

AUDIT MEMORANDUM

Date: November 17, 2017

To: Rebecca Woolley, Section Chief, CERO Audits
FILE

From: Joe Laughton, CERO Audits

Re: RTN: 2-3000173
Former Buckley & Mann Property
Norfolk

Focus of Audit: September 4, 2001 Class A-3 Response Action Outcome

MCP Status: A-3 RAO (Permanent Solution with Conditions)

Release Summary: B&M submitted a Preliminary Site Assessment, Interim Site Classification and Waiver Application in April 1992. Metals (chromium, zinc and lead), PAHs and benzene detected in soil and/or groundwater.

Prior Higher Level Enforcement Actions: 1986 – Commonwealth of Massachusetts Final Judgment alleging Buckley & Mann violated Massachusetts Clean Waters Act G.L. c. 21, SS 26-53. The Order required B&M to either obtain a permit to discharge wastewater to lagoons or terminate dyehouse operations and conduct assessment and remediation. B&M decided to terminate dyehouse operations.

Prior Audit History: None

Site Summary:

General Description: The B&M property consists of 143 acres, 10 acres of which comprises the site. The site and property are currently vacant. Future residential use of the property is proposed although the site is not within the project area. Wastewater from wool carbonizer and dye house operations were pumped to two lagoons for settling and facultative biological treatment. Water from the lagoons eventually evaporated or percolated into groundwater.

Property History: B&M operated a wool carbonizer process and a dye house from 1926 through 1965. Carbonization process was used to reclaim wool from used garments. The raw material was conveyed through acid vapor to char the cotton threads on the seams, buttons and zippers to facilitate separation of the wool. The carbonizer building was demolished in 1965 and the dye house operation discontinued in 1986. Wastewater was generated from the wool carbonizer and discharged to the Carbonizer Lagoon. Dye

house wastewater was discharged to Lagoon #1. Lagoon #2 received overflow from Lagoon #1.

USTs: Three USTs (2,000 gallon gasoline, 3,000-gallon oil and 250-gallon diesel) were removed from the site in October 1986. There was no evidence of a release either visually or via field screening.

ASTs: None

Surrounding Area: The remainder of the B&M property is vacant wooded land. The Mill River flows south to north through the middle of the property. The Mill River was dammed in the 19th century, creating Bush Pond, and to power the buildings. The tail race remains, located parallel to the river. Residential properties are located to the east of the site.

Physical Features: The river forms a small valley through the property with elevation differences varying from approximately 160 feet above sea level near the river to 250 feet on the eastern and western sides of the property. The river front area includes up to 300 feet of low lying seasonally marshy land.

Soils: Stratified drift ranging from gravel to sand with some silt. Bedrock surface encountered between 18 and 27 feet below grade.

Groundwater: Depth to groundwater ranges from 3.5 to 10.5 feet below ground surface and groundwater flow is towards the Mill River and tail race.

Resource Areas: Mill River concourse through the property. The Site is within Zone II area for Town of Franklin water supply wells, located approximately 1.5 miles north.

RESPONSE ACTIONS:

1986 Assessment: Five overburden monitoring wells (MW-2 – MW-6) and one bedrock well (MW-3A) were installed and sampled. Surface water samples were collected from the tail race, Lagoons #1 and #2, Mill River and Bush Pond. Soil and sludge samples were collected from the lagoons, and locations near drums and sludge piles. Cesspools and septic tanks samples were also collected. Samples were analyzed for all or some of the following: VOCs, metals, PAHs and general chemistry parameters (pH, specific conductivity, alkalinity, temperature, anions and chemical oxygen demand).

Elevated chromium was detected in surface water from Lagoon #1, in sludge from Lagoons #1 and #2, and soil samples SS-1 and SS-2. High zinc levels were detected in the lagoon sludge samples, SS-1 and SS-2. Elevated lead concentrations were detected in soil sample SS-1. High PAH concentrations were found in Lagoon #1 sludge. The pH of surface water collected from the lagoons was in the 6 – 7 range.

The source of chromium and zinc was opined to be from various dyes. Naphthalene and other PAHs were opined to be a component of dye carriers.

Summary of soil analytical results above Reportable Concentrations (1986 - 1992)

Sample ID	Chromium	Lead	Zinc	TPH	Total PAHs
SS-5	450	670			
SS-1	1,000	1,200	8,200		
SS-4	270				92
SS-4A	1,300				172
SS-1A/1B	210			350	
SS-3	430				
SS-2A/3B				1,320	
SS-2B				590	
SS-3B				740	
SS-4A/4B				440	
Excavated lagoon 1 soil pile		2,440		3,350	132
RCS-1	100	200	5,000	300	

Notes: Carbonizer Lagoon samples (SS-5, -1); Lagoon #1 soil samples (SS-4, 4A); Lagoon #2 soil samples (SS-3, -2A/3B, -2B, -3B, -4A/4B). RCS-1 = reportable concentrations in soil (circa 1992). Concentrations reported as mg/kg.

