September 2022

2022 SOIL COVER MONITORING AND MAINTENANCE SUMMARY REPORT

GSA PROPERTY DOMA001902
670 ARSENAL STREET
WATERTOWN, MASSACHUSETTS

Prepared by:

U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, Massachusetts 01742

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FIGURES

ATTACHMENTS

1. INTRODUCTION

This Soil Cover Monitoring and Maintenance Summary Report was prepared in compliance with the Final Operation and Maintenance (O&M) Plan dated 16 April 2014 for the Watertown Arsenal - General Services Administration (GSA) Property (D0MA001902) located at 670 Arsenal Street, Watertown, Middlesex County, Massachusetts (the Site). This report includes:

- Date of the inspections and name of personnel conducting the inspections;
- A brief summary of observations;
- Summary of maintenance activities;
- Representative photographs of the soil cover area and any deficiencies (with recommendations to correct any deficiencies); and
- A determination as to whether or not the land use controls are still being fully implemented.

2. BACKGROUND

The Site is located at 670 Arsenal Street, in the eastern portion of the town of Watertown in Middlesex County, Massachusetts (Figure 1, USACE, 2018b). Historically, the parcel was filled to facilitate development during World War II, and was subsequently used by the U.S. Army and by the GSA for storing various materials and equipment. The 11.91-acre GSA Property parcel was part of the former U.S. Army Watertown Arsenal. The GSA also leased portions of the property to various parties, including automobile dealers and a television production company. One building was used as a police firing range and to store flammable materials.

Currently, the site contains vacant land classified as high to medium density residential due to nearby apartment buildings (MassGIS, 2017). The boundaries are heavily vegetated, and the interior contains an engineered, compensatory wetland and maintained soil cover (Figure 1, USACE, 2018b). Structures related to former site operations were removed as part of the remedy, and there is no active use of the property. The anticipated future use of the Site is passive recreation.

The Site is listed in the United States Army Corps of Engineers (USACE) records as Formerly Used Defense Site (FUDS) Project Number D01MA0019_02. As established in the Decision Document, the Remedial Action Objective (RAO) is to reduce human health and ecological risks associated with exposure to polychlorinated biphenyls (PCBs), dioxin, and metals in the PCB Impacted Area (USACE, 2012). The selected site remedial alternative included excavation and off-site disposal of PCB-contaminated soil with concentrations greater than 50 milligrams per kilogram (mg/kg), capping of PCB-impacted soils greater than 1 mg/kg but less than 50 mg/kg, and the construction of a compensatory wetland area as presented on Figure C-1 (Charter, 2014b). PCBs impacted soils greater than 50 mg/kg were transported off-site to an approved treatment, storage, and disposal facility. Construction was completed in 2014. The five-year review trigger date is 15 August 2013, the start of soil excavation and removal in the PCB Impacted Area.

3. FIVE YEAR REVIEW

The USACE completed a Five-Year Review (FYR) on 03 August 2018 in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) under the Defense Environmental Restoration Program (DERP). FYRs are required for this site by statute because the selected soil cover remedy for site results in contaminants remaining at concentrations exceeding unlimited use and unrestricted exposure to site media. This was the first five-year review for the former GSA Property Site.

The FYR concluded that the Former GSA Property's soil cover remedy is functioning as designed by severing the fill material (soil) exposure pathway (USACE, 2018b). The Decision Document's soil and surface water Applicable or Relevant and Appropriate Requirements have been met. The compensatory wetlands are functioning as intended, with maintenance.

4. COMPENSATORY WETLAND

A part of the remedy, a compensatory wetland was designed to replace the functions and values of the former wetland areas that were impacted in order to excavate and cover contaminated soils at the Site. The compensatory wetland is approximately two acres in size and includes an interspersion of open water, emergent, wet meadow, and forested wetland cover types (USACE, 2018b). The USACE was responsible for inspections of the compensatory wetland and that corrective actions were complete for the initial five-year period. Beginning in 2019, in accordance with the O&M Plan, the property owner, the Department of Conservation and Recreation (MassDCR), assumed responsibility for the maintenance of the compensatory wetland (Charter, 2014a).

5. MONITORING AND MAINTENANCE

The USACE performed the Annual Soil Cap Inspection on 22 August 2022. Representative photographs the USACE took during the site walk are included in Attachment A. The Soil Cover Inspection Checklist the USACE completed is attached as Attachment B.

