Appendix 3

Natural Resource Assessment Survey Results

Memorandum

To: **Eric Ham,** MaineDOT
From: Linda Rivard, Tetra Tech, Inc.
Subject: Natural Resource Assessment Survey Results for the Maine Department of Transportation Frank J. Wood Bridge (#2016) Project (WIN#22603.00)
Date: January 8, 2016

This report describes the survey effort, methods, and results for the Maine Department of Transportation (MaineDOT) Frank J. Wood Bridge (#2016) Project (WIN#22603.00) (Project). The Project bridge spans the Androscoggin River on Route 201 at the Brunswick-Topsham town line (Figure 1).

Maine DOT provided work authorization to Tetra Tech, Inc. (Tetra Tech) to complete a vernal pool and wetland assessment of the Project site via Assignment Letter #23 under Tetra Tech's current Natural Resources Assessment contract with MEDOT (Multi-PIN Project Contract Number 20130822000000000145 dated August 22, 2013), received via email on November 3, 2015. Field work was completed on November 11, 2015. Specifically, work performed according to Assignment Letter #23 included:

- Delineation of wetlands in accordance with United States Army Corps of Engineers (USACE) methodologies;
- A vernal pool assessment in accordance with Chapter 335, Significant Wildlife Habitat, Maine Natural Resource Protection Act and USACE State Programmatic General Permit;,
- Characterization of coastal wetlands in all areas below elevation 0.3 feet (ft) NAVD 88 in accordance with Maine Department of Environmental Protection's (MDEP's) DEPLW1999-13 (Maine's Coastal Wetlands: I. Types, Distribution, Rankings, Functions and Values [Ward 1999]);
- Characterization of upland areas; and
- Documentation of potential northern long-eared bat (*Myotis septentrionalis*) (NLEB) roost trees within the Project area.

The Project survey area included all areas 100 ft upstream and 150 ft downstream from the bridge, and areas with 750 feet of each bridge abutment. Relevant assessment forms completed for the Project are provided in Appendix A, and all CAD and global positioning system (GPS) files were provided to MaineDOT on November 24, 2015.

