



**FEMA**

**FINDING OF NO SIGNIFICANT IMPACT**  
**TRANSFER STATION STABILIZATION PROJECT**  
**TOWN OF HIGHGATE, FRANKLIN COUNTY, VERMONT**  
**DR-4022-VT**

**INTRODUCTION**

The President declared a major disaster under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) on September 1, 2011 for the State of Vermont as a result of Tropical Storm Irene that occurred from August 27 to September 2, 2011. This declaration, designated FEMA-4022-DR-VT, authorized the Hazard Mitigation Grant Program (HMGP) statewide. Under the HMGP, the Federal Emergency Management Agency (FEMA) may provide financial assistance for state, local, and tribal governments, and certain private nonprofit organizations to implement hazard mitigation measures that are cost effective and substantially reduce the risk of future damage, hardship, loss, or suffering in any area affected by the major disaster. Vermont Emergency Management submitted to FEMA an HMGP application on behalf of the Town of Highgate in November 2013.

The purpose of the project is to design and implement a slope stabilization construction project for failing steep banks at Transfer Station Road, in Highgate, Vermont. The proposed slope stabilization at the transfer station is needed to protect human health, protect the natural environment, and maintain town owned infrastructure and improved property. The project is also needed to augment repairs from fluvial erosion and landslide events occurring in 2003, 2008 and 2011.

The Proposed Action (Alternative 2 in the EA), would stabilize the slope failures at Sites 1 and E in the project area and includes the following components:

1. Stabilization would include the excavation of an estimated 17,810 cubic yards of subsoil and topsoil, flattening of failing slide areas and transition areas, and the rebuilding of the slopes to a stable configuration using an estimated 27,320 cubic yards of stone fill.
2. Area E (Landfill Slide) and Site 1 (Salt Shed Slide) includes installing a drainage swale at the top of the slope (to divert surficial flow), and a stone key at the bottom of the slope. The swale would drain to existing or proposed storm drain inlets. The slope would be stabilized with a filter fabric, granular filter, and stone fill.
3. Site 1 drainage swale outfall would be stabilized with stone.
4. Clearing and grubbing of 2.3 acres within Area E and Site 1 including the removal of approximately 500 generally mature trees (8-inch diameter at breast height or greater). Stumps would be ground down and roots removed to a depth of 18-inches below exposed subgrade. Tree branches would be chipped and disposed of off-site.

## **FINDING OF NO SIGNIFICANT IMPACT**

Transfer Station Stabilization Project  
Town of Highgate, Franklin County, Vermont

5. Stream channel realignment and widening would be performed perpendicular, upgradient and downgradient from Site 1. Channel realignment would include the installation of stream cross vanes.

Dewatering measures may be needed for stone key installation and channel realignment and may be in place until construction has progressed up the slope, including but not limited to the localized sump locations. The channel restoration, realignment, and widening at the toe of the slope has been designed to better resist scour. Stream channel erosion of easily erodible sand, silt, and clay soils along the toe of the slope adjacent to the landfill and salt shed areas has created multiple small sloughs that expand and propagate uphill. Temporary impacts such as access routes and water diversion methods (where required) have not been developed at this time and would be part of the contractor's proposed means and methods. Full permitting needs, including mitigation measures (permit conditions), are not yet fully known.

As required by the National Environmental Policy Act and federal regulations, FEMA evaluated the Proposed Action and the No Action Alternative. Three other alternatives were considered but dismissed from analysis. These alternatives included 1.) relocating the Town's facilities, 2.) an engineered soil stabilization solution, and 3.) a bioengineered stabilization solution. These alternatives were dismissed because they were infeasible: incompatible soil types, steepness of slopes, costs beyond what the Town could bear, lack of a suitable alternative site and the time associated with procuring and developing an alternative site.

Under the No Action Alternative, no federal funding would be provided to the Town. The full cost of any future repairs, mitigation measures or remediation should the slopes fail and breach the capped landfill would be the responsibility of the Town. Ad hoc repairs would likely take place as funds allowed.

## **ENVIRONMENTAL IMPACT EVALUATION**

FEMA prepared the Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321–4347 (2000), as implemented by the regulations promulgated by the President's Council on Environmental Quality (40 C.F.R. §§ 1500–1508) and in accordance with FEMA Instruction 108-1-1, *Instruction on Implementation of the Environmental Planning and Historic Preservation Responsibilities and Program Requirements*, and DHS Instruction Manual 023-01-001-01 *Implementation of the National Environmental Policy Act*.

The Proposed Action, as described in the EA, would not result in any significant adverse impacts to the natural and human environment. The Proposed Action is anticipated to have long-term moderate to major beneficial effects from prevention of future slope failures that could breach the closed landfill and impact the health and safety of the local community and environment, no impact to floodplains, permanent adverse effects (within regulatory standards) from the fill of wetlands, minor to moderate benefits to environmental justice populations, and a moderate localized effect to vegetation.

The Proposed Action is anticipated to have the following short-term construction-related effects: minor impacts to topography and soils, water quality, wildlife and fish, ESA-listed species, migratory birds (including Bald Eagles), cultural resources, noise levels, and environmental justice communities; and moderate impacts on public services and utilities. All potential short-term impacts require conditions to avoid, minimize, and mitigate adverse effects. With the implementation of these conditions, none of the potential effects would be significant.

## FINDING OF NO SIGNIFICANT IMPACT

Transfer Station Stabilization Project  
Town of Highgate, Franklin County, Vermont

### MITIGATION COMMITMENTS AND PROJECT CONDITIONS

The Town, including their contractors, is responsible for obtaining and complying with all applicable federal, state, and local permits and clearances prior to construction. While a good faith effort was made to identify all necessary permits during the preparation of the Environmental Assessment, the following list may not include every approval or permit required for this project. The Town must adhere to the following conditions before project implementation; failure to comply with grant conditions may jeopardize federal funds. Any substantive change to the approved scope of work would require re-evaluations by FEMA for compliance with NEPA and other laws and executive orders.

1. Before construction begins, the Applicant must obtain a required Clean Water Act section 401 Water Quality Certification from the Vermont Department of Environmental Conservation. A copy of the approval/permit, or documentation from the permitting official that an approval/permit is not required, must be forwarded to the state and FEMA for inclusion in the administrative record. Contact the Vermont Department of Environmental Conservation Water Management Division for information regarding Section 401 Water Quality Certifications at [ANR.WSMD401@vermont.gov](mailto:ANR.WSMD401@vermont.gov); 802-828-1115.
2. Before construction begins, the Applicant must obtain a required Clean Water Act section 402 NPDES permit from the Vermont Stormwater Program. A copy of the approval/permit, or documentation from the permitting official that a permit is not required, must be forwarded to the state and FEMA for inclusion in the administrative record. Contact Michael Sadler, [Michael.sadler@vermont.gov](mailto:Michael.sadler@vermont.gov) (802) 490-6159 to determine permitting requirements for work with more than one acre of ground disturbance.
3. Before construction begins, the Applicant must obtain a required Clean Water Act section 404 permit from the U.S. Army Corps of Engineers. A copy of the approval/permit, or documentation from the permitting official that an approval/permit is not required, must be forwarded to the state and FEMA for inclusion in the administrative record. Contact Angela Repella, [angela.c.repella@usace.army.mil](mailto:angela.c.repella@usace.army.mil), (802) 872-2893.
4. Before construction begins, the Applicant must obtain approval from the Vermont Wetlands Program responsible for the Protection of Wetlands. A copy of the approval/permit, or documentation from the permitting official that an approval/permit is not required, must be forwarded to the state and FEMA for inclusion in the administrative record. Contact Brock Freyer, [brock.freyer@vermont.gov](mailto:brock.freyer@vermont.gov), (802) 490-6758 to determine permitting requirements for work in or near wetland resources.
5. Before construction begins, the Applicant must obtain a Stream Alteration Permit from the Rivers Program. A copy of the permit, or documentation from the Rivers Program that a permit is not required, must be forwarded to the state and FEMA for inclusion in the administrative record. Contact Chris Brunelle, [chris.brunelle@vermont.gov](mailto:chris.brunelle@vermont.gov) (802) 777-5328 to determine permitting requirements for work in state waters.

Additionally, FEMA would require the Town, and their contractors, to adhere to the following conditions during project implementation. Failure to comply with grant conditions may jeopardize federal funds.

1. In the event of the discovery of archaeological deposits (e.g., Indian pottery, stone tools, shell, old house foundations, old bottles) the Subrecipient and their contractor must immediately stop all work in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. The Subrecipient and their contractor must secure all archaeological discoveries and restrict access to discovery sites. The Subrecipient must immediately report the archaeological discovery to Vermont

## **FINDING OF NO SIGNIFICANT IMPACT**

Transfer Station Stabilization Project  
Town of Highgate, Franklin County, Vermont

Emergency Management and the FEMA Deputy Regional Environmental Officer Mary Shanks, 617-901-2204; FEMA will determine the next steps.

2. In the event of the discovery of human remains, the Subrecipient and their contractor must immediately stop all work in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. The Subrecipient and their contractor must secure all human remains discoveries and restrict access to discovery sites. The Subrecipient and their contractor must follow the provisions of applicable state laws. Violation of state law will jeopardize FEMA funding for this project. The Subrecipient will inform the Office of the Chief Medical Examiner, the State Archaeologist, Vermont Emergency Management and the FEMA Deputy Regional Environmental Officer Mary Shanks, 617-901-2204. FEMA will consult with the SHPO and Tribes, if remains are of tribal origin. Work in sensitive areas may not resume until consultation is completed and appropriate measures have been taken to ensure that the project is compliant with the National Historic Preservation Act.
3. If any unanticipated damage, alterations, or demolition (complete or partial) occurs to structures (including, but not limited to, culverts, bridges, stone walls [including those along water channels], and buildings) that are over 45 years of age within or adjacent to the project area, the Subrecipient and their contractor must immediately stop all work in the vicinity of the damage and take reasonable measures to avoid or minimize additional harm to the structure and make it safe and secure. The Subrecipient must immediately report the unanticipated impact to structures to Vermont Emergency Management and the FEMA Deputy Regional Environmental Officer Mary Shanks, 617-901-2204; FEMA will determine the next steps.

### **PUBLIC AND AGENCY INVOLVEMENT**

The following is a good faith effort to capture all coordination and consultation with state and federal partners:

- Consultation with State Historic Preservation Office from March 2021 through August 2021. The State Historic Preservation Office concurred with finding of "No Historic Properties Affected" on August 23, 2021.
- Early Public Notice notifying the public of FEMA's decision to prepare an Environmental Assessment was published in the St. Albans Messenger (print) on June 29, 2021. No comments were received.
- Vermont DEC Wetlands Division completed a site inspection on July 2, 2019.
- A site visit was held prior to drafting the Environmental Assessment on July 20, 2021. Representatives of the Town of Highgate accompanied Stone Environmental.
- Environmental Assessment "Scoping Document" distributed by FEMA to state and federal partner agencies on September 16, 2021. One agency comment was received regarding wetlands; two agency comments were received regarding endangered species.
- Coordination with Vermont Fish and Wildlife Department and consultation with USFWS for northern long-eared bat on October 11, 2021; concurrence assumed on November 11, 2021.

The following documents the opportunities for the public to weigh in on the decision-making process.

- Initial Public Notice published on page 16 of the June 29, 2021, issue from the St. Albans Messenger of FEMA's intent to provide Hazard Mitigation Grant Program funding for the slope stabilization project that is located within a wetland. Funding would be provided through Vermont Emergency Management.

## FINDING OF NO SIGNIFICANT IMPACT

Transfer Station Stabilization Project  
Town of Highgate, Franklin County, Vermont

- Public Notice for the Availability of the Draft EA was published in the St. Albans Messenger on April 29, 2022. The Public Notice was also posted on the Town's website at [https://www.highgatevt.org/index.asp?SEC=4509D9F0-4E16-4778-8C98-0DEA20FB47FF&Type=B\\_PR](https://www.highgatevt.org/index.asp?SEC=4509D9F0-4E16-4778-8C98-0DEA20FB47FF&Type=B_PR), the Town's Facebook page at <https://www.facebook.com/TownofHighgateVT/photos/a.321672491264297/4925439190887581/> and at five sites around the Town.
- The Draft EA was made available for public comment and can be viewed and downloaded at: [Highgate Transfer Station Project Draft Environmental Assessment 2022.04.19 \(highgatevt.org\)](https://www.highgatevt.org/Highgate-Transfer-Station-Project-Draft-Environmental-Assessment-2022.04.19).
- The Draft EA could also be viewed in hard copy at the Highgate Municipal Office located at 2996 Vermont Route 78, Highgate Center.

The public comment period ended 15 days from the date of the final legal notice; no comments were received by FEMA or the Town of Highgate.

### FINDING OF NO SIGNIFICANT IMPACT (FONSI)

Based upon conditions and information contained in the HMGP grant application and the EA, and in accordance with the FEMA Instruction 108-1-1, *Instruction of Implementation of the Environmental Planning and Historic Preservation Responsibilities and Program Requirements*; the DHS Instruction Manual 023-01-001-01, Revision 01, *Implementation of the National Environmental Policy Act (NEPA)*; CEQ regulations in Title 40 C.F.R., Parts 1500-1508 *National Environmental Policy Act Implementing Regulations*; Executive Orders (EOs) addressing floodplains (EO 11988), wetlands (EO 11990), and environmental justice (EO 12898); and the Town's anticipated adherence to the prescribed standard and special conditions, FEMA has determined that the Proposed Action would not have significant impacts on the quality of the natural and human environment. As a result of this FONSI, an environmental impact statement will not be prepared and the project, as described in the grant application and the EA with the conditions listed above, may proceed.

### FEMA APPROVAL AUTHORITY:

**ERIC B KUNS**

Digitally signed by ERIC B KUNS  
Date: 2022.05.19 16:37:10  
-04'00'

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Eric Kuns, FEMA Region 1 Senior Environmental Protection Specialist

### HAZARD MITIGATION PROGRAM ENDORSEMENT:

**RICHARD H  
VERVILLE**

Digitally signed by RICHARD H  
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Date: 2022.05.19 16:43:22 -04'00'

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Richard Verville, FEMA Region 1 Deputy Director, Mitigation Division



## Final Environmental Assessment

### **Transfer Station Stabilization Project**

**HMGP Project No. DR-4022-VT-141-R (FEMA Grant # 02140-34000-157)**

**Franklin County, Vermont**

**May 17, 2022**



**U.S. Department of Homeland Security  
Federal Emergency Management Agency Region I  
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**TABLE OF CONTENTS**

TABLE OF CONTENTS..... 3

APPENDICES ..... 4

LIST OF ACRONYMS ..... 5

1.0 INTRODUCTION ..... 6

2.0 PURPOSE AND NEED ..... 6

3.0 PROJECT LOCATION AND BACKGROUND ..... 7

4.0 ALTERNATIVES ..... 7

    4.1 ALTERNATIVE 1: NO ACTION ALTERNATIVE..... 7

    4.2 ALTERNATIVE 2: PROPOSED ACTION, STABILIZE TWO SLOPES..... 7

    4.3 ALTERNATIVE(S) CONSIDERED AND DISMISSED ..... 8

        4.3.1 *Alternative 3: Relocation* ..... 8

        4.3.2 *Alternative 4: Engineered Solution*..... 8

        4.3.3 *Alternative 5: Bioengineered Solution*..... 8

5.0 AFFECTED ENVIRONMENT AND POTENTIAL EFFECTS..... 9

    5.1 PHYSICAL RESOURCES ..... 10

        5.1.1 *Geology and Soils* ..... 10

    5.2 WATER RESOURCES..... 10

        5.2.1 *Water Quality*..... 10

        5.2.2 *Floodplains* ..... 11

        5.2.3 *Wetlands*..... 12

    5.3 BIOLOGICAL RESOURCES..... 13

        5.3.1 *Fish and Wildlife*..... 13

        5.3.2 *Vegetation* ..... 14

        5.3.3 *Invasive Species* ..... 15

        5.3.4 *Threatened and Endangered Species* ..... 15

        5.3.5 *Migratory Birds and Bald Eagle*..... 16

    5.4 CULTURAL RESOURCES..... 17

        5.4.1 *Identification of Area of Potential Effect (APE), Cultural Resources and Consultation Process* 18

        5.4.2 *Historic Standing Structures* ..... 18

        5.4.3 *Archaeological Resources*..... 18

    5.5 SOCIOECONOMIC RESOURCES..... 19

        5.5.1 *Noise* ..... 19

        5.5.2 *Public Services and Utilities* ..... 19

        5.5.3 *Environmental Justice*..... 20

        5.5.4 *Hazardous Materials*..... 21

    5.6 CUMMULATIVE EFFECTS ..... 22

6.0 PERMITS AND PROJECT CONDITIONS..... 23

7.0 AGENCY COORDINATION AND PUBLIC INVOLVEMENT ..... 25

8.0 REFERENCES ..... 26



**APPENDICIES**

APPENDIX A: Maps and Figures

Location Map

FEMA Flood Map

National Wetlands Inventory Map

APPENDIX B: Project Documents and Designs

Engineering Design Plans (Select Pages)

APPENDIX C: Supporting Documents

Photographic Key

Site Photographs

8-Step Analysis

## LIST OF ACRONYMS

ANR	Agency of Natural Resources
APE	Area of Potential Effect
ARA	Archaeological Resources Assessment
BCC	Bird of Conservation Concern
DEC	Vermont Department of Environmental Conservation
EJ	Environmental Justice
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
HMGP	Hazard Mitigation Grant Program
IPaC	Information for Planning and Consultation
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
SHPO	State Historic Preservation Office
SRHP	State Register of Historic Places
U.S.	United States
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service

## **1.0 INTRODUCTION**

The President declared a major disaster under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) on September 1, 2011 for the State of Vermont as a result of Tropical Storm Irene that occurred from August 27 to September 2, 2011. This declaration, designated FEMA-4022-DR-VT, authorized the Hazard Mitigation Grant Program (HMGP) statewide. Under the HMGP, the Federal Emergency Management Agency (FEMA) may provide financial assistance for state, local, and tribal governments, and certain private nonprofit organizations to implement hazard mitigation measures that are cost effective and substantially reduce the risk of future damage, hardship, loss, or suffering in any area affected by the major disaster. Vermont Emergency Management, Department of Public Safety is the recipient under the HMGP and responsible for submitting HMGP applications on behalf of eligible applicants. It is also the entity to which FEMA awards HMGP funding and is responsible and accountable for the use of HMGP funding.

