



Vermont Better Roads Grant Program Application

Please complete one application per category and/or project you are applying for. You may make copies of the application for multiple applications per category and/or multiple categories.

Please check the Category you are applying for:

- B. Correction of a Road Related Erosion Problem and/or Stormwater Mitigation Retrofit for both gravel and paved roads
- C. Correction of a Stream Bank or Slope Related Problem
- D. Structure/culvert upgrades

Town/Organization: Town of Hubbardton

Project Name: Structure Upgrades (9)

Road Name: Black Pond Rd TH #: 7 Structure # (if applicable): _____

Road Type: Unpaved Uncurbed

Class 3

Watershed: Otter Creek

Please provide a thorough description of the problem (ex. Roadway has steep slope with no ditch which is causing roadway erosion):

Targeted culverts are too small and structurally insufficient to accommodate runoff from substandard ditching.

Culvert numbers (VTCulverts - Local ID):

7-1; 7-5; 7-6; 7-14; 7-17; 7-20; 7-22; 7-25; one not included in 2010 inventory

Description of Project and how you plan to complete the work (ex. Stone line 500' of ditch by reshaping ditch and stone lining, working from the top of the project down to the bottom):

Replace existing 8 culverts (currently 15" diameter) with 18" plastic corrugated culverts.

Replace Culvert 7-1 (currently 57"x38" elliptical; marked on map by red rectangle-Breese Pond outlet) with a 71"x47" elliptical. Hydraulic Study has been taken place (attached).

Expected Effects (+ & -) on water quality (ex. Erosion will be eliminated by placing the stone ditch):

By increasing culvert diameter, ditch and road erosion will be eliminated, thereby reducing/eliminating silt runoff into nearby water bodies.

The upgrade for Culvert 7-1 will ensure unobstructed flow into/out of Breese Pond.



Distance from end of project to nearest water (stream, lake, or stormwater system that outlets directly to water). 0-50'

Progress to Date:

Cut brush back beyond ditch line in certain areas; replaced 3 culverts in summer '15

Is there an emergency reason this project must be completed quickly? If yes, please explain:

No

Has this project been identified through a municipal road inventory, capital budget plan, tactical basin plan, culvert inventory, or other management plan? If yes, please list which.

Yes: Highway Dept maintenance plan

No

Please list any professionals you may have contacted for assistance with this project (ANR River Management Engineer, Army Corps of Engineers, VTtrans District Technical staff, Basin Planner etc.):
ANR Hydraulics Unit

Is the project located in the town "Right of Way?" Yes, No, Both (if "Both" please explain further).

Yes

Will the town road crew complete this work? Yes, No, Some (if "some" please explain further).

Yes



Blank Hand - D

Describe how the grant funds will be spent and/or attach a project budget:

Attached

How do you plan to meet the required 20% match on this grant?:

In-kind via town labor and equipment usage.

Requested Grant Amount (\$20,000 max Category B, \$40,000 max Categories C & D): ~~\$10,000.00~~ \$20,666.40

Estimated Total Project Cost (including 20% local match): ~~\$21,000.00~~ \$25,835.00

Estimated Completion Date: 07/31/2017

REQUIRED ATTACHMENTS:

- Itemized Cost Estimate (labor, equipment, materials)
(For assistance, call Better Backroads at 802-828-4585)
- Project Location Map
(Please show location of affected water; 1:12,000 USGS map, if possible)
- Sketch of proposed erosion control measures, including:
 - Distances (ft.)
 - Estimate of waste & borrow quantities
 - Approx. location of town/other right-of-way and/or property lines
- Photo(s) of the project area.
- Agreement for Entry and/or Deed of Easement (if project is outside Town ROW).
- If project involves stream or river/road conflict, include documentation of consultation with a River Management Engineer.
- Other appropriate supporting documents.

By signing this application I certify that all the information provided is accurate to the best of my knowledge. We will comply with all the requirements of the grant including making our books available for audit if required.

SIGNATURE OF APPLICANT: (Must be Town Administrator/Manager or Select Board Chair)

Name: Jean M. Macey Title: Vice Chair



Hubbardton Roads <hubbardtonrd@gmail.com>

Email Bid# B196265

1 message

Mike Zakrzewski - 592 COLCHESTER_WATERWORKS
<mike.zakrzewski@ferguson.com>
Reply-To: mike.zakrzewski@ferguson.com
To: hubbardtonrd@gmail.com

Mon, Mar 21,
2016 at 9:38 AM

Price Quotation # B196265

FERGUSON WATERWORKS #592
134 PARK ST.
RUTLAND, VT 05701

Phone : 802-747-7555
Fax : 802-747-7129

Bid No.....: B196265
Bid Date...: 03/21/16
Quoted By: MEZ
Customer.: TOWN OF HUBBARDTON
1831 MONUMENT HILL RD
HUBBARDTON, VT 05735

Cust Phone: 802-273-2950
Terms.....: CASH ON DEMAND
Ship To.....: TOWN OF HUBBARDTON
1831 MONUMENT HILL RD
HUBBARDTON, VT 05735

Cust PO#..:

Job Name.: 71X47 CULVERT

Item	Description	Quantity	Net Price	UM	Total
SP-C71X4712GG	71X47 12GA GALV ARCH PIPE 2-2/3X1/2	40	95.000	FT	3800.00
SP-C60ARCHBAND	71X47 ARCH BAND	1	142.500	EA	142.50
FFREIGHT	FRT CHARGE FEE	1	300.000	EA	300.00

Subtotal: \$4242.50
Inbound Freight: \$0.00
Tax: \$254.55
Order Total: \$4497.05

Quoted prices are based upon receipt of the total quantity for immediate shipment (48 hours). SHIPMENTS BEYOND 48 HOURS SHALL BE AT THE PRICE IN EFFECT AT TIME OF SHIPMENT UNLESS NOTED OTHERWISE. Seller not responsible for delays, lack of product or increase of pricing due to causes beyond our control, and/or based upon Local, State and Federal laws governing type of products that



Foundations

324 Danby Pawlet Rd
Pawlet, VT 05761
(802) 325-3118 ofc
(802) 375-4943 cell

March 2016
Town of Hubbardston
M. Highway Dept

Bragg Pond Culvert

Head wall for pond side entrance of culvert, 2' cutoff under pipe & 2' up sides on per plans by forbes	
Completed 3/21/16	
4000 PSI concrete with 2-12" d rebar of 5/8 rebar	1850
(to be pre-cast - done set in place by Highway crew)	
if needed?	
3000 # SAND Bags for collar dam around entrance of culvert	
Estimated cost 30 bags @ \$100 ea	3000 ea
includes cost of bags, sand, installation labor & removal	
(possible loan of bags from VT highway Dept)	

