RECONNECTING WATERWAYS

A WORKSHOP ON REMOVING DAMS & RIGHT-SIZING CULVERTS


(SLR, 2022)

Construction Oversight

Doug Osborne & Jessica Louisos

December 5, 2024
Burlington, VT

SLRCONSULTING.COM

Bid Documents

- Format and requirements depend on project manager and funding
- Key components to include
  - Scope of work
  - Specifications (Typically no formal project specs or manual)
  - Construction schedule and work windows
  - Regulatory requirements
  - Insurance requirements
  - Compensation
  - Bid submittal information
  - Selection Criteria

Bid Schedule

- Provide clear deadlines and expectations for questions and addendum
- Plan for sufficient time for bidding after pre-bid meeting and addendum

Item	**Date (2024)**	**Time**
Bid posted	Friday May 3	5:00 PM
Pre-bid site meeting	Friday May 17	10:00 AM
End of questions	Friday May 24	5:00 PM
Final Addendum	Wednesday May 29	5:00 PM
Bids Due	**Wednesday June 12**	**4:00 PM**
Notice of Award	Wednesday June 19	
Construction Start	July 1	
Construction End	October 1	

BID SHEET Revised 5/22/2024
WAINWRIGHT MILL DAM REMOVAL
SALISBURY, VERMONT
BIDS DUE: June 12, 2024 at 4:00 PM

Company: Contact:
Address:
Phone: Email:
Reference 1:
Reference 2:
Fill Dump Site Address Used in Estimate:
Estimated Start Date:
Estimated End Date:

Bid Item	Typical Tasks	Unit	Quantity	Item Cost ($)
A. MOBILIZATION / SITE PREPARATION	Job site setup, temporary construction fencing, site access, erosion and sedimentation control measures, construction signage, construction staking and survey, and water control.	Lump Sum	1	
B. TREE REMOVAL AND CLEARING	Excavation, cutting, and stockpiling of trees and shrubs.	Lump Sum	1	
D. DAM REMOVAL	Remove concrete dam (30 CY) and concrete training wall (3 CY).	Lump Sum	1	
E. CHANNEL WORK	Remove impounded sediment (10,700 CY), invasive species handling, form pilot channel, install saved trees, install saved cobble and gravel, and perform excavation as necessary for the installation of instream wood structures (beaver dam analogs and post-assisted log structures).	Lump Sum	1	
F. SITE RESTORATION / DEMOBILIZATION	Seed and mulch (1.7 AC), replant stockpiled shrubs, remove access, and job site cleanup.	Lump Sum	1	
TOTAL BID (written and $)				

Add Alternative:		Unit	Cost / Unit
1. REMOVE CONCRETE DAM AND TRAINING WALL	The volume estimate in the above bid item is considered to have an accuracy of +/- 10%. Provide a unit price in the event that the actual volume is more than 10% above or below the estimate.	Cubic Yard	
2. REMOVE SEDIMENT AND HAUL	The volume estimate in the above bid item is considered to have an accuracy of +/- 10%. Provide a unit price in the event that the actual volume is more than 10% above or below the estimate.	Cubic Yard	

Pre-Bid Meeting

- Held at the project site
- Mandatory or optional
- **Contractors NEED to VISIT SITE!**
- Walk project site and discuss key pieces of design plans
- Record questions and answers to include in addendum if necessary
- Crucial that all potential bidders receive the same information

Bid Selection – What are we looking for?

- Low, but responsive bid
- Experience usually plays into selection
- References, experience with river and dam work
- If asked, project examples – specific to project
- If asked, special project elements
  - Sequence
  - Water control
  - Schedule
  - Fill site location

	Item Cost					TOTAL	Add Alternative - per CY		
	A. MOBILIZATION / SITE PREPARATION	B. TREE REMOVAL AND CLEARING	D. DAM REMOVAL	E. CHANNEL WORK	E. SITE RESTORATION / DEMOBILIZATION	TOTAL	1. REMOVE EARTHEN EMBANKMENT AND HAUL	2. REMOVE CONCRETE SPILLWAY AND HAUL	3. REMOVE SEDIMENT AND HAUL
	$ 314,500	$ 49,500	$ 467,200	$ 376,500	$ 47,500	**$ 1,255,200**	$ 24.75	$ 148.35	$ 32.00
	$ 54,780	$ 58,300	$ 269,300	$ 275,520	$ 94,775	**$ 752,675**	$ 13.00	$ 55.00	$ 13.00
	$ 55,000	$ 6,000	$ 325,300	$ 275,000	$ 9,500	**$ 670,800**	$ 19.25	$ 25.00	$ 25.00
	$ 136,649	$ 78,166	$ 404,783	$ 262,262	$ 30,521	**$ 912,381**	$ 24.71	$ 146.37	$ 35.04
STATISTICS									
Min	$ 54,780	$ 6,000	$ 269,300	$ 262,262	$ 9,500	**$ 670,800**	$ 13	$ 25	$ 13
Max	$ 314,500	$ 78,166	$ 467,200	$ 376,500	$ 94,775	**$ 1,255,200**	$ 25	$ 148	$ 32
Mean	$ 140,232	$ 47,992	$ 366,646	$ 297,320	$ 45,574	**$ 892,892**	$ 19	$ 76	$ 23
Standard Deviation	$ 122,405	$ 30,454	$ 87,085	$ 53,141	$ 36,297	**$ 316,428**	$ 6	$ 64	$ 10

Bid Selection – How are we picking?

- All unique
- Review by large group of stakeholders or just engineer and owner
- Example language:

13. BID SELECTION CRITERIA:

The contract, if awarded, will be awarded to the least costly, best qualified and most responsible Bidder. Note that the OWNER is not obligated to award the project to the lowest bid based on cost alone. In determining the "least costly, best qualified and most responsible Bidder," in addition to price, the following may be considered:

1. The substantial performance of the Bidder in meeting the specifications and other terms and conditions of the solicitation;
2. The ability, capacity and skill of the Bidder to provide the services required, and to do so within the time specified;
3. The character, integrity, reputation, experience, financial resources and performance of the Bidder under previous contracts with the OWNER (if applicable) and elsewhere.

The chosen CONTRACTOR may be required to provide references and demonstrate successful completion of similar work. The chosen CONTRACTOR may be required to demonstrate that he or she consistently performs work using the highest quality of workmanship. The chosen CONTRACTOR may be required to demonstrate that he or she owns or has access to the equipment required to perform this work. CONTRACTOR shall not assign or subcontract the performance of this project or any portion thereof to any other CONTRACTOR without the prior written approval of the OWNER.

The OWNER reserves the right: (1) to accept or reject any or all Bids in whole or in part and to accept other than the lowest price proposal; (2) to amend, modify, or withdraw this Request for Bids; (3) to require supplemental statements or information from Bidders; (4) to waive or correct any irregularities in Bids received, after prior notice to the Bidders; (5) to negotiate with any vendor who submits a Bid.

Bid Selection – How are we picking?

