Dam Inspection Report

Birch Mill Pond Dam,
Essex, CT
Connecticut Dam Inventory No. 5004

Prepared For:
Southwinds Association
Bruce S. & Jerri MacMillian
Rocco J. & Anna A. D'Amico

■ *August 25, 2017*

Lenard Engineering, Inc.
Civil, Environmental & Hydrogeological Consultants

DAM SAFETY PROGRAM
DAM INSPECTION REPORT FORM – FOR REGULATORY INSPECTION

Part I: Summary of Dam Inspection

Dam Name:	**Birch Mill Pond Dam**	Inspection Date(s):	**8-25-2017**
Alternate Dam Name(s):		CT Dam ID #:	**5004**
Location (Municipality):	**Essex**	Temperature / Weather:	**73° F Sunny**
Registered?: Yes or No If yes, provide the 9 digit registration number found on the notification letter.	**Yes**	Pool Level: See Instructions	**1-in over spillway**
Emergency Action Plan?: Yes or No If Yes, see instructions	**No**	Impoundment Use: use options listed in instructions	**Recreation**
Hydraulic and Hydrologic Analysis?: Yes or No If Yes, see instructions	**No**	Stability Analysis?: Yes or No If Yes, see instructions	**No**
Overall Condition: **FAIR**			

Persons present at the inspection		
Name	**Title/Position**	**Representing**
Roger Hurlbut	**Project Engineer**	**Lenard Engineering Inc.**
Bruce MacMillian	**Owner**	
Steve Bancroft	**Owner's Representative**	**Southwinds Assoc**

Indicate if Owner or Operator: **Owner (Left portion of embankment)**

Name: **Bruce & Jerrie MacMillian**

Mailing Address: **8 South Winds Drive**

City/Town **Essex** State: **CT** Zip Code: **06426**

Phone: **860 510-8318** ext.:

Emergency Phone:

*E-mail: **bmacmillian@gmail.com**

Indicate if Owner or Operator: **Owner (Right portion of embankment)**

Name: **Rocco & Anna D'Amico**

Mailing Address: **4 South Winds Drive**

City/Town **Essex** State: **CT** Zip Code: **06426**

Phone: **860 767-3353** ext.:

Emergency Phone:

*E-mail:

Indicate if Owner or Operator: **Owner (Spillway)**

Name: **Southwinds Association C/O Adrienne Brochu**

Mailing Address: **34 Birch Mill Trail**

City/Town **Essex** State: **CT** Zip Code: **06426**

Phone: **860 767-3830** ext.:

Emergency Phone:

