– SPRING STREET POND DAM –

VISUAL INSPECTION REPORT

Dam Name: Spring Street Pond Dam

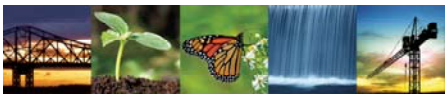
CTDEEP ID#: 15911

Owner: Town of Wethersfield

Town: Wethersfield, Connecticut

Consultant: GZA GeoEnvironmental, Inc.

Date of Inspection: September 27, 2016



Proactive by Design

GEOTECHNICAL
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CONSTRUCTION MANAGEMENT

655 Winding Brook Drive
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Glastonbury, CT 06033
T: 860.286.8900
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www.gza.com

April 11, 2017
GZA File No. 05.0045906.00

Mr. Derrick Gregor, P.E.
Town Engineer, Town of Wethersfield
505 Silas Deane Highway
Wethersfield, Connecticut 06109

Re: Visual Inspection Report
Spring Street Pond Dam
CTDEEP # 15911

Dear Mr. Gregor:

In accordance with our proposal dated August 28, 2015 and our Notice to Proceed dated July 21, 2016 attached to the Town of Wethersfield Purchase Order Number: 20166877-000, GZA GeoEnvironmental, Inc. (GZA) has completed a visual inspection of the Spring Street Pond Dam located in Wethersfield, Connecticut. Our site visit was performed on September 27, 2016 by Matthew A. Taylor, P.E., David M. Barstow, P.E., and Anthony Trani of GZA GeoEnvironmental, Inc. (GZA) and Don Moisa of Town of Wethersfield.

The purpose of our efforts was to assess the current condition of the dam and to prepare an updated, formal Regulatory Inspection of the dam in accordance with the State of Connecticut Department of Energy and Environmental Protection (CTDEEP) Dam Safety Regulation 22a-409, pertaining to inspection frequency. Our services and report are subject to the Limitations found in **Appendix D**.

Spring Street Pond Dam is currently classified by the Connecticut Department of Energy and Environmental Protection (CTDEEP) as **Class AA (Negligible) Hazard Potential**. Based on our visual inspection, the dam has been judged to be in **POOR** condition, in GZA's opinion. Refer to **Appendix A** for the condition rating definitions as per the Connecticut Dam Safety regulations. At the time of the inspection, the weather was cloudy with a temperature of approximately 65° Fahrenheit.

A further discussion of our evaluation and recommended actions are presented in the attached Inspection Report, which includes: (a) CTDEEP Dam Inspection Form; (b) Limitations; (c) Photo Log and Photo Location Plan; and (d) Historic Drawings.

The primary deficiencies at the dam observed during our visual inspection include, but are not limited to, the following:

1. The right embankment had been partially breached by overtopping during severe thunderstorms in 2008.
2. Over-steep areas due to wave action on the upstream slopes and vehicular traffic was observed on the downstream slopes of both the left and right embankments.
3. The left and right embankment slopes and crest have sparse grassy vegetation with many bare soil areas and requires reseeding;
4. The downstream channel (Beaver Brook) appeared to be blocked and was not flowing at the time of the inspection. The cause of the apparent blockage was not observable.
5. Brush growth at the left and right embankment spillway contacts.

The "Poor" Condition rating for the dam has been assigned because the embankment has been partially breached.

In accordance with Connecticut Regulation of the Department of Energy and Environmental Protection concerning Dams and Similar Structures Regulations (Section 22a-409-2), Spring Street Pond Dam is currently classified as a **Class AA (Negligible)** hazard potential dam. As defined, failure of the dam would cause no measurable damage to roadways, land and structures and negligible economic loss. Even with the partial breach, outflow from the impoundment flows over the downstream road (Spring Street) with minimum damage.

It is critical to note that the condition of the dam depends on numerous and constantly changing internal and external conditions and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can unsafe conditions be detected.

GZA GeoEnvironmental, Inc. will submit one bound color copy of the final inspection report to the Inland Water Resources Division of CTDEEP. An electronic copy of the complete report in unlocked, searchable PDF format, using the latest CTDEEP prescribed format will also be sent to the CTDEEP.

We appreciate the opportunity to perform this inspection for the Town. Please don't hesitate to contact us if you have any questions or concerns.

Sincerely,

GZA GeoEnvironmental, Inc.

David M. Barstow, P.E.
Sr. Project Manager

Peter H. Baril, P.E.
Consultant/Reviewer

Matthew A. Taylor, P.E.
Principal-in-Charge

Enclosures:

CTDEEP Dam Inspection Report Form
Appendices
A. Overall Dam Condition Selection Standards
B. Hazard Classification of Dams
C. Photo Location Plan and Photo Log with Site Sketch
D. Limitations
E. Historic Drawings

Connecticut Department of
Energy & Environmental Protection
Bureau of Water Protection & Land Reuse
Inland Water Resources Division

DAM SAFETY PROGRAM
DAM INSPECTION REPORT FORM – FOR REGULATORY INSPECTION

Please complete this form in accordance with the instructions (DEEP-DAM-INST-002).

Part I: Summary of Dam Inspection

Dam Name:	**Spring Street Pond Dam**	Inspection Date(s):	**9/27/2016**
Alternate Dam Name(s):	**Spring Street Skating Pond**	CT Dam ID #:	**15911**
Location (Municipality):	**Wethersfield**	Temperature / Weather:	**~65°F /Sunny**
Registered?: Yes or No If yes, provide the 9 digit registration number found on the notification letter.	**Yes – Number Unknown**	Pool Level: See Instructions	**16.25-inches below the top of the training wall**
Emergency Action Plan?: Yes or No If Yes, see instructions	**No**	Impoundment Use: use options listed in instructions	**Recreational**
Hydraulic and Hydrologic Analysis?: Yes or No If Yes, see instructions	**No**	Stability Analysis?: Yes or No If Yes, see instructions	**No**
Overall Condition: (refer to Appendix A located at the end of this form) **Poor**			

Persons present at the inspection *(select the tab button in the last cell to the right to create another row)*		
Name	**Title/Position**	**Representing**
Matthew Taylor. P.E.	**Associate Principal**	**GZA GeoEnvironmental, Inc.**
David Barstow, P.E.	**Project Manager**	**GZA GeoEnvironmental, Inc.**
Anthony Trani	**Assistant Project Manager**	**GZA GeoEnvironmental, Inc.**
Don Moisa	**Operations Coordinator**	**Town of Wethersfield**

Owners and Operators: If there is more than one owner or operator, copy the empty table below for each owner or operator and paste right below the previous table, then complete the information for each

*By providing this e-mail address you are agreeing to receive official correspondence from DEEP, at this electronic address, concerning the subject report. Please remember to check your security settings to be sure you can receive e-mails from "ct.gov" addresses. Also, please notify DEEP if your e-mail address changes by email via deep.damsafety@ct.gov.

Indicate if Owner or Operator: Owner

Name: **Town of Wethersfield (Contact: Jeff Bridges, Town Manager)**

Mailing Address: **505 Silas Deane Highway**

City/Town: **Wethersfield** State: **CT** Zip Code: **06109**

Phone: **(860) 721-2801** ext.: **---**

Emergency Phone: **---**

*E-mail: **jeff.bridges@wethersfieldct.gov**

Part II: General Dam Information

General Description: Spring Street Pond Dam is an earthen embankment dam with a maximum height of about 4 feet and a total length of approximately 300 feet. The right embankment is about 140-feet long and the left embankment is about 146-feet long. Existing topography serve as the abutments for the embankments. The integrated, reinforced concrete spillway, stilling basin and training wall structure is about 14 feet wide and separates the two embankments.

The primary spillway is near the center of the dam and consists of a 6-foot long, broad crested weir with stop logs. Training walls are located on the left and right side of the spillway and the stop logs slide into a notch in the training walls.

Water discharges over the spillway into a 6.3-feet long by 12-feet wide, reinforced concrete stilling basin. Water discharges from the stilling basin into two 36-inch-diameter reinforced concrete pipes (RCP) which cross under Spring Street East and then discharge to Beaver Brook The impoundment is used for recreation and is an ice skating rink in the winter.

Hazard Classification:	AA	**Dam Height (ft):**	4
Dam Length (ft):	300	**Spillway Length (ft):**	6
Spillway Type:	Broad crested weir with stop logs	**Normal Freeboard (ft):**	1
Drainage Area (square miles):	0.94 (600-acres)	**Impoundment Area (at principal spillway crest, in acres):**	1.4

Watercourse(s): Spillway discharges to Beaver Brook which flows south to the Connecticut River.