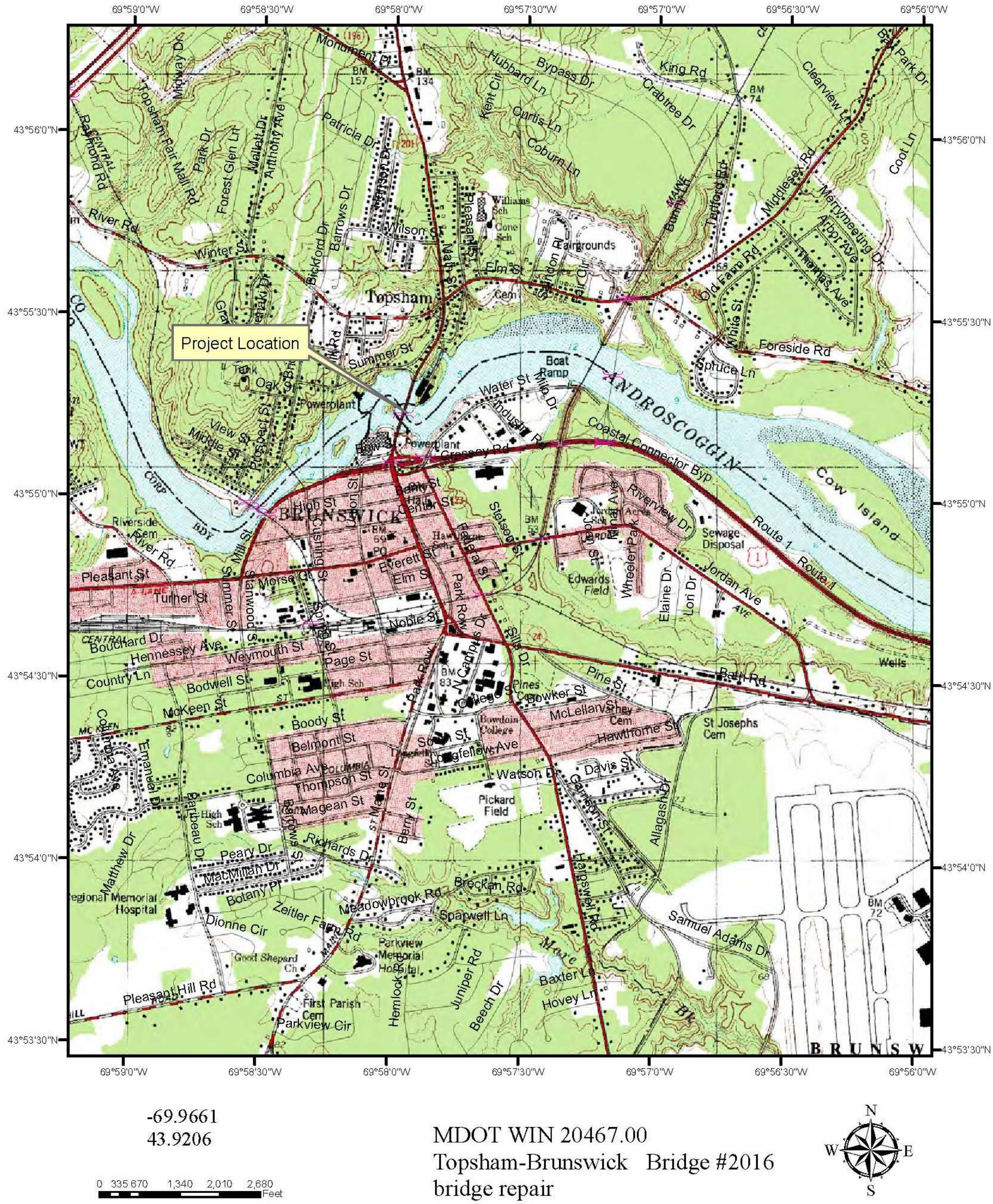

Figure 1. Brunswick-Topsham (WIN#22603.00) Project Location.

SURVEY METHODS

Prior to conducting field work, Tetra Tech performed a desktop analysis of the Project survey area to identify existing mapped wetlands in ESRI ArcGIS 10.2.1 and suitable NLEB habitat in Google Earth Pro 7.1.2.2041 based on forest patch size, proximity to closed-canopy forests, and landscape features that may be used by bats commuting between roosting and foraging habitats. Field surveys were conducted by two Tetra Tech biologists on November 11, 2015.[1]

Wetland boundaries under federal and state jurisdiction were determined using the technical criteria described in the USACE 1987 *Wetland Delineation Manual* (USACE 1987) and guidance provided by MaineDOT (E. Ham, MaineDOT, personal communication, November 3, 2015). In accordance with current USACE regulations, the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (USACE 2012) was selected as the most appropriate technique to meet the USACE objectives of the wetland delineation Project task. Wetland boundaries were marked with pink, alphanumeric-coded flags and locations were collected using Trimble GEOXH 6000 Series GPS receivers. The coastal wetland assessment Project task was conducted in accordance with the MDEP's DEPLW1999-13 (Maine's Coastal Wetlands: I. Types, Distribution, Rankings, Functions and Values [Ward 1999]).

The NLEB habitat assessment (including bridge assessment, where feasible) was conducted following the general guidelines established in the United States Fish and Wildlife Service (USFWS) *2014 Northern Long-eared Bat Interim Conference and Planning Guidance: USFWS Regions 2, 3, 4, 5, & 6* (USFWS 2014), the *2015 Range-wide Indiana Bat Summer Survey Guidelines – April 2015* (USFWS 2015a), and *Appendix B: Bridge Inspection Guidance* of the *Federal Highway Administration and Federal Railroad Administration Range-wide Biological Assessment for Transportation Projects for Indiana Bat and Northern Long-Eared Bat* (USFWS 2015b). The USFWS roost tree and habitat assessment forms were developed for radio tracking surveys and summer habitat assessments, respectively. Therefore, Tetra Tech adapted the forms to suit MaineDOT's request for documentation of potential roost trees and general upland habitat characterization (Appendix A).

RESULTS AND DISCUSSION

Emergent Wetlands and Drainage Areas

A single emergent wetland (palustrine emergent wetland) was identified within the Project area. This wet area is located between the bridge and the parking lot for the Seadog Brewing Company (Figure 2). Parking lot drainage is being contained by a concrete dam (Figures 3–5). The dam overflow is creating a small emergent wetland that is dominated by reed canary grass (*Phalaris arundinacea*) with several stems of broadleaf cattail (*Typha latifolia*) and speckled alder (*Alnus incana*) (Figures 6 and 7). The substrate is a thin layer of sandy muck over cobbles and bedrock. Based on anecdotal reports and aerial imagery, this area is inundated with water during high flows. Another drainage area was documented on

[1] Surveys were conducted during late fall conditions and wetland and vernal pool habitat should be verified under growing season conditions.

the north side of the bridge behind 11 Main Street on the east side of Route 201/Main Street (Figures 8 and 9).

Figure 2. Facing east towards the retaining wall of the Seadog Brewing Company parking lot, standing on top of a small concrete dam with water overflow.

Figure 3. Drainage area (facing south) between Bowdoin Mill Island and Route 201/Main Street. The pool did not exhibit flow in November 2015.

Figure 4. Additional view of drainage area (under bridge, facing north) between Bowdoin Mill Island and Route 201/Main Street.

Figure 5. Additional view of drainage area (facing north) between Bowdoin Mill Island and Route 201/Main Street. This bridge provides access from Route 201/Main Street to Bowdoin Mill Island.

Figure 6. Small emergent wetland that is anecdotally known to be inundated with water from the Androscoggin River in the spring.

Figure 7. Looking southwesterly towards the Frank J. Wood Bridge (#2016) from a seasonally wet drainage area/palustrine emergent wetland near the small bridge to Bowdoin Mill Island. Vegetation includes reed canary grass (*Phalaris arundinacea*), broadleaf cattail (*Typha latifolia*), speckled alder (*Alnus incanca*), and willow (*Salix* sp.).

Figure 8. Looking southerly on Route 201/Main Street towards a small drainage area on the east side of the right-of-way.

Figure 9. Looking southwesterly up towards Route 201/Main Street from the drainage area.