- Rank bids by price or specified ranking if graded
- Review references
  - Types of projects, experience with in-water work, etc.
- Interview contractors
  - Equipment, labor, schedule, sequence of work, access plan, water control plan, fill site, etc.
- Trainings factor in
  - This workshop, Shoreland Erosion course, Rivers & Roads
- Recommend contractor to project owner

Monitoring Plan

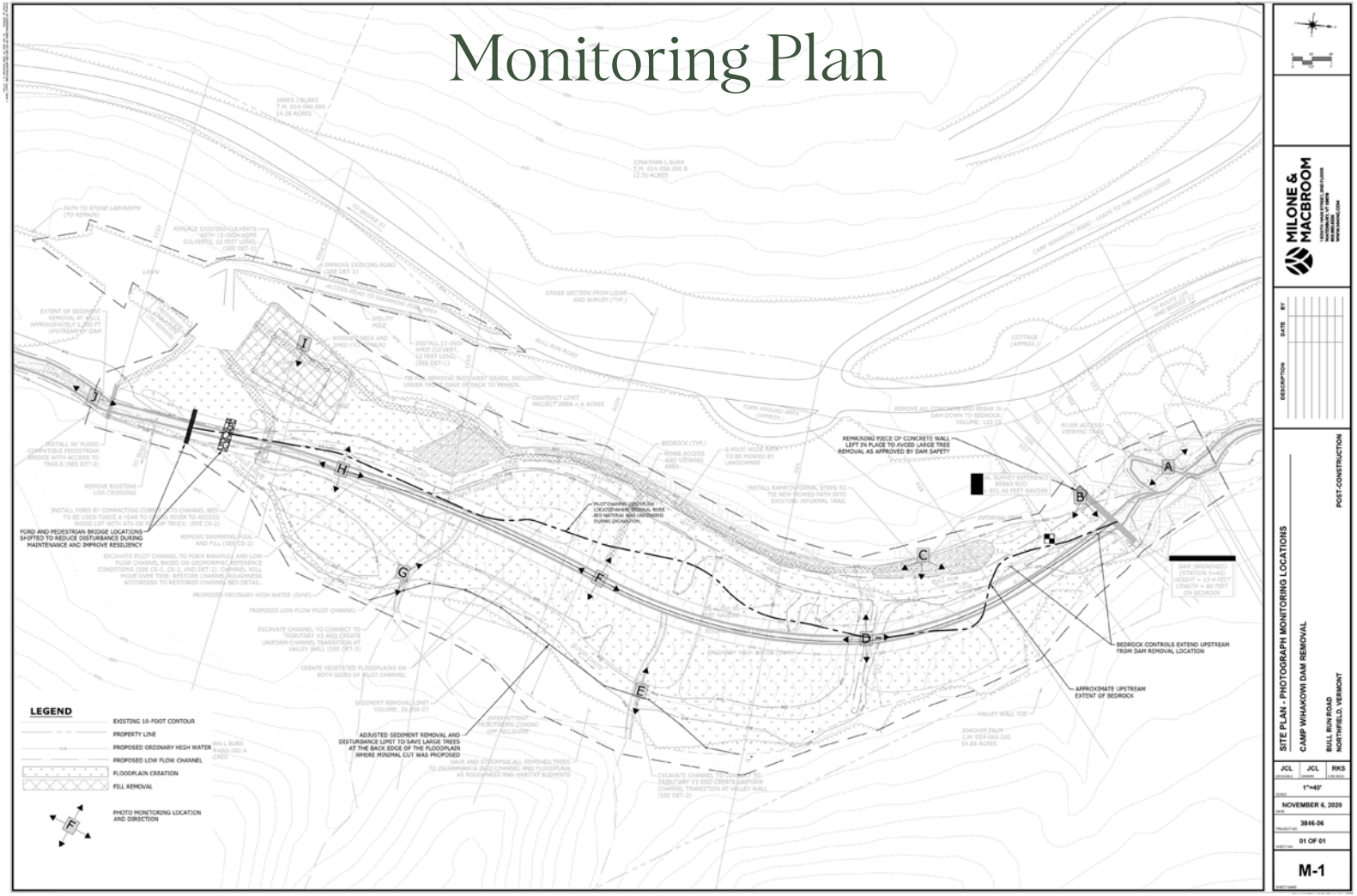


Photo-Documentation
Camp Wihakowi Dam Removal Project, Northfield, Vermont
Location A, Downstream of Dam, Looking Upstream

Pre-construction (Source: MMI)

Post-construction (Source: MMI)

One Year Post-construction (Source: MMI)

Two Years Post-construction (Source: MMI)

Three Years Post-construction (Source: SLR)

MILONE & MACBROOM

Pre-Construction Meeting

- Site meeting with contractor, regulators, landowner, project manager, engineer, etc.
- Establish communication plan
  - Contact info for site foreman
  - Daily texts/calls between contractor and engineer
  - Create email list for distribution of project updates and observation reports
- Discuss construction schedule
  - Start date and end dates
  - Work window constraints

Submittal Review

- Construction sequence
- Water control plan
- Structure shop drawings
- Material review

Special Materials

- Native Seed Mix
- Tree/ Shrub Planting
  - Substitutions of cultivars not always accepted
  - Cost for large size
  - Special planting procedures
  - Planting timing / guarantees
- Streambed
- Logs for habitat
  - Too long for truck
  - Root ball size/ messy
  - No invasives!

Levels of Oversight

- Full time
  - Full time resident engineer
- Part time
  - Visits 2-3 times per week
  - On site for key activities
- Limited
  - Shared with partners
  - On site for key activities

FULL TIME COMMUNICATION!

Oversight Visits

- Review site conditions and confirm permit compliance
- Check in with site foreman to review progress, schedule, questions, etc.
- Bring tools to check design is being met
  - Rod and level, rangefinder, GPS, measuring tape, etc.
- Visit fill disposal site

Communication

- Daily texts and calls between contractor and engineer
  - Communicate timing of important visits
  - Work with the contractor as a team to implement design
- Observation reports for each oversight visit
  - Inform project manager, regulators, landowners, town, etc. of project progress and updates
- Approval of invoices and change orders
- Engineer is primary communicator of project activity

Construction Observation Report

Date: August 21, 2024 **Time On Site:** 3:45 PM **Time Off Site:** 4:55 PM

Project: Blake & Higgins Dam Removal (SLR #12525.00019)

Observed By: Jessica Louisos & Roy Schiff

Weather: Sunny, normal flow, 70°F

Equipment / Materials

- CAT 315CL Excavator / Derrick
- Hitachi Zaxis 270LC Excavator / Aaron
- Hitachi Zaxis 350LC Excavator / Alex
- Deere 350D Excavator with hammer / Derrick
- Caterpillar 226 Sweeper / Idle
- Triaxle Dump Trucks x 2 / Norm and David

Personnel

- Aaron Adams / Adams Trucking & Excavation - 802-738-3741,

Construction Activity

- Sorting upper dam materials and setting aside large concrete pieces to fill south bank, stockpiling broken concrete, sediment, and dirt. Stone riprap separated for reuse as part of riprap. Hauling out by passing between excavators and loading into trucks waiting on the bank.
- River flow is running through the notched dam on river left.
- Hammering dam on south side. Currently near flush with proposed river bank above removal area and ~ 1 foot above downstream pool water surface. No bedrock uncovered yet.
- Directing water around active work area with dam pieces and river sediment. The flow is isolated from the active work area.
- Trucks loaded at river edge and hauling dam pieces to Rockingham pit.
- Riprap applied over the approximately 30 feet of bank between the south piers. Filled in back of riprap with concrete pieces to bring to grade. Filled over riprap with river sediment to provide a growing medium. Tied into very large existing toe rock downstream of dam.