Twenty-three test pits were excavated across the site at depths ranging from 3 – 8 feet below grade in October 1996. Fifteen soil samples were collected. All field PID readings were consistent with background concentrations. Test pits 1, 2, 3, 4 and 6 encountered groundwater. Petroleum non-aqueous phase liquid was not observed. A slight sheen was observed in test pit 16. Soil samples were submitted for lab analysis of metals, PAHs, TPH, pesticides, PCBs and landfill reuse criteria (pH, ignitability, cyanide, sulfide). Analytes detected at concentrations exceeding Method 1 risk assessment soil standards included: TPH, chromium, lead, arsenic, barium and PAHs.

RELEASE ABATEMENT MEASURE SUMMARY

RAM remedial actions were completed between May 1998 and June 1999. Remedial actions consisted of:

- Site clearing;
- Excavation and onsite consolidation of contaminated soils, carbonizer spoils, coal ash, building debris and waste water residues in Area #10;
- Off-site disposal of unsuitable material, and;
- Installation of a cover in Area #10, consisting of a 70-mil non-woven geotextile fabric covered by 3 feet of clean sand.

Material from Areas 3, 5, and 6 were excavated and placed with material previously landfilled in area 10. The consolidated material consisted of building demo debris (brick, concrete, wood, piping, asphalt shingles) coal ash, textile debris, abandoned equipment along with contaminated soils and wastewater residues. The total volume of consolidated material was approximately 4,550 cubic yards.

Soil was excavated from Area 10 that contained high concentrations of chromium (1,900 mg/kg) and lead (5,000 mg/kg) and transported off-site to Waste Management Turnkey Facility in Rochester, New Hampshire. The total amount was 315 tons.

A small pile of asbestos containing Transite panel was observed in Area 10. An asbestos removal company disposed of approximately 4 cubic yards of material.

After the consolidated material in Area 10 was graded, a 70-mil non-woven geotextile fabric was placed over the entire limits of the material. Three feet of clean sand was then placed over the geotextile fabric. Lime, fertilizer, 500 cubic yards of compost and hydroseed were applied to establish grass cover.

**CLASS A-3 RAO/RAM COMPLETION, PREPARED BY ROBERT DANGEL
(LSP#7798), SUBMITTED ON SEPTEMBER 4, 2001**

Sampling conducted for the Class A-3 RAO included one round of groundwater samples, shallow lagoon groundwater/soil samples, and confirmatory soil sampling outside AUL limits.

Groundwater samples were collected in May 1998 and analyzed for PAHs, chromium, lead and zinc. Results are summarized below in micrograms per liter ($\mu\text{g/L}$).

Well ID	Total PAHs	Chromium	Lead	Zinc
EW-2	< 0.7	< 0.85	< 0.68	30
MW-1	n/a	1.4	< 0.68	49
MW-2	n/a	2.2	1.4	< 12
MW-3	< 0.7	32	< 0.68	220
MW-3A	< 0.7	< 0.85	< 0.68	< 12
MW-4	n/a	2.4	< 0.68	< 12
MW-5	n/a	< 0.85	< 0.68	< 12
MW-6	n/a	5.3	3.7	13
GW-1		<i>100</i>	<i>15</i>	<i>2,000</i>
GW-3		<i>2,000</i>	<i>30</i>	<i>900</i>

GW-1 and GW-3 are the applicable groundwater clean-up standards

Shallow soil and groundwater samples were collected from lagoons #1 and #2 in October 2000 to check for the presence of hydrocarbon dye carriers via EPA Method 8270 and extractable petroleum hydrocarbons (EPH). Two composite soil and groundwater samples were collected from hand dug pits in each Lagoon. Groundwater samples were

turbid but not filtered to avoid possible absorption of dissolved PAHs onto the filter paper. Results are summarized below for soil (mg/kg) and groundwater (µg/L).

Sample ID	Acenaphthene	Naphthalene	Fluorene	1-methylnap	2-methylnap	biphenyl
Groundwater						
GW-1-AB	17	13	1.1	9.7	16	---
GW-1-CD	8	2.1	1.2	6.9	7.3	---
GW-2-AB	6.8	1.6	1.8	5	< 0.12	---
GW-2-CD	1.1	< 0.2	< 0.2	< 0.2	< 0.2	---
GW-1	<i>20</i>	<i>20</i>	<i>300</i>	---	<i>10</i>	
GW-3	<i>5,000</i>	<i>6,000</i>	<i>3,000</i>	---	<i>3,000</i>	
Soil						
LS-1-AB	1.4	< 1.1	< 1.1	< 1.1	1.2	2.6
LS-1-CD	1.3	< 0.57	< 0.57	0.65	0.62	2.5
LS-2-AB	< 0.59	< 0.59	< 0.59	< 0.59	< 0.59	< 0.59
LS-2-CD	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	1.6
S-1/GW-1	<i>20</i>	<i>4.0</i>	<i>400</i>	---	<i>4.0</i>	<i>1</i>
S-1/GW-3	<i>1,000</i>	<i>100</i>	<i>1,000</i>	---	<i>500</i>	<i>100</i>