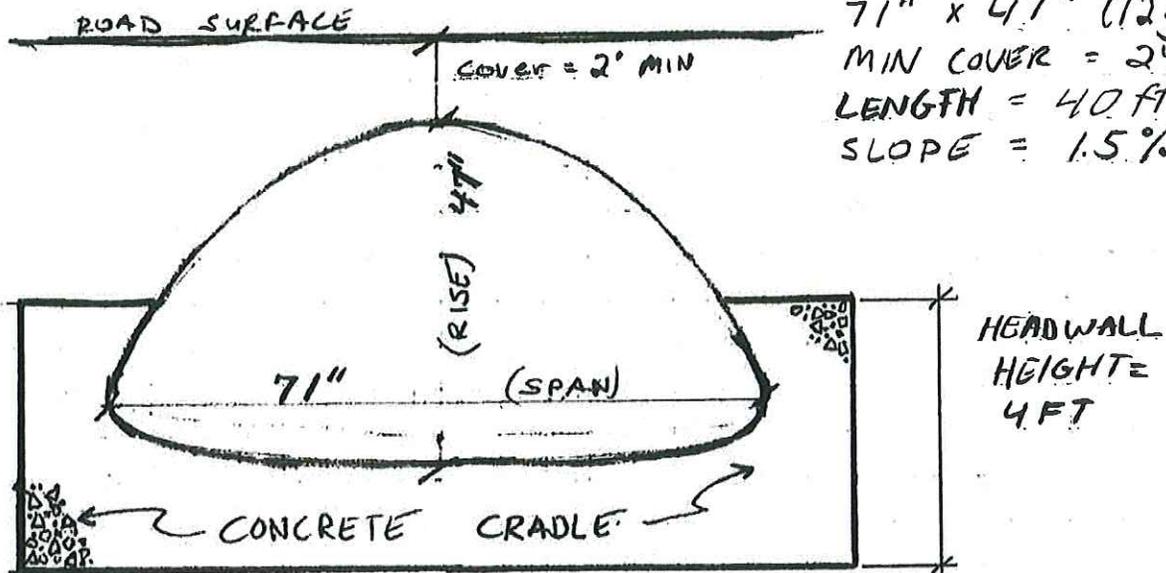
may need

SA-07-007-2016
BLACH POND RD

HUBBARDTON
03/18/2016

STRUCTURE

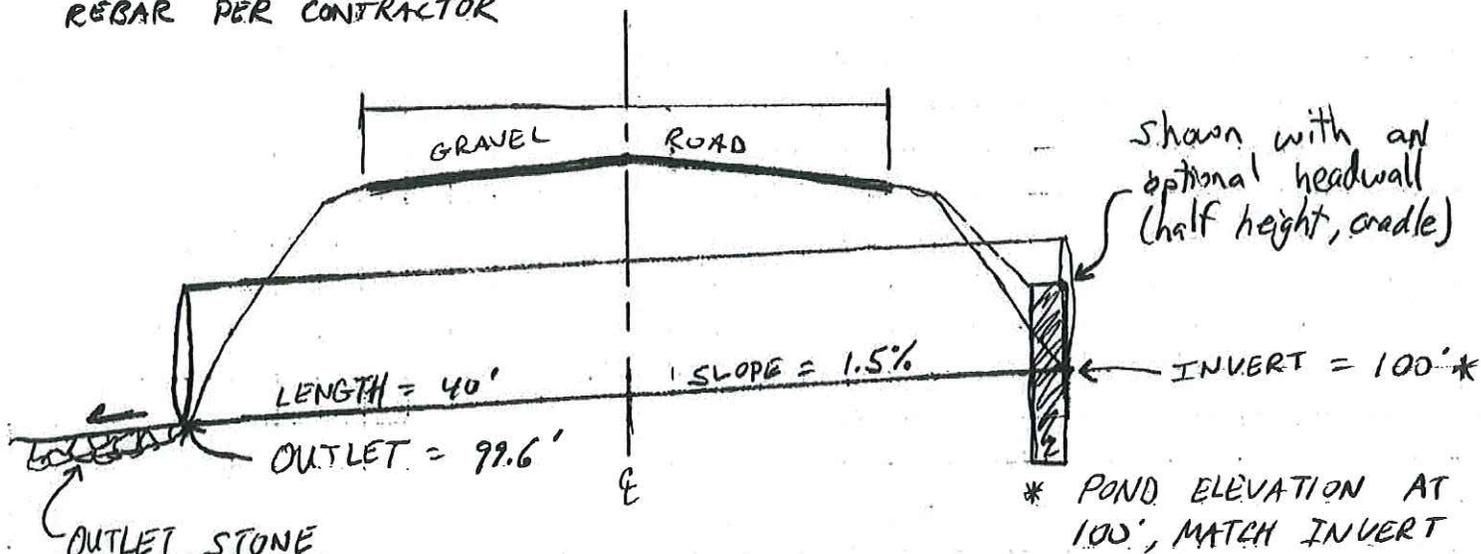
C.M.P. PIPE-ARCH
71" x 47" (12g)
MIN COVER = 24"
LENGTH = 40 FT
SLOPE = 1.5%



SECTION VIEW (nts)

HEADWALL (OPTIONAL)

CAST-IN-PLACE CONCRETE
DIMENSIONS = 10' x 4' (L x H)
CUT OFF WALL = 2' DEEP
THICKNESS = 12" MIN
CONCRETE = 1.5 cyds
REBAR PER CONTRACTOR



OUTLET STONE
ANR TYPE E1
18" MINUS
6' x 6' x 3' (L x W x D)
4.0 cyds

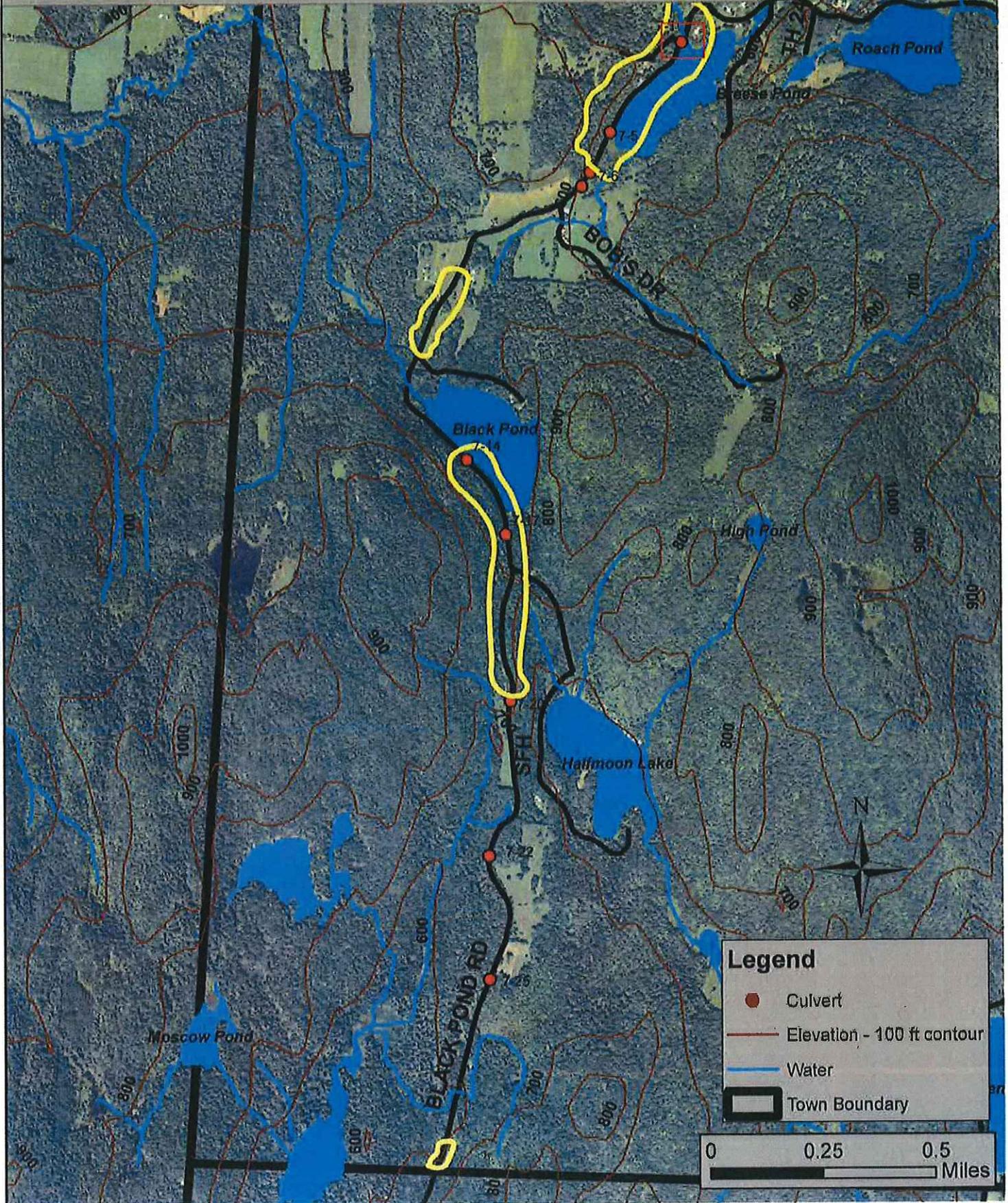
PROFILE VIEW (nts)

