TOWN OF LINCOLNVILLE
493 HOPE ROAD
LINCOLNVILLE, MAINE 04849
TEL: 207-763-3555 FAX: 207-763-4545
www.town.lincolnville.me.us

March 31, 2016

Division of Purchases
Attn: Scott Laflamme, RFP Coordinator
Burton M. Cross Building
111 Sewall Street, 4th Floor
9 State House Station
Augusta, ME 04333-0009

RE: RFP# 201601017 - Stream Crossing Public Infrastructure Improvements
Coleman Pond Outlet/Slab City Road - Lincolnville, ME

Dear Mr. Laflamme:

Enclosed please find the Town of Lincolnville's Stream Crossing Public Infrastructure Improvements grant application.

The Town is seeking a $95,000 grant to assist in replacing the inadequate culvert that carries the water from the outlet of Coleman Pond under the Slab City Road. The replacement of this culvert will open up 3.1 miles of stream habitat as well as the 225 acre Coleman Pond and thus will allow for barrier free fish passage from the Atlantic Ocean into Coleman Pond and its tributaries, a total distance of approximately 4.5 miles.

The Town of Lincolnville is very pleased to have the support in this effort of the U.S. Fish and Wildlife Service, Trout Unlimited, the Nature Conservancy, and the Coleman Pond Association.

We look forward to hearing from you. If you have any questions please contact me. Thank you for considering this grant request.

Sincerely,

David B. Kinney
Town Administrator

cc: Alex Abbott, U.S. Fish and Wildlife Service
Jeffrey Reardon, Trout Unlimited
Ben Mathews, Nature Conservancy
Whitney Oppersdorff, Coleman Pond Association

APPENDIX 1

NOTE: Please refer to the full RFP instructions before completing this application. Specific details and explanations are included on pages 7 thru 9 of the application.

Maine Department of Environmental Protection
Request for Proposals for Stream Crossing Public Infrastructure Improvement Projects
Proposal Application Form - 2016
RFP# 201601017

I. Applicant Information

Applicant Name			
Town of Lincolnville, Maine			
Applicant Mailing Address **493 Hope Road**	City **Lincolnville**	State **ME**	Zip **04849**
Applicant Phone # **207-763-3555**	Applicant Email Address **tadmin@town.lincolnville.me.us**		

II. Agent/Consultant Information, if applicable

Agent Name			
David B. Kinney, Town Administrator			
Agent Mailing Address **493 Hope Road**	City **Lincolnville**	State **ME**	Zip **04849**
Agent Phone # **207-763-3555**	Agent Email Address **tadmin@town.lincolnville.me.us**		

III. Culvert/Stream Crossing Location (please attach a map(s) of the project location and a photo of the existing culvert/crossing to this application as described in Section IV):

Municipality or Unorganized territory where project will take place: **Lincolnville**	GPS Location in Digital Format: **Latitude 44.304082 Longitude -69.056843** (Available on google maps by clicking the location on the map)

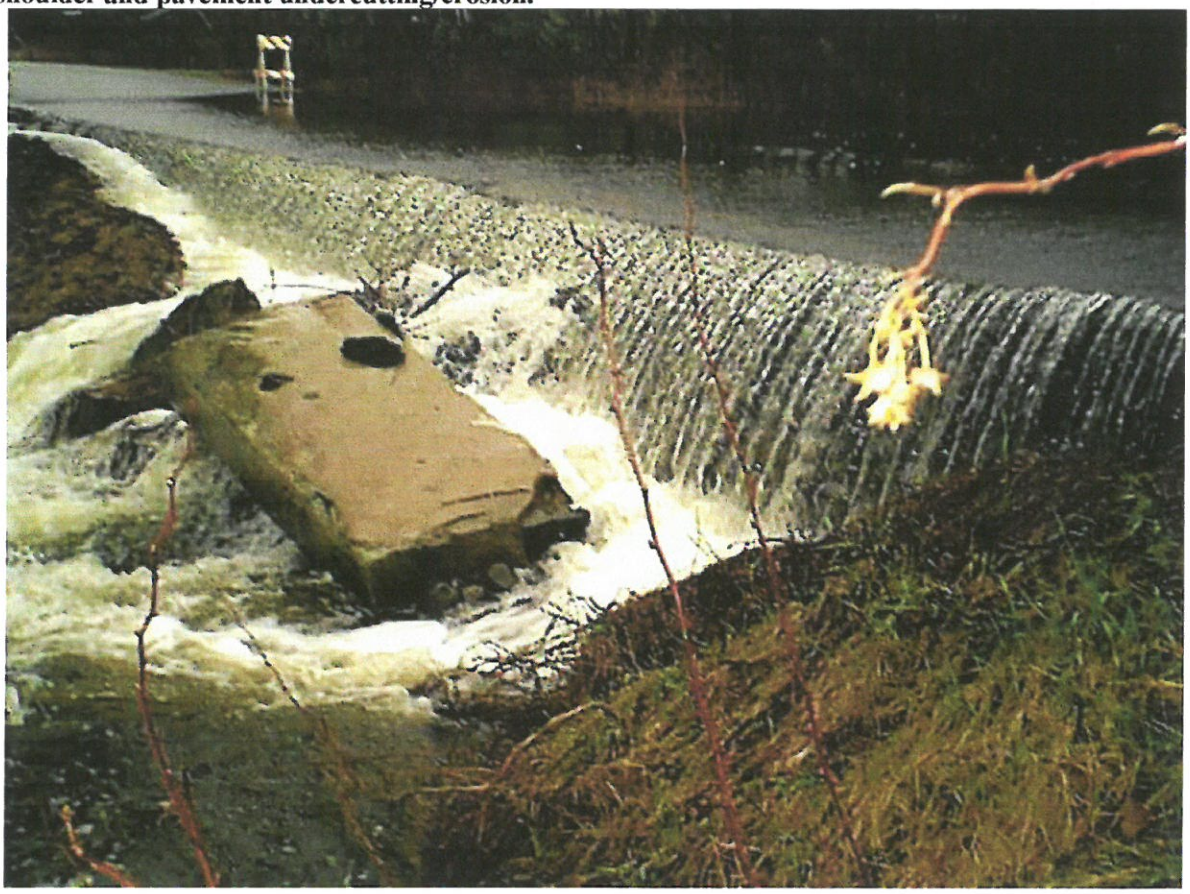
Culvert/crossing location. Name of the road on which the culvert/crossing is located and distances to the nearest road intersections.
Slab City Road, 0.2 miles west of N. Chester Dean Road; 1.7 miles west of State Route 173 (Beach Road); 1.59 miles east of State Route 52 (Belfast Road).

