

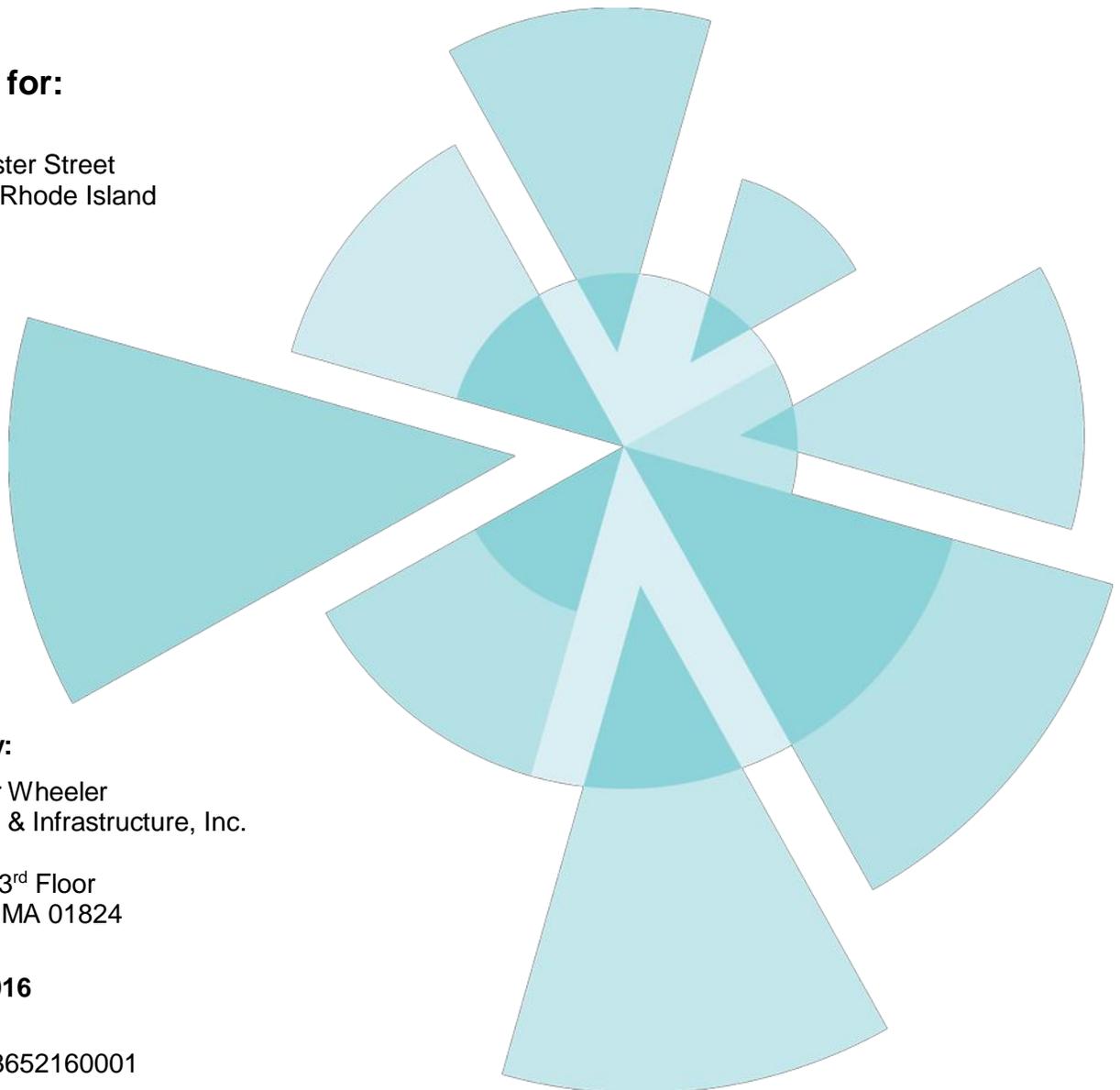


REMEDIAL ACTION COMPLETION REPORT

Phase II Area – Mashapaug Inner Cove,
Phase III Area – Northeast Upland, and Parcel C
Former Gorham Manufacturing Facility
333 Adelaide Avenue, Providence, Rhode Island

Prepared for:

Textron, Inc.
40 Westminster Street
Providence, Rhode Island



Prepared by:

Amec Foster Wheeler
Environment & Infrastructure, Inc.

271 Mill Rd, 3rd Floor
Chelmsford, MA 01824

February 2016

Project No. 3652160001

Textron, Inc.
Former Gorham Manufacturing Facility, Providence, RI
Remedial Action Completion Report: Phase II Area – Mashapaug Inner Cove,
Phase III Area – Northeast Upland And Parcel C
Project No.: 3652160001
February 12, 2016



REMEDIAL ACTION COMPLETION REPORT

**PHASE II AREA – MASHAPAUG INNER COVE,
PHASE III AREA – NORTHEAST UPLAND,
AND PARCEL C**

**FORMER GORHAM MANUFACTURING FACILITY
333 ADELAIDE AVENUE
PROVIDENCE, RHODE ISLAND**

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Prepared and Reviewed by:

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ACRONYMS

ABB-ES	ABB Environmental Services, Inc.
AMEC	AMEC Environment & Infrastructure, Inc.
Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc.
BFM	Bonded fiber matrix
BOL	Bill of Lading
CGP	Construction General Permit
COPC	Constituents of potential concern
CY	Cubic Yards
1,2-DCE	1,2-dichloroethene
ELUR	Environmental Land Usage Restriction
GPS	Global Positioning System
GZA	GZA GeoEnvironmental, Inc.
HHRA	Human Health Risk Assessment
HLA	Harding Lawson Associates
Hydrograss	Hydrograss Technologies
LOD	Limit of Disturbance
MACTEC	MACTEC Engineering and Consulting, Inc.
MassDEP	Massachusetts Department of Environmental Protection
mg/m ³	Milligrams per Cubic Meter
NOT	Notice of Termination
PAH	Polynuclear Aromatic Hydrocarbons
PCE	Tetrachloroethene
RAWP	Remedial Action Work Plan
RDEC	Residential Direct Exposure Criteria
RIDEM	Rhode Island Department of Environmental Management
RIDOH	Rhode Island Department of Health
RIHPHC	Rhode Island Historical Preservation and Heritage Commission
RIPDES	Rhode Island Permit Discharge Elimination System
ROW	Right of way
SESC	Soil Erosion and Sediment Control
SIR	Site Investigation Report
SMP	Soil Management Plan
SSIR	Supplemental Site Investigation Report
SVOCs	Semi-volatile Organic Compounds

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1,1,1-TCA	1,1,1-trichloroethane
T&D	Transportation and Disposal
TCE	Trichloroethene
Textron	Textron, Inc.
TPH	Total Petroleum Hydrocarbons
Tree Tech	Tree Technologies
TWA	Time Weighted Average
USACE	United States Army Corps of Engineers
VHB	Vanasse Hangen Brustlin, Inc.
VOCs	Volatile Organic Compounds
WQC	Water Quality Certification

1.0 INTRODUCTION

The Former Gorham Manufacturing Facility is located at 333 Adelaide Avenue, Providence, Rhode Island and is comprised of four parcels (Figures 1 and 2). This Remedial Action Completion Report details the recently-completed Remedial Action and current Site status of the multi-phase remedy (Phases II, and III) of Parcel C-1 and the final capping of Parcel C as proposed in the Remedial Action Work Plan (RAWP) dated March 11, 2015 by Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) and the July 6, 2015 response to comments. The final RAWP was approved by Rhode Island Department of Environmental Management (RIDEM) on July 9, 2015 (Appendix A, Order of Approval).