5.1 Observations

During the site visit, the USACE observed that the perimeter fence, i.e., the second/interior gate, was padlocked and there was no evidence of trespasser activity. The USACE did not have the key to the padlock; therefore, the USACE representatives cut the chain to access the Property to complete the required inspection activities. Upon completion of the soil cap inspections, the USACE representatives took the chain, with the existing lock still attached, and wound it through the chain link fence to appear secured. USACE informed the DCR of the status of the lock via electronic mail on 22 August 2022.The entrance gate was observed to be in poor condition as the frame and chain link are warped and not flat (see Photograph 1). The USACE also observed the abandoned transformer on a utility pole located on Arsenal Street, which was previously identified during the 2021 soil cap inspection (see Photograph 2).

A large tree was observed growing through the perimeter fence at the southern end of the drainage swale adjacent to Greenough Boulevard (see Photograph 3). Ongoing construction of a biotechnology facility on Coolidge Avenue was noted looking north from the Site (see Photograph 4).

5.1.1 Integrity

On 22 August 2022, the soil cap was observed to be intact (see Photographs 5, 6, and 7). The USACE did not note issues with the integrity of the soil cap, specifically there was no erosion, settlement, cracks, holes, or tire ruts in the soil cap. Also observed in 2021, USACE identified one minor depression at the foot of the eastern slope; however, the USACE believes it is too shallow to warrant remediation at this time (Photograph 8). The USACE also observed two small relic animal burrows on the soil cap (see Photograph 9). Both burrows were observed to be shallow and unused, therefore, they did not appear to require remediation at this time.

5.1.2 Vegetation

On 22 August 2022, the USACE observed the grass to be in healthy, but dry condition due to the ongoing drought. However, grass was observed to be sparse along the slope of the southern perimeter of the soil

cap (see Photograph 10). This area was previously noted in the 2021 soil cap inspection report. Although the area is dry, the bare patch appears to be comparable in size to the 2021 observation.

5.1.3 Swale and Check Dams

Along the northwest portion of the drainage swale, the USACE observed saplings, dead branches, and other vegetation overhanging the swale (see Photograph 11). Immediately adjacent to the riprap of the swale in this area, 2-3-inch-wide woody roots were observed (see Photograph 12).

Along the northeast portion of the swale, the USACE observed that a tree had taken root (see Photograph 13) and cattails (see Photograph 14) are growing in the swale. Along this section of the drainage swale, looking south towards Greenough Boulevard, the USACE observed a tree/shrub encroaching on the swale (see Photograph 15).

Similar to the 2021 inspection, the USACE observed the access gate located along Greenough Boulevard is blocked by trees growing along the edge of the eastern drainage swale (see Photograph 16).

The catch basin was observed to be surrounded by dense phragmites growth. The USACE inspector attempted to clear the catch basin drain with a metal pry bar (see Photograph 17).

The drainage swale appeared to be mostly dry around the entirety of the cap. USACE observed dense phragmites growth along the eastern and southern portions of the swale (Photographs 3, 16, 17, 18, and 19).

5.2 Maintenance Performed

No maintenance was performed during this reporting period by the USACE with the exception of the effort made to clear the catch basin using the pry bar as shown in Photograph 17.

6. RECOMMENDATIONS

The USACE recommends the following maintenance activities be conducted by DCR:

- Clear the catch basin grate and surrounding swale clear of debris and vegetation;
- Remove the trees growing in front of the Greenough Boulevard access gate.
- Trim back the vegetation that is overhanging the drainage swale.
- Remove the growth of *Phragmites*, cattails, and trees growing in or near the swales and treat with herbicide in accordance with the O&M plan.

REFERENCES

ABB Environmental Services Inc (ABB Environmental, Inc), 1993. Former Watertown Arsenal Preliminary Assessment, Watertown Massachusetts. U.S Army Corps of Engineers New England Division Waltham Massachusetts, 321 p.

Charter Environmental, Inc. (Charter), 2014a. Operation & Maintenance Plan, Remediation Action, GSA Property D0MA001902, Watertown, Massachusetts, Revision No.: 01. 14 April 2014.

Charter, 2014b. Remedial Action Closeout Report, Remedial Action, GSA Property D0MA001902, Watertown, Massachusetts, Revision No.: 00, Contract No. W912WJ-11-0009/0003. 30 September 2014.

Harding ESE, 2004. Draft Response Action Outcome Statement, GSA Site, Watertown Massachusetts, Release Tracking Number 3-02722. Prepared for USACE New England District under Contract No DACA33-97-C-0023, January 2004, 109 p.