Vernal Pools

No potential vernal pools were observed within the survey area. Although, this survey was not conducted during the spring vernal pool breeding season, it is unlikely that this survey area can support vernal pools due to the extent of development and disturbance.

Coastal Wetland Assessment

Tetra Tech biologists surveyed the area on the north bank of the Androscoggin River (in Topsham) and the area on the south bank east of the bridge. The north bank of the river consisted of ledge habitat, bridge rip rap, and constructed rock retaining walls (Figures 10 and 11). There are two structural concrete pilings located under the deck of the Seadog Brewing Company (Figure 12). The ledge habitat and bridge rip rap extends from the western end of the Project study area under the bridge to the rock retaining wall on the southern end of the Project study area. A rock retaining wall also supports the Seadog Brewing Company building and parking area (Figures 2, 3, and 11).

The south bank of the river (in Brunswick) consists of ledge habitat to the east of the bridge. Observations made from the bridge determined the rock ledge continues to the constructed fish ladder (Figure 13). From a distance Tetra Tech observed what appeared to be reed canary grass growing at the waterline, which is visible in Figure 13. The area west of the bridge on the south bank of the river was inaccessible due to unsafe conditions, and was therefore not surveyed (Figures 13 and 14). The two islands to the west and east of the bridge also were not surveyed.

Figure 10. Looking westerly towards the hydro dam from under the Frank J. Wood Bridge (#2016).

Figure 11. Looking southerly towards the Town of Brunswick showing rock ledge, retaining walls, bridge pilings, and rip-rap within the Project area.

Figure 12. Looking northerly towards Seadog Brewing Company.

Figure 13. Looking northwesterly from the south bank towards the hydro dam and fish ladder. From a distance it appears that reed canary grass is growing along the left bank of the river.

Figure 14. Looking from the south bank down a steep and inaccessible slope.

General Characterization of Upland Areas

The upland areas within the survey are generally characterized as disturbed and developed, and includes a high daily volume of traffic. The north side of the bridge (in the Town of Topsham) consists primarily of paved, impermeable surfaces with residential and commercial development. Tetra Tech biologists did, however, note a small wooded drainage area with black locust (*Robinia pseudoacacia*) and sugar maple (*Acer saccharum*) as the dominant trees, and Japanese knotweed (*Polygonum cuspidatum*) and Japanese barberry (*Berberis thunbergii*) in the understory (Figure 15). NLEB roost trees identified in this area are described in the section below.

The south side of the bridge (in the Town of Brunswick) is similarly disturbed, developed, and includes a high daily volume of traffic, with primarily commercial and post-industrial development present. Tetra Tech assessed the landscaped recreational area immediately to the east of the bridge and characterized it as having little to no wildlife value, with only invasive and ornamental plantings and no natural vegetation communities (Figures 16–18).

Figure 15. Looking east from Route 201/Main Street towards drainage area. Surveyors observed trash and debris in the drainage area, steady traffic, and traffic-related noise along the right-of-way.

Figure 16. Looking northeasterly towards the Frank J. Wood Bridge (#2106) and the Seadog Brewing Company. This small, landscaped park with sparse ornamental trees has very little habitat value for bats and other wildlife.

Figure 17. Looking southwesterly towards Fort Andross Mill.

Figure 18. Looking northeasterly towards the Androscoggin River at disturbed habitat along a steep embankment to the east of the Frank J. Wood Bridge (#2016). Very little habitat value for bats and other wildlife is present.

Potential Northern Long-Eared Bat Roost Trees

Tetra Tech identified several trees within the project area that could potentially serve as roost trees for NLEB during the summer roosting season. All of these trees were located on the north side of the bridge (in the Town of Topsham) and to the east of Route 201/Main Street (Figures 19–24). In addition, Tetra Tech inspected the bridge, where feasible, for signs of bat use (Figures 25 and 26). Completed field forms are included in Appendix A.

Figure 19. Small drainage area on east side of Route 201/Main Street behind 11 Main Street. This large multiple-stem (each stem approximately 30 inches diameter at breast height [dbh]), deeply furrowed black locust (*Robinia pseudoacacia*) is a potential roost tree for northern long-eared bat. Note: black locust is a Maine Natural Areas Program potential or probable invasive species.

Figure 20. Small drainage area on east side of Route 201/Main Street behind 11 Main Street. This dead stem (snag) of a multiple-stem black locust with cavities (approximately 30 inches dbh) is a potential roost tree for NLEB. The immediate habitat is small and marginal for NLEB, but flight corridors are available that connect to more contiguous forest habitat.

Figure 21. Small drainage area on east side of Route 201/Main Street behind 11 Main Street. This double-stem black locust (each stem approximately 12 inches dbh) is a potential NLEB roost tree.

Figure 22. Small drainage area on east side of Route 201/Main Street behind 11 Main Street. This triple-stem sugar maple (each stem approximately 12 inches dbh) is a potential NLEB roost tree.

Figure 23. Drainage area between Route 201/Main Street and Bowdoin Mill Island. This large, multiple-stem (each stem approximately 20 inches dbh) red maple is a potential NLEB roost tree.

Figure 24. Drainage area between Route 201/Main Street and Bowdoin Mill Island. Close up of red maple bark exhibiting flaking characteristic required by NLEB.