The Parcel C-1 Phase I Area, which is the western area along Mashapaug Pond and the area north of the Alvarez High School (Figure 3) was remediated in 2012 and a completion report submitted in 2013 (AMEC, 2013a). The Parcel C-1 Phase II Area includes Mashapaug Inner Cove, and the Phase III Area includes the northern portion of Parcel C-1 (Figure 3). The Phase II and Phase III Areas and the final capping of the area immediately west of the high school (Parcel C) are the subject of this Remedial Action Completion Report.

The remedial action discussed in this completion report focuses on surface sediment in the Phase II Area and the surface soil in the Phase III Area and Parcel C. The remedial objectives for the Phase II (Mashapaug Inner Cove), and Phase III Areas, and Parcel C consist of the following:

- ▶ Limit access to impacted sediments within the Mashapaug Inner Cove (Phase II Area) that present ecological risks;
- ▶ Prevent and eliminate direct-contact human exposure to contaminated soil (Phase III Area and Parcel C) exceeding RIDEM Residential Direct Exposure Criteria (RDEC);
- ▶ Stimulate the re-growth of native plants and allow the wetlands to re-vegetate in a natural, wild manner, while limiting human access to the shoreline of the Inner Cove and supporting the existing Rhode Island Department of Health (RIDOH) restriction on swimming in and catching fish from Mashapaug Pond; and
- ▶ Monitor the Parcel C groundwater plume to confirm its continued biodegradation until at least three consecutive rounds of sampling show concentrations of volatile organic compounds (VOCs) in Parcel C groundwater are below the RIDEM GB Groundwater Objectives and are showing no increasing trends, and VOCs on Parcel C-1 groundwater are below the Massachusetts Department of Environmental Protection (MassDEP) GW-3 Standards with no increasing trends of VOCs.

This Remedial Action Completion Report has been prepared pursuant to the Remedial Approval Letter (Appendix A) and the Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases, as amended November 9, 2011, (hereafter referred to as the Remediation Regulations) on behalf of Textron, Inc. (Textron).

1.1 Property and Site History

The Former Gorham Manufacturing Facility is a 37-acre parcel of land where Gorham Silver engaged in the manufacture of silverware, both sterling and plated, and bronze castings from approximately 1890 to 1985 (Figure 1). Operations included casting, rolling, polishing, lacquering, forging, plating, annealing, soldering, degreasing, machining, and melting. Vapor degreasers reportedly used trichloroethene (TCE), tetrachloroethene (PCE), and 1,1,1-trichloroethane (1,1,1-TCA). More recent Site conditions (prior to remediation) are shown in the aerial photograph in Figure 2. In this figure, the Site is located immediately north of Adelaide Avenue and west of the Amtrak railroad tracks. The former manufacturing facility was razed in 2001.

Parcel C (formerly known as the YMCA parcel) and Parcel C-1 (formerly known as the Park Parcel) are two of the four parcels that comprise the 333 Adelaide Avenue Former Gorham Manufacturing Facility property as identified in the 2006 Consent Order between RIDEM and the City of Providence (Figure 3), and are currently owned by the City of Providence. A retail development has been completed on the southeastern portion of the Site (Parcel A). A public high school (Alvarez High School) was constructed on a second parcel (Parcel B).

Parcel C is a vacant empty lot located adjacent to the Alvarez High School. Parcel C-1 extends from the intersection of Adelaide Avenue and Crescent Street north and east along Mashapaug Pond/Inner Cove to the northeast corner of the property behind the Parcel A detention basin and Mashapaug Pond. Parcel D, the fast food restaurant, is not owned by the City of Providence and not part of the Site. These Parcel locations are depicted on Figure 2.

1.2 Physical Setting

The 333 Adelaide Avenue property is bordered to the east by Amtrak railroad tracks (Figure 2). Adelaide Avenue and a residential neighborhood bound the 333 Adelaide Avenue property to the south. To the north and west, the Site is bounded by Mashapaug Pond. The property includes Mashapaug Inner and Outer Cove. Parcel C-1 constitutes the northern portions of the 333 Adelaide Avenue property. On the opposite (northern) shore of Mashapaug Pond is an industrially-zoned area.

A description of the physical setting for the Phase II and Phase III Areas of Parcel C-1 and Parcel C as they existed prior to the 2015 remediation is provided below. The post-remediation physical setting of these areas is described in Sections 2.6 through 2.8 of this Completion Report.

1.2.1 Phase II Area of Parcel C-1 - Mashapaug Cove

The Phase II Area of Parcel C-1 is the Mashapaug Inner Cove. The Site consists of both the Inner and Outer Coves (Figure 3). The Inner Cove abuts the Phase I and Phase III Areas while the Outer Cove is located between the Inner Cove and Mashapaug Pond to the north. The Inner Cove has a shallow flat bottom with water depths that vary between 2.4 and 3.5 feet at locations greater than 20 feet from the shore. Inner Cove sediments are generally a very dark, organic silt layer in the top two to eight feet underlain by sandy layers. Soil boring data show that sandy/gravel material is present to a depth of approximately 38 feet within the Inner Cove. Slag

debris was previously present along the southern shore line of the Inner Cove (Figure 2). In 2006 construction activities were completed to remove the slag pile from the Phase I area. Approximately 1,110 to 1,130 cy of slag was removed and transported off-site for recycling (MACTEC, 2006b). Soil from a former storm water outfall that discharged into the Inner Cove was also removed and disposed of off-site in July 2006 due to elevated metals concentrations (MACTEC, 2006b). This former outfall was located east of the former slag pile and was capped as part of the Phase I remediation (AMEC, 2013a). During the summer months, aquatic vegetation is abundant within the Inner Cove and in recent years contains a large amount of blue green algae.

Most of the Outer Cove consists of sandy layers with organic silt located within the minor channel extending from the Inner Cove into Mashapaug Pond. The eastern and western shorelines of the Outer Cove generally consist of sand and very little organics. Water depths range from four to eleven feet and soil boring data show that sandy/gravel material is present to a depth of approximately 45 feet within the Outer Cove.

In 2006, MACTEC completed a Supplemental Site Investigation Report (SSIR) which summarized historic events associated with the Former Gorham Manufacturing Site and Mashapaug Cove (MACTEC, 2006a). An advisory released to the public by RIDEM and RIDOH during that same time frame indicated that catch and release fishing and boating were safe activities for Mashapaug Pond, and that a Site visitor would be unlikely to have significant exposures to Site-related constituents during recreational activities at the pond (minimal exposure to Cove surface water and sediment) (RIDEM and RIDOH, 2002). In 2006, RIDEM reclassified Mashapaug Pond (including Mashapaug Cove) as a Class B surface water (RIDEM, 2006a).

