prescribed burning. In addition, Caviness (2003) reported that prescribed burns were found to have no notable influence on bats hibernating in various caves in the Ozark National Forest. All bats present in caves at the beginning of the burn were still present and in "full hibernation" when the burn was completed, and bat numbers increased in the caves several days after the burn. There were minute changes in relative humidity and temperature during the burn and elevated short-term levels of some contaminants from smoke were noted.

We also do not quantify the potential reductions or increases in fitness that may result as indirect effects from the loss of roost trees (adverse) or the creation of roost trees, increased prey availability, or reduction of mid-story clutter (beneficial). We anticipate that only 0.2% of available habitat will be burned annually, and any habitat losses from prescribed fire will be temporary. In addition, the NLEB does not appear to be limited by roost trees, as demonstrated through a great deal of plasticity within its environment (e.g., roosting in a wide variety of trees and sizes). Therefore, reductions in fitness from habitat loss are anticipated to be small. Further, prescribed fire likely also benefits NLEB habitat and may increase fitness of local populations as described above. We do not quantify the potential increases in fitness because we lack the scientific support to interpret the degree to which survival or reproductive success rates of local populations may be influenced; however, management of existing forests is likely to maintain roosting or foraging habitat.

4.5 FOREST CONVERSION

Forest conversion is the loss of forest to another land cover type (e.g., grassland, cropland, development). For the purposes of this BO, we define forest conversion as any activity that removes forested habitat that is suitable for the NLEB. This includes, but is not limited to, tree removal from commercial or residential development, energy production and transmission (oil, gas, solar, wind), mining, agriculture, transportation, military training, and other ecosystem management. Unlike forest management, forest conversion permanently removes forested habitat on the landscape, or in some cases, there is no forest for decades as in the case of mining.

4.5.1 EFFECTS OF FOREST CONVERSION

In the final listing rule for the NLEB, we note that forest conversion could result in the following impacts: (1) loss of suitable roosting or foraging habitat; (2) fragmentation of remaining forest patches, leading to longer flights between suitable roosting and foraging habitat; (3) removal of (fragmenting colonies/networks) travel corridors; and (4) direct injury or mortality from the removal of occupied roosts during active season clearing. Forest conversion could also alter the flow of air and water through unknown hibernacula and impact NLEBs.

The literature review for timber harvest describes the loss of suitable roosting or foraging habitat, direct injury or mortality from removal of occupied roost, and alteration of hibernacula (see section 4.1.2.1). Fragmentation of forests patches and travel corridors may result in longer flights to find alternative suitable habitat and colonial disruption. NLEBs emerge from hibernation with their lowest annual fat reserves and return to their summer home ranges. Because NLEBs have summer home range fidelity (Foster and Kurta 1999; Patriquin et al. 2010; Broders et al. 2013), loss or alteration of forest habitat may put additional stress on females when returning to summer roost or foraging areas after hibernation. Females (often pregnant) have limited energy reserves available for use if forced to seek out new roosts or foraging areas. Hibernation and reproduction are the most energetically demanding periods for temperate-zone bats, including the NLEB (Broders et al. 2013). Bats may reduce metabolic costs of foraging by concentrating efforts in areas of known high prey profitability, a benefit that could result from the bat's local roosting and home range knowledge and site fidelity (Broders et al. 2013). Cool spring temperatures provide an additional energetic demand, as bats need to stay sufficiently warm or enter torpor. Entering torpor comes at a cost of delayed parturition; bats born earlier in the year have a greater chance of surviving their first winter and breeding in their first year of life (Frick et al. 2010). Delayed parturition may also be costly because young of the year and adult females would have less time to prepare for hibernation (Broders et al. 2013). Female NLEBs typically roost colonially, with their largest population counts occurring in the spring (Foster and Kurta 1999), presumably as one way to reduce thermal costs for individual bats (Foster and Kurta 1999). Therefore, similar to other temperate bats, NLEBs have multiple high metabolic demands (particularly in spring) and must have sufficient suitable roosting and foraging habitat available in relatively close proximity to allow for successful reproduction.

Table 4.1 shows the six pathways we identified for NLEB responses to forest conversion and the range of individual responses expected. The primary alteration of the environment associated with forest conversion that is relevant to the NLEB is the removal of trees that provide roosts or serve as foraging, spring staging, or fall swarming habitat. Removing occupied trees is likely to kill or injure pups and adults. Fragmentation and loss of forest habitat decreases opportunities for growth and successful reproduction. Alteration of hibernacula can harm NLEBs. The disturbance (noise, exhaust from machinery, etc.) that accompanies conversion activities may result in

disturbance because fleeing during daylight increases the likelihood of predation. A small subset of disturbed individuals may be harmed. The species' responses to these stressors depend on the timing, location, and extent of the removal. In areas with little forest or highly fragmented forests (e.g., western U.S. edge of the range, central Midwestern states; see Figure 1.1, above), impact of forest loss would be disproportionately greater than similar-sized losses in heavily forested areas (e.g., Appalachians and northern forests). Also, the impact of habitat loss within a NLEB's home range is expected to vary depending on the scope of removal.

4.5.2 METHODOLOGY FOR QUANTIFYING EFFECTS OF FOREST CONVERSION

To estimate the potential impacts of forest conversion through 2022, we examined the total forested acres in each state from 2001 to 2011 using the National Land Cover Datasets (Homer et al. 2015). We calculated the approximate acres of forest lost per state per year by subtracting the acres of total forest in 2011 from the forested acres in 2001 and calculating the annual loss over the 10 year period (Table 4.9). We assume that the mean annual forest conversion from 2001-2011 will be consistent through the period of this consultation. Similar to the population estimation methods in Section 2.4.2, we excluded a state from our analyses if less than 50% of it is within the NLEB range. We anticipate that 914,237 acres will be converted from forested habitat annually through 2022, which is 0.3% of the available forested habitat per year and 2.3% of the available habitat through 2022 (Table 4.2). The majority of the expected forest conversion will occur in the Southern range (53%), followed by the Eastern range (26%), Midwest (19%). Only about 2% of the total conversion will occur in the Western range.

Similar to timber harvest, we lack a breakdown of forest conversion during the active and non-volant seasons, and we assume that it will occur with equal frequency throughout the year. Therefore, the average annual acres of forest conversion during the active season are 58.6% of the total average annual acres, and 16.7% of the total is estimated to occur in the non-volant season.

We use the same methods described for timber harvest (see Section 4.1.2.2) to estimate individual-level effects corresponding to the stressor-exposure-response pathways for prescribed burning. Our calculations for each pathway that we quantify are presented in tabular form in Section 4.3.

4.5.3 QUANTIFYING EFFECTS OF FOREST CONVERSION

We quantify the two pathways expected to disturb or harm the NLEB: disturbance from fleeing human activity (Table 4.10), and harm from removing occupied roost trees (Table 4.11 for pups

and Table 4.12 for adults). Human disturbance from forest conversion during the active season (April – October) within maternity roosting areas may disturb up to 21,004 volant NLEB annually (Table 4.10). Forest conversion activities that remove occupied roost trees during the non-volant season may harm up to 317 pups annually (Table 4.11). Removal of occupied roost trees during the active season may harm up to 83 adults annually (Table 4.12).

In addition to these two pathways, forest conversion could alter the flow of air and water through unknown hibernacula and also harm NLEBs. We do not have enough information to quantify the effects of this pathway because we do not know where projects will occur relative to the unknown hibernacula that are likely on the landscape. Although the alteration of unknown hibernacula is reasonably certain to occur, we anticipate that relatively small numbers of bats will be impacted per year in each state based on the widely dispersed nature of forest conversion activities. In addition, the hibernacula often selected by NLEB are "large, with large passages" (Raesly and Gates 1987), and may be less affected by relatively minor surficial micro-climatic changes that might result from forest conversion around unknown roosts. Raesly and Gates (1987) evaluated external habitat characteristics of hibernacula and reported that for the NLEB the percentage of cultivated fields within 0.6 miles (1 km) the hibernacula was greater (52.6 percent) for those caves used by the species, than for those caves not used by the species (37.7 percent), suggesting that the removal of some forest around a hibernacula can be consistent with the species needs.

We also do not quantify the potential reductions in fitness that may result as indirect effects from loss of habitat. We anticipate that 0.3% (914,237 acres) of available habitat will be converted annually through 2022. We anticipate that habitat losses from forest conversion will be permanent. However, the NLEB does not appear to be limited by habitat, as demonstrated by a great deal of plasticity within its environment (e.g., living in highly fragmented forest habitats to contiguous forest blocks from the southern United States to Canada's Yukon Territory) in the absence of WNS. Therefore, reductions in fitness from habitat loss are anticipated to be small.

4.6 WIND TURBINE OPERATION

Wind energy development is rapidly increasing throughout the NLEB's range. Iowa, Illinois, Oklahoma, Minnesota, Kansas, and New York are within the top 10 States for wind energy capacity (installed megawatts) in the United States (AWEA 2013). There is a national movement towards a 20 percent wind energy sector in the U.S. market by 2030 (United States Department of Energy (US DOE) 2008). Through 2012, wind energy has achieved its goals in installation towards the targeted 20 percent by 2030 (AWEA 2015a). If the target is achieved, it would represent nearly a five-fold increase in wind energy capacity during the next 15 years (Loss et al. 2013). While locations of future wind energy projects are largely influenced by ever-changing economic factors and are difficult to predict, sufficient wind regimes exist to support wind power

development throughout the range of the NLEB (USDOE 2015a), and wind development can be expected to increase throughout the range in future years. Wind energy facilities have been constructed in areas within a large portion of the range of the NLEB.

4.6.1 EFFECTS OF WIND TURBINE OPERATION

Significant bat mortality has been witnessed associated with utility-scale (greater than or equal to 0.66 megawatt (MW)) wind turbines along forested ridge tops in the eastern and northeastern United States and in agricultural areas of the Midwest (Johnson 2005; Arnett et al. 2008; Cryan 2011; Arnett and Baerwald 2013; Hayes 2013; Smallwood 2013). Recent estimates of bat mortality from wind energy facilities vary considerably depending on the methodology used and species of bat. Arnett and Baerwald (2013) estimated that 650,104 to 1,308,378 bats had been killed at wind energy facilities in the United States and Canada as of 2011, and expected another 196,190 to 395,886 would be lost in 2012. Other bat mortality estimates range from "well over 600,000… in 2012" (Hayes 2013; [but see Huso and Dalthorp 2014]) to 888,000 bats per year (Smallwood 2013), and mortality can be expected to increase as more turbines are installed on the landscape. The majority of bats killed include migratory foliage-roosting species the hoary bat (*Lasiurus cinereus*) and eastern red bat, and the migratory, tree- and cavity-roosting silver-haired bat (Arnett et al. 2008; Cryan 2011; Arnett and Baerwald 2013). NLEBs are rarely detected as mortalities, even in areas where they are known to be common on the landscape.

The Service reviewed post-construction mortality monitoring studies at 62 unique operating wind energy facilities in the range of the NLEB in the United States and Canada. In these studies, 41 NLEB mortalities were documented, comprising less than 1 percent of all bat mortalities. Northern long-eared bat mortalities were detected throughout the study range at 29 percent of the facilities, including: Illinois, Indiana, Maryland, Michigan, Missouri, New York, Pennsylvania, West Virginia, and Ontario. There is a great deal of uncertainty related to extrapolating these numbers to generate an estimate of total NLEB mortality at wind energy facilities due to variability in post-construction survey effort and methodology (Huso and Dalthorp 2014). Bat mortality can vary between years and between sites, and detected carcasses are only a small percentage of total bat mortalities. Despite these limitations, Arnett and Baerwald (2013) estimated that wind energy facilities in the United States and Canada killed between 1,175 and 2,433 NLEBs from 2000 to 2011.

There are three impacts of wind turbines that may explain proximate causes of bat fatalities, which include: (1) bats collide with turbine towers; (2) bats collide with moving blades; or (3) bats suffer internal injuries (barotrauma) after being exposed to rapid pressure changes near the trailing edges and tips of moving blades (Cryan and Barclay 2009). Researchers have recently indicated that traumatic injury, including bone fractures and soft tissue trauma caused by collision with moving blades, is the major cause of bat mortality at wind energy facilities

(Rollins et al. 2012; Grodsky et al. 2011). Grodsky et al. (2011) suggested that these injuries can lead to an underestimation of bat mortality at wind energy facilities due to delayed lethal effects. However, the authors also noted that the surface and core pressure drops behind the spinning turbine blades are high enough (equivalent to sound levels that are 10,000 times higher in energy density than the threshold of pain in humans) to cause significant ear damage to bats flying near wind turbines (Grodsky et al. 2011). Bats suffering from ear damage would have a difficult time navigating and foraging, as both of these functions depend on the bats' ability to echolocate (Grodsky et al. 2011). While earlier papers indicated that barotrauma may also be responsible for a considerable portion of bat mortality at wind energy facilities (Baerwald et al. 2008), in a more recent study, researchers found only 6 percent of wind turbine killed bats at one site were possibly killed by barotrauma (Rollins et al. 2012). In a separate study, Grodsky et al. (2011) found that 74 percent of carcasses had bone fractures and more than half had mild to severe hemorrhaging in the middle or inner ears; thus it is difficult to attribute individual fatalities exclusively to either direct collision or barotrauma.

Table 4.1 shows the two pathways we identified for NLEB responses to wind turbine operation and the range of individual responses expected. The primary impact to bats from operation of wind facilities is death resulting from collision with operating turbines. It is also possible that NLEBs could be disturbed by sound from turbine operation; however, studies have found no evidence to suggest that bats are likely to be affected (Szewczak and Arnett 2006; Horn et al. 2008). We do not address sound from turbine operation further in this BO. We include the potential impacts from construction under forest conversion.

4.6.2 QUANTIFYING EFFECTS OF WIND TURBINE OPERATION

This section describes the approach for determining the current and future wind energy development conditions and the estimation of potential fatalities from wind energy through the duration of this consultation in 2022.

We compiled the installed wind power capacity (megawatts [MW]) as identified by the American Wind Energy Association (AWEA) for each state within the NLEB's range through 2014 (AWEA 2014). Similar to the population estimation methods in Section 2.4.2, we excluded a state from our analyses if less than 50% of it is within the NLEB range. There is currently no installed wind power capacity in the excluded states of Louisiana, Alabama, Georgia, and South Carolina, but there was 5,857 MW of installed capacity in Montana, Wyoming, and Oklahoma as of 2014. To determine if excluding these states was reasonable, we also examined a wind development pressure map (Figure 4.1) developed using the Federal Aviation Administration's wind turbine data (Service 2015a, unpublished data). We concluded that a small amount of potential wind energy development was within the species' range in Montana, Wyoming, and Oklahoma; however, the inclusion of the full states of Nebraska and Kansas should compensate

for any impacts not included in the excluded states. The total amount of installed wind capacity for the remaining states within the range of the NLEB was 28,294 MW at the end of 2014 (Table 4.13).

To estimate the potential impacts of future wind energy development through 2022, we used the Department of Energy's 2020 and 2030 build-out projections from the interactive map developed using data from with their 2015 Wind Vision Report (http://energy.gov/maps/map-projected-growth-wind-industry-now-until-2050; USDOE 2015b). The total amount of installed wind capacity by 2020 for states with more than 50% of their area within the NLEB range is projected to be 44,100 MW (Table 4.13). Lacking annual projections, we assumed that the annual build-out from 2014 to 2020 would be the mean of the total build-out over the six year period. We estimated build-out in 2021 and 2022 by taking the difference between the 2030 and 2020 projections and assuming the annual build-out in 2021 and 2022 would be the mean of the total build-out through 2030. The total amount of installed wind capacity by 2022 for states with more than 50% of their area within the NLEB range is projected to be 55,006 MW. The total capacity of wind energy is anticipated to nearly double in the next seven years.

The best source of information available to estimate anticipated future impacts to bats from collision with wind turbines is data from post-construction monitoring studies of existing wind facilities. Species composition data from these studies can be used to estimate the level of NLEB mortality by assuming the proportion of documented fatalities of NLEB, relative to the fatalities of all other bat species, represents the proportion of NLEB fatalities expected in other projects situated in similar geographic areas. It is important to use data that are as representative as possible of the conditions in the area for which mortality is being estimated because multiple variables are likely to influence mortality rates at wind energy facilities, including location relative to bat areas of activity, turbine height, rotor-swept area, turbine cut-in speed (i.e., the minimum speed required to produce energy), geographic location, elevation, topographic location, surrounding habitat types, time of year, and weather conditions. Uncertainty regarding variations in the relative densities of different species of bats across the landscape and over time are an additional source of error in this estimation. However, we used the data from the draft Midwest Wind Energy Habitat Conservation Plan (MWE HCP) as a surrogate for the full range of the species because the post construction mortality studies have not been compiled at the range-wide scale of the NLEB. The estimates from the MWE HCP represent the best available data for this consultation, but we acknowledge the uncertainty of these estimates for the Eastern, Southern, and Western portions of the species' range.