Figure 25. Looking southerly from under the bridge at bridge pier and underneath bridge deck. No guano deposits or staining were visible. Bridge does not mimic “cave-like” atmosphere.

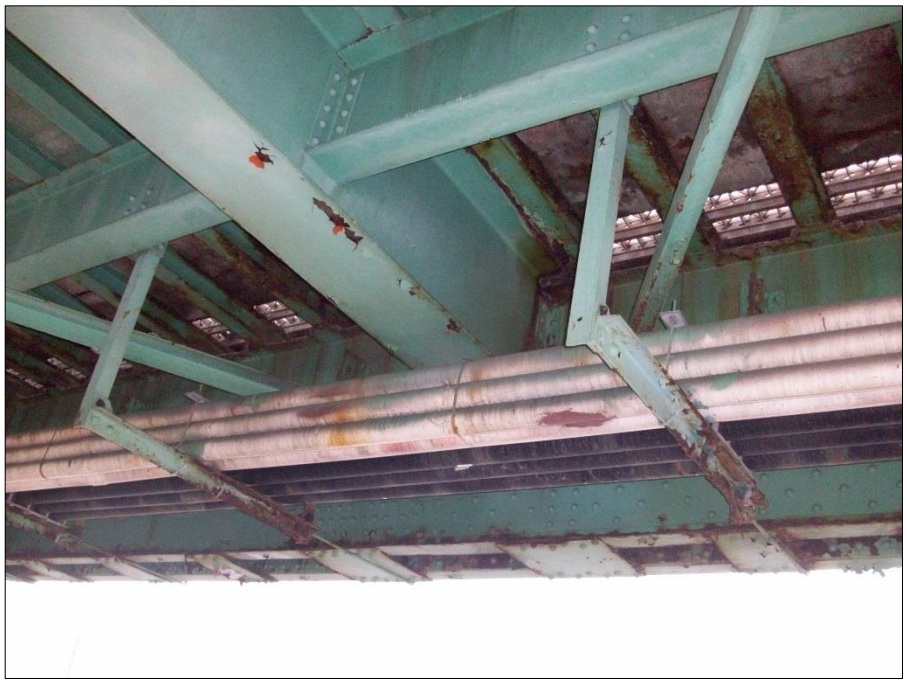

Figure 26. Looking up at bridge deck. No guano deposits or staining were visible.

CONCLUSION

The natural resource assessment survey completed for the Project supports one emergent wetland, some disturbed upland habitat, and several potential roost trees for NLEB. No potential vernal pools or accessible coastal wetlands were identified in the Project area.

The emergent wetland is likely the result of a concrete dam that may have been constructed to regulate the flow of drainage from the Bowdoin Mill Island parking area and adjacent businesses. Anecdotal reports and aerial imagery indicates that this wetland may be inundated with water from the Androscoggin River at certain times of year. Development and disturbance limits the likelihood of any vernal pools existing in the Project area surveyed, and the ubiquitous amount of ledge likely precludes the presence of coastal wetlands.

The disturbed upland habitats consists primarily of ornamental vegetation and invasive species and are unlikely to provide much habitat value for wildlife. However, Tetra Tech identified several trees on the north side of the bridge that may potentially provide summer roosting habitat for NLEB. Research suggests that NLEB are variable in their selection of roost trees in terms of species, size, and decay state, but generally prefer areas with some canopy cover (USFWS 2014). Although the immediate surrounding upland habitat is mostly disturbed, at a landscape scale NLEB and other bats could use this area for summer roosting since available flight corridors (e.g. along the river) provide connectivity to more contiguous areas of forested habitat, several of which are protected from development.

REFERENCES

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Ward, A.E. 1999. Maine's Coastal Wetlands: I. Types, Distribution, Rankings, Functions and Values. Prepared by NOAA Coastal Management Fellow for Maine Department of Environmental Protection, Bureau of Land & Water Quality, Division of Environmental Assessment. Available at http://www.maine.gov/dacf/mcp/downloads/wetlands/mainescoastalwetlands_typesfunctionsvalues_ward1999.pdf.

APPENDIX A. COMPLETED FIELD SURVEY FORMS

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: MDOT - Main St - Androscoggin River City/County: Topsham / Sagadahoc Sampling Date: 11/10/15

Applicant/Owner: Maine DOT State: ME Sampling Point: VEG1a

Investigator(s): NJ - ML Section, Township, Range:

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 3%

Subregion (LRR or MLRA): Lat: 43.922064 Long: -69.965064 Datum:

Soil Map Unit Name: HrC Hollis fine sandy loam NWI classification: PEMICOn

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

- Parking Lot Drainage Depression - Concrete dam with H_2O overflow to small emergent WL
- Under 6+ feet of H_2O in Spring

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ✓ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 1-3"
Water Table Present?	Yes _____	No _____	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No _____	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Perched Area on bedrock on river bank

VEGETATION – Use scientific names of plants. Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. Alnus incana	5%	No	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	5% = Total Cover		
Herb Stratum (Plot size: _____)			
1. Phalaris arundinacea	95%	Y	FACW
2. Typha latifolia	2%	N	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	100%	—	—	—	—	Sandy Muck	
Rock								Cobbles on bedrock

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ✓ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bedrock