1.2.2 Phase III Area of Parcel C-1

The Phase III Area of Parcel C-1 is located in the northeast corner of the Property (Figure 3). This area borders both the eastern shore of the Inner and Outer Coves and shoreline of Mashapaug Pond. A steep slope is present along the eastern shore of the Inner and Outer Coves and the eastern peninsula separating these coves. To the east of the Mashapaug Outer Cove is a flat upland area that formerly housed an employee recreational building (known as the ‘Casino’) and associated parking lots. No visible building foundations or debris are present within this former Casino area. A separate plot of land that contains an active Amtrak High Speed railroad substation is present in the northeast corner of the Phase III Area (Figure 3). Remnants of the former brick Carriage House are present in the area adjacent to the Amtrak railroad behind the existing retail building (Parcel A) (Figure 2). An approximate 20-foot difference in elevation exists between the former “Casino” and parking lots upland parcel and the lower shoreline of Mashapaug Cove and Pond. A City sewer easement is also located in the southeast corner of the Phase III Area between the Amtrak access road and the railroad right of way (ROW). The Parcel C-1 eastern peninsula (located within the Phase III Area) has trees and vegetation, but is generally more open and accessible than the western peninsula of Parcel C-1. Parcel C-1 is enclosed by a chain-link fence installed and maintained by the City in accordance with the 2006 Consent Order. A locking gate for Amtrak access is located behind the retail building (Parcel A).

1.2.3 Parcel C (west of High School)

Parcel C (formerly known as the YMCA parcel) is an undeveloped, relatively flat 6-acre portion of the Site located in the western area of the property, adjacent to the Alvarez High School (Parcel B), as shown on Figure 2. Buildings formerly located on Parcel C were associated with historic operations at Gorham Silver and were used for storage. In 2001, the historic buildings and structures were demolished and some remnants remained in a pile in the center of Parcel C. A locking gate which allows access to Parcel C and the western portions of Parcel C-1 is located in the southeast corner of Parcel C nearest the high school.

An historic low-level remnant PCE/TCE plume (western plume) exists in the northwest corner of Parcel C. This plume is believed to have originated from the fill material on the property. As presented in the 2014 SIR (AMEC, 2014) and described in the 2015 RAWP, historic groundwater data for the Parcel C Western Plume demonstrated a clear trend of decreasing contaminant concentrations over time.

1.3 Regulatory Background and Previous Investigations

To reduce confusion, we have provided a list of company names that developed the historical reports cited within this Completion Report. This list of company names have all been incorporated under Amec Foster Wheeler. Please note that when citing a report/document, we use the appropriate company name as listed on the document/report at the time it was published/submitted.

- ▶ ABB Environmental Services, Inc. (ABB-ES)
- ▶ Harding Lawson Associates (HLA)
- ▶ Harding ESE
- ▶ MACTEC Engineering and Consulting, Inc. (MACTEC)
- ▶ AMEC Environment & Infrastructure, Inc. (AMEC)
- ▶ Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler)

In addition, when this Completion Report discusses activities conducted by Amec Foster Wheeler or its predecessors listed above (i.e., submittal of work plans, reports, response to comments, or conducting investigation activities), it is inferred that Amec Foster Wheeler submitted the document or conducted the activities on behalf of Textron.

Site investigations of Parcel C-1 and Parcel C were conducted between 1994 and 2004. Supplemental Site investigation (SSI) activities were then conducted between December 2005 and February 2007 to support the nature and extent of contamination and completion of a human health and ecological risk assessment for Parcel C-1, including Mashapaug Cove and the Phase III Area (MACTEC, 2006a and 2007). These environmental investigations demonstrated that soil at select locations on the 333 Adelaide Avenue Property, particularly the former manufacturing

facility on Parcel A, was impacted by historical industrial operations. Constituents of potential concern (COPC) in soils at the Site include VOCs (principally the chlorinated hydrocarbons TCE, PCE, and 1,1,1-TCA and their degradation products 1,2-dichloroethene [1,2-DCE] and vinyl chloride), semi-volatile organic compounds (SVOCs, principally polynuclear aromatic hydrocarbons [PAHs]), metals (primarily arsenic, copper, and lead), dioxin, and total petroleum hydrocarbons (TPH).

The 2006 SSIR (MACTEC, 2006a) and 2007 SSIR Addendum (MACTEC, 2007), recommended the construction of a soil cap in the Phase I and Phase III Areas of Parcel C-1. The 2012 RAWP (AMEC, 2012) detailed the construction of a soil cap on the Phase I Area to address contamination exceeding the RDEC to support a passive recreational use of Parcel C-1. This soil cap on the Parcel C-1 Phase I Area was completed in November 2012 (AMEC, 2013a).

1.3.1 Phase II Area of Parcel C-1

The data collection and risk assessment of the Mashapaug Inner Cove was completed in the 2006 SSIR (MACTEC, 2006a). In November 2011 AMEC conducted a supplemental investigation of Mashapaug Pond (AMEC, 2011) to delineate the nature and extent of contaminated sediments, specifically for metals and dioxin, and to support an ecological risk assessment of the Outer Cove. As presented within the 2014 Final Site Investigation Report (SIR) (AMEC, 2014), the 2006 Human Health Risk Administration (HHRA), updated to include the 2011 data, did not identify any unacceptable risk from the Inner Cove surface water or sediment for the worker; however, the trespasser scenario and ecological risk assessment identified that the Inner Cove sediment needed to be remediated. Surface water and sediment in the Outer Cove did not pose an unacceptable risk to human health or the environment, and did not require remediation (AMEC, 2014).

1.3.2 Phase III Area of Parcel C-1

The 2006 SSIR (MACTEC, 2006a) concluded that additional soil sampling was required along the eastern side of the Phase III Area to further define the extent of a proposed soil cap and to fill data gaps on the most northern, southern and eastern ends of the Phase III Area. AMEC conducted pre-design soil sampling in June 2013 (AMEC, 2013b) to close those data gaps and complete the delineation of surface soils exceeding RDEC that required capping. The former Carriage House area was not sampled in June 2013 since the fire that previously destroyed the building would likely have resulted in detections of metals and PAHs above the RDEC in surface soil. As presented within the 2014 Final SIR (AMEC, 2014), areas where concentrations of contaminants exceeded the RDEC required remediation (capping).