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National Center for Biotechnology Information. PubChem Database. Aroclor 1254, CID=40470, https://pubchem.ncbi.nlm.nih.gov/compound/Aroclor-1254 (accessed on July 24, 2019)

New York State Department of Environmental Conservation, Division of Environmental Remediation, 2011. Record of Decision, Waste Stream, Inc., State Superfund Project, Potsdam, St. Lawrence County, Site No. 645022, March 2011.

USACE, 2018a. Wetland and Soil Cover Inspection, 2018 Summary Report, GSA Property DOMA001902, 670 Arsenal Street, Watertown, Massachusetts. 20 December 2018.

USACE, 2018b. First Five-Year Review For GSA Property, Formerly Used Defense Site #D01MA001902, Town of Watertown, Middlesex County, MA. Prepared by: Geo-Environmental and Geotechnical Branches Engineering Division, New England District, Concord, MA. 03 August 2018.

USACE, 2012. Decision Document GSA Property Formerly Used Defense Site # D01MA001902 Watertown, Massachusetts D01MA001902, signed 20 June 2012. Prepared by: Woods Hole Group, Inc. 81 Technology Park Drive East Falmouth, Massachusetts and AMEC Environment & Infrastructure, Inc. 107 Audubon Road Wakefield, Massachusetts Contract Number: W912WJ-09-D0001, 97 p.

USEPA, 1983. Environmental Transport and Transformation of Polychlorinated Biphenyls. United States Environmental Protection Agency. EPA 560/5-83-025.

FIGURES


Figure 1. Site Map
Watertown Arsenal - GSA Property
670 Arsenal Street, Watertown, Massachusetts
(Google Earth, 2018)
Engineered Soil Cap
Greenough Boulevard
Compensatory Wetland
Arsenal Street
Google earth
200 ft
N