Depth (inches): 2"

Hydric Soil Present? Yes ✓ No ____

Remarks:

Thin layer of muck over bedrock

Standard MaineDOT Information/ F&V form

Maine DOT Functional assessment:

1. Town: Topsham	2. Route: US-201	3. PIN: 22603.00
4. Wetland/Line ID: VE01a	5. Cowardin Class: PEM1C0n	6. Stationing/Location:
7. Dominant Vegetation: Phalaris arundinacea		8. Wetland Morphology: HGM type Riverine

9. Notes:

10. FVA Table:

Impacted area (survey area w/in ~40 feet of road edge):

F/V	GRD	FFA	FSH	STR	NRRT	PE	SSS	WH	REC	ESV	U/H	VQA	ES*
Occurs:					✓		✓						
Principal:					✓		✓						

Whole wetland (if wetland extends beyond survey area):

F/V	GRD	FFA	FSH	STR	NRRT	PE	SSS	WH	REC	ESV	U/H	VQA	ES*
Occurs:													

11. Is this wetland part of larger complex: ✓ Yes ____ No

Describe:

Drainage to Androscoggin River

12. Impact Notes/Photos:

13. Wetlands of Special Significance Observations (not applicable for streams):

____ Observed or known to contain an S1 or S2 Community (identify:_____).*

____ Observed or known to contain Significant Wildlife Habitat (identify:_____).

____ Within 250 feet of a coastal wetland.

____ Within 250 feet of the normal high water line, and within the same watershed, of any lake or pond classified as GPA under 38 MRSA, Sec. 465-A.

____ Contains at least 20,000 square feet of aquatic vegetation, emergent marsh vegetation or open water, unless result of an artificial pond or impoundment.

____ Is or contains peatlands.

✓ Within 25 feet of a river, stream or brook.

See additional Photographic Record attachment.

**The scope of this review did not include a search for rare, threatened or endangered species/habitats, or a review of existing RTE data available from natural resource agencies (e.g. MDIF&W, USFWS, NMFS, etc.).*

Applicable ACOE Paired Plot: ✓ Completed for this Wetland

____ Not Completed for this Wetland

GENERAL ~~APPENDIX A~~
~~PHASE 1 SUMMER~~ HABITAT ASSESSMENTS

NLEB
~~INDIANA BAT~~ HABITAT ASSESSMENT DATASHEET

Project Name: MDOT 20467.00 TOPSHAM-BRUNSWICK BRIDGE #2016 Date: 11/11/2015

Township/Range/Section: BRUNSWICK & TOPSHAM, ME

Lat Long/UTM/ Zone: -69.9661, 43.9206

Surveyor: MAO LIN, NICC JOHNSON (TETRA TECH, INC)

Brief Project Description

BRIDGE REPAIR WITH ASSESSMENT OF SURROUNDING HABITAT

Project Area

	Total Acres	Forest Acres	Open Acres
Project	N/A	N/A	N/A

	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing
Proposed Tree Removal (ac)	UNK	UNK	UNK

Vegetation Cover Types

Pre-Project	Post-Project
BLACK LOCUST, RED MAPLE, SUGAR MAPLE W/IN DRAINAGE AREAS. MIXED INVASIVE PLANTS ORNAMENTALS	

Landscape within 5 mile radius

Flight corridors to other forested areas?

YES - FORESTED AREAS ALONG ANDROSCOGGIN RIVER

Describe Adjacent Properties (e.g. forested, grassland, commercial or residencial development, water sources)

LARGELY RESIDENTIAL WITH SOME COMMERCIAL DEVELOPMENT

Proximity to Public Land

What is the distance (mi.) from the project area to forested public lands (e.g., national or state forests, national or state parks, conservation areas, wildlife management areas)?

COW ISLAND (BRUNSWICK TOPSHAM LAND TRUST), ANDROSCOGGIN RIVER SCENIC AREA (MDOT), COOMBS PROPERTY (BRUNSWICK TOPSHAM LAND TRUST) ARE ALL WITHIN 2 MILES WITH CORRIDORS

GENERAL ~~APPENDIX A~~
~~PHASE I SUMMER~~ HABITAT ASSESSMENTS

Use additional sheets to assess discrete habitat types at multiple sites in a project area
Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same

Sample Site Description	NEAR 11 MAIN ST. TOPSHAM
Sample Site No.(s): 1	
DISTURBED, WOODED, DRAINAGE AREA	

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources: ADJACENT TO ANDROSCOGGIN
	?	?	?	SMALL DRAINAGE DITCH
Pools/Ponds (# and size)		Open and accessible to bats?		BOX CULVERT W/ POOL
				PLASTIC CULVERT
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81=100%
	4	1	6	
Dominant Species of Mature Trees	BLACK LOCUST, SUGAR MAPLE			
% Trees w/ Exfoliating Bark	5			
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
			5	
No. of Suitable Snags		1		

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR ~~INDIANA BATS~~? NLEB YES, BUT MARGINALLY

Additional Comments:
SEE PHOTO LOG

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

GENERAL ~~APPENDIX A~~
~~PHASE 1 SUMMER~~ HABITAT ASSESSMENTS

Use additional sheets to assess discrete habitat types at multiple sites in a project area
Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same