1.3.3 Parcel C (west of Alvarez High School)

GZA GeoEnvironmental, Inc. (GZA), on behalf of the YMCA, prepared the SIR for Parcel C adjacent to the Alvarez High School in May 2003 (GZA, 2003). Based on the proposed construction of a YMCA on the property, GZA recommended that a cap be constructed (pavement, building and soil cover), an Environmental Land Usage Restriction (ELUR) be applied restricting future access to metals and PAHs in Site soils, and a sub-slab ventilation system be

installed beneath the building to address the low level of VOCs found in the soil vapor. On April 24, 2006, RIDEM issued an Order of Approval (RIDEM, 2006b) for a RAWP prepared by GZA (GZA, 2006) that supported the construction of a YMCA building and parking lot. The proposed construction of the YMCA was canceled in 2007 and the property development reverted back to the City of Providence. In August 2010, Vanasse Hangen Brustlin, Inc. (VHB), on behalf of the City, submitted a draft RAWP (VHB, 2010) for Parcel C (west of the high school) (Figure 2). The 2010 draft RAWP proposed the construction of an engineered cap consisting of roadways, walkways, paved parking areas, and vegetative cover to address potential direct contact concerns to soils. The institutional controls identified in the 2003 SIR (GZA, 2003) remained part of the final remedy for Parcel C. In August 2010, VHB, on behalf of the City, submitted a revised draft RAWP (VHB, 2010) that documented the change in remedy for Parcel C and proposed the construction of an engineered cap. The sub-slab ventilation system was no longer required since no building was to be constructed on the property. RIDEM reviewed the draft 2010 RAWP and issued a comment letter (RIDEM, 2011).

Textron summarized and incorporated the Parcel C 2003 SIR and draft 2010 RAWP information into the 2014 Final SIR (AMEC, 2014) and requested approval to implement the final Parcel C remedy in coordination with the proposed remediation of Parcel C-1 Phase II and Phase III Areas. The final remedial action proposed for Parcel C and responses to the RIDEM comments associated with the 2010 draft RAWP by VHB were addressed and incorporated into the 2015 RAWP (Amec Foster Wheeler, 2015).

The 2015 RAWP also detailed the approach for remediating sediments within the Phase II Area - Mashapaug Inner Cove and capping the Phase III Area soil. RIDEM issued the Program Letter on January 20, 2015 (RIDEM, 2015a) and the Remedial Decision Letter on March 27, 2015 (RIDEM, 2015b) (Appendix A) approving the 2015 RAWP and final remedy for Parcel C-1 and Parcel C.

1.3.4 Parcel C Groundwater

Extensive groundwater investigations were previously conducted throughout the upland portions of the Property, including Parcel C, and Mashapaug Inner and Outer Coves (MACTEC, 2006a) which identified low levels of VOCs in groundwater immediately upgradient of the Inner Cove along the southern shore of the Inner Cove. Based on 2006-2010 groundwater data a historic low-level PCE/TCE plume (western plume) originates from the fill material in the northwestern corner of Parcel C.

Groundwater and sediment data collected between 2006 and 2010 show that the western plume (Parcel C), which flows primarily towards the Inner Cove and discharges upward through the Inner Cove sediment and into the surface water is undergoing biodegradation. As presented in the 2014 SIR (AMEC, 2014) and described in the 2015 RAWP, historic groundwater data for the Parcel C Western Plume demonstrated a clear trend of decreasing contaminant concentrations over time.

RIDEM's Order of Approval of the 2015 RAWP (Appendix A) requires Textron to monitor Parcel C groundwater by sampling six wells (MW-235S, MW-236S, MW-237S, MW-FS, MW-241, and

MW-D) until data from three consecutive sampling rounds demonstrate that Parcel C groundwater is compliant with RIDEM's GB Groundwater Objectives with no increasing trends of VOCs, and that Parcel C-1 groundwater is compliant with the MassDEP GW-3 Standards with no increasing trends of VOCs. Figure 4 shows the locations of the six groundwater monitoring wells.

1.4 Remediation

Remediation of Parcel C-1 was divided into three phases as mentioned previously. The Phase I Area of remediation of Parcel C-1 (Figure 3) was completed in November 2012 to address the soil impacts above RDEC and extended from the corner of Adelaide Avenue and Crescent Street, northward along Mashapaug Pond to the western peninsula and east along the southern shoreline of Mashapaug Inner Cove. A Closure Report documenting the remediation of the Phase I Area was submitted in April 2013 (AMEC, 2013a).

The 2015 RAWP detailed the approach of remediating the Phase II Area - Mashapaug Inner Cove sediments, and capping the Phase III Area and Parcel C soil and was approved by RIDEM (Program Letter issued January 20, 2015 [RIDEM, 2015a] and Remedial Decision letter dated March 27, 2015 [RIDEM, 2015b]) (Appendix A). The 2015 RAWP also specified monitoring of the Parcel C Western Groundwater Plume to confirm further biodegradation.

The remediation of the Phase II Inner Cove sediments and the capping of the Phase III Area and Parcel C was completed December 4, 2015 and the contractor demobilized from the Site December 11, 2015. Textron continues to monitor the Site pending surface stabilization. Once the Site is stabilized Textron will remove the turbidity curtain from the Outer Cove and conduct the required surface water sampling.

As part of the Phase II Area and Phase III Area remediation, the fringe wetlands that form a narrow band along the shore of the Inner Cove and the perimeter wetlands that extend 50 feet upgradient of the delineated wetland edge were restored to a pre-2006 slag debris removal water line.

In accordance with RIDEM's Order of Approval (Appendix A), Textron also conducted pre- and post-remediation sampling of the Parcel C groundwater in July 2015 and December 2015.

Details of the remediation of the Phase II and Phase III Areas and Parcel C, wetlands restoration, and groundwater sampling events are provided in Section 2.0 of this closure report.

1.5 Regulatory Permitting

1.5.1 Section 404 Permit

The Mashapaug Inner Cove sediment remediation is regulated by the RIDEM Office of Waste Management as a remediation project, under the Remediation Regulations, in consultation with the RIDEM Freshwater Wetland Program and Water Resources. This project also qualified for coverage under the Department of the Army General Permit for the State of Rhode Island, Category 2 – Reporting/Application Required. The United States Army Corps of Engineers (USACE) issued Permit No. NAE-2013-2359 to Textron on June 3, 2015 (Appendix A) for the

sediment remediation conducted in and along Mashapaug Inner Cove and the wetland restoration activities. As part of the General Permitting process, the Rhode Island Historical Preservation and Heritage Commission (RIHPHC) issued an approval in accordance with Section 106 of the National Historic Preservation Act to conduct the sediment removal.

The Mashapaug Inner Cove sediment remediation and wetland restoration work was completed on October 26, 2015. A Compliance Certification was submitted to the USACE and RIDEM on November 30, 2015 (Appendix A) to certify that the remediation work authorized by the General Permit was completed in accordance with the terms and conditions of the permit. Details of the remediation and wetland restoration are provided in subsequent sections of this Completion Report.

As required by the permit, Textron will continue to monitor the Inner Cove and adjacent wetlands and conduct the required storm water inspections until the disturbed areas have reached 80% surface stabilization and the wetlands have achieved the required growth and stabilization.

1.5.2 State Water Quality Regulations

Under the State Water Quality Regulations, the RIDEM Office of Water Resources issued Water Quality Certification (WQC) File No. 15-007 (Appendix B) for the remediation work within Mashapaug Pond and the wetlands. The WQC expires on July 13, 2018. This certification also authorized the Site to discharge stormwater associated with the remediation construction under the Rhode Island Pollutant Discharge Elimination System (RIPDES) General Permit for Stormwater Discharge Associated with Construction Activity (RIPDES Construction General Permit (CGP)) (RIPDES File No. RIRI101253) (Appendix A). As required by the Water Quality Regulations, Textron developed and implemented a Soil Erosion and Sediment Control (SESC) Plan, which will remain in effect until the Site has stabilized and a written certification confirming the drainage systems were constructed in accordance with the RAWP has been submitted. Textron will continue to conduct the required storm water inspections until the Site has reached stabilization. When Site stabilization is confirmed, Textron will submit a Notice of Termination (NOT), terminating coverage under the CGP.