Vermont Emergency Management submitted to FEMA an HMGP application on behalf of the Town of Highgate in November 2013. The scope of work in the project application is to design and implement a slope stabilization construction project for failing steep banks at Transfer Station Road, south of Route 78 in Highgate, Vermont. The soils on the slopes have previously failed including a slide in 2013. The project would reduce erosion risks on the transfer station parcel.

The National Environmental Policy Act (NEPA) requires FEMA to follow a specific planning process to ensure proper environmental consideration has taken place prior to the Proposed Action implementation and that the public is fully informed about the consequences of a proposed federal action, such as the approval of a mitigation project under the HMGP grant for a Stafford Act major disaster declaration. To meet its NEPA requirements, FEMA, in cooperation with the Town of Highgate and their contractor Stone Environmental, Inc., has prepared this Environmental Assessment to analyze potential effects of the Proposed Action and Alternatives on the human environment, and to determine whether the proposed project warrants preparation of an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

## **2.0 PURPOSE AND NEED**

The Town's most common hazards, as identified in Chapter 8 of the Highgate Town Plan are flooding, fluvial erosion, and landslides. Sandy soils and groundwater discharge has made the Highgate Transfer Station parcel prone to erosion and landslides (Highgate 2015). The purpose of this project is to stabilize the slopes at the transfer station and allow the continued use of this public facility.

The proposed slope stabilization at the transfer station is needed to protect human health, protect the natural environment, and maintain town owned infrastructure and improved property. The project is also needed to augment repairs from fluvial erosion and landslide events occurring in 2003, 2008 and 2011. These repairs were made within three areas of the transfer station parcel between 2003–2007 (west of the transfer station building); in 2011 (northwest of the capped landfill), and in 2013 (northwest of the transfer station building). The 2011 and 2013 repairs were limited in scope and did not address all areas where landslides could occur, leaving the current need for additional slope stabilization. The Town's contractor, GeoDesign, Inc., has indicated there is currently a 40% probability of failure of the capped landfill (GeoDesign 2019a-c).

### **3.0 PROJECT LOCATION AND BACKGROUND**

Highgate is in northwestern Franklin County, Vermont, and shares borders with the province of Quebec, Sheldon and Swanton County, and Lake Champlain. The 193 acre transfer station facility is located south of Route 78 and north of the Missisquoi River within the commercial section of the town (Appendix A, Document 1) and has four main components comprising 13 acres of the 193 acre parcel: the transfer station/recycling center building, a closed and capped municipal landfill, the Town's salt shed and Transfer Station Road. Portions of the Missisquoi River including an unnamed tributary of the river which is part of the project area are prone to wide floodplain flooding with severe instances of flooding occurring in 1927, 1979, 2004, 2006, and 2011 (Tropical Storm Irene).

The Town's site was originally developed as a 10 acre sanitary landfill that opened in 1987 and operated until 1992. In 1992, the landfill stopped operating because the State of Vermont required all unlined landfills in environmentally sensitive areas to be closed. The closed and capped landfill has been monitored for over 20 years and no longer needs to be monitored based on water quality results. Also in 1992, the current transfer station and recycling center opened and was originally operated by Waste USA before ownership and operation was taken over by Casella Waste Management in 1995. Casella Waste Management's services are still under contract with the town (Highgate 2015).

### **4.0 ALTERNATIVES**

#### **4.1 Alternative 1: No Action Alternative**

The project area includes variable terrain that is prone to erosion and landslides including two ongoing, progressive slope failures, designated "Site 1" located northwest of the salt shed, and "Area E" located west of the capped landfill (Appendix B). Under the No Action Alternative, no federal funding would be provided to the Town. The full cost of any future repairs, mitigation measures or remediation should the slopes fail and breach the capped landfill would be the responsibility of the Town. Ad hoc repairs would likely take place as funds allowed.

#### **4.2 Alternative 2: Proposed Action, Stabilize Two Slopes**

The Proposed Action would stabilize the slope failures at Sites 1 and E in the project area. The existing capped landfill is located at the crest of one of the slope failures (Area E) and the salt shed is located at the crest of the other slope failure (Site 1) (Cross Consulting Engineers 2019; Appendix B). A photographic key and photographic log of the Proposed Action project area is included in Appendix C. Each slope is approximately 100 feet high with a stream at the toe of the slope. Slope stabilization at these locations is designed to mitigate problematic soils that cause landslides.

The Proposed Action has the following components:

1. Stabilization would include the excavation of an estimated 17,810 cubic yards of subsoil and topsoil, flattening of failing slide areas and transition areas, and the rebuilding of the slopes to a stable configuration using an estimated 27,320 cubic yards of stone fill.
2. Area E (Landfill Slide) and Site 1 (Salt Shed Slide) includes installing a drainage swale at the top of the slope (to divert surficial flow), and a stone key at the bottom of the slope. The swale would drain to existing or proposed storm drain inlets. The slope would be stabilized with a filter fabric, granular filter, and stone fill.
3. Site 1 drainage swale outfall would be stabilized with stone.

4. Clearing and grubbing of 2.3 acres within Area E and Site 1 including the removal of approximately 500 generally mature trees (8-inch diameter at breast height or greater). Stumps would be ground down and roots removed to a depth of 18-inches below exposed subgrade. Tree branches would be chipped and disposed of off-site.
5. Stream channel realignment and widening would be performed perpendicular, upgradient and downgradient from Site 1. Channel realignment would include the installation of stream cross vanes.

Dewatering measures may be needed for stone key installation and channel realignment and may be in place until construction has progressed up the slope, including but not limited to the localized sump locations. The channel restoration, realignment, and widening at the toe of the slope has been designed to better resist scour. Stream channel erosion of easily erodible sand, silt, and clay soils along the toe of the slope adjacent to the landfill and salt shed areas has created multiple small sloughs that expand and propagate uphill. Temporary impacts such as access routes and water diversion methods (where required) have not been developed at this time and would be dependent on the contractor's proposed means and methods. Permitting needs, including mitigation measures, are not yet fully known.

Work completed to date includes Phase I of the construction process including two soil borings, a slope stability evaluation, and conceptual design documents; a project narrative completed during the HMGP application; as well as final design plans dated July 13, 2019 (GeoDesign 2019c). The permitting process, required prior to construction implementation, has not yet occurred, and would be completed during Phase II.

### **4.3 Alternative(s) Considered and Dismissed**

#### **4.3.1 Alternative 3: Relocation**

The original preferred alternative in the HMGP project application was to relocate the facilities. However, the Town of Highgate does not own a suitable property to facilitate relocation of the salt shed and transfer station. In addition to an unknown, yet likely considerable cost of real estate to purchase a new site there would be additional costs for preparation of the new land, construction of a new salt shed and transfer station facilities, demolition of the old salt shed and transfer station facilities, "make safe" costs associated with no longer having an active presence at the landfill site and lastly a remaining need to repair Site E to protect the closed landfill. Given these costs, time needed to complete the relocation, and the benefit of an estimated 50-year life span for slope stabilization as presented in the preferred alternative, the Highgate Town Selectboard dismissed this alternative.

#### **4.3.2 Alternative 4: Engineered Solution**

The alternative of installing a retaining element or soil nailing solution for slope stabilization was considered. This alternative was dismissed because these solutions are significantly more costly than the stone fill solution presented and therefore were not pursued in detail by the Town.

#### **4.3.3 Alternative 5: Bioengineered Solution**

Bioengineering options were not considered for the streambank stabilization for three main reasons. 1) the sandy soil type is not conducive to a bioengineering solution, 2) the amount of time for root/plant establishment, and 3) terrain access limitations due to the steep slopes.

## 5.0 AFFECTED ENVIRONMENT AND POTENTIAL EFFECTS

Effects include ecological, aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect would be beneficial (40 CFR § 1508.8).

When possible, quantitative information is provided to establish potential effects; otherwise, the potential qualitative effects are evaluated based on the criteria listed in Table 5.0.1:

**Table 5.0.1: Effect Significance and Context Evaluation Criteria for Potential Effects**

Effect Scale	Criteria
None/Negligible	The resource area would not be affected, OR changes or benefits would either be non-detectable or, if detected, would have effects that would be slight and local. Detrimental effects would be well below regulatory standards, as applicable.
Minor	Changes to the resource would be measurable, but the effects would be small and localized. Detrimental and beneficial effects would be within or below regulatory standards, as applicable. Mitigation measures would reduce any potential detrimental effects.
Moderate	Changes to the resource would be measurable and have either localized or regional scale effects/benefits. Detrimental effects would be within or below regulatory standards, but historical conditions would be altered on a short-term basis. Mitigation measures would be necessary, and the measures would reduce any potential detrimental effects.
Major	Changes to the resource would be readily measurable and would have substantial consequences/benefits on a local or regional level. Detrimental effects would exceed regulatory standards. Mitigation measures to offset the detrimental effects would be required, though long-term effects to the resource would be expected.

Not all effect topics are applicable to either the No Action Alternative or the Proposed Action Alternative. The table below lists the resources that have been eliminated from the EA with reasoning.

**Table 5.0.2: Resource Topic Eliminated and Reasoning**

Resource Topic	Reason
Coastal Zone Management Act (CZMA)	No designated Coastal Zone in Vermont.
Coastal Barrier Resources Act (CBRA)	No designated Coastal Barrier Resource Units or Otherwise Protected Areas in Vermont.
Safe Water Drinking Act	No Sole Source Aquifers and neither of the alternatives analyzed would affect groundwater.
Magnuson-Stevens Act	No Essential Fish Habitat designated in Vermont.
Wild and Scenic Rivers Act	Closest Wild and Scenic River designation is 30 miles away (upstream) of the project area.
Clean Air Act and Climate Change	Neither alternative would create emissions above <i>de minimis</i> levels
Transportation	Transportation infrastructure, traffic volume and traffic routing would not be affected.
Public Health and Safety	Neither alternative would increase flood hazards or impact emergency services
Land Use and Planning	The project would not alter current land use.
Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)	There are no hazardous waste sites in the Town of Highgate listed on the EPA's National Priorities List including at the project area.

## 5.1 PHYSICAL RESOURCES

### 5.1.1 Geology and Soils

#### 5.1.1.1 Existing Conditions

The project area is in Highgate, Vermont, north of the Missisquoi River, south of the Canadian border, and east of Lake Champlain. Highgate is at an elevation of 322 feet and located within the Champlain Valley Belt geologic area (Kim et al. 2009). Bedrock geology is mapped as slate and dolostone, described as laminated black slate with thin orange dolostone beds, includes massive dolostones mapped as Saxe Brook formation.

The surficial soils that cover most of the project area consist of pebbly marine sand, but also contain alluvium. The project area also contains sand and gravel deposits (Natural Resources Atlas 2021). The soils at the base of the slope near the Proposed Action are poorly drained silt loam. Soils at the crest of the slope are fine sand. The Town of Highgate is in an area with minimal earthquake hazards (strong shaking and some building damage could occur) (Earthquake Hazard Map 2021).

The soils in the project area consist of 48 percent Windsor loamy fine sand (25-60 percent slopes) and 52 percent Limerick silt loam. Limerick silt loam when drained is a soil of statewide importance (NRCS 2021a).

#### 5.1.1.2 Potential Effects and Proposed Mitigation

##### **Alternative 1: No Action**

Under the No Action Alternative, there would be no slope stabilization, removal/addition of soil/stone fill, stream realignment, or other construction activities. The project area would continue to experience soil erosion and potential landslides. Current and future erosion and landslides would result in **moderate** effects to the soil and **negligible** effects to geology.

##### **Alternative 2: Proposed Action, Stabilize Two Slopes**

The Proposed Action of stabilizing the two slopes would require clearing and grubbing approximately 2.3 acres, subsoil/topsoil removal, flattening of failing slides and transition areas, and adding a filter fabric, granular filter layer, stone fill key, and stone fill. FEMA coordinated with NRCS on December 20, 2021 regarding the Limerick soils which resulted in a determination that the soils were not drained and therefore not soils of statewide importance (FEMA 2021b; NRCS 2021b). The Proposed Action Alternative would have no effect on Prime, Unique or soils of local or statewide importance. Effects to soils would be **minor** for soils and **negligible** for geology.

## 5.2 WATER RESOURCES

### 5.2.1 Water Quality

The Clean Water Act regulates discharge of pollutants into water under the shared responsibility of the United States Army Corps of Engineers (USACE) and the Environmental Protection Agency (EPA). Section 404 of the Clean Water Act establishes the USACE permit requirements for discharge of dredged or fill materials into Waters of the United States (U.S.) including traditional navigable waterways. USACE regulation of activities within navigable waters is also authorized under the Rivers and Harbors Act. Under the Section 402 of the Clean Water Act, known as National Pollutant Discharge Elimination System (NPDES), the EPA regulates both point and non-point pollutant sources, including stormwater and stormwater runoff. Activities that disturb one acre of ground or more are required to apply for an NPDES permit through the Vermont DEC which issues Construction Stormwater Discharge Permits as authorized by the EPA. A Section 401 water quality certification is required when obtaining a Clean Water Act Section 402 NPDES or 404 Dredge and Fill Permit.

### 5.2.1.1 Existing Conditions

The project area is within the Missisquoi River Watershed. An unnamed tributary of the Missisquoi River, located at the toe of the slope of Area E and Site 1, flows south into the Missisquoi River which then flows west and drains into Lake Champlain. The water quality within the entire length of the Missisquoi River is poor because of sediment loading, turbidity, nutrient enrichment, and streambank erosion (VT ANR 2004). A contributing factor to the poor water quality in the area is that 42% of the Town of Highgate land is used for agricultural purposes (Highgate 2015). Additionally, the section of the Missisquoi River between the Swanton Dam, located six miles west of the transfer station in Swanton, VT, and its mouth at Lake Champlain is considered impaired because of increased mercury levels in fish (VT ANR 2004).

### 5.2.1.2 Potential Effects and Proposed Mitigation

#### Alternative 1: No Action

The No Action alternative would result in continued erosion and potential landslides into the wetland areas and the unnamed tributary to the Missisquoi River. There would also be channel disturbance from potential downed trees and landslides. Lastly, if the capped landfill or a portion of the capped landfill fails, regulatory action may be triggered including the reinstatement of post-closure water quality monitoring and potential remediation associated with damages to water resources. Effects of no action would be **moderate to major**.

#### Alternative 2: Proposed Action, Stabilize Two Slopes

Under the Proposed Action, 2.3-acres of stream and stream bank would be impacted. The impacted acres would be cleared and grubbed, and slope stabilization would include installation of a drainage swale at the top of the slope, a stone key at the bottom of the slope, and fabric and granular filters on the slope. During construction dewatering may take place, and stream channel realignment/widening would occur. Approximately 9,500-square feet of wetlands within the project area that act as a natural filtration and biological treatment system to improve water quality would be filled, potentially adversely affecting future water quality (see Section 5.2.3 Wetlands below).

As indicated by Angela C. Repella of USACE, the Town of Highgate would need to apply for a permit under Section 404 of the Clean Water Act for placement of fill within wetlands and the unnamed tributary of the Missisquoi River (USACE 2021). At this time, it is uncertain if the Proposed Action would be authorized under the Vermont General Permits or an Individual Permit. Additional permits that may be required by the Vermont DEC include a Water Quality Certification and Construction General Permit for Stormwater under Sections 401 and 402 of the Clean Water Act and a Vermont Stream Alteration permit. All permit applications are pending and would be submitted to the regulatory agencies during the final design, permitting and bidding phase of the project. Both USACE and Vermont water quality permits would include conditions to avoid, minimize and mitigate, in that order, adverse impacts to water quality. The Proposed Action would have **minor** effects to water quality.

### 5.2.2 Floodplains

Executive Order (EO) 11988 Floodplain Management requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. Each federal agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities. FEMA uses an 8-Step Analysis to evaluate potential effects on and mitigate effects to floodplains in compliance with EO 11988 and 44 CFR Part 9. The



Vermont Agency of Natural Resources (ANR), DEC administers and regulates floodplains in Vermont in accordance with the National Flood Insurance Act and the National Flood Insurance Program.

#### **5.2.2.1 Existing Conditions**

Portions of the Missisquoi River and tributaries are prone to wide-floodplain flooding with severe instances of flooding occurring in 1927, 1979, 2004, 2006, and 2011 (Tropical Storm Irene). The project area abuts an unnamed tributary of the Missisquoi River (at the base of both Area E and Site 1). A portion of the transfer station parcel along the southeast section is within the 100-year flood zone according to the Flood Insurance Rate Map panel 5000550015B dated April 04, 1983, but the project area is north of, and outside of, the 100-year flood zone area (Appendix A, Document 5; Northwest Regional Planning Commission, 2016). The closest 100-year floodplain is 1,500 feet downstream of the project area where the unnamed tributary meets the Missisquoi River.

#### **5.2.2.2 Potential Effects and Proposed Mitigation**

##### **Alternative 1: No Action**

The No Action Alternative would not affect the 100-year floodplain because the project area is located outside of, and outside of the area of influence of, the 100-year floodplain.

##### **Alternative 2: Proposed Action, Stabilize Two Slopes**

The Proposed Action would not affect the 100-year floodplain because the project area is located outside of, and outside of the area of influence of, the 100-year floodplain.

### **5.2.3 Wetlands**

EO 11990 Protection of Wetlands requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. Each federal agency shall provide leadership and shall take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities. FEMA uses an 8-Step Analysis to evaluate potential effects on, and mitigate effects to, wetlands in compliance with EO 11990 and 44 CFR Part 9 (Appendix C, Document 4). The State of Vermont's Wetland Office, the U.S. Army Corps of Engineers, and U.S. Department of Agriculture (USDA) Natural Resource Conservation Service are the three government agencies that administer wetland protection programs.

#### **5.2.3.1 Existing Conditions**

The U.S. Fish and Wildlife Service (USFWS) National Wetlands Mapper identifies two wetland types within the project area (Area E and Site 1): one freshwater emergent wetland habitat (classified as PEM1E) and one freshwater forested/shrub wetland habitat (classified as PFO1E) (Appendix A, Document 6). The wetlands within the project area were delineated by Gilman and Briggs on May 30, 2019 and the Vermont Wetlands Program visited the site on July 2, 2019 and found the delineation acceptable and determined that the wetlands are classified as Class II wetlands (Cross Consulting Engineers 2021).