Design / Construction Notes

- Riprap on south bank has one location uphill of pier that is approximately 4 feet below elevation shown on plans due to access/reach inaccessibility uphill of pier. Existing rock in place at this location. Aaron to check grades at top of riprap slope.
- Concrete left at dam toe on south bank may need to be hammered farther back, to be evaluated once hammered lower to see toe tie in location.
- Concrete left at dam toe to be roughened with a lower trough hammered in at back to allow upper riprap to hold better on concrete surface.

Compliance Notes

- No observed turbidity. Crossing location has hard clean rock bottom. No runoff from the construction site.

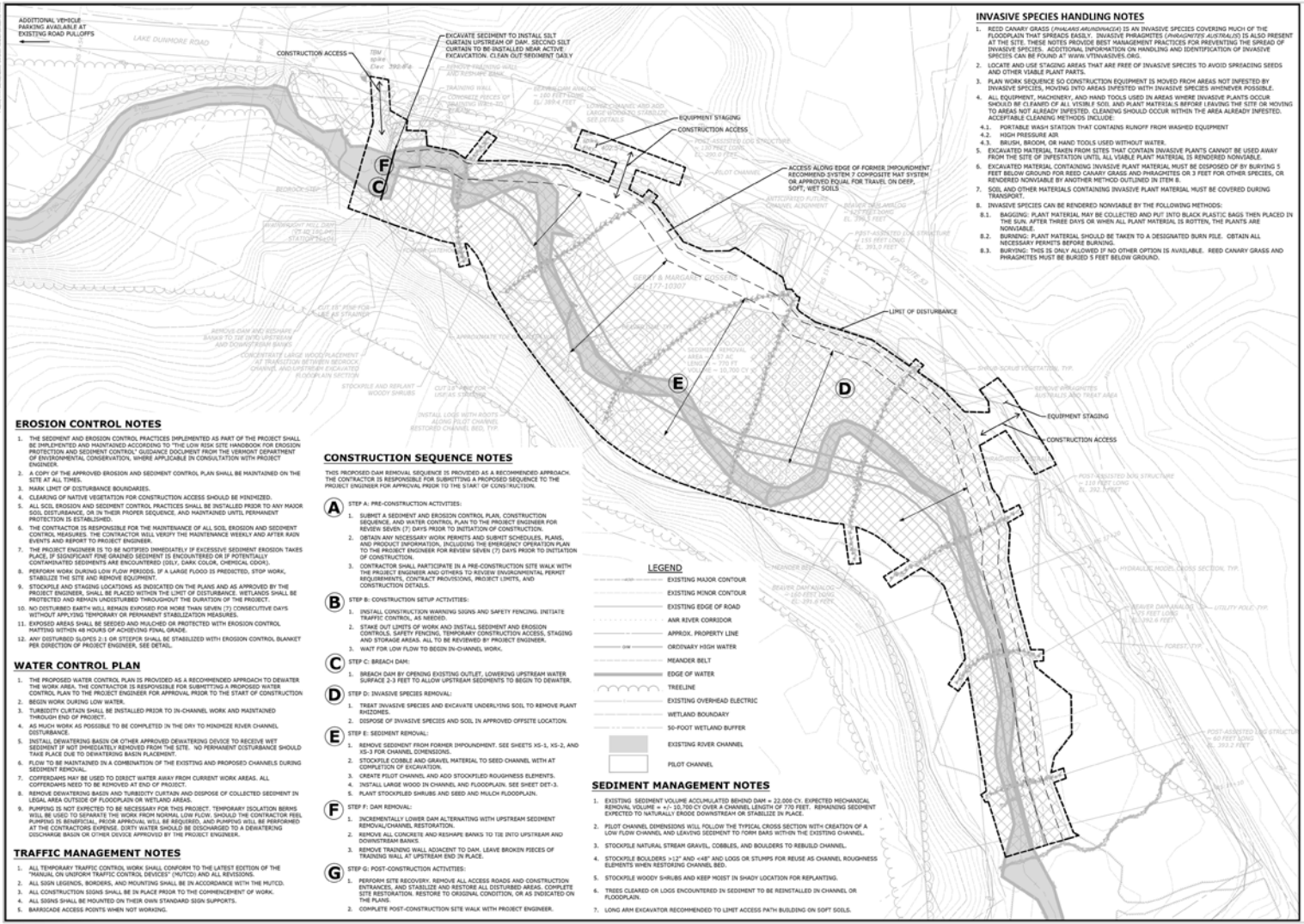
Schedule

- Plan to be onsite Monday – Friday 7 am – 4 pm
- Thursday – continue hauling material from site, continue to hammer dam lower on south side, continue to reconstruct right bank.

Construction Observation Report

Photos

Figure 1: Preparing right bank for stone armor application.