2.0 SUMMARY OF REMEDIATION ACTIVITIES

A work plan was submitted to RIDEM on March 11, 2015 (AMEC, 2015) detailing the proposed remedial actions by Textron for the Phase II Area (Mashapaug Inner Cove) and the Phase III Area (Northeast Upland of Parcel C-1) with the Parcel C RAWP originally proposed by the City of Providence. Textron contracted with Charter of Boston, Massachusetts to perform the remedial construction at the Site. The remedial actions for these areas included:

- ▶ **Phase II-** removing up to two feet of sediment from the Mashapaug Inner Cove and placing and capping the dewatered sediment within the former Carriage House Area. Fringe and Perimeter wetland areas were restored to provide a smooth transition from the perimeter wetland (50 feet above the delineated fringe wetland) into the water;
- ▶ **Phase III-** re-graded and compacted the northeast Upland of Parcel C-1 with a maximum of 3:1 slopes, placed a marker fabric, six inches of clean imported soil and six inches of imported topsoil over the contaminated soils (sub-grade); and
- ▶ **Parcel C-** spread, graded and compacted the soil and debris pile, placed a marker fabric, six inches of clean imported soil and six inches of imported topsoil over the sub-grade.

Amec Foster Wheeler's Construction Drawings were issued for bid to several reputable contractors and the project was awarded to Charter in June 2015 to complete on-site construction activities. Amec Foster Wheeler was contracted by Textron to provide construction oversight for the Phase II/III and Parcel C activities. Prior to mobilization a notification of construction activities letter was mailed to local residents, Appendix A.

2.1 Site Mobilization

Amec Foster Wheeler and Charter mobilized to the Site on July 27, 2015. A preconstruction on-site meeting was held with Charter, Amec Foster Wheeler, Textron and Amtrak which summarized anticipated construction schedule, points of contact and expected coordination with Amtrak to allow them to have continued access to their High Speed railroad substation located with the Phase III Area. Located adjacent to the rail road is the City's Sewer Easement, this access gate remained clear throughout the duration of construction.

The Phase III Area was used as the primary equipment laydown and storage area. Equipment mobilized and used during construction included; excavators, dozer, vibratory roller, rock trucks, boat, conex box, front end loader and a mini bob cat. During Parcel C construction equipment needed to support these efforts were temporarily stored on Parcel C.

Erosion and sediment controls were installed around the perimeter of the Site along the limits of disturbance (LOD) as depicted in Figure 3 prior to starting any construction activities.

2.2 Clearing and Grubbing

Parcel C and the Phase III Area required clearing and grubbing to the LOD for their respective sites (Figure 3). Charter hired a sub-contractor, Tree Technologies (Tree Tech) to complete the

clearing and grubbing. Textron hired Clean Harbors for all transportation and disposal (T&D) of any material generated for off-site disposal. T&D records are included in Appendix B, photos of clearing activities are included in Appendix C. Area specific details are listed below:

- ▶ **Phase II-** An effort was made to save as many trees and wetland plantings as possible around the Inner Cove. Trees along the perimeter wetland side slopes of the Phase III area were not able to be saved due to the change of grade needed to create 3:1 slopes. Trees, brush and stumps along the side slopes were cleared, chipped and combined with sub-grade material for the Phase III Upland Cap.
- ▶ **Phase III-** Trees and brush within this area were cleared, chipped and combined with the sub-grade and graded. Stumps from Phase III were also chipped and combined with sub-grade material in a thin layer. The former Carriage House Area, adjacent to the Amtrak railroad substation, contained remnant burnt wood and debris. This debris was characterized and hauled off-site via roll-off containers under a Bill of Lading (BOL) by Clean Harbors.
- ▶ **Parcel C-** Working with the neighborhood, a 10 foot buffer of trees was saved along Adelaide Avenue. The remaining trees on-site were cleared, chipped and combined with the sub-grade and graded. Stumps from Parcel C were broken up and hauled off-site by Clean Harbors under a BOL.

2.3 Fencing

An eight foot chain link fence was installed around the perimeter of Phase II/III and Parcel C prior to construction activities. A vehicle construction entrance is located at Parcel C and Phase III. A pedestrian access gate is located behind the retail building. Gates were unlocked while crews were on-site and secured and locked during off-site hours.

In an effort to minimize the transport of dust off-site, as well as an additional security measure for pedestrians, privacy screening was installed over the chain link fence. Screening was installed along the east fence line of Parcel C, south end of Mashapaug pond behind Alvarez High School up to the tree line behind the retail building and along the entrance gate of the Phase III area. Privacy screening was removed from the fencing at the end of construction activities in November 2015 to provide full view of the completed remediation and visual inspection. The chain link fence and gates will remain in place for future use by the City of Providence.

2.4 Air Monitoring Results

Amec Foster Wheeler conducted perimeter air monitoring within the work zones during construction activities that had potential to disturb soil (grading and/or excavating) using fixed real-time continuous air monitoring stations. Four perimeter air stations were used and set up as depicted in Figure 5. Perimeter air stations were turned on daily after job safety meetings and off at the end of each work day (times varied depending on activities), throughout the time the meters were on data entries were logged by the minute. An alarm and email notification was set up for each perimeter air station when the dust level reached 0.15 milligrams per cubic meter (mg/m³)

as warning that the action level was being approached. In an effort to keep dust to a minimum the contractor wet down the grounds using a water truck. In the case that an alarm was exceeded work within the vicinity of the respective air station was temporarily stopped until Charter used their water truck to wet down the area. Data was downloaded and summarized on a weekly basis. Results were also posted to the bulletin board at the Parcel C Construction Entrance Gate and sent to RIDEM via email. Weekly perimeter air results are included in Appendix D.

2.5 Storm Water Management

A Soil and Erosion Sediment Control (SESC) Plan was developed by Amec Foster Wheeler to be used at the Site until 80% stabilization is established. This SESC Plan and all SESC inspections occurred to date are included in Appendix E. SESC inspections are completed on a weekly basis, minimum, in addition to after any storm event that greater than one quarter inch (>0.25”) of rain was recorded. If/when the Site reaches frozen conditions this winter an amendment letter can be added to the SESC Plan and inspections can be reduced to once per month. Frequency will be resumed to once per week when the grounds thaw and warmer weather is present.

Erosion and washouts noted during SESC inspections are documented and reported to the Contractor so repairs can be made. To date wash outs have been noted along the northern and western shorelines of Phase III and within the drainage features of Parcel C. These damages have been repaired by the Contractor.