Watershed Location: List the name of the stream, brook, or the water body the culvert is located on, and the downstream, brooks streams, rivers, lakes, ponds, bays, etc.
Coleman Pond Outlet. Coleman Pond Outlet flows into Black Brook 800 feet below the culvert. Black Brook flows into the Ducktrap River .85 miles below that, then flows 3.5 miles to Penobscot Bay.

Required Maps and Photos: Include the following photos and maps (in color if possible).
X Map marking culvert/crossing location and showing road names.
X Map showing satellite view with culvert/crossing location marked.
☐ Optional - Map showing culvert/crossing location on Maine Stream Habitat Viewer.
Note – All photos should be dated.
X Photo(s) showing condition of culvert/crossing.
X Photo(s) showing downstream side of culvert/crossing (including water level at end of culvert).
X Photo(s) showing inlet side of culvert/crossing (including water level at end of culvert/crossing).
X Photo(s) showing safety conditions such as sinkholes, collapsing structures, erosion undermining, etc.
X Photo(s) showing downstream erosion impacts, if any.

IV. Scoring Criteria for Public Infrastructure Information: (25 Points total):

Has the culvert/crossing washed out, flooded, overtopped the road, or failed in the past 20 years due to storm events? If yes, please describe how often, and the approximate dates of culvert/crossing failure. (Include pictures if available.) **Stormwater from various storm events has overtopped this road a number of times in recent years including but not limited to: April 2005, the Patriot's Day Storm in April 2007 and an April 5/6, 2009 rain event. Below is picture from April 2005 shows water overtopping the road, the dislocated stone headwall (which has been reset) and the eroded/missing shoulder and pavement undercutting/erosion.**



Water overtopping Slab City Road at Coleman Pond Outlet (April 2005)

What is the current condition of the culvert/crossing?
The current condition of the culvert and the crossing is best described as minimally functional and structurally compromised due to rusting and age. The culvert provides insufficient capacity for current and anticipated future storm events. The culvert should be replaced prior to the planned 2017 resurfacing of Slab City Road.

Discuss current safety concerns of the existing culvert/crossing? **At this crossing location the roadway shoulders are narrow and if a vehicle were to exit the road shoulder no protection exists to prevent the vehicle from entering the stream. Additionally when the water backs up behind the road due to the insufficient culvert capacity Mass Pike (a dead end private road serving six residences) is submerged underwater, see photo on next page, thus cutting off the residents from being able to conduct normal everyday activities and from town being able to provide emergency services an efficient manner.**

Mass Pike (flooded, April 2005)

In how many years from now do you estimate the culvert/crossing would likely have a complete failure, a complete collapse, or total washout?

☐1 year ☐3 years ☐5 years ☐10 years ☐15 years ☐20 years ☐25 years

Has the culvert/crossing been inspected by the Maine Department of Transportation? If so, what is the date of the last inspection and condition classification by Maine DOT? **To the best of our knowledge MaineDOT has not inspected this culvert/crossing.**

Discuss what sort of impacts would occur if the culvert/crossing were to fail? For instance, are there critical public services (fire or police station, hospital, school, public works facility) located on this road that would be cutoff or required to detour? **If this culvert/crossing where to fail fortunately no one would be completely cutoff from accessing critical public services. Depending on the type of service required certain delays in providing public services would be inevitable. For example, if a fire where to occur just west of the crossing a fire truck responding from the Lincolnville Beach Fire Station would have to travel 10.1 miles versus 3.2 miles. Slab City Road serves as a "short cut" between to State Routes (52 and 173) particularly by inland residents accessing the ferry to Islesboro for work. Motorists using this road save approximately four miles of travel and avoid travelling through Lincolnville Center and its associated 25 MPH zone.**

If the culvert/crossing fails would homes, businesses, or infrastructure be cut off or required to detour?

#Cut off: 0 year round homes
#Cut off: 0 seasonal homes
#Cut off: 0 businesses (list type and size)
#Cut off: 0 infrastructure (list type)
#Cut off: 0 other (list)

How many miles, and how many of each would be required to detour?

80 year round homes required to detour 10.4 miles
28 seasonal homes required to detour 10.4 miles
1 businesses (list type and size) required to detour 10.4 miles (25 unit self-storage facility)
0 infrastructure (list type) required to detour _____ miles
25 other (list) required to detour 4 additional miles (estimate of daily ferry users over location)

Private roads only: If the culvert or crossing is located on a private road and directly impacts a lake or pond, is public access to the lake or pond prohibited or highly restricted to foot access or carry in only? **N/A**

What is the annual maintenance fee per landowner per year for the private road? **N/A**

V. Scoring Criteria for Proposed Culvert/Crossing Cost & Budget Information (25 Points total):

Existing culvert/crossing material: Circle One (Plastic pipe, concrete pipe, corrugated metal pipe, concrete box culvert, stone/granite culvert, pipe arch, bridge, or Other type (describe):

Length:	Diameter:	Width:	Height:	Approximate Age:
28 feet +/-	**4 feet**	**4 feet**	**4 feet**	**35 years**

Proposed culvert/crossing material: Circle One (Plastic pipe, concrete pipe, corrugated metal pipe, concrete box culvert, stone/granite culvert, pipe arch, bridge, or Other type (describe): **Open bottom arch culvert**

Length:	Diameter:	Width:	Height:	Amount Requested:
36 feet	**N/A**	**18 feet**	**5'9"**	**$95,000**

Population of town, group or association funding project: **2.164 (2010 census)**	Total cost of project (including in kind costs): **$183,500**

Discuss approximate funds spent on physical repairs within the last 10 years on the culvert/crossing (exclude normal maintenance costs such as painting). **Recognizing that this crossing was in need of replacement minimal maintenance has been done to the structure in the last 10 years. What work has been done has consisted of reconstructing the shoulders after overtopping events and resetting the stone headwall when dislocated. Shoulder repairs typically consist of several yards of gravel and or cold patch. The total cost of repairs in the last 10 years is estimated at $5,000.**

What are the estimated construction costs for the culvert/crossing replacement? Include estimated items for mobilization of equipment, erosion control and stream diversion, existing culvert removal, installation of the new culvert, permanent stabilization, and engineering design costs.