The number of NLEBs that may be impacted by wind development in each state was calculated following these steps[3]: (1) determine the anticipated bat fatality rate for the geographic area of

[3] The MWE HCP is currently in development with the Service, a coalition of eight Midwestern states, and representatives of the wind energy industry. Much of the following information in this section comes from the draft

interest based on the results of post-construction monitoring studies; (2) determine the proportion of the NLEB among fatalities in post-construction monitoring studies in the applicable range of the NLEB; and (3) multiply the proportion of the NLEB by the expected fatality rate to derive the expected number of total fatalities of the NLEB. For example, if the total estimated bat mortality from regional data is 12 bats/MW/year (or 1,200 bats/year for a 100 MW facility), and the number of NLEB fatalities among all bat fatalities was 1 out of 100 (or 1%), the total estimated mortality of the NLEB would be 12 fatalities/year.

1. *determine the anticipated bat fatality rate for the geographic area of interest based on the results of post-construction monitoring studies*

   The studies used to estimate all bat fatality rates for the MWE HCP were limited to those that were conducted in the eight Midwestern states within the range of the covered bat species in the MWE HCP (i.e., Indiana bat, NLEB, little brown bat). The following additional criteria were used to select post-construction monitoring studies: (1) the search interval had to be weekly or more frequent; (2) studies had to correct for carcass persistence and searcher efficiency using site-specific data; (3) the search interval had to be shorter than the mean carcass persistence rate; (4) only include the mortality rate for the most robust study method for studies that reported more than one mortality rate; and (5) only include the bat fatality estimates from control turbines for curtailment study projects. These studies were further modified to account for unsearched areas where bats were expected to fall by applying a correction factor (sensu Hull and Muir 2013) if the study included search areas smaller than 100 m search radii. Fatality rates must also be representative of the period over which future mortality is being estimated; therefore, rates were adjusted to account for bat mortality that occurred during from April 1 to October 31, which is inclusive of the time frame within which all NLEB mortalities have been documented.

   Based on these criteria, 17 fatality monitoring studies were selected to estimate fatality of all bats within the MWE HCP states. Of these 17 studies, two were conducted in Minnesota, three in Wisconsin, three in Iowa, four in Illinois, two in Indiana, and three in Ohio. Reported bat fatality rates (adjusted as described above) were variable across projects and ranged from a low of 1.42 bats/MW/study period at the Big Blue project in Minnesota (Fagen Engineering, LLC 2014), to 38.25 bats/MW/study period at the Cedar Ridge project in Wisconsin (BHE Environmental 2010). The mean bat fatality rate was 17.55 bats/MW/year. This estimate is similar to pre-WNS values surveys in Maryland (15.61 bats/MW; Young et al. 2011) and Pennsylvania (14.4 bats/MW; Taucher et al.

MWE HCP being written by Leidos, Inc. The analytical process used here was developed and approved by the Service; therefore, the data derived from this study currently represents the best available information to inform this analysis.

2012), which addresses some of the uncertainty of using Midwest estimates for the entire range.

2. *determine the proportion of the NLEB among fatalities in post-construction monitoring studies in the applicable range of the NLEB*

   The MWE HCP used 71 studies to estimate species composition for NLEBs. This was a larger pool than the more restrictive studies used to determine the all bat fatality rate because the purpose was to capture all available data on NLEB mortality in the Midwest. Of these 71 studies, three species of long-distance migrants made up the highest percentage of fatalities, totaling 88% of the 8,934 bat carcasses documented across all studies. Eastern red bats had the highest number of fatalities (3,893 bat carcasses or 44%), followed by hoary bats (2,328 bat carcasses or 26%), and silver-haired bats (1,621 bat carcasses or 18%). The next most common species found among fatalities were big brown bats (519 bat carcasses or 6%), followed by little brown bats (339 bat carcasses or 4%). NLEBs made up 0.09% (8 bat carcasses out of 8,934) of the fatality pool.

3. *multiply the proportion of the NLEB by the expected fatality rate to derive the expected number of total fatalities of the NLEB*

   Based on the estimated percentage of NLEBs (0.09%) among the mean bat fatality rate (17.55/MW/year), the mean estimated NLEB fatalities/MW/year was 0.0158. This NLEB fatality rate was then applied to the current installed wind capacity and projected build-out through 2022 to determine an estimated number of NLEB fatalities that would occur during each year over the term of this consultation assuming no avoidance and minimization measures would be in place. Based on these assumptions, we estimated that 5,654 NLEB fatalities could result from the projected wind capacity of 55,006 MW through 2022 (3,575 NLEBs from current facilities and 2,078 NLEBs from projected build-out; Table 4.13). There was an estimated 447 mortalities in 2014, and annual estimates increase every year by 42 individuals from 2015-2020 and 86 individuals in 2021 and 2022 for a total of 869 individuals in 2022. These are over-estimates because they do not account for avoidance and minimization measures that are currently applied at wind facilities, especially within the range of the endangered Indiana bat and it does not account for declines from WNS, especially in the Eastern range.

   Operational adjustments can be made to minimize mortality of bat species at wind facilities through two primary methods: (1) turbines are “feathered,” or rendered near motionless below the normal manufacturer’s cut-in speed, and (2) the cut-in speed is raised to a wind speed higher than the normal manufacturer’s cut-in speed during periods and in areas of greatest risk for bats. These adjustments have been found to significantly

reduce bat mortality because bat activity and mortality have been shown to have an inverse relationship with wind speed (Arnett et al. 2013). Some facilities within the range of the NLEB have already instituted these operational adjustments to avoid take of Indiana bats or as required by Indiana bat Habitat Conservation Plans. In addition, the wind industry has recently announced new best management practices establishing voluntary operating protocols, which they expect "to reduce impacts to bats from operating wind turbines by as much as 30 percent" (AWEA 2015b). According to AWEA, the agreement "involves wind operators' voluntarily limiting the operations of turbines in low-wind speed conditions during the fall bat migration season, when research has shown bats are most at risk of collision" (AWEA 2015b). Given the large numbers of other bat species impacted by wind energy (Hein et al 2013) and the economic importance of bats in controlling agricultural or forest pest species (Boyles et al 2011), we anticipate that these new standards will be adopted by most wind energy facilities and ultimately required by wind-energy-siting regulators at state and local levels. It is possible that total fatalities will be reduced by as much as 50% if we include the effects of additional curtailment that is ongoing at many projects and the effects of WNS on the overall population.

4.7 OTHER ACTIVITIES THAT MAY AFFECT THE NLEB

The NLEB is likely to be affected by a variety of other activities which are excepted from incidental take prohibitions in the final 4(d) rule that are not covered by the general categories for removal from human structures, forest management, forest conversion, and wind turbine operation. These activities include, but may not be limited to:

- Disturbance/noise from with human activities not associated with timber harvest or forest conversion
- Lighting
- Use of pesticides for pest and vegetation control
- Spills/chemical contamination
- Water quality alteration
- Collision
- Noise from munitions, detonations, and training vehicles/aircraft
- Use of military training smoke and obscurants
- Bridge maintenance, repair, or replacement
- Subsurface drilling or blasting for utility line and road installation
- Use of waste pits to store contaminated fluids

4.7.1 EFFECTS OF OTHER ACTIVITIES

Disturbance/Noise

Noise and vibration and general human disturbance are stressors that may disrupt normal feeding, sheltering, and breeding activities of the NLEB. Many activities may result in increased noise/vibration/disturbance that may result in effects to bats. Significant changes in noise levels in an area may result in temporary to permanent alteration of bat behaviors. The novelty of these noises and their relative volume levels will likely dictate the range of responses from individuals or colonies of bats. At low noise levels (or farther distances), bats initially may be startled, but they would likely habituate to the low background noise levels. At closer range and louder noise levels (particularly if accompanied by physical vibrations from heavy machinery and the crashing of falling trees) many bats would probably be startled to the point of fleeing from their day-time roosts and in a few cases may experience increased predation risk. For projects with noise levels greater than usually experienced by bats, and that continue for multiple days, the bats roosting within or close to these areas are likely to shift their focal roosting areas further away or may temporarily abandon these roosting areas completely.

There is limited literature available regarding impacts from noise (outside of road/traffic) on bats. Gardner et al. (1991) had evidence that an NLEB conspecific, Indiana bat, continued to roost and forage in an area with active timber harvest (see the timber harvest Section above regarding other similar studies for NLEB). They suggested that noise and exhaust emissions from machinery could possibly disturb colonies of roosting bats, but such disturbances would have to be severe to cause roost abandonment. Callahan (1993) noted that the likely cause of the bats in his study area abandoning a primary roost tree was disturbance from a bulldozer clearing brush adjacent to the tree.

Indiana bats have also been documented roosting within approximately 300 meters of a busy state route adjacent to Fort Drum Military Installation (Fort Drum) and immediately adjacent to housing areas and construction activities on Fort Drum (US Army 2014). Bats roosting or foraging in all of the examples above have likely become habituated to the noise/vibration/disturbance.
Table 4.1 shows the pathway we identified for NLEB responses to noise/disturbance, and it is possible that NLEBs will be disturbed by noise/disturbance. A small subset of disturbed individuals may be harmed. Although some adverse effects to NLEBs are reasonably certain to occur from noise or disturbance, we anticipate that relatively small numbers of bats will be impacted per year in each state based on the widely dispersed nature of activities and occupancy rates that are typically less than 50%.

Lighting

Bat behavior may be affected by lights when traveling between roosting and foraging areas. Foraging in lighted areas may increase risk of predation or it may deter bats from flying in those areas. Bats that significantly alter their foraging patterns may increase their energy expenditures resulting in reduced reproductive rates. This depends on the context (e.g., duration, location, extent, type) of the lighting.

Some bats seem to benefit from artificial lighting, taking advantage of high densities of insects attracted to light. For example, 18 species of bats in Panama frequently foraged around streetlights, including slow-flying edge foragers (Jung and Kalko 2010). However, seven species in the same study were not recorded foraging near streetlights. Bat activity differed among color of lights with higher activity at bluish-white and yellow-white lights than orange. Bat activity at streetlights varied for some species with season and moonlight (Jung and Kalko 2010). In summary, this study suggests highly variable responses among species to artificial lighting.

Some species appear to be adverse to lights. Downs et al. (2003) found that lighting of *Pipistrellus pygmaeus* roosts reduced the number of bats that emerged. In Canada and Sweden, *Myotis* spp. and *Plecotus auritus* were only recorded foraging away from street lights (Furlonger et al. 1987, Rydell 1992). Stone et al. (2009) found that commuting activity of lesser horseshoe bats (*Rhinolophus hipposideros*) in Britain and was reduced dramatically and the onset of commuting was delayed in the presence of high pressure sodium (HPS) lighting. Stone et al. (2012) also found that light-emitting diodes (LED) caused a reduction in *Rhinolophus hipposideros* and *Myotis* spp. activity. In contrast, there was no effect of lighting on *Pipistrellus pipistrellus*, *Pipistrellus pygmaeus*, or *Nyctalus/Eptesicus* spp.

Although there is limited information regarding potential neutral, positive, or negative impacts to NLEB from increased light levels, slow-flying bats such as *Rhinolophus*, *Myotis*, and *Plecotus* species have echolocation and wing-morphology adapted for cluttered environments (Norberg and Rayner 1987), and emerge from roosts when light levels are low, probably to avoid predation by diurnal birds of prey (Jones and Rydell 1994). Therefore, we would generally expect that NLEB would avoid lit areas. In Indiana, Indiana bats avoided foraging in urban areas and Sparks et al. (2005) suggested that it may have been in part due to high light levels. Using captive bats, Alsheimer (2012) also found that the little brown bat (*M. lucifugus*), was more active in the dark than light.

Table 4.1 shows the pathway we identified for NLEB responses to lighting, and it is possible that NLEBs will experience reduced fitness from lighting. Although some adverse effects to NLEBs are reasonably certain to occur from lighting, we anticipate that relatively small numbers of bats

will be impacted per year in each state based on the widely dispersed nature of activities and occupancy rates that are typically less than 50%.

Pesticides

Herbicides and other pesticides may be used to control pests and weed species including noxious or invasive plants. Treatments typically occur in spring, early summer, or fall. Treatments can be applied either by hand, from a truck mounted boom sprayer withspray heads designed to minimize drift, or aerially. Herbicide and other pesticide applications typically occur during the day when bats are roosting, and often in the morning to avoid and minimize wind-induced drift.

Long-term sublethal effects of environmental contaminants, such as herbicides and other pesticides, on bats are largely unknown; however, environmentally relevant exposure levels of various contaminants have been shown to impair nervous system, endocrine, and reproductive functioning in other wildlife (Yates et al. 2014, Köhler and Triebskorn 2013, Colborn et al. 1993). Moreover, bats' high metabolic rates, longevity, insectivorous diet, migration-hibernation patterns of fat deposition and depletion, and immune impairment during hibernation, along with potentially exacerbating effects of WNS, likely increase their risk of exposure to and accumulation of environmental toxins (Secord et al. 2015, Yates et al. 2014, Geluso et al. 1976, Quarles 2013, O'Shea and Clark 2002).

Table 4.1 shows the pathway we identified for NLEB responses to the use of herbicides and other pesticides, and it is possible that NLEBs will experience reduced fitness and harm depending on the specific circumstances. Bats may drink contaminated water or forage in affected or treated areas and thus may eat insects exposed to chemicals. Bats may also be directly exposed to herbicides or other pesticides sprayed in roosting areas. Although some adverse effects to NLEBs are reasonably certain to occur from herbicides and other pesticide use, we anticipate that relatively small numbers of bats will be impacted per year in each state based on the widely dispersed nature of activities and occupancy rates that are typically less than 50%. In addition, all herbicides and other pesticides must be used in accordance to their label instructions, which are designed to minimize water contamination and adverse effects to wildlife.

Spills/Chemical Contamination

Accidents during project operation could result in the leakage of hazardous chemicals into the environment which could affect water quality resulting in reduced densities of aquatic insects that bats consume. If an accident occurred and hazardous chemicals leaked into the environment, a rapid response from state and/or federal agencies would limit the size of the spill area. However, if chemicals did reach surface waters (streams and wetlands), a short-term reduction in both aquatic and terrestrial insects could occur, thus reducing the spring, summer, or autumn

prey base for foraging NLEB. If this occurred, it would be localized, thus allowing foraging NLEBs to move nearby and continue foraging.

Table 4.1 shows the pathway we identified for NLEB responses to spills and chemical contamination, and it is possible that NLEBs will experience reduced fitness and harm depending on the specific circumstances. Bats may drink contaminated water or forage in affected areas with the potential to eat insects exposed to chemicals. Although some adverse effects to NLEBs are reasonably certain to occur from spills and chemical contamination, we anticipate that relatively small numbers of bats will be impacted per year in each state based on the widely dispersed nature of activities and occupancy rates that are typically less than 50%. In addition, all projects are typically required to follow state and/or federal wetland permitting, stormwater management, and water quality standards.

Water Quality Alteration

Some projects may result in permanent loss from wetland and/or stream fill or temporarily reduce water quality from dust and sedimentation. Table 4.1 shows the pathway we identified for NLEB responses to water quality alteration. Activities that reduce quantity or quality of water sources and foraging habitat may impact bats, even if conducted while individuals are not present. Standard construction BMPs (e.g., silt fencing) will minimize erosion and subsequent sedimentation, thus reducing potential impacts on aquatic ecosystems. Since potential impacts from sedimentation are expected to be localized, foraging bats should have alternative drinking water and foraging locations. The surrounding landscape will continue to provide an abundant prey base of both terrestrial and aquatic insects during project construction, operation, and maintenance. Therefore, any potential direct effects to bats from a reduction in water quality are anticipated to be insignificant.