2.6 Parcel C

Parcel C finished grades and stormwater features were originally designed by the City of Providence with the site’s future use as a soccer field for the City and Alvarez High School. These design grades were incorporated into the Parcel C construction drawings. The debris pile located in the middle of Parcel C consisted of historic building debris and contaminated soils. This pile was dozed and graded to sub-grade elevations. Photographs of Parcel C construction are included in Appendix C.

2.6.1 Community Participation

Parcel C was phased to be started at the beginning of construction (July 2015) and be complete by the start of the new school year (September 2015). Due to scheduling and subcontractor delays construction on Parcel C was not started until late August and continued into the school year. Access to Parcel C is through the construction gate located near the front of Alvarez High School. There were safety concerns for the students and faculty with heavy construction equipment traveling through this area. A coordination meeting was held before the start of the school year with Textron, Amec, Charter and the High School to establish a traffic plan to be used during peak traffic times within the parking lot (arrival and dismissals). All parties agreed that traffic would be kept to a minimum during arrival and dismissal times. As an added precaution Amec Foster Wheeler and Charter agreed to set up traffic signs and cones and stand at the entrance of the Parcel C gate and Parcel A to stop any traffic leaving or entering the Site until school traffic had cleared. The traffic plan used is included in Appendix A. Parcel C construction

finished on October 19, 2015. At this time the Parcel C entrance gate remains locked, notification was given to the high school and traffic monitoring was no longer needed.

There were no incidents between the construction equipment and the school. Vibratory compaction of the subgrade on Parcel C was found to disturb the nearby classrooms and was no longer conducted during school hours. Static compaction methods were then used to meet the required compaction criteria.

The bulletin board at the Parcel C Gate was maintained throughout the project. This included weekly air monitoring results, Textron and RIDEM contact information and a two week construction schedule.

2.6.2 Excavation

Parcel C was graded to pitch from the center of the Parcel outwards towards the north, east, west and south directions into drainage features as designed by the City of Providence. Originally these drainage features were designed to be excavated and covered with two feet of clean imported material; however, it was agreed with RIDEM within the July 9, 2015 Order of Approval, after drawings were Issued for Construction, that an additional three feet of subgrade material would be removed to total the imported clean fill used in drainage features to five feet. Additional material excavated from the drainage features was combined and graded with sub-grade material throughout the Parcel to meet sub-grade elevations.

2.6.2.1 Well Abandonment

Groundwater monitoring wells located throughout the Site that no longer support active groundwater monitoring or had historical groundwater results that met applicable RIDEM criteria were abandoned prior to cap installation. A total of 17 monitoring wells were abandoned. Well abandonment logs are included in Appendix F. Wells were filled with grout and depending on field location casings were either removed or cut to below grade. Abandoned monitoring wells are depicted on Figure 4.

2.6.3 Cap Installation

The impacted soil was graded consistent with the design documents and compacted using a vibratory roller (when possible). An orange marker fabric was then placed over the sub-grade to be used as a physical warning barrier between contaminated soils and clean imported fill. Over the marker fabric lies a six inch layer of compacted imported clean fill (common borrow) (4.5 feet within the drainage features) and six inches of imported topsoil. All materials imported to the Site were tested at a 500 cubic yard (CY) frequency per material type to meet RIDEM RDEC. Analytical sampling reports are included in Appendix H. Charter kept a daily tracking log of all imported material to be sure that necessary samples were collected. A total of 6,866 CY of imported clean fill and 5,125 CY of clean topsoil were used at Parcel C.

Common borrow was graded using a dozer and compacted with a vibratory roller. Topsoil was graded using a dozer and tied into side slopes using grading rakes. Common borrow was required to meet 95% compaction; third parting testing results are included in Appendix G.

2.6.4 Seeding

Charter hired Hydrograss Technologies (Hydrograss) to complete the seeding requirements for Parcel C. Per contract documents a standard 4-seed slope mix was to be applied on all the upland cap areas (including Parcel C) and all 3:1 slopes, swales and drainage features were to be protected with a jute matting approved by Amec Foster Wheeler. Charter requested to use a bonded fiber matrix (BFM) mixed in with the hydroseed mix to be used on all slopes, swales and drainage features as a substitution to the jute matting. Amec Foster Wheeler approved this method with the contingency that Charter was responsible for any damage created during storm events. During the first seed mobilization the seed mix submittals were swapped and a perimeter seed mix was applied to the north half of Parcel C. The submittals were resolved and the remaining portions of Parcel C were seeded with a standard 4-seed slope mix as approved in the submittals. This modification is not anticipated to have any impact on the long-term integrity of the vegetative cap. Seed mix certifications are included in Appendix I.

2.7 Phase II (Inner Cove)

The remedial action for Mashapaug Inner Cove was to remove up to two feet of sediment and place and cap the removed sediment within a defined area of the Phase III upland area. Prior to construction activities within the Inner Cove a turbidity curtain was installed in the Outer Cove. A Wildlife Management Summary Plan was developed by Amec Foster Wheeler to outline the procedures of wildlife protection during dewatering activities (Appendix J). A one-foot organic soil cap was then placed over the remaining sediment surface.

2.7.1 Dewatering and Dam Installation

Charter used their approved Dewatering Plan submittal (Appendix K) as a guideline for dewatering the Inner Cove. First, Charter installed a turbidity curtain across the Outer Cove and used noise makers along the southern shore line of the Inner Cove to herd fish into the Outer Cove. Then Charter installed a temporary Port-A-Dam to hold back water from the Outer Cove. This consisted of a steel frame covered by an impervious liner facing the Outer Cove. Using a large 12-inch pump Charter pumped the water level of the Inner Cove down to approximately one foot of water. Water was discharged to the Outer Cove between the Port-A-Dam and turbidity curtain. After water reached a depth of one foot the Wildlife Mitigation Plan (Appendix J) was implemented. Then the remaining water was pumped out of the Inner Cove to a Frac tank to reduce the sediment concentrations and then up to an infiltration gallery where water would naturally recharge through the soils further filtering out the sediment before entering the pond (Figure 6).

As soon as the Inner Cove was drawn down to one foot of water the Wildlife Restoration Plan was implemented and the biota remaining within the Inner Cove were collected and transported to the Outer Cove. A memo was prepared to document the species and counts transported after

dewatering activities were completed; a copy of this memo is included with the Wildlife Management Summary Plan in Appendix J.

To keep the water level within the Inner Cove down to a minimum during construction Charter installed multiple two-inch and three-inch submersible pumps. These pumps ran continuously, throughout excavation activities, and discharged into the temporary frac tank which then discharged into the infiltration gallery located in the northern end of the Phase III Area (Figure 6).

On August 28, 2015 the Port-A-Dam liner was reportedly vandalized and the Inner Cove was re-flooded. Crews mobilized to the Site the next day after the vandalism was reported to repair the damages. Large slices to the Port-A-Dam liner were observed; ply-wood and a new liner were installed over the areas where the original liner was torn.

Once the Port-A-Dam was resealed the depth to water within the Inner Cove was approximately three feet. Charter used their approved dewatering methods to redraw the water level back down (Appendix K). The Wildlife Management Plan was also re-implemented and fish were collected with nets and moved to the Outer Cove as the water level drew down. A down time and project delay of approximately 8 days was incurred as a result of this damage.