#### **5.2.3.2 Potential Effects and Proposed Mitigation**

##### **Alternative 1: No Action**

Under the No Action Alternative, potential future erosion and landslides would continue to adversely affect the wetlands from excessive sedimentation. Additionally, the landfill is at risk of failing. If the capped landfill or a portion of the capped landfill fails, the water quality of the unnamed tributary of the Missisquoi River and

adjoining wetlands may be impacted due to release of landfill leachate into the tributary and release of refuse and debris. The natural function of the wetlands to filter and improve water quality may be compromised by pollutants within the landfill leachate that can be toxic to plant and animals within the wetlands. Wetland loss can stress the remaining wetlands adjoining the unnamed tributary to the Missisquoi River, for example if fewer wetlands are available to filter pollutants, those pollutants could become more concentrated in the remaining wetlands. If the preferred alternative is not implemented, the release of pollutants from the failed landfill may be continuous and occur over several different storm events, which would cause long-term stress on the adjoining wetlands and potentially impact water quality in the Missisquoi River. However, the no action alternative does not purposely fill in 9,500-square feet of wetlands. Effects to the wetlands would be **moderate** if the No Action Alternative is implemented.

### **Alternative 2: Proposed Action, Stabilize Two Slopes**

The Proposed Action Alternative would have 9,500 square feet of permanent impacts to wetlands: 3,100 square feet at Site 1 and 6,400 square feet at Area E (Cross Consulting Engineers 2019). The impacted areas would be cleared and grubbed of all vegetation, would lay down a filter fabric and a granular filter and would place large stone to stabilize the area. Temporary impacts would include dewatering measures located within and adjacent to the wetlands and heavy machinery located within the wetlands. Permitting would be required by USACE and the Vermont Wetlands Program. Potential conditions of the permits may include sedimentation and erosion control during construction activities, bank stabilization designed to minimize environmental effects, and waterway and wetland work designed to avoid the restrictions of high flows, maintain existing low flows, and to not obstruct the movement of aquatic life indigenous to the waterbody after the duration of the construction. In lieu fees or other compensatory mitigation may also be required by USACE and Vermont Wetlands program if avoidance of adverse effects cannot be practically achieved.

The Proposed Action would result in permanent adverse effects to wetlands as well as temporary adverse construction effects but would also improve long-term slope stabilization and reduce future erosion, sedimentation, and landslides into other nearby wetlands. Effects to wetlands would be **moderate**.

## **5.3 BIOLOGICAL RESOURCES**

### **5.3.1 Fish and Wildlife**

The project area is in State Fisheries District 4, Wildlife District 4, as well as a Western Baitfish zone (VT ANR, 2021).

#### **5.3.1.1 Existing Conditions**

Fish and wildlife composition in the project area includes a range of forest, riparian and aquatic species. There are no National Wildlife Refuge lands, fish hatcheries, or critical habitats within the project area as defined by USFWS online Information for Planning and Consultation tool (USFWS 2021a). Downstream of the project area, the section of the Missisquoi River between the Swanton Dam and its mouth at Lake Champlain is listed as impaired because of increased mercury levels in fish (VT ANR 2004).

#### **Terrestrial**

Small mammals and game species are assumed to live in and migrate through the project area.

#### **Aquatic**

No federal aquatic species of concern were identified using the IPaC tool (USFWS 2021a). The Vermont Fish & Wildlife Fishing Regulations for the Missisquoi River do not allow individuals to catch and keep the following species: lake sturgeon, American shad, largemouth and smallmouth bass, muskellunge and sauger.

### 5.3.1.2 Potential Effects and Proposed Mitigation

#### **Alternative 1: No Action**

The No Action Alternative would result in continued flooding, erosion, and accumulation of sediment in the wetland areas, the unnamed tributary and the Missisquoi River which could potentially damage natural habitats causing a loss in wildlife. Effects to fish and wildlife would be **minor**.

#### **Alternative 2: Proposed Action, Stabilize Two Slopes**

Under the Proposed Action Alternative, construction activities could have a minor impact on wildlife species and would have a minor localized impact from the conversion of natural areas to stone fill. Dewatering and the stream alteration would have temporary minor impacts to aquatic species in the unnamed tributary to the Missisquoi River. Any downstream construction impacts to aquatic species, including regulated game fish would be mitigated through state permitting.

### 5.3.2 Vegetation

#### 5.3.2.1 Existing Conditions

Most of the project area is forested land consisting of hemlock, yellow birch, and sugar maple. An unidentified "uncommon vascular plant" species occurs within the transfer station parcel but not within the project area (VT ANR 2021; USFWS 2021a). Elk sedge is located on the transfer station parcel and early thimbleweed is identified as growing on wet ledges, downstream of the project area near the Missisquoi River. Approximately 0.5 miles downstream in the Missisquoi River, at the confluence of the unnamed tributary, there is a Significant Natural Community identified as "Silver Maple-Ostrich Fern Floodplain" (VT ANR 2022).

#### 5.3.2.2 Potential Effects and Proposed Mitigation

##### **Alternative 1: No Action**

The No Action Alternative would not alter current vegetation (other than natural succession), but if future erosion or landslides occur, vegetation could be affected. The unidentified "uncommon vascular plant" species upgradient of the project area on the bank of the Missisquoi River would likely not be impacted based on its distance from the project area and its upgradient location. The Silver Maple-Ostrich Fern Floodplain Significant Natural Community would not be affected under normal conditions but would be expected to be affected if the landfill was breached during a large storm event. Effects would be **minor to moderate**.

##### **Alternative 2: Proposed Action, Stabilize Two Slopes**

Under the Proposed Action, grubbing and clearing would occur within the project area which would result in the permanent removal of 2.3-acres of trees, shrubs, and roots. Area E and Site 1 would not be re-vegetated, but would be stabilized and covered with filter fabric, granular filter, and stone fill. There would be no impacts to the unidentified "uncommon vascular plant" species. Effects to the Silver Maple-Ostrich Fern Floodplain Significant Natural Community would not be expected by the Proposed Action's construction activities because of both state and federal permit conditions protecting water resources. Long-term beneficial effects to the Silver Maple-Ostrich Fern Floodplain Significant Natural Community would be expected because of future protections against the risk of a landfill breach during large storm events. Effects to vegetation would be **moderate**.

### 5.3.3 Invasive Species

EO 13112, Invasive Species, requires federal agencies, to the extent practicable, to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health effects that invasive species cause. Invasive species prefer disturbed habitats and generally possess high dispersal abilities, enabling them to out-compete native species.

#### 5.3.3.1 Existing Conditions

The only invasive species identified was Eurasian watermilfoil within the Missisquoi River in Highgate.

#### 5.3.3.2 Potential Effects and Proposed Mitigation

##### Alternative 1: No Action

No new invasive species would be introduced or promoted. Effects would be **none/negligible**.

##### Alternative 2: Proposed Action, Stabilize Two Slopes

Under the Proposed Action, construction equipment and fill material that could introduce invasive species would be placed in the project area. To prevent the introduction of invasive species, all fill material would be verified clean, tested in a laboratory, and would not contain rocks/roots/seeds in accordance with the construction specification for Turf and Grasses included within the engineered design documents (Cross Consulting Engineers 2019; Appendix B). Additionally, USACE and state permitting would likely include general and/or project specific conditions on how to prevent the introduction of invasive species. Thus, it is unlikely that new invasives would be promoted or introduced during the implementation of the Proposed Action. Effects would be **negligible**.

### 5.3.4 Threatened and Endangered Species

The Endangered Species Act (ESA) provides for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The lead Federal agency for implementing the ESA in Vermont is the USFWS. The law requires Federal agencies to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. The law also prohibits any action that causes a “taking” of any listed species of endangered fish or wildlife. “Take” is defined in regulation (50 CFR § 10.12) as “to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities.

#### 5.3.4.1 Existing Conditions

The project area is within the consultation area for the state and federally listed northern long-eared bat. There are no critical habitats within the project area (USFWS 2021a). The northern long-eared bat is a threatened species (endangered at the state level) according to the ESA and ranges throughout the state of Vermont. The Vermont ANR, Department of Fish and Wildlife communicated that the project area might contain “potential habitat” of the northern long-eared bat species; the Vermont ANR Atlas does not identify any known roosts or hibernation sites within a mile of the site (VT ANR 2021; VT F&W 2021). In addition, the Monarch butterfly (*Danaus plexippus*) is a candidate species on the species list provided by New England Ecological Services Field Office (IPaC 2021).

The Vermont ANR Atlas also showed that downstream of the project area at the confluence with the Missisquoi River and beyond there are other state-listed species (VT ANR 2022). The ANR Atlas does not identify the species in order to protect the species from the curious; FEMA requested additional information from Vermont Fish and Wildlife on April 18, 2022 (FEMA 2022) and received a Vermont Natural Heritage Inventory, Element

Occurrence Report from Vermont Fish and Wildlife on April 19, 2022. This report included 8 state listed species in the main stem of the Missisquoi River including five freshwater mussel species (one threatened and four endangered) and three fish species (two threatened and one endangered) (VT F&W 2022).

#### **5.3.4.2 Potential Effects and Proposed Mitigation**

##### **Alternative 1: No Action**

Under the No Action Alternative, there would be no tree removal activities; however, there is the potential for trees to fall from future landslides and there may be an adverse effect to ESA-listed species. Under the No Action Alternative there could be effects to downstream aquatic species from future erosion and sedimentation from storm events. Any construction effects from future Town repair activities would be considered and mitigated through standard state permitting processes. Effects would be **minor**.

##### **Alternative 2: Proposed Action, Stabilize Two Slopes**

The Proposed Action would require the removal of 2.3-acres of trees/vegetation which would have a minor impact on the species because of the removal of potential habitat. Therefore, consultation with USFWS was required for northern long-eared bat. The 2.3-acres that would be cleared and grubbed under the Proposed Action is below the Vermont Fish and Wildlife Department concern for potential habitat and thus, no special conditions are requested for the Proposed Action. Using the optional streamlined consultation framework for northern long-eared bat under the ESA's 4(d) rule, FEMA initiated consultation with USFWS on October 11, 2021 (USFWS 2021c). The compliance letter was completed on October 11, 2021 and indicates the Proposed Action may affect the northern long-eared bat; however, any "take" that may occur because of the Proposed Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Per the consultation framework, FEMA was able to assume USFWS concurrence after 30 days on November 10, 2021. Effects to ESA-listed northern long-eared bat would be **minor**.

Under the Proposed Action, consideration for state-listed aquatic species in the Missisquoi River would be through standard state permitting processes, e.g., the Vermont Stream Alteration permit, Vermont Wetlands permit and not through the ESA Section 7 consultation process for federal agencies. Through these state permitting processes further consideration would occur by state permitting staff and include any required permit conditions to the permits to avoid, minimize, and mitigate any construction related effects from the Proposed Action. Effects to state-listed species are expected to be **none/negligible**.

#### **5.3.5 Migratory Birds and Bald Eagle**

The Migratory Bird Treaty Act (MBTA) provides a program for the conservation of migratory birds that fly through lands of the U.S. The lead Federal agency for implementing the MBTA is the USFWS. The law makes it unlawful at any time, by any means or in any manner to take any part, nest, or egg of migratory birds. "Take" is defined in regulation (50 CFR 10.12) as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities. As part of the MBTA is the list of Birds of Conservation Concern which identifies bird species (beyond those already designated as federally threatened or endangered) that are among the highest conservation priorities of the USFWS. The Birds of Conservation Concern list does not confer additional regulatory or legal protection to the included species, beyond the protections of the MBTA, but instead serves to focus conservation efforts across the federal government and its partners (The Wildlife Society 2021).

The Bald and Golden Eagle Protection Act, enacted in 1940, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" Bald and Golden Eagles, including their parts, nests, or eggs. Like the MBTA, the law makes it illegal for anyone to "take," possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any bald or golden eagles, or their parts, feathers, nests, or eggs. "Take" is

defined as “to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities. There are no known Golden Eagle nests in any New England state.”

#### **5.3.5.1 Existing Conditions**

All of Vermont is in the Atlantic Flyway, an important travel corridor for birds as they migrate north for summer and south for the winter. The Atlantic Flyway encompasses the eastern states and connects northern Canada to South America. It is the most developed of the four flyways in the U.S. making undeveloped areas along the route where birds can rest and live important to their survival (Ducks Unlimited 2020). The USFWS documents six species of migratory birds potentially present in the project area: Bald Eagle (*Haliaeetus leucocephalus*), Black-Billed Cuckoo (*Coccyzus erythrophthalmus*), Bobolink (*Dolichonyx oryzivorus*), Eastern Whip-Poor-Will (*Antrostomus vociferus*), Prairie Warbler (*Dendroica discolor*), and Wood Thrush (*Hylocichla mustelina*). All but the Bald Eagle are listed as "Birds of Conservation Concern" (USFWS 2021a). The Vermont ANR Atlas has no known occurrences of Bald Eagle in or adjacent to the project area. Eagles have not been observed within the project area. In addition, there are no known Golden Eagles present in Vermont (USFWS 2021a; VT ANR 2021).

#### **5.3.5.2 Potential Effects and Proposed Mitigation**

##### **Alternative 1: No Action**

Under the No Action Alternative, landslides and erosion could affect trees and nests used by migratory birds and Bald Eagle but would not likely affect any long-term nesting, foraging or migration patterns of these species. In the long-term, the area does not have a potential to impact migratory birds or Bald Eagle if no action is taken, so effects would be **negligible**.

##### **Alternative 2: Proposed Action, Stabilize Two Slopes**

The Proposed Action could impact migratory birds and Bald Eagle during the construction/grubbing phase of the project due to the use of equipment, and long-term from the permanent removal of 2.3 acres of trees and vegetation, but would not likely affect any long-term nesting, foraging or migration patterns of these species. Effects would be localized and **minor**.

### **5.4 CULTURAL RESOURCES**

Federal agencies must consider the potential effects of their actions upon cultural resources prior to engaging in any undertaking. Cultural resources are defined as prehistoric and historic sites, structures, districts, buildings, objects, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. One of the laws that codifies this obligation is Section 106 of the National Historic Preservation Act (NHPA), as amended and implemented by 36 CFR Part 800. The NHPA of 1966 defines a historic property as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register.” Eligibility criteria for listing a property on the National Register of Historic Places (NRHP) are found at 36 CFR Part 60. While the definition of a cultural resource under NEPA can be broader, FEMA regularly uses Section 106 to meet its obligations to consider effects to cultural resources. For this project, FEMA determined that it was appropriate to utilize its NHPA review to fulfill its NEPA obligations.

Cultural resources determined to be potentially significant under NHPA are subject to a greater level of review and federal agencies must consider the effects of their projects on those resources and consider steps to avoid, minimize, or mitigate those effects. To be considered significant, a cultural resource must meet one or more of the criteria established by the National Park Service (NPS) that would make that resource eligible for inclusion in the NRHP. The term “eligible for inclusion in the NRHP” includes all properties that meet the NRHP listing

criteria, which are specified in the Department of Interior regulations Title 36, Part 60.4 and NRHP Bulletin 15. Sites that have not been evaluated at the time of the undertaking may be considered potentially eligible for inclusion in the NRHP and, as such, are afforded the same regulatory consideration as nominated properties.

#### **5.4.1 Identification of Area of Potential Effect (APE), Cultural Resources and Consultation Process**

FEMA considered effects to cultural resources within the Area of Potential Effect (APE) identified during the Section 106 process. Pursuant to 36 CFR 800.4(a)(1), the APE is defined as the geographic area(s) within which the undertaking may directly or indirectly affect cultural resources. For this undertaking, the APE included the specific areas of construction as well as areas to be utilized for access and staging.

The Vermont Agency of Commerce and Community Development, Division for Historic Preservation maintains a database of Vermont's historic properties which is regularly updated, in part based on reports prepared by cultural resources professionals in advance of construction projects that are subject to State Historic Preservation Officer (SHPO) review under state and federal laws. FEMA reviewed the Vermont Online Resource Center, State Register of Historic Places (SRHP) database, and NRHP to determine if there were previously identified cultural resources with the area of effect for this project. Historical aerial images and historic maps were also reviewed to assess the potential for eligible above-ground and below-ground resources within the project area.

FEMA sent a Finding of "No Historic Properties Affected" and an Archaeological Resource Assessment (ARA) recommendation to the SHPO on March 29, 2021. The concurrence was received on April 23, 2021. A Phase 1 Archaeological Survey Recommendation was sent to SHPO on June 9, 2021, and the concurrence was received on June 15, 2021. The results of a Phase 1 Survey and finding of "No Historic Properties Affected" was sent to SHPO on August 11, 2021, and the concurrence was received on August 23, 2021 (Appendix C, Document 8).

#### **5.4.2 Historic Standing Structures**

##### **5.4.2.1 Existing Conditions**

There are no standing structures over 50 years of age within the APE and therefore no historic properties.

##### **5.4.2.2 Potential Effects and Proposed Mitigation**

#### **Alternative 1: No Action**

There are no standing structures over 50 years of age within the project area; therefore, under the No Action Alternative, effects to historical standing structures would be **none**.

#### **Alternative 2: Proposed Action, Stabilize Two Slopes**

There are no standing structures over 50 years of age within the project area; therefore, under the Proposed Action, effects to historical standing structures would be **none**.

#### **5.4.3 Archaeological Resources**

##### **5.4.3.1 Existing Conditions**

An Archaeological Phase I Site Survey was performed by Crown Consulting Archaeology and dated August 10, 2021. The proposed project APE is located on a high, elevated terrace edge of a deeply incised tributary of the Missisquoi River. Specifically, the top of the slope of Site 1 is on outwash terraces of the Champlain Sea. Sands deposited along the margins of the Champlain Sea, and its tributaries formed the soils of the project area. The Missisquoi River was a major thoroughfare for pre-Contact Native Americans and has a high, known archaeological site density along its banks and up its tributaries. In addition, this portion of Vermont is still

considered the traditional homeland of the Western Band Abenaki, who continue to live here today. Numerous known archaeological sites are located within 0.3 miles of the project area.

#### **5.4.3.2 Potential Effects and Proposed Mitigation**

##### **Alternative 1: No Action**

Under the No Action Alternative, additional effects to archaeological resources would be **negligible**. The Phase I archaeology survey determined there is little potential to impact archaeological resources (Appendix C, Document 8).

##### **Alternative 2: Proposed Action, Stabilize Two Slopes**

Under the Proposed Action Alternative, additional effects to archaeological resources would be **minor**. Based on the results of the Phase I archaeological survey, no pre-Contact Native American artifacts were recovered from any of the test pits, and therefore no archaeological sites were identified. No historic period Euromerican sites were encountered either. As a result, the Proposed Action would not disturb cultural resources and no additional archeological study is recommended. As such, SHPO concurred with FEMA's determination of "no historic properties affected." Conditions would be placed on the Proposed Action to address the potential for inadvertent discoveries.