Sample Site Description	DRAINAGE ARE B/W RT. 201/MAIN ST AND BOWDOIN MILL ISLAND
Sample Site No.(s): 2	
DISTURBED DRAINAGE AREA WITH STANDING WATER, BEDROCK, SOME VEGETATION	

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources: DRAINAGE - MAPS + AERIAL PHOTOGRAPHY INDICATE THAT WATER MAY HAVE ONCE FLOWED AROUND BOWDOIN MILL ISLAND,
	?	?	?	
Pools/Ponds (# and size)		Open and accessible to bats?		
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
	1	1	1	
Dominant Species of Mature Trees	RED MAPLE, LOCUST SP.			
% Trees w/ Exfoliating Bark	1			
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
		2	4	
No. of Suitable Snags		0		

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR ~~INDIANA BATS~~ NLEB? NO

Additional Comments:
SEE PHOTO LOG

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

GENERAL ~~APPENDIX A~~
~~PHASE 1 SUMMER~~ HABITAT ASSESSMENTS

Use additional sheets to assess discrete habitat types at multiple sites in a project area
Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same

Sample Site Description	SMALL PARK EAST OF FRANK J. WOOD BRIDGE IN BRUNSWICK
Sample Site No.(s): 3	
SPARSE ORNAMENTAL TREES, LANDSCAPED, STEEP RIVER BANK	

Water Resources at Sample Site				
Stream Type	Ephemeral	Intermittent	Perennial	Describe existing condition of water
(# and length)	0	0	RIVER	sources:
Pools/Ponds		Open and accessible to bats?		ALONGSIDE ANDROSCOGGIN
(# and size)				
Wetlands	Permanent	Seasonal		
(approx. ac.)				

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
	1	1	1	
Dominant Species of Mature Trees	N/A			
% Trees w/ Exfoliating Bark	N/A	N/A	N/A	
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	1			
No. of Suitable Snags		0		

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR ~~INDIANA BATS~~? NLEB NO

Additional Comments:
SEE PHOTO LOG

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees, water sources

~~APPENDIX D~~

~~PHASE 4 RADIO-TRACKING~~

USFWS ~~INDIANA BAT~~ NLEB POTENTIAL ROOST DATASHEET

Biologists (Full Name): HAO LIN, NICK JOHNSON **Date:** 11/11/2015

UTM: Zone_____ **Easting** _____ **Northing**_____ ***OR***

LAT_____ **LONG**_____ SEE GPS DATA FILE

Property Owner: UNKNOWN **Phone#** UNKNOWN

State ME **County** SAGADAHOC **Site #** 1

Roost # 1 **Roost Name:** N/A

Roost Tree Data

Species: BLACK LOCUST **Live** ✓ **Snag** ✓ **Other** __

(if other, explain) MULTIPLE STEMS WITH ONE SNAG

DBH (in or cm) ~30 IN EACH **Total Height (ft or m)** ~60 FT

Height of roost area (if known) UNKNOWN **Dist. from capture site** N/A

Roost position aspect (deg) UNKNOWN

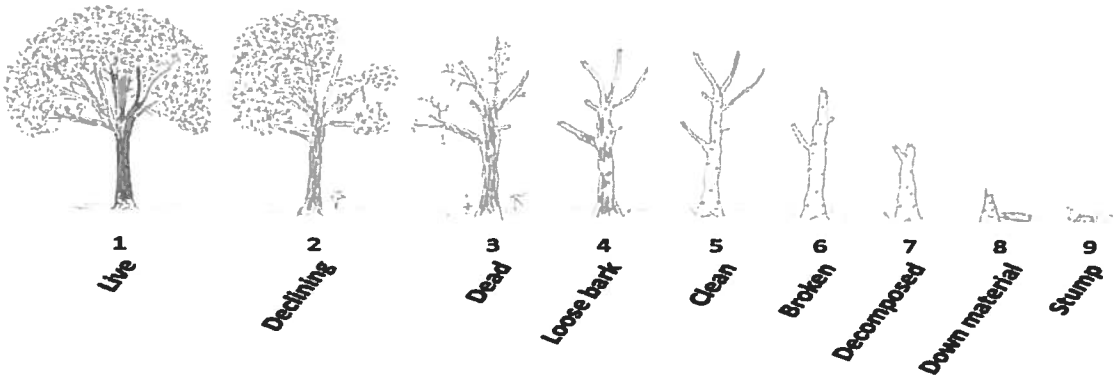
Exfoliating bark on bole (%) 100% **Describe: sloughing** __ **platy** ✓ **tight** __