OTHER INFORMATION:

Several documents were available at either the Connecticut Department of Energy and Environmental Protection (CTDEEP) or in the Town of Wethersfield files for Spring Street Pond Dam. Below is a review of pertinent files.

Based on the “Engineers Report” dated October 2009 by Town of Wethersfield, Spring Street Pond Dam suffered damage in 2008 during severe summer-time thunderstorms. These storms caused the impoundment to overtop and erode the right embankment near the right abutment contact. The eroded area is about 1 foot deep, approximately 60-foot long and now roughly matches the elevation of Spring Street East. The right embankment and debris from the erosion has been washed into the downstream area. Per the referenced report, the top of the dam is below the 100-year flood elevation and overtops during 10-year storm events.

In 2008, the Town proposed a dam rehabilitation where the embankment would be raised to a uniform height and the eroded portion of the right embankment would be repaired. A plan entitled “Earthen Dam Repairs, Spring Street at Beaver Brook Park”, dated November 2008, prepared by Town of Wethersfield Engineering Division presents the proposed repairs which include repairing the right embankment, regrading and revegetating the left and right embankments, constructing an emergency spillway near the right embankment spillway contact and constructing a rip rap-lined plunge pool downstream of Spring Street at the outlet end of the twin, 36-inch pipes at Beaver Brook.

The Town of Wethersfield prepared and submitted a CTDEEP permit application form for repairs to Spring Street Pond Dam, dated October 2008, which was approved by the CTDEEP. However, the repairs were not performed and the permit was withdrawn by the Town of Wethersfield in 2009. According to the permit application, the spillway has a capacity of 31.5 cubic feet per second during peak outflow, presumably due to the two, 36-inch outlet pipes.

References:

“Engineers Report, Minor Dam Repairs, Spring Street Skating Pond, Spring Street, Wethersfield, Connecticut”,

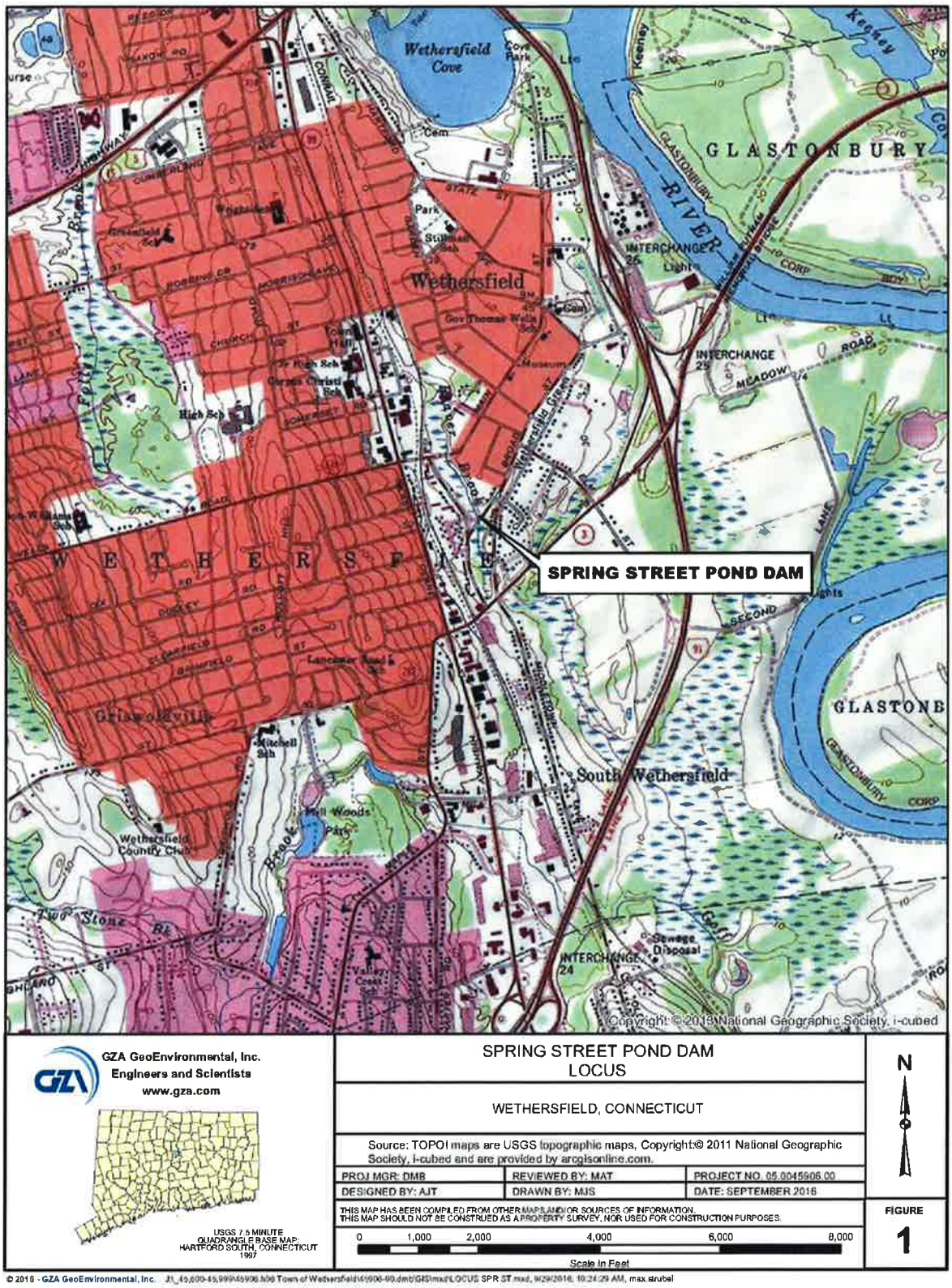
dated October 2009 by Town of Wethersfield;

"Permit Application Transmittal Form, State of Connecticut, Department of Environmental Protection", dated October 2008 by Town of Wethersfield;

Plan entitled "Earthen Dam Repairs, Spring Street at Beaver Brook Park", dated November 2008, prepared by Town of Wethersfield Engineering Division, Sheet 1 of 1, unknown datum; and

Plan entitled "Spring Street Skating Pond Spillway, Beaver Brook", dated 9/2/1982, prepared by Town of Wethersfield Engineering Division, File No. 62-33, unknown datum.

Part III: Aerial Photo/Location Map



GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

USGS 7.5 MINUTE QUADRANGLE BASE MAP: HARTFORD SOUTH, CONNECTICUT 1997

SPRING STREET POND DAM
LOCUS

WETHERSFIELD, CONNECTICUT

Source: TOPO! maps are USGS topographic maps, Copyright:© 2011 National Geographic Society, i-cubed and are provided by arcgisonline.com.

PROJ MGR: DMB	REVIEWED BY: MAT	PROJECT NO. 05.0045906.00
DESIGNED BY: AJT	DRAWN BY: MJS	DATE: SEPTEMBER 2016

THIS MAP HAS BEEN COMPILED FROM OTHER MAPS AND/OR SOURCES OF INFORMATION.
THIS MAP SHOULD NOT BE CONSTRUED AS A PROPERTY SURVEY, NOR USED FOR CONSTRUCTION PURPOSES.