INVASIVE SPECIES HANDLING NOTES

1. REED CANARY GRASS (*PHALARIS ARUNDINACEA*) IS AN INVASIVE SPECIES COVERING MUCH OF THE FLOODPLAIN THAT SPREADS EASILY. INVASIVE PHRAGMITES (*PHRAGMITES AUSTRALIS*) IS ALSO PRESENT AT THE SITE. THESE NOTES PROVIDE BEST MANAGEMENT PRACTICES FOR PREVENTING THE SPREAD OF INVASIVE SPECIES. ADDITIONAL INFORMATION ON HANDLING AND IDENTIFICATION OF INVASIVE SPECIES CAN BE FOUND AT WWW.VTINVASIVES.ORG.
2. LOCATE AND USE STAGING AREAS THAT ARE FREE OF INVASIVE SPECIES TO AVOID SPREADING SEEDS AND OTHER VIABLE PLANT PARTS.
3. PLAN WORK SEQUENCE SO CONSTRUCTION EQUIPMENT IS MOVED FROM AREAS NOT INFESTED BY INVASIVE SPECIES, MOVING INTO AREAS INFESTED WITH INVASIVE SPECIES WHENEVER POSSIBLE.
4. ALL EQUIPMENT, MACHINERY, AND HAND TOOLS USED IN AREAS WHERE INVASIVE PLANTS OCCUR SHOULD BE CLEANED OF ALL VISIBLE SOIL AND PLANT MATERIALS BEFORE LEAVING THE SITE OR MOVING TO AREAS NOT ALREADY INFESTED. CLEANING SHOULD OCCUR WITHIN THE AREA ALREADY INFESTED. ACCEPTABLE CLEANING METHODS INCLUDE:
   - 4.1. PORTABLE WASH STATION THAT CONTAINS RUNOFF FROM WASHED EQUIPMENT
   - 4.2. HIGH PRESSURE AIR
   - 4.3. BRUSH, BROOM, OR HAND TOOLS USED WITHOUT WATER.
5. EXCAVATED MATERIAL TAKEN FROM SITES THAT CONTAIN INVASIVE PLANTS CANNOT BE USED AWAY FROM THE SITE OF INFESTATION UNTIL ALL VIABLE PLANT MATERIAL IS RENDERED NONVIABLE.
6. EXCAVATED MATERIAL CONTAINING INVASIVE PLANT MATERIAL MUST BE DISPOSED OF BY BURYING 5 FEET BELOW GROUND FOR REED CANARY GRASS AND PHRAGMITES OR 3 FEET FOR OTHER SPECIES, OR RENDERED NONVIABLE BY ANOTHER METHOD OUTLINED IN ITEM B.
7. SOIL AND OTHER MATERIALS CONTAINING INVASIVE PLANT MATERIAL MUST BE COVERED DURING TRANSPORT.
8. INVASIVE SPECIES CAN BE RENDERED NONVIABLE BY THE FOLLOWING METHODS:
   - 8.1. BAGGING: PLANT MATERIAL MAY BE COLLECTED AND PUT INTO BLACK PLASTIC BAGS THEN PLACED IN THE SUN. AFTER THREE DAYS OR WHEN ALL PLANT MATERIAL IS ROTTEN, THE PLANTS ARE NONVIABLE.
   - 8.2. BURNING: PLANT MATERIAL SHOULD BE TAKEN TO A DESIGNATED BURN PILE. OBTAIN ALL NECESSARY PERMITS BEFORE BURNING.
   - 8.3. BURYING: THIS IS ONLY ALLOWED IF NO OTHER OPTION IS AVAILABLE. REED CANARY GRASS AND PHRAGMITES MUST BE BURIED 5 FEET BELOW GROUND.

EROSION CONTROL NOTES

1. THE SEDIMENT AND EROSION CONTROL PRACTICES IMPLEMENTED AS PART OF THE PROJECT SHALL BE IMPLEMENTED AND MAINTAINED ACCORDING TO THE LOW RISK SITE HANDBOOK FOR EROSION PROTECTION AND SEDIMENT CONTROL GUIDANCE DOCUMENT FROM THE VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION, WHERE APPLICABLE IN CONSULTATION WITH PROJECT ENGINEER.
2. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
3. MARK LIMIT OF DISTURBANCE BOUNDARIES.
4. CLEARING OF NATIVE VEGETATION FOR CONSTRUCTION ACCESS SHOULD BE MINIMIZED.
5. ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCE, OR IN THEIR PROPER SEQUENCE, AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE OF ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES. THE CONTRACTOR WILL VERIFY THE MAINTENANCE WEEKLY AND AFTER RAIN EVENTS AND REPORT TO PROJECT ENGINEER.
7. THE PROJECT ENGINEER IS TO BE NOTIFIED IMMEDIATELY IF EXCESSIVE SEDIMENT EROSION TAKES PLACE, IF SIGNIFICANT FINE GRAINED SEDIMENT IS ENCOUNTERED OR IF POTENTIALLY CONTAMINATED SEDIMENTS ARE ENCOUNTERED (OILY, DARK COLOR, CHEMICAL ODOR).
8. PERFORM WORK DURING LOW FLOW PERIODS. IF A LARGE FLOOD IS PREDICTED, STOP WORK, STABILIZE THE SITE AND REMOVE EQUIPMENT.
9. STOCKPILE AND STAGING LOCATIONS AS INDICATED ON THE PLANS AND AS APPROVED BY THE PROJECT ENGINEER, SHALL BE PLACED WITHIN THE LIMIT OF DISTURBANCE. WETLANDS SHALL BE PROTECTED AND REMAIN UNDISTURBED THROUGHOUT THE DURATION OF THE PROJECT.
10. NO DISTURBED EARTH WILL REMAIN EXPOSED FOR MORE THAN SEVEN (7) CONSECUTIVE DAYS WITHOUT APPLYING TEMPORARY OR PERMANENT STABILIZATION MEASURES.
11. EXPOSED AREAS SHALL BE SEEDED AND MULCHED OR PROTECTED WITH EROSION CONTROL MATTING WITHIN 48 HOURS OF ACHIEVING FINAL GRADE.
12. ANY DISTURBED SLOPES 2:1 OR STEEPER SHALL BE STABILIZED WITH EROSION CONTROL BLANKET PER DIRECTION OF PROJECT ENGINEER. SEE DETAIL.

WATER CONTROL PLAN

1. THE PROPOSED WATER CONTROL PLAN IS PROVIDED AS A RECOMMENDED APPROACH TO DEWATER THE WORK AREA. THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING A PROPOSED WATER CONTROL PLAN TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION
2. BEGIN WORK DURING LOW WATER.
3. TURBIDITY CURTAIN SHALL BE INSTALLED PRIOR TO IN-CHANNEL WORK AND MAINTAINED THROUGH END OF PROJECT.
4. AS MUCH WORK AS POSSIBLE TO BE COMPLETED IN THE DRY TO MINIMIZE RIVER CHANNEL DISTURBANCE.
5. INSTALL DEWATERING BASIN OR OTHER APPROVED DEWATERING DEVICE TO RECEIVE WET SEDIMENT IF NOT IMMEDIATELY REMOVED FROM THE SITE. NO PERMANENT DISTURBANCE SHOULD TAKE PLACE DUE TO DEWATERING BASIN PLACEMENT.
6. FLOW TO BE MAINTAINED IN A COMBINATION OF THE EXISTING AND PROPOSED CHANNELS DURING SEDIMENT REMOVAL.
7. COFFERDAMS MAY BE USED TO DIRECT WATER AWAY FROM CURRENT WORK AREAS. ALL COFFERDAMS NEED TO BE REMOVED AT END OF PROJECT.
8. REMOVE DEWATERING BASIN AND TURBIDITY CURTAIN AND DISPOSE OF COLLECTED SEDIMENT IN LEGAL AREA OUTSIDE OF FLOODPLAIN OR WETLAND AREAS.
9. PUMPING IS NOT EXPECTED TO BE NECESSARY FOR THIS PROJECT. TEMPORARY ISOLATION BERMS WILL BE USED TO SEPARATE THE WORK FROM NORMAL LOW FLOW. SHOULD THE CONTRACTOR FEEL PUMPING IS BENEFICIAL, PRIOR APPROVAL WILL BE REQUIRED, AND PUMPING WILL BE PERFORMED AT THE CONTRACTORS EXPENSE. DIRTY WATER SHOULD BE DISCHARGED TO A DEWATERING DISCHARGE BASIN OR OTHER DEVICE APPROVED BY THE PROJECT ENGINEER.