Collision

Collision has been documented for Indiana bats and other myotids. The Indiana bat recovery plan indicates that bats do not seem particularly susceptible to vehicle collisions, but it may threaten local populations in certain situations (Service 2007). Russell et al. (2009) assessed the level of mortality from road kills on a bat colony in Pennsylvania and collected 27 road-killed little brown bats and 1 Indiana bat. This study also cited unpublished data from the Penssylvania Game Commission documenting NLEB collision mortality. Curtis et al. (2014) indicates that a dead NLEB was found along a road in Kansas and was thought to have collided with a vehicle. Collision has been documented for other *Myotis* in Europe (Lesinski et al. 2011). Collision risk of bats varies depending on time of year, location of road in relation to roosting/foraging areas), the characteristics of their flight, traffic volume, and whether young bats are dispersing (Lesinski 2007, Lesinski 2008, Russell et al. 2009, Bennett et al. 2011).

It can be difficult to determine whether roads pose greater risk for bats colliding with vehicles or greater likelihood of deterring bat activity in the area (thus decreasing risk of collision). Many studies suggest that roads may serve as a barrier to bats (Bennett and Zurcher 2013, Bennett et al. 2013, Berthinussen and Altringham 2011, Wray et al. 2006). In most cases, we expect there will be a decreased likelihood of bats crossing roads (and therefore, reduced risk of collision) of increasing size (lanes).

Table 4.1 shows the pathway we identified for NLEB responses to collision, and we anticipated that NLEBs will be killed from collision with vehicles. Although some mortality is reasonably certain to occur, we anticipate that relatively small numbers of bats will be impacted per year in each state because of the decreased likelihood of bats crossing major roads. Also, we anticipate the likelihood of mortality will be reduced by the widely dispersed of new road construction and occupancy rates that are typically less than 50%.

Noise from Munitions, Detonations, and Training Vehicles, Aircraft

Recent studies have indicated that anthropogenic noise can alter foraging behavior and success of bats, including some gleaning species like the NLEB (Bunkley et al. 2015; Schaub et al. 2008; Siemers and Schaub 2011). Table 4.1 shows the pathway we identified for NLEB responses to noise from military training operations, and it is possible that NLEBs will be disturbed. A small subset of disturbed individuals may be harmed. However, studies indicate that indicate bats do not avoid active ranges or alter foraging behavior during night-time maneuvers, and NLEBs are expected to become habituated to noise disturbance (Whitaker & Gummer 2002; Service 2010; USFWS 2009). Although some adverse effects to NLEBs may occur from noise from military operations, we anticipate that relatively small numbers of bats will be impacted per year in each state based on the widely dispersed nature of activities and occupancy rates that are typically less than 50%.

Use of Military Training Smoke and Obscurants

Smoke/obscurants are used to conceal military movements and help protect troops and equipment in combat conditions. Although they would be primarily used during the day, smoke/obscurants may be deployed at night. Training on military installations may include, but is not limited to, smokes and obscurants such as fog oil, colored smoke grenades, white phosphorous, and graphite smoke. Research indicates that prolonged dermal and respiratory exposures to these items, except for the graphite smoke, could have adverse effects on roosting and foraging Indiana bats (Service 1998; Service 2012; Driver et al. 2002; USWFS 2009; NRC 1999). Given the similar roosting behavior and foraging locations of the NLEB, it is likely they will also be adversely affected by these smokes and obscurants.

Table 4.1 shows the pathway we identified for NLEB responses to the use of smokes and obscurants, and it is possible that NLEBs will be harmed depending on the specific circumstances. Although some adverse effects to NLEBs are reasonably certain to occur, we anticipate that relatively small numbers of bats will be impacted per year in each state based on the limited use of these chemicals and occupancy rates that are typically less than 50%. In addition, many military installations already limit the use of smokes and obscurants in areas that may affect the Indiana bat, further reducing the impact to NLEBs.

Bridge Maintenance, Repair, or Replacement

NLEBs have been found using bridges for day and night roosts in Illinois, Louisiana, Iowa, and Missouri (Feldhamer et al. 2003; Ferrara and Leberg 2009; Kiser et al. 2002; Benedict and Howell 2008; Droppelman 2014). Altering or removing bridges when occupied by NLEBs is expected to result in adverse effects. Bridge alteration refers to any bridge repair, retrofit, maintenance, and/or rehabilitation work activities that modifies the bridge to the point that it is no longer suitable for roosting.

Table 4.1 shows the two pathways we identified for NLEB responses to bridge work and it is possible that NLEBs will experience reduced fitness and harm depending on the specific circumstances. We expect that NLEBs will be killed or injured bats during activities conducted while bats are present, and the removal of roosts can reduce fitness. Although some adverse effects to NLEBs are reasonably certain to occur from bridge maintenance, repair, or replacement, we anticipate that relatively small numbers of bats will be impacted per year in each state based on the widely dispersed nature of activities and occupancy rates that are typically less than 50%.

Subsurface Drilling or Blasting

Surface-disturbing activities (such as drilling or blasting) in the vicinity of hibernacula may affect bat populations if those activities result in changes to the microclimate (temperature, humidity, and air flow) of the cave or mine (Ellison et al. 2003).

Table 4.1 shows the two pathways we identified for NLEB responses to drilling and blasting, and it is possible that NLEBs will be harmed. These activities can alter the flow of air and water through unknown hibernacula. Although the alteration of unknown hibernacula is reasonably certain to occur, we anticipate that relatively small numbers of bats will be impacted per year in each state based on the widely dispersed nature of timber harvest activities.

Use of Waste Pits to Store Contaminated Fluids

The oil and gas industry (and possibly other industries) occasionally use of temporary waste pits to store materials removed from drilling, including sand used during hydraulic fracturing treatments, wellbore cuttings, bentonite drilling muds, and fluids. These waste pits have been documented to attract and entrap wildlife. Bats may drink contaminated water or become trapped in waste pits and die. Table 4.1 shows the pathway we identified for NLEB responses to waste pits, and it is possible that NLEBs will be harmed. Although some adverse effects to NLEBs are reasonably certain to occur from the use of waste pits, we anticipate that relatively small numbers of bats will be impacted per year in each state based on the widely dispersed nature of activities and occupancy rates that are typically less than 50%.

4.8 CONSERVATION MEASURES IN THE 4(D) RULE

In BOs, we consider how conservation measures included in the proposed action may reduce the severity of effects or the probability of exposure. Prohibitions adopted under the final 4(d) will reduce the severity of effects or the probability of exposure of NLEB to the full scope of activities that may affect the species through regulatory processes under section 7 and section 10 the Act. Under the final 4(d) rule, incidental take involving tree removal in the WNS zone is not prohibited if two conservation measures are followed. The first measure is the year-round application of a 0.25-mile radius buffer (which is equivalent to 125.7 acres) around known NLEB hibernacula. The second conservation measure involves the temporary protection of known, occupied maternity roost trees. Incidental take is prohibited if the activity cuts or destroys a known, occupied maternity roost tree and other trees within a 150-foot radius around the maternity roost tree (which is equivalent to 1.6 acres) during the pup season (June 1-July 31). The 150 ft buffer covers 1.6 acres around a known maternity roost tree. In addition, incidental take is prohibited in hibernacula within the WNS zone; therefore, regardless of the buffer size, NLEBs are protected from take while in known hibernacula when they are most vulnerable.

To determine how these conservation measures reduce the severity of effects or probability of exposure, we compared the acreages affected by the conservation measures to the total forested habitat within the range of the NLEB (Table 4.14). As described in section 2.2, there are currently 1,508 known hibernacula and 1,412 known maternity roost trees. The year-round protection of forested habitat around hibernacula results in a total of 189,556 acres (0.05% of the total forested habitat) in 31 of 37 states (84% of the range) where activities that may affect the NLEB are subject to regulatory processes under sections 7 and 10 of the Act. The temporary protection of known, occupied maternity roosts results in a total of 2,259 acres (<0.001% of the total forested habitat) in 17 of 37 states (46% of the range) where activities that may affect the NLEB are subject to the same regulatory processes.

These two conservation measures are beneficial in that they protect known hibernating populations from take and help protect known maternity colonies from direct harm by temporarily protecting known maternity roost trees during the pup season. However, because known maternity roost trees likely represent a small fraction of the total, the beneficial effect of this conservation measure, which reduces the severity of effects, does not significantly reduce the probability of exposure. Additionally, known roost trees may be cut either before June 1st or after July 31st in compliance with the 4(d) rule, or during that time period with either an incidental take permit under section 10, or an incidental take statement under section 7. The hibernacula conservation measure is more protective in scope (i.e., timing, location, and severity). The severity of the effects and probability of exposure are somewhat reduced, but this beneficial effect extends only to known hibernacula. Like known maternity roost trees, known hibernacula likely represent a small fraction of the total.

4.9 SUMMARY OF IMPACTS OF INDIVIDUALS

Table 4.15 combines the total annual estimated effects of the activities quantified for timber harvest, prescribed fire, forest conversion, and wind turbine operation. Because fatalities from wind turbine operation increase every year between 2015 and 2022, we report the average annual wind fatalities over the time-frame of this consultation. Based on these estimations, we anticipate that up to 117,267 NLEB will be disturbed and 3,285 pups and 980 adults will be harmed annually from timber harvest, prescribed fire, forest conversion, and wind turbine operation.

The disturbance associated with timber harvest, prescribed burning, and forest conversion within maternity roosting areas during the active season (April – October) can cause volant bats to flee their roosts and expend additional energy while exposed to day-time predators. Our methodology computes the number of NLEB affected annually as 117,267 bats (or 1.2% of the population) (Table 4.16). We recognize that not all of the NLEB roosting in an activity area will necessarily respond to disturbance by fleeing their roosts, likely depending on the disturbance intensity and proximity; therefore, we consider this to be an overestimate. Table 4.16 shows that 66 percent of the potential disturbance in maternity roosting areas is due to timber harvest, 18 percent to forest conversion, and 17% to prescribed burning. Disturbance that disrupts normal behavior patterns and creates the likelihood of injury to listed species (e.g., causing a nocturnal species to travel during daylight hours) may result in harm.

Timber harvest, prescribed burning, and forest conversion may also occur in maternity roosting areas during the non-volant season (June 1 – July 31). Heat and smoke from prescribed burning, and tree removal from the other activities, may kill or injure a non-volant pup, who cannot flee the threat unless carried by its mother, which we do not presume precludes this potential harm. We estimate that up to 3,285 NLEB pups (0.1 percent of the total pup population) are exposed to potentially lethal habitat modification annually (Table 4.17). Prescribed burning may affect 56.6

percent of the total pup population (Table 4.17). The potential for death or injury resulting from prescribed burning depends largely on site-specific circumstances, e.g., fire intensity near the maternity roost tree and the height above ground of pups in the maternity roost tree. Not all fires through maternity roosting areas will kill or injure all pups present, but our methodology in this BO estimates that all potentially vulnerable individuals within the expected area of activity/occupancy overlap are affected. We therefore consider this to be an overestimate. Timber harvest and forest conversion account for 33.8 and 9.6 percent of the estimated harm to non-volant pups, respectively (Table 4.17). Unlike prescribed burning, we did not assume that all potentially vulnerable individuals within the expected area of activity/occupancy overlap are affected. We assumed that 15 percent of pups would be injured or killed when their roost tree was felled.

Wind turbine operation and tree removal from timber harvest and forest conversion may also kill or injure adults when they are struck by turbines or when occupied roost trees are felled. We estimate that up to 980 NLEB adults (less than 0.02 percent of the total adult population) are exposed to potentially lethal wind turbines and habitat modification annually (Table 4.18). Wind turbine operation accounts for 66.3% of the adult mortality, followed by timber harvest (25.2%) and forest conversion (8.5%) (Table 4.18). As discussed in Section 4.1.5.2, we believe the wind fatalities may be overestimated by as much as 50% after accounting for population reductions from WNS and current and future curtailment. The adult mortality from tree removal is not as likely to be overestimated because we did not assume that all potentially vulnerable individuals within the expected area of activity/occupancy are affected.

Additional harm is anticipated for unquantified effects from removal from human structures and "other" activities that may affect the NLEB; however, we do not expect the additional impacts to substantially change the total numbers reported in Table 4.15 for reasons discussed above (see section 4.1). In addition, we consider some of the numbers for harm and disturbance in this section to be overestimates as discussed, and we also expect that the numbers affected over time will be reduced as WNS continues to affect the range-wide population. As populations decline as a result of WNS, the chances of any particular activity affecting northern long-eared bats becomes more remote.

4.10 IMPACTS TO POPULATIONS

As described above, individual NLEBs may experience decreased reproductive success and survival as a result of implementation of the final 4(d) rule. Of importance here though, is how these potential adverse effects to individual bats affect the overall health and viability of populations present within the action area. This is best done by looking at the maternity colony and hibernacula populations; however, we do not have enough information about local populations or when and where projects will occur relative to the species' occurrence.

The finest-scale of analysis we have to examine effects on local populations is at the state level. States vary greatly in the number of maternity colonies estimated per state (Table 2.5). States in the Eastern range generally have the lowest estimated number of maternity colonies, ranging from 16 maternity colonies in Delaware to 6,984 colonies in West Virginia. States with small numbers of maternity colonies are likely at greater risk of extirpation from impacts to individuals. For example, Delaware has 16 maternity colonies estimated to be comprised of 20 females each, for a total adult population size of 640 individuals. Activities implemented according to the final 4(d) rule could disturb 9 individuals in Delaware per year, along with harm to 3 pups and 2 adults per year. If all the annual impacts occurred within one maternity colony, it is possible that the colony would be reduced by at least 10% in one year (2 adults killed from a colony with 20 females = 10%), and potentially more if the 3 pups were also killed. Losses to very small populations may not be sustainable at the local-level. It is possible that the loss of 10% of the maternity colony could result in the loss of that colony, but it is unlikely that that level of impact would occur within a single maternity colony every year. However, areas hardest hit by WNS are likely at greatest risk (i.e., currently much of the Eastern range).

Although local populations could be affected by the implementation of the final 4(d) rule, most of the states have larger populations and more maternity colonies. In addition, less than 2.3% of NLEBs will be disturbed in all states (Table 4.16), less than 1% of pups will be harmed in all states (Table 4.17), and less than 1% of adults will be harmed in all states (Table 4.18). Therefore, the vast majority of individuals and populations that survive WNS will be unaffected by these activities.

Where the species has substantially declined as a result of WNS, the surviving members of the population may be resilient or resistant to WNS. These surviving populations are particularly important to the persistence of the populations. The individual effects analysis indicates that some additional impacts will occur as a result this action. We do not know at this time if the impacts from this action are additive; however, even if the potential mortality from these activities is additive to the impacts from WNS, it is likely that the species will persist in these states based on the number of maternity colonies and widely-dispersed nature of the activities.

Based on the relatively small numbers affected annually compared to the state population sizes, we do not anticipate population-level effects to the NLEB. We conclude that adverse effects from timber harvest, prescribed fire, forest conversion, wind energy, and other activities will not lead to population-level declines in this species. Because we do not anticipate population-level impacts from our action, our analysis of effects to the NLEB is complete.

4.11 INTERRELATED AND INTERDEPENDENT ACTIONS

An interrelated activity is an activity that is part of the proposed action and depends on the proposed action for its justification. An interdependent activity is an activity that has no independent utility apart from the action under consultation. At this time, we are unaware of actions that are interrelated and interdependent with the final 4(d) rule that have not already been considered in this BO.

4.12 TABLES AND FIGURES FOR EFFECTS OF THE ACTION

Table 4.1. Exposure-response analysis for activities conducted in accordance with the final 4(d) rule that may affect the NLEB.