Mobilization	**$5,000**
Water, Sediment and Erosion Control	**$15,000**
Traffic Control, Detour setup, etc.	**$5,000**
Site Work (excavation, pipe removal/disposal, backfilling, pavement, guard rail, etc.)	**$50,000**
Assembled Pipe Arch with footings	**$65,000**
Stream Bed Reconstruction	**$4,000**
Engineering (8%)	**$11,500**
Environmental Permitting	**$3,500**
Contingency (15%)	**$24,500**
Total:	**$183,500**

Of the estimated total cost of the project the Town has matching fund commitments from the Nature Conservancy ($50,000) and George's River Trout Unlimited ($3,000). In-kind donations to date include U.S. Fish and Wildlife ($2,500) and Trout Unlimited ($1,500). If the $95,000 grant is awarded the Town has the remaining funds available for the project.

Do you have engineered design plans and construction specifications for the replacement culvert/crossing? If yes, describe who designed the plans, and when the plans were completed. **No, we have a preliminary design completed in March 2016 by a consultant for the U.S. Fish and Wildlife Service, see attached.**

What is the estimated construction schedule for the proposed project? Include estimated start and completion dates, and include any time of year restrictions from state or federal permitting agencies. Do you have permits? Yes, No, or Application Submitted

The final engineering design and the environmental permitting (NRPA and US Army Corps of Engineers permit) is to commence as soon as final funding is secured. The construction of the project will most likely commence on July 15, 2016 and be completed by October 2016 (to conform to environmental permit standards). We have initiated discussions for expedited review with U.S. Fish and Wildlife.

VI. Environmental Scoring Criteria for Proposed Culvert/Crossing Information (50 Points total): (See Section V.B. on pages 10-11 for more detail.)

Climate Resiliency (10 Points) Explain how the new culvert/crossing has been sized appropriately for the watershed. Discuss any watershed studies or hydrology studies that have been conducted, if any.

The watershed drainage area of 2.3 square miles suggests a bankful width of approximately 12 feet. However, local stream width measurements and site specific concerns (old mill remains) suggest a wider structure with an 18' span. In addition to appropriately sizing the

arch culvert to pass the 100 year flood, the structure will be constructed with footings below the level of potential scour and foot blocks will be armored with large rock.

Please describe what provisions for addressing climate resiliency were used/will be used in designing the replacement culvert/crossing. Will the design meet the 100 year flood criteria data, if not explain the rationale for not meeting this criteria. Discuss any watershed studies or hydrology studies that have been conducted, if any.

Hy-8 hydraulic analysis software, using USGS peak flow regression equations for small Maine streams (Lombard and Hodgkins, 2015) indicates a 100 year flood flow of 182 cfs. The structure will pass this flow with a water depth of 2.95' at the inlet and 3/35' at the outlet.

Habitat (25 Points) If the existing culvert/crossing was to be replaced, how much habitat (i.e., miles of stream, or acres of wetland habitat) would be opened up to fish passage and other aquatic life?

Upstream of the crossing are 3.1 miles of stream habitat and 225 acres of Coleman Pond.

List the type of fish, aquatic life, or wildlife affected by the project.

x☐ Brook Trout ☐Brown Trout ☐ Rainbow Trout ☐ Landlocked Atlantic Salmon

x☐Atlantic Salmon (present today) x ☐Atlantic Salmon (potential modeled habitat)

☐Rainbow Smelt x☐Alewives ☐Other:_____

X☐American Eel x ☐Sea-run Brook Trout ☐Sea-run Brown Trout

Has the presence of these fish been confirmed by Maine IF&W, Maine DMR, or US FWS? X Yes ☐No

Please list agency confirming and the species they have identified:

Is the existing habitat active spawning habitat today? If so, discuss. **Yes for Alewives**

Is the culvert identified by the Maine Stream Habitat Viewer or by an Agency as a Barrier? x☐ Yes ☐No	Barrier Identification **#11982**	**Type of Barrier Velocity barrier at high flows.**	Estimate how many months per year is Barrier a Full Barrier preventing any fish passage? **Two. (Spring high water—April & May)**
Is the Culvert undersized? **X**☐Yes ☐No	Width of Culvert: **4 feet**	Width of natural stream (not pool at culvert): **No good reference reach. Theoretical 12 feet. Stream widths are wider than that.**	

Is the new crossing/culvert 1.2 times the stream bed (bank full) width? If not, please explain the rationale for a smaller size. **Yes.**

How many miles would open upstream to the next Barrier? **No identified upstream barriers. 225 acre pond and 3.1 miles of tributary streams.**	How many miles downstream to the next Barrier? **No identified downstream barriers. 4.5 miles to Penobscot Bay via Black Brook and the Ducktrap River (a wild Atlantic Salmon river).**

Connectivity: Describe significant adjacent fisheries or habitats such as heritage ponds impacted by this project. Include distances from the project to these other areas.

Black Brook has mapped salmon spawning and rearing habitat for Atlantic salmon ~2,000 below Slab City Road and 99 units of modeled salmon rearing habitat. Limited amounts of modeled salmon rearing habitat are in two tributaries to Coleman Pond. Ducktrap River has 509 units of modeled salmon spawning habitat. Coleman Pond has 225 acres of documented alewife habitat. Black Brook and Coleman Pond Outlet were both known to support sea-run brook trout historically, and the Ducktrap River continues to support them.

