APPENDIX A

West Britannia Dam Removal Engineering Designs
WEST BRITANNIA DAM REMOVAL
100% DESIGN SUBMITTAL
TAUNTON, MA
June 30, 2017

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7. FABRIC ENCAPSULATED SOIL LIFT (FES) AND SURFACE FABRIC TREATMENT TYPICAL DETAILS
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West Britannia Dam Removal Taunton, MA

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DIG SAFE: STATE LAW REQUIRES AN PERSON PERFORMING EXCAVATION ON PRIVATE OR PUBLIC PROPERTY TO CALL DIG SAFE: 1-888-DIG-SAFE OR 8-1-1. ALL EXCAVATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH MASSACHUSETTS DIG SAFE LAW.

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"RESERVED FOR DESIGN ENGINEER'S STAMP"

Cover and Sheet Index
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SURVEY CONTROL

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<tr>
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NOTES:

CONTOURS BEYOND THE LIMITS OF DISTURBANCE IN UPLAND AREAS FROM STATE DIGITAL ELEVATION MODEL.

THE HORIZONTAL COORDINATE SYSTEM IS THE NORTH-AMERICAN DATUM OF 1983, MASSACHUSETTS STATE PLANE, MAINLAND ZONE, US FEET.


EXISTING PARCEL DATE PROVIDED BY THE CITY OF TAUNTON.

CONSTRUCTION SEQUENCE

1. Establish staging area and install erosion control BMPs.
2. Construct temporary access from parking lot.
3. Cross-channel to the island. Remove timber flashboards in the raceway to lower water levels as necessary.
4. Divert flows into east channel.
5. Excavate fine sediment from west channel and stockpile for eventual off-site disposal.
6. Divert flows into west channel. Remove timber flashboards and erect temporary flow control as necessary.
7. Remove dam structure within limits shown.
8. Excavate fine sediment from east channel.
9. Complete grading of east channel, construct bed, excavate low flow channel, and complete bank treatments on right and left banks.
10. Construct backwater alcove and stormwater swale.
11. Seed and plant disturbed areas as shown on the plans.
12. Replace timber flashboards and allow flow back into constructed east channel.
13. Remove temporary access.
14. Re-vegetate remaining disturbed areas as required.

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**Mill River Profile View**
Sta. 24+25 to Sta. 28+75

- **SELECTED FINE SEDIMENT REMOVAL EXCAVATE TO DEPTH OF REFUSAL LEAVING 2:1 SIDE SLOPES**

- **SELECTED FOR FINE SEDIMENT REMOVAL EXCAVATE TO DEPTH OF REFUSAL LEAVING 2:1 SIDE SLOPES**

- **EXISTING 5 FT. CONTOUR, TYP.**

- **EXISTING 1 FT. CONTOUR, TYP.**

- **EXISTING STORM DRAINAGE CONVEYANCE SYSTEM**

- **EXISTING SANITARY SEWER CONVEYANCE SYSTEM**

- **EXISTING FENCE**

- **EXISTING RIPRAP**

- **CONSTRUCTED RIFFLE**

- **STONE BANK PROTECTION**

- **FINE SEDIMENT EXCAVATION**

- **EXISTING STORM DRAINAGE CONVEYANCE SYSTEM**

- **EXISTING SANITARY SEWER CONVEYANCE SYSTEM**

- **EXISTING FENCE**

- **EXISTING WALLS (SURVEYED)**

**LEGEND**

- **EXISTING 5 FT. CONTOUR, TYP.**
- **EXISTING 1 FT. CONTOUR, TYP.**
- **EXISTING STORM DRAINAGE CONVEYANCE SYSTEM**
- **EXISTING SANITARY SEWER CONVEYANCE SYSTEM**
- **EXISTING FENCE**
- **EXISTING WALLS (SURVEYED)**

*EXISTING DATA PROVIDED BY THE CITY OF TAUNTON*
**LEGEND**

- PARCEL BOUNDARIES *
- EXISTING 5 FT. CONTOUR, TYP.
- EXISTING 1 FT. CONTOUR, TYP.
- EXISTING FENCES *
- EXISTING WALLS (SURVEYED)
- EXISTING RIPRAP
- PROPOSED CONTOURS
- ACTIVE CONSTRUCTION AREA
- FABRIC ENCAPSULATED SOIL (FES) LIFTS
- SURFACE FABRIC
- CONSTRUCTED RIFFLE
- STONE TOE PROTECTION
- ACCESS, STAGING, & STOCKPILE AREA
- PERMANENT TURF REINFORCEMENT MAT (TRM)

* EXISTING DATA PROVIDED BY THE CITY OF TAUNTON.