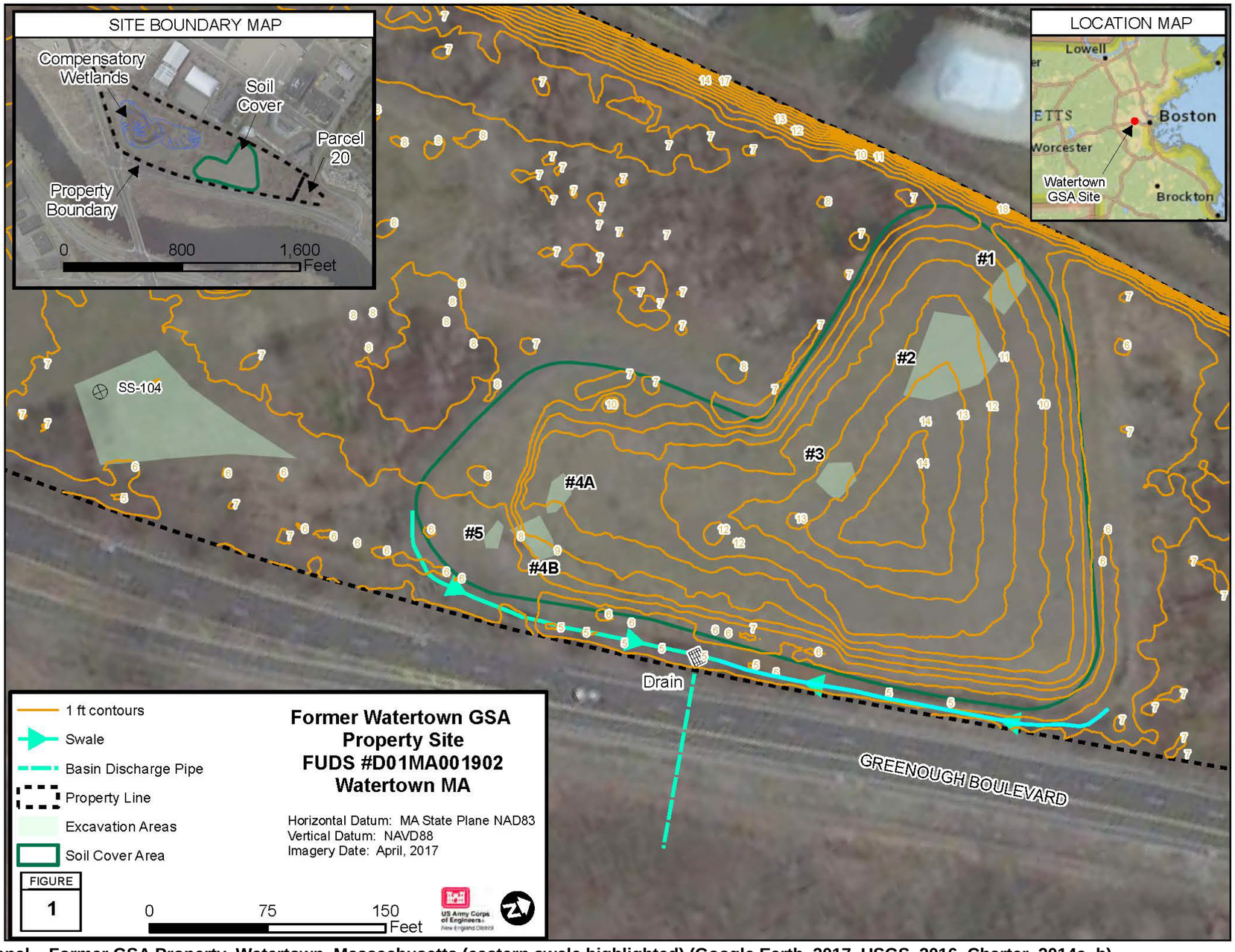


Figure 1. Watertown Arsenal – Former GSA Property, Watertown, Massachusetts (eastern swale highlighted) (Google Earth, 2017, USGS, 2016, Charter, 2014a, b).