Please provide other information about the proposed project that you believe is important:

With funding from NOAA-Fisheries and other sources, a new pool-and-weir fishway was constructed at the outlet of Coleman Pond in 2013. The target species was alewife, but the fishway would also pass Atlantic salmon and resident or sea-run brook trout. During periods of high flow the Slab City Road crossing represents a velocity barrier to returning fish.

APPENDIX 2

State of Maine
Department of Environmental Protection
Bureau of Land and Water Quality
DEBARMENT, PERFORMANCE and NON-COLLUSION CERTIFICATION
RFP# 201601017
2016 Grants for Stream Crossing Public Infrastructure Improvements

By signing this document I certify to the best of my knowledge and belief that the aforementioned organization, its principals, and any subcontractors named in this proposal:

a. *Are not presently debarred, suspended, proposed for debarment, and declared ineligible or voluntarily excluded from bidding or working on contracts issued by any governmental agency.*
b. *Have not within three years of submitting the proposal for this contract been convicted of or had a civil judgment rendered against them for:*
    i. *fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a federal, state or local government transaction or contract.*
    ii. *violating Federal or State antitrust statutes or committing embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;*
    iii. *are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or Local) with commission of any of the offenses enumerated in paragraph (b) of this certification; and*
    iv. *have not within a three (3) year period preceding this proposal had one or more federal, state or local government transactions terminated for cause or default.*
c. *Have not entered into a prior understanding, agreement, or connection with any corporation, firm, or person submitting a response for the same materials, supplies, equipment, or services and this proposal is in all respects fair and without collusion or fraud. The above mentioned entities understand and agree that collusive bidding is a violation of state and federal law and can result in fines, prison sentences, and civil damage awards.*

Failure to provide this certification may result in the disqualification of the Bidder's proposal, at the discretion of the Department.

Name: David B. Kinney		Title: Town Administrator
Authorized Signature:		Date: March 31, 2016

Restoration Plan Summary **Coleman Pond Outlet Brook Site #11982, Slab City Road, Lincolnville, Maine**

Document prepared by Alex Abbott, U.S. Fish and Wildlife Service Gulf of Maine Coastal Program

March 21, 2016

Narrative:

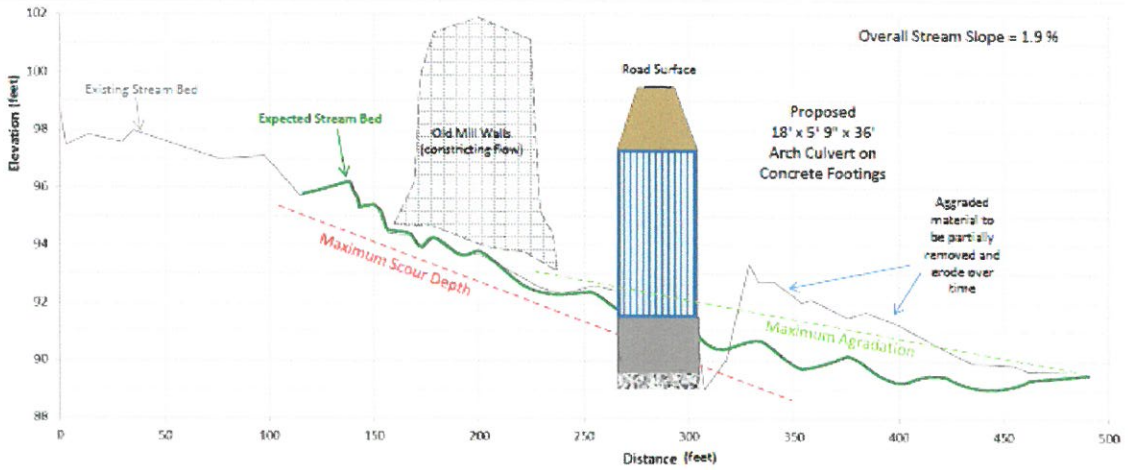
Crossing #11892 consists of one round 4' diameter corrugated metal culvert, providing insufficient capacity for the outlet stream of Coleman Pond, and presenting a barrier to aquatic organism passage. The stream has recently undergone restoration, with a new pool and weir fishway built in 2013 to provide access to alewife in particular, but which could be used by wild Eastern brook trout (resident or sea-run). At high flows, as when alewife migrate in spring to Coleman Pond, this crossing can present high velocities to returning fish. To restore the ability of this crossing to pass expected flood discharges while also improving aquatic organism passage, the crossing needs a substantially larger capacity structure. The new structure should have a natural bottom, be set at an appropriate stream bed elevation, and be sized to handle 100-year peak flows. An open-bottom structure of sufficient width will allow the stream bed to adjust naturally to accommodate movement of sediment and natural materials through the structure. An appropriate structure for the site is an open-bottom metal arch on concrete block footings. Removing this barrier to aquatic organism passage will better ensure alewife access to Coleman Pond, as well as to 0.17 miles of brook trout habitat.

With a 2.3 square mile drainage area, the crossing was initially estimated to require a bankfull stream width of almost 12 feet, yet a 20 foot field measurement was collected downstream, and though that measurement likely over-represents the stream width, it helps to inform the initial estimate. As no appropriate reference reach exists in the vicinity of the crossing, assessment of appropriate structure width focuses particularly on the ability of the proposed crossing to pass expected 100 year flood discharges. The overall slope of the stream in this area is 1.9%, and is affected at high flows by being constricted just upstream of the crossing by two remnant mill walls. If not limited by an undersized culvert, high flows may tend to scour substrate in an open-bottom crossing just downstream of this constriction such that the structure must be installed at a sufficiently low elevation to avoid potential problems of scour around its footings.