*E-mail: **abrochu2@comcast.net**

Part II: General Dam Information

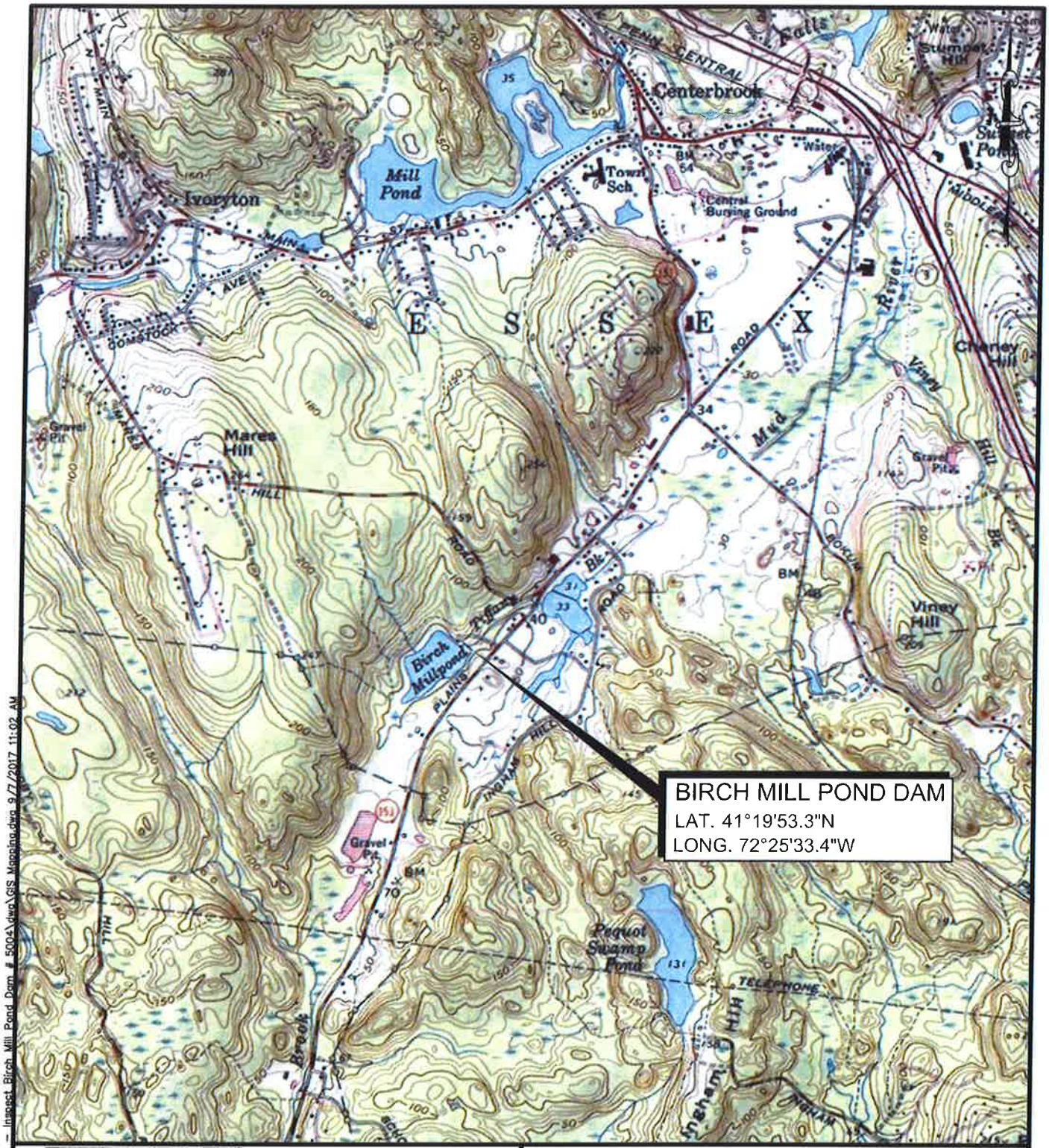
General Description: **200-ft long 8.5-ft high earth embankment**			
Hazard Classification:	**BB**	Dam Height (ft):	**8.5**
Dam Length (ft):	**200**	Spillway Length (ft):	Primary 41-in' secondary 88-in
Spillway Type:	**Uncontrolled broad crested**	Normal Freeboard (ft):	**1-FT**
Drainage Area (square miles):	**0.47**	Impoundment Area (at principal spillway crest, in acres):	**13.9**
Watercourse(s): **Tiffany Brook tributary to Mud River**			

OTHER INFORMATION:

The dam and spillway are owned and maintained by three different entities or people. The spillway is owned by Southwinds Association, the embankment on the left side if the spillway and a short section on the right of the spillway are owned by Bruce and Jerrie MacMillian and the last 73 feet of the right embankment is owned by Rocco and Anna D'Amico At the right termination of the upstream riprap, a capped metal pin, believed to be the property line, was observed (See sketch, pg 18 of 23) .

To the left of the spillway (MacMillian ownership) there is a residential structure immediately adjacent to the downstream crest of the embankment. The lower floor, which is a garage area, is approximately level with the dam crest and the second floor is the living area.