Charter hired an overnight security company, Arrow Security, to guard the Site for the remainder of Inner Cove remediation as a precaution to prevent future vandalism and project delays. Arrow Security was on-site whenever Charter was off-site, generally week nights 5pm-6:30am and weekends 24/7 unless work was scheduled for Saturday.

2.7.2 Cove Excavation

The Inner Cove area is about 2.8 acres, from which sediment was excavated at depths ranging from one to two feet as approved in the RAWP. Excavation activities were completed in compliance with Amec's Drawings and Specifications and Charter's written Sediment Removal Plan, included in Appendix K. Following dewatering activities a pre-excavation survey was completed by Charter to confirm existing elevations; with some locations of the Cove bottom being soft due to organic material a complete survey was not able to be collected. The survey points Charter collected were combined with historic data points to create a surface to be used to track sediment removal grades and volumes.

Timber mats were placed within the Inner Cove and used as a stable ground for equipment and personnel to navigate. The existing conditions surface, post-excavation surface, fill surface and the 19 soil boring locations were loaded onto a Leica Global Positioning System (GPS) and used to guide Charter with excavating sediment to the required depths. Excavation was tracked by soil management grids. Soil management grids were defined by the limits of excavation activities completed for a continued duration of time (Figure 7). Points were collected in each grid once the desired elevation was reached. Points were uploaded into AutoCAD and cross-checked with the surfaces detailed in the Issued for Construction Drawings, Figure 8.

Sediment was excavated from the Inner Cove and transferred to the sediment drying area in the middle of the Phase III Upland Area, as shown on the Construction Drawings, via rock trucks.

Material quantities were tracked by rock truck loads. One rock truck load was estimated to be 10 CY of sediment. This method was verified by calculating volumes of the soil management grids in AutoCAD. Sediment was placed in strips and aerated using an excavator bucket blades then stockpiled in the Former Carriage House area until placement. Stockpiled sediment was temporarily covered with a poly sheeting as defined in the SESC Plan.

Sediment excavation activities started on August 18, 2015 and continued until October 23, 2015. A total of 4,503 CY of sediment with an average depth of 1.20 feet was excavated from 17 soil management grids representing the Inner Cove. Photographic documentation of excavation activities are included in Appendix C.

2.7.3 Cove and Wetland Restoration

Following sediment removal the Inner Cove and surrounding wetlands were restored. The Inner Cove was capped with 12-inches of a 10% organic fill material. The imported fill was hauled into the Inner Cove using 10 CY rock trucks and spread with excavator buckets. Similar to excavation, Charter used a GPS unit to collect fill elevation points within each of the soil management grids. These points were imported into AutoCAD and a surface was created to confirm proper coverage was applied (Figure 9). An approximate total of 5,430 CY of 10% organic fill material was used to cap the Inner Cove with an average cap thickness of 1.11 feet.

Within a 10 foot buffer zone, from the Inner Cove to the designed water line, and within the wetlands a 20% organic material was used. The higher organic material content was used within these areas to replicate the former shoreline habitat as discussed in the Wetland Restoration Plan (Appendix I). Imported material was sampled every 500 CY and compared to RIDEM RDEC. Material sampling data is included in Appendix H. An approximate total of 2,688 CY of 20% organic fill material was used to cap the Inner Cove fringe and Wetlands restoration.

Prior to removing the Port-A-Dam all sumps and timber mats used to assist with sediment removal were removed. Charter allowed the Inner Cove to naturally recharge with groundwater until the water level was about one to two feet throughout the Inner Cove. The liner of the Port-A-Dam was slowly opened to allow water from the Outer Cove to migrate back into the Inner Cove. After the water was at equilibrium on either side of the Port-A-Dam the liner and steel frames were removed for cleaning and shipped off-site.

Photos documenting the Cove and Wetland Restoration are included in Appendix C.

2.7.3.1 Well Installation

During the slag removal in 2006 (MACTEC, 2006b), monitoring well GZA-5 was removed due to slag excavation activities in the area under this remedial action. A replacement monitoring well MW-243 was installed as required within the RAWP and Order of Approval. This well installation log is included in Appendix F.

2.8 Phase III Area

The Phase III Area is approximately a 3.25 acre portion of Parcel C-1 that is mainly open space, with the exception of the wetland border along the north and western shoreline. The approved remedial action for the Phase III Area was to; regrade the sub-grade material with maximum side slopes of 3:1, restore the wetland areas along north and western shorelines, cap the areas and install a one foot cap with imported clean material.

2.8.1 Sub-grade prep and Excavation

2.8.1.1 Wetland Restoration

The north and western shoreline of the Mashapaug Pond/Cove were re-graded to a maximum slope of 3:1. Excavated material was transferred to the upland area to be graded with the sub-grade material. Fabric was installed on top of the compacted sub-grade material. A 50-foot buffer from the shoreline up the north and western side slopes was restored as wetlands and capped with 1-ft of 20% organic material. Plantings, as approved in the Wetland Restoration Plan (Appendix I) were installed and a wetland seed mix was applied. The remainder of the side slopes above the 50-foot buffer were capped with six-inches of common borrow material and six inches of topsoil material and matched grade of the upland area.

Imported material was sampled every 500 CY and was required to meet RIDEM RDEC. A total of 1,820 CY of imported 20% organic fill material was used along the north and western side slopes with in the 50-foot wetland buffer.

A slope stabilization material, BFM, was mixed in with the seed and applied to the north and western slopes. As discussed in Section 2.6.4, damages to the slopes documented from storm events will be the responsibility of the contractor until the Site is stabilized.

2.8.1.2 Upland

The upland portion of Phase III Area was used during the Inner Cove excavation as a temporary dewatering pad and sediment drying area. Once dewatering activities for the Inner Cove were complete the dewatering pad was graded to meet sub-grade elevations. Once sediments were transferred to the Former Carriage House Area for placement this staging area was graded to meet sub-grade elevations. The sub-grade and final grade surfaces for the upland area were loaded onto a GPS attached to a dozer which was used to grade the upland area. Sub-grade material included material from the north and western side slope excavations as well as wood chippings from the stumps removed during tree clearing activities. Once sub-grade elevations were met an orange marker fabric was installed over the soil subgrade.

2.8.1.3 Sediment Area (Former Carriage House Area)

The Former Carriage House Area consisted of burnt wood timbers and organic material debris. Burnt wood timbers were segregated from the debris and hauled off-site in roll-off containers under a BOL by Clean Harbors. Transportation and Disposal records are included in Appendix B. Asphalt within the Carriage House Area foot print was broken up into smaller pieces and re-

graded. This newly graded area was the foot-print to be used for stabilized sediments excavated from the Inner Cove.

Excavated sediments were mixed with an imported lime kiln dust material at a six-percent (6%) by weight ratio due to the high moisture content left in the sediments after air drying. Lime kiln dust material was imported to the Site from three different sources; material data sheets are included in Appendix L. Lime was mixed with the sediment using the excavator bucket in accordance with Charters Sediment Removal Plan (Appendix K). Mixed sediment was placed in a stockpile and allowed to “set” for up to 24-hours before transferring over to the Former Carriage House Area for placement.