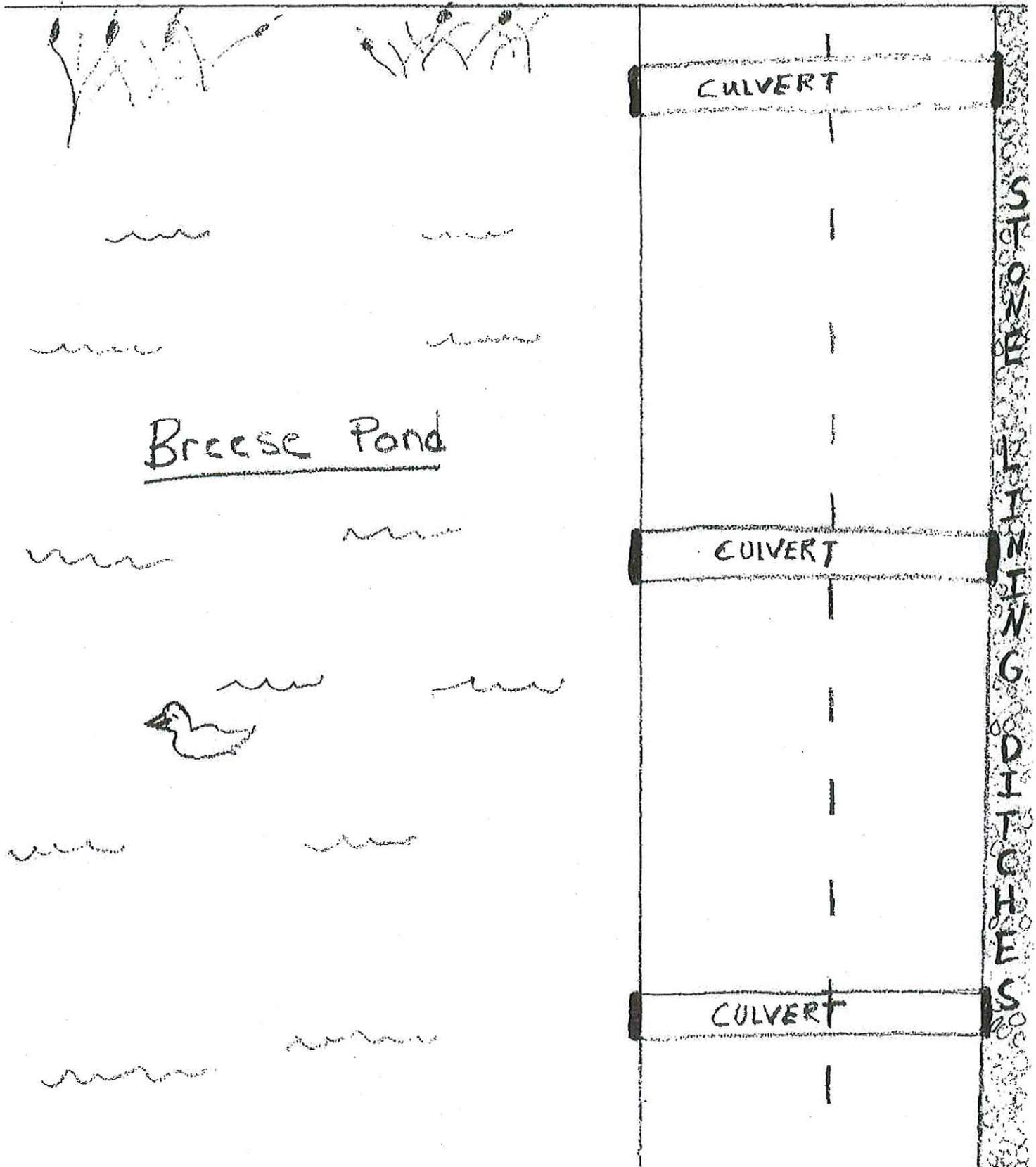
BY JOSH CARVAJAL, RME

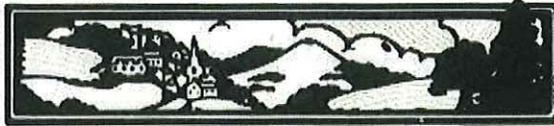
Hubbardton - Black Pond Rd

-Category B - Stone Line Ditching (4 sections)

-Category D - Structure Upgrades (9 culverts)







RUTLAND REGIONAL PLANNING COMMISSION

April 13, 2016

Mr. Alan May
Better Backroads Coordinator
VTrans
I National Life Drive
Montpelier, VT 05633

Dear Alan:

This letter supports the application from the Town of Hubbardton's Better Roads Grant application for a Category D for nine structure upgrades on Black Pond Road. These structures are in poor condition, undersized and the drainage is inadequate, causing road erosion. Culvert7-1 is an outlet for Breese Pond and the new culvert will improve the water quality.

This work is necessary and vital for the Town's infrastructure and we strongly support this application.

Sincerely,

Susan Schreibman

Susan Schreibman
Assistant Director

RUTLAND REGIONAL PLANNING COMMISSION
The Opera House, P.O. Box 965, Rutland, VT 05702
802-775-0871; FAX 802-775-1766
www.rutlandrpc.org

VT AGENCY OF TRANSPORTATION PROGRAM DEVELOPMENT DIVISION
HYDRAULICS UNIT

TO: Brain Sanderson, District 3 Project Manager
Janet Morey, Town of Hubbardton

FROM: Leslie Russell, P.E., Hydraulics Project Manager

DATE: 16 March 2016

SUBJECT: Hubbardton TH 7 (Black Pond Road) over unnamed stream
Site at outlet of Breese Pond
GPS Coordinates: N43.7162 W73.2157

We have completed our hydraulic study for the above referenced site, and offer the following information for your use:

Hydrology

This site has a hilly to mountainous drainage basin. It is mostly forested with a large pond and wetlands. The total contributing drainage area is about 0.65 sq. mi. There is an overall length of 7340 feet from the divide to the site, with a 450 foot drop in elevation, giving an average overall channel slope of about 6%. The stream slope at the site was estimated to be about 1% or less. Using several hydrologic methods, we selected the following design flow rates:

<u>Annual Exceedance Probability</u> (% AEP)	<u>Flow Rate in Cubic Feet per Second</u> (CFS)
43	20
10	40
4	50 - Local Road Design Flow
2	60
1	70 - Check flow

Channel Morphology

There is a large pond with wetlands at the inlet of this pipe. There is likely very little coarse sediment transport at the site. No indications of active vertical or horizontal instability were observed. The Vermont Hydraulic Geometry Relationships anticipate a bankfull width of 11' for stream channels in equilibrium at this watershed size.

Existing Conditions

The existing structure is a corrugated metal pipe arch with a clear width of 57" and a clear height of 38". It provides a waterway opening of 11.6 sq. ft. The pipe is deteriorating under the road with rust and large holes in it. There is a trash rack in front of the inlet that could be being used as beaver protection.