Activity	Subactivity	Stressor	Exposure (time)	Exposure (space)	Resource Affected	Individual Response	Interpretation
Removal from Human Structures	Exclusion	Using exclusion to make a known roost unsuitable	Year-round; indirect effect	All occupied areas except hibernacula	Adults	Reduced fitness	Loss of structures where bat colonies have demonstrated repeated could reduce fitness through additional energy expenditure while searching for a new roost site.
Removal from Human Structures	Rodenticides and sticky traps	Using rodenticides and sticky traps to remove bats	Active season, daytime; direct effect	Roosting areas (maternity and non-maternity)	Individuals	Injury, mortality; harm	Activities conducted while bats are present are likely to kill or injure individuals. We expect this threat to be reduced through the implementation of BMPs for bat removal.
Removal from Human Structures	Eviction Devices	Using eviction or exclusionary devices to remove bats	Active season, daytime; direct effect	Roosting areas (maternity and non-maternity)	Pups	Injury, mortality; harm	Use of exclusionary devices during the non-volant period is likely to result in the death of pups because females cannot return to take care of their young. However, many states require that exclusions be conducted outside of the non-volant period to minimize impacts.
Removal from Human Structures	Rabies testing	Euthanizing bats for rabies testing during removal	Active season, daytime; direct effect	Roosting areas (maternity and non-maternity)	Individuals	Injury, mortality; harm	Rabies testing will kill adults and volant juveniles. Data from MO and NY indicate that an average of 7 bats were killed bats per year during the most recent three years.
Forest Management	Timber Harvest	Reducing mid-story clutter adjacent to roost trees	Year-round; indirect effect	Maternity roosting areas	Vegetation near roost trees	Beneficial through maintenance or improvement of habitat	Beneficial through increased solar radiation on roosts; improved access to roosts; travel corridors to foraging areas; however, we are unable to quantify the degree of benefit in terms of increased survival or reproductive success.
Forest Management, Forest Conversion	Timber Harvest, Construction Activities	Removing unoccupied roost trees	Winter; indirect effect	Maternity roosting areas	Trees	Reduced fitness	Removal of roost trees where bat colonies have demonstrated repeated could reduce fitness through additional energy expenditure while searching for a new roost site.
Forest Management, Forest Conversion	Timber Harvest, Construction Activities	Removing trees that provide habitat used for foraging, swarming, or staging	Year-round; indirect effect	All occupied areas except hibernacula	Insect prey, forest cover that supports (shelters) bat activity	Reduced fitness; energy expenditure for relocating from traditional use areas to alternative habitat	Loss of forest habitat decreases opportunities for growth and successful reproduction. Depending on location and size of the harvest, forest cover removal in the summer home range may cause a shift in home range or relocation. Loss of habitat in staging/swarming areas near hibernacula may cause a similar shift in habitat use for larger numbers of individuals, due to their seasonal concentration in these areas, and may reduce fall mating success and/or reduced fitness in preparation for spring migration
Forest Management, Forest Conversion, Other	Timber Harvest, Construction Activities, Most other subactivities	Disturbance (noise, machinery exhaust, activity) associated with human activities	Active season, daytime; direct effect	Roosting areas (maternity and non-maternity)	Individuals	Disturbance (fleeing); harass	Fleeing disturbance during daylight hours increases the likelihood of predation
Forest Management, Forest Conversion, Other	Timber Harvest, Construction Activities	Altering the flow of air and water through hibernacula.	Winter (direct effect) and active season (indirect effect)	Near hibernacula	Individuals	Arousal from hibernation; reduced fitness, mortality; take in the form of harm.	Response depends on proximity of tree removal to hibernacula entrances, airflow patterns, and local hydrology. Sufficient modification may cause injury or mortality (take in the form of harm).
Forest Management, Forest Conversion	Timber Harvest, Construction Activities	Removing occupied roost trees	Active seasos; direct effect	Maternity roosting areas	Individuals	Injury, mortality; harm	Removing occupied trees is likely to kill or injure pups and adults. For the purposes of this consultation, we assume that 15% of non-volant bats and 3% of adults may be injured or killed.
Forest Conversion	Construction Activities	Removal of forested habitat	Year-round; indirect effect	All occupied areas except hibernacula	Trees	Reduced fitness	Fragmentation of forests patches and travel corridors may result in longer flights to find alternative suitable habitat and colonial disruption.
Forest Management	Prescribed Burning	Creating snags, creating roost features in live trees	Year-round; indirect effect	All occupied areas except hibernacula	Trees	Beneficial through maintenance or improvement of habitat	Beneficial through greater availability of suitable roosts increasing opportunities for successful reproduction, more efficient use of forest habitat however, we are unable to quantify the degree of benefit in terms of increased survival or reproductive success

Table 4.1. Continued.

Activity	Subactivity	Stressor	Exposure (time)	Exposure (space)	Resource Affected	Individual Response	Interpretation
Forest Management	Prescribed Burning	Stimulating growth of ground cover and insect populations	Growing-season following the burn; indirect effect	Foraging areas	Insect prey	Beneficial through maintenance or improvement of habitat	Beneficial through greater availability of insect prey increasing foraging efficiency; however, we are unable to quantify the degree of benefit in terms of increased survival or reproductive success
Forest Management	Prescribed Burning	Thinning mid-story clutter adjacent to roost trees	Growing-season following the burn; indirect effect	Maternity roosting areas	Vegetation near roost trees	Beneficial through maintenance or improvement of habitat	Beneficial through increased solar radiation on roosts; improved access to roosts however, we are unable to quantify the degree of benefit in terms of increased survival or reproductive success.
Forest Management	Prescribed Burning	Destroying existing snags and other trees suitable for roosting	Year-round; indirect effect	All occupied areas except hibernacula	Trees	Reduced fitness	Loss of suitable roosts decreases opportunities for successful reproduction, more efficient use of forest habitat
Forest Management	Prescribed Burning	Heat and smoke	Active season, day time; direct effect	Roosting areas (maternity and non-maternity)	Individuals; adults and volant juveniles	Disturbance (fleeing); harass	Fleeing the line of fire of a prescribed burn during daylight hours increases the likelihood of predation
Forest Management	Prescribed Burning	Heat and smoke	Active season, night time; direct effect	Foraging areas	Individuals; adults and volant juveniles	Disturbance (fleeing)	Fleeing the line of fire of a prescribed burn during night-time foraging is unlikely to cause injury
Forest Management	Prescribed Burning	Heat and smoke	Winter; direct effect	Near hibernacula	Individuals	Arousal from hibernation; reduced fitness, mortality; take in the form of harm	Response depends on proximity of fire to hibernacula entrances and airflow patterns. Sufficient smoke entering hibernacula may cause injury or mortality.
Forest Management	Prescribed Burning	Heat and smoke	Non-volant season; direct effect	Maternity roosting areas	Individuals; non-volant juveniles	Injury, mortality; harm	Response varies with fire intensity and roost height; a combination of high-intensity burns and/or low roosts is likely to cause injury or mortality
Wind Energy	Operation	Sound from Operating Turbines	Active season, day and night; direct effect	Active season; direct effect	Individuals	Disturbance (fleeing)	Studies (Szewczak and Arnett 2006, Horn et al. 2008) have found evidence to suggest that bats are not likely to be negatively affected by sound from operating turbines.
Wind Energy	Operation	Collision with Operating Turbines	Active season, direct effect	All occupied areas except hibernacula	Individuals	Mortality; harm	Collision with wind wind turbines is likely to kill bats
Other	Most subactivities	Lighting	Active season, night; direct effect	All occupied areas except hibernacula	Individuals	Disturbance (fleeing), increased risk of predation; increase energy expenditure; harass	Foraging in lighted areas may increase risk of predation (leading to death) or it may deter bats from flying in those areas. Bats that significantly alter their foraging patterns may increase their energy expenditures resulting in reduced reproductive rates. This depends on the context (e.g., duration, location, extent, type) of the lighting. Some studies also show a beneficial effect of concentrating prey.
Other	Most subactivities	Use of pesticides and herbicides for pest and vegetation control	Active season, direct and indirect effect	All occupied areas except hibernacula	Individuals; insect prey	lethal or sublethal exposure to toxins; reduction in prey availability; harm/harass	Bats may drink contaminated water or forage in affected areas with the potential to eat insects exposed to chemicals. Bats may also be directly exposed to herbicides sprayed in roosting areas. Effects are reduced because all herbidices and pesticides must be used in accordance with their label.
Other	Most subactivities	Chemical contamination from use or spills in/around bat habitat	Active season, direct and indirect effect	All occupied areas except hibernacula	Individuals; insect prey	lethal or sublethal exposure to toxins; reduction in prey availability; harm/harass	Bats may drink contaminated water or forage in affected areas with the potential to eat insects exposed to chemicals.
Other	Most subactivities	Water Quality Alteration; sedimentation	Active season, indirect effect	All occupied areas except hibernacula	Insect prey	Reduced fitness	Temporary effects on water quality could occur during construction, which could reduce local insect populations. Standard construction BMPs (e.g., silt fencing) will minimize erosion and subsequent sedimentation, thus reducing potential impacts on aquatic ecosystems.

Table 4.1. Continued.

Activity	Subactivity	Stressor	Exposure (time)	Exposure (space)	Resource Affected	Individual Response	Interpretation
Other	Military Operations	Noise from munitions, detonations, and training vehicles, including aircraft	Active season, direct effect	All occupied areas except hibernacula	Individuals	Disturbance (fleeing)	Fleeing disturbance increases the likelihood of predation. However, studies indicate bats do not avoid active ranges or alter foraging behavior during night-time maneuvers, and NLEBs are expected to become habituated to noise disturbance.
Other	Military Operations	Use of Military Training Smoke and Obscurants	Active season, direct effect	All occupied areas except hibernacula	Individuals	Injury, mortality; harm	Research indicates that prolonged dermal and respiratory exposures smokes and obsurants could have adverse effects on roosting and foraging bats.
Other	Bridge maintenance, repair, or replacement	Bridge work activities affect roosting bats	Active season, direct effect	Roosting areas (maternity and non-maternity)	Individuals	injury, mortality; harm	Bats may be injured or killed if they do not exit the bridge before it is either removed or the action results in effects to portion of the bridge where the bats are roosting.
Other	Bridge maintenance, repair, or replacement	Bridge work makes it unsuitable for roosting.	Inactive season, indirect effect	Roosting areas (maternity and non-maternity)	Individuals	Increased energy exposure; reduced fitness	Removal of bridges where bat colonies have demonstrated repeated could reduce fitness through additional energy expenditure while searching for a new roost site.
Other	Drilling	Subsurface drilling utility line and road installation	Winter (direct effect) and active season (indirect effect)	Near hibernacula	Individuals	Arousal from hibernation; reduced fitness, mortality; take in the form of harm.	Response depends on proximity of harvest to hibernacula entrances, airflow patterns, and local hydrology. Sufficient modification may cause injury or mortality (take in the form of harm).
Other	Blasting	Use of explosives to remove rocks for utility line and road installation	Winter (direct effect) and active season (indirect effect)	Near hibernacula	Individuals	Arousal from hibernation; reduced fitness, mortality; take in the form of harm.	Response depends on proximity of harvest to hibernacula entrances, airflow patterns, and local hydrology. Sufficient modification may cause injury or mortality (take in the form of harm).
Other	Storage Pits for oil and gas waste	Bats can become trapped in waste pits or drink contaminated water	Active season, direct effect	All occupied areas except hibernacula	Individuals	Injury, mortality; harm	Bats may drink contaminated water or become trapped in waste pits and die.

Table 4.2. Mean annual harvest (acres) for each state included in the analysis (Source: U.S. Forest Service's Forest Inventory EVALIDator web-application Version 1.6.0.03; Available only on internet: http://apps.fs.fed.us/Evalidator/evalidator.jsp).

					Harvest (acres)						
Region	State	Acres of Forested Land	Years	N (years)	National Forest	Other Federal	State & Local	Private	Total	Average (acre/year)	Percent of Annual Average Acres Harvested
Midwest	Iowa	3,013,759	2009-2014	6	0	0	6,290	118,105	124,395	20,733	0.7%
Midwest	Illinois	4,847,480	2009-2014	6	0	7,392	0	220,038	227,430	37,905	0.8%
Midwest	Indiana	4,830,395	2009-2014	6	2,924	3,500	12,114	292,650	311,189	51,865	1.1%
Midwest	Michigan	20,127,048	2009-2014	6	79,571	0	340,950	1,189,042	1,609,563	268,261	1.3%
Midwest	Minnesota	17,370,394	2010-2014	5	43,708	2,977	391,433	360,229	798,346	159,669	0.9%
Midwest	Missouri	15,471,982	2009-2014	6	66,135	0	45,879	933,470	1,045,484	174,247	1.1%
Midwest	Ohio	8,088,277	2009-2014	6	1,945	0	15,572	467,607	485,124	80,854	1.0%
Midwest	Wisconsin	16,980,084	2009-2014	6	75,449	4,738	390,366	1,144,172	1,614,726	269,121	1.6%
Eastern	Connecticut	1,711,749	2009-2014	6	0	0	14,622	44,924	59,546	9,924	0.6%
Eastern	Delaware	339,520	2009-2014	6	0	0	2,540	13,625	16,164	2,694	0.8%
Eastern	Maine	17,660,246	2010-2014	5	0	0	86,952	2,285,161	2,372,113	474,423	2.7%
Eastern	Maryland	2,460,652	2009-2014	6	0	0	11,192	76,740	87,931	14,655	0.6%
Eastern	Massachusetts	3,024,092	2009-2014	6	0	0	16,196	66,640	82,837	13,806	0.5%
Eastern	New Hampshire	4,832,408	2009-2014	6	14,502	7,118	35,153	355,549	412,332	68,722	1.4%
Eastern	New Jersey	1,963,561	2009-2014	6	0	0	0	21,442	21,442	3,574	0.2%
Eastern	New York	18,966,416	2009-2014	6	0	0	62,807	1,002,449	1,065,256	177,543	0.9%
Eastern	Pennsylvania	16,781,960	2009-2014	6	10,966	8,625	128,668	1,026,196	1,174,456	195,743	1.2%
Eastern	Rhode Island	359,519	2009-2014	6	0	0	0	0	0	0	0.0%
Eastern	Vermont	4,591,280	2010-2014	5	4,858	0	5,596	245,487	259,941	51,988	1.1%
Eastern	Virginia	15,907,041	2008-2013	6	2,606	9,518	20,195	1,125,092	1,157,410	192,902	1.2%
Eastern	West Virginia	12,154,471	2009-2014	6	0	0	0	463,133	463,133	77,189	0.6%
Southern	Arkansas	18,754,916	2009-2014	6	193,868	11,975	43,919	2,411,963	2,661,725	443,621	2.4%
Southern	Kentucky	12,471,762	2006-2013	8	17,706	8,644	4,873	847,274	878,496	109,812	0.9%
Southern	Mississippi	19,541,284	2006-2014	9	68,994	21,053	60,562	3,273,286	3,423,895	380,433	1.9%
Southern	North Carolina	18,587,540	2003-2014	12	0	29,351	60,638	2,276,778	2,366,767	197,231	1.1%
Southern	Tennessee	13,941,333	2005-2013	9	0	12,837	3,028	1,151,325	1,167,190	129,688	0.9%
Western	Kansas	2,502,434	2009-2014	6	0	6,205	0	57,781	63,985	10,664	0.4%
Western	Nebraska	1,576,174	2009-2014	6	0	0	1,221	91,823	93,044	15,507	1.0%
Western	North Dakota	759,998	2009-2014	6	0	0	0	0	0	0	0.0%
Western	South Dakota	1,910,934	2009-2014	6	163,971	0	1,489	52,375	217,834	36,306	1.9%
	Total	281,528,709			747,203	133,933	1,762,255	21,614,356	24,261,754	3,669,077	1.3%

Table 4.3. Estimated numbers of NLEB affected (disturbed) annually by human activity from active-season harvest in maternity roosting areas.