### **5.5 SOCIOECONOMIC RESOURCES**

#### **5.5.1 Noise**

##### **5.5.1.1 Existing Conditions**

Noise is defined by the EPA as unwanted or disturbing sound (EPA 2021a). Current sources of noise in the project area includes vehicle traffic traveling on Routes 78 and 207, regular operation of the transfer station and nearby lawn/yard/farm equipment. Truck traffic tends to occur during normal business hours with occasional disruptions during the night. There are schools and churches in the Town that could be sensitive to noise.

##### **5.5.1.2 Potential Effects and Proposed Mitigation**

##### **Alternative 1: No Action**

The No Action Alternative would not involve any construction and would not affect noise levels from traffic flow, transfer station operations or nearby lawn/agricultural equipment. Effects would be **none**.

##### **Alternative 2: Proposed Action, Stabilize Two Slopes**

The Proposed Action Alternative would have no long-term effect on noise levels in the project area and the temporary effects would be **minor**. During the short-term, the Proposed Action would include the use of construction equipment and supplies that would temporarily increase the amount of noise in the project area. The local noise control ordinance would need to be followed.

#### **5.5.2 Public Services and Utilities**

##### **5.5.2.1 Existing Conditions**

The transfer station provides a public service to the surrounding area including a transfer station building operated by Casella Waste Management, a capped landfill, and a town operated salt shed. The nearest transfers stations in the surrounding areas are in St. Albans, 9.3 miles away; Alburgh, 14.4 miles; Fairfax, 23.3 miles; and Bakersfield, 23.3 miles away.



### 5.5.2.2 Potential Effects and Proposed Mitigation

#### **Alternative 1: No Action**

Under the No Action Alternative, demand in public service is not foreseen to change, but public resources could be adversely affected if there are landslides/erosion that impacts Transfer Station Road, the capped landfill, the salt shed, and the transfer station's capacity to accept municipal solid waste. In the event of interrupted services, any temporary closure of the Highgate Transfer Station would incur higher taxpayer costs associated with the replacement (versus repair) of any of the structures at the facility. Additionally, a portion of the capped landfill is at risk of failure if the adjoining slope fails. If failure occurs, a portion of the landfill would need to be relocated and potentially post closure water quality monitoring would be required to monitor environmental impacts. Temporary closures would also add inconvenience to residents and place increased demand on the nearby transfer stations. Under the No Action Alternative, effects to public services and utilities would be **major**.

#### **Alternative 2: Proposed Action, Stabilize Two Slopes**

The Proposed Action is designed for a 50-year life span at an estimated total cost of \$2,871,892.00 (\$2,153,919.00 FEMA cost share and \$717,973.00 Town of Highgate cost share) (GeoDesign 2019b). The costs associated with replacing structures at the transfer station facility would exceed the taxpayer costs of the Proposed Action. Short-term construction effects such as partial lane closures on Transfer Station Road would be expected. There would be long-term beneficial effects from the reduction of future risk of failure from storm related erosion and landslides. Effects to the public services and utilities would be **moderate**.

### 5.5.3 Environmental Justice

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires each Federal agency to identify and address, as appropriate, "disproportionately high and adverse human health or environmental effects" its activities may have on minority or low-income populations. Guidance released by the Council on Environmental Quality following publication of the EO makes clear that environmental effects include economic and social effects when considering Environmental Justice during the NEPA process (CEQ 1997).

The CEQ guidance also provides criteria for identifying minority and low-income populations. Specifically, low-income populations are identified based on the annual statistical poverty income thresholds of the U.S. Census Bureau, and minority populations are defined as persons in the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. Any area where the minority population exceeds 50 percent is considered to have an environmental justice population, based on the CEQ guidance.

#### **5.5.3.1 Existing Conditions**

According to the U.S. EPA's Environmental Justice Screening and Mapping Tool, the area surrounding the project area average demographic indicators are as follows: 8% people of color, 23% low income, 0% linguistically isolated, 14% with less than a high school education, 4% under age 5, and 17% over age 64 (EPA 2020b). While there are no Environmental Justice (EJ) Populations within the project area, it can be reasonably expected that Environmental Justice Populations use the services provided by the transfer station and salt shed facilities.

### 5.5.3.2 Potential Effects and Proposed Mitigation

#### **Alternative 1: No Action**

Under the No Action Alternative, failure and temporary closure of the transfer station facility and services would add inconvenience to all residents, but could disproportionately impact vulnerable populations, if travel was required to another Town's transfer station. Environmental impacts from a breach in the capped landfill would impact all residents equally. Effects would be **minor to moderate**.

#### **Alternative 2: Proposed Action, Stabilize Two Slopes**

Effects from the Proposed Action, both localized construction-related effects and town-wide beneficial effects of protecting the facility and surrounding environment, would impact both EJ and non-EJ populations equally. Short term adverse effects on EJ Populations would be **negligible to minor** and long term beneficial effects would be **minor to moderate**.

### 5.5.4 Hazardous Materials

#### 5.5.4.1 Existing Conditions

The Highgate Transfer Station is listed on the Vermont ANR Atlas as a Hazardous Waste Generator: EPA ID: VTR00008771. The transfer station is operated by Casella Waste Management and the transfer station building is located to the south of the project area. The project area is classified as a landfill with the Vermont DEC Solid Waste formerly operating as the Town of Highgate Landfill. The landfill is capped, and water quality monitoring was previously performed. The landfill post closure water quality monitoring requirements have been met.

#### 5.5.4.2 Potential Effects and Proposed Mitigation

##### **Alternative 1: No Action**

Under the No Action Alternative, the project area would be prone to continued erosion and landslide risk which could impact the integrity of the landfill located at the top of the slope. Under the No Action Alternative, effects to hazardous materials could be **moderate to major**.

##### **Alternative 2: Proposed Action, Stabilize Two Slopes**

The Proposed Action would not disturb the existing landfill. Future slope failures within Area E that may impact the landfill would be mitigated and the Proposed Action would have a beneficial effect by mitigating the threat of a release of leachate, and refuse and debris into the unnamed tributary, wetlands and the surrounding environment. Direct effects to the hazardous materials would be **none to negligible**. The prevention of future adverse effects would be **moderate to major**.

## 5.6 CUMMULATIVE EFFECTS

This Environmental Assessment considers the overall cumulative effect of the Proposed Action and other actions that are related in terms of time or proximity. While consideration of cumulative effects is no longer required under regulations as of September 14, 2020, the cumulative effects text is retained in this document for the added perspective on potential effects. Cumulative effects represent “effect[s] on the environment which results from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time” (40 C.F.R. 1508.7 pre-2020).

During 2021, the Town issued 14 new residential house building permits, and has projects underway that are expected to grow the business sector in the Town. As a result, it is expected that the Town would experience an increased use of the Highgate transfer station facilities over time. In addition to the Proposed Action, the following projects, excluding routine and purely maintenance projects, are ongoing or planned in the Town (Town of Highgate 2021):

- Village Core Master Planning: this project is still at the planning stage with the intent to improve water and wastewater facilities in the Village Core. The plan also includes the construction of a new public library. This project is one mile east of the transfer station project area.
- Airport and Industrial Park Infrastructure Project: this project would expand the airport facilities and update and expand 7,200 linear feet of water and sewer infrastructure for the Commercial and Industrial District surrounding airport. Construction is scheduled to be completed in 2024 and it is estimated that the project will create 1,200 jobs within 10-20 years. This project is three miles west of the transfer station project area.
- Machia Road Stabilization: This project would stabilize a failing section of Machia Road. This project is still in the design and engineering phase with no set construction date. This project is four miles east/southeast of transfer station project area.
- Machia Road FEMA-funded home buyout: This project would utilize federal funds through a FEMA Hazard Mitigation Assistance grant to acquire and demolish one home from the floodplain along Machia Road. This project is approximately four miles east/southeast of the transfer station project area.

Cumulative effects to the Proposed Action would be **moderate**.

## 6.0 PERMITS AND PROJECT CONDITIONS

The Town of Highgate (Town) is responsible for obtaining all required federal, state, and local permits. While a good faith effort was made to identify all necessary permits for this Environmental Assessment, the following list may not include every approval or permit required for this project. Before, and no later than, submission of a project closeout package, the Town shall provide FEMA with a copy of the required permit(s) from all pertinent regulatory agencies.

1. Before construction begins, the Applicant must obtain a required Clean Water Act section 401 Water Quality Certification from the Vermont Department of Environmental Conservation. A copy of the approval/permit, or documentation from the permitting official that an approval/permit is not required, must be forwarded to the state and FEMA for inclusion in the administrative record. Contact the Vermont Department of Environmental Conservation Water Management Division for information regarding Section 401 Water Quality Certifications requiring a permit from USACE at [ANR.WSMD401@vermont.gov](mailto:ANR.WSMD401@vermont.gov); 802-828-1115.
2. Before construction begins, the Applicant must obtain a required Clean Water Act section 402 NPDES permit from the Vermont Stormwater Program. A copy of the approval/permit, or documentation from the permitting official that a permit is not required, must be forwarded to the state and FEMA for inclusion in the administrative record. Contact Michael Sadler, [Michael.sadler@vermont.gov](mailto:Michael.sadler@vermont.gov) (802) 490-6159 to determine permitting requirements for work with more than one acre of ground disturbance.
3. Before construction begins, the Applicant must obtain a required Clean Water Act section 404 permit from the U.S. Army Corps of Engineers. A copy of the approval/permit, or documentation from the permitting official that an approval/permit is not required, must be forwarded to the state and FEMA for inclusion in the administrative record. Contact Angela Repella, [angela.c.repella@usace.army.mil](mailto:angela.c.repella@usace.army.mil), (802) 872-2893.
4. Before construction begins, the Applicant must obtain approval from the Vermont Wetlands Program responsible for the Protection of Wetlands. A copy of the approval/permit, or documentation from the permitting official that an approval/permit is not required, must be forwarded to the state and FEMA for inclusion in the administrative record. Contact Brock Freyer, [brock.freyer@vermont.gov](mailto:brock.freyer@vermont.gov), (802) 490-6758 to determine permitting requirements for work in or near wetland resources.
5. Before construction begins, the Applicant must obtain a Stream Alteration Permit from the Rivers Program. A copy of the permit, or documentation from the Rivers Program that a permit is not required, must be forwarded to the state and FEMA for inclusion in the administrative record. Contact Chris Brunelle, [chris.brunelle@vermont.gov](mailto:chris.brunelle@vermont.gov) (802) 777-5328 to determine permitting requirements for work in state waters.
6. In the event of the discovery of archaeological deposits (e.g., Indian pottery, stone tools, shell, old house foundations, old bottles) the Subrecipient and their contractor must immediately stop all work in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. The Subrecipient and their contractor must secure all archaeological discoveries and restrict access to discovery sites. The Subrecipient must immediately report the archaeological discovery to Vermont Emergency Management and the FEMA Deputy Regional Environmental Officer Mary Shanks, 617-901-2204; FEMA will determine the next steps.

7. In the event of the discovery of human remains, the Subrecipient and their contractor must immediately stop all work in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. The Subrecipient and their contractor must secure all human remains discoveries and restrict access to discovery sites. The Subrecipient and their contractor must follow the provisions of applicable state laws. Violation of state law will jeopardize FEMA funding for this project. The Subrecipient will inform the Office of the Chief Medical Examiner, the State Archaeologist, Vermont Emergency Management and the FEMA Deputy Regional Environmental Officer Mary Shanks, 617-901-2204. FEMA will consult with the SHPO and Tribes, if remains are of tribal origin. Work in sensitive areas may not resume until consultation is completed and appropriate measures have been taken to ensure that the project is compliant with the National Historic Preservation Act.
8. If any unanticipated damage, alterations, or demolition (complete or partial) occurs to structures (including, but not limited to, culverts, bridges, stone walls [including those along water channels], and buildings) that are over 45 years of age within or adjacent to the project area, the Subrecipient and their contractor must immediately stop all work in the vicinity of the damage and take reasonable measures to avoid or minimize additional harm to the structure and make it safe and secure. The Subrecipient must immediately report the unanticipated impact to structures to Vermont Emergency Management and the FEMA Deputy Regional Environmental Officer Mary Shanks, 617-901-2204; FEMA will determine the next steps.

## 7.0 AGENCY COORDINATION AND PUBLIC INVOLVEMENT

The following is a good faith effort to capture all coordination and consultation with state and federal partners:

- Consultation with State Historic Preservation Office from March 2021 through August 2021. The State Historic Preservation Office concurred with finding of "No Historic Properties Affected" on August 23, 2021.
- Early Public Notice notifying the public of FEMA's decision to prepare an Environmental Assessment was published in the St. Albans Messenger (print) on June 29, 2021. No comments were received.
- Vermont DEC Wetlands Division completed a site inspection on July 2, 2019.
- A site visit was held prior to drafting the Environmental Assessment on July 20, 2021. Representatives of the Town of Highgate accompanied Stone Environmental.
- Environmental Assessment "Scoping Checklist" distributed by FEMA to state and federal partner agencies on September 16, 2021. One comment was received regarding wetlands. Two comments were received regarding endangered species.
- Coordination with Vermont Fish and Wildlife Department and consultation with USFWS for northern long-eared bat on October 11, 2021; concurrence assumed on November 11, 2021.

The following documents the opportunities for the public to weigh in on the decision-making process.

- Initial Public Notice published on page 16 of the June 29, 2021, issue from the St. Albans Messenger of FEMA's intent to provide Hazard Mitigation Grant Program funding for the slope stabilization project that is located within a wetland. Funding would be provided through Vermont Emergency Management.
- Public Notice for the Availability of the Draft EA was published in the St. Albans Messenger on April 29, 2022. The Public Notice was also posted on the Town's website at [https://www.highgatevt.org/index.asp?SEC=4509D9F0-4E16-4778-8C98-0DEA20FB47FF&Type=B\\_PR](https://www.highgatevt.org/index.asp?SEC=4509D9F0-4E16-4778-8C98-0DEA20FB47FF&Type=B_PR), the Town's Facebook page at <https://www.facebook.com/TownofHighgateVT/photos/a.321672491264297/4925439190887581/> and at five sites around the Town.
- The Draft EA was made available for public comment and can be viewed and downloaded at: [Highgate Transfer Station Project Draft Environmental Assessment 2022.04.19 \(highgatevt.org\)](#).
- The Draft EA could also be viewed in hard copy at the Highgate Municipal Office located at 2996 Vermont Route 78, Highgate Center.

The comment period ended 15 days from the date of the legal notice publication (April 29, 2022). No comments were received by FEMA or the Town of Highgate.

## 8.0 REFERENCES

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- . 2019c. Geotechnical Engineering Evaluation Summary Letter, Transfer Station Property Slides-Phase I, Highgate, VT. March 11.
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- USACE (U.S. Army Corps of Engineers). 2021. Reply email: *FEMA Environmental Assessment Scoping Document - Highgate, VT Transfer Station Slope* from Angela Repella, USACE to Eric Kuns, FEMA regarding Clean Water Act permitting requirements. Dated September 22, 2021.
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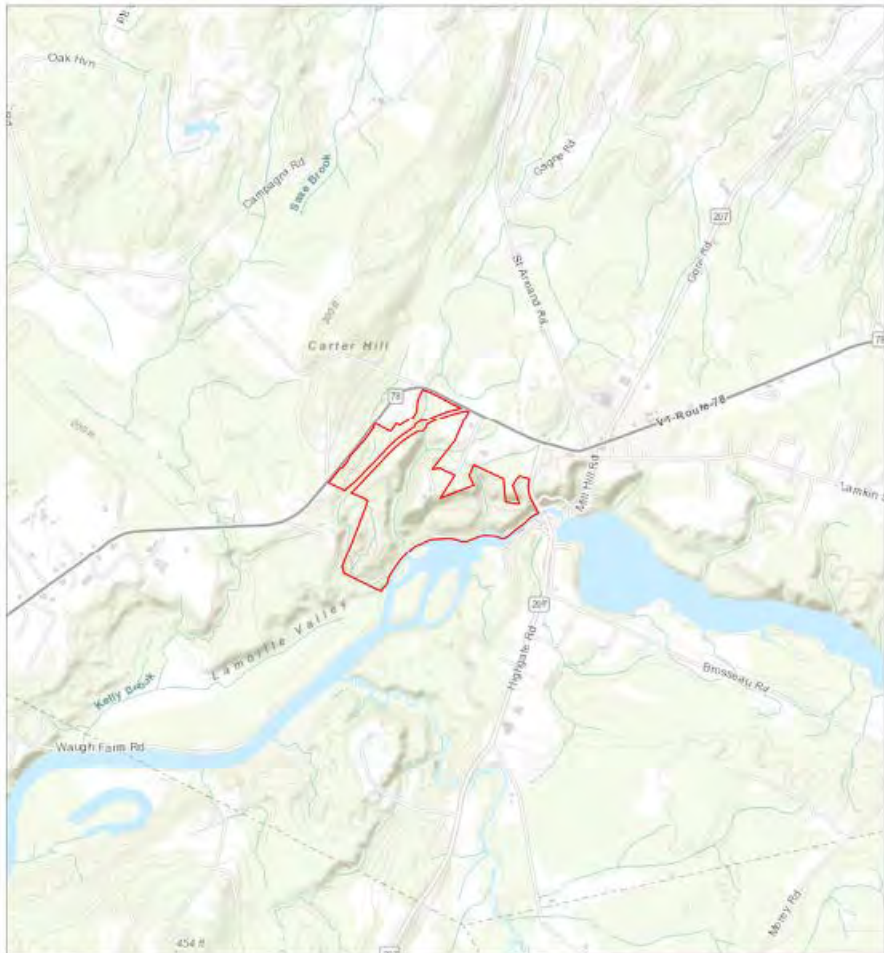