TRAFFIC MANAGEMENT NOTES

1. ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS.
2. ALL SIGN LEGENDS, BORDERS, AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD.
3. ALL CONSTRUCTION SIGNS SHALL BE IN PLACE PRIOR TO THE COMMENCEMENT OF WORK.
4. ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.
5. BARRICADE ACCESS POINTS WHEN NOT WORKING.

CONSTRUCTION SEQUENCE NOTES

THIS PROPOSED DAM REMOVAL SEQUENCE IS PROVIDED AS A RECOMMENDED APPROACH. THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING A PROPOSED SEQUENCE TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.

A STEP A: PRE-CONSTRUCTION ACTIVITIES:
1. SUBMIT A SEDIMENT AND EROSION CONTROL PLAN, CONSTRUCTION SEQUENCE, AND WATER CONTROL PLAN TO THE PROJECT ENGINEER FOR REVIEW SEVEN (7) DAYS PRIOR TO INITIATION OF CONSTRUCTION.
2. OBTAIN ANY NECESSARY WORK PERMITS AND SUBMIT SCHEDULES, PLANS, AND PRODUCT INFORMATION, INCLUDING THE EMERGENCY OPERATION PLAN TO THE PROJECT ENGINEER FOR REVIEW SEVEN (7) DAYS PRIOR TO INITIATION OF CONSTRUCTION.
3. CONTRACTOR SHALL PARTICIPATE IN A PRE-CONSTRUCTION SITE WALK WITH THE PROJECT ENGINEER AND OTHERS TO REVIEW ENVIRONMENTAL PERMIT REQUIREMENTS, CONTRACT PROVISIONS, PROJECT LIMITS, AND CONSTRUCTION DETAILS.

B STEP B: CONSTRUCTION SETUP ACTIVITIES:
1. INSTALL CONSTRUCTION WARNING SIGNS AND SAFETY FENCING. INITIATE TRAFFIC CONTROL, AS NEEDED.
2. STAKE OUT LIMITS OF WORK AND INSTALL SEDIMENT AND EROSION CONTROLS, SAFETY FENCING, TEMPORARY CONSTRUCTION ACCESS, STAGING AND STORAGE AREAS. ALL TO BE REVIEWED BY PROJECT ENGINEER.
3. WAIT FOR LOW FLOW TO BEGIN IN-CHANNEL WORK.

C STEP C: BREACH DAM:
1. BREACH DAM BY OPENING EXISTING OUTLET, LOWERING UPSTREAM WATER SURFACE 2-3 FEET TO ALLOW UPSTREAM SEDIMENTS TO BEGIN TO DEWATER.

D STEP D: INVASIVE SPECIES REMOVAL:
1. TREAT INVASIVE SPECIES AND EXCAVATE UNDERLYING SOIL TO REMOVE PLANT RHIZOMES.
2. DISPOSE OF INVASIVE SPECIES AND SOIL IN APPROVED OFFSITE LOCATION.

E STEP E: SEDIMENT REMOVAL:
1. REMOVE SEDIMENT FROM FORMER IMPOUNDMENT. SEE SHEETS XS-1, XS-2, AND XS-3 FOR CHANNEL DIMENSIONS.
2. STOCKPILE COBBLE AND GRAVEL MATERIAL TO SEED CHANNEL WITH AT COMPLETION OF EXCAVATION.
3. CREATE PILOT CHANNEL AND ADD STOCKPILED ROUGHNESS ELEMENTS.
4. INSTALL LARGE WOOD IN CHANNEL AND FLOODPLAIN. SEE SHEET DET-3.
5. PLANT STOCKPILED SHRUBS AND SEED AND MULCH FLOODPLAIN.

F STEP F: DAM REMOVAL:
1. INCREMENTALLY LOWER DAM ALTERNATING WITH UPSTREAM SEDIMENT REMOVAL/CHANNEL RESTORATION.
2. REMOVE ALL CONCRETE AND RESHAPE BANKS TO TIE INTO UPSTREAM AND DOWNSTREAM BANKS.
3. REMOVE TRAINING WALL ADJACENT TO DAM. LEAVE BROKEN PIECES OF TRAINING WALL AT UPSTREAM END IN PLACE.

G STEP G: POST-CONSTRUCTION ACTIVITIES:
1. PERFORM SITE RECOVERY. REMOVE ALL ACCESS ROADS AND CONSTRUCTION ENTRANCES, AND STABILIZE AND RESTORE ALL DISTURBED AREAS. COMPLETE SITE RESTORATION. RESTORE TO ORIGINAL CONDITION, OR AS INDICATED ON THE PLANS.
2. COMPLETE POST-CONSTRUCTION SITE WALK WITH PROJECT ENGINEER.

LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING EDGE OF ROAD
- ANR RIVER CORRIDOR
- APPROX. PROPERTY LINE
- OHW ORDINARY HIGH WATER
- MEANDER BELT
- EDGE OF WATER
- TREELINE
- EXISTING OVERHEAD ELECTRIC
- WETLAND BOUNDARY
- 50-FOOT WETLAND BUFFER
- EXISTING RIVER CHANNEL
- PILOT CHANNEL

SEDIMENT MANAGEMENT NOTES

1. EXISTING SEDIMENT VOLUME ACCUMULATED BEHIND DAM = 22,000 CY. EXPECTED MECHANICAL REMOVAL VOLUME = +/- 10,700 CY OVER A CHANNEL LENGTH OF 770 FEET. REMAINING SEDIMENT EXPECTED TO NATURALLY ERODE DOWNSTREAM OR STABILIZE IN PLACE.
2. PILOT CHANNEL DIMENSIONS WILL FOLLOW THE TYPICAL CROSS SECTION WITH CREATION OF A LOW FLOW CHANNEL AND LEAVING SEDIMENT TO FORM BARS WITHIN THE EXISTING CHANNEL.
3. STOCKPILE NATURAL STREAM GRAVEL, COBBLES, AND BOULDERS TO REBUILD CHANNEL.
4. STOCKPILE BOULDERS >12" AND <48" AND LOGS OR STUMPS FOR REUSE AS CHANNEL ROUGHNESS ELEMENTS WHEN RESTORING CHANNEL BED.
5. STOCKPILE WOODY SHRUBS AND KEEP MOIST IN SHADY LOCATION FOR REPLANTING.
6. TREES CLEARED OR LOGS ENCOUNTERED IN SEDIMENT TO BE REINSTALLED IN CHANNEL OR FLOODPLAIN.
7. LONG ARM EXCAVATOR RECOMMENDED TO LIMIT ACCESS PATH BUILDING ON SOFT SOILS.