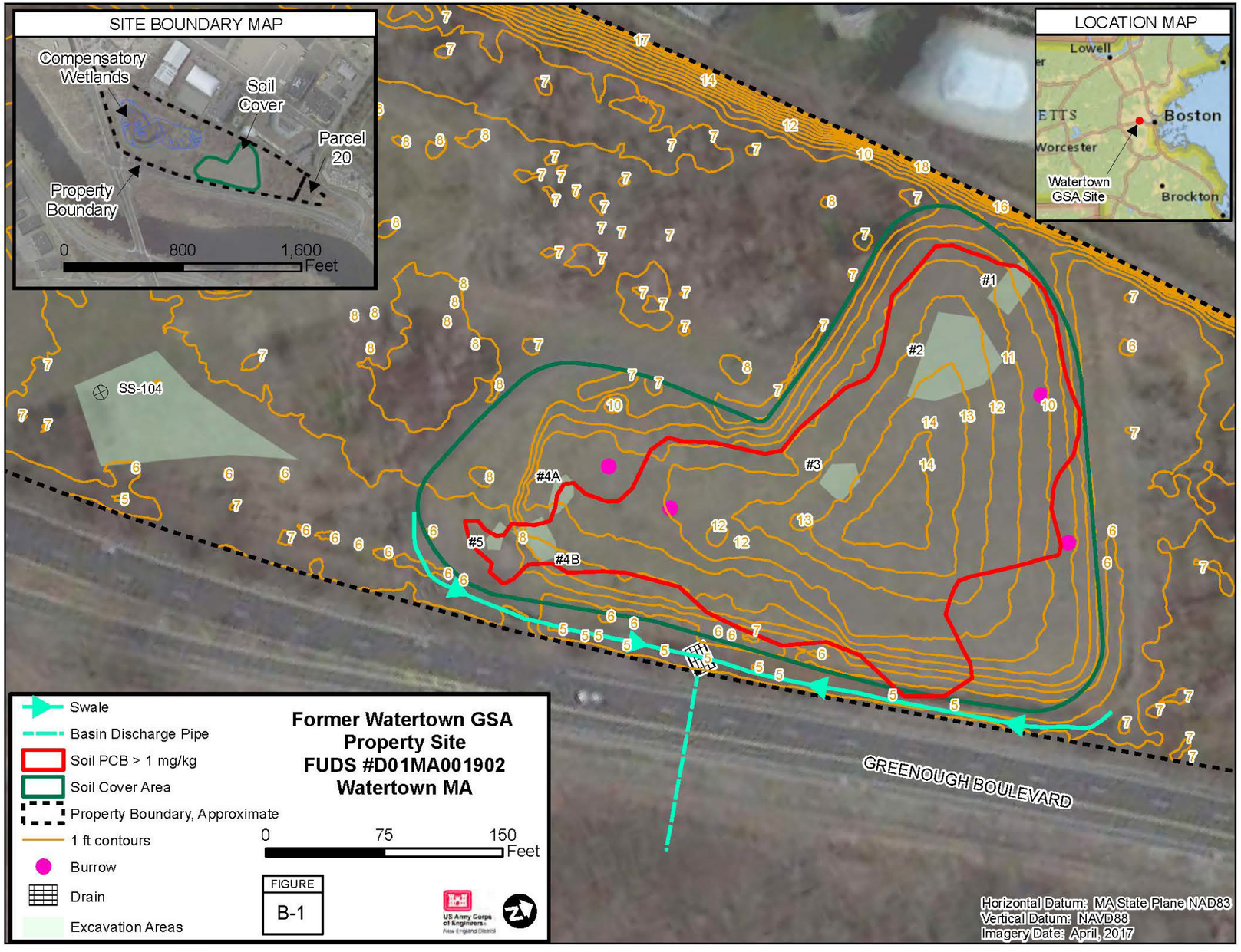


Figure C-1. Site visit map showing excavated areas, PCB and cover extents, highlighted eastern swale with discharge pipe, and site topography as of 2016 (USGS, 2016, Charter, 2014b). Property boundary and burrow locations area approximate (latter from cellphone GPS). PCB excavation areas are georeferenced from drawing and soil borings (Charter, 2013b).

ATTACHMENT A

PHOTOGRAPHS

Photograph 1. Entry gate looking east; chain cut to allow USACE access to complete annual inspection activities (22 August 2022).

Photograph 2. Old power transformer on utility pole covered by vegetation. Appears to be more overgrown compared to 2021 inspection (22 August 2022).

Photograph 3. Southern swale looking south; large tree growing through perimeter fence (22 August 2022).

Photograph 4. Looking north; active construction of biotechnology facility (22 August 2022).

Photograph 5. Top of soil cap looking northeast; dry conditions and significant phragmites growth adjacent to Greenough Boulevard evident (22 August 2022).

Photograph 6. Top of soil cap looking southeast (22 August 2022).

Photograph 7. Top of soil cap looking northwest (22 August 2022).

Photograph 8. Slight depression in the grass cover of the soil cap adjacent to the eastern drainage swale (22 August 2022).

Photograph 9. One of two small relic burrows identified on the soil cap. (22 August 2022).

Photograph 10. Bare patches near crest of southern section (looking northwest) of the soil cap (22 August 2022).

Photograph 11. Overhanging vegetation along northwestern swale (22 August 2022)

Photograph 12. Woody tree root (2-3 inches wide) observed adjacent to northwestern swale and overhanging vegetation noted in Photograph 1 (22 August 2022)

Photograph 13. Northern drainage swale showing woody vegetation growth in swale riprap (22 August 2022)

Photograph 14. Northern drainage swale looking northeast showing vegetation growth in swale (22 August 2022)

Photograph 15. Northern drainage swale with dense vegetation growth looking southwest towards Greenough Boulevard (22 August 2022)

Photograph 16. Phragmites growth in drainage swale and tree growth blocking exterior of northeastern gate adjacent to Greenough Boulevard. (22 August 2022).

Photograph 17. Dense phragmites growth in eastern swale over the catch basin (22 August 2022).

Photograph 18. Dense phragmites growth along eastern unmaintained drainage swale (22 August 2022).

Photograph 19. Phragmites growth in the southern section of the drainage swale looking southwest (22 August 2022).

ATTACHMENT B

SOIL COVER INSPECTION CHECKLIST –

22 August 2022

☑ Steve Mayoon - Watertown
~~☐ Joanne Dearden - MADEP~~

SOIL COVER INSPECTION CHECKLIST

Task Order/Job Code:
Site Name: GSA Property D01MA001902
City: Watertown
State: Massachusetts
Inspection Team: USACE Brent Smith (Geologist), Michael Narcisi (Biologist), Jeffrey Dvorak (PM/ETL)

Weather: ~~70s~~, cloudy, light wind
Temperature: 70s F @ start
Site Map: Attach Map
Inspection Date: 22 August 2022