FEMA Region 1 Environmental Assessment

Town of Highgate Transfer Station

**Appendix A: Maps and Figures**

# Appendix A-1: Location Map



## LEGEND


 Site Boundary

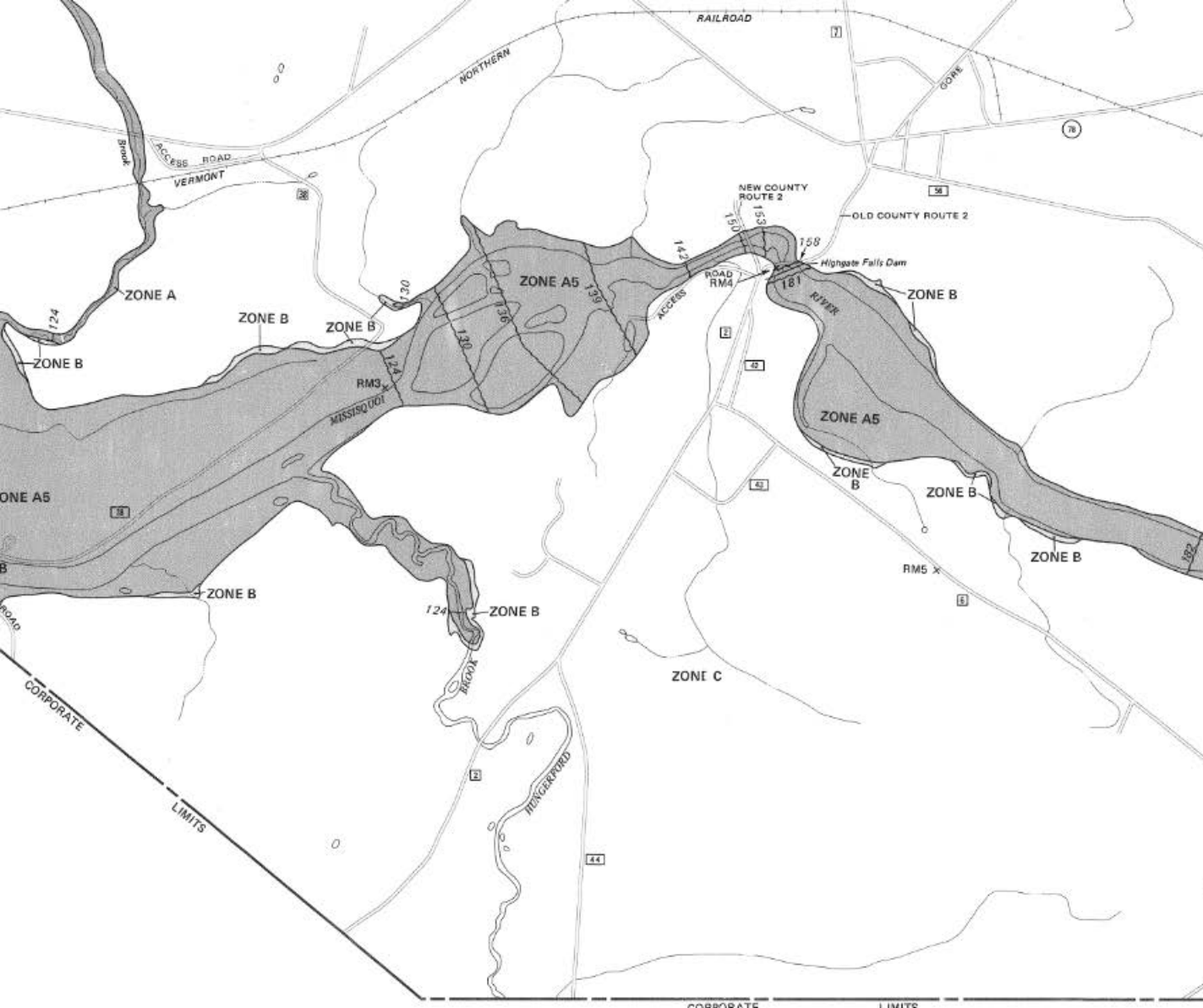


### Figure A-1: Location Map

352 Transfer Station Road  
Highgate, Vermont

Prepared for Town of Highgate

 **STONE ENVIRONMENTAL**



Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.



NATIONAL FLOOD INSURANCE PROGRAM

**FIRM**  
FLOOD INSURANCE RATE MAP

TOWN OF  
**HIGHGATE, VERMONT**  
FRANKLIN COUNTY

PANEL 15 OF 20  
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER  
500055 0015 B

EFFECTIVE DATE:  
APRIL 4, 1983




Federal Emergency Management Agency



October 14, 2021

**Wetlands**

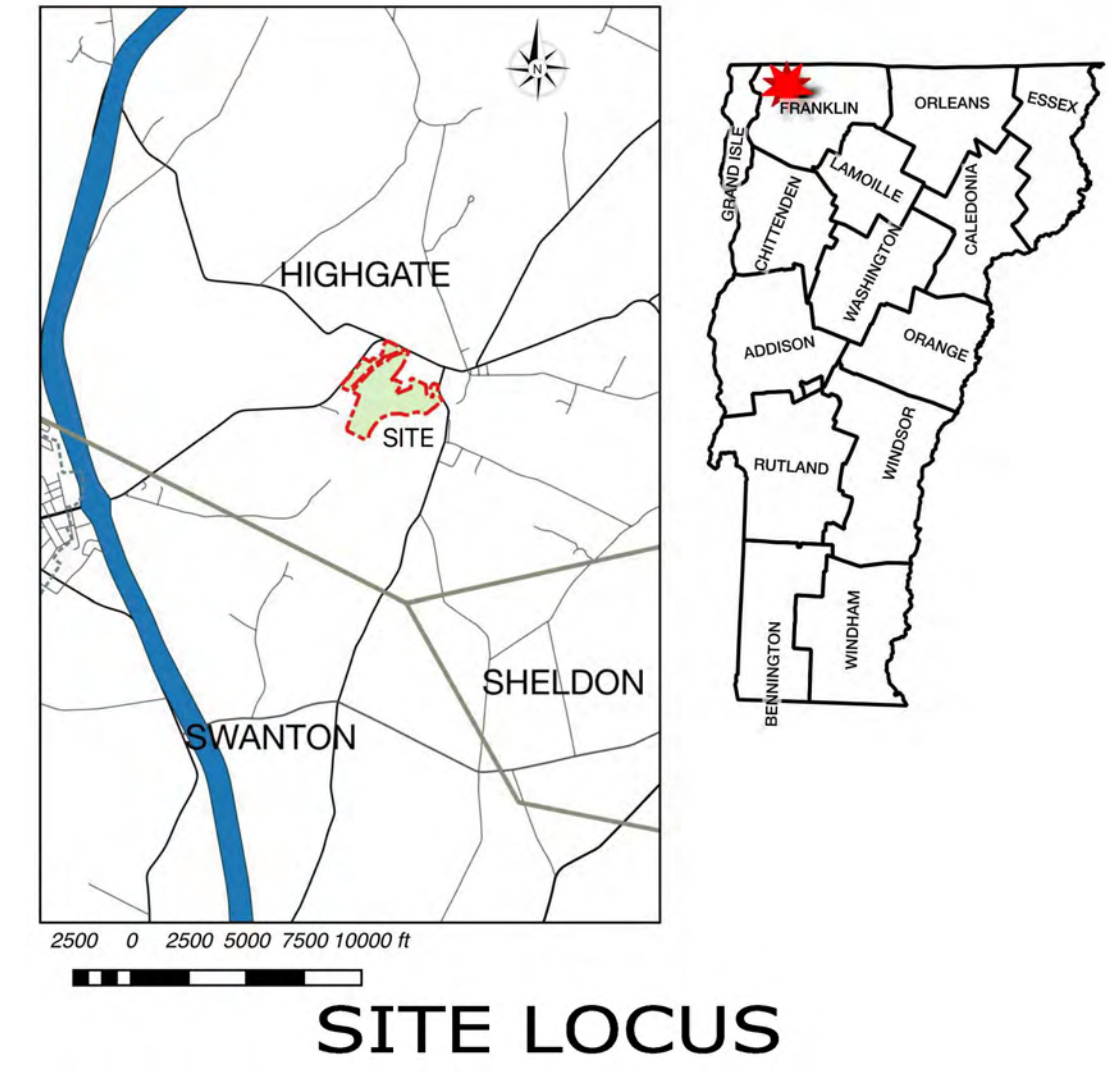
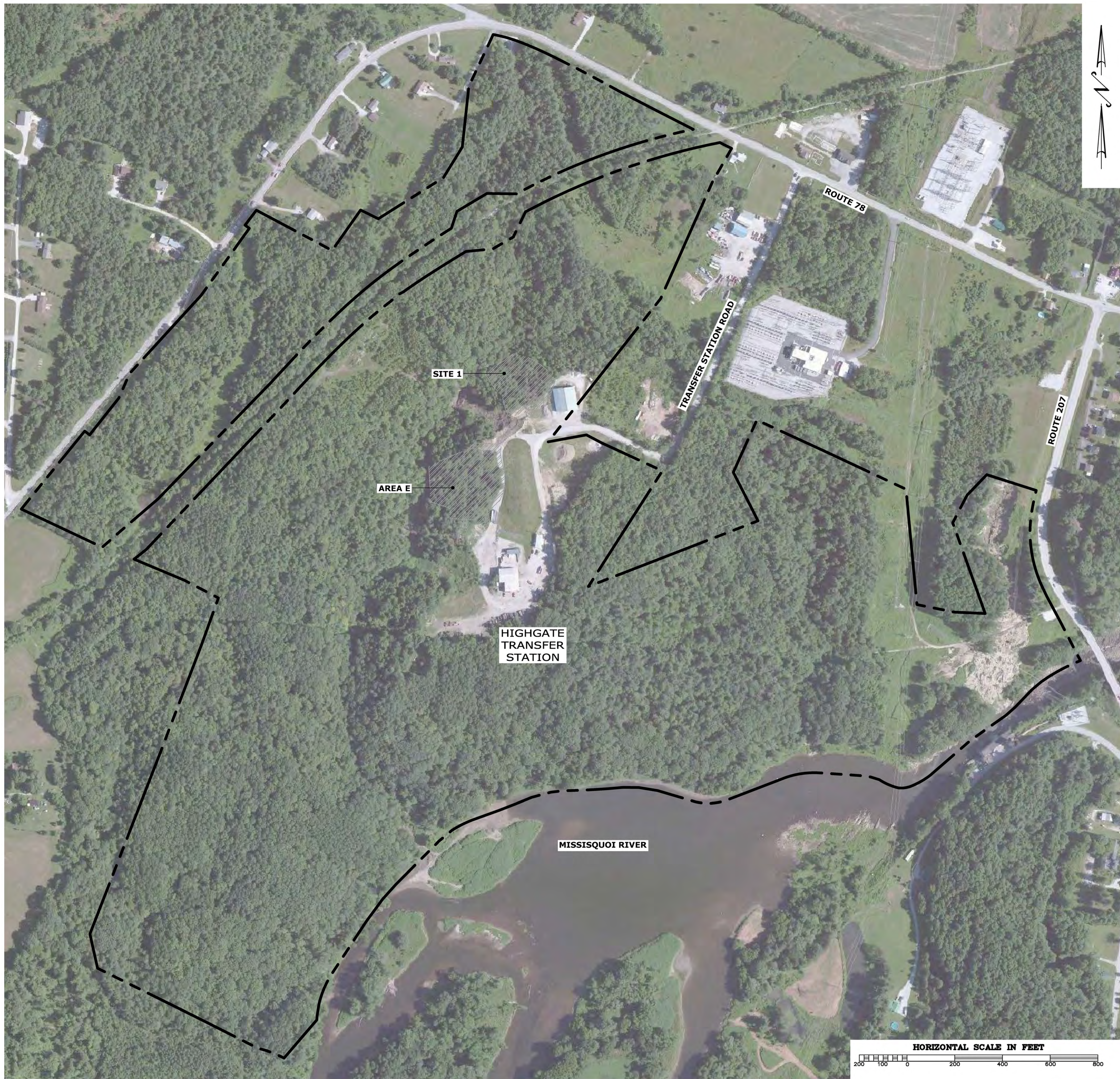
- |  |   |  |
|--|---|--|
|  Estuarine and Marine Deepwater |  Freshwater Emergent Wetland       |  Lake     |
|  Estuarine and Marine Wetland   |  Freshwater Forested/Shrub Wetland |  Other    |
|  |  Freshwater Pond                   |  Riverine |

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

FEMA Region 1 Environmental Assessment

Town of Highgate Transfer Station

**Appendix B: Project Documents and Designs**



Q:\2018 Drawings\18107 Geodesign- Highgate Transfer Station\Current\C-01 Site Access And Vicinity Plan.dwg Plotted: 8/6/2019 7:50:27 AM

<p>PROJECT: 18107 DATE: 2019-07-31 DESIGN: DSW DRAWN: DSW CHECKED: PHC APPROVED: PHC</p>	<p>Tel: 802-524-2113 Fax: 802-524-9681</p> <p><b>CCE</b> CROSS CONSULTING ENGINEERS, P.C. 103 Fairfax Rd. St. Albans, Vermont 05478 © COPYRIGHT 2019 Cross Consulting Engineers, P.C.</p>	<p>Site Access And Vicinity Plan</p>	<p>GeoDesign, Inc. Windsor, VT Highgate Transfer Station Highgate, VT VT Route 78</p>	<p>CIVIL <b>C-01</b></p>
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PROJECT: 18107  
 DATE: 2019-07-31  
 DESIGN: DSW  
 DRAWN: DSW  
 CHECKED: PHC  
 APPROVED: PHC

TELE: 802-524-2113  
 FAX: 802-524-9661  
**CROSS**  
 CONSULTING ENGINEERS, P.C.  
 103 Fairfax Rd.  
 St. Albans, Vermont 05478  
 © COPYRIGHT 2019  
 Cross Consulting Engineers, P.C.

Site Plan -  
 Area E

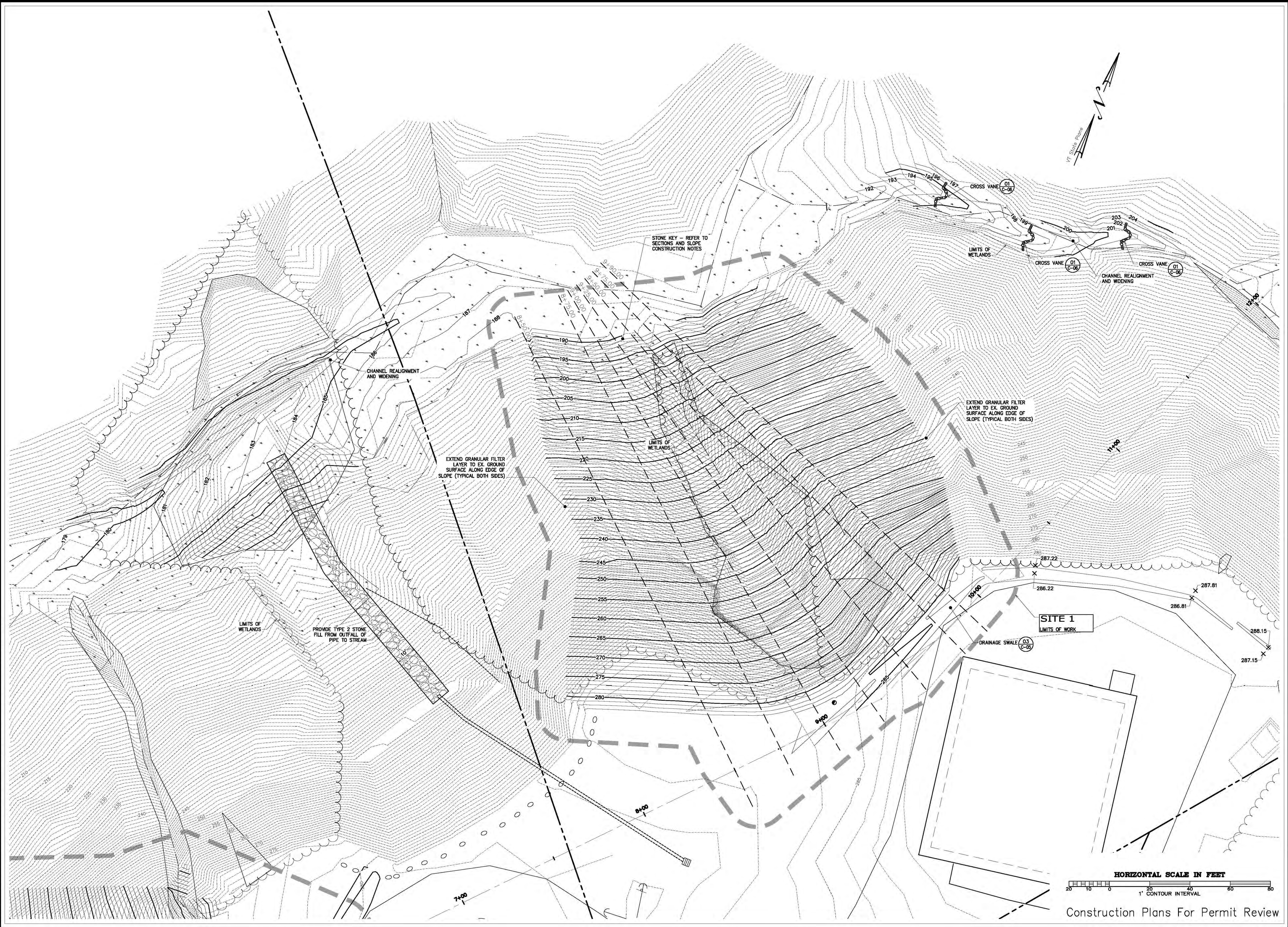
GeoDesign, Inc.  
 Windsor, VT  
 Highgate Transfer Station  
 VT Route 78  
 Highgate, VT

CIVIL  
**C-03**

HORIZONTAL SCALE IN FEET  
 20 10 0 10 20 30 40 50 60  
 1' CONTOUR INTERVAL  
 Construction Plans For Permit Review



Q:\2018 Drawings\18107 Geodesign- Highgate Transfer Station\Current\C-04 Site Plan - Site 1.dwg Plot Date: 8/19/2019 7:50:51 AM