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**TREATMENT PLAN**

**The Nature Conservancy**

West Britannia Dam Removal

Taunton, MA

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**SHEET** 4 OF 11

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West Britannia Dam Removal

Taunton, MA
DAM REMOVAL NOTES:
1. AT RIGHT ABUTMENT, IN THE PRESENCE OF THE ENGINEER, TEST WHETHER SECOND PIER IS FREESTANDING OR INTEGRATED INTO NEW CONCRETE PRIOR TO STARTING DEMOLITION WORK. (SEE SPECIFICATIONS)
2. AT LEFT ABUTMENT, REMOVE THE FULL VERTICAL EXTENT OF DAM ALONG EDGE OF RETAINING WALL. UPON REVIEW OF ENGINEER, BACKFILL WITH ROCK. FINAL LIMITS TO BE FIELD VERIFIED WITH ASSISTANCE OF ENGINEER.

CONSTRUCTION CROSS SECTIONS

EXISTING EAST CHANNEL
EXISTING WEST CHANNEL
EXISTING ISLAND

STA: 0+00
ELEV: 44.84

CHANNEL GRADING SECTION

GRADED SECTION NOTES:
1. SECTIONS ORIENTED TO FACE DOWNSTREAM
2. CHANNEL BOTTOM WIDTH: 30 FT. TYPICAL (GRADING ADJUSTS AS NEEDED FOR WEST CHANNEL FLOWS)
3. LOWER BANK SLOPE: 2:1 TYPICAL
4. AFTER REACHING FINISH GRADE, EXCAVATE 10 FT. WIDE, 0.5 FT. DEEP LOW-FLOW CHANNEL FROM STA 25+37 TO STA 26+63. ALIGNMENT TO BE DETERMINED ONSITE BY THE ENGINEER.

25+82

CHANNEL GRADING SECTION

26+21

CHANNEL GRADING SECTION

26+51

CHANNEL GRADING SECTION

27+48

CHANNEL GRADING SECTION

26+75

CHANNEL GRADING SECTION

25+51

CHANNEL GRADING SECTION

25+68

CHANNEL GRADING SECTION

27+84

CHANNEL GRADING SECTION

27+21

CHANNEL GRADING SECTION

25+06

CHANNEL GRADING SECTION

27+45

CHANNEL GRADING SECTION

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HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1"=20'

TRADEMARK OF THE NATURE CONSERVANCY

1. REFER TO SPECIFICATIONS FOR INSTRUCTIONS ON SECURING OVERLAPS IN TRM.
2. PLACE STAPLES A MINIMUM OF 2 INCHES FROM ANY MAT EDGE.
GENERAL NOTES ON SECURING COIR FABRIC:

1. SECURE THE OUTER FABRIC WITH A WOODEN STAKE THROUGH THE FABRIC ON 3 FT CENTERS (SEE DETAIL VIEWS 1 - 3). THE HOLES FOR STAKES SHALL NOT BE PRECUT. ALLOW THE STAKE TO BREAK THE MINIMUM NUMBER OF STRANDS AS IT IS BEING DRIVEN IN. DRIVE STAKES SO THAT 2" TO 3" OF THE TOP OF THE STAKE IS LEFT EXPOSED.

2. OUTER FABRIC ENDS SHALL BE JOINED BY LAPPING THE UPSTREAM PIECE OF FABRIC OVER THE DOWNSTREAM PIECE AS SHOWN IN DETAILS 1 - 3. OVERLAPS SHALL BE A MINIMUM OF 3 FT. INNER FABRIC ENDS SHALL BE OVERLAPPED BY 12". OVERLAPS SHALL BE STAGGERED FROM LIFT TO LIFT BY A MINIMUM OF 15 FT.

3. STAKING SPACING IS 3 FT. ON CENTER UNLESS OTHERWISE NOTED.
1. BANKS MAY BE CONSTRUCTED IN EITHER AN UPSTREAM OR DOWNSTREAM DIRECTION, AS LONG AS THE FABRIC IS OVERLAPPED IN THE PROPER DIRECTION.