Region	State	A. Harvest, Bat Active Season (acres)[1]	B. Forest Habitat (acres)	C. Percent of Forest Affected (A/B)	D. Percent of Forest Used as Roost Areas[2]	E. Expected Overlap (acres) (BxCxD)	F. Density	G. Number of Bats Affected (FxE)
Midwest	Iowa	12,149	3,013,759	0.403%	6.3%	765	0.808	619
Midwest	Illinois	22,212	4,847,480	0.458%	9.4%	2,097	0.701	1,469
Midwest	Indiana	30,393	4,830,395	0.629%	5.7%	1,722	0.701	1,207
Midwest	Michigan	157,201	20,127,048	0.781%	4.8%	7,479	0.701	5,240
Midwest	Minnesota	93,566	17,370,394	0.539%	8.9%	8,295	0.808	6,706
Midwest	Missouri	102,109	15,471,982	0.660%	4.0%	4,040	0.701	2,831
Midwest	Ohio	47,380	8,088,277	0.586%	6.4%	3,013	0.701	2,111
Midwest	Wisconsin	157,705	16,980,084	0.929%	6.8%	10,694	0.701	7,493
Eastern	Connecticut	5,816	1,711,749	0.340%	1.4%	83	0.359	30
Eastern	Delaware	1,579	339,520	0.465%	0.8%	12	0.359	5
Eastern	Maine	278,012	17,660,246	1.574%	1.4%	3,949	0.701	2,767
Eastern	Maryland	8,588	2,460,652	0.349%	0.8%	65	0.359	24
Eastern	Massachusetts	8,090	3,024,092	0.268%	1.0%	83	0.359	30
Eastern	New Hampshire	40,271	4,832,408	0.833%	1.5%	597	0.359	215
Eastern	New Jersey	2,094	1,963,561	0.107%	4.8%	101	0.359	37
Eastern	New York	104,040	18,966,416	0.549%	5.0%	5,233	0.359	1,880
Eastern	Pennsylvania	114,705	16,781,960	0.684%	5.1%	5,856	0.359	2,104
Eastern	Rhode Island	0	359,519	0.000%	1.4%	0	0.359	0
Eastern	Vermont	30,465	4,591,280	0.664%	1.5%	451	0.359	163
Eastern	Virginia	113,040	15,907,041	0.711%	7.3%	8,246	0.359	2,963
Eastern	West Virginia	45,233	12,154,471	0.372%	8.1%	3,662	0.359	1,316
Southern	Arkansas	259,962	18,754,916	1.386%	9.9%	25,636	0.701	17,961
Southern	Kentucky	64,350	12,471,762	0.516%	6.1%	3,956	0.701	2,772
Southern	Mississippi	222,934	19,541,284	1.141%	5.2%	11,515	0.808	9,309
Southern	North Carolina	115,577	18,587,540	0.622%	6.0%	6,982	0.701	4,892
Southern	Tennessee	75,997	13,941,333	0.545%	6.2%	4,717	0.359	1,695
Western	Kansas	6,249	2,502,434	0.250%	3.4%	213	0.808	172
Western	Nebraska	9,087	1,576,174	0.577%	3.4%	309	0.808	250
Western	North Dakota	0	759,998	0.000%	3.4%	0	0.808	0
Western	South Dakota	21,275	1,910,934	1.113%	3.4%	723	0.808	585
	Total	2,150,079	281,528,709	0.764%		120,495		76,846

[1] We prorated the total annual harvest for activities occuring during the active season by using the annual percent of the active season (58.6%).

[2] From Table 2.5

Table 4.4. Estimated numbers of NLEB pups affected (harmed) annually by non-volant season harvest in maternity roosting areas.

Region	State	A. Havest, Non-Volant Season[1] (acres)	B. Forest Habitat (acres)	C. Percent of Forest Affected (A/B)	D. Percent of Forest Used as Maternity Roost Areas[2]	E. Expected Overlap (acres) (BxCxD)	F. Density	G. Number of Pups Affected (FxE)
Midwest	Iowa	3,462	3,013,759	0.115%	6.3%	218	0.269	9
Midwest	Illinois	6,330	4,847,480	0.131%	9.4%	598	0.234	21
Midwest	Indiana	8,661	4,830,395	0.179%	5.7%	491	0.234	18
Midwest	Michigan	44,800	20,127,048	0.223%	4.8%	2,131	0.234	75
Midwest	Minnesota	26,665	17,370,394	0.154%	8.9%	2,364	0.269	96
Midwest	Missouri	29,099	15,471,982	0.188%	4.0%	1,151	0.234	41
Midwest	Ohio	13,503	8,088,277	0.167%	6.4%	859	0.234	31
Midwest	Wisconsin	44,943	16,980,084	0.265%	6.8%	3,048	0.234	107
Eastern	Connecticut	1,657	1,711,749	0.097%	1.4%	24	0.120	1
Eastern	Delaware	450	339,520	0.133%	0.8%	4	0.120	1
Eastern	Maine	79,229	17,660,246	0.449%	1.4%	1,125	0.234	40
Eastern	Maryland	2,447	2,460,652	0.099%	0.8%	19	0.120	1
Eastern	Massachusetts	2,306	3,024,092	0.076%	1.0%	24	0.120	1
Eastern	New Hampshire	11,477	4,832,408	0.237%	1.5%	170	0.120	4
Eastern	New Jersey	597	1,963,561	0.030%	4.8%	29	0.120	1
Eastern	New York	29,650	18,966,416	0.156%	5.0%	1,491	0.120	27
Eastern	Pennsylvania	32,689	16,781,960	0.195%	5.1%	1,669	0.120	30
Eastern	Rhode Island	0	359,519	0.000%	1.4%	0	0.120	0
Eastern	Vermont	8,682	4,591,280	0.189%	1.5%	129	0.120	3
Eastern	Virginia	32,215	15,907,041	0.203%	7.3%	2,350	0.120	43
Eastern	West Virginia	12,891	12,154,471	0.106%	8.1%	1,044	0.120	19
Southern	Arkansas	74,085	18,754,916	0.395%	9.9%	7,306	0.234	256
Southern	Kentucky	18,339	12,471,762	0.147%	6.1%	1,127	0.234	40
Southern	Mississippi	63,532	19,541,284	0.325%	5.2%	3,282	0.269	133
Southern	North Carolina	32,938	18,587,540	0.177%	6.0%	1,990	0.234	70
Southern	Tennessee	21,658	13,941,333	0.155%	6.2%	1,344	0.120	25
Western	Kansas	1,781	2,502,434	0.071%	3.4%	61	0.269	3
Western	Nebraska	2,590	1,576,174	0.164%	3.4%	88	0.269	4
Western	North Dakota	0	759,998	0.000%	3.4%	0	0.269	0
Western	South Dakota	6,063	1,910,934	0.317%	3.4%	206	0.269	9
	Total	612,736	281,528,709	0.218%		34,339		1,109

[1] We prorated the total annual harvest for activities occuring during the non-volant season by using the annual percent of the non-volant season (16.7%).

[2] From Table 2.5

Table 4.5. Estimated numbers of NLEB adults affected (harmed) annually by active season harvest in maternity roosting areas.

Region	State	A. Havest, Active Season[1] (acres)	B. Forest Habitat (acres)	C. Percent of Forest Affected (A/B)	D. Percent of Forest Used as Maternity Roost Areas[2]	E. Expected Overlap (acres) (BxCxD)	F. Density	G. Number of Adults Affected (FxE)
Midwest	Iowa	12,149	3,013,759	0.403%	6.3%	765	0.081	2
Midwest	Illinois	22,212	4,847,480	0.458%	9.4%	2,097	0.071	5
Midwest	Indiana	30,393	4,830,395	0.629%	5.7%	1,722	0.071	4
Midwest	Michigan	157,201	20,127,048	0.781%	4.8%	7,479	0.071	16
Midwest	Minnesota	93,566	17,370,394	0.539%	8.9%	8,295	0.081	21
Midwest	Missouri	102,109	15,471,982	0.660%	4.0%	4,040	0.071	9
Midwest	Ohio	47,380	8,088,277	0.586%	6.4%	3,013	0.071	7
Midwest	Wisconsin	157,705	16,980,084	0.929%	6.8%	10,694	0.071	23
Eastern	Connecticut	5,816	1,711,749	0.340%	1.4%	83	0.036	1
Eastern	Delaware	1,579	339,520	0.465%	0.8%	12	0.036	1
Eastern	Maine	278,012	17,660,246	1.574%	1.4%	3,949	0.071	9
Eastern	Maryland	8,588	2,460,652	0.349%	0.8%	65	0.036	1
Eastern	Massachusetts	8,090	3,024,092	0.268%	1.0%	83	0.036	1
Eastern	New Hampshire	40,271	4,832,408	0.833%	1.5%	597	0.036	1
Eastern	New Jersey	2,094	1,963,561	0.107%	4.8%	101	0.036	1
Eastern	New York	104,040	18,966,416	0.549%	5.0%	5,233	0.036	6
Eastern	Pennsylvania	114,705	16,781,960	0.684%	5.1%	5,856	0.036	7
Eastern	Rhode Island	0	359,519	0.000%	1.4%	0	0.036	0
Eastern	Vermont	30,465	4,591,280	0.664%	1.5%	451	0.036	1
Eastern	Virginia	113,040	15,907,041	0.711%	7.3%	8,246	0.036	9
Eastern	West Virginia	45,233	12,154,471	0.372%	8.1%	3,662	0.036	4
Southern	Arkansas	259,962	18,754,916	1.386%	9.9%	25,636	0.071	55
Southern	Kentucky	64,350	12,471,762	0.516%	6.1%	3,956	0.071	9
Southern	Mississippi	222,934	19,541,284	1.141%	5.2%	11,515	0.081	29
Southern	North Carolina	115,577	18,587,540	0.622%	6.0%	6,982	0.071	15
Southern	Tennessee	75,997	13,941,333	0.545%	6.2%	4,717	0.036	6
Western	Kansas	6,249	2,502,434	0.250%	3.4%	213	0.081	1
Western	Nebraska	9,087	1,576,174	0.577%	3.4%	309	0.081	1
Western	North Dakota	0	759,998	0.000%	3.4%	0	0.081	0
Western	South Dakota	21,275	1,910,934	1.113%	3.4%	723	0.081	2
	Total	2,150,079	281,528,709	0.764%		120,495		247

[1] We prorated the total annual harvest for activities occuring during the active season by using the annual percent of the active season (58.6%).

[2] From Table 2.5

Table 4.6. Prescribed fire (acres) within forested lands from 2002-2014 for each state included in the analysis (Source: National Interagency Fire Center, modified using the percent of prescribed fire within forested lands in each state from the 2012 National Prescribed Fire Use Survey Report).

Region	State	Acres of Forested Land	Average Annual Acres of Forest Land Burned	Minimum Annual Acres of Forest Land Burned	Maximum Annual Acres of Forest Land Burned	Percent of Average Available Habitat Burned
Midwest	Iowa	3,013,759	10,365	251	26,741	0.3%
Midwest	Illinois	4,847,480	8,102	626	21,890	0.2%
Midwest	Indiana	4,830,395	6,385	1,962	12,600	0.1%
Midwest	Michigan	20,127,048	9,325	1,669	16,652	0.0%
Midwest	Minnesota	17,370,394	102,512	48,837	158,160	0.6%
Midwest	Missouri	15,471,982	35,419	-	95,268	0.2%
Midwest	Ohio	8,088,277	2,781	259	6,767	0.0%
Midwest	Wisconsin	16,980,084	15,831	2,836	25,495	0.1%
Eastern	Connecticut	1,711,749	53	-	113	0.0%
Eastern	Delaware	339,520	50	-	161	0.0%
Eastern	Maine	17,660,246	3	2	5	0.0%
Eastern	Maryland	2,460,652	2,631	524	11,823	0.1%
Eastern	Massachusetts	3,024,092	272	2	815	0.0%
Eastern	New Hampshire	4,832,408	103	35	209	0.0%
Eastern	New Jersey	1,963,561	7,115	-	14,549	0.4%
Eastern	New York	18,966,416	189	39	918	0.0%
Eastern	Pennsylvania	16,781,960	1,795	-	7,013	0.0%
Eastern	Rhode Island	359,519	19	-	97	0.0%
Eastern	Vermont	4,591,280	323	46	902	0.0%
Eastern	Virginia	15,907,041	13,570	5,768	20,546	0.1%
Eastern	West Virginia	12,154,471	718	87	2,950	0.0%
Southern	Arkansas	18,754,916	153,639	100,108	200,998	0.8%
Southern	Kentucky	12,471,762	8,207	3,495	12,097	0.1%
Southern	Mississippi	19,541,284	126,297	1,818	253,860	0.6%
Southern	North Carolina	18,587,540	109,273	38,869	170,668	0.6%
Southern	Tennessee	13,941,333	14,959	1,856	23,085	0.1%
Western	Kansas	2,502,434	77	7	134	0.0%
Western	Nebraska	1,576,174	7,432	2,883	17,339	0.5%
Western	North Dakota	759,998	6,291	1,413	8,464	0.8%
Western	South Dakota	1,910,934	5,171	383	9,291	0.3%
		281,528,709	648,908	213,775	1,119,611	0.2%

Table 4.7. Estimated numbers of NLEB affected (disturbed) annually by heat and smoke from active-season prescribed burning in maternity roosting areas.

Region	State	A. Active Season Burning (acres)[1]	B. Forest Habitat (acres)	C. Percent of Forest Affected (A/B)	D. Percent of Forest Used as Roost Areas[2]	E. Expected Overlap (acres) (BxCxD)	F. Density	G. Number of Bats Affected (FxE)
Midwest	Iowa	6,074	3,013,759	0.2%	6.3%	383	0.808	310
Midwest	Illinois	4,748	4,847,480	0.1%	9.4%	448	0.701	314
Midwest	Indiana	3,742	4,830,395	0.1%	5.7%	212	0.701	149
Midwest	Michigan	5,464	20,127,048	0.0%	4.8%	260	0.701	183
Midwest	Minnesota	60,072	17,370,394	0.3%	8.9%	5,325	0.808	4,306
Midwest	Missouri	20,755	15,471,982	0.1%	4.0%	821	0.701	576
Midwest	Ohio	1,630	8,088,277	0.0%	6.4%	104	0.701	73
Midwest	Wisconsin	9,277	16,980,084	0.1%	6.8%	629	0.701	441
Eastern	Connecticut	31	1,711,749	0.0%	1.4%	0	0.359	1
Eastern	Delaware	29	339,520	0.0%	0.8%	0	0.359	1
Eastern	Maine	2	17,660,246	0.0%	1.4%	0	0.701	1
Eastern	Maryland	1,542	2,460,652	0.1%	0.8%	12	0.359	5
Eastern	Massachusetts	159	3,024,092	0.0%	1.0%	2	0.359	1
Eastern	New Hampshire	60	4,832,408	0.0%	1.5%	1	0.359	1
Eastern	New Jersey	4,170	1,963,561	0.2%	4.8%	202	0.359	73
Eastern	New York	111	18,966,416	0.0%	5.0%	6	0.359	2
Eastern	Pennsylvania	1,052	16,781,960	0.0%	5.1%	54	0.359	20
Eastern	Rhode Island	11	359,519	0.0%	1.4%	0	0.359	1
Eastern	Vermont	189	4,591,280	0.0%	1.5%	3	0.359	2
Eastern	Virginia	7,952	15,907,041	0.0%	7.3%	580	0.359	209
Eastern	West Virginia	421	12,154,471	0.0%	8.1%	34	0.359	13
Southern	Arkansas	90,032	18,754,916	0.5%	9.9%	8,879	0.701	6,221
Southern	Kentucky	4,809	12,471,762	0.0%	6.1%	296	0.701	208
Southern	Mississippi	74,010	19,541,284	0.4%	5.2%	3,823	0.808	3,091
Southern	North Carolina	64,034	18,587,540	0.3%	6.0%	3,868	0.701	2,711
Southern	Tennessee	8,766	13,941,333	0.1%	6.2%	544	0.359	196
Western	Kansas	45	2,502,434	0.0%	3.4%	2	0.808	2
Western	Nebraska	4,355	1,576,174	0.3%	3.4%	148	0.808	120
Western	North Dakota	3,687	759,998	0.5%	3.4%	126	0.808	102
Western	South Dakota	3,030	1,910,934	0.2%	3.4%	103	0.808	84
	Total	380,260	281,528,709	0.1%		26,863		19,417

[1] We prorated the total annual burning for activities occuring during the active season by using the annual percent of the active season (58.6%).

[2] From Table 2.5

Table 4.8. Estimated numbers of NLEB pups affected (harmed) annually by heat and smoke from non-volant season prescribed burning in maternity roosting areas.