SLR
1 SOUTH MAIN STREET
WATERBURY, VT 05676
SLRCONSULTING.COM

DESCRIPTION	DATE	BY

100% DESIGN

SITE PLAN - CONSTRUCTION ACCESS, SEQUENCE & CONTROLS

WAINWRIGHT MILL DAM REMOVAL (VT ID 160.04)

LAKE DUNMORE ROAD
SALISBURY, VERMONT

JCL	AOM	JCL
DESIGNED	DRAWN	CHECKED

1"=30'
SCALE

FEBRUARY 26, 2024
DATE

16306.00009
PROJECT NO.

4 OF 11
SHEET NO.

CON-1
SHEET NAME

Water Control

- Sequencing to control sediment and water
- Any weather
- Handle high or low flows
- How to apply plan EPSC
- Engineer on site and approving prior to switching flow path


FLUIDSTATE

Hanks Brook Culvert Replacement

Sediment Control

August 16, 2024

September 18, 2024

Invasive Species Handling

- Clean equipment ahead
- Special handling
- Sequencing to avoid/ remove first
- Separation from clean
- Disposal requirements
- Cleaning between phases

Site Access and Travel

- Review every visit
- Soil Type
- Change during project

Channel Crossings


Indian Rapids Dam
September 14, 2023

Permit Compliance

- US Army Corps of Engineers Programmatic General Permit
- Vermont Dam Order
  - Dams impounding more than 500,000 cubic feet of any liquid
- Vermont Stream Alteration Permit
- Vermont Construction General Permit
- Vermont Wetlands Review/Permit
- Vermont Department of Historic Preservation Review
- Vermont Floodplain Permit
- VTrans Right of Way Permit – Section 1111
- Vermont Act 250
- Local permits

Jobsite Setup Checks

- Post Permits
- Co-permittee status for erosion control
- Signage and road safety
- Archeological protected areas – work around
- Expectations in and around wetlands
- Limits of approved fill sites

Fill Site

- Upland location cleared of wetlands
  - Reviewed by USACE
- Location sometimes determined before construction, or located by the contractor
- Sufficient space for sediment volume plus expansion
- Stabilization required for fill piles

Emergency Action Plan

- Emergency contact list
- Remove equipment from flood prone areas
- Keep a spill kit on site
- Stabilize site ahead of weather events
- Extra materials onsite for emergency stabilization
- Remove and replace crossings

Two excavators at the edge of the pilot channel that were toppled in flood waters and uprighted.

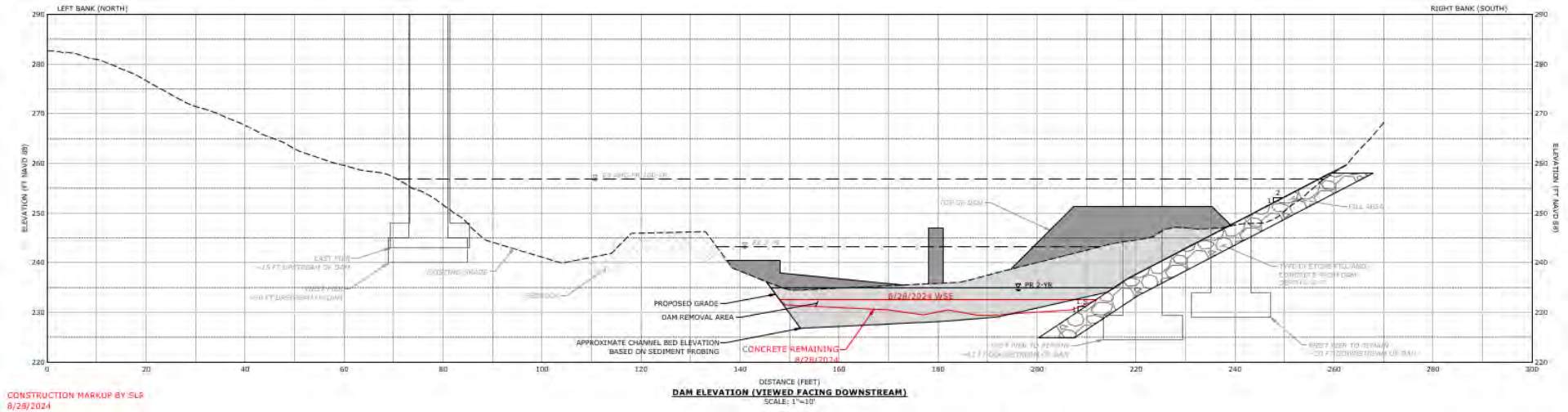
Dam Breach

- Regulators informed ahead of time
- Engineer on site
- Controlled
- Incremental
- Phased with sediment and water control