2. PLACE A SERIES OF THREE OR MORE FORMS ON THE GROUND SO THAT THE FORMS FOLLOW THE PROPOSED STREAM BANK ALIGNMENT. BUTT THE ENDS OF THE FORMS TIGHTLY TOGETHER.


6. APPLY NATIVE SEED MIX TO TOP OF FILL FROM THE FRONT OF THE LIFT TO 3 FT BACK FROM FRONT OF THE LIFT (FIG C).

7. FOLD THE LOOSE ENDS OF THE TWO COIR FABRIC LAYERS BACK OVER THE COMPACTED FILL MATERIAL AND STRETCH TIGHTLY TO REMOVE WRINKLES (FIG D). SECURE WITH WOODEN STAKES 1 PER 3 FT ALONG THE BACK EDGE AND INTO UNDISTURBED SOIL.

8. PLACE FIRST STAKE IMMEDIATELY IN FRONT OF NEXT LIFT, OR 2 IF 2:1 FROM LIFT TOE IF THIS IS TOP LIFT

9. WHERE THE TOP OF THE LIFT MEETS THE GROUND SURFACE, EXCAVATE A KEY TRENCH 1.5 FEET WIDE AND 1 FOOT DEEP ALONG THE EDGE OF THE OUTER FABRIC LAYER, PARALLEL TO THE_Forms. SEED ENTIRE AREA OF TOP LIFT. SECURE FABRIC IN THE KEY TRENCH WITH WOODEN STAKES, 3 FT O.C.

10. BACKFILL THE KEY TRENCH WITH TOPSOIL AND CONTINUE TO APPLY TOPSOIL TO SMOOTHLY MERGE WITH EXISTING CONTOURS. APPLY NATIVE SEED MIX TO KEY TRENCH AREA.

11. SUPPLEMENT LIFT STAKING WITH ADDITIONAL WOODEN STAPLES ON 18" CENTERS EXCEPT WHERE WOODEN STAKES HAVE ALREADY BEEN PLACED.

GENERAL INSTRUCTIONS FOR FABRIC ENCAPSULATED LIFTS

1. BANKS MAY BE CONSTRUCTED IN EITHER AN UPSTREAM OR DOWNSTREAM DIRECTION, AS LONG AS THE FABRIC IS OVERLAPPED IN THE PROPER DIRECTION.

2. PLACE A SERIES OF THREE OR MORE FORMS ON THE GROUND SO THAT THE FORMS FOLLOW THE PROPOSED STREAM BANK ALIGNMENT. BUTT THE ENDS OF THE FORMS TIGHTLY TOGETHER.


6. APPLY NATIVE SEED MIX TO TOP OF FILL FROM THE FRONT OF THE LIFT TO 3 FT BACK FROM FRONT OF THE LIFT (FIG C).

7. FOLD THE LOOSE ENDS OF THE TWO COIR FABRIC LAYERS BACK OVER THE COMPACTED FILL MATERIAL AND STRETCH TIGHTLY TO REMOVE WRINKLES (FIG D). SECURE WITH WOODEN STAKES 1 PER 3 FT ALONG THE BACK EDGE AND INTO UNDISTURBED SOIL.

8. PLACE FIRST STAKE IMMEDIATELY IN FRONT OF NEXT LIFT, OR 2 IF 2:1 FROM LIFT TOE IF THIS IS TOP LIFT

9. WHERE THE TOP OF THE LIFT MEETS THE GROUND SURFACE, EXCAVATE A KEY TRENCH 1.5 FEET WIDE AND 1 FOOT DEEP ALONG THE EDGE OF THE OUTER FABRIC LAYER, PARALLEL TO THE FORMS. SEED ENTIRE AREA OF TOP LIFT. SECURE FABRIC IN THE KEY TRENCH WITH WOODEN STAKES, 3 FT O.C.

10. BACKFILL THE KEY TRENCH WITH TOPSOIL AND CONTINUE TO APPLY TOPSOIL TO SMOOTHLY MERGE WITH EXISTING CONTOURS. APPLY NATIVE SEED MIX TO KEY TRENCH AREA.

11. SUPPLEMENT LIFT STAKING WITH ADDITIONAL WOODEN STAPLES ON 18" CENTERS EXCEPT WHERE WOODEN STAKES HAVE ALREADY BEEN PLACED.
PLANTING NOTES:

1. All non-paved disturbed areas to be seeded with native seed mix and cover crop and planted with native trees and shrubs according to the specifications.