On site: 0835
off site: 1130

ITEM	REMARKS
VEGETATIVE COVER	
1. AVERAGE GRASS HEIGHT 0.2 ft ⇩ Estimated Height (inches): 1-3 in	- property was mowed prior to inspection - no additional mowing needed
2. SPARSE COVER AREAS? Yes ☑ No ☐ Location (also indicate on map): Length: 5ft Width: 10 ft	- same area identified in SEP 2021 inspection - also minor bare patches in northern section after mowing
3. GRASS CONDITION Healthy ☐ Fair ☑ Poor ☐	- fully covered 95%, only noted Fair due to drought conditions
4. INVASIVE TREES/SHRUBS? Yes ☑ No ☐ Location (also indicate on map): Areal Extent: Height:	- overhanging saplings + raspberry bushes along NW swale + boulders in a line ~~not~~ NW to retaining wall
GROUND SURFACE	
1. SETTLEMENT (LOW SPOTS) Yes ☑ No ☐ Location (also indicate on map): Areal Extent: 2ft × 2ft Depth: 0.5 ft	- same minor depression observed in prior inspections along SW toe of cap, 0.5ft deep - no action needed
2. CRACKS Yes ☐ No ☑ Location (also indicate on map): Length: Width: Depth:	- none observed
3. EROSION Yes ☐ No ☑ Location (also indicate on map): Areal Extent: Depth:	- none observed
4. HOLES Yes ☑ No ☐ Location (also indicate on map): Areal Extent: 0.3 ft wide Depth: 0.5 ft Suspected Cause (e.g. rodent, other): rodent	~~no burrows~~ active burrows - one small burrow observed - relic (filled) burrows also observed - no action needed

ITEM	REMARKS
5. WET AREAS Yes ☐ No ☑ Ponding: Location (also indicate on map): Areal Extent: Seeps: Yes ☐ No ☑ Location (also indicate on map): Areal Extent: Estimated Flow Rate: Soft Subgrade: Yes ☐ No ☑ Location (also indicate on map): Areal Extent:	- none observed; likely due to drought conditions - none observed - none observed
6. EVIDENCE OF UNAUTHORIZED OFF ROAD VEHICLES Yes ☐ No ☑ Location (also indicate on map): Areal Extent: Depth:	- no evidence of vehicle trespass observed
STORM WATER MANAGEMENT SYSTEMS	
1. EASTERN SWALE Settlement: Yes ☐ No ☑ Location (also indicate on map): Ponding: Yes ☐ No ☑ Location (also indicate on map):	- no settlement or ponding observed
2. SOUTHERN SWALE Settlement: Yes ☐ No ☑ Location (also indicate on map): Ponding: Yes ☐ No ☑ Location (also indicate on map):	- no settlement or ponding observed
3. WESTERN SWALE Settlement: Yes ☐ No ☑ Location (also indicate on map): Ponding: Yes ☐ No ☑ Location (also indicate on map):	- no settlement or ponding observed - tree roots (up to 3 inch diameter) observed near swale and placed boulders; no action needed
4. CATCH BASIN Debris: Yes ☑ No ☐ Appears to be Functioning: *Yes ☑ No ☐ Condition: Good ☐ Fair ☑ Poor ☐	* unknown functionality due to drought ~~- partly clogged~~ N/A - catch basin is partly to mostly clogged w/ heavy vegetation and sediment - USACE attempted to clear catch basin grate w/ pry bar found on site

ITEM			REMARKS
5. STONE CHECK DAMS Excess Sediment: (greater than 12") Location (also indicate on map):	Yes ☐	No ☑	-veg. debris throughout obscured sediment, but no visible sediment exceeding 12 inches
Erosion: Location (also indicate on map):	Yes ☐	No ☑	-none observed
ACCESS ROADS			
1. Damage: Location (also indicate on map):	Yes ☐	No ☑	-none observed
Erosion: Location (also indicate on map):	Yes ☐	No ☑	-none observed
Vegetation: Location (also indicate on map):	Yes ☑	No ☐	- at fence & in wetland
WALLS AND SLOPES			
1. NORTHERN SLOPE Erosion: Settlement: Location (also indicate on map):	Yes ☐ Yes ☐	No ☑ No ☑	-no erosion or settlement observed
2. EASTERN SLOPE Erosion: Settlement: Location (also indicate on map):	Yes ☐ Yes ☐	No ☑ No ☑	-no significant erosion or settlement observed -see aforementioned minor depression listed under Ground Surface → 1. Settlement
3. SOUTHERN SLOPE Erosion: Settlement: Location (also indicate on map):	Yes ☐ Yes ☐	No ☑ No ☑	-no erosion or settlement observed
GENERAL			
1. VANDALISM Location (also indicate on map): Description of Damage:	Yes ☐	No ☑	-~~no new vandalism~~ - USACE cut chain for entry - existing graffiti on ret. wall, no change
2. CHANGED SITE CONDITION	Yes ☐	No ☑	- no change observed
3. LAND USE CONTROLS STILL FULLY IMPLEMENTED	Yes ☑	No ☐	- LUC still implemented but inspection access ~~for~~ for USACE should improve - e.g. USACE locks should not be cut off