0 1,000 2,000 4,000 6,000 8,000
Scale in Feet

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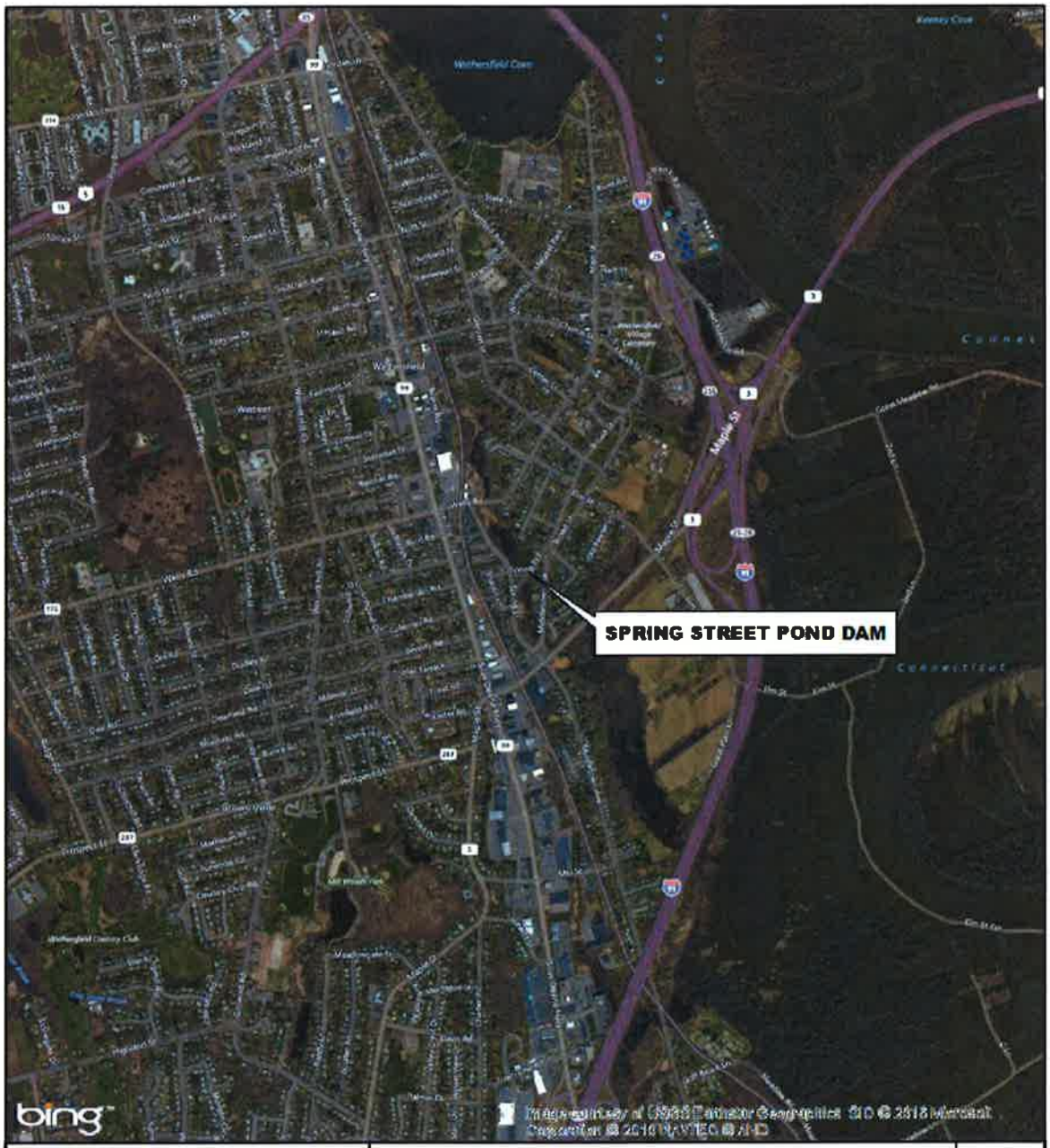
FIGURE 1



GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

USGS 7.5 MINUTE QUADRANGLE BASE MAP: HARTFORD SOUTH, CONNECTICUT 1997

SPRING STREET POND DAM
AERIAL PHOTOGRAPH

WETHERSFIELD, CONNECTICUT

Source: Imagery provided by arcgisonline.com.

PROJ MGR: DMB	REVIEWED BY: MAT	PROJECT NO. 05.0045906.00
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0 1,000 2,000 4,000 6,000 8,000
Scale in Feet

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FIGURE 2

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Part IV: Dam/Embankment/Dike Information

Number of Dam/Embankments/Dikes: (2) Two

All directional references relate to looking downstream i.e. right is west and left is east.

Dam/Embankment/Dike Name (see instructions): Right Embankment
General Description: The right embankment is an approximately 140-foot long earthen embankment with a 10H:1V upstream and downstream slope. The crest is about 4 feet wide. Existing topography functions as the right abutment. The left abutment ties into the primary spillway.
General Condition: Poor
Concrete Condition: N/A
Stone Masonry: N/A
Settlement/Alignment/Movement: None observed
Seepage/Foundation Drainage: N/A
Riprap: None observed
Erosion/Burrows: The right embankment has been eroded area over a 60-feet long section near the right abutment. At the time of the inspection, water was observed flowing through the eroded area and there was a 20-foot wide channel with 2 to 3 inches. The water flowed across the Spring Street to a stormwater catch basin in Spring Street East. The catch basin outlet discharges to Beaver Brook. The upstream slope of the embankment was undercut and a 1- to1.5-foot high, vertical soil slope was observed at the water's edge. Rutting/displaced soil apparently due to vehicular traffic was observed on the downstream slope.
Vegetative Cover: The ground surface was generally covered in sparse grass with several large bare soil areas. Small brush was observed at the spillway contact.
Other: Ponded water was observed on Spring Street East at the toe of the downstream slope in the area of an existing stormwater catch basin**.**
Photos/Graphics/Sketches: See Parts XIII and XIV below.

Dam/Embankment/Dike Name (see instructions): Left Embankment
General Description: The left embankment is an approximately 146-foot long earthen embankment with a about 5H:1V upstream and downstream slopes. The crest is about 4 feet wide. Existing topography functions as the left abutment.
General Condition: Poor
Concrete Condition: N/A
Stone Masonry: N/A
Settlement/Alignment/Movement: None observed
Seepage/Foundation Drainage: N/A
Riprap: None observed
Erosion/Burrows: An eroded area was observed between about 55- to 90-feet from the left spillway contact. The erosion was up to 2 to 3 inches deep. The toe of the upstream embankment was undercut and a 1- to1.5-foot high, vertical soil slope was observed at the water's edge. Rutting from vehicular traffic was observed on the downstream toe.
Vegetative Cover: The ground surface was generally covered in sparse, maintained grass with occasional bare soil areas. Small brush was observed at the spillway contact.
Other: Ponded water was observed on Spring Street East at the toe of the downstream slope near the spillway contact.
Photos/Graphics/Sketches: See Parts XIII and XIV below.

Part V: Principal Spillway, Training Walls, Apron

Number of Principal Spillways: (1) One

Spillway Type (see instructions): Broad Crested Weir with Stop Logs
General Description: The integrated, reinforced concrete spillway, stilling basin and training wall structure is about 14 feet wide. The spillway is a 6-feet long broad crested weir with stop logs which connects the left and right

training walls. The left and right training walls are each about 18-feet long. The training walls also function as the upstream walls of the stilling basin. The stop logs are 4-inches wide by 12-inches tall by 78-inches long. Water flows over the spillway into an approximate 5.3-foot long by 12-foot wide stilling basin that is 5.3 feet deep with a concrete bottom. The walls of the stilling basin are 12-inch thick reinforced concrete and the bottom is 20-inch thick concrete slab per the historic drawings. There are two 36-inch-diameter RCP outlet pipes that convey flow from the spillway under Spring Street to headwall of the stilling basin at Beaver Brook.
General Condition: Satisfactory (however much of the structure was submerged, which limited visual observations)
Concrete Condition: Satisfactory – minor spalling observed, see below.
Stone Masonry: N/A
Settlement/Alignment/Movement: None observed - the majority of the structure was underwater.
Cracks: A minor crack was observed on the left and right sides of the training wall at the 90-degree corner. A crack and exposed rebar were observed on the left training wall near the spillway.
Scouring/Undermining: None observed - the majority of the structure was underwater.
Seepage/Foundation Drainage: None observed, the majority of the structure was underwater.
Other: N/A
Photos/Graphics/Sketches: See Parts XIII and XIV below.

Part VI: Auxiliary Spillway, Training Walls, Apron

Number of Auxiliary Spillways: (0) None

Part VII: Downstream Channel

Number of Downstream Channels: (1) One

Channel Name (see instructions), include Watercourse Name: Beaver Brook
General Description: The downstream channel begins at the outlet of the two, 36-inch diameter outlet pipes and consists of natural brook that flows to the south. The brook water level appeared to be full (i.e. over the top of the pipes) and generally stagnant. Downstream blockage within the brook was likely. The streambed was also not visible at the time of inspection.
General Condition: Fair due to the apparent blockage(s).
Scouring: None observed - vision was obscured due to the high water levels.
Debris: None observed.
Riprap: None observed –vision was obscured due to the high water levels.
Other: In addition to the spillway discharge flows, Beaver Brook also receives roadway stormwater flows from catch basins in Spring Street and Spring Street East. Adjacent to the spillways stilling basin is a 42-inch diameter RCP that enters from the northeast, a 30-inch diameter RCP that enters from the north and a 24-inch RCP that enters from the west.
Photos/Graphics/Sketches: See Parts XIII and XIV below.

Part VIII: Intake Structure(s)

Number of Intake Structures: (0) None

Part IX: Outlet Structure(s)

Number of Outlet Structures: (0) None

Part X: Miscellaneous Features

List miscellaneous features: Spring Street Pond has a large population of ducks, geese and swans. These birds were observed in the pond and sitting on the embankments.