Construction Plans For Permit Review

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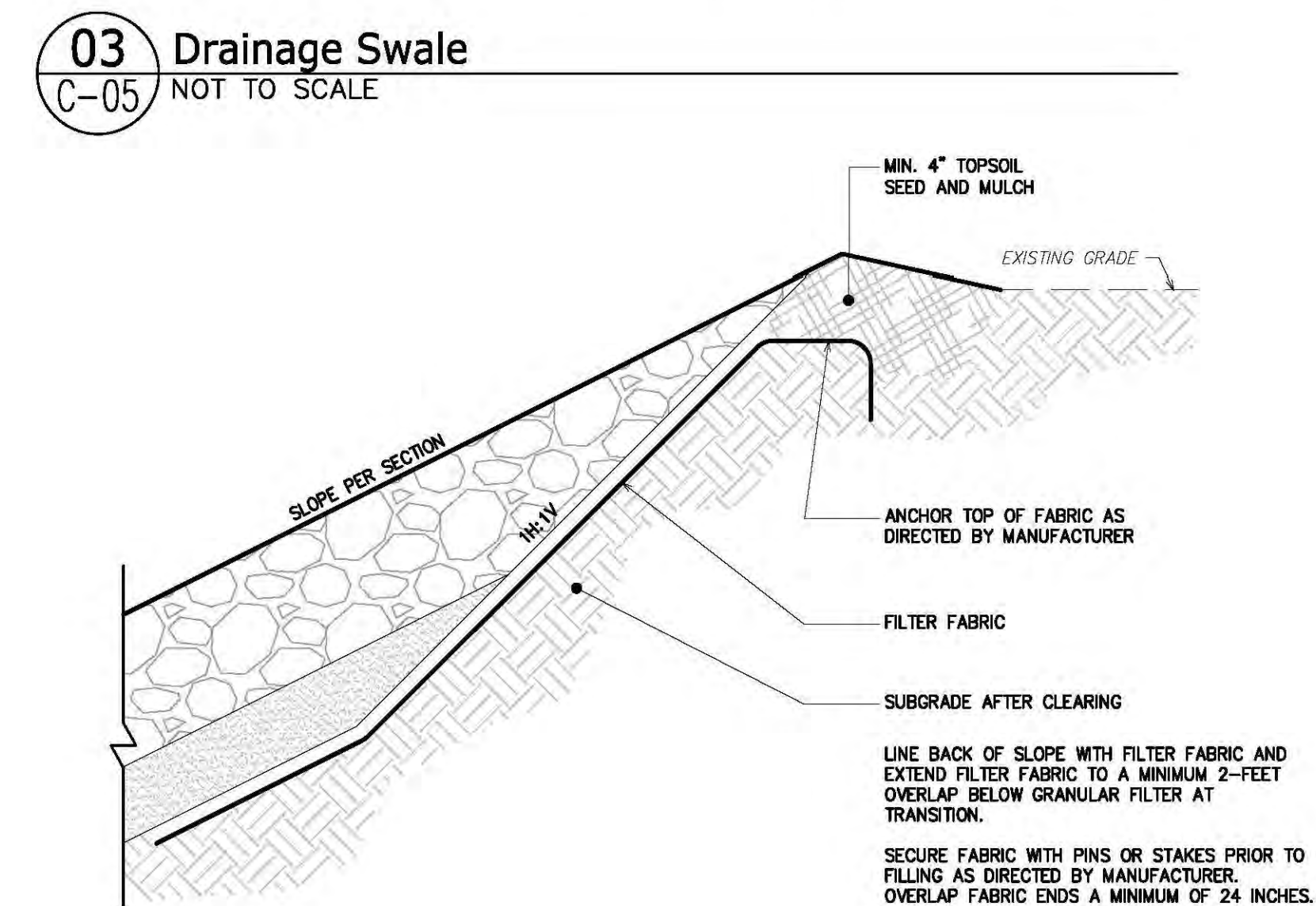
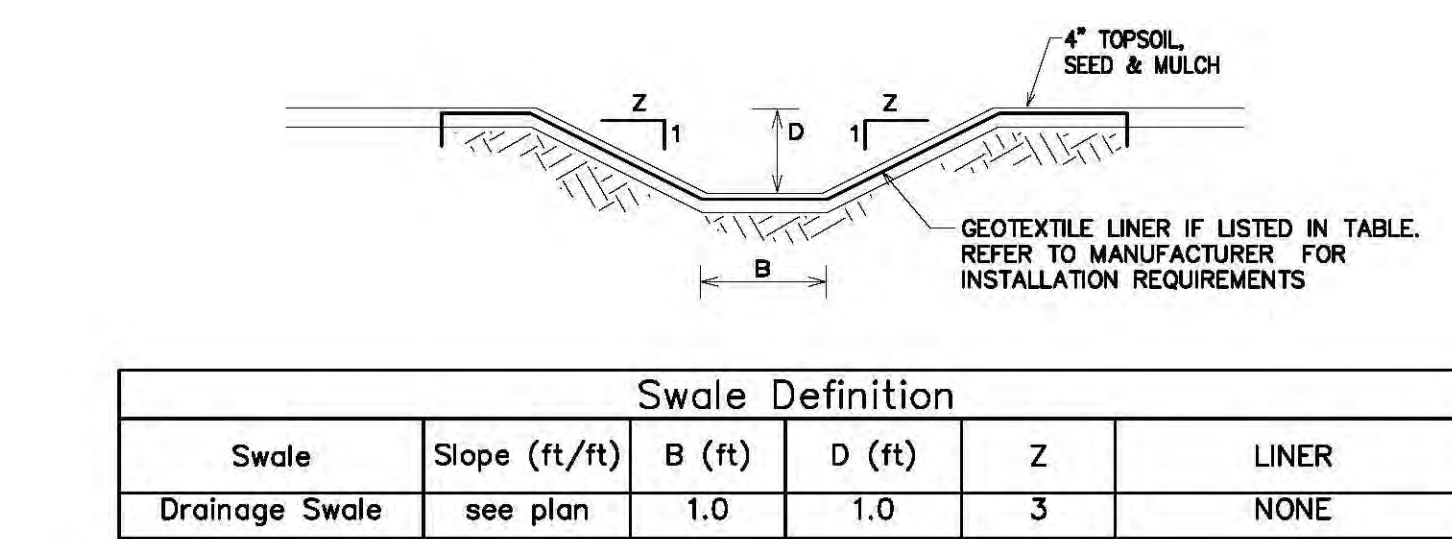
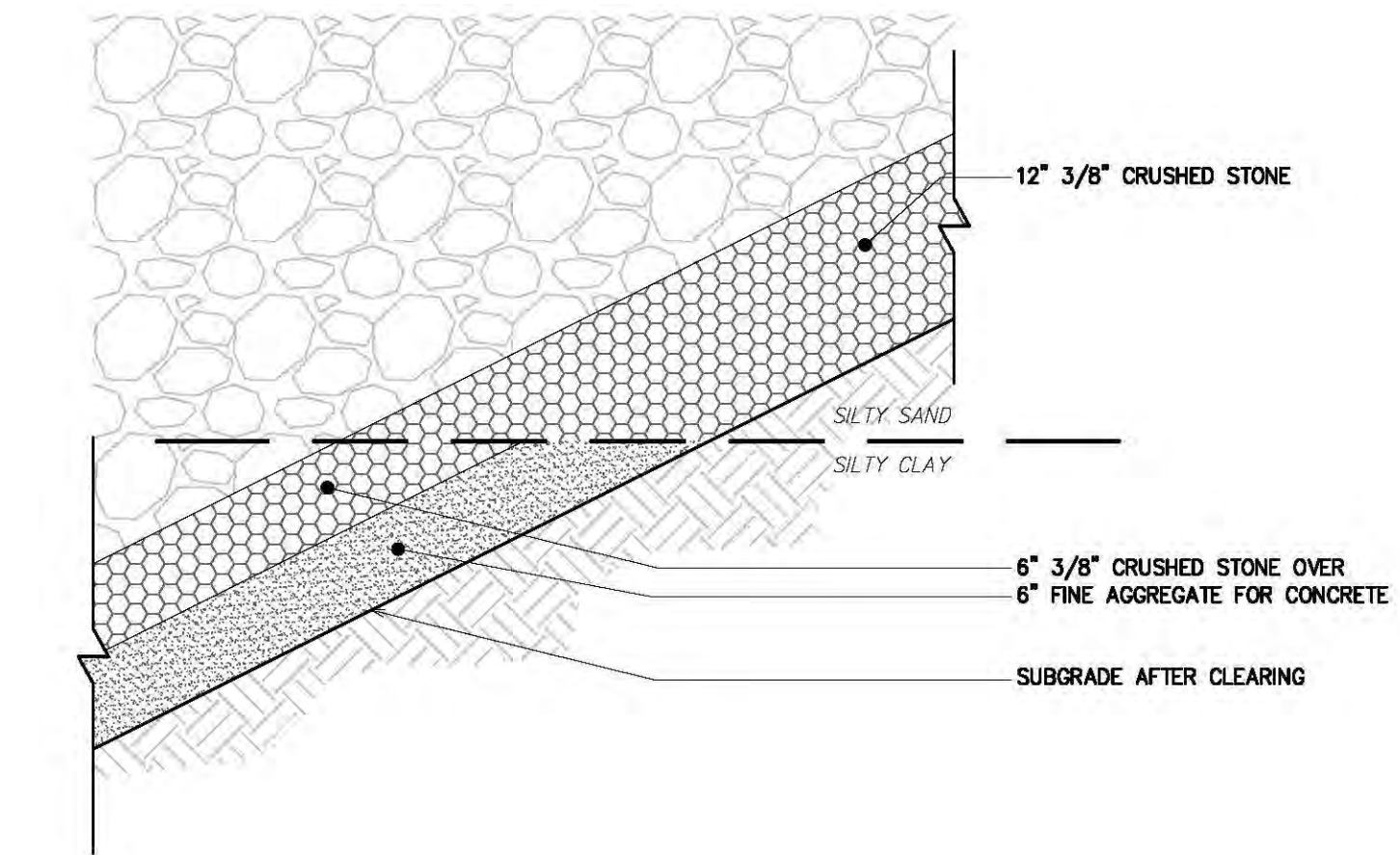
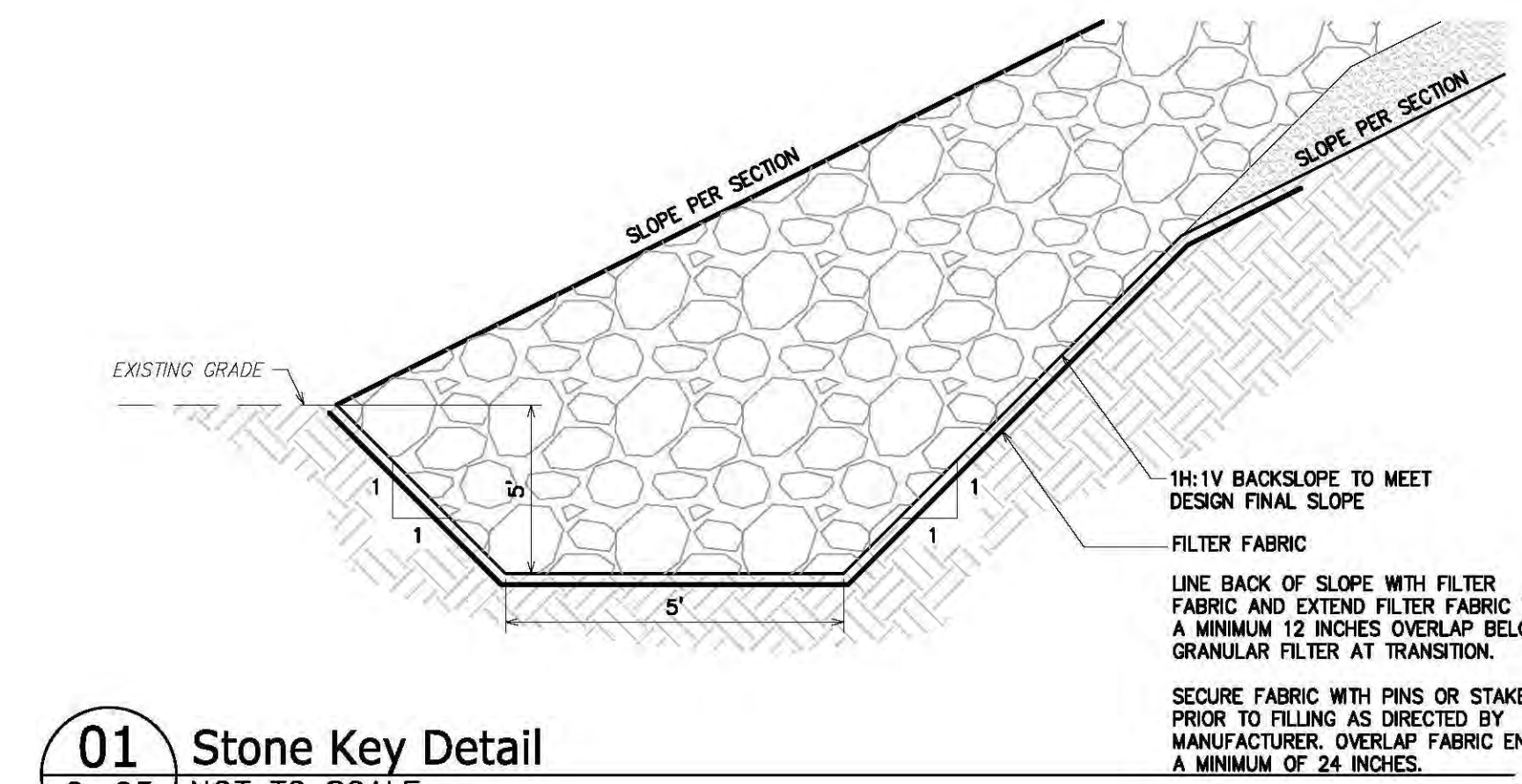
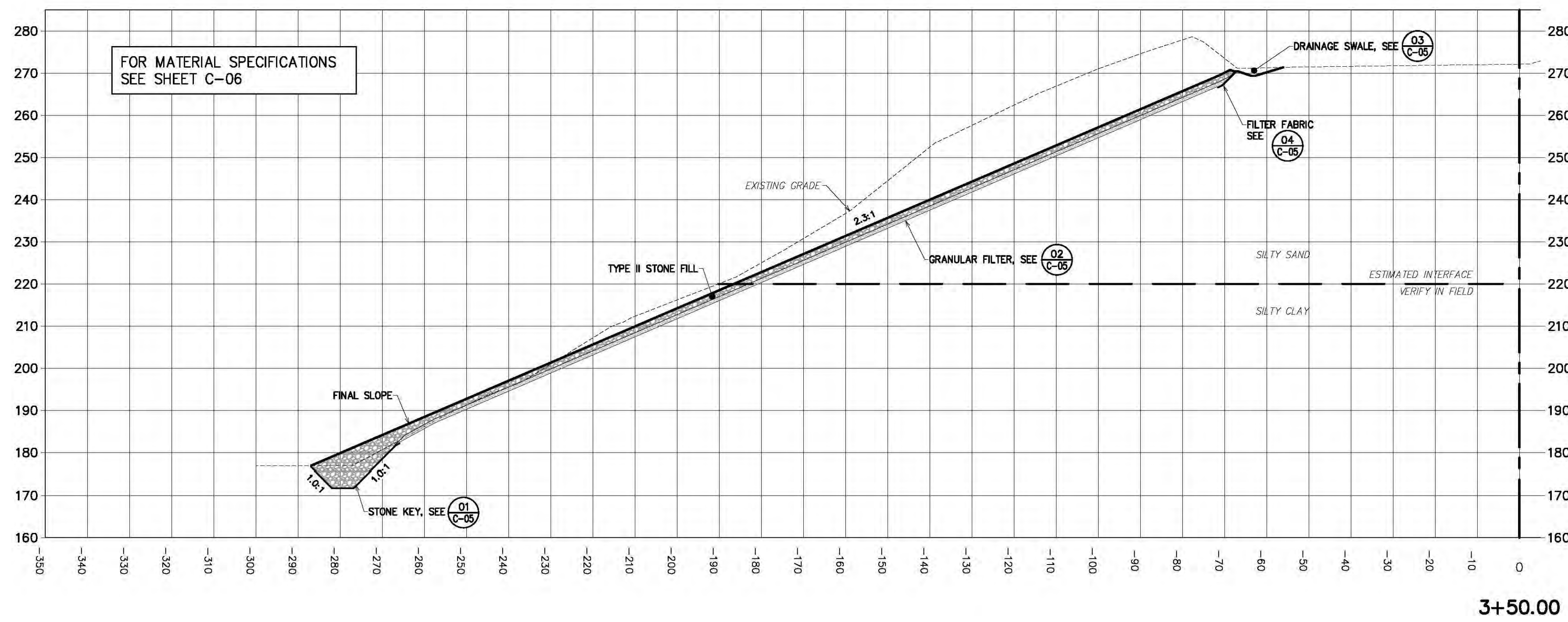
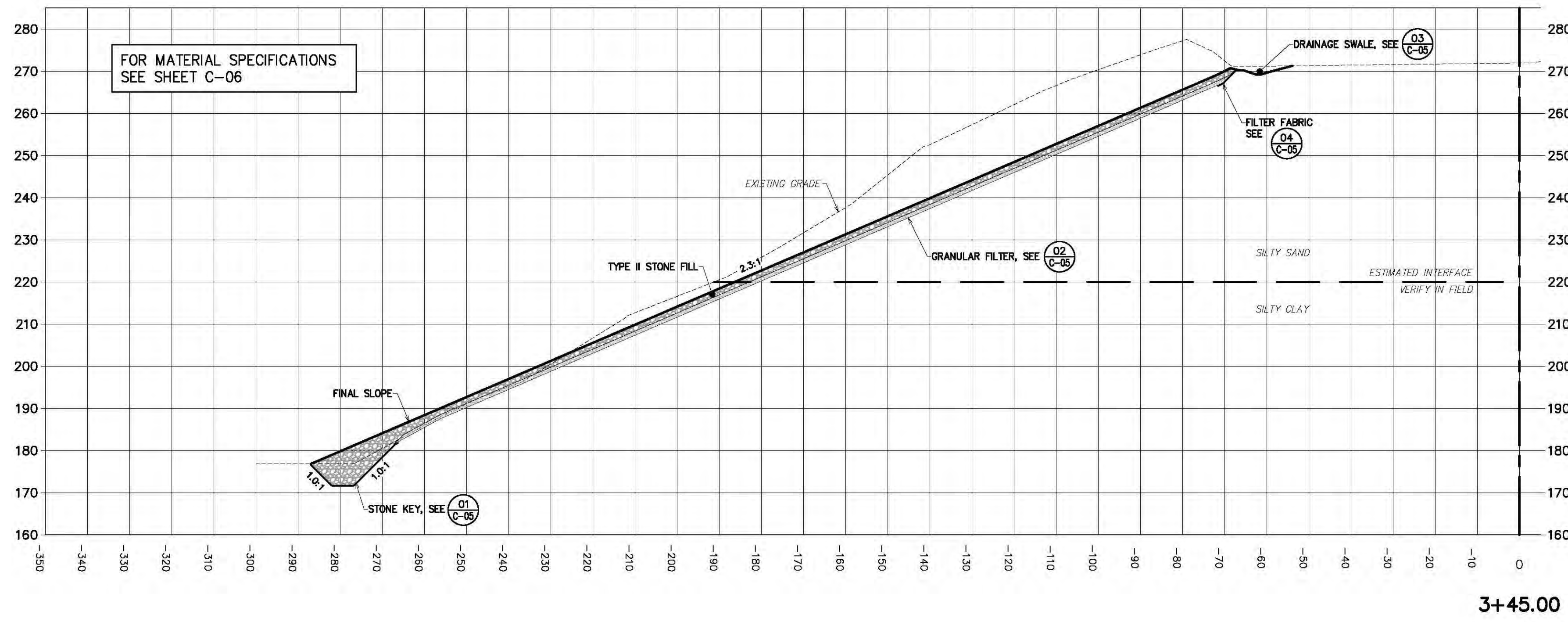
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Fax: 802-524-9661  
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St. Albans, Vermont 05478  
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Site Plan -  
Site 1 And Channel  
Restoration