BLS note — who handles cap damage? USACE

INTERVIEWS (*conduct interviews only if any of the following are present during inspection*)

1. INTERVIEW WORKERS ON SITE — N/A ; no workers present
   Problems:
   Suggestions:
   Attach Report

2. INTERVIEW SITE NEIGHBORS — N/A; no neighbors present
   Problems:
   Suggestions:
   Attach Report

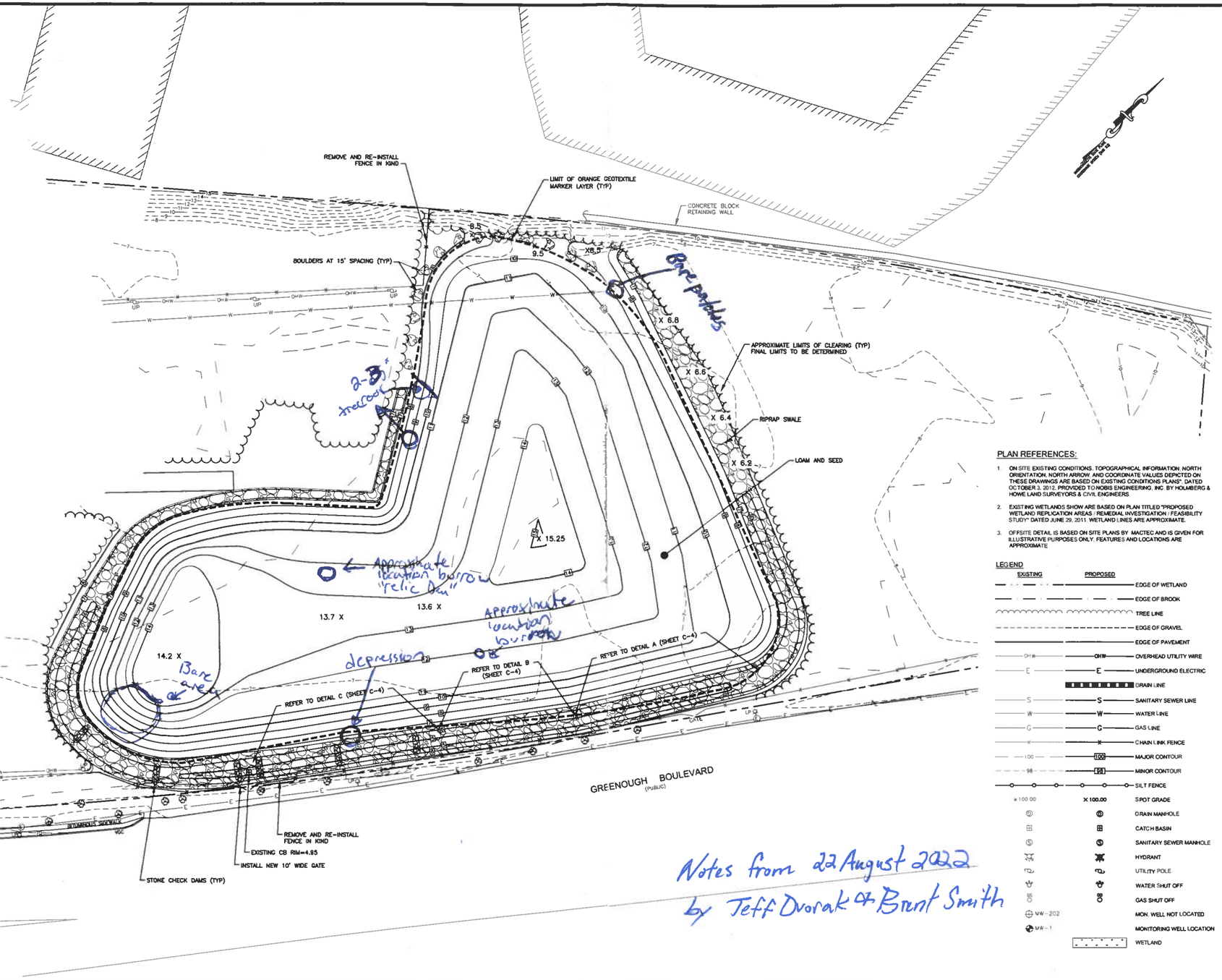
3. INTERVIEW LOCAL OFFICIALS — Steve Magoon (Assistant Town Manager/Director of Community Dev. & Planning, Watertown)
   Problems: phragmites; homeless ~~pop~~ pop. in past, lab path potential
   Suggestions: removal/control of veg.
   Attach Report
   - parking & access due to local construction. Con. Comp & Watertown & DCR should communi
   - limited emergency access