Part III: Aerial Photo/Location Map



Source:
USGS TOPOGRAPHIC MAP
Essex, CT QUADRANGLE

Lenard Engineering, Inc.
WINSTED, CT

LOCUS MAP

BIRCH MILL POND DAM
CT DAM #5004

ESSEX CT

Scale 1:24000

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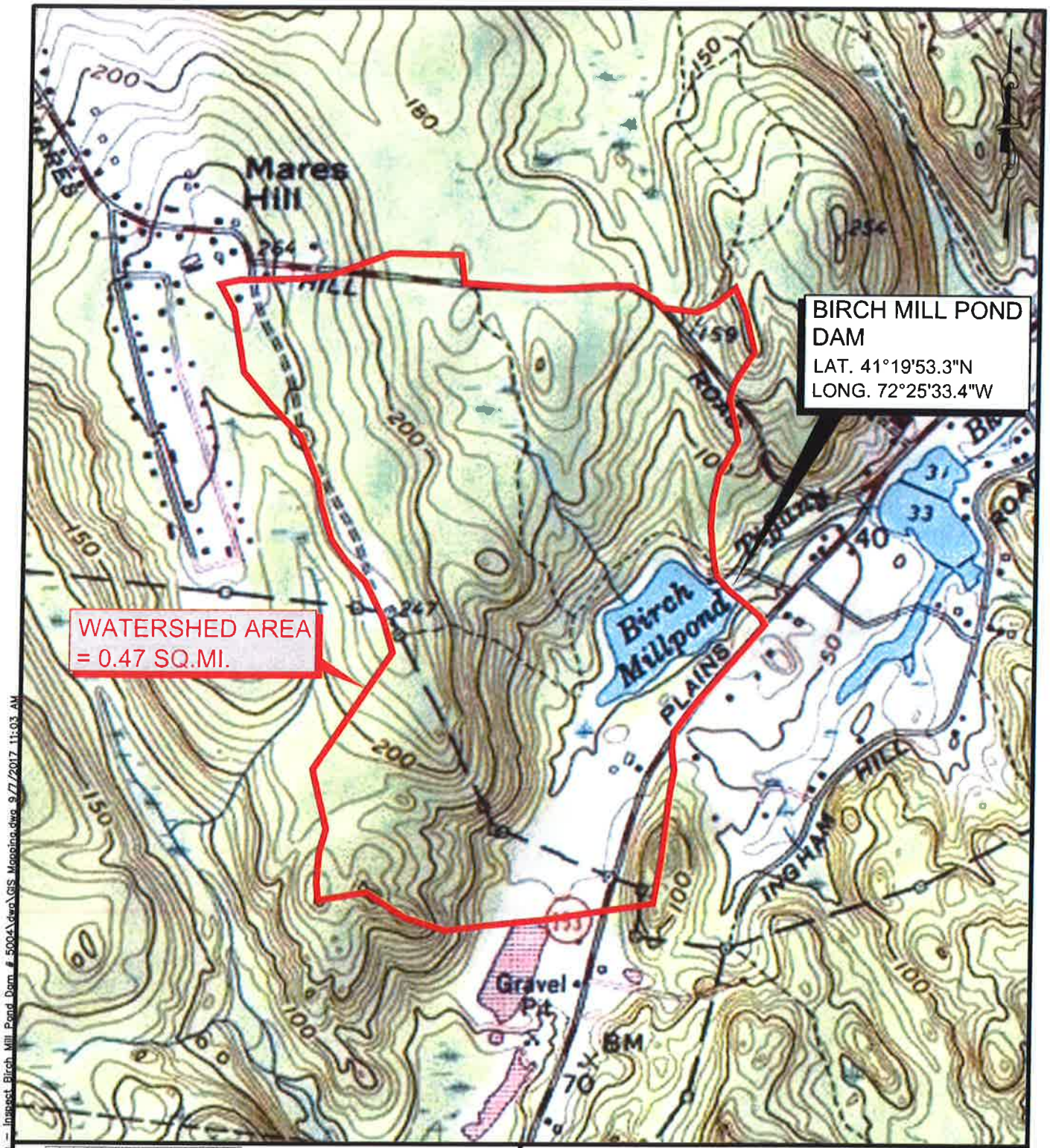