Region	State	A. Non-Volant Season[1] Burning (acres)	B. Forest Habitat (acres)	C. Percent of Forest Affected (A/B)	D. Percent of Forest Used as Roost Areas[2]	E. Expected Overlap (acres) (BxCxD)	F. Density	G. Number of Pups Affected (FxE)
Midwest	Iowa	1,731	3,013,759	0.1%	6.3%	109	0.269	30
Midwest	Illinois	1,353	4,847,480	0.0%	9.4%	128	0.234	30
Midwest	Indiana	1,066	4,830,395	0.0%	5.7%	60	0.234	15
Midwest	Michigan	1,557	20,127,048	0.0%	4.8%	74	0.234	18
Midwest	Minnesota	17,119	17,370,394	0.1%	8.9%	1,518	0.269	409
Midwest	Missouri	5,915	15,471,982	0.0%	4.0%	234	0.234	55
Midwest	Ohio	464	8,088,277	0.0%	6.4%	30	0.234	7
Midwest	Wisconsin	2,644	16,980,084	0.0%	6.8%	179	0.234	42
Eastern	Connecticut	9	1,711,749	0.0%	1.4%	0	0.120	1
Eastern	Delaware	8	339,520	0.0%	0.8%	0	0.120	1
Eastern	Maine	1	17,660,246	0.0%	1.4%	0	0.234	1
Eastern	Maryland	439	2,460,652	0.0%	0.8%	3	0.120	1
Eastern	Massachusetts	45	3,024,092	0.0%	1.0%	0	0.120	1
Eastern	New Hampshire	17	4,832,408	0.0%	1.5%	0	0.120	1
Eastern	New Jersey	1,188	1,963,561	0.1%	4.8%	58	0.120	7
Eastern	New York	32	18,966,416	0.0%	5.0%	2	0.120	1
Eastern	Pennsylvania	300	16,781,960	0.0%	5.1%	15	0.120	2
Eastern	Rhode Island	3	359,519	0.0%	1.4%	0	0.120	1
Eastern	Vermont	54	4,591,280	0.0%	1.5%	1	0.120	1
Eastern	Virginia	2,266	15,907,041	0.0%	7.3%	165	0.120	20
Eastern	West Virginia	120	12,154,471	0.0%	8.1%	10	0.120	2
Southern	Arkansas	25,658	18,754,916	0.1%	9.9%	2,530	0.234	591
Southern	Kentucky	1,371	12,471,762	0.0%	6.1%	84	0.234	20
Southern	Mississippi	21,092	19,541,284	0.1%	5.2%	1,089	0.269	294
Southern	North Carolina	18,249	18,587,540	0.1%	6.0%	1,102	0.234	258
Southern	Tennessee	2,498	13,941,333	0.0%	6.2%	155	0.120	19
Western	Kansas	13	2,502,434	0.0%	3.4%	0	0.269	1
Western	Nebraska	1,241	1,576,174	0.1%	3.4%	42	0.269	12
Western	North Dakota	1,051	759,998	0.1%	3.4%	36	0.269	10
Western	South Dakota	864	1,910,934	0.0%	3.4%	29	0.269	8
	Total	108,368	281,528,709	0.038%		7,656		1,859

[1] We prorated the total annual burning for activities occuring during the non-volant season by using the annual percent of the non-volant season (16.7%).

[2] From Table 2.5

Table 4.9. Mean annual acres of forest conversion harvest for each state included in the analysis.

REGION	STATE	Acres of Forested Land	Approximate Acres of Forest Lost per Year (NLCD change 2001 to 2011)	Percent of Habitat Lost Annually	Approximate Acres of Forest Lost by 2022	Percent of Habitat Lost by 2022
Midwest	Iowa	3,013,759	2,520	0.1%	17,641	0.6%
Midwest	Illinois	4,847,480	6,156	0.1%	43,092	0.9%
Midwest	Indiana	4,830,395	4,002	0.1%	28,011	0.6%
Midwest	Michigan	20,127,048	44,704	0.2%	312,930	1.6%
Midwest	Minnesota	17,370,394	52,135	0.3%	364,942	2.1%
Midwest	Missouri	15,471,982	16,968	0.1%	118,775	0.8%
Midwest	Ohio	8,088,277	13,522	0.2%	94,655	1.2%
Midwest	Wisconsin	16,980,084	30,191	0.2%	211,334	1.2%
Eastern	Connecticut	1,711,749	2,940	0.2%	20,577	1.2%
Eastern	Delaware	339,520	1,492	0.4%	10,444	3.1%
Eastern	Maine	17,660,246	52,154	0.3%	365,076	2.1%
Eastern	Maryland	2,460,652	6,286	0.3%	43,999	1.8%
Eastern	Massachusetts	3,024,092	7,075	0.2%	49,526	1.6%
Eastern	New Hampshire	4,832,408	12,002	0.2%	84,016	1.7%
Eastern	New Jersey	1,963,561	6,045	0.3%	42,318	2.2%
Eastern	New York	18,966,416	14,117	0.1%	98,822	0.5%
Eastern	Pennsylvania	16,781,960	22,638	0.1%	158,468	0.9%
Eastern	Rhode Island	359,519	715	0.2%	5,003	1.4%
Eastern	Vermont	4,591,280	3,858	0.1%	27,008	0.6%
Eastern	Virginia	15,907,041	95,261	0.6%	666,824	4.2%
Eastern	West Virginia	12,154,471	12,700	0.1%	88,899	0.7%
Southern	Arkansas	18,754,916	115,372	0.6%	807,604	4.3%
Southern	Kentucky	12,471,762	23,167	0.2%	162,169	1.3%
Southern	Mississippi	19,541,284	162,759	0.8%	1,139,312	5.8%
Southern	North Carolina	18,587,540	130,835	0.7%	915,845	4.9%
Southern	Tennessee	13,941,333	54,006	0.4%	378,039	2.7%
Western	Kansas	2,502,434	4,224	0.2%	29,567	1.2%
Western	Nebraska	1,576,174	4,036	0.3%	28,252	1.8%
Western	North Dakota	759,998	1,826	0.2%	12,785	1.7%
Western	South Dakota	1,910,934	10,532	0.6%	73,725	3.9%
	TOTALS	281,528,709	914,237	0.3%	6,399,657	2.3%

Table 4.10. Estimated numbers of NLEB affected (disturbed) annually by human activity from active-season forest conversion in maternity roosting areas.

Region	State	A. Forest Conversion, Bat Active Season (acres)[1]	B. Forest Habitat (acres)	C. Percent of Forest Affected (A/B)	D. Percent of Forest Used as Roost Areas[2]	E. Expected Overlap (acres) (BxCxD)	F. Density	G. Number of Bats Affected (FxE)
Midwest	Iowa	1,477	3,013,759	0.049%	6.3%	93	0.808	76
Midwest	Illinois	3,607	4,847,480	0.074%	9.4%	341	0.701	239
Midwest	Indiana	2,345	4,830,395	0.049%	5.7%	133	0.701	94
Midwest	Michigan	26,197	20,127,048	0.130%	4.8%	1,246	0.701	874
Midwest	Minnesota	30,551	17,370,394	0.176%	8.9%	2,708	0.808	2,190
Midwest	Missouri	9,943	15,471,982	0.064%	4.0%	393	0.701	276
Midwest	Ohio	7,924	8,088,277	0.098%	6.4%	504	0.701	354
Midwest	Wisconsin	17,692	16,980,084	0.104%	6.8%	1,200	0.701	841
Eastern	Connecticut	1,723	1,711,749	0.101%	1.4%	25	0.359	9
Eastern	Delaware	874	339,520	0.258%	0.8%	7	0.359	3
Eastern	Maine	30,562	17,660,246	0.173%	1.4%	434	0.701	305
Eastern	Maryland	3,683	2,460,652	0.150%	0.8%	28	0.359	11
Eastern	Massachusetts	4,146	3,024,092	0.137%	1.0%	43	0.359	16
Eastern	New Hampshire	7,033	4,832,408	0.146%	1.5%	104	0.359	38
Eastern	New Jersey	3,543	1,963,561	0.180%	4.8%	171	0.359	62
Eastern	New York	8,273	18,966,416	0.044%	5.0%	416	0.359	150
Eastern	Pennsylvania	13,266	16,781,960	0.079%	5.1%	677	0.359	244
Eastern	Rhode Island	419	359,519	0.116%	1.4%	6	0.359	3
Eastern	Vermont	2,261	4,591,280	0.049%	1.5%	33	0.359	13
Eastern	Virginia	55,823	15,907,041	0.351%	7.3%	4,072	0.359	1,463
Eastern	West Virginia	7,442	12,154,471	0.061%	8.1%	602	0.359	217
Southern	Arkansas	67,608	18,754,916	0.360%	9.9%	6,667	0.701	4,672
Southern	Kentucky	13,576	12,471,762	0.109%	6.1%	835	0.701	585
Southern	Mississippi	95,377	19,541,284	0.488%	5.2%	4,926	0.808	3,983
Southern	North Carolina	76,669	18,587,540	0.412%	6.0%	4,632	0.701	3,245
Southern	Tennessee	31,647	13,941,333	0.227%	6.2%	1,964	0.359	706
Western	Kansas	2,475	2,502,434	0.099%	3.4%	84	0.808	69
Western	Nebraska	2,365	1,576,174	0.150%	3.4%	80	0.808	66
Western	North Dakota	1,070	759,998	0.141%	3.4%	36	0.808	30
Western	South Dakota	6,172	1,910,934	0.323%	3.4%	210	0.808	170
	Total	535,743	281,528,709	0.190%		32,673		21,004

[1] We prorated the total annual conversion for activities occuring during the active season by using the annual percent of the active season (58.6%).

[2] From Table 2.5

Table 4.11. Estimated numbers of NLEB pups affected (harmed) annually by non-volant-season forest conversion in maternity roosting areas.

Region	State	A. Forest Conversion, Non-Volant Season[1] (acres)	B. Forest Habitat (acres)	C. Percent of Forest Affected (A/B)	D. Percent of Forest Used as Maternity Roost Areas[2]	E. Expected Overlap (acres) (BxCxD)	F. Density	G. Number of Pups Affected (FxE)
Midwest	Iowa	421	3,013,759	0.014%	6.3%	27	0.269	2
Midwest	Illinois	1,028	4,847,480	0.021%	9.4%	97	0.234	4
Midwest	Indiana	668	4,830,395	0.014%	5.7%	38	0.234	2
Midwest	Michigan	7,466	20,127,048	0.037%	4.8%	355	0.234	13
Midwest	Minnesota	8,706	17,370,394	0.050%	8.9%	772	0.269	32
Midwest	Missouri	2,834	15,471,982	0.018%	4.0%	112	0.234	4
Midwest	Ohio	2,258	8,088,277	0.028%	6.4%	144	0.234	6
Midwest	Wisconsin	5,042	16,980,084	0.030%	6.8%	342	0.234	12
Eastern	Connecticut	491	1,711,749	0.029%	1.4%	7	0.120	1
Eastern	Delaware	249	339,520	0.073%	0.8%	2	0.120	1
Eastern	Maine	8,710	17,660,246	0.049%	1.4%	124	0.234	5
Eastern	Maryland	1,050	2,460,652	0.043%	0.8%	8	0.120	1
Eastern	Massachusetts	1,182	3,024,092	0.039%	1.0%	12	0.120	1
Eastern	New Hampshire	2,004	4,832,408	0.041%	1.5%	30	0.120	1
Eastern	New Jersey	1,010	1,963,561	0.051%	4.8%	49	0.120	1
Eastern	New York	2,358	18,966,416	0.012%	5.0%	119	0.120	3
Eastern	Pennsylvania	3,781	16,781,960	0.023%	5.1%	193	0.120	4
Eastern	Rhode Island	119	359,519	0.033%	1.4%	2	0.120	1
Eastern	Vermont	644	4,591,280	0.014%	1.5%	10	0.120	1
Eastern	Virginia	15,909	15,907,041	0.100%	7.3%	1,160	0.120	21
Eastern	West Virginia	2,121	12,154,471	0.017%	8.1%	172	0.120	4
Southern	Arkansas	19,267	18,754,916	0.103%	9.9%	1,900	0.234	67
Southern	Kentucky	3,869	12,471,762	0.031%	6.1%	238	0.234	9
Southern	Mississippi	27,181	19,541,284	0.139%	5.2%	1,404	0.269	57
Southern	North Carolina	21,849	18,587,540	0.118%	6.0%	1,320	0.234	47
Southern	Tennessee	9,019	13,941,333	0.065%	6.2%	560	0.120	11
Western	Kansas	705	2,502,434	0.028%	3.4%	24	0.269	1
Western	Nebraska	674	1,576,174	0.043%	3.4%	23	0.269	1
Western	North Dakota	305	759,998	0.040%	3.4%	10	0.269	1
Western	South Dakota	1,759	1,910,934	0.092%	3.4%	60	0.269	3
	Total	152,678	281,528,709	0.054%		9,311		317

[1] We prorated the total annual conversion for activities occuring during the non-volant season by using the annual percent of the non-volant season (16.7%).

[2] From Table 2.5

Table 4.12. Estimated numbers of NLEB adults affected (harmed) annually by active-season forest conversion in maternity roosting areas.

Region	State	A. Forest Conversion, Active Season[1] (acres)	B. Forest Habitat (acres)	C. Percent of Forest Affected (A/B)	D. Percent of Forest Used as Maternity Roost Areas[2]	E. Expected Overlap (acres) (BxCxD)	F. Density	G. Number of Adults Affected (FxE)
Midwest	Iowa	1,477	3,013,759	0.049%	6.3%	93	0.081	1
Midwest	Illinois	3,607	4,847,480	0.074%	9.4%	341	0.071	1
Midwest	Indiana	2,345	4,830,395	0.049%	5.7%	133	0.071	1
Midwest	Michigan	26,197	20,127,048	0.130%	4.8%	1,246	0.071	3
Midwest	Minnesota	30,551	17,370,394	0.176%	8.9%	2,708	0.081	7
Midwest	Missouri	9,943	15,471,982	0.064%	4.0%	393	0.071	1
Midwest	Ohio	7,924	8,088,277	0.098%	6.4%	504	0.071	2
Midwest	Wisconsin	17,692	16,980,084	0.104%	6.8%	1,200	0.071	3
Eastern	Connecticut	1,723	1,711,749	0.101%	1.4%	25	0.036	1
Eastern	Delaware	874	339,520	0.258%	0.8%	7	0.036	1
Eastern	Maine	30,562	17,660,246	0.173%	1.4%	434	0.071	1
Eastern	Maryland	3,683	2,460,652	0.150%	0.8%	28	0.036	1
Eastern	Massachusetts	4,146	3,024,092	0.137%	1.0%	43	0.036	1
Eastern	New Hampshire	7,033	4,832,408	0.146%	1.5%	104	0.036	1
Eastern	New Jersey	3,543	1,963,561	0.180%	4.8%	171	0.036	1
Eastern	New York	8,273	18,966,416	0.044%	5.0%	416	0.036	1
Eastern	Pennsylvania	13,266	16,781,960	0.079%	5.1%	677	0.036	1
Eastern	Rhode Island	419	359,519	0.116%	1.4%	6	0.036	1
Eastern	Vermont	2,261	4,591,280	0.049%	1.5%	33	0.036	1
Eastern	Virginia	55,823	15,907,041	0.351%	7.3%	4,072	0.036	5
Eastern	West Virginia	7,442	12,154,471	0.061%	8.1%	602	0.036	1
Southern	Arkansas	67,608	18,754,916	0.360%	9.9%	6,667	0.071	15
Southern	Kentucky	13,576	12,471,762	0.109%	6.1%	835	0.071	2
Southern	Mississippi	95,377	19,541,284	0.488%	5.2%	4,926	0.081	13
Southern	North Carolina	76,669	18,587,540	0.412%	6.0%	4,632	0.071	10
Southern	Tennessee	31,647	13,941,333	0.227%	6.2%	1,964	0.036	3
Western	Kansas	2,475	2,502,434	0.099%	3.4%	84	0.081	1
Western	Nebraska	2,365	1,576,174	0.150%	3.4%	80	0.081	1
Western	North Dakota	1,070	759,998	0.141%	3.4%	36	0.081	1
Western	South Dakota	6,172	1,910,934	0.323%	3.4%	210	0.081	1
	Total	535,743	281,528,709	0.190%		32,673		83

[1] We prorated the total annual harvest for activities occuring during the active season by using the annual percent of the active season (58.6%).

[2] From Table 2.5

Table 4.13. Estimated NLEB fatalities from wind energy operation created using current and projected wind capacity through 2022.