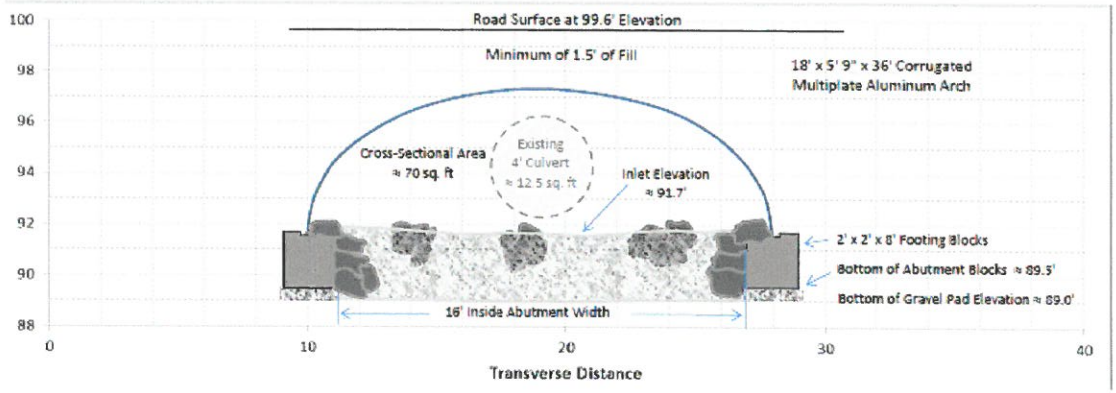
The proposed replacement structure will be a corrugated steel or aluminum arch with a span of 18 feet, a rise of 5 feet 9 inches, and a length of 36 feet, with a stream bed elevation of 91.7 feet at the inlet and 91.0 feet at the outlet providing a crossing slope of $\approx$ 1.9% and a cross-sectional area of approximately 70 square feet, or over five times the existing crossing capacity of 12.5 square feet. Analysis of likely peak flows in this watershed using HY-8 hydraulic analysis software indicates the proposed crossing will successfully pass more than the expected 100-year peak flow of 182 cfs. The bed of the proposed footings are to be set at approximately 89.5 feet in elevation, below the level of potential scour, and large rock will be used to armor the footer blocks to protect them from scour during large flow events. Additional large rock will be placed as roughness elements within the stream bed to provide alternative flow paths to improve passage of aquatic organisms.

Note: This document is meant to provide both general and specific guidance in the design and installation of a replacement crossing structure, but does not address all issues related to engineering, permitting and construction. All elevations are relative and established from an arbritrary starting point of 100'.

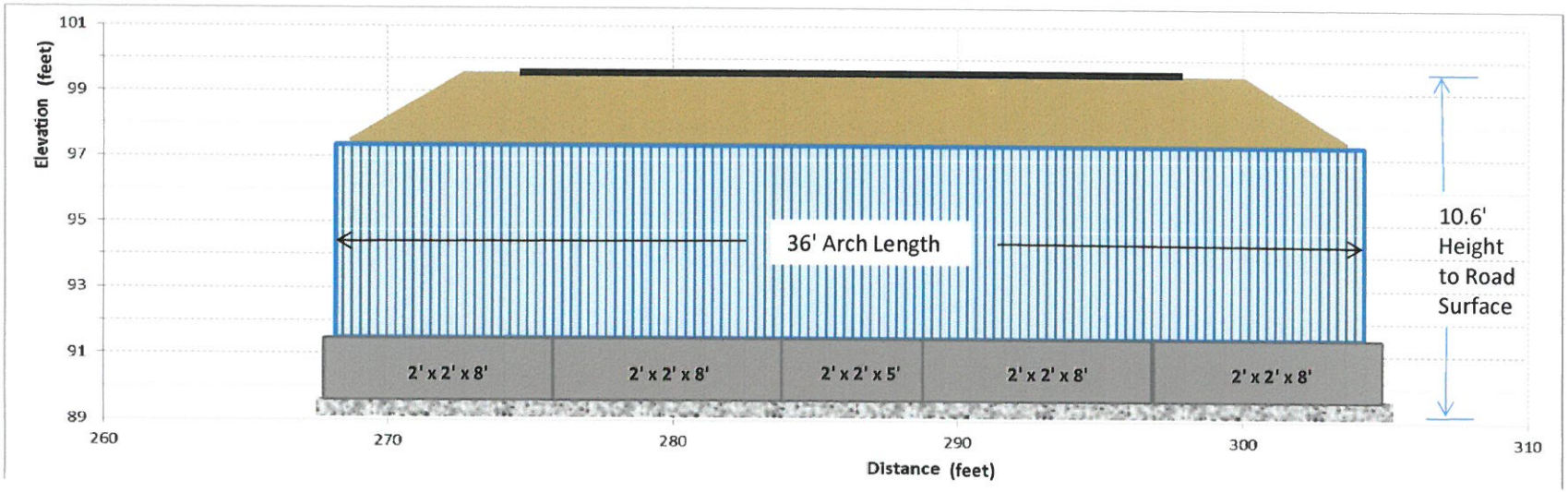
Proposed Profile View - Open-Bottom Arch on Pre-cast Concrete Block Footings