Our calculations, field observations and measurements indicate the existing structure meets the current standards of the VTrans Hydraulic Manual. However, it does not meet state stream equilibrium standards for bankfull width (span length). With the pond there, it is probably not necessary that the structure meet bankfull width, but this should be verified with the ANR River Management Engineer.

This structure results in a headwater depth of 3.1' at 4% AEP and 3.9' at 1% AEP.

Replacement Recommendations

In sizing a new structure, we attempt to select structures that meet both the current VTrans hydraulic standards, state environmental standards with regard to span length and opening height, and allow for roadway grade and other site constraints. The structure should be placed at an elevation so that the upstream pond does not drain.

The low height from the stream bed to the road limits the replacement options to a box structure, as the roadway would have to be raised substantially for a pipe. Raising the road that much would create a dam that could increase flooding of the upstream property, so that is not recommended.

Based on the above considerations and the information available, we recommend any of the following structures as a replacement at this site:

1. A concrete box with a 6' wide by 3' high inside opening. This structure provides 18 sq. ft. of waterway area. The box invert should be placed at an elevation that allows water to partially fill the box and so that the pond is not drained. Work with the ANR River Management Engineer to determine the elevation the box should be placed at. This structure will result in a headwater depth of 2.2' at 4% AEP and of 2.7' at 1% AEP, with no roadway overtopping up to 1% AEP, if the box is placed at the same elevation.
2. Any similar structure with a minimum clear span of 6' and at least 18 sq. ft. of waterway area, that fits the site conditions, could be considered.

Prior to any further action toward implementation of any of the above recommendations, structure size and type must be confirmed, and may be modified, by the VT ANR River Management Engineer to ensure compliance with state environmental standards for stream crossing structures.

Other regulatory authorities including the US Army Corps of Engineers may have additional concerns or requirements regarding replacement of this structure.

General Comments

If a new box is installed, we recommend it have full headwalls at the inlet and outlet, if appropriate here. The headwalls should extend at least four feet below the channel bottom, or to ledge, to act as cutoff walls and prevent undermining.

It is always desirable for a new structure of this size to have flared wingwalls at the inlet and outlet, to smoothly transition flow through the structure, and to protect the structure and roadway approaches from erosion. The wingwalls should match into the channel banks. Any new structure should be properly aligned with the channel, and constructed on a grade that matches the channel. A new structure should span the natural channel width.

Stone Fill, Type II should be used to protect any disturbed channel banks or roadway slopes at the structure's inlet and outlet, up to a height of at least one-foot above the top of the opening. The stone fill should not constrict the channel or structure opening.

Please note that while a site visit was made, these recommendations were made without the benefit of a survey and are based on limited information. The final decision regarding replacement of this structure must comply with state regulatory standards, and should take into consideration matching natural channel conditions, roadway grade, environmental concerns, safety, and other requirements.

Please contact us if you have any questions or if we may be of further assistance.

LGR

cc: Josh Carvajal, A.N.R. River Management Engineer
Hydraulics Project File via NJW

Gmail

More

COMPOSE

Black Pond Road Culvert Inbox x

Inbox (13)

Starred

Sent Mail

Drafts (20)

intro junk

save

More

Hubbardton

Dawn Custer
Dawn wants to chat on H...

Carvajal, Joshua

Jan 25

Hi Janet, Attached is the draft sketch plan, please review and provide commen...

Carvajal, Joshua <Joshua.Carvajal@vermont.gov>
to me

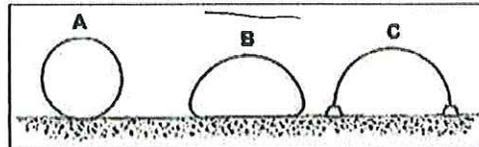
Feb 18 (5 days ago)

Janet,

Equivalent arch pipe size is 64" x 43" (WxH). Contech is a manufacturer, here is a contact:

STEVE WOLF
Sales Engineer
P.O. Box 1975
New London, NH 03257
Phone: [603-526-7496](tel:603-526-7496)
Cell: [802-233-9110](tel:802-233-9110)
Fax: [513-277-0946](tel:513-277-0946)
Email: SWolf@conteches.com

On this image the arch pipe is labeled B

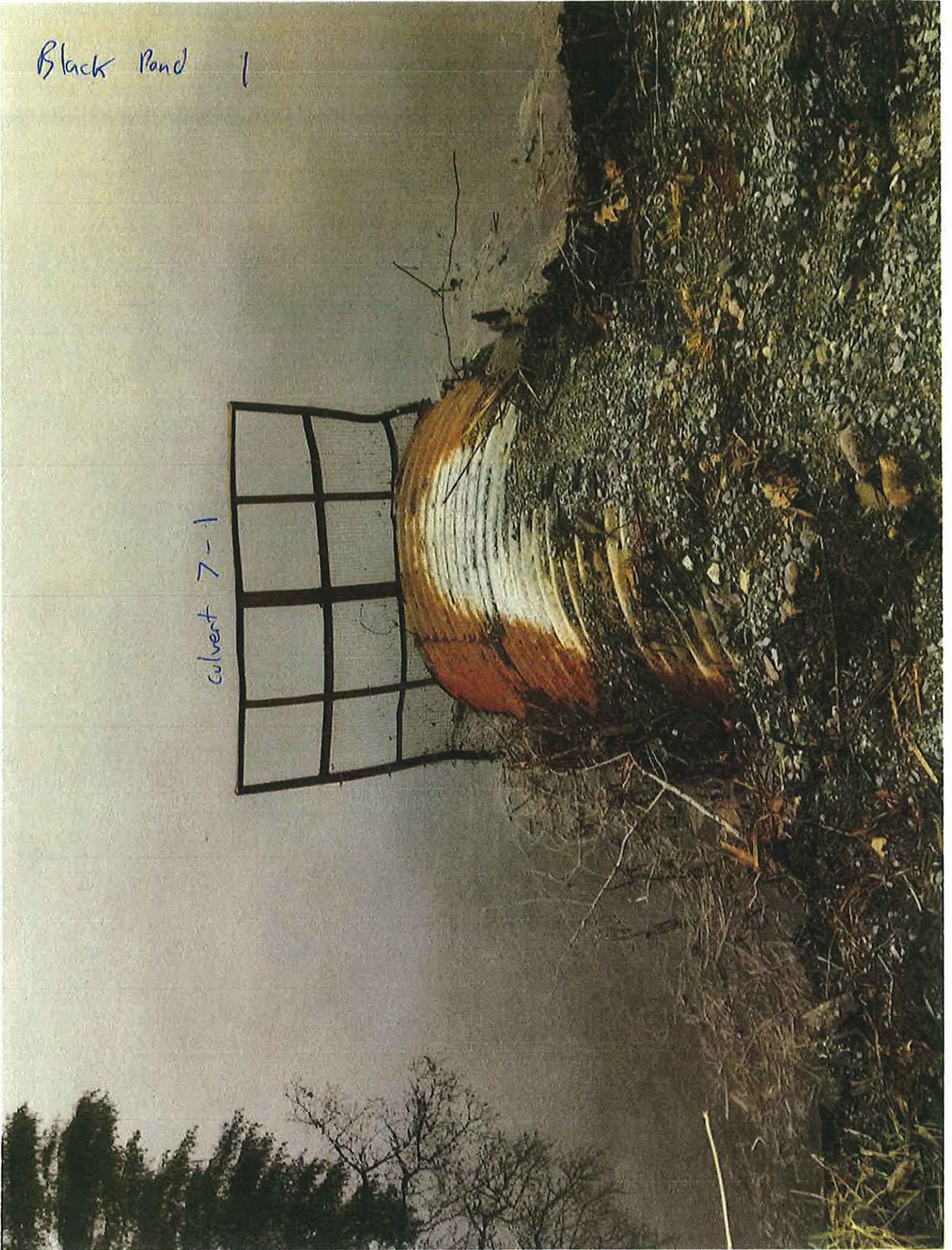


Hope this helps. Let me know if you need anything else.