REGION	STATE	Installed Wind Capacity in 2014 (MW)	Projected Wind Capacity in 2020 (MW)	Projected Wind Capacity in 2030 (MW)	Mean Annual Build-out 2014-2020 (MW)	Mean Annual Build-out 2021-2022 (MW)	Current Fatality through 2014	Annual Fatality 2015	Annual Fatality 2016	Annual Fatality 2017	Annual Fatality 2018	Annual Fatality 2019	Annual Fatality 2020	Annual Fatality 2021	Annual Fatality 2022	Total Fatality All Years
Midwest	Iowa	5688	6200	17300	85	1110	90	91	93	94	95	97	98	115	133	906
Midwest	Illinois	3568	3980	19490	69	1551	56	57	59	60	61	62	63	87	112	616
Midwest	Indiana	1745	2610	13500	144	1089	28	30	32	34	37	39	41	58	76	375
Midwest	Michigan[1]	1531	1531	1850	0	32	24	24	24	24	24	24	24	25	25	219
Midwest	Minnesota	3035	3470	3990	73	52	48	49	50	51	53	54	55	56	56	472
Midwest	Missouri	459	1280	4350	137	307	7	9	12	14	16	18	20	25	30	151
Midwest	Ohio	435	2990	5320	426	233	7	14	20	27	34	41	47	51	55	295
Midwest	Wisconsin	648	1320	1640	112	32	10	12	14	16	17	19	21	21	22	152
Eastern	Connecticut	0	130	130	22	0	0	0	1	1	1	2	2	2	2	11
Eastern	Delaware[2]	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Eastern	Maine	440	950	950	85	0	7	8	10	11	12	14	15	15	15	107
Eastern	Maryland	160	820	820	110	0	3	4	6	8	9	11	13	13	13	80
Eastern	Massachusetts	107	270	270	27	0	2	2	3	3	3	4	4	4	4	29
Eastern	New Hampshire	171	470	470	50	0	3	3	4	5	6	7	7	7	7	50
Eastern	New Jersey[2]	9	9	0	0	0	0	0	0	0	0	0	0	0	0	1
Eastern	New York	1748	1750	3860	0	0	28	28	28	28	28	28	28	28	28	249
Eastern	Pennsylvania[2]	1340	5580	5400	707	0	21	32	43	55	66	77	88	88	88	559
Eastern	Rhode Island[2]	9	9	0	0	0	0	0	0	0	0	0	0	0	0	1
Eastern	Vermont[2]	119	440	430	54	0	2	3	4	4	5	6	7	7	7	45
Eastern	Virginia	0	100	830	17	73	0	0	1	1	1	1	2	3	4	12
Eastern	West Virginia	583	600	2030	3	143	9	9	9	9	9	9	9	12	14	91
Southern	Arkansas	0	0	2550	0	255	0	0	0	0	0	0	0	4	8	12
Southern	Kentucky	0	0	950	0	95	0	0	0	0	0	0	0	2	3	5
Southern	Mississippi	0	0	450	0	45	0	0	0	0	0	0	0	1	1	2
Southern	North Carolina	0	750	750	125	0	0	2	4	6	8	10	12	12	12	65
Southern	Tennessee	29	29	1310	0	128	0	0	0	0	0	0	0	2	5	10
Western	Kansas[2]	2967	3420	3270	76	0	47	48	49	50	52	53	54	54	54	461
Western	Nebraska	812	1260	1360	75	10	13	14	15	16	18	19	20	20	20	155
Western	North Dakota	1886	2870	4710	164	184	30	32	35	38	40	43	45	48	51	362
Western	South Dakota	803	1260	2400	76	114	13	14	15	16	17	19	20	22	24	159
Totals		**28294**	**44100**	**100380**	**2634**	**5453**	**447**	**489**	**530**	**572**	**613**	**655**	**697**	**783**	**869**	**5654**

[1]Projections were held constant for Michigan between 2014 and 2020 because 2020 projections were already exceeded.

[2]Projections are expected to decline slightly between 2020-2030; however, we did not reduce capacity because we assume constructed facilities will continue to operate.

Table 4.14. Influence of conservation measures for tree removal activities included in the final 4(d) rule for the NLEB.

Range	State	Known Hibernacula	Known Occupied Maternity Roost Trees	Acres Covered by Hibernacula Conservation Measure[1]	Acres Covered by Maternity Roost Tree Conservation Measure[2]	Acres of Forested Land	Percent of Total Available Habitat Covered by Measures
Midwest	Iowa	2	14	251	22	3,013,759	0.01%
Midwest	Illinois	44	39	5,531	62	4,847,480	0.12%
Midwest	Indiana	69	193	8,673	309	4,830,395	0.19%
Midwest	Michigan	77	25	9,679	40	20,127,048	0.05%
Midwest	Minnesota	15	102	1,886	163	17,370,394	0.01%
Midwest	Missouri	269	58	33,813	93	15,471,982	0.22%
Midwest	Ohio	32	4	4,022	6	8,088,277	0.05%
Midwest	Wisconsin	67	84	8,422	134	16,980,084	0.05%
Eastern	Connecticut	8	0	1,006	0	1,711,749	0.06%
Eastern	Delaware	2	0	251	0	339,520	0.07%
Eastern	Maine	3	0	377	0	17,660,246	0.00%
Eastern	Maryland	8	0	1,006	0	2,460,652	0.04%
Eastern	Massachusetts	7	16	880	26	3,024,092	0.03%
Eastern	New Hampshire	11	0	1,383	0	4,832,408	0.03%
Eastern	New Jersey	9	47	1,131	75	1,963,561	0.06%
Eastern	New York	90	27	11,313	43	18,966,416	0.06%
Eastern	Pennsylvania	322	157	40,475	251	16,781,960	0.24%
Eastern	Rhode Island	0	0	0	0	359,519	0.00%
Eastern	Vermont	16	0	2,011	0	4,591,280	0.04%
Eastern	Virginia	11	12	1,383	19	15,907,041	0.01%
Eastern	West Virginia	104	231	13,073	370	12,154,471	0.11%
Southern	Alabama	11	0	1,383	0	22,876,792	0.01%
Southern	Arkansas	77	310	9,679	496	18,754,916	0.05%
Southern	Georgia	6	20	754	32	24,768,236	0.00%
Southern	Kentucky	122	254	15,335	406	12,471,762	0.13%
Southern	Louisiana	0	0	0	0	14,540,135	0.00%
Southern	Mississippi	0	0	0	0	19,541,284	0.00%
Southern	North Carolina	29	101	3,645	162	18,587,540	0.02%
Southern	Oklahoma	9	0	1,131	0	12,646,138	0.01%
Southern	South Carolina	3	0	377	0	13,120,509	0.00%
Southern	Tennessee	61	50	7,668	80	13,941,333	0.06%
Western	Kansas	1	0	126	0	2,502,434	0.01%
Western	Montana	0	0	0	0	25,573,200	0.00%
Western	Nebraska	2	0	251	0	759,998	0.03%
Western	North Dakota	0	0	0	0	1,576,174	0.00%
Western	South Dakota	21	0	2,640	0	1,910,934	0.14%
Western	Wyoming	0	0	0	0	11,448,541	0.00%
	Total	1,508	1,744	189,556	2,790	406,502,260	0.05%

[1]Hibernacula buffer circles have a radius of 0.25 mi, which is 125.7 acres

[2]Maternity roost trees have a temporary buffer circle with a 150 ft radius, which is 1.6 acres

Table 4.15. Summary of annual disturbance and harm estimates from timber harvest, prescribed fire, forest conversion, and wind[4].

Region	State	Harass Timber Harvest	Harass Prescribed Fire	Harass Forest Conversion	Harm (pups) Timber Harvest	Harm (pups) Prescribed Fire	Harm (pups) Forest Conversion	Harm (adults) Timber Harvest	Harm (adults) Forest Conversion	Harm (adults) Average Wind	Total Annual Harassment	Total Annual Harm (pups)	Total Annual Harm (adults)
Midwest	Iowa	619	310	76	9	30	2	2	1	102	1,005	41	105
Midwest	Illinois	1,469	314	239	21	30	4	5	1	70	2,022	55	76
Midwest	Indiana	1,207	149	94	18	15	2	4	1	43	1,450	35	48
Midwest	Michigan	5,240	183	874	75	18	13	16	3	24	6,297	106	43
Midwest	Minnesota	6,706	4,306	2,190	96	409	32	21	7	53	13,202	537	81
Midwest	Missouri	2,831	576	276	41	55	4	9	1	18	3,683	100	28
Midwest	Ohio	2,111	73	354	31	7	6	7	2	36	2,538	44	45
Midwest	Wisconsin	7,493	441	841	107	42	12	23	3	18	8,775	161	44
Eastern	Connecticut	30	1	9	1	1	1	1	1	1	40	3	3
Eastern	Delaware	5	1	3	1	1	1	1	1	0	9	3	2
Eastern	Maine	2,767	1	305	40	1	5	9	1	13	3,073	46	23
Eastern	Maryland	24	5	11	1	1	1	1	1	10	40	3	12
Eastern	Massachusetts	30	1	16	1	1	1	1	1	3	47	3	5
Eastern	New Hampshire	215	1	38	4	1	1	1	1	6	254	6	8
Eastern	New Jersey	37	73	62	1	7	1	1	1	0	172	9	2
Eastern	New York	1,880	2	150	27	1	3	6	1	28	2,032	31	35
Eastern	Pennsylvania	2,104	20	244	30	2	4	7	1	67	2,368	36	75
Eastern	Rhode Island	0	1	3	0	1	1	0	1	0	4	2	1
Eastern	Vermont	163	2	13	3	1	1	1	1	5	178	5	7
Eastern	Virginia	2,963	209	1,463	43	20	21	9	5	2	4,635	84	16
Eastern	West Virginia	1,316	13	217	19	2	4	4	1	10	1,546	25	15
Southern	Arkansas	17,961	6,221	4,672	256	591	67	55	15	2	28,854	914	72
Southern	Kentucky	2,772	208	585	40	20	9	9	2	1	3,565	69	12
Southern	Mississippi	9,309	3,091	3,983	133	294	57	29	13	0	16,383	484	42
Southern	North Carolina	4,892	2,711	3,245	70	258	47	15	10	8	10,848	375	33
Southern	Tennessee	1,695	196	706	25	19	11	6	3	1	2,597	55	10
Western	Kansas	172	2	69	3	1	1	1	1	52	243	5	54
Western	Nebraska	250	120	66	4	12	1	1	1	18	436	17	20
Western	North Dakota	0	102	30	0	10	1	0	1	42	132	11	43
Western	South Dakota	585	84	170	9	8	3	2	1	18	839	20	21
	Total	76,846	19,417	21,004	1,109	1,859	317	247	83	650	117,267	3,285	980

[4] Wind is the mean annual estimate from 2015 to 2022 reported in Table 4.13.

Table 4.16. Summary of the activities expected to disturb NLEB annually. The total number of bats per state includes adults and pups.

Region	State	Total # Bats Harassed per year	Percent Harass from Burning	Percent Harass from Harvest	Percent Harass from Conversion	Total # Bats per State	Percent Total Bats Affected
Midwest	Iowa	1,005	30.8%	61.6%	7.6%	153,495	0.7%
Midwest	Illinois	2,022	15.5%	72.7%	11.8%	320,580	0.6%
Midwest	Indiana	1,450	10.3%	83.2%	6.5%	191,763	0.8%
Midwest	Michigan	6,297	2.9%	83.2%	13.9%	670,878	0.9%
Midwest	Minnesota	13,202	32.6%	50.8%	16.6%	1,244,835	1.1%
Midwest	Missouri	3,683	15.6%	76.9%	7.5%	428,922	0.9%
Midwest	Ohio	2,538	2.9%	83.2%	13.9%	360,360	0.7%
Midwest	Wisconsin	8,775	5.0%	85.4%	9.6%	806,715	1.1%
Eastern	Connecticut	40	2.5%	75.0%	22.5%	8,760	0.5%
Eastern	Delaware	9	11.1%	55.6%	33.3%	960	0.9%
Eastern	Maine	3,073	0.0%	90.0%	9.9%	175,734	1.7%
Eastern	Maryland	40	12.5%	60.0%	27.5%	6,720	0.6%
Eastern	Massachusetts	47	2.1%	63.8%	34.0%	11,160	0.4%
Eastern	New Hampshire	254	0.4%	84.6%	15.0%	25,740	1.0%
Eastern	New Jersey	172	42.4%	21.5%	36.0%	34,140	0.5%
Eastern	New York	2,032	0.1%	92.5%	7.4%	342,720	0.6%
Eastern	Pennsylvania	2,368	0.8%	88.9%	10.3%	307,800	0.8%
Eastern	Rhode Island	4	25.0%	0.0%	75.0%	1,860	0.2%
Eastern	Vermont	178	1.1%	91.6%	7.3%	24,420	0.7%
Eastern	Virginia	4,635	4.5%	63.9%	31.6%	416,880	1.1%
Eastern	West Virginia	1,546	0.8%	85.1%	14.0%	353,520	0.4%
Southern	Arkansas	28,854	21.6%	62.2%	16.2%	1,295,775	2.2%
Southern	Kentucky	3,565	5.8%	77.8%	16.4%	537,147	0.7%
Southern	Mississippi	16,383	18.9%	56.8%	24.3%	815,940	2.0%
Southern	North Carolina	10,848	25.0%	45.1%	29.9%	786,708	1.4%
Southern	Tennessee	2,597	7.5%	65.3%	27.2%	310,920	0.8%
Western	Kansas	243	0.8%	70.8%	28.4%	68,850	0.4%
Western	Nebraska	436	27.5%	57.3%	15.1%	43,335	1.0%
Western	North Dakota	132	77.3%	0.0%	22.7%	20,925	0.6%
Western	South Dakota	839	10.0%	69.7%	20.3%	52,515	1.6%
	Total	117,267	16.6%	65.5%	17.9%	9,820,077	1.2%

Table 4.17. Summary of the activities expected to harm NLEB pups annually.

Region	State	Total # Pups Harmed per year	Percent Harm from Burning	Percent Harm from Harvest	Percent Harm from Conversion	Total # Pups per State	Percent Total Pups Affected
Midwest	Iowa	41	73.2%	22.0%	4.9%	51,165	0.1%
Midwest	Illinois	55	54.5%	38.2%	7.3%	106,860	0.1%
Midwest	Indiana	35	42.9%	51.4%	5.7%	63,921	0.1%
Midwest	Michigan	106	17.0%	70.8%	12.3%	223,626	0.0%
Midwest	Minnesota	537	76.2%	17.9%	6.0%	414,945	0.1%
Midwest	Missouri	100	55.0%	41.0%	4.0%	142,974	0.1%
Midwest	Ohio	44	15.9%	70.5%	13.6%	120,120	0.0%
Midwest	Wisconsin	161	26.1%	66.5%	7.5%	268,905	0.1%
Eastern	Connecticut	3	33.3%	33.3%	33.3%	2,920	0.1%
Eastern	Delaware	3	33.3%	33.3%	33.3%	320	0.9%
Eastern	Maine	46	2.2%	87.0%	10.9%	58,578	0.1%
Eastern	Maryland	3	33.3%	33.3%	33.3%	2,240	0.1%
Eastern	Massachusetts	3	33.3%	33.3%	33.3%	3,720	0.1%
Eastern	New Hampshire	6	16.7%	66.7%	16.7%	8,580	0.1%
Eastern	New Jersey	9	77.8%	11.1%	11.1%	11,380	0.1%
Eastern	New York	31	3.2%	87.1%	9.7%	114,240	0.0%
Eastern	Pennsylvania	36	5.6%	83.3%	11.1%	102,600	0.0%
Eastern	Rhode Island	2	50.0%	0.0%	50.0%	620	0.3%
Eastern	Vermont	5	20.0%	60.0%	20.0%	8,140	0.1%
Eastern	Virginia	84	23.8%	51.2%	25.0%	138,960	0.1%
Eastern	West Virginia	25	8.0%	76.0%	16.0%	117,840	0.0%
Southern	Arkansas	914	64.7%	28.0%	7.3%	431,925	0.2%
Southern	Kentucky	69	29.0%	58.0%	13.0%	179,049	0.0%
Southern	Mississippi	484	60.7%	27.5%	11.8%	271,980	0.2%
Southern	North Carolina	375	68.8%	18.7%	12.5%	262,236	0.1%
Southern	Tennessee	55	34.5%	45.5%	20.0%	103,640	0.1%
Western	Kansas	5	20.0%	60.0%	20.0%	22,950	0.0%
Western	Nebraska	17	70.6%	23.5%	5.9%	14,445	0.1%
Western	North Dakota	11	90.9%	0.0%	9.1%	6,975	0.2%
Western	South Dakota	20	40.0%	45.0%	15.0%	17,505	0.1%
	Total	3,285	56.6%	33.8%	9.6%	3,273,359	0.1%

Table 4.18. Summary of the activities expected to harm NLEB adults annually.