Wainwright Dam
August 16, 2024

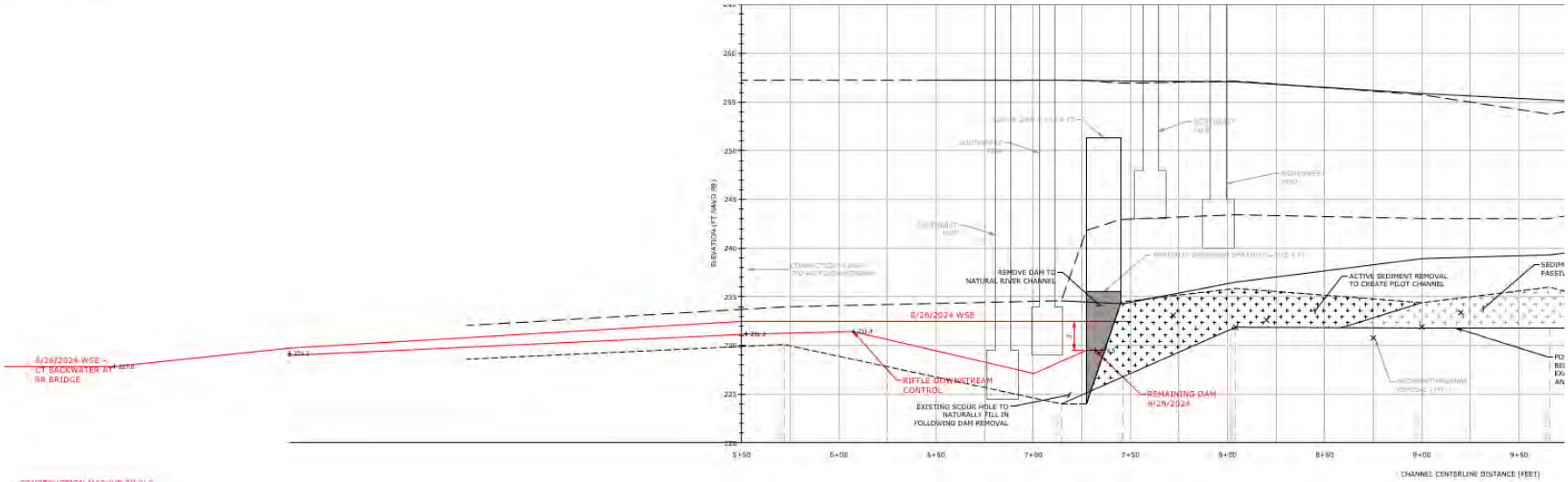

Blake & Higgins Dam
August 26, 2024


Blake & Higgins Dam
August 28, 2024



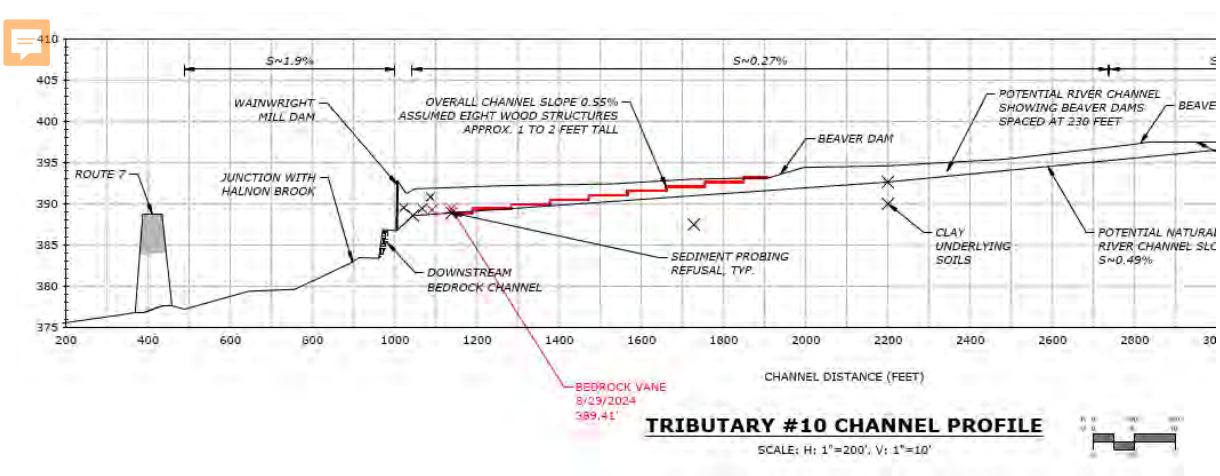
CONSTRUCTION MARKUP BY SLR
8/28/2024

DAM ELEVATION (VIEWED FACING DOWNSTREAM)
SCALE: 1"=10'



CONSTRUCTION MARKUP BY SLR
8/26/2024 AND 8/28/2024

PROFILE - PROJECT AREA
SCALE: H: 1"=25', V: 1"=5'



TRIBUTARY #10 CHANNEL PROFILE

SCALE: H: 1"=200', V: 1"=10'

Quantity Documentation

- Pre- and post-construction survey and measurements
- Truck slips from the contractor
- Measure fill site piles

Site Restoration

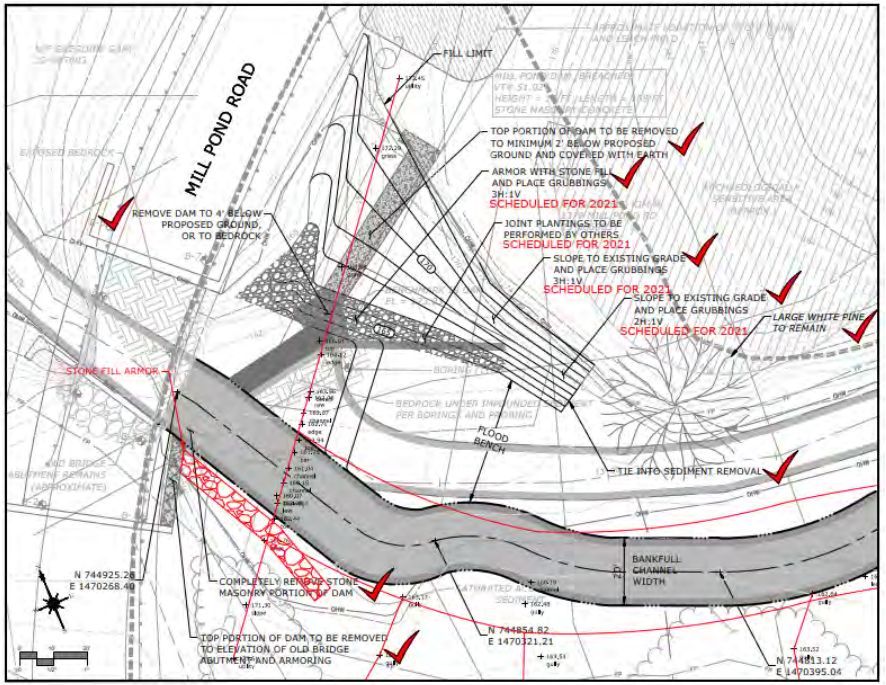
- Submittal review of special materials
- Phased stabilization and restoration throughout project
- Confirm completion prior to removing access from portions of site
- Proper planting, seeding, and mulching
- Remove construction access
- Restore site to existing or improved conditions

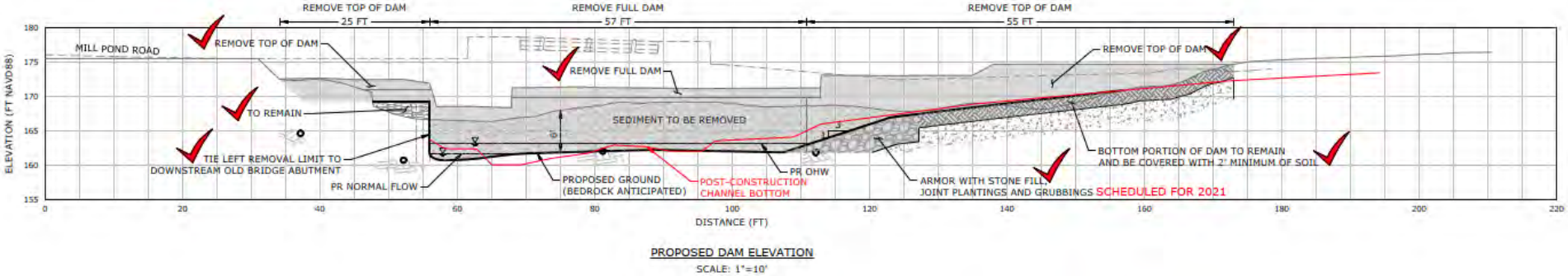
Final Site Walk

- Prior to demobilization
- Include project manager, regulators, landowners, town, etc.
- Create punch list of items to be completed prior to demobilization

Project Wrap Up

- As-Built plans
- Closeout permits
- Photo documentation





PROPOSED DAM ELEVATION

SCALE: 1"=10'

Post-Construction Monitoring

- Required by regulators on certain projects
- Could include photos, cross-sections, pebble counts, GPS, water quality, etc.