Source:
USGS TOPOGRAPHIC MAP
Essex, CT QUADRANGLE

Lenard Engineering, Inc.
WINSTED, CT

WATERSHED MAP

BIRCH MILL POND DAM
CT DAM #5004

ESSEX CT

Scale 1:12000

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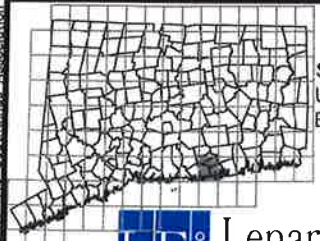

Source:
USGS TOPOGRAPHIC MAP
Essex, CT QUADRANGLE

Lenard Engineering, Inc.
WINSTED, CT

AERIAL LOCATION

BIRCH MILL POND DAM
CT DAM #5004

ESSEX CT

Scale 1:720

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Part IV: Dam/Embankment/Dike Information

Number of Dam/Embankments/Dikes: **1**

Dam/Embankment/Dike Name:: **Birch Mill Pond Dam**

General Description: **The dam is a 200 (+/-) foot long 8.5 foot high earth embankment with a spillway located about mid-way between the abutments. The crest of the dam averages 16 feet in width.**
General Condition: **Fair - Due to trees and lack of good downstream vegetative cover.**

Concrete Condition: **There are 10 to 14 foot long concrete retaining walls on both side of the spillway. The walls are beginning to crack and display evidence of deterioration.**

Stone Masonry: **No Stone masonry. There is a vertical masonry wall at downstream end of spillway.**

Settlement/Alignment/Movement: **No settlement or alignment problems observed. The far right portion of the embankment is about 1-ft higher than the portions left of the property line.**

Seepage/Foundation Drainage: **No seepage or drainage observed. The downstream slope & toe appear to be exceptionally dry.**

Riprap: Upstream **The left 2/3 has riprap. To the right of the property line there is no riprap and the embankment is slightly scarped or eroded at normal water level.**

Erosion/Burrows: **There is evidence of minor past erosion immediately left or spillway.**

Vegetative Cover: **The crest of the dam has a fair growth of grass with some thin spots. To the right of the spillway the downstream slope has weeds with small woody growth.**

Other: **There are two large trees on the dam. To the left of the spillway there is a large maple at the upstream edge of the crest. On the right side there is a fairly large tree (Oak ?) at the downstream edge of the crest.**
Photos/Graphics/Sketches **See Parts XIII and XIV**

Part V: Principal Spillway, Training Walls, Apron

Number of Principal Spillways: **1**

Spillway Type : **Broad crested, two stage (stepped) concrete spillway**

General Description: **The spillway is a two stage or stepped concrete spillway that tapers from 14 foot at the upstream face to 13 ft. at the downstream end. The primary or lower spillway channel averages 38-in wide by 9-in deep. The two secondary levels have a combined average width of 75 in by 9-in deep.**
General Condition: **Satisfactory**

Concrete Condition: **Weathered, but satisfactory.**

Stone Masonry: **The downstream face of spillway is a masonry wall with minor irregularities and several voids. There is a short section of masonry training wall immediately below the spillway on the left side of the channel that is missing some stones but appears stable at this time.**
Settlement/Alignment/Movement: **None observed**

Cracks: **Insignificant**

Other: **The area immediately under the spillway outfall is overgrown with a dense mat of roots. No low level outlet pipe or conduit was visible.**
Photos/Graphics/Sketches **See Parts XIII and XIV**

Part VI: Auxiliary Spillway, Training Walls, Apron

Number of Auxiliary Spillways:

Spillway Type : **Earth channel**

General Description: **There appears to be a grassed earthen area that will flow prior to dam being overtopped. The area has been extensively changed by landscaping and it is hard to determine the original ground line.**
General Condition: **Satisfactory**