Proposed Arch - Inlet Elevation



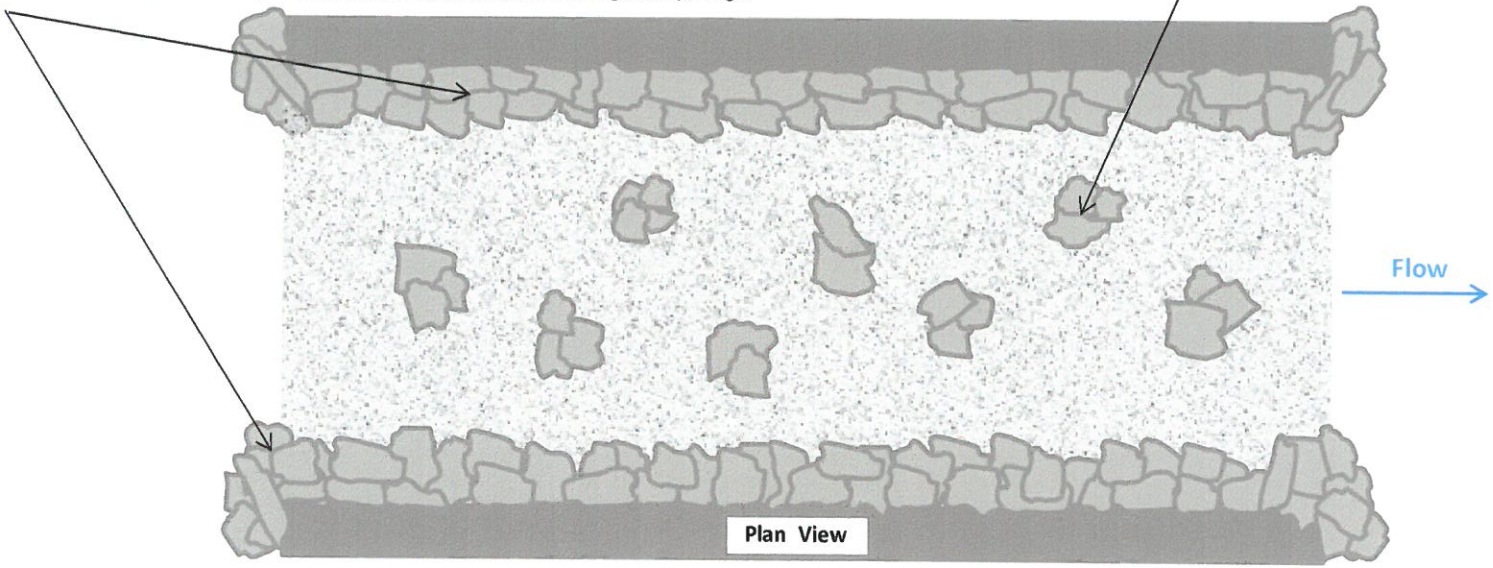
Proposed Arch and Abutment Elevations



Bed and Bank Schematic:

Banklines and bed features are composed of 12-18 inch (average intermediate dimension – not longest or shortest measure) competent, angular to sub-angular foundation rock. Banklines are meant to connect to the natural stream banks on both sides upstream and downstream to improve scour protection and terrestrial organism passage.

Bed roughness features provide alternative flow paths for aquatic organism passage, and are buried in the stream so that only their tops rise above.



USGS Basin and Stream Flow Statistics & Hydraulic Analysis

Attribute	Value	Units	Definition
Drainage Area	2.3	sqare miles	Area that drains to crossing
Wetlands	23.11	percent	Percentage of NWI storage
Elev	209.7	feet	Mean basin elevation
Precip	47.5	inches	Mean annual precipitation
Aquifer	0	percent	Percentage of land surface underlain by aquifers
X	494217	State Plane Coord.	Basin centroid E/W location
Y	4905274	State Plane Coord.	Basin centroid N/S location

Source: USGS StreamStats version 3 Beta, 11/16/2015

URL: http://streamstatsags.cr.usgs.gov/v3_beta/Bcreport.htm

Return Period T (yr)	Peak Flow Estimate [1] QT (ft3/s)
1.1	29
2	57
5	86
10	105
25	137
50	155
100	182
500	237
Estimated Bankfull Width [2] = 11.6'	

References:

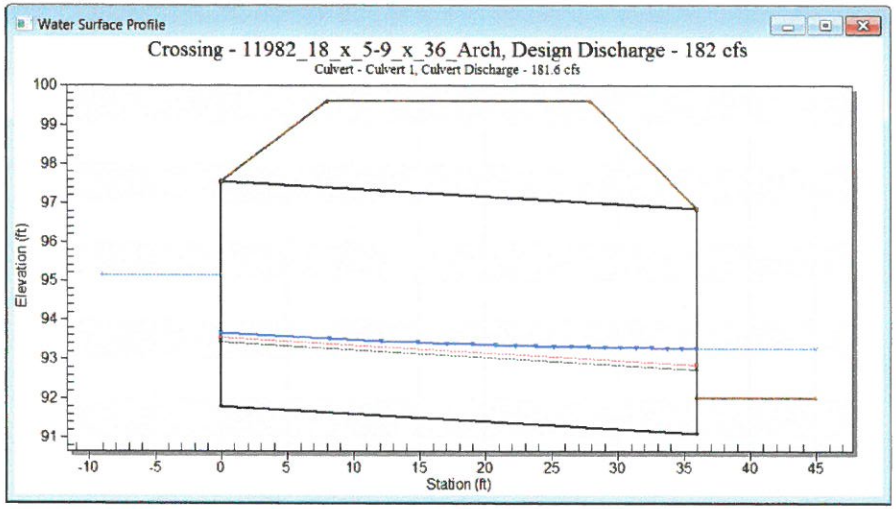
[1] Lombard, P. & Hodgkins, G., 2015. Peak Flow Regression Equations for Small, Ungaged Streams in Maine: Comparing Map-Based to Field-Based Variables. Water-Resources Investigations Report 2015-5049. US Geological Survey, Augusta, Maine.

$Q_T = b \times A^a \times 10^{cW}$

[2] Craig, S. & Koenig, S., 2010. Regional Stream Relationship Curves from Restoration Sites - Mean Bankfull Width to Catchment Area within Northern Coastal Maine Watersheds.