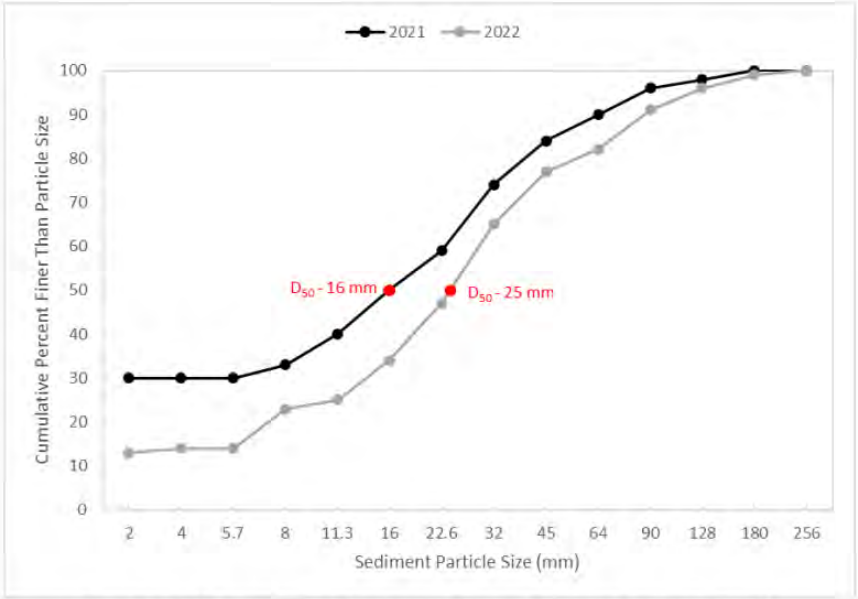


Figure 1: Particle Size Distributions at Cross-Section 5+42

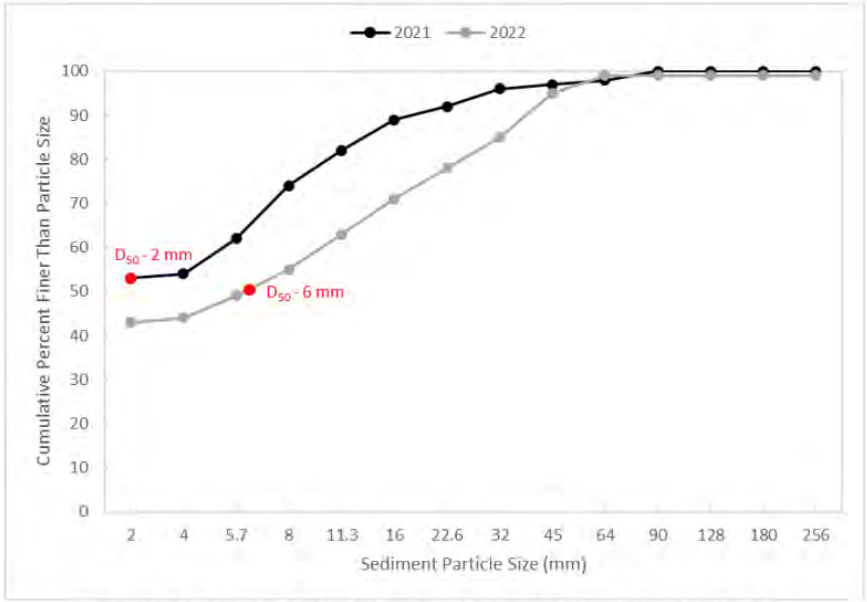
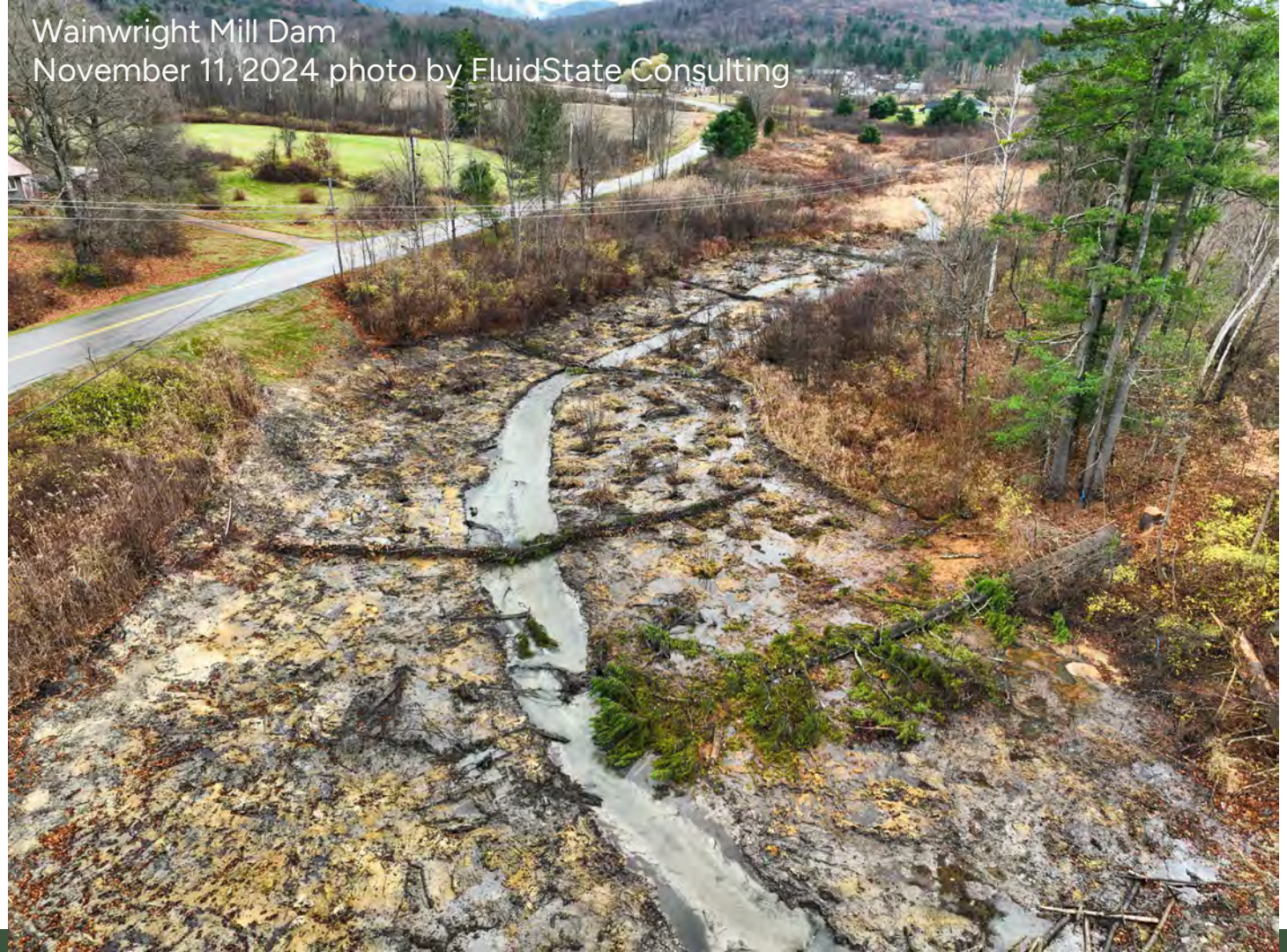


Figure 2: Particle Size Distributions at Cross-Section 0+51


Wainwright Mill Dam
November 11, 2024 photo by FluidState Consulting