Concrete Condition: **None**

Stone Masonry: **None**

Settlement/Alignment/Movement: **None**

Cracks: **None**

Scouring/Undermining: **None**

Seepage/Foundation Drainage: **None**

Other: **There is no formal auxiliary spillway. There is a low area at the left abutment contact that would probably flow prior to the dam overtopping. It discharges to a paved driveway and then over a broad flat, grassy area prior to re-entering the stream downstream of the residence.**

Photos/Graphics/Sketches **See Parts XIII and XIV**

Part VII: Downstream Channel

Number of Downstream Channels: 1

Channel Name: **Tiffany Brook**

General Description: **Appears to have reverted to a natural stream**

General Condition: **Satisfactory**

Scouring: **None observed**

Debris: **Minor organic material**

Riprap: **Minor - mostly native rock.**

Other: Approximately **185 feet downstream of the outlet is a small low (<5-ft) dam, immediately upstream of South Winds Drive.**
Photos/Graphics/Sketches **See Parts XIII and XIV**

Part VIII: Intake Structure(s)

Number of Intake Structures: ?

Other: **Previous reports had listed a non-functioning low level outlet; however no evidence was observable during the inspection. There is a square depression in the floor of the spillway that reportedly houses the control for a gate but nothing was discernable during the dam inspection. Due to water level during the inspection no upstream inlet was observable and the root mat under the spillway prevented observation of any outlet. (see photo 8)**

Photos/Graphics/Sketches **See Parts XIII and XIV**

Part IX: Outlet Structure(s)

Number of Outlet Structures: None observable

Part X: Miscellaneous Features

List miscellaneous features

Photos/Graphics/Sketches **See Parts XIII and XIV**

Part XI: Downstream Hazard Classification Reassessment

Downstream Hazard Classification

BB - Moderate Potential Hazzard Dam

No change recommended

Part XII: Recommendations

Recommendations:

1. **Undertake a Hydrology and Hydraulics (H&H) analysis to determine if the spillway (s) can safely pass a 100 year event.**
2. **Regrade the embankment as necessary to provide spillway capacity and a uniform crest elevation.**
3. **Provide riprap erosion protection to the right upstream slope of the embankment at normal pool elevation.**
4. **Repair the downstream masonry walls to prevent further deterioration.**
5. **Repair cracks in the left and right upstream concrete walls.**
6. **Remove trees and woody vegetation from the embankment and within 25 feet of the toe of the embankment.**