Photos/Graphics/Sketches: See Parts XIII and XIV below.

Part XI: Downstream Hazard Classification Reassessment

Downstream Hazard Classification:

Spring Street Pond Dam is located north of a connector road between Spring Street and Spring Street East. The dam impounds Beaver Brook which flows to the south and eventually to the Connecticut River. The downstream area is undeveloped and wooded. Middletown Avenue is approximately 1,000 feet south of the dam and Route 3 is approximately 1,200 feet south of the dam. Beaver Brook passes underneath Middletown Avenue and Route 3 which are approximately 10 feet higher in elevation than Beaver Brook based upon topography available at CTECO (http://www.cteco.uconn.edu/). If the dam were to breach, the water would flow over the section of Spring Street East immediately downgradient of the dam (potentially damaging it) and into the downstream area. However, it is unlikely that Middletown Avenue and Route 3 would be affected by the flood water.

Based on an Average Daily Traffic (ADT) map available at www.CT.Gov, there is no traffic count available for Spring Street near the dam or Spring Street East. However, traffic counts on portions near the dam range from 1,400 to 5,000 cars. Based upon the network of roads in the area and observations during the inspection, the traffic flow on Spring Street East is likely below 1,500 ADT. If Spring Street were to flood, traffic could very easily be detoured away. Therefore, Spring Street Pond Dam appears to meet the criteria for a Class AA (Negligible) Hazard Potential dam and no change to the hazard classification is required.

Part XII: Recommendations *(See instructions for identifying recommendations)*

Recommendations: The following recommendations and remedial measures generally describe the recommended approach to address the current deficiencies at the dam. Prior to undertaking any maintenance, repairs or remedial measures, the applicability of dam safety and environmental permits should be considered.

Studies and Analyses:

1. Perform preliminary studies to evaluate permanently repair options for the breach in the right embankment and to evaluate overtopping protection options for the dam. The studies should include a limited hydrologic and hydraulic (H&H) study to determine reservoir elevations for various flood levels (i.e. 10-year, 50-year and 100-year). Determine the depths of overtopping over the embankments for each flood. Evaluate overtopping protection options (i.e. loam and seed, reinforced turf mat, and riprap) to protect the embankment from erosion during overtopping events. Select the most appropriate option based on a balance of risk and short-term/long-term costs.

2. Inspect the condition of the spillway, stilling basin and 36-inch diameter outlet pipe when they are not submerged.

Recurrent Maintenance Recommendations:

GZA recommends the following recurrent repairs or maintenance-level activities that can be undertaken by Owner and do not require engineering design or a dam safety permit.

1. Temporarily place and compact granular fill followed by loam and seed within the breached section of the right embankment to mitigate overtopping onto Spring Street during minor storm events. Permanent repairs should be performed based on the results of the previously recommended studies.

2. Continue to cut the grass on the top, downstream slope, and downstream area of the dam. Reseed as needed.

3. Remove the brush around the spillway.

4. Investigate the cause of the backwater condition in Beaver Brook downstream of the dam. Perform the necessary maintenance to remove blockages and restore flow.

Part XIII: Photographs/Graphics *(see instructions and Appendix C)*

Refer to Appendix C for Photographic Log

Part XIV: Sketches

Refer to Appendix C and E for a Site Sketch.

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."

Signature of Professional Engineer		Date
Matthew A. Taylor	**Associate Principal**	**26480**
Printed Name of Professional Engineer	Title	CT P.E. Number

GZA GeoEnvironmental, Inc
Name of Firm

Affix P.E. Stamp Here

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	3/2/2017 Date
Jeff Bridges (Town of Wethersfield) Name of Owner (print or type)	**Town Manager** Title (if applicable)
Signature of Owner	Date
Name of Owner (print or type)	Title (if applicable)
Signature of Owner	Date
Name of Owner (print or type)	Title (if applicable)
Signature of Owner	Date
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

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

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:

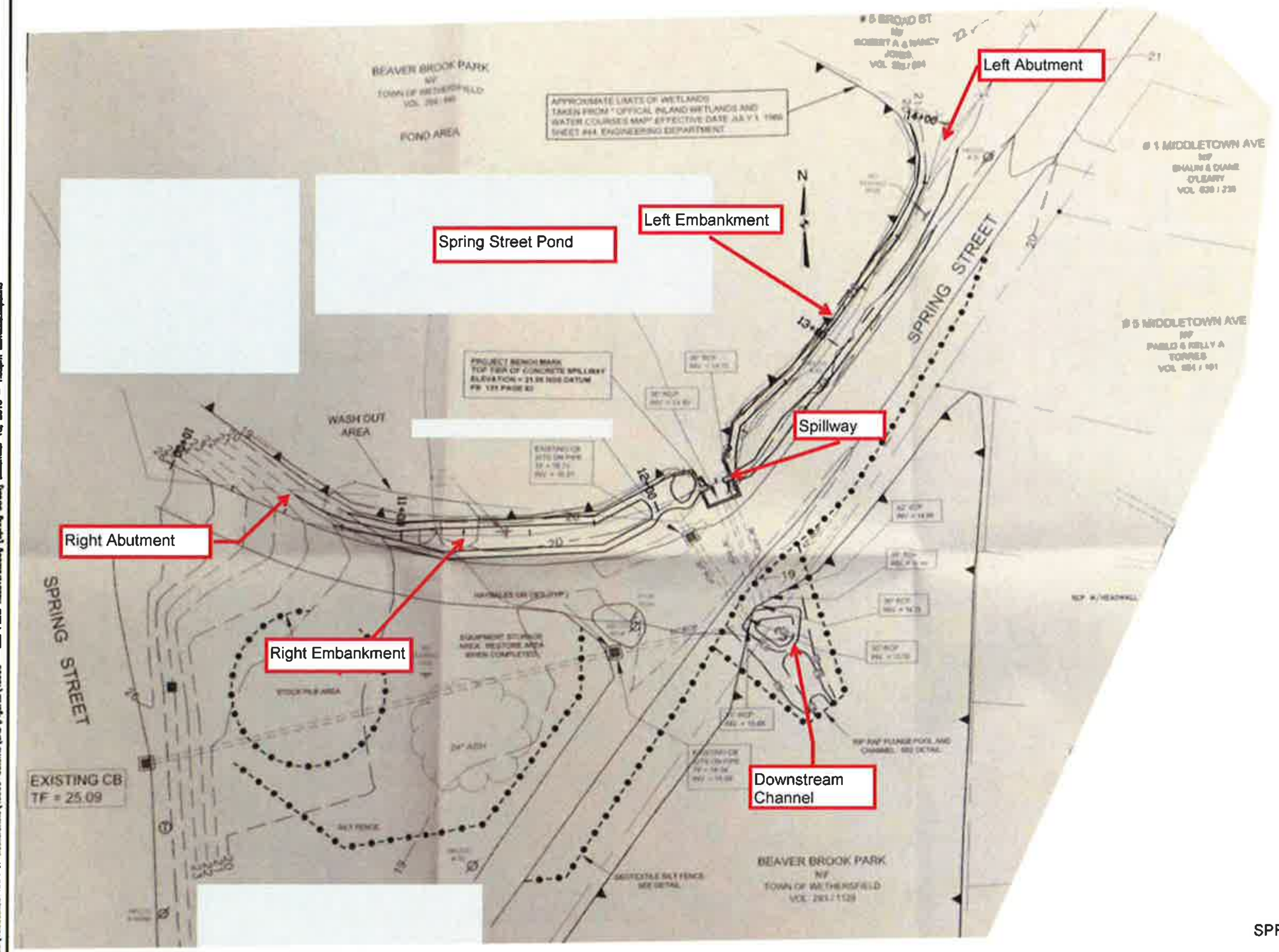
(i) possible loss of life;
(ii) minor damage to habitable structures, residences, hospitals, convalescent homes, schools, etc;
(iii) damage to or interruption of the use of service of utilities;
(iv) damage to primary roadways (less than 1500 ADT) and railroads;
(v) significant economic loss.