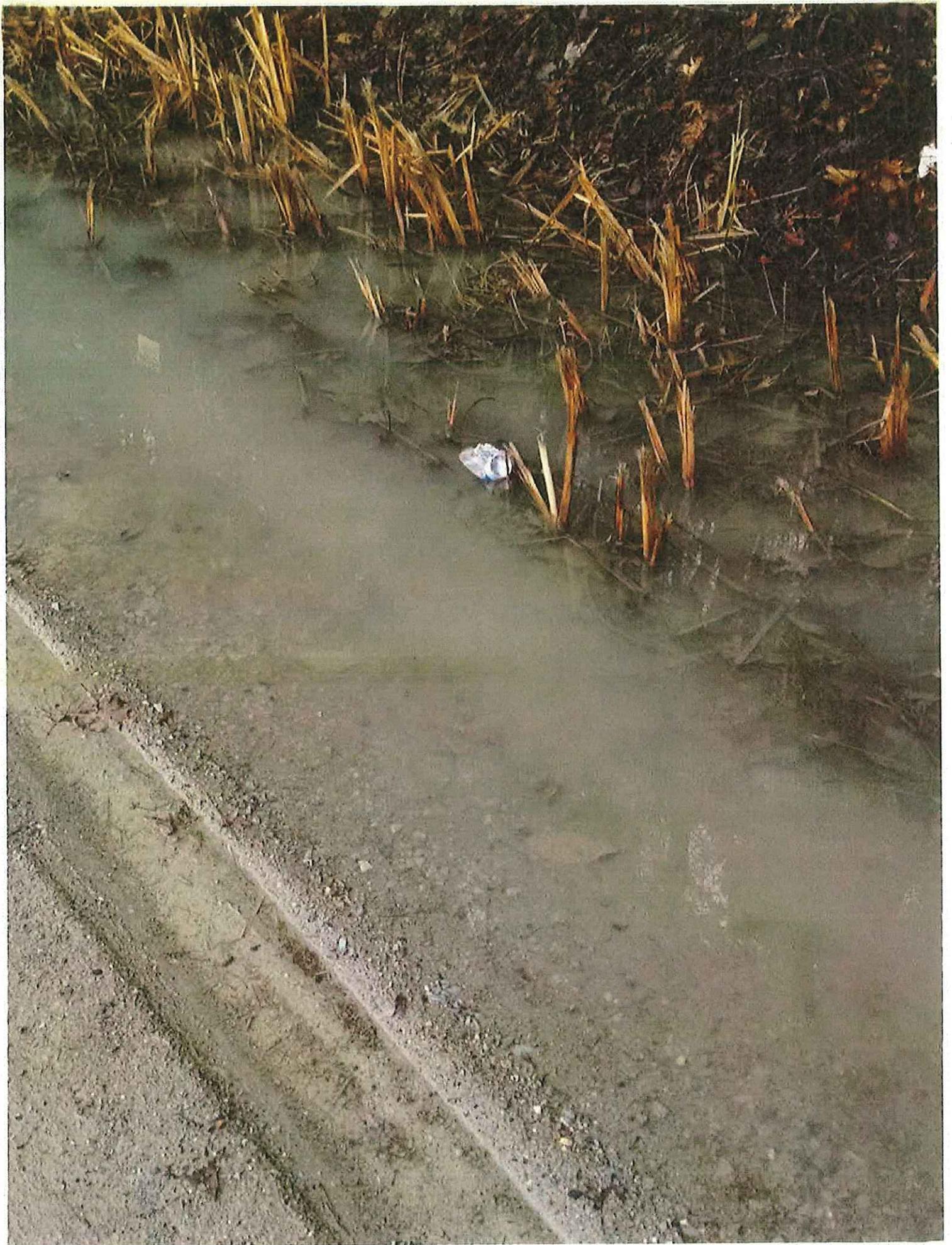
Josh

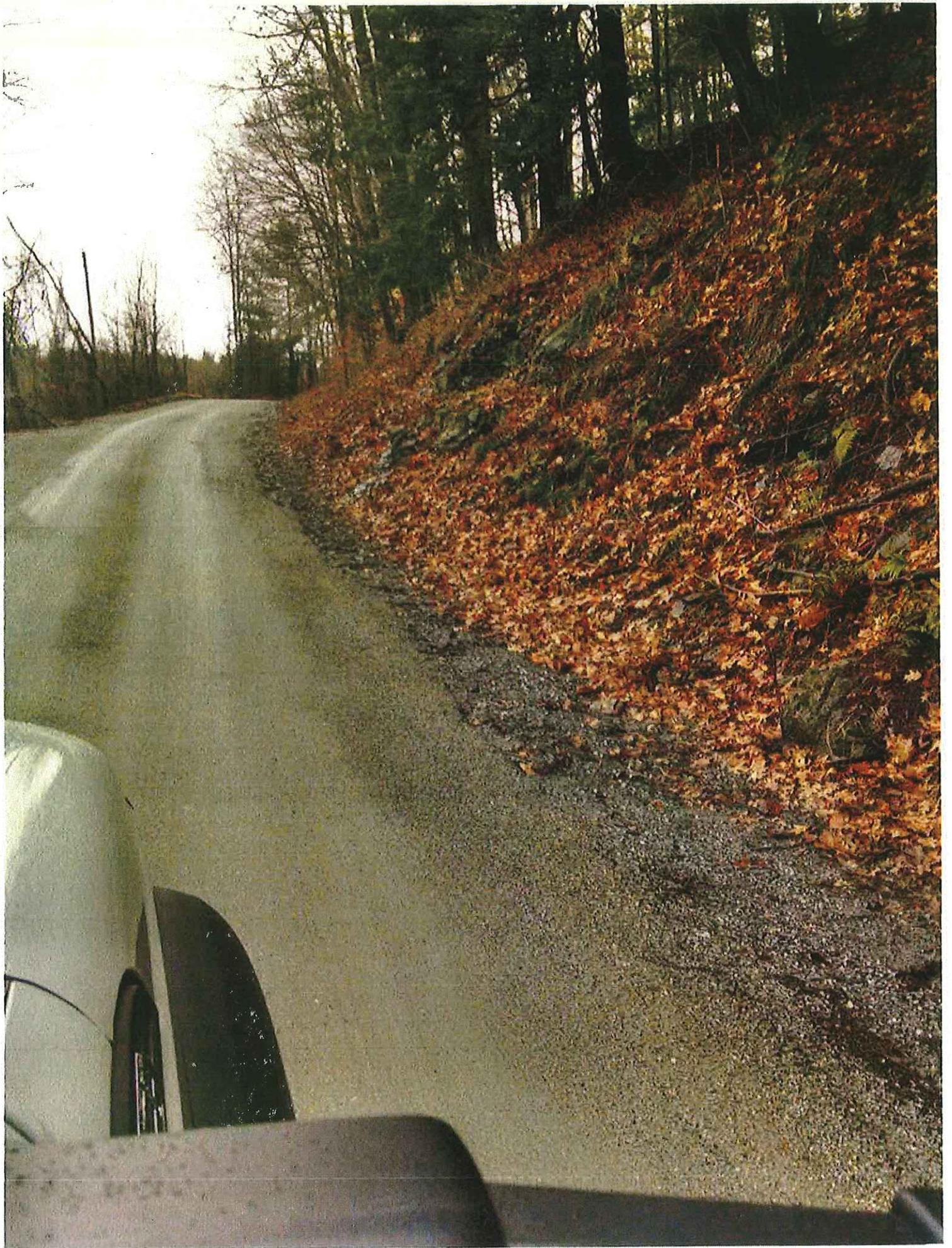
Black Pond 1