$W_{bkf} = 8.7147 \times A^{0.3429}$

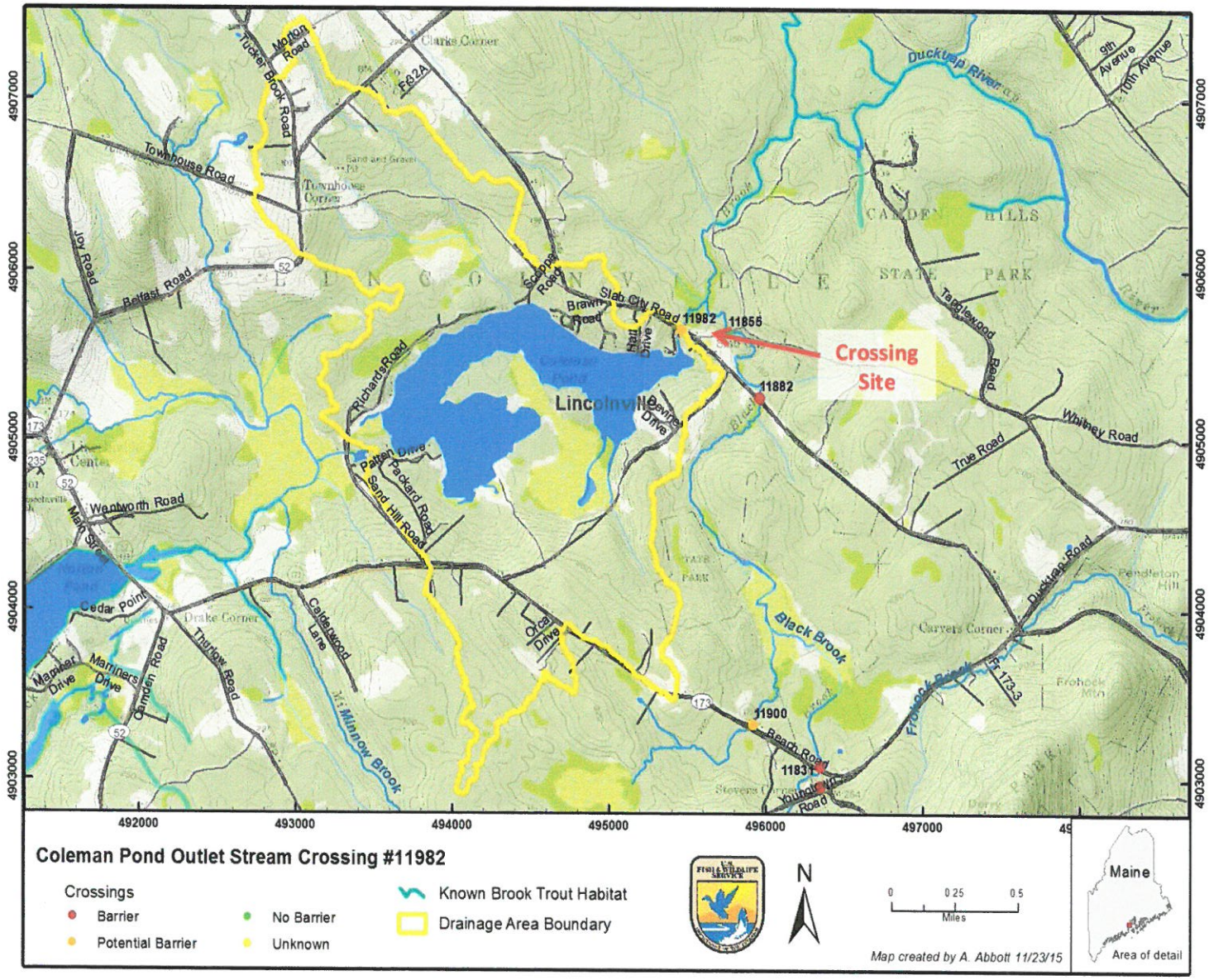
HY-8 Hydraulic Analysis Program of the U.S. Federal Highway Administration provides results for the above peak flow estimates for the proposed arch design, and indicates that the crossing as proposed will easily pass the expected 100-year (and 500-year) storm events.



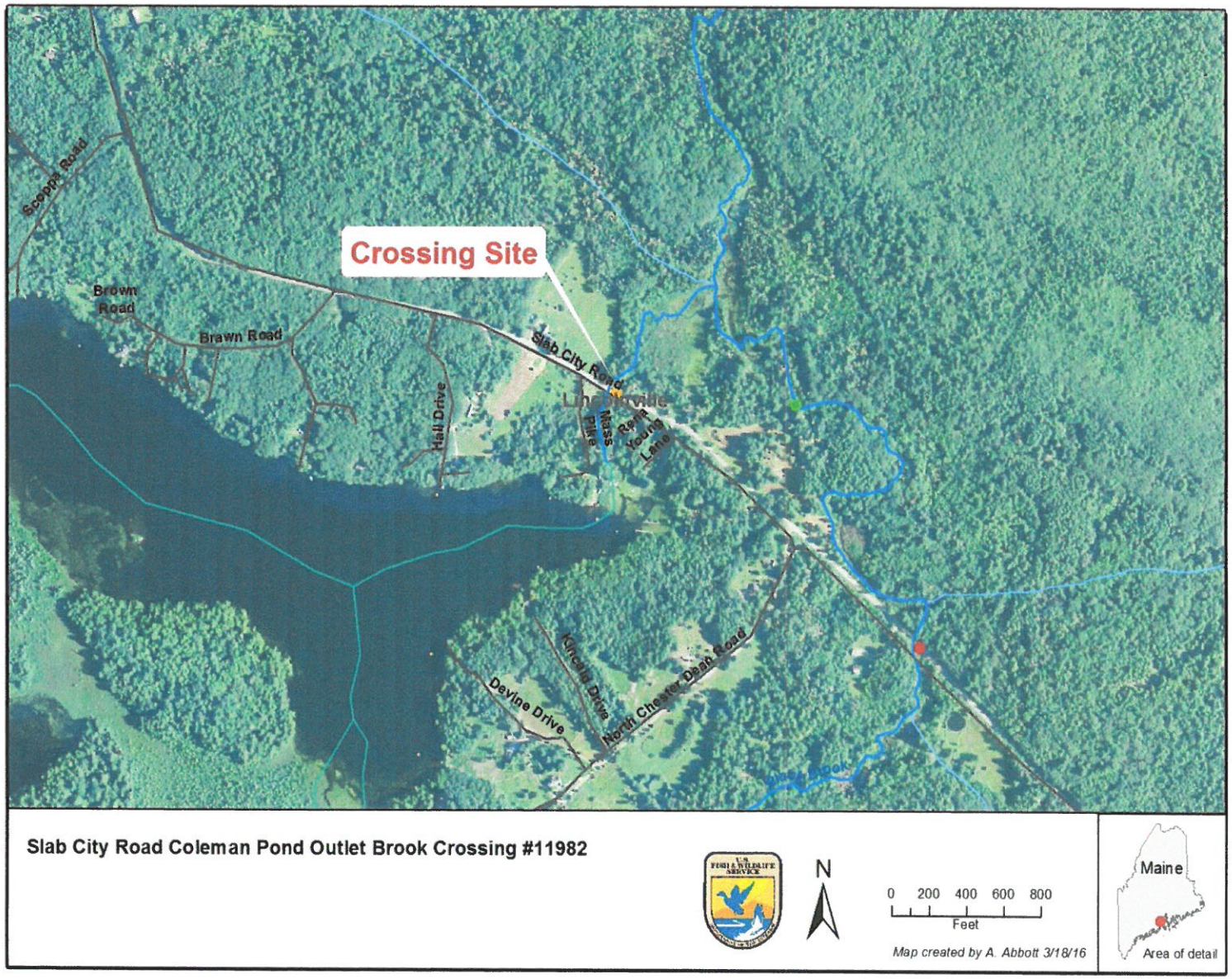
Discharge Names	Total Discharge	Headwater Elevation (ft)	Inlet Control Depth(ft)	Outlet Control Depth(ft)	Flow Type	Outlet Depth (ft)	Outlet Velocity (ft/s)
1 year	29.10	92.82	0.75	1.02	1-S1t	1.51	1.24
2 year	56.50	93.29	1.35	1.49	1-S1t	1.69	2.16
5 year	86.10	93.78	1.78	1.98	1-S1t	1.83	3.04
10 year	104.90	94.08	2.03	2.28	1-S1t	1.91	3.56
25 year	137.40	94.55	2.44	2.75	1-S1t	2.03	4.40
50 year	155.10	94.80	2.65	3.00	1-S1t	2.09	4.83
100 year	181.60	95.15	2.95	3.35	1-S1t	2.16	5.47
500 year	236.60	95.82	3.60	4.02	1-S1t	2.30	6.72