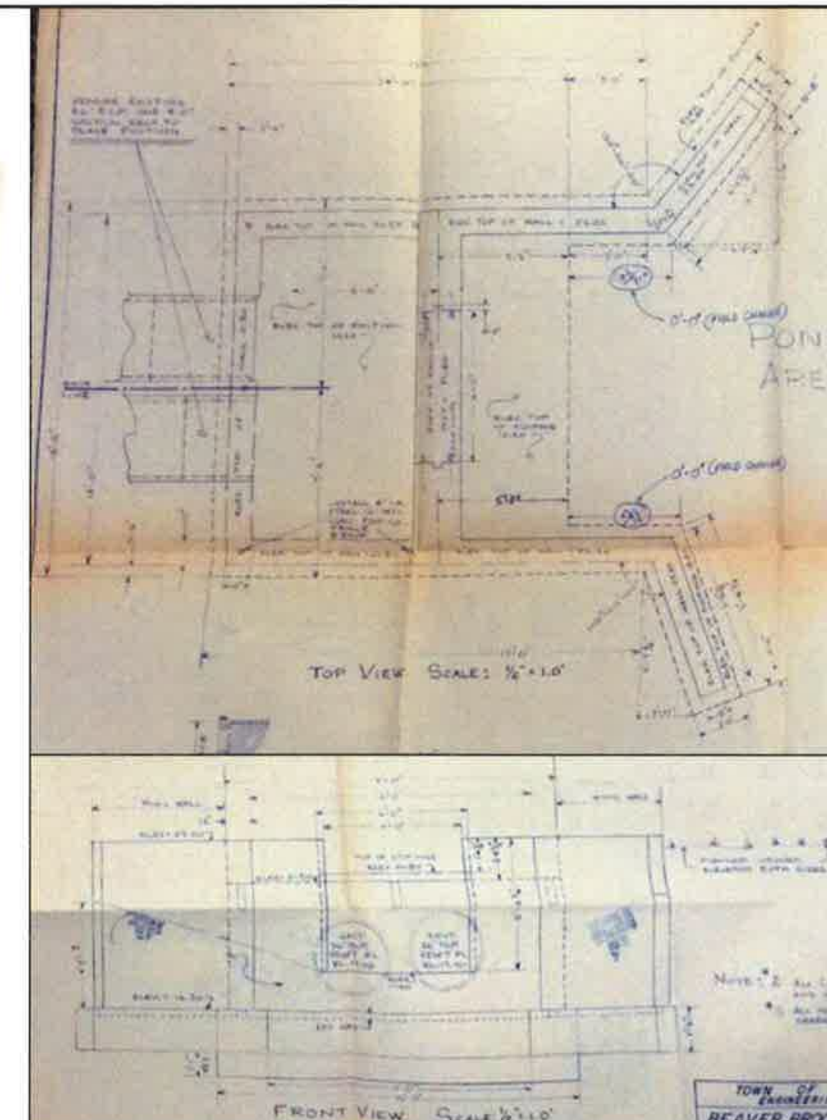
V. A Class C dam is a high hazard potential dam which, if it were to fail, would result in any of the following:

(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.

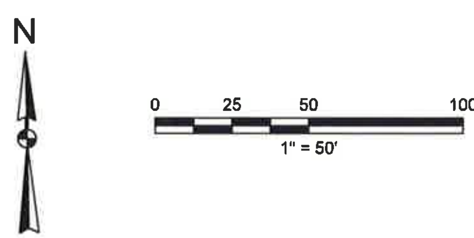
APPENDIX C

PHOTO LOCATION PLAN AND PHOTO LOG WITH SITE SKETCH





SPRING STREET POND DAM SPILLWAY
PLAN AND ELEVATION VIEW
NOT TO SCALE



NOTES:

1. BASEMAP DEVELOPED FROM A PLAN ENTITLED "SPRING STREET AT BEAVER BROOK PARK, EARTHEN DAM REPAIRS", DATED NOVEMBER 2008, BY TOWN OF WETHERSFIELD ENGINEERING DIVISION, SCALE 1"= 20', SHEET NO. 1 OF 1.

2. SPILLWAY PLAN AND ELEVATION VIEW DEVELOPED FROM A PLAN ENTITLED "SPRING STREET SKATING POND SPILLWAY", DATED SEPT. 2, 1980, BY TOWN OF WETHERSFIELD ENGINEERING DIVISION, SCALE AS NOTED, DRAWING NO. M-2553.

3. DAM INSPECTION PERFORMED BY GZA PERSONNEL ON SEPTEMBER 27, 2016.

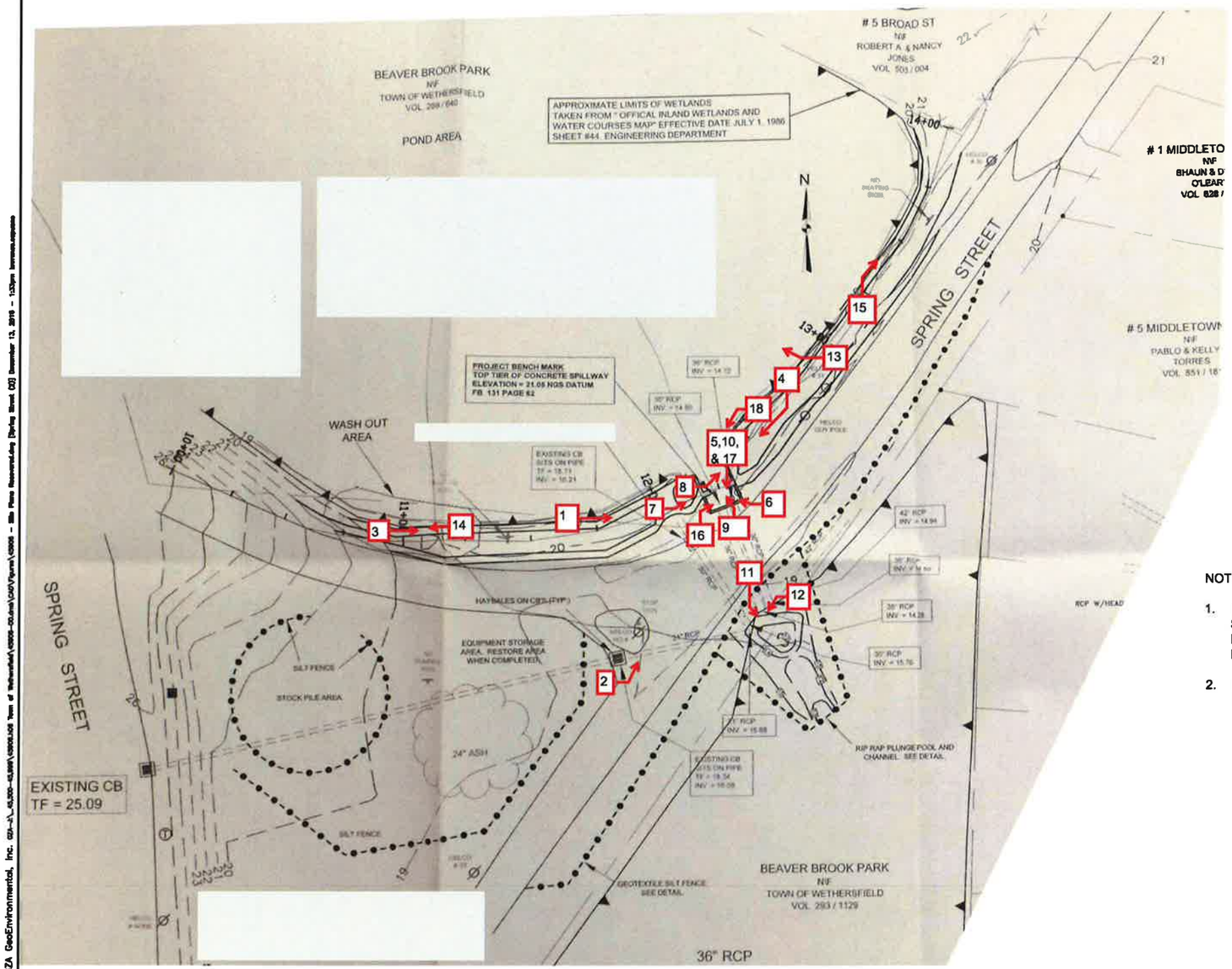
NO.	ISSUE/DESCRIPTION	BY	DATE

SPRING STREET POND DAM
SPRING STREET EXTENSION AT BEAVER BROOK PARK
WETHERSFIELD, CONNECTICUT

SITE SKETCH

PREPARED BY:	PREPARED FOR:
GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com	TOWN OF WETHERSFIELD ENGINEERING DIVISION WETHERSFIELD, CONNECTICUT

PROJ MGR: DMB	REVIEWED BY: DMB	CHECKED BY: MAT	FIGURE
DESIGNED BY: LBC	DRAWN BY: LBC	SCALE: 1" = 50'	3
DATE: SEPTEMBER 2016	PROJECT NO. 05.0045906.00	REVISION NO.	SHEET NO.