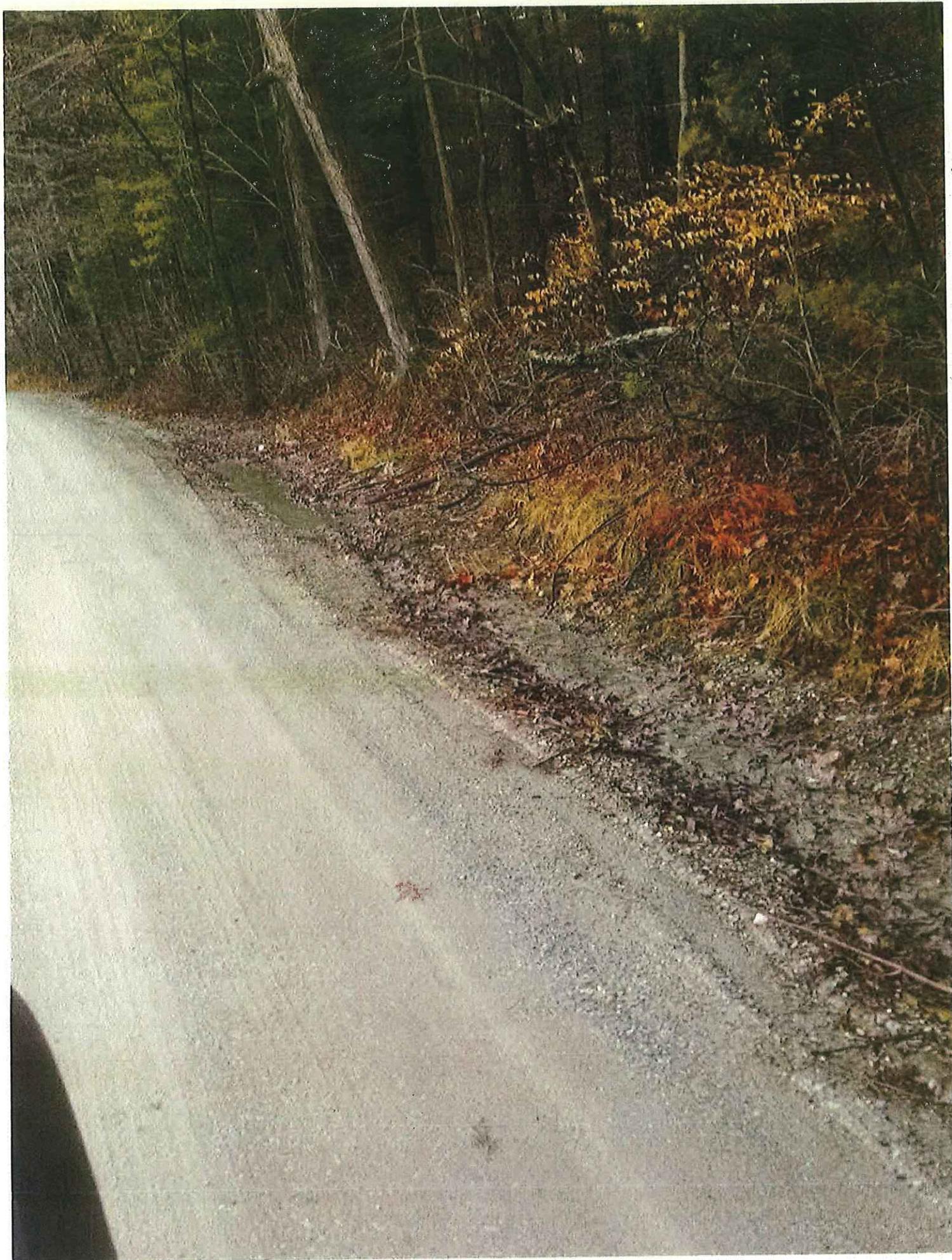
culvert 7-1

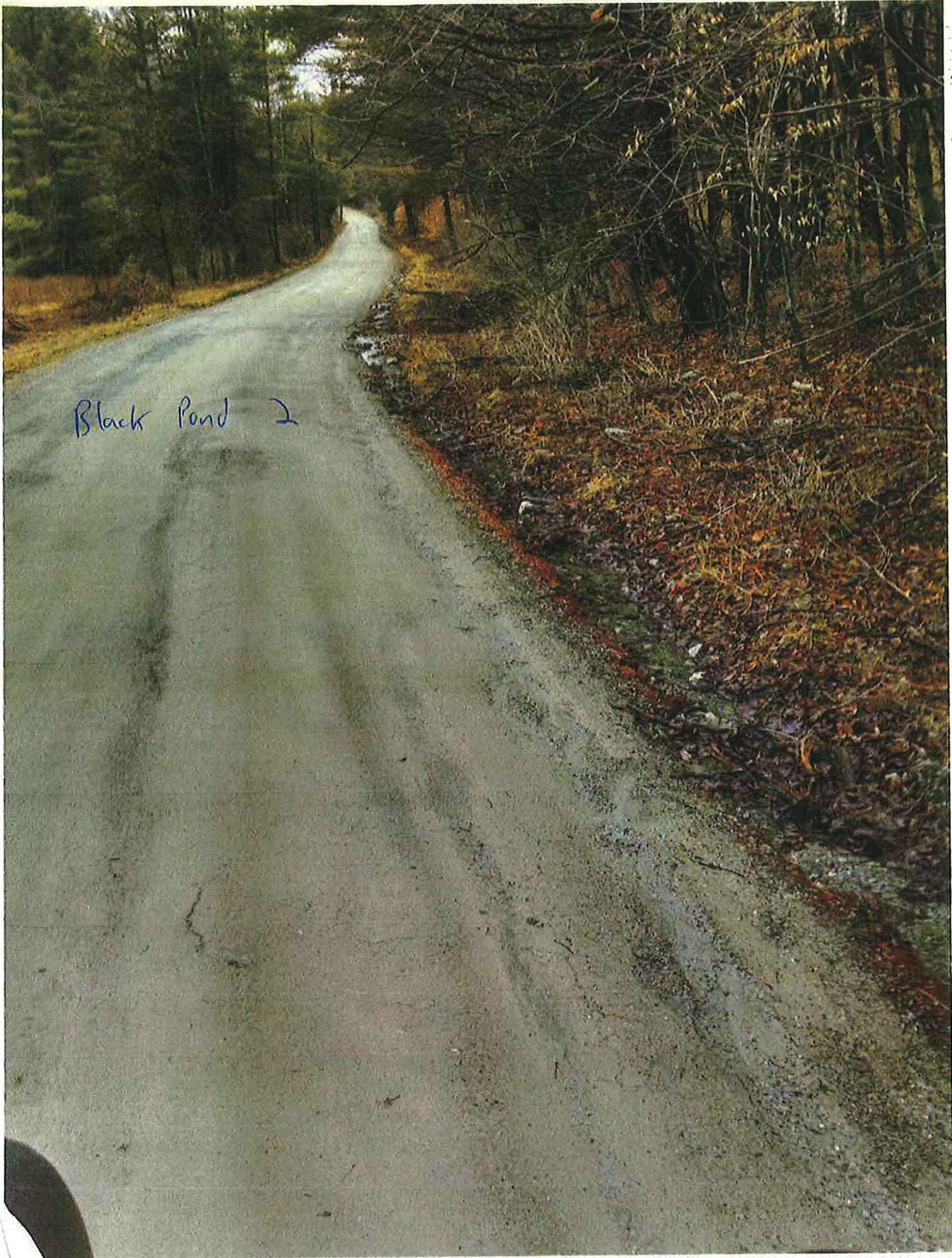