Cavities present? Y **If so, describe:** SEE PHOTO LOG

Roost Decay State: 1 2 3 4 5 6 7 8 9 Other

LIVE PORTION = 1

SNAG PORTION = 6



~~APPENDIX D~~

~~PHASE 4 RADIO-TRACKING~~

NLEB POTENTIAL

USFWS ~~INDIANA BAT~~ ROOST DATASHEET

Biologists (Full Name): MAULIN, NIC JOHNSON **Date:** 11/11/2015

UTM: Zone_____ **Easting** _____ **Northing**_____ ***OR***

LAT_____ **LONG**_____ SEE GPS DATA FILE

Property Owner: UNKNOWN **Phone#** UNKNOWN

State ME **County** SAGADAHOC **Site #** 1

Roost # 2 **Roost Name:** N/A

Roost Tree Data

Species: BLACK LOCUST - DOUBLE STEMS **Live** ✓ **Snag** __ **Other** __

(if other, explain) _____

DBH (in or cm) 12 IN EACH STEM **Total Height (ft or m)** ~ 50 FT

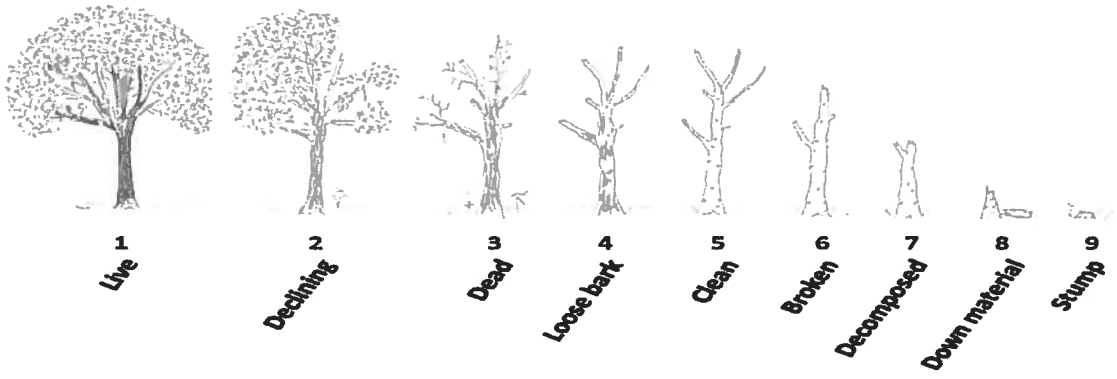
Height of roost area (if known) UNKNOWN **Dist. from capture site** N/A

Roost position aspect (deg) UNKNOWN

Exfoliating bark on bole (%) 100% **Describe: sloughing** __ **platy** ✓ **tight** __

Cavities present? N **If so, describe:**_____

Roost Decay State: (1) 2 3 4 5 6 7 8 9 **Other**



~~APPENDIX D~~

~~PHASE 4 RADIO-TRACKING~~

NLEB POTENTIAL

USFWS ~~INDIANA BAT~~ ROOST DATASHEET

Biologists (Full Name): MADELIN, NELL JOHNSON **Date:** 11/11/2015

UTM: Zone____ **Easting**____ **Northing**____ ***OR***

LAT____ **LONG**____ SEE GPS DATA FILE

Property Owner: UNKNOWN **Phone#** UNKNOWN

State ME **County** SAGADAHOC **Site #** 1

Roost # 3 **Roost Name:** N/A

Roost Tree Data

Species: SUGAR MAPLE - 3 STEMS **Live** ✓ **Snag** __ **Other** __

(if other, explain) ____

DBH (in or cm) 12 IN EACH STEM **Total Height (ft or m)** ~ 50 FT

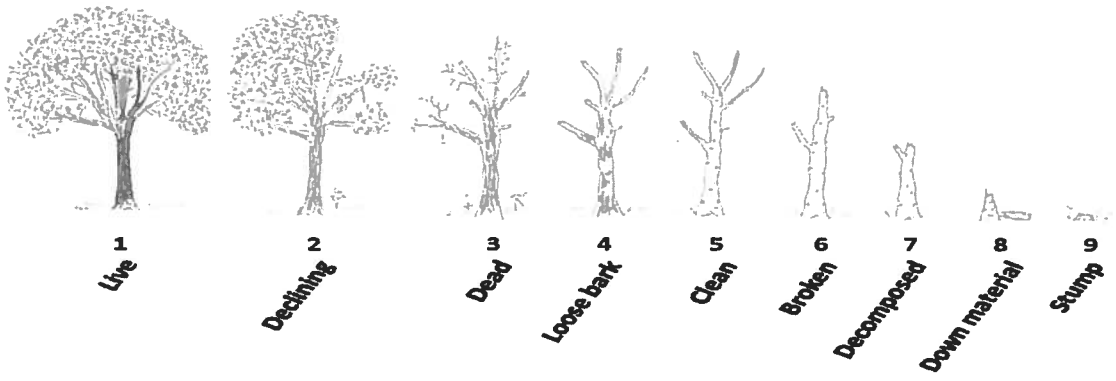
Height of roost area (if known) UNKNOWN **Dist. from capture site**____

Roost position aspect (deg) UNKNOWN

Exfoliating bark on bole (%) 50 **Describe: sloughing** __ **platy** ✓ **tight** __