Note that prediction errors are quite large when using regression equations to estimate flows and bankfull widths based on drainage area. It is best to account for potentially larger flows at these return intervals.

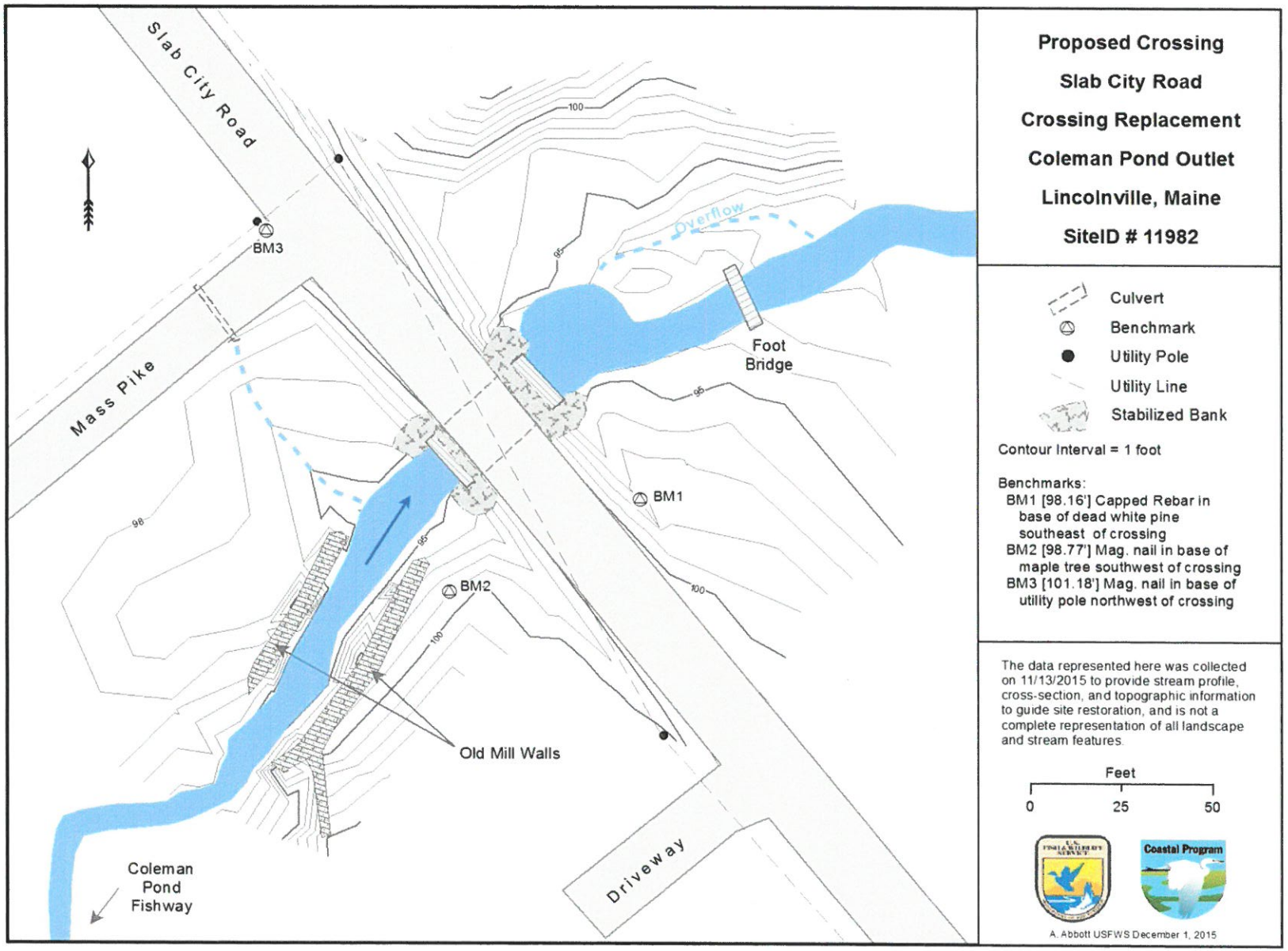
Site Map - Drainage Area



Site Map - Orthophoto



Site Topography - Proposed Crossing



Inlet Photo

Outlet Photo

Upstream Photo

Downstream Photo

All Photos 11/13/15