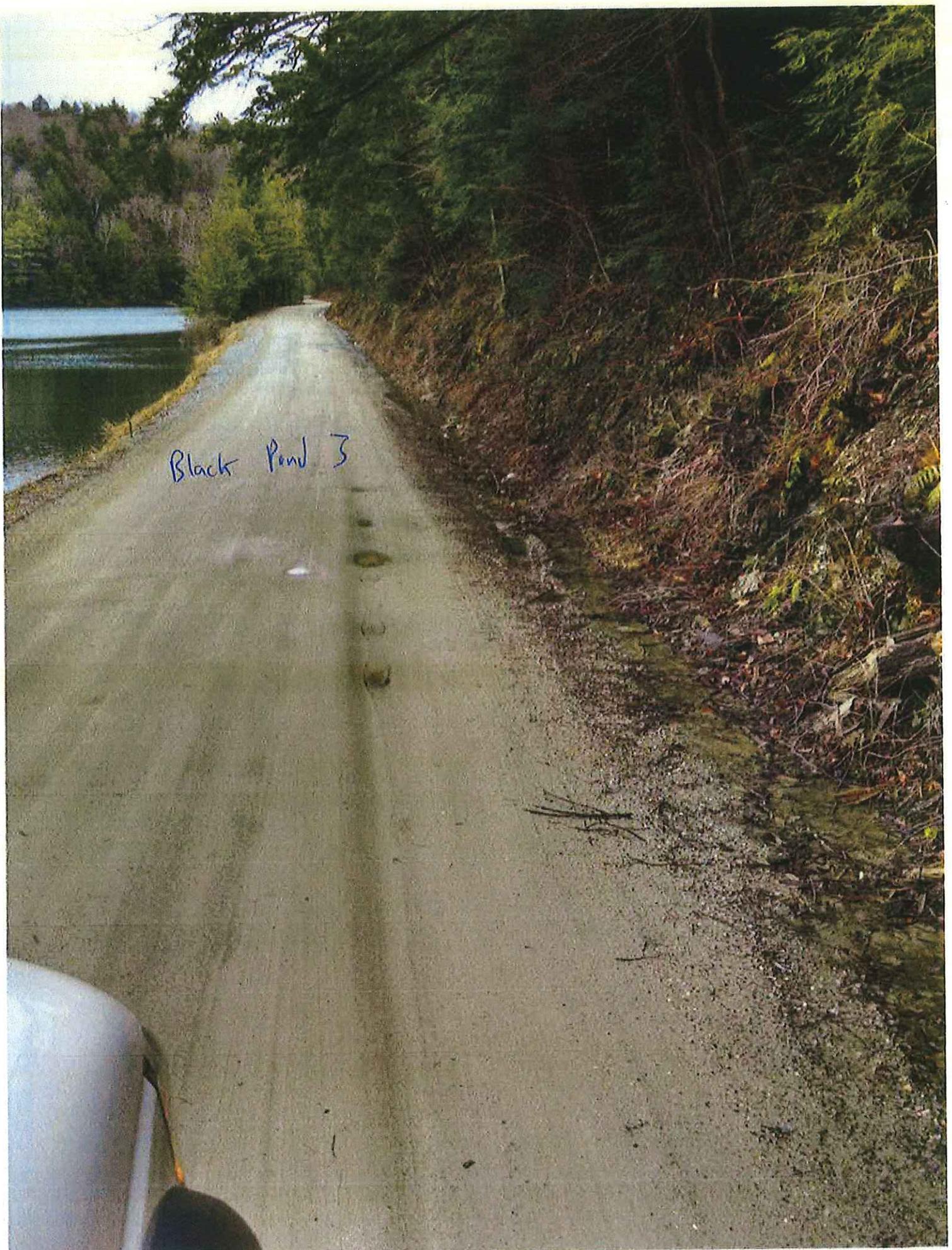




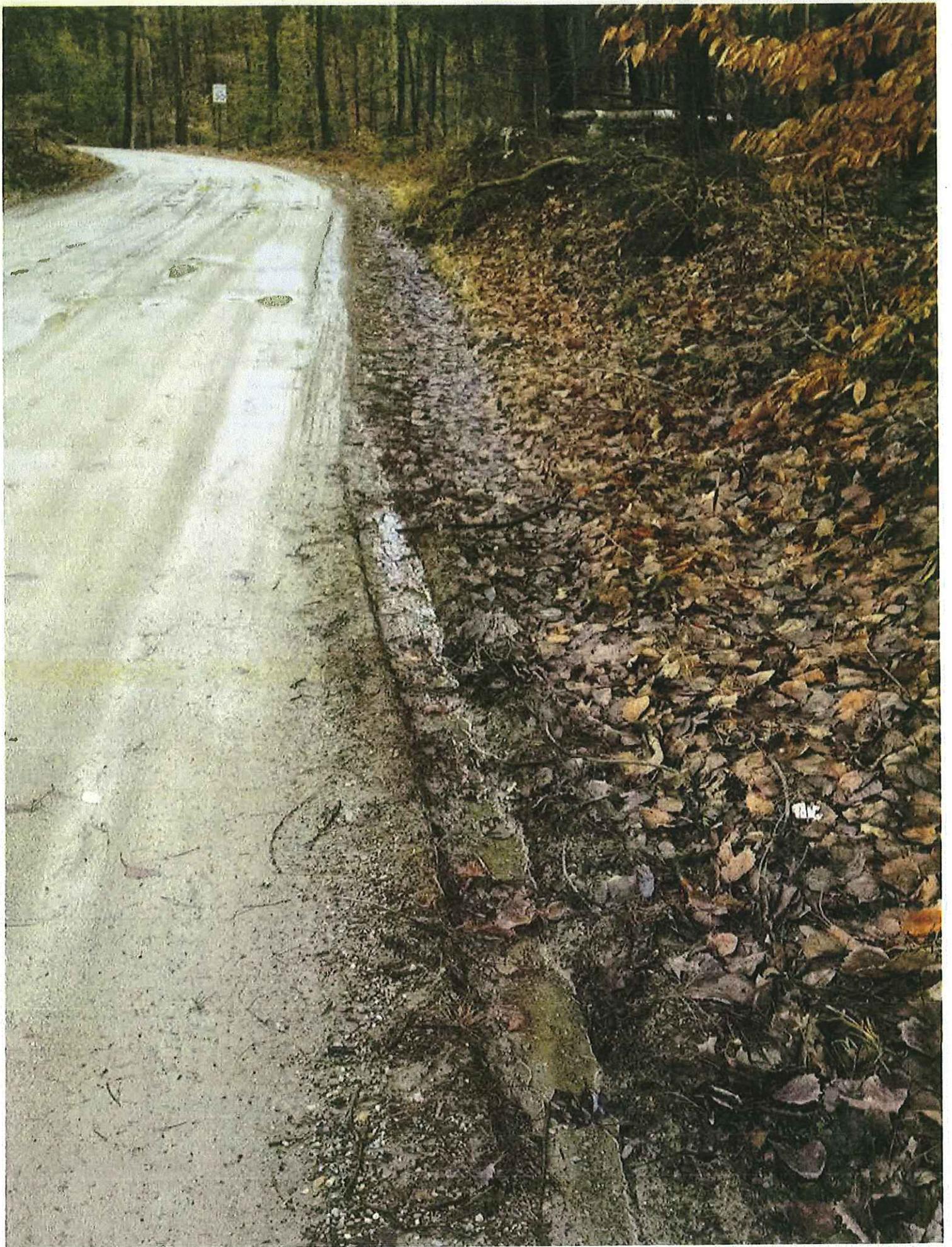


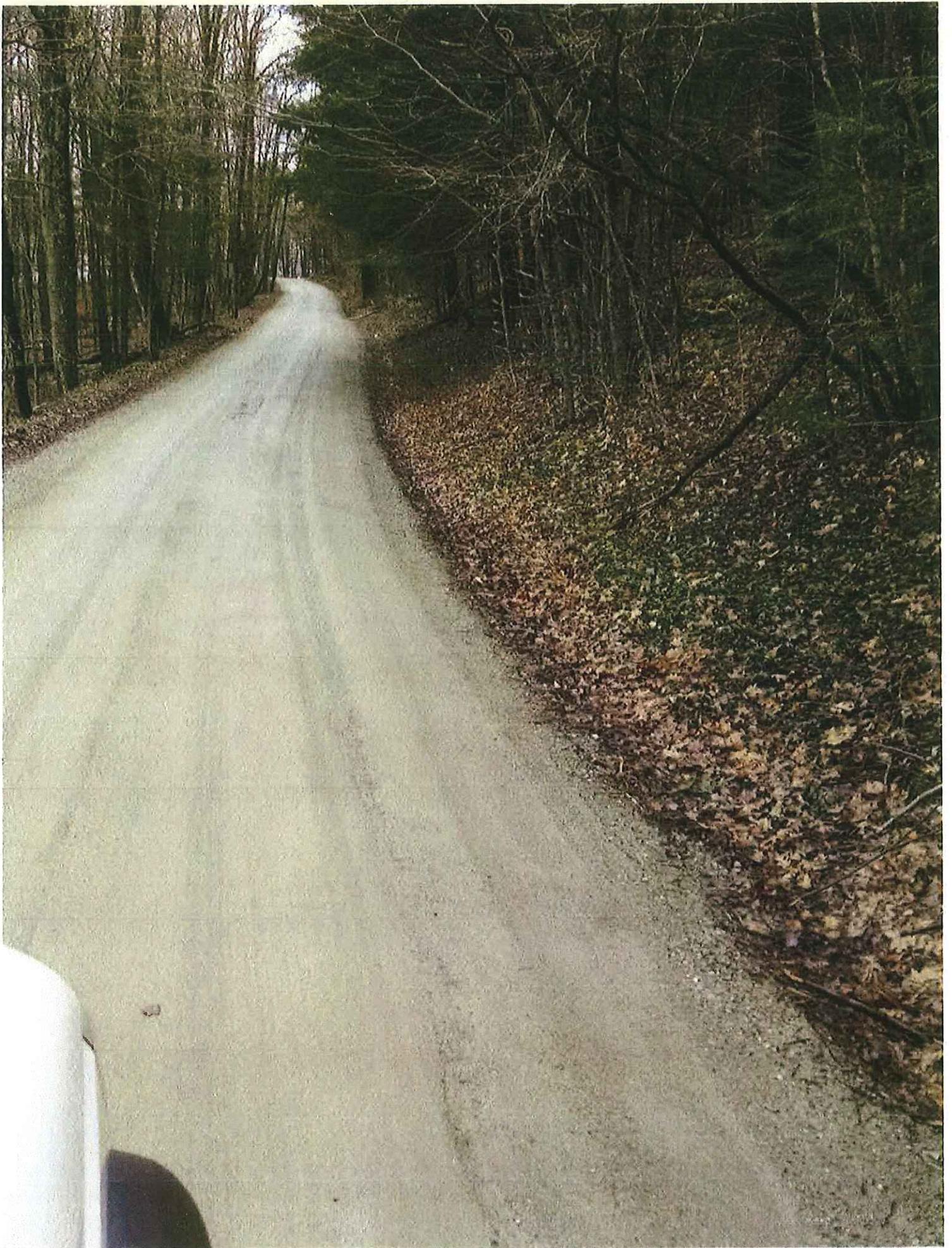