GeoDesign, Inc.  
Windsor, VT  
Highgate Transfer Station  
Highgate, VT  
VT Route 78

CIVIL

C-04



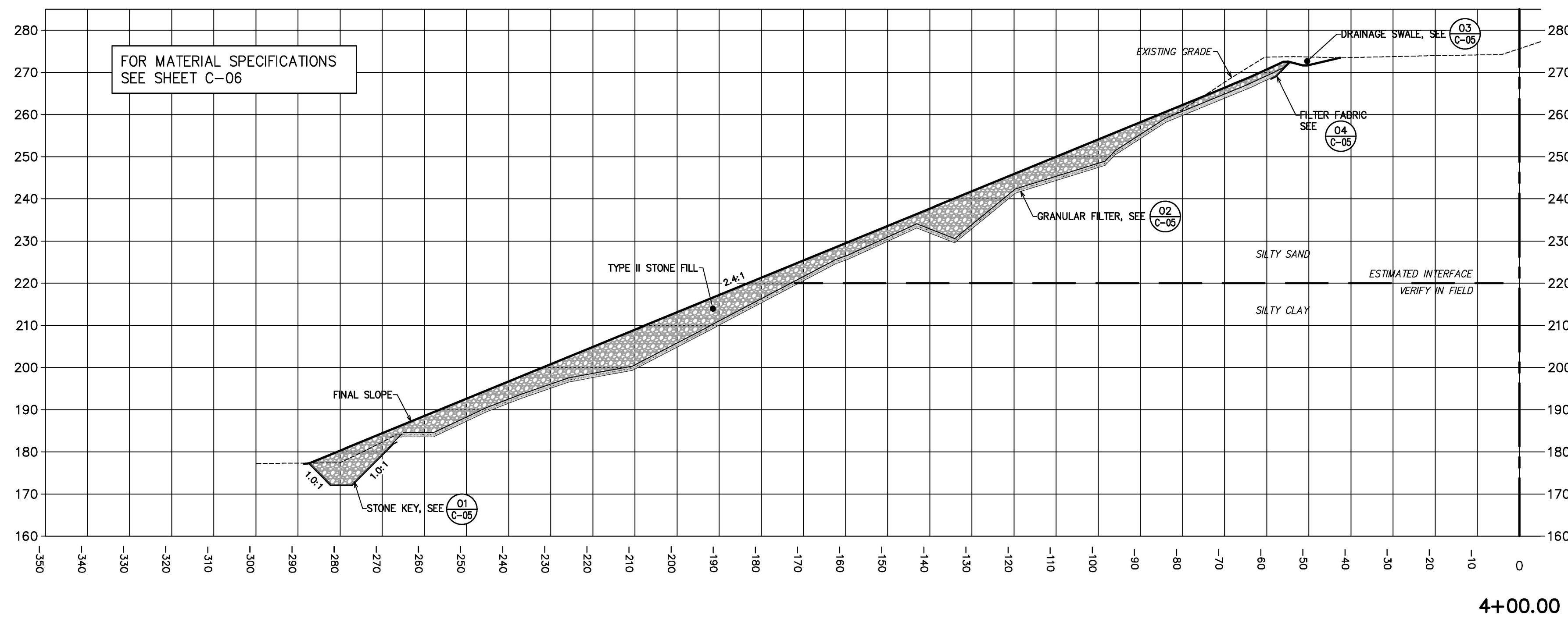
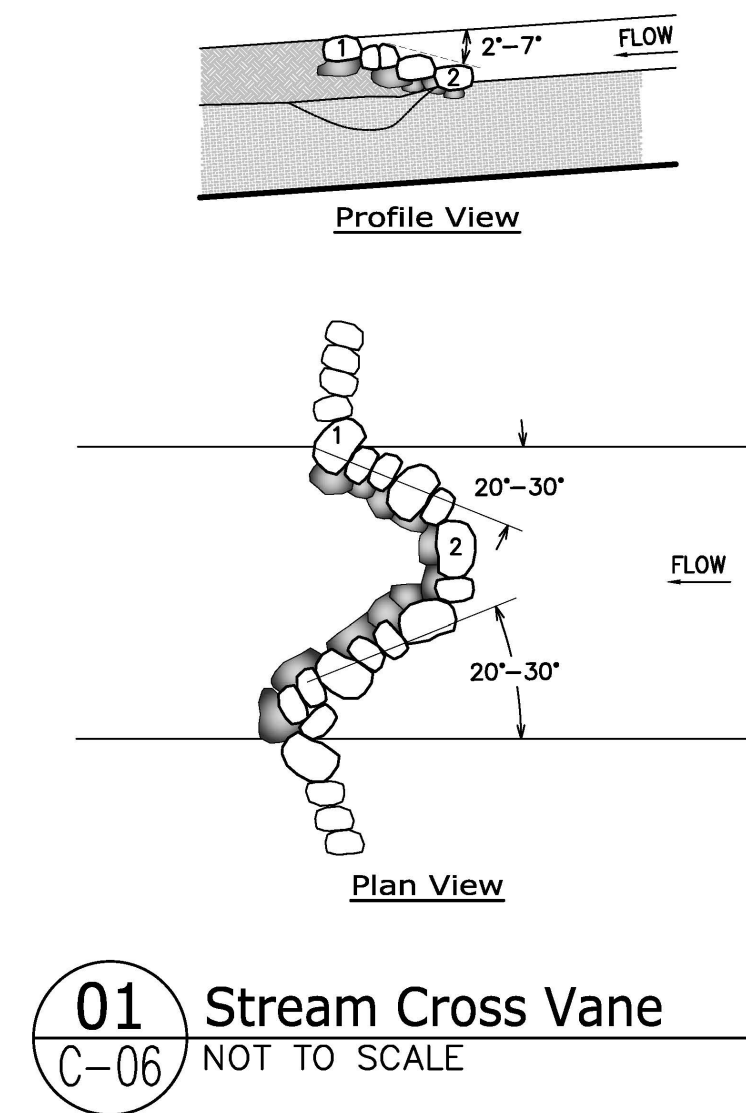
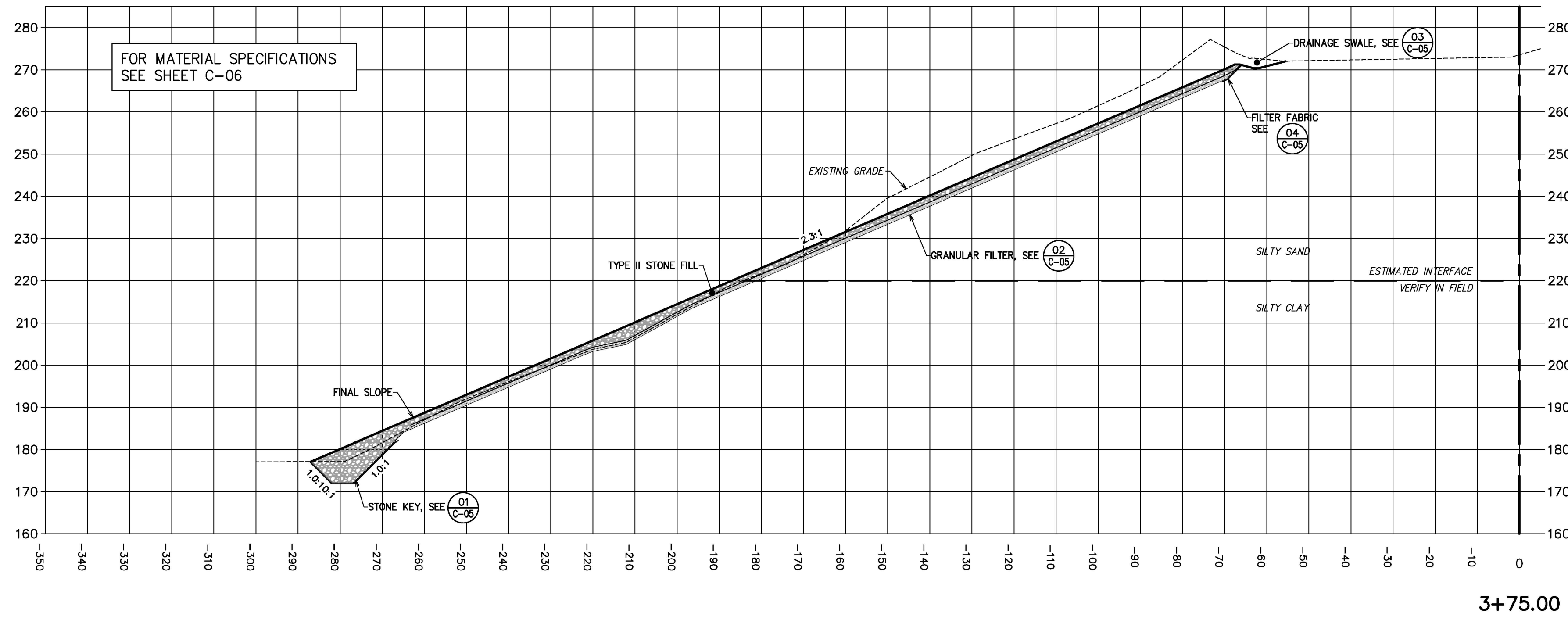
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APPROVED: PHC

GeoDesign, Inc.  
Windsor, VT  
Highgate Transfer Station  
Highgate, VT  
VT Route 78

Area E Sections  
3+45 and 3+50

GeoDesign, Inc.  
Windsor, VT

CIVIL  
C-05



**MATERIAL SPECIFICATIONS:**

**Granular Filter Layer** – Material shall meet specifications outlined in the current VAOT Standard Specifications for Construction, Sections 704.01A (Fine Aggregate for Concrete) and 704.02A (3/8" Crushed Stone). See Slope Construction notes and Details.

**Stone Fill** – Material shall meet specifications outlined in the current VAOT Standard Specifications for Construction, Section 706.04 (b) (Type II Stone). Stone for stone fill shall be approved, hard, blasted, angular rock other than serpentine rock containing the fibrous variety chrysotile (asbestos). Only Limestone, Dolomite, or Quartzite shall be allowed. The least dimension of the stone shall be greater than 33% of the longest dimension. Stone fill shall be reasonably well graded from smallest to the maximum size stone specified so as to form a compact mass when in place. The longest dimension of the stone shall vary from 2 to 36 inches, and at least 50% of the volume of the stone in place shall have a least dimension of 12 inches.

**Geotextile Fabric at Stone Fill Key and at Crest** – Geotextile fabric shall be a non-woven meeting the requirements outlined in the current VAOT Standard Specifications for Construction, for Item 649.31 Under Stone Fill in Table 720.04A and installation shall meet specifications outlined in Section 649 and Table 720.04A.

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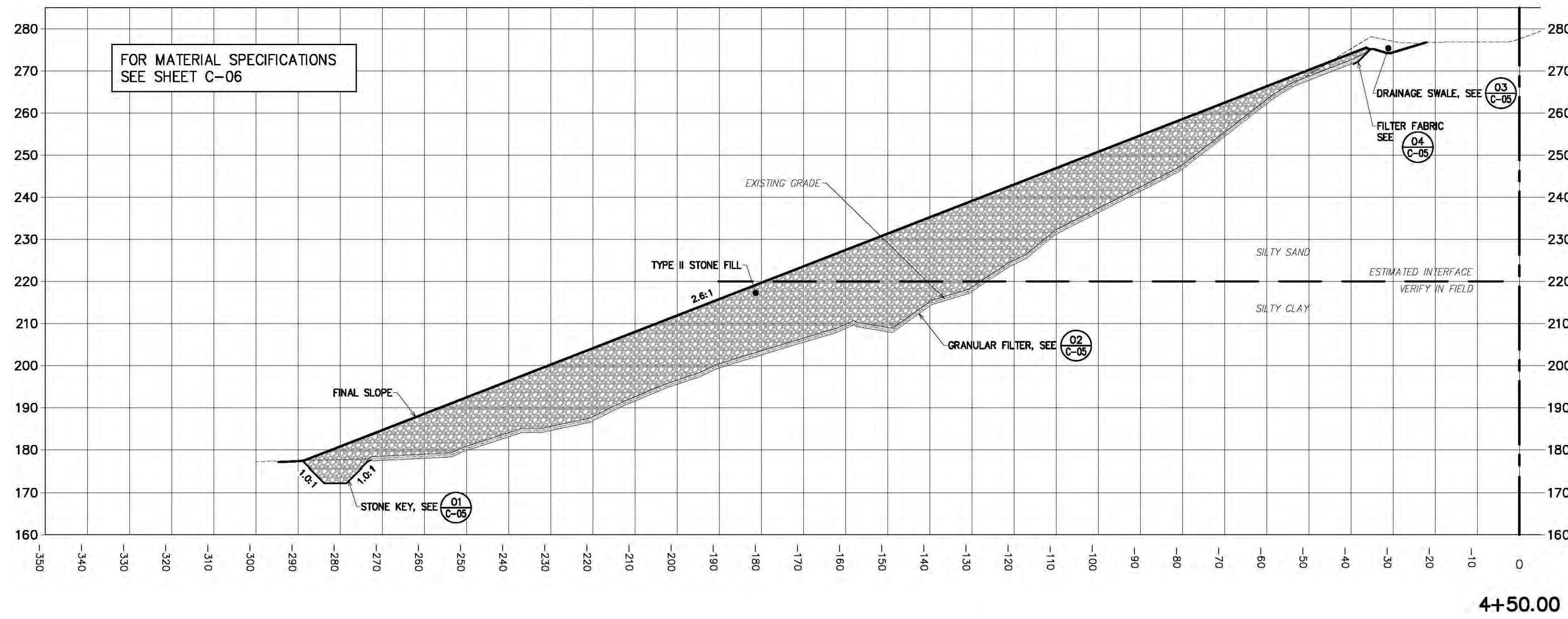
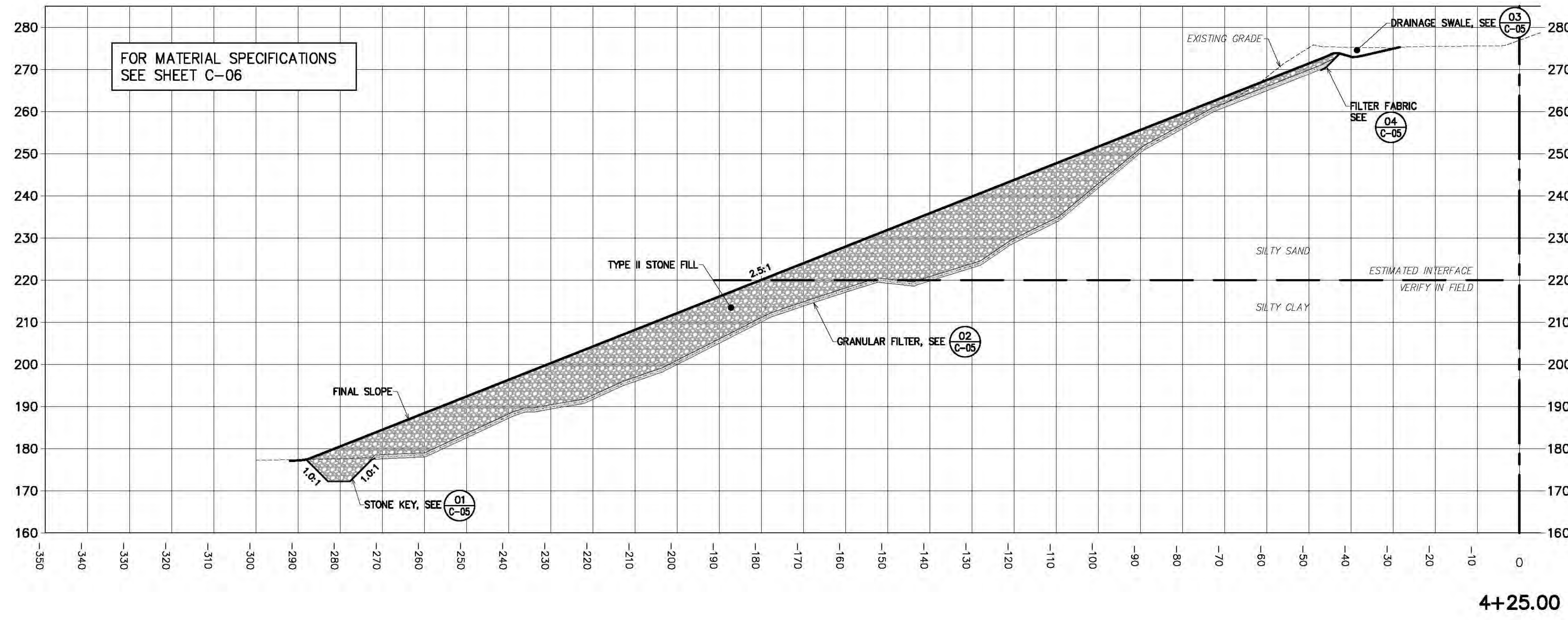
PROJECT: 18107  
DATE: 2019-07-31  
DESIGN: DSW  
DRAWN: DSW  
CHECKED: PHC  
APPROVED: PHC

TEL: 802-524-2113  
FAX: 802-524-9661  
**CROSS**  
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St. Albans, Vermont 05478  
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Area E Sections  
3+75 and 4+00

GeoDesign, Inc.  
Windsor, VT  
Highgate Transfer Station  
VT Route 78  
Highgate, VT

CIVIL  
**C-06**



Additional Construction Notes

- The methods and materials of construction shall conform to the latest standards of the State of Vermont Agency of Transportation and the Projects construction documents. All work shall be in conformance with all permits and approvals issued for the project. In case of conflict, the more stringent specification shall apply as directed by the Engineer. All work shall be done in a workmanlike manner and completed in the time specified by the Owner.
- The Contractor shall be responsible for all work and materials shown and required to make the job complete. These drawings do not show every fitting or appurtenance. Materials shall be as specified on the drawings and in the notes. Manufacturers product specifications shall be submitted for all materials to the Engineer for approval prior to installation.
- The location and size of existing underground utilities is not warranted to be exact or complete. The Contractor shall be solely responsible for all existing utilities and their uninterrupted services.
- Repair of all disturbed areas, grading, seeding, mulching, repair of roads and curbs, paving, and other incidentals are included as part of the required work. All disturbed areas shall be loamed and mulched until permanent ground cover is established.
- The Contractor shall verify all horizontal control and temporary bench marks before use.
- The workers and public shall be protected by the Contractor from any and all hazards connected with the construction work. Open trenches, materials, or equipment within the working limits are to be guarded by the use of adequate barricades or flaggers. All barricades left in position overnight are to be properly lighted. When work narrows the useable pavement, flaggers shall be employed to aid the flow of traffic so that there will be no undue delays. The Contractor shall be held responsible for the safety of all workers and the general public and all within the working area. All work shall be in conformance to OSHA regulations, Title 19, Parts 1926.651 and 1926.652, and applicable to VIOSHA regulations.
- Contractor shall contact Dig Safe prior to excavation.
- The Contractor shall sawcut all existing pavement to be removed. The Contractor shall minimize the pavement area disturbance. Contractor shall be responsible for all pavement repair and restoration necessary to complete the work.
- The Contractor shall be responsible for all construction layout.
- Temporary silt fence shall be erected prior to any clearing or construction. Fencing may be erected in phases, but in no case shall construction of clearing proceed fencing. Special areas may be designated by the Owner for preservation of existing trees. These areas shall be the Contractor's responsibility to insure no damage is done to designated trees.
- Contractor shall sign on as the Co-Permittee for the State of Vermont Erosion Prevention and Sediment Control permit for the project.