Part XIII: Photographs/Graphics

Photo 1 Dam from left

Photo 2 Upstream face from left

Photo 3 Right portion of embankment

Photo 4 Crest of embankment from right abutment

Photo 5 Large tree on downstream slope of right embankment

Photo 6 Spillway from right

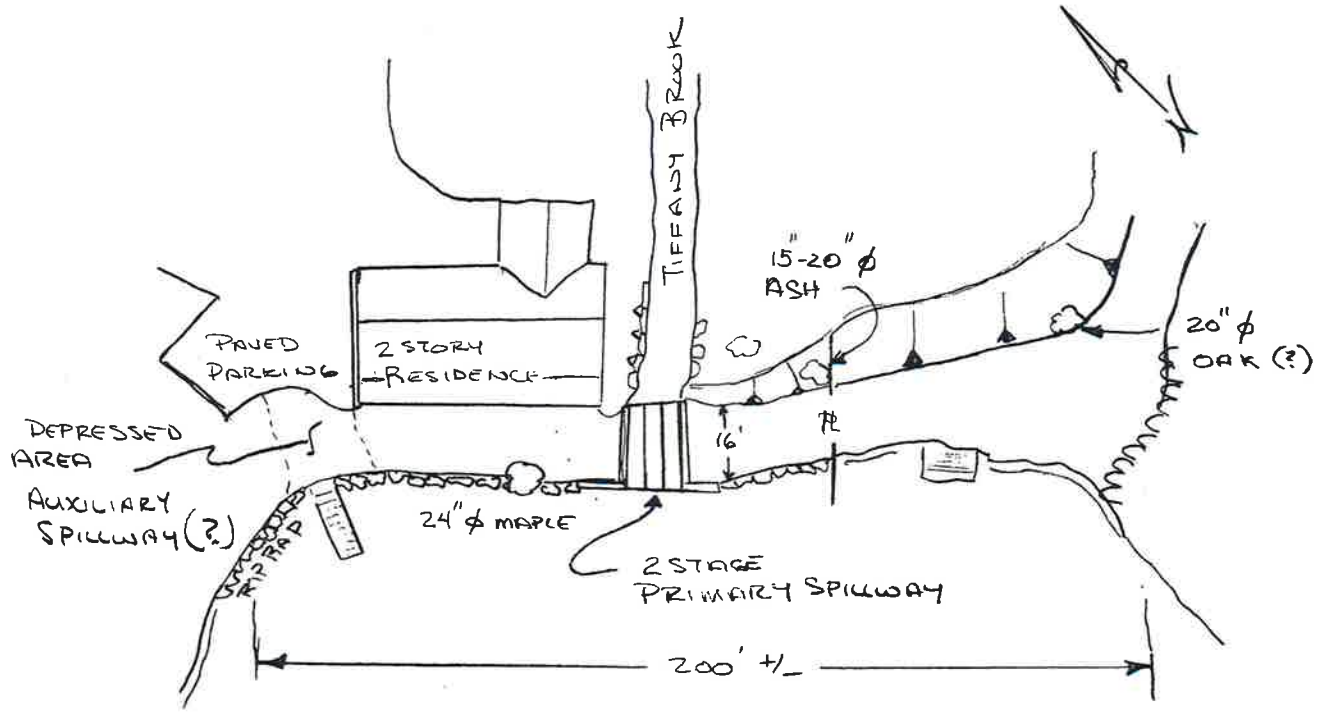
Photo 7 Downstream channel

Photo 8 Downstream face of spillway

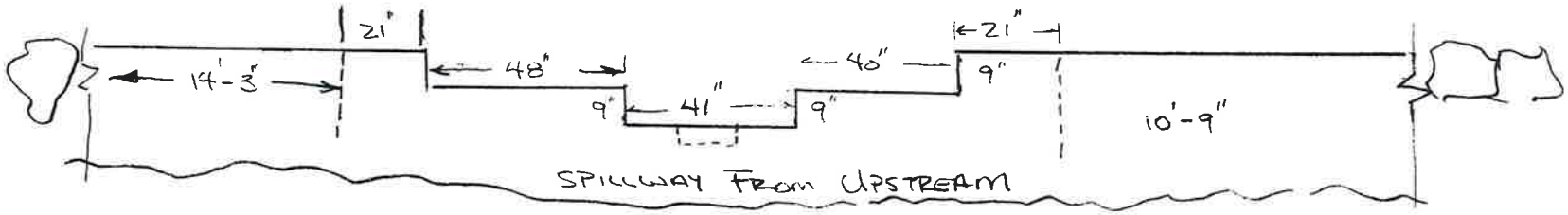
Photo 9 Erosion on left side of spillway