N

0 20 40 80

1" = 40'

LEGEND

1 APPROXIMATE LOCATION / ORIENTATION OF PHOTOGRAPH WITH NUMBER IDENTIFICATION

NOTES:

1. BASEMAP DEVELOPED FROM A PLAN ENTITLED "SPRING STREET AT BEAVER BROOK PARK, EARTHEN DAM REPAIRS", DATED NOVEMBER 2008, BY TOWN OF WETHERSFIELD ENGINEERING DIVISION, SCALE 1"= 20', SHEET NO. 1 OF 1.
2. DAM INSPECTION PERFORMED BY GZA PERSONNEL ON SEPTEMBER 27, 2016.

NO.	ISSUE/DESCRIPTION	BY	DATE

SPRING STREET POND DAM
SPRING STREET EXTENSION AT BEAVER BROOK PARK
WETHERSFIELD, CONNECTICUT

PHOTO LOCATION PLAN

PREPARED BY:	PREPARED FOR:
GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com	TOWN OF WETHERSFIELD ENGINEERING DIVISION WETHERSFIELD, CONNECTICUT

PROJ MGR: DMB	REVIEWED BY: DMB	CHECKED BY: MAT	FIGURE 4
DESIGNED BY: LBC	DRAWN BY: LBC	SCALE: 1" = 40'	
DATE: SEPTEMBER 2016	PROJECT NO. 05.0045906.00	REVISION NO.	SHEET NO.

GZA GeoEnvironmental, Inc.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.:
Town of Wethersfield	Spring Street Pond Dam, Wethersfield, CT	05.0045906.00

Photo No.:	Date:
01	9/27/16

Direction Photo Taken:
Easterly

Photographer:
D. Barstow

Description:

Overview of Spring Street Pond Dam from upstream. Note erosion due to wave action on the upstream slope.

Photo No.:	Date:
02	9/27/16

Direction Photo Taken:
Northeasterly

Photographer:
D. Barstow

Description:

Overview of dam from downstream.

GZA GeoEnvironmental, Inc.		PHOTOGRAPHIC LOG
Client Name: Town of Wethersfield	**Site Location:** Spring Street Pond Dam, Wethersfield, CT	**Project No.:** 05.0045906.00

Photo No.: 03	**Date:** 9/27/16

Direction Photo Taken:
Southeasterly

Photographer:
D. Barstow

Description:
Overview of right embankment from the right abutment. Note the breach in the right embankment (approx. 60-feet long) near right abutment and bare earth on embankment. Two to three inches of water is flowing over embankment into a submerged stormwater catch basin that is connected to downstream channel (Beaver Brook).

Photo No.: 04	**Date:** 9/27/16

Direction Photo Taken:
Southwesterly

Photographer:
D. Barstow

Description:

Overview of the left embankment from left abutment. Note bare areas and areas of erosion at the upstream slope and crest near the sign post.

Client Name:	Site Location:	Project No.:
Town of Wethersfield	Spring Street Pond Dam, Wethersfield, CT	05.0045906.00

Photo No.:	Date:
05	9/27/16

Direction Photo Taken:
Southerly

Photographer:
D. Barstow

Description:

Overview of spillway from upstream. Note timber stop logs in spillway and log on right side of spillway.

Photo No.:	Date:
06	9/27/16

Direction Photo Taken:
Northwesterly

Photographer:
D. Barstow

Description:

Overview of spillway from downstream. Note brush on either side of spillway.

GZA GeoEnvironmental, Inc.		PHOTOGRAPHIC LOG
Client Name: Town of Wethersfield	**Site Location:** Spring Street Pond Dam, Wethersfield, CT	**Project No.:** 05.0045906.00

Photo No.: 07	**Date:** 9/27/16

Direction Photo Taken: Northeasterly

Photographer: D. Barstow

Description:

Overview of right training wall. Note areas of erosion at contact with embankment.

Photo No.: 08	**Date:** 9/27/16

Direction Photo Taken: Northeasterly

Photographer: D. Barstow

Description:

Overview of left training wall and spillway.

Client Name:	Site Location:	Project No.:
Town of Wethersfield	Spring Street Pond Dam, Wethersfield, CT	05.0045906.00

Photo No.:	Date:
09	9/27/16

Direction Photo Taken:
Northwesterly

Photographer:
D. Barstow

Description:

Overview of broad crested weir. Note stop logs.

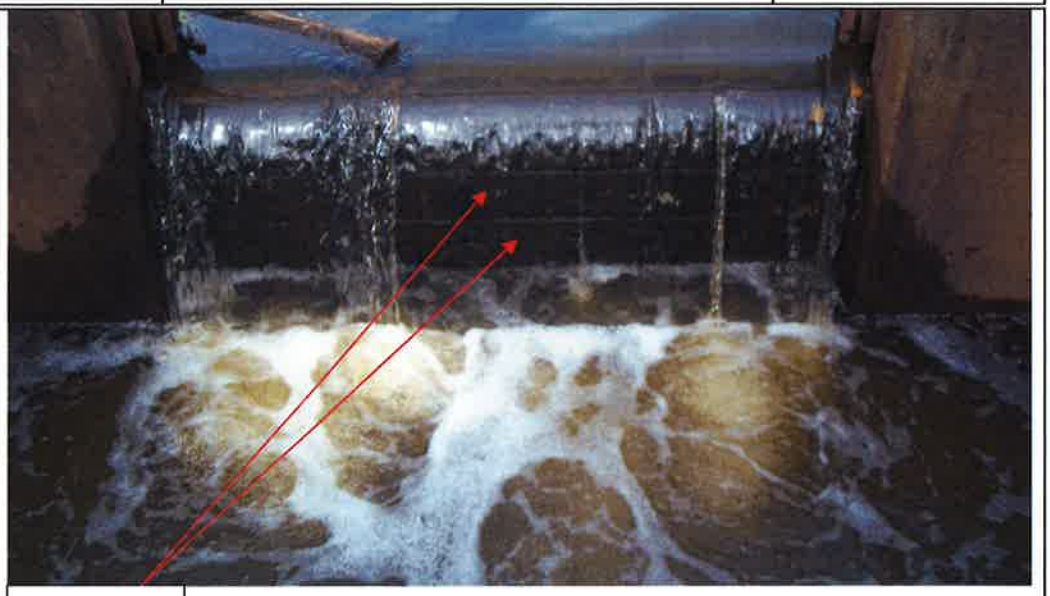


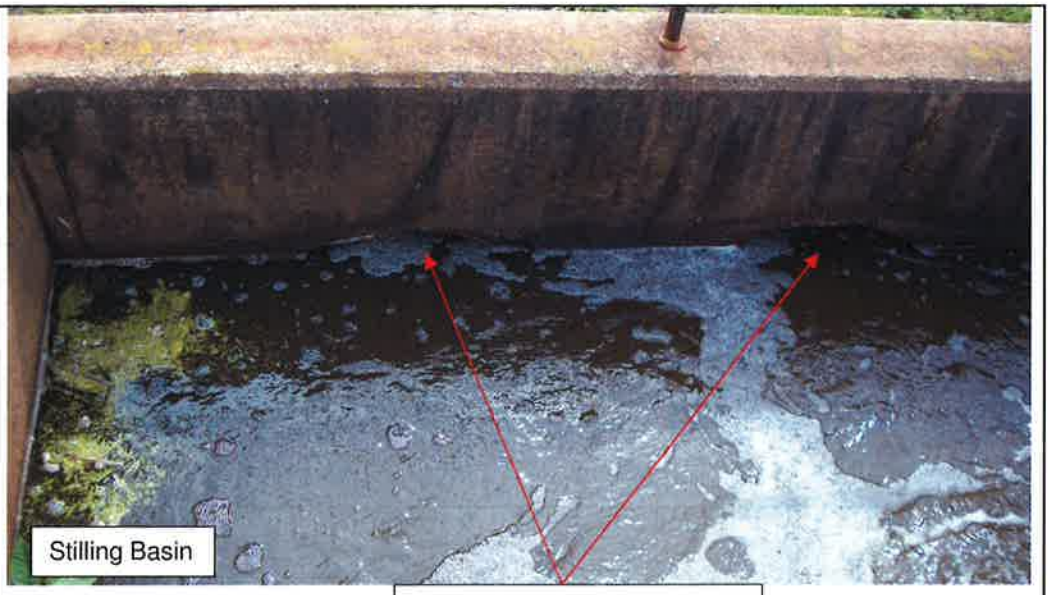
Photo No.:	Date:
10	9/27/16

Direction Photo Taken:
Southerly

Photographer:
D. Barstow

Description:

Overview of stilling basin. Note the tops of the two 36-inch-diameter RCP outlet pipes on the downstream headwall of the stilling basin.