Sediment was placed in 12-inch lifts and compacted using a sheepsfoot roller. Sediment placed within 20-feet laterally of the slope face were required to meet 93% of the maximum dry density as determined by the standard proctor test. All other sediments were required to meet 90% of the maximum dry density. Compaction tests were collected at a minimum of 3 tests per lift, results are included in Appendix G. Due to the final volume of stabilized sediment, the finished slope for the sediment area was reduced to a 4 or 5:1 slope, being more stable than the planned 3:1 slope.

2.8.2 Cap Installation

A one-foot cap was installed over a warning barrier fabric, similar to Parcel C activities. The cap consists of six-inches of common borrow under six-inches of topsoil. Common borrow was graded using a dozer and compacted with a vibratory roller. Topsoil was graded using a dozer and tied into side slopes using grading rakes. Common borrow was required to meet 95% compaction; third parting testing results are included in Appendix G. All imported material was tested every 500 CY and was required to meet RIDEM RDEC. A total of 4,115 CY of common borrow and 4,335 CY of topsoil was imported within the Phase III area. Analytical data reports for imported material are included in Appendix H.

2.8.3 Seeding

Grading activities for the Phase III Area were completed on November 23, 2015. Seeding was applied on December 4, 2015 using a standard four seed slope mix. A winter rye seed was added to this mix since seeding occurred after the recommended seeding date for the season of October 15. A BFM was added to the seed mixture used for the sediment area and slopes.

2.9 Site Demobilization

Following seeding within the Phase III area the Contractor started demobilization activities. Activities included collecting an as-built survey, removing the privacy screening from the perimeter fence, hauling equipment off-site and assuring that access gates were properly locked and secured. Demobilization occurred between November 30 and December 11, 2015. As-built drawings completed by Charter are included in Appendix M.

2.10 Remaining Work

Although construction activities are complete, weekly storm SESC inspections are required until the Site achieves 80% stabilization. However during winter conditions (frozen grounds) inspections can be reduced to once per month. A letter will be included as an SESC Amendment when/if this Site reaches frozen conditions.

Following site stabilization, surface water sampling and completion of Parcel C groundwater monitoring, Textron will prepare the Parcel C Closure Report for submittal to RIDEM. This will include the registered copy of the ELUR and Soil Management Plan (SMP). The draft ELUR and SMP from the RAWP is included in Appendix N for RIDEM review. Once approved Textron will work with the City to file in Providence Land Records. This filing will support RIDEMs Issue of the Parcel C Letter of Compliance.

2.10.1 Inner Cove and Wetland Restoration

Monitoring of the restored fringe wetland and perimeter wetland areas will be conducted over a one-year growth period to provide early indication of problems and corrective actions. Observations will be made at least two times during the growing season (late spring, late summer). The restored areas will be monitored for performance standards to include the minimum 80 % vegetation coverage in the fringe wetland and perimeter wetland; successful establishment of species with a wetland indicator status of facultative, facultative-wetland, or obligate within the fringe wetland; and absence of invasive species. Monitoring reports will be prepared bi-annually and will be submitted to RIDEM and the City of Providence.

Surface water samples will be collected from the Inner and Outer Coves 30 days after the Phase II Inner Cove restoration and SESC slope stabilization is complete. These samples will be submitted for analyses to confirm effectiveness of the remedy. Proposed sampling locations are included in the RAWP (Amec Foster Wheeler, 2015). Surface water samples will be analyzed for PAHs, dissolved metals and dioxins.

2.10.2 Parcel C Groundwater Monitoring

A pre-construction groundwater sampling event was conducted in July 2015 and post-construction sampling event was conducted in December 2015. Groundwater sampling results are included in Table 1. This table presents the groundwater analytical results for the six monitoring wells between 1989 and 2015. Only those highlighted in yellow (MW-D) exceed the GB criteria specified for Parcel C wells. Concentrations of VOCs increased in some wells during the construction activities in this area. Copies of the groundwater monitoring laboratory analytical reports are included in Appendix N.

Textron proposes to conduct additional groundwater monitoring of the six Parcel C/C-1 wells (MW-235S, MW-236S, MW-237S, MW-FS, MW-241 and MW-D) to evaluate VOC concentration trends and identify steady state conditions that are not impacted by the remedial construction activities. Parcel C/C-1 groundwater sampling is anticipated to be conducted in February, April, June and August 2016.

3.0 CONCLUSION

Proposed construction activities were completed by the Contractor in accordance with the 2015 RAWP and the July 9, 2015 Order of Approval which included:

- ▶ **Phase II-** removed up to two feet of sediment from the Mashapaug Inner Cove and placed and capped the dewatered sediment within the former Carriage House Area. Fringe and Perimeter wetland areas were restored to provide a smooth transition from the perimeter wetland (50 feet above the delineated fringe wetland) into the water;
- ▶ **Phase III-** re-graded and compacted the northeast Upland of Parcel C-1 with a maximum of 3:1 slopes, placed a marker fabric, six inches of clean imported soil and six inches of imported topsoil over the contaminated soils (sub-grade); and
- ▶ **Parcel C-** spread, graded and compacted the soil and debris pile, placed a marker fabric, six inches of clean imported soil and six inches of imported topsoil over the sub-grade.

Ongoing monitoring in 2016 will include groundwater sampling at six Parcel C/C-1 monitoring wells and bi-annual inspection of the replicated wetlands. Textron will continue to inspect the Site under the SESC. Following site stabilization and removal of the turbidity curtain, surface water sampling of the Inner and Outer Coves will be conducted. Following that Textron will file the Parcel C Closure Report for Parcel C-1 Phase I-III Areas and Parcel C once site stabilization and surface water sampling activities are complete. This will support RIDEMs issue of the Letter of Compliance.

Textron, Inc.
Former Gorham Manufacturing Facility, Providence, RI
Remedial Action Completion Report: Phase II Area – Mashapaug Inner Cove,
Phase III Area – Northeast Upland And Parcel C
Project No.: 3652160001
February 12, 2016



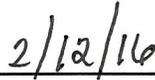
4.0 CERTIFICATION REQUIREMENTS

The following certifications are provided pursuant to Rule 9.19 of the Remediation Regulations.

The undersigned hereby certifies that to the best of their knowledge the information contained in this report is complete and accurate based on the information available at the time of its preparation. Furthermore, the undersigned certifies that to the best of their knowledge the report is as complete and accurate of a representation of the Site and the release based on the available information, and contains the known facts surrounding the release.

Amec Foster Wheeler Environment & Infrastructure, Inc.

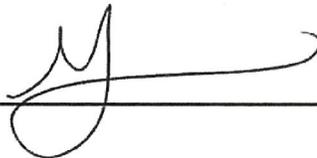


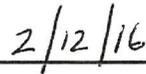


David E. Heislein
Senior Project Manager

Date

Textron, Inc.





Gregory Simpson
Director, Site Remediation

Date

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Phase III Area – Northeast Upland And Parcel C
Project No.: 3652160001
February 12, 2016



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