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PROJECT: 18107  
 DATE: 2019-07-31  
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Area E Sections  
 4+25 and 4+50

GeoDesign, Inc.  
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 Highgate, VT  
 VT Route 78

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 C-07

FEMA Region 1 Environmental Assessment

Town of Highgate Transfer Station

**Appendix C: Supporting Documents**

**REGION 1**  
**EXECUTIVE ORDER 11988 Floodplain Management**  
**EXECUTIVE ORDER 11990 Protection of Wetlands**  
**8-Step Analysis (44 CFR Part 9)**

**TITLE:** Transfer Station Project

**LOCATION:** Highgate, VT (approximate center point: 44.93679, -73.05946)

**BACKGROUND:**

The Highgate Transfer Station is in Franklin County, south of Route 78 and north of the Missisquoi River in Northwestern Vermont. Highgate is comprised of mainly agriculture (42%) and forested land (18%), but also contains areas of water (19%), wetlands/shorelines/non-buildable locations (14%), and residential/transportation (7%). Land in Highgate is used primarily for agriculture or is considered forestland.

The Town of Highgate owns the 192.81-acre Highgate Transfer Station and Recycling Center parcel and the Salt Shed, and Casella Waste Management owns the Transfer Station building. The original 9.8-acre sanitary landfill opened in 1987 and operated until 1992. In 1992, the landfill stopped operating because the State of Vermont required all unlined landfills in environmentally sensitive areas to be closed. The capped landfill has been monitored for over 20 years and no longer needs to be monitored based on water quality results. In 1992, the current Highgate Transfer Station and Recycling Center opened and was operated by Waste USA and started operating under Casella Waste Management in 1995, under contract with the town.

Sandy soils and groundwater discharge has made the Highgate Transfer Station parcel prone to erosion and landslides. The need for this current stabilization project is the result of fluvial erosion and landslide events during the years of 2003, 2008 and 2011. Previous slope repairs were made within three areas of the Transfer Station parcel between 2003–2007 (west of the transfer station building), in 2011 (northwest of the capped landfill), and in 2013 (northwest of the transfer station building). The 2011 and 2013 repairs did not include the project area (Area E and Site 1) and additional slope stabilization is still needed.

**DESCRIPTION OF PROJECT:**

The Proposed Action (Alternative 2 in EA) would stabilize ongoing, progressive slope failures at the Town of Highgate Transfer Station. The existing capped landfill is located at the crest of one of the slope failures and the Salt Shed is located at the crest of the other slope failure. Each slope is on the order of 100 feet high with a stream at the toe of the slope. Slope stabilization at these locations would mitigate problematic soils that cause landslides. Stabilization would include the excavation of an estimated 17,810 cubic yards of subsoil and topsoil, flattening of failing slide areas and transition areas, and the rebuilding of the slopes to a stable configuration using an estimated 27,320 cubic yards of stone fill.

**STEP 1: Determine whether the proposed action is in, or affects, the 100-year floodplain, which includes the Coastal High Hazard Area (500-year floodplain for critical actions).**

The project area abuts an unnamed tributary of the Missisquoi River (at the base of both Area E and Site 1, proposed slope stabilization areas). A portion of the Transfer Station parcel along the southeast section is within the 100-year flood zone according to the Flood Insurance Rate Map panel 5000550015B dated April 04, 1983 (Appendix A, Document 5). The project area is north of, and outside of, the 100-year flood zone area (Northwest Regional Planning Commission, 2016). The Proposed Action would not affect the 100-year floodplain.

**Determine whether the proposed action is within, or affects, a designated wetland.**

The proposed action is located within and affects designated wetlands. A wetland delineation was completed by Gilman and Briggs on May 30, 2019. Brock Freyer from the Vermont Wetlands Program visited the site on July 2, 2019 and found the delineation acceptable and determined the wetlands to be Class II wetlands. Additionally, the U.S. Fish and Wildlife Service National Wetland Inventory identifies two wetlands within the proposed project area.

**Is the action a functional dependent use (cannot perform its intended purpose unless it is located or carried out in proximity to water) or a facility or structure that facilitates open space use?**

The proposed action is a functional dependent use.

**STEP 2 Notify the public at the earliest possible time of the intent to carry out an action in a floodplain and wetland. Involve the affected and interested public in the decision-making process.**

Early Public Notice notifying the public of FEMA's decision to prepare an Environmental Assessment and work affecting the floodplain and wetlands was published in the St. Albans Messenger on June 29, 2021. No comments were received.

Additionally, FEMA's NEPA Scoping Document was distributed to state and federal partner agencies on September 16, 2021. One comment was received regarding work within a wetland from the U.S. Army Corps of Engineers indicating the Town of Highgate would need to apply for a permit under Section 404 of the Clean Water Act for placement of fill within wetlands and the unnamed tributary of the Missisquoi River.

**STEP 3 Identify and evaluate practicable alternatives to locating the proposed action in a floodplain and wetland (including alternatives sites, actions and the "no action" option).**

A 10% conceptual design document and a geotechnical engineering evaluation was performed to evaluate the slope repair concepts, and guide selection of the preferred alternative.

**Alternative 1: No Action Alternative**

The 192.81-acre Transfer Station parcel includes variable terrain that is prone to erosion and landslides. Past slope stabilization actions on the parcel have failed, putting the Salt Shed, portions of the Transfer Station Road, and the wetlands within the slopes and at the bottom of the slopes at risk. Performing the no action alternative would allow the two slopes to continue to fail which might result in the loss of the Salt Shed, portions of the Transfer Station Road, and portions of the capped landfill. In addition, there would likely be additional sedimentation that would impact the wetlands.

**Alternative 3: Considered and Dismissed:**

The original preferred alternative within the Hazard Mitigation Program project application was to relocate the property. However, the Town of Highgate does not own a suitable property to facilitate relocation of the Salt Shed and Transfer Station. In addition to an unknown, yet likely considerable cost of real estate to purchase a new site, the most recent estimated cost to relocate and build the Salt Shed is \$846,239 (Reed, 2019). Relocation of the transfer station could be roughly estimated at three times the costs of relocating the Salt Shed because it is a multi-structure facility with on-site employees, a wastewater permit/discharge permit with onsite wastewater treatment and drive-up truck scales. Remediation of 25% failure of the landfill has been estimated at \$287,604 (VTANR, 2019). Given these costs, versus the current local share of cost for the preferred alternative (\$717,973) and the benefit of an estimated 50-year life span for slope stabilization as presented in the preferred alternative, the Highgate Town Selectboard dismissed this alternative.

**Alternative 4: Considered and Dismissed:**

The alternative of installing a retaining element or soil nailing solution for slope stabilization was considered. This alternative was dismissed because these solutions are significantly more costly than the stone fill solution presented and therefore were not pursued in detail.

#### **Alternative 5: Considered and Dismissed:**

Bioengineering options were not considered for the streambank stabilization for three main reasons. 1) sandy soil type, 2) the amount of time for root/plant establishment, and 3) terrain access limitations due to the steep slopes.

#### **STEP 4 Identify the potential direct and indirect adverse impacts associated with the occupancy or modification of floodplains and wetlands and the potential direct and indirect support of floodplain and wetland development that could result from the proposed action.**

For the preferred alternative to be implemented, minor short-term impacts would occur to the wetlands adjoining the unnamed tributary to the Missisquoi River during construction activities. There are moderate permanent impacts on the wetlands that are planned to be filled in within Area E and Site 1 where slope stabilization is planned to occur. Approximately 9,500 square feet of wetland would be directly impacted by the proposed action and would be cleared/grubbed and filled in with filter fabric/granular filter. Short-term effects would also include dewatering and impacting access routes/water diversion methods (where required). In addition to the 9,500 square feet of wetlands to be filled in, there will be temporary impacts on approximately 41,000 square feet of wetlands. The temporary impacts would include dewatering measures located within and adjacent to the wetlands and heavy machinery located within the wetlands.

#### **STEP 5 Minimize the potential adverse impacts and support to or within floodplains and wetlands identified under Step 4, restore and preserve the natural and beneficial values served by the floodplain and wetlands.**

Under the proposed action, the wetlands adjoining the tributary of the unnamed stream to the Missisquoi River would be improved by the stabilization of the two slopes. The proposed action would improve slope stabilization and thus reduce future erosion and landslides into the wetlands and there would be less sedimentation entering the wetlands. The moderate impact of filling in a portion of the wetland within the project area is outweighed by the beneficial impact of restoring and preserving the natural value served by the wetlands adjoining the unnamed tributary located at the toe of the failing slope. During a site walk performed on July 20, 2021, it was noted that the unnamed tributary stream channel was eroding into the adjoining wetlands due to down trees blocking the channel from previous landslides. The preferred alternative would realign the stream channel to improve its drainage capabilities and mitigate the erosion of adjoining wetlands.

If the preferred alternative is not implemented, then the landfill is at risk of failing. If the capped landfill or a portion of the capped landfill fails, the water quality of the unnamed tributary of the Missisquoi River and adjoining wetlands may be impacted due to release of landfill leachate into the tributary and release of refuse and debris. Additionally, the natural function of the wetlands to filter and improve water quality may be compromised by pollutants within the landfill leachate that can be toxic to plant and animals within the wetlands. Wetland loss can stress the remaining wetlands adjoining the unnamed tributary to the Missisquoi River, for example if fewer wetlands are available to filter pollutants, those pollutants could become more concentrated in the remaining wetlands. If the preferred alternative is not implemented, the release of pollutants from the failed landfill may be continuous and occur over several different storm events, which would cause long-term stress on the adjoining wetlands and potentially impact water quality in the Missisquoi River.

Potential short- and long-term adverse impacts would be avoided and minimized through design measures and permitting conditions. The Town of Highgate would need to apply for a permit under Section 404 of the Clean Water Act for placement of fill within wetlands and the unnamed tributary of the Missisquoi River and for a permit through the VT Wetlands program. Potential conditions to the permits may include sedimentation and erosion control during construction activities, bank stabilization designed to minimize environmental effects, and waterway and wetland work designed to not prevent the restrictions of high flows, maintain existing low flows, and to not obstruct the movement of aquatic life indigenous to the waterbody after the duration of the construction. In lieu fees or other compensatory mitigation may be required by USACE and VT Wetlands program if avoidance of adverse effects on protected functions cannot be practically achieved.



**STEP 6 Reevaluate the proposed action to determine first, if it is still practicable in light of its exposure to flood hazards or impacts on wetlands, the extent to which it will aggravate the hazards to others, and its potential to disrupt floodplain and wetland resources and second, if alternatives preliminarily rejected at Step 3 are practicable in light of the information gained in Steps 4 and 5. FEMA shall not act in a floodplain unless it is the only practicable location.**

The purpose of the project is to stabilize the slopes at the Highgate Transfer station parcel. The proposed action would have a direct detrimental effect to wetlands during the construction duration; however, would have an indirect beneficial effect to wetlands following site restoration, and on balance the effect would be beneficial. Other alternatives considered would have a detrimental effect on wetlands, including relocating the transfer station and the no action alternative. The wetlands would be at risk of filling in with sedimentation if the slopes are not stabilized. Other geotechnical designs were considered for the slope stabilization, including retaining element, soil nailing, and bioengineering; however, these geotechnical designs would still have a direct impact on wetlands due to the need to place fill in the wetlands.

**STEP 7 Prepare and provide the public with a finding and public explanation of any final decision that the floodplain and wetland is the only practicable alternative.**

Public notice will be provided by FEMA and the Town as part of the Environmental Assessment process.

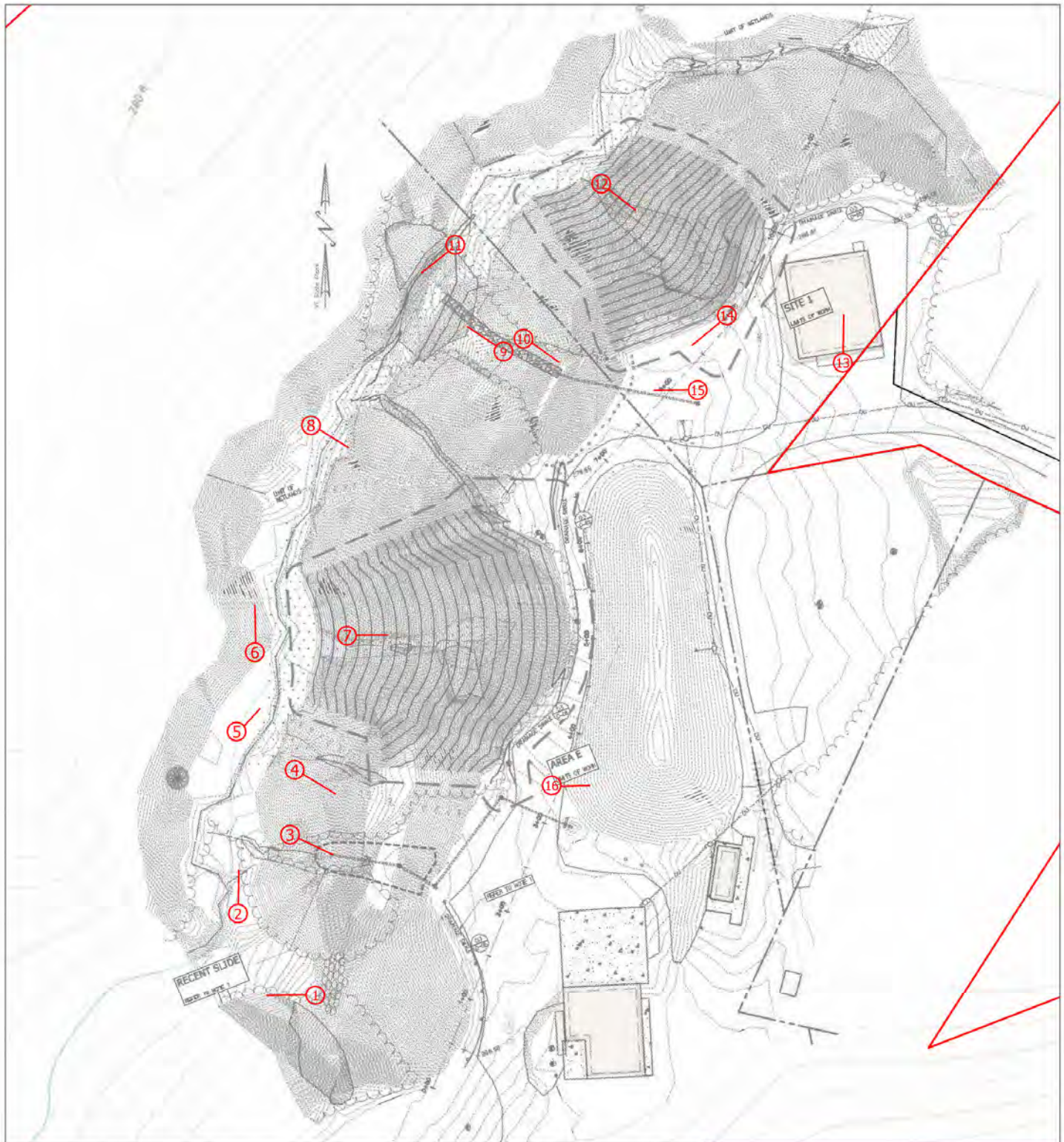
**STEP 8 Review the implementation and post - implementation phases of the proposed action to ensure that the requirements stated in Section 9.11 are fully implemented.**

The FEMA project grant would be conditioned for the Applicant to secure federal, state and local permitting for work in the wetland: including a U.S. Army Corps of Engineers General Permit (Clean Water Act Section 404), a Vermont Wetland Permit, and a Vermont Stream Alteration Permit. Compliance with all federal, state and local permits would be determined as part of the grant close-out process.

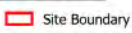


**Prepared by:**

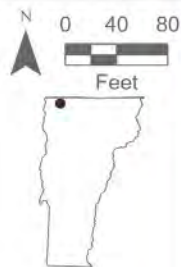
This 8-Step Decision Making Document was prepared by Katrina Mattice, PE, Project Engineer, Stone Environmental, Inc..

# Appendix C-1: Photographic Key



## LEGEND


-  Site Boundary
-  Parcel Boundary
-  Photograph Number, Location and Orientation



### Figure C-1: Photographic Key

352 Transfer Station Road  
Highgate, Vermont

Prepared for Town of Highgate

 **STONE ENVIRONMENTAL**

Source: Esri World Imagery, VCGI, Overall Site Plan - Highgate Transfer Station, 31 July 2019  
 Path: \\stone-files1\netdrv-01\PROJ-21\EAR\20211129 Town of Highgate  
 EA\GIS\MapDocuments\20211129 Town of Highgate\20211129 Town of Highgate.aprx Saved:

## Appendix C-2: Site Photographs

Refer to Appendix C-1 for location of photographs.



Photo 1: Wetland Area, South of Area E



Photo 3: Outfall Pipe



Photo 5: Area E Wetland



Photo 6: Ravine, Bottom of Area E Slope



Photo 7: Middle Drainage, Area E



Photo 8: Ravine, Northern Edge of Area E





Photo 9: Wetland, Bottom of Drainage Between Site 1 and Area E



Photo 10: Wetland, Bottom of Drainage Between Area E and Site 1



Photo 11: Channel Realignment Area, South of Site 1



Photo 12: Site 1 Slope



Photo 14: Top of Site 1, Behind Salt Shed