GZA GeoEnvironmental, Inc.	PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.:
Town of Wethersfield	Spring Street Pond Dam, Wethersfield, CT	05.0045906.00

Photo No.:	Date:
11	9/27/16

Direction Photo Taken:
Southeasterly

Photographer:
D. Barstow

Description:

Overview of downstream channel. Note the two outlet pipes for the dam in the center of the photo. Note the lack of flow due to a possible downstream blockage.

Photo No.:	Date:
12	9/27/16

Direction Photo Taken:
Southwesterly

Photographer:
D. Barstow

Description:

Overview of the discharge ends of the 36-inch diameter RCP outlet pipes.

GZA GeoEnvironmental, Inc.	PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.:
Town of Wethersfield	Spring Street Pond Dam, Wethersfield, CT	05.0045906.00

Photo No.:	Date:
13	9/27/16

Direction Photo Taken:
Northwesterly

Photographer:
D. Barstow

Description:

Overview of reservoir area.

Photo No.:	Date:
14	9/27/16

Direction Photo Taken:
Westerly

Photographer:
D. Barstow

Description:

Right embankment breach near the right abutment contact. Note the bare soil on the crest of the right embankment.

Client Name:	Site Location:	Project No.:
Town of Wethersfield	Spring Street Pond Dam, Wethersfield, CT	05.0045906.00

Photo No.:	Date:
15	9/27/16

Direction Photo Taken:
Northeasterly

Photographer:
D. Barstow

Description:

Pooled water at the downstream toe of the left embankment and undercutting of the upstream slope.

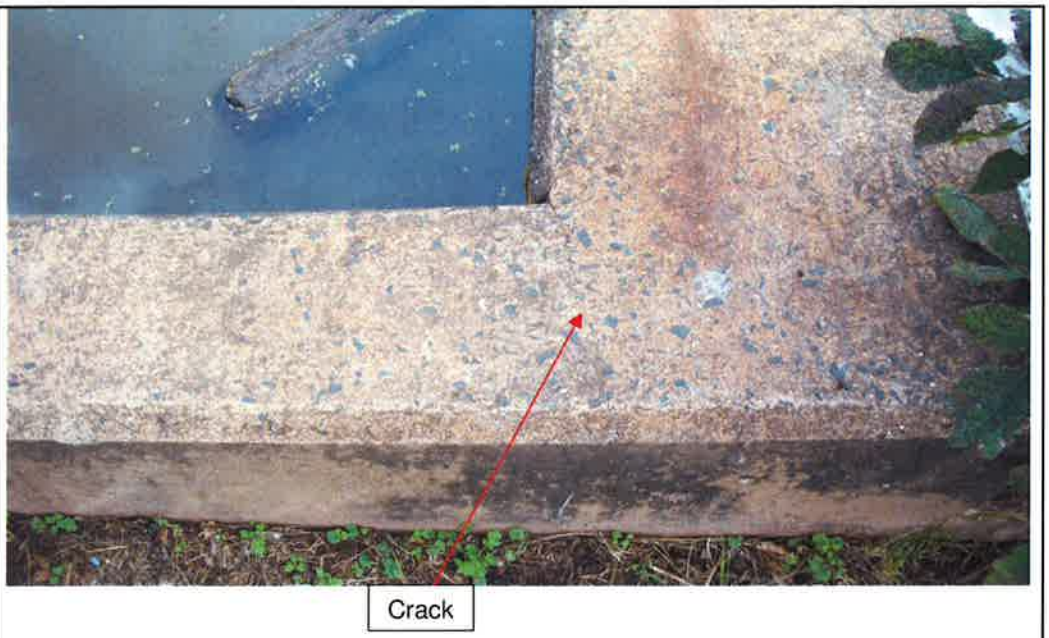
Photo No.:	Date:
16	9/27/16

Direction Photo Taken:
Northeasterly

Photographer:
D. Barstow

Description:

Minor crack in right training wall where it intersects the spillway.



APPENDIX D

LIMITATIONS

USE OF REPORT

1. GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of the University of Connecticut (Client) for Spring Street Pond Dam and for the stated purpose(s) and location(s) identified in the Report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not identified in the agreement, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

STANDARD OF CARE

2. Our findings and conclusions are based on the work conducted as part of the Scope of Services set forth in the Report and/or proposal, and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. Conditions other than described in this report may be found at the subject location(s).

3. Our services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made.

SUBSURFACE CONDITIONS

4. If presented, the generalized soil profile(s) and description, along with the conclusions and recommendations provided in our Report, are based in part on widely-spaced subsurface explorations by GZA and/or others, with a limited number of soil and/or rock samples and groundwater /piezometers data and are intended only to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and were based on our assessment of subsurface conditions. The composition of strata, and the transitions between strata, may be more variable and more complex than indicated. For more specific information on soil conditions at a specific location refer to the exploration logs. The nature and extent of variations between these explorations may not become evident until further exploration or construction. If variations or other latent conditions then appear evident, it will be necessary to reevaluate the conclusions and recommendations of this report.

5. Water level readings have been made in test holes (as described in the Report), monitoring wells and piezometers, at the specified times and under the stated conditions. These data have been reviewed and interpretations have been made in this Report. Fluctuations in the groundwater and piezometer levels, however, occur due to temporal or spatial variations in areal recharge rates, soil heterogeneities, reservoir and tailwater levels, the presence of subsurface utilities, and/or natural or artificially induced perturbations.

GENERAL

6. The observations described in this report were made under the conditions stated therein. The conclusions presented were based solely upon the services described therein, and not on scientific tasks or procedures beyond the scope of described services or the time and budgetary constraints imposed by the Client.

7. In preparing this report, GZA relied on certain information provided by the Client, state and local officials, and other parties referenced therein available to GZA at the time of the evaluation. GZA did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this evaluation.

8. Any GZA hydrologic analysis presented herein is for the rainfall volumes and distributions stated herein. For storm conditions other than those analyzed, the response of the site's spillway, impoundment, and drainage network has not been evaluated.

9. Observations were made of the site and of structures on the site as indicated within the report. Where access to portions of the structure or site, or to structures on the site was unavailable or limited, GZA renders no opinion as to the condition of that portion of the site or structure. In particular, it is noted that water levels in the impoundment and elsewhere and/or flow over the spillway may have limited GZA's ability to make observations of underwater portions of the structure. Excessive vegetation, when present, also inhibits observations.

10. In reviewing this Report, it should be realized that the reported condition of the dam is based on observations of field conditions during the course of this study along with data made available to GZA. It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued inspection and care can there be any chance that unsafe conditions be detected.

COMPLIANCE WITH CODES AND REGULATIONS

11. We used reasonable care in identifying and interpreting applicable codes and regulations. These codes and regulations are subject to various, and possibly contradictory, interpretations. Compliance with codes and regulations by other parties is beyond our control.

12. This scope of work does not include an assessment of the need for fences, gates, no-trespassing signs, repairs to existing fences and railings and other items which may be needed to minimize trespass and provide greater security for the facility and safety to the public. An evaluation of the project for compliance with OSHA rules and regulations is also excluded.