Region	State	Total # Adults Harmed per year	Percent Harm from Harvest	Percent Harm from Conversion	Percent Harm from Wind	Total # Adults per State	Percent Total Adults Affected
Midwest	Iowa	105	1.9%	1.0%	97.1%	102,330	0.10%
Midwest	Illinois	76	6.6%	1.3%	92.1%	213,720	0.04%
Midwest	Indiana	48	8.3%	2.1%	89.7%	127,842	0.04%
Midwest	Michigan	43	37.0%	6.9%	56.1%	447,252	0.01%
Midwest	Minnesota	81	25.9%	8.6%	65.4%	829,890	0.01%
Midwest	Missouri	28	32.1%	3.6%	64.3%	285,948	0.01%
Midwest	Ohio	45	15.5%	4.4%	80.1%	240,240	0.02%
Midwest	Wisconsin	44	52.6%	6.9%	40.6%	537,810	0.01%
Eastern	Connecticut	3	29.6%	29.6%	40.7%	5,840	0.06%
Eastern	Delaware	2	50.0%	50.0%	0.0%	640	0.31%
Eastern	Maine	23	40.0%	4.4%	55.6%	117,156	0.02%
Eastern	Maryland	12	8.6%	8.6%	82.8%	4,480	0.26%
Eastern	Massachusetts	5	18.6%	18.6%	62.8%	7,440	0.07%
Eastern	New Hampshire	8	12.9%	12.9%	74.2%	17,160	0.05%
Eastern	New Jersey	2	50.0%	50.0%	0.0%	22,760	0.01%
Eastern	New York	35	17.1%	2.9%	80.0%	228,480	0.02%
Eastern	Pennsylvania	75	9.3%	1.3%	89.4%	205,200	0.04%
Eastern	Rhode Island	1	0.0%	100.0%	0.0%	1,240	0.08%
Eastern	Vermont	7	13.6%	13.6%	72.9%	16,280	0.05%
Eastern	Virginia	16	57.6%	32.0%	10.4%	277,920	0.01%
Eastern	West Virginia	15	26.7%	6.7%	66.7%	235,680	0.01%
Southern	Arkansas	72	76.9%	21.0%	2.1%	863,850	0.01%
Southern	Kentucky	12	77.4%	17.2%	5.4%	358,098	0.00%
Southern	Mississippi	42	68.6%	30.8%	0.6%	543,960	0.01%
Southern	North Carolina	33	45.1%	30.1%	24.8%	524,472	0.01%
Southern	Tennessee	10	60.8%	30.4%	8.9%	207,280	0.00%
Western	Kansas	54	1.9%	1.9%	96.3%	45,900	0.12%
Western	Nebraska	20	5.1%	5.1%	89.9%	28,890	0.07%
Western	North Dakota	43	0.0%	2.4%	97.6%	13,950	0.30%
Western	South Dakota	21	9.4%	4.7%	86.0%	35,010	0.06%
	Total	980	25.2%	8.5%	66.3%	6,546,718	0.01%

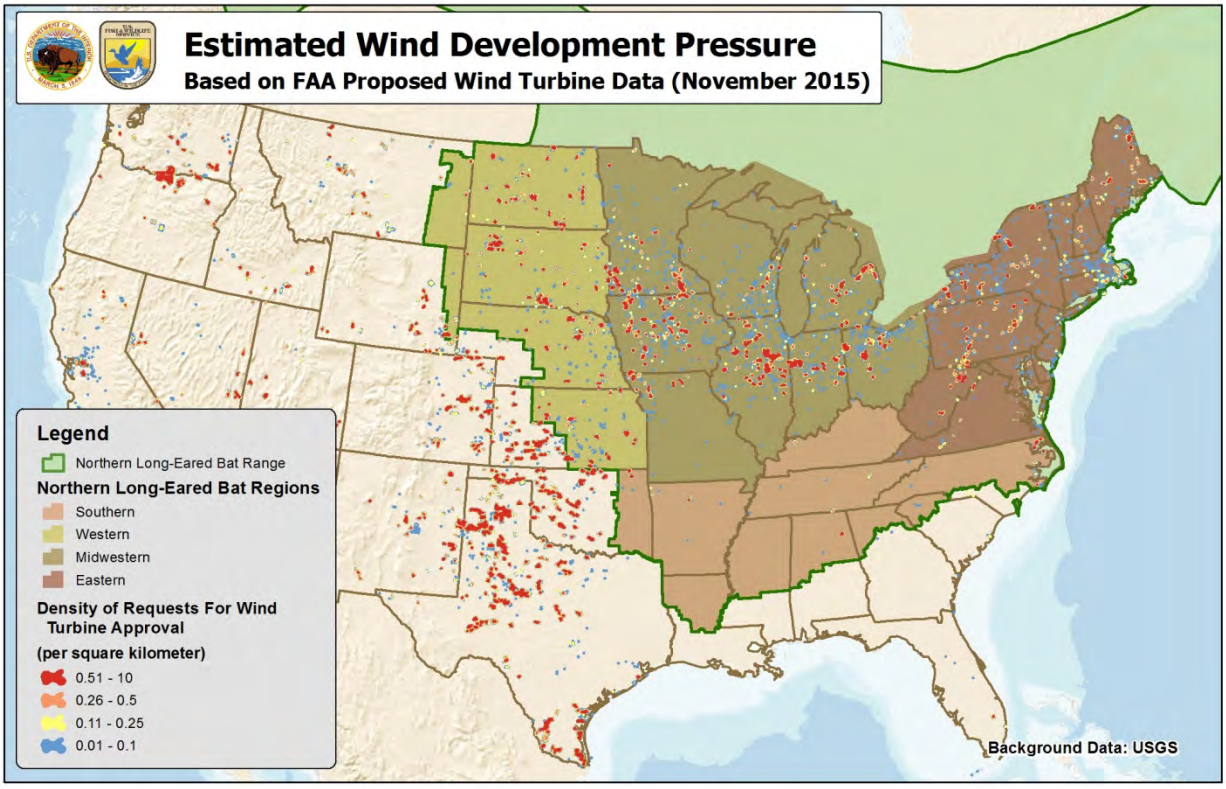

Figure 4.1. Estimated wind development pressure based on the Federal Aviation Administration's proposed wind turbine data.

5 CUMULATIVE EFFECTS

In the context of a consultation, cumulative effects are the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the Action Area. Future federal actions that are unrelated to the proposed action are not considered, because they require separate consultation under section 7 of the ESA.

Section 4 of this BO discusses all actions that may affect the NLEB associated with the implementation of the final 4(d) rule. These include effects of state, tribal, local and private actions. These actions are typically included in this section; however, the action evaluated in this BO is the finalization and implementation of the final 4(d) rule, which includes state, tribal, local, and private actions. We acknowledge that some of the activities included in the effects of the action are cumulative effects, but we do not separate them in this BO.

6 CONCLUSION

WNS is the primary factor affecting the status of the NLEB, which has caused dramatic and rapid declines in abundance, resulting in the local extirpation of the species in some areas. Although other factors, individually or in combination, are likely insignificant at the range-wide scale, they may exacerbate the effects of WNS at the local population scale, thereby accelerating declines and the likelihood of local extirpation due to the disease or reducing the population's ability to survive and potentially rebound. Our analysis of the effects of activities that may affect the NLEB, but do not cause prohibited take, indicates that the additional loss of individual NLEB resulting from these activities would not exacerbate the effects of WNS at the scale of states within its range. Even if all anthropogenic activities that might adversely affect NLEB ceased, we do not believe that the resulting reduction in adverse effects would materially change the devastating impact WNS has had, and will continue to have, on NLEB at the local population level or at larger scales.

The species' foremost conservation need is to reduce or eliminate the threat of WNS. In areas impacted by WNS, the next priorities are to protect NLEB in hibernacula and maternity roost trees, and to continue to monitor populations in summer habitats (e.g., identify where the species continues to survive after the detection of Pd or WNS and determine the factors influencing its resilience).

From our assessment of the species' status/environmental baseline, we have observed NLEB population declines within a few years following the arrival of WNS, and can expect further declines as the disease moves through the Action Area. Based on post-WNS occupancy rates inferred from summer survey data and assumptions about colony size and distribution in forested habitats, we estimate that the population of NLEB is currently about 6,546,700 adult NLEB.

Activities that may affect the NLEB, but will not cause prohibited take under the final 4(d) rule, primarily include timber harvest, prescribed fire, forest conversion, and wind turbine operation. We estimate that these activities will disturb up to 117,267 volant NLEB (both adults and juveniles) each year, all within roosting areas (both maternity and non-maternity), and mostly (65.5 percent) resulting from timber harvest. The Action is expected to harm up to 3,285 non-volant juvenile NLEB annually, all within maternity roosting areas, and mostly resulting from prescribed burning and tree clearing activities conducted during the active season. The Action is also expected to harm up to 980 adults annually, mostly from wind turbine operation and removal of undocumented occupied roosts.

The disturbance estimate amounts to 1.2 percent of the total NLEB population, including young-of-the-year (1 per adult female following parturition), and less than 2.3% of the total number of NLEBs in each individual state. We do not expect disturbance of less than 2.3% of a state's population to significantly affect the numbers or reproduction of the species in the states, as only a small fraction of those fleeing roosts due to disturbance are likely to suffer injury from day-time predators or other hazards encountered before roosting elsewhere. Further, we do not expect disturbance to significantly affect the distribution of the species on the Forests, as the disturbances causing it are temporary, ceasing when project-level activity ceases.

The harm estimate of 3,285 NLEB pups amounts to less than 0.1 percent of the total population of non-volant pups. Less than 1% of the total number of NLEB pups may be harmed in individual states. However, these numbers are overestimates. As noted above, most of this harm is caused by prescribed burning and tree clearing activities, where the potential for death or injury depends largely on site-specific circumstances, e.g., the likelihood of felling a tree containing a maternity colony. Not all tree clearing activities through maternity roosting areas will kill or injure all pups present, but our methodology in this BO estimates that all potentially vulnerable individuals within the expected area of activity/occupancy overlap are affected. The same is true for prescribed fire. We also estimated that 980 adults (less than 0.02% of the total population) may be affected by wind turbine operation and tree clearing activities. Less than 1% of the total number of NLEB adults may be affected in all individual states. These numbers are more realistic estimations because we did not assume that all potentially vulnerable individuals would be affected – we assumed that only 3% of adults would be impacted.

There are no additional interrelated and interdependent actions to the proposed Action or cumulative effects that are not included in the analysis of the proposed Action.

The final 4(d) rule determined that the conservation of the NLEB as a threatened species is best served by limiting the full suite of prohibitions applicable to endangered species under section 9 of the Act to its most vulnerable life stages, i.e., while in hibernacula or in maternity roost trees

within the WNS zone, and to activities, tree removal in particular, that are most likely to affect the species. Activities excepted from the requirements to obtain incidental take statements or incidental take permits will affect relatively small numbers of individuals, which is not anticipated to impair conservation efforts or the recovery potential of the species. The vast majority of individuals and populations that survive WNS are unaffected by these activities. It is likely that the species will persist in the individual states based on the number of maternity colonies and widely-dispersed nature of the activities. Based on the relatively small numbers affected annually compared to the state population sizes, we conclude that adverse effects from timber harvest, prescribed fire, forest conversion, wind energy, and other activities will not cause population-level declines in this species.

The Service defines "to jeopardize the continued existence of a listed species" as to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of the species. After reviewing the current status of the NLEB, environmental baseline, effects of the Action, and cumulative effects, it is the Service's biological opinion that the Action, as proposed, is not likely to jeopardize the continued existence of the NLEB. The Service has not proposed or designated critical habitat for this species; therefore, none is affected.

Incidental take that is not expressly prohibited under the final 4(d) rule does not require exception in an Incidental Take Statement. This BO has evaluated major categories of actions that may affect the NLEB, but for which incidental take is not prohibited. Accordingly, there are no reasonable and prudent measures or terms and conditions that are necessary and appropriate for these actions. Federal agencies may rely on this BO to fulfill their project-specific section 7(a)(2) responsibilities under the framework specified in section 1.3 of this BO, which provides a process by which agencies may verify that their proposed actions do not include activities that would cause prohibited incidental take. Prohibited incidental take requires either a separate consultation (federal actions) or an incidental take permit (non-federal actions).

7 REINITIATION NOTICE

Reinitiation of formal consultation is required and shall be requested by the Service, where discretionary federal involvement or control over the action has been retained or is authorized by law and: (a) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (b) If the identified action is subsequently modified in a manner that has an effect to the listed species or critical habitat that was not considered in the biological opinion; or (c) If a new species is listed or critical habitat designated that may be affected by the identified action. The section 7 regulations also require that consultation be reinitiated if the amount or extent of taking specified in the incidental take

statement is exceeded (50 CFR 402.16); however, this condition does not apply to this consultation because all incidental take resulting from actions carried out in compliance with the final 4(d) rule is not prohibited.

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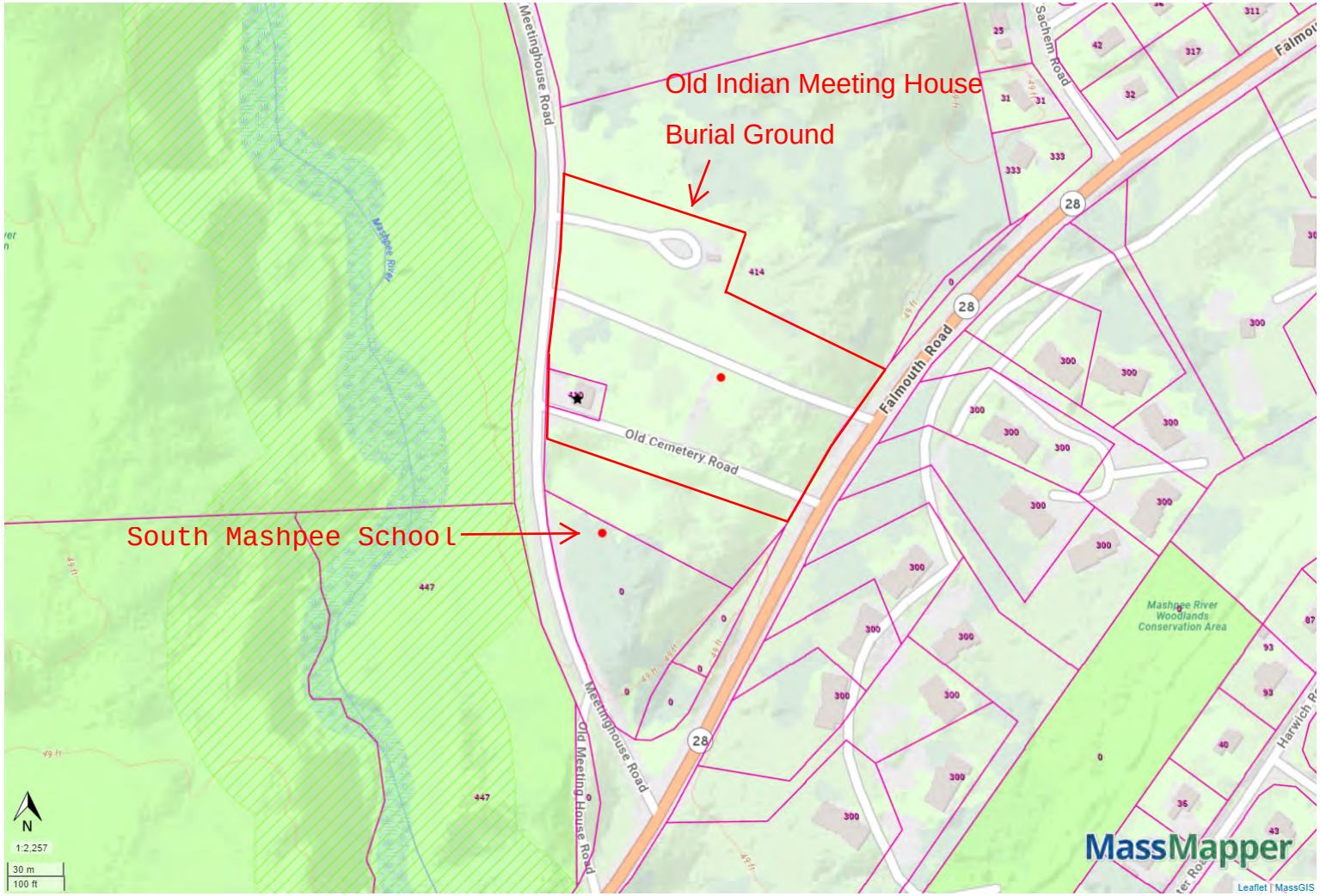
APPENDIX L

HISTORIC PROPERTIES DOCUMENTATION

Historical Features Map



NHESP Estimated Habitats of Rare Wildlife

MassHistoric Commission Inventory (Points)

- National Register of Historic Places
- Preservation Restriction
- Massachusetts Historic Landmark
- Local Historic District
- NRHP and LHD
- Inventoried Property

Property Tax Parcels

Historical Features Map Details

2019 Aerial Imagery

2021 Aerial Imagery

NHESP Priority Habitats of Rare Species

NHESP Estimated Habitats of Rare Wildlife

MassHistoric Commission Inventory (Points)

- National Register of Historic Places
- Preservation Restriction
- Massachusetts Historic Landmark
- Local Historic District
- NRHP and LHD
- Inventoried Property

Property Tax Parcels