REVIEW DOCUMENTS

1. OPERATION AND MAINTENANCE PLAN
   - Is there a plan in place? Yes ☑ No ☐
   - Is it being followed? Yes ☑ No ☐
   - Is it adequate? Yes ☑ No ☐

Notes:
- Locks managed by DCR
- Lab under construction
- Lab construction (up hill) may have funding for path to connect to other paths
- New locks on outer gate, not there in 2021; USACE needs access
- minor hole in fence on path by wetland
- mild bald spots N/E corner of cap rear wall
- large roots visible
- trees above fence adj. to boulders → tree roots near boulders 2-3" diam.
- relic den/burrow, both appear inactive

Recommendations:
1. Remove encroaching phragmites in eastern & southern swales
2. Remove cattails in the east/northeast section of the eastern swale.
3. Clear catch basin/drain of phragmites debris in a 3-5 ft radius.
4. Remove phragmites on east side of fence that abuts Greenough Blvd.
5. Remove small trees at gate located at northeast corner of property along Greenough Blvd
6. Remove overhanging saplings, branches, & shrubs along the northwestern and northeastern swales.
7. Provide USACE with copy of main gate key or allow for daisy-chaining of USACE lock to allow for inspection access.
8. Assess condition of transformer on utility pole near the main gate.



PLAN REFERENCES:

1. ON SITE EXISTING CONDITIONS, TOPOGRAPHICAL INFORMATION, NORTH ORIENTATION, NORTH ARROW, AND COORDINATE VALUES DEPICTED ON THESE DRAWINGS ARE BASED ON EXISTING CONDITIONS PLANS", DATED OCTOBER 3, 2012, PROVIDED TO NOBIS ENGINEERING, INC. BY HOLMBERG & HOWE LAND SURVEYORS & CIVIL ENGINEERS.
2. EXISTING WETLANDS SHOW ARE BASED ON PLAN TITLED "PROPOSED WETLAND REPLICATION AREAS / REMEDIAL INVESTIGATION / FEASIBILITY STUDY" DATED JUNE 29, 2011. WETLAND LINES ARE APPROXIMATE.
3. OFFSITE DETAIL IS BASED ON SITE PLANS BY MACTEC AND IS GIVEN FOR ILLUSTRATIVE PURPOSES ONLY. FEATURES AND LOCATIONS ARE APPROXIMATE

LEGEND

EXISTING	PROPOSED	
		EDGE OF WETLAND
		EDGE OF BROOK
		TREE LINE
		EDGE OF GRAVEL
		EDGE OF PAVEMENT
OHW	OHW	OVERHEAD UTILITY WIRE
E	E	UNDERGROUND ELECTRIC
		DRAIN LINE
S	S	SANITARY SEWER LINE
W	W	WATER LINE
G	G	GAS LINE
x	x	CHAIN LINK FENCE
100	100	MAJOR CONTOUR
98	98	MINOR CONTOUR
		SILT FENCE
* 100.00	X 100.00	SPOT GRADE
		DRAIN MANHOLE
		CATCH BASIN
		SANITARY SEWER MANHOLE
		HYDRANT
		UTILITY POLE
		WATER SHUT OFF
GS	GS	GAS SHUT OFF
MW-202		MON. WELL NOT LOCATED
MW-1		MONITORING WELL LOCATION
		WETLAND

Notes from 22 August 2022
by Jeff Dvorak & Brent Smith

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Client - Focused, Employee - Owned

CONSTRUCTION PROGRESS PRINT

WATERTOWN GSA SITE

WATERTOWN, MASSACHUSETTS

NO.	DATE	DESCRIPTION
4	01/16/14	UPDATED FOR CONSTRUCTION STATUS
3	11/12/13	UPDATED FOR CONSTRUCTION STATUS
2	09/03/2013	ADDED EROSION STONE

REVISIONS

0 30' 60'
GRAPHIC SCALE

DATE:	MARCH 2013
NOBIS PROJECT NO.	86300.00
DRAWN BY:	ML
CHECKED BY:	BV
CAD DRAWING FILE:	86300-DESIGN.dwg

SHEET TITLE

PROPOSED SOIL COVER AREA

SHEET
C-3
3 OF 5

J:\86300 Watertown - Working Files\Civil Work\CAD\dwg\86300-DESIGN.dwg 2/10/2014 8:31 AM