COST ESTIMATES

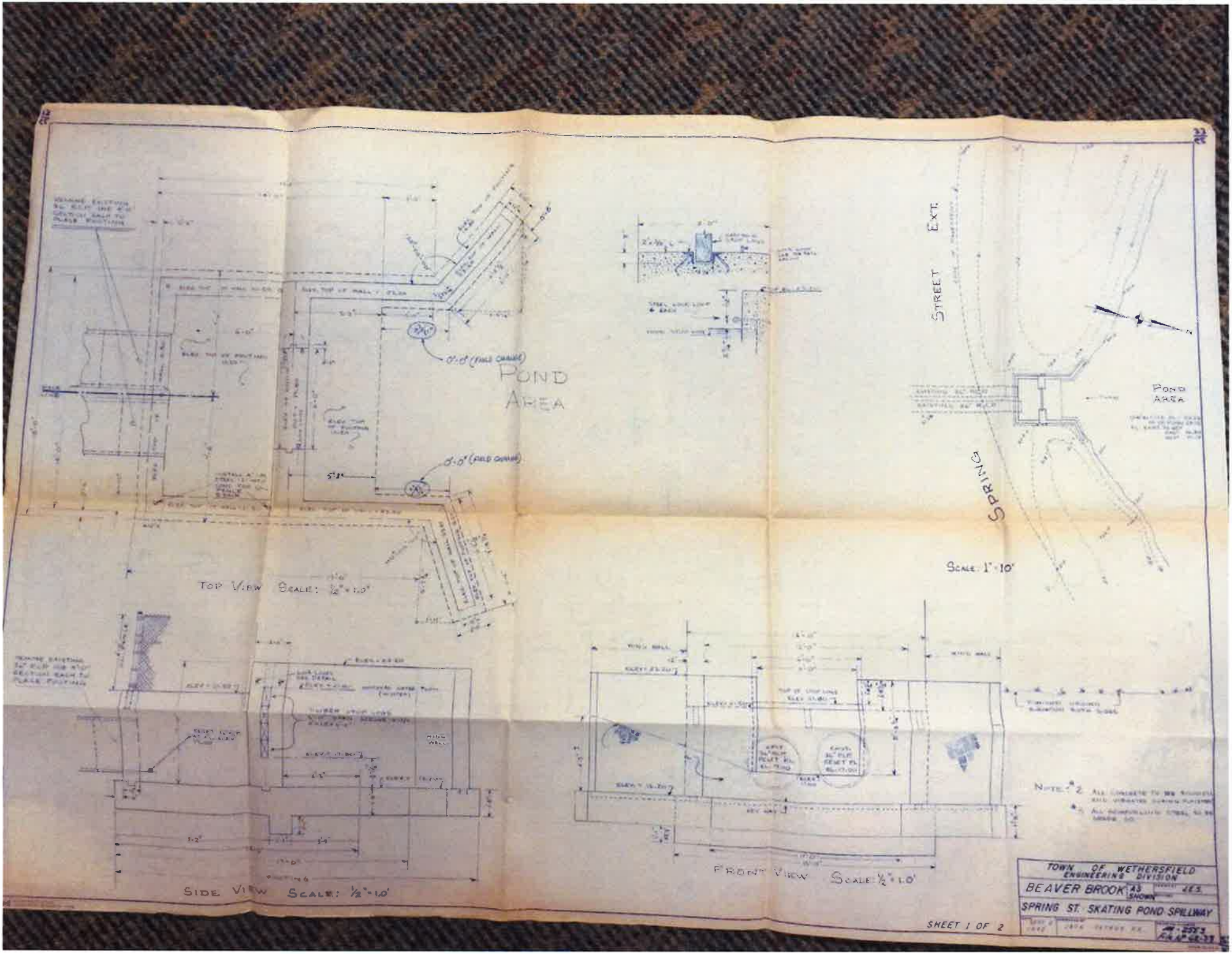
13. Unless otherwise stated, our cost estimates are for comparative, or general planning purposes. These estimates may involve approximate quantity evaluations and may not be sufficiently accurate to develop construction bids, or to predict the actual cost of work addressed in this Report. Further, since we have no control over the labor and material costs required to plan and execute the anticipated work, our estimates were made using our experience and readily available information. Actual costs may vary over time and could be significantly more, or less, than stated in the Report.

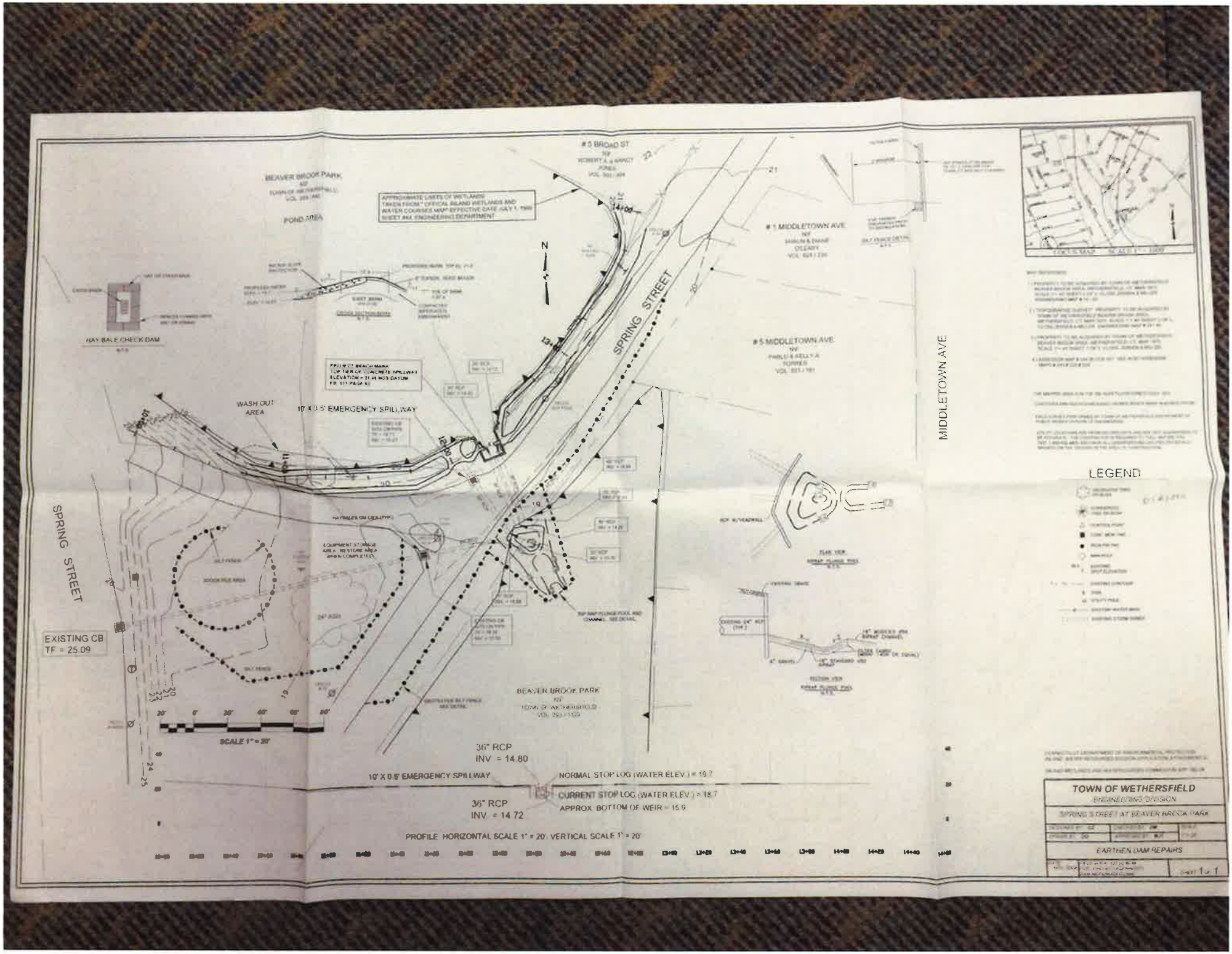
ADDITIONAL SERVICES

14. It is recommended that GZA be retained to provide services during any future: site observations, explorations, evaluations, design, implementation activities, construction and/or implementation of remedial measures recommended in this Report. This will allow us the opportunity to: i) observe conditions and compliance with our design concepts and opinions; ii) allow for changes in the event that conditions are other than anticipated; iii) provide modifications to our design; and iv) assess the consequences of changes in technologies and/or regulations.

APPENDIX E

HISTORIC DRAWINGS


POND AREA
TOP VIEW SCALE: 1/2"=1.0'
SIDE VIEW SCALE: 1/2"=1.0'
FRONT VIEW SCALE: 1/2"=1.0'
STREET EXT.
SPRING
POND AREA
SCALE 1"=10'
NOTE: 2. ALL CONCRETE TO BE
TOWN OF WETHERSFIELD
ENGINEERING DIVISION
BEAVER BROOK AS SHOWN
SPRING ST. SKATING POND SPILLWAY
SHEET 1 OF 2


BEAVER BROOK PARK
POND AREA
5 BROAD ST
1 MIDDLETOWN AVE
5 MIDDLETOWN AVE
SPRING STREET
MIDDLETOWN AVE
HAY BALE CHECK DAM
WASH OUT AREA
10' X 0.5' EMERGENCY SPILLWAY
EXISTING CB
TF = 25.09
36" RCP
INV = 14.80
36" RCP
INV = 14.72
NORMAL STOP LOG (WATER ELEV.) = 19.7
CURRENT STOP LOG (WATER ELEV.) = 18.7
APPROX BOTTOM OF WEIR = 15.9
PROFILE HORIZONTAL SCALE 1" = 20' VERTICAL SCALE 1" = 20'
SCALE 1" = 20'
LEGEND
TOWN OF WETHERSFIELD
ENGINEERING DIVISION
SPRING STREET AT BEAVER BROOK PARK
EARTHEN DAM REPAIRS
Sheet 1 of 1