Black Pond 2

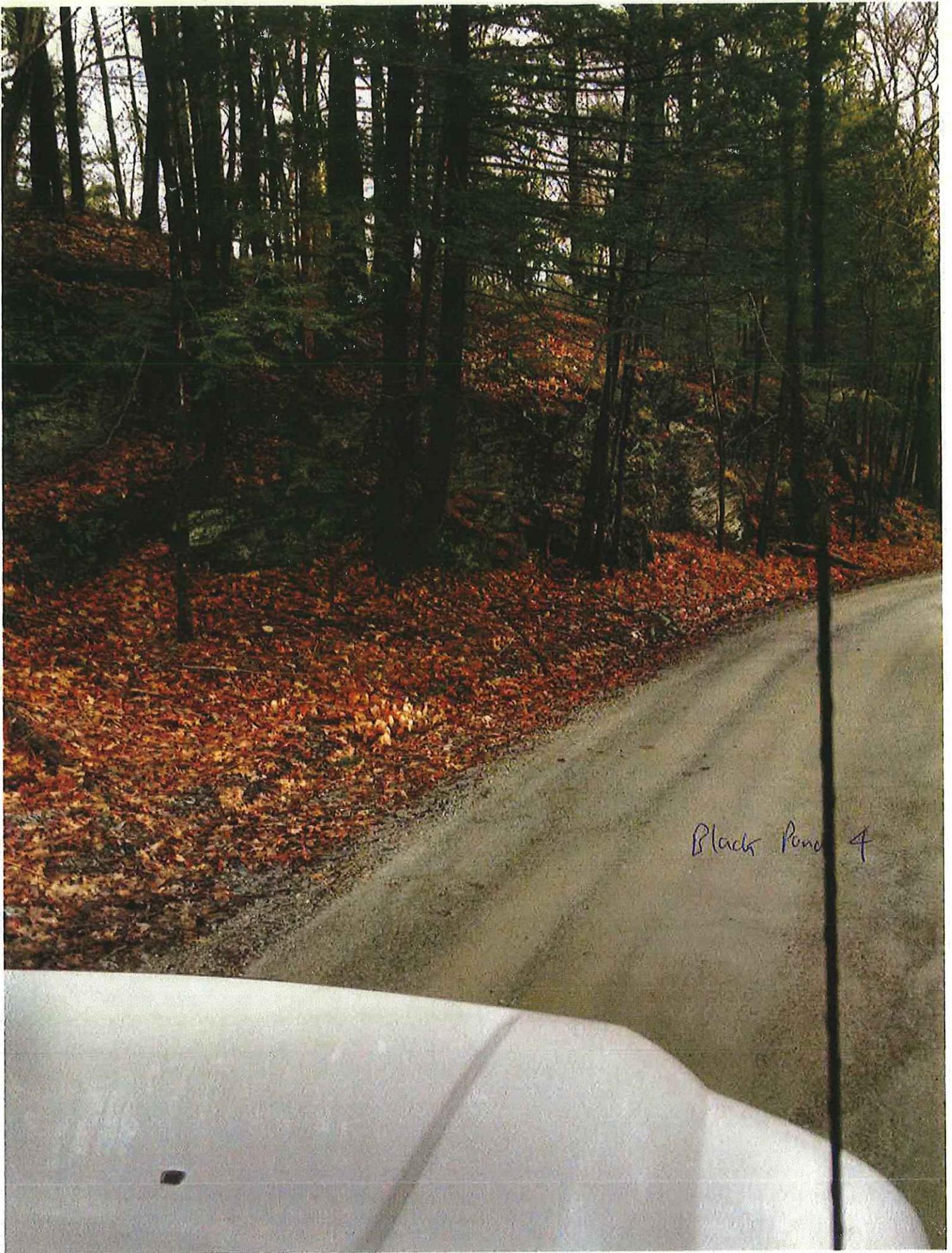




Black Pond 3







Black Pond 4