Photo 10 Impoundment from Spillway

Part XIV: Sketches



BIRCH MILL POND



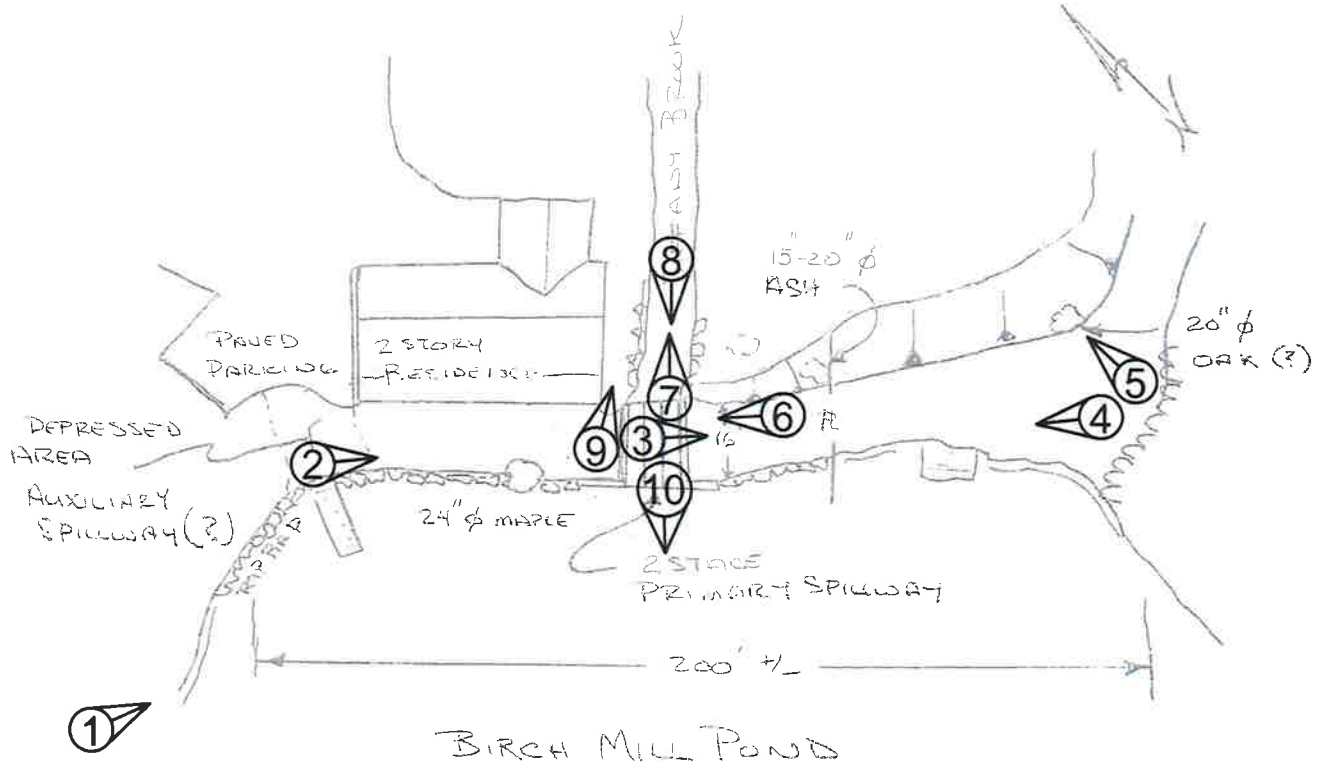
SITE SKETCH

BIRCH MILL POND DAM
CT DAM #5004

ESSEX, CT

NOT TO SCALE

Lenard Engineering, Inc.
Winsted, CT



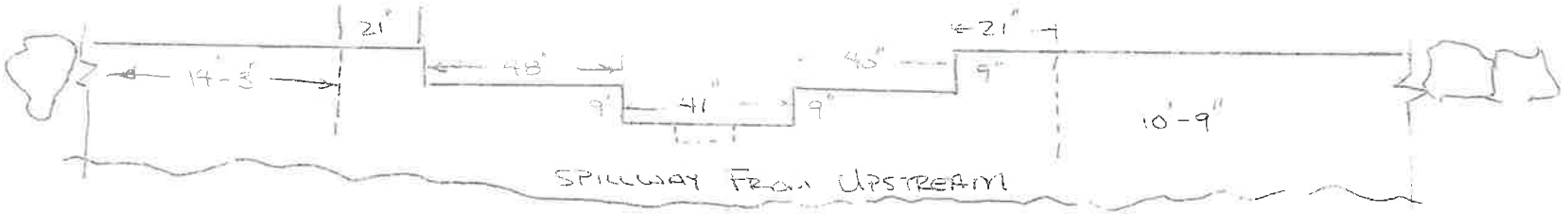


PHOTO LOCATIONS
BIRCH MILL POND DAM
CT DAM #5004

ESSEX, CT

NOT TO SCALE

Lenard Engineering, Inc.
Winsted, CT

Part XV: Professional Engineer Certification

The following certification must be signed by a Professional Engineer

"I hereby certify that the information provided in this report has been examined by me and found to be true and correct in my professional judgment."