2. Final location of all plants to be field verified with assistance of engineer.

3. Seed to be placed beneath all COR fabrics and trim.

LEGEND

- EXISTING 5 FT CONTOUR (TYP)
- EXISTING 1 FT CONTOUR (TYP)
- ACTIVE CONSTRUCTION AREA
- X EXISTING FENCES*
- POST CONSTRUCTION ORDINARY HIGH WATER
- PLANTING AREAS
- STONE TOE PROTECTION
- EXISTING RIPRAP
- SEEDING ONLY AREA

*EXISTING DATA PROVIDED BY THE CITY OF TAUNTON
**PERMITTING INFORMATION: FLOOD INUNDATION**

The approximate flood inundation extents shown are based on the flood frequency estimates used for analysis and design simulated with the final project hydraulic model, and are included for informational purposes only. See final design report for further detail on the flood frequency estimates and hydraulic modeling. Flood inundation extents included herein should under no circumstance be substituted for or interpreted to represent prevailing regulatory floodplain mapping completed under the jurisdiction and direction of the Federal Emergency Management Agency (FEMA).

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**LEGEND**
- **100' RIVERFRONT BUFFER (EXISTING CONDITIONS)**
- **200' RIVERFRONT BUFFER (EXISTING CONDITIONS)**
- **100' RIVERFRONT BUFFER (RESPONSE UNDER PROPOSED CONDITIONS)**
- **200' RIVERFRONT BUFFER (RESPONSE UNDER PROPOSED CONDITIONS)**
- **ORDINARY HIGH WATER (EXISTING CONDITIONS)**
- **ORDINARY HIGH WATER (RESPONSE UNDER PROPOSED CONDITIONS)**
- **APPROX. 100 YEAR FLOOD INUNDATION (EXISTING CONDITIONS FROM FEMA GIS SPATIAL DATA)**
- **APPROX. 100 YEAR FLOOD INUNDATION (UNDER PROPOSED CONDITIONS)**
- **FROM HYDRAULIC MODEL**
- **BFW (EXISTING CONDITIONS DELINEATED 2014 BY INTERFLUVE)**
- **BFW (EXISTING CONDITIONS FROM DEP SPATIAL DATA)**
- **BFW (RESPONSE AREA UNDER PROPOSED CONDITIONS)**
- **LAND UNDER WATER (PROPOSED CONDITIONS)**
- **RESERVED FOR DESIGN ENGINEER'S STAMP**
- **SCALE: 1"=150'**

**NOTE:** The approximate flood inundation extents shown are based on the flood frequency estimates used for analysis and design simulated with the final project hydraulic model, and are included for informational purposes only. See final design report for further detail on the flood frequency estimates and hydraulic modeling. Flood inundation extents included herein should under no circumstance be substituted for or interpreted to represent prevailing regulatory floodplain mapping completed under the jurisdiction and direction of the Federal Emergency Management Agency (FEMA).

Final design drawings for project permitting coordination. Not for use in project construction.
### Resource Area Impacts

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<th>RESOURCE AREAS</th>
<th>EXISTING CONDITIONS</th>
<th>PROPOSED MAXIMUM DISTURBANCE</th>
<th>PERMANENT CHANGES</th>
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<td>229,181 SF</td>
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<td>Bordering Land Subject to Flooding</td>
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<td>Land Under Water</td>
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### Legend
- **100' Riverfront Buffer (Existing Conditions)**
- **200' Riverfront Buffer (Existing Conditions)**
- **RF 100**
- **RF 200**
- **Ordinary High Water (Existing Conditions)**
- **Ordinary High Water (Proposed Conditions)**
- **100 Year Flood Inundation (Existing Conditions)**
- **100 Year Flood Inundation (Proposed Conditions)**
- **All Bordering Vegetated Wetland (Existing Conditions)**
- **BORDERING VEGETATED WETLAND RESPONSE AREA UNDER PROPOSED CONDITIONS**
- **Land Under Water - Proposed Conditions**

### Additional Notes
- The approximate flood inundation extents shown are based on the flood frequency estimates used for analysis and design simulated with the final project hydraulic model, and are included for informational purposes only. See final design report for further detail on the flood frequency estimates and hydraulic modeling.
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**PERMITTING INFORMATION: RESOURCE AREA IMPACTS**

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