Cavities present? ✓ **If so, describe:**____

Roost Decay State: (1) 2 3 4 5 6 7 8 9 **Other**



~~APPENDIX D~~
~~PHASE 4 RADIO-TRACKING~~

USFWS ~~INDIANA BAT~~ NLEB POTENTIAL ROOST DATASHEET

Biologists (Full Name): MADELIN, NELL JOHNSON **Date:** 11/11/2015

UTM: Zone____ **Easting**____ **Northing**____ ***OR***

LAT____ **LONG**____ SEE GPS DATA

Property Owner: UNKNOWN **Phone#** UNKNOWN

State ME **County** SAGADAHOC **Site #** 2

Roost # 1 **Roost Name:** N/A

Roost Tree Data

Species: RED MAPLE **Live** ✓ **Snag** __ **Other** __

(if other, explain) ____

DBH (in or cm) 20" INCH STEM **Total Height (ft or m)** ~50 FT

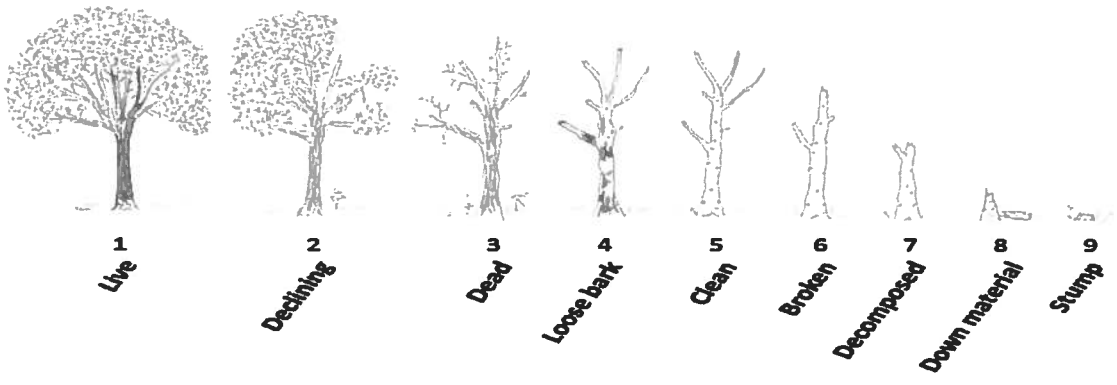
Height of roost area (if known) UNKNOWN **Dist. from capture site** N/A

Roost position aspect (deg) UNKNOWN

Exfoliating bark on bole (%) 50 **Describe: sloughing** __ **platy** ✓ **tight** __

Cavities present? N **If so, describe:**____

Roost Decay State: (1) 2 3 4 5 6 7 8 9 **Other**



~~APPENDIX C~~: Bridge/Structure Inspection Form

Bridge Inspection Form

This form will be completed and submitted to the District Environmental Manager by the Contractor prior to conducting any work below the deck surface either from the underside, from activities above that bore down to the underside, or that could impact expansion joints, from deck removal on bridges, or from structure demolish. Each bridge/structure to be worked on must have a current bridge inspection. Any bridge/structure suspected of providing habitat for any species of bat will be removed from work schedules until such time that the DOT has obtained clearance from the US Fish and Wildlife Service, if required. Additional studies may be undertaken by the DOT to determine what species may be utilizing structures prior to allowing any work to proceed.

DOT Project #	Water Body	Date/Time of Inspection
MAINE # 2016	ANDROSCOGGIN RIVER	11/11/2015 / 12 PM

Route:	County:	Federal Structure ID:	Bat Indicators Check all that apply. Presence of one or more indicators is sufficient evidence that bats may be using the structure.				
			Visual	Sound	Droppings	Staining	Notes: (e.g.,number & species of bats, if known)
201	SAGADAHOC / CUMBERLAND						NO EVIDENCE OF BATS USING THE BRIDGE

Areas Inspected (Check all that apply)

Bridges		Culverts/Other Structures		Summary Info (circle all that apply)			
All vertical crevices sealed at the top and 0.5-1.25" wide & ≥4" deep	N/A	Crevices, rough surfaces or imperfections in concrete	N/A	Human disturbance or traffic under bridge/in culvert or at the structure	High	Low X	None
All crevices >12" deep & not sealed	N/A	Spaces between walls, ceiling joists	N/A	Possible corridors for netting	None/poor	Marginal	excellent X
All guardrails	N/A			Evidence of bats using bird nests, if present?	Yes	No X	
All expansion joints	N/A						

Spaces between concrete end walls and the bridge deck	X						
Vertical surfaces on concrete I-beams	X						

Inspection Conducted By: MAO LIN, TETRA TECH, INC **Signature(s):**

District Environmental Use Only: Date Received by District Environmental Manager: _____

DOT Bat Inspection Form Instructions

1. Inventories must be completed prior to conducting any work below the deck surface on all bridges that meet the physical characteristics described in the Programmatic Informal Consultation, regardless of whether inventories have been conducted in the past. **Due to the transitory nature of bat use, a negative result in one year does not guarantee that bats will not use that structure in subsequent years.**
2. Contractors must complete this form no more than seven (7) business days prior to initiating work at each bridge/structure location. Legible copies of this document must be provided to the District Environmental Manager within two (2) business days of completing the inspection. Failure to submit this information will result in that structure being removed from the planned work schedule.
3. Any bridge/structure suspected of providing habitat for any species of bat will be removed from work schedules until such time that the DOT has obtained clearance from the USFWS, if required. Additional studies may be undertaken by the DOT to determine what species may be utilizing each structure identified as supporting bats prior to allowing any work to proceed.
4. Estimates of numbers of bats observed should be place in the Notes column.
5. Any questions should be directed to the District Environmental Manager.