Roger Hurlbut
Signature of Professional Engineer

9/29/2017
Date

Roger Hurlbut **Project Engineer** **0014893**
Printed Name of Professional Engineer Title CT P.E. Number

Lenard Engineering Inc.
Name of Firm

Part XVI: Owner Signature

The following statement must be signed by the Owner(s) of the subject Dam.

"The information provided in this report has been examined by me."

Signature of Owner	Date 9/12/2017
Bruce + Jerry MacMillan Name of Owner (print or type)	Title (if applicable)
Signature of Owner	Date
Name of Owner (print or type)	Title (if applicable)
Adrienne Brochu, President South Winds Homeowner Association Signature of ~~Owner~~	Date 9/18/2017
Adrienne Brochu Name of Owner (print or type)	Title (if applicable)
Rocco J. D'Amico CVD Signature of Owner Owner D'Amico	Date Sept 20-17
Rocco J D'Amico Name of Owner (print or type)	Title (if applicable)

Note: Mail the completed inspection report to:

DAM SAFETY PROGRAM
INLAND WATER RESOURCES DIVISION
CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CT 06106

In addition, please send this completed report converted to Adobe portable document format (pdf) including a scan of the signature page via email to: DEEP.DamSafety@ct.gov

Appendix A: Overall Dam Condition Selection Standards

Condition	Definition
Good	Through file research and after a thorough visual inspection it has been determined that the dam is well maintained and no existing dam safety deficiencies are recognized. Only continued routine maintenance is required.
Satisfactory	Through file research and after a thorough visual inspection it has been determined that no significant deficiencies are recognized. Only minor maintenance is required and only minor flaws are noted.
Fair	Through file research and after a thorough visual inspection it has been determined that there are no critical deficiencies with the dam that would require engineering analysis with the following exception: the engineer may recommend that a hydrologic and hydraulic analysis be conducted due to the lack of adequate freeboard and/or the lack of spillway capacity documentation. A condition exists at the dam that may require some sort of additional monitoring.
Poor	Through file research and after a thorough visual inspection it has been determined that deficiencies are recognized that require engineering analysis and/or remedial action.
Unsatisfactory	Through file research and after a thorough visual inspection it has been determined that a deficiency is recognized that requires immediate or emergency action. Administrative/Enforcement action may be required as determined by the Dam Safety Program. Reservoir level restrictions may be necessary until the problem is resolved.

Appendix B - Hazard Classification of Dams

I. A Class AA dam is a negligible hazard potential dam which, if it were to fail, would result in the following:

(i) no measurable damage to roadways;
(ii) no measurable damage to land and structures;
(iii) negligible economic loss.

II. A Class A dam is a low hazard potential dam which, if it were to fail, would result in any of the following:

(i) damage to agricultural land;
(ii) damage to unimproved roadways (less than 100 ADT);
(iii) minimal economic loss.

III. A Class BB dam is a moderate hazard potential dam which, if it were to fail, would result in any of the following:

(i) damage to normally unoccupied storage structures;
(ii) damage to low volume roadways (less than 500 ADT);
(iii) moderate economic loss.

IV. A Class B dam is a significant hazard potential dam which, if it were to fail, would result in any of the following:

(i) possible loss of life;
(ii) minor damage to habitable structures, residences, hospitals, convalescent homes, schools, etc;
(iii) damage to or interruption of the use of service of utilities;
(iv) damage to primary roadways (less than 1500 ADT) and railroads;
(v) significant economic loss.

V. A Class C dam is a high hazard potential dam which, if it were to fail, would result in any of the following:

(i) probable loss of life;
(ii) major damage to habitable structures, residences, hospitals, convalescent homes, schools, etc;
(iii) damage to main highways (greater than 1500 ADT);
(iv) great economic loss.