GW-1 and GW-2 represent groundwater cleanup standards and S-1/GW-1, S-1/GW-3 represent soil cleanup standards. 1-methylnap = 1-methylnaphthalene

Minor concentrations on EPH hydrocarbon fractions were detected, all well below S-1/GW-1 soil standards.

A follow-up round of shallow groundwater samples were collected from the same areas of Lagoons #1 and #2 in December 2000. This time, the suspended solids in the groundwater samples were precipitated with aluminum sulfate. After the floc settled, the top clear portion of the sample was decanted into lab sample bottles. Samples were analyzed for PAHs via EPA Method 8270. All analytes from Lagoon #2 sample were at non-detectable levels. The concentration of 2-methylnaphthalene in GW-1-AB dropped from 16 to 0.3 µg/L. All other detected analytes remained below GW-1 standards.

Soil samples were collected in Area #3, #5, #6 and #10 (outside AUL area). Samples were analyzed for PAHs, lead, chromium and zinc. The concentrations of all detected contaminants were below the most stringent S-1/GW-1 soil standards.

Method 1 Human Health Risk Characterization

Groundwater Categories: GW-1 and GW-3

Soil Categories (outside AUL areas): S-1/GW-1 and S-1/GW-3

Soil Categories (AUL Areas): S-2/GW-1 and S-2/GW-3

The concentrations of contaminants in soil collected from 8 Areas of the site were compared to site specific soil standards. Soil data were below applicable S-2 soil standards in the AUL areas and below S-1 soil standards in the remaining areas of the site.

Groundwater analytical results were compared against Method 1 GW-1 and GW-3 groundwater standards.

Bush Pond, Mill River and the Tail Race were sampled for VOCs, metals and PAHs in 1986. All results were non-detect except for the detection of lead in the tail race surface water at a concentration of 4 µg/L. The RAO did not include a Stage I environmental screening.

An Activity & Use Limitation was registered for two portions (AUL subarea "A" and "B") of the site in Norfolk Land Court on August 20, 2001 (Certification 15475, Book 774, Page 153). Subarea "A" consists of the landfill consolidation area and Subarea "B" consists of former Lagoon #1 and #2. The AUL in Subarea "B" is voluntary, as it is not required based on analytical data collected from the Lagoons, but was implemented to control future excavation. AUL requirements for Subarea "A" include:

Permitted Activities and uses

- i. Passive and active recreational activities including but not limited to, activity on the grassed area for children, sitting on benches or sitting or lying on the ground surface;
- ii. Maintenance of grassed areas, planting and seeding up to a depth of three feet below ground surface, installation of fencing with intrusion limited to driving of posts;
- iii. Utility maintenance work involving soil excavation to a depth of less than 3 feet below ground surface;
- iv. Emergency utility repair work, lasting no more than 8 consecutive hours and involving the excavation of no more than 20 cubic yards of soil.
- v. Non-invasive activities and uses which to not disturb or compromise the structural integrity of the protective barrier layer and the underlying contaminated soils

Inconsistent activities and uses

- i. Excavation of soils at a depth of greater than 3 feet below ground surface. Such non-emergency invasive activities, which may be part of utility repair or maintenance, or construction, cannot be performed without the involvement of an LSP....
- ii. Any activities and uses which may cause physical, chemical, or structural damage to the protective barrier layer in the designated AUL area...

Obligations and Conditions

- i. The performance of any activities including but not limited to excavation which could cause the removal, damage, and/or disturbance of the protective barrier layer and/or contaminated soil located beneath it without the prior development and implementation of a HASP and Soil Management Plan.
- ii. The integrity of the protective barrier layer within the designated AUL area must be maintained and inspected on at least an annual basis to verify its ability to effectively prevent exposures to underlying contaminated soil...; and
- iii. The contaminated soil must remain beneath the protective barrier....

Potential Issues:

1. The carbonizer lagoon and trench are currently established wetland areas. Some contaminants were detected (TPH, lead, zinc) in sediment but most samples were below S-1 standards. However, a Stage I environmental risk assessment was not conducted.
2. AUL does not expressly prohibit/restrict residential, daycare or school use.

Audit Site Inspection: A site inspection was conducted on September 13, 2017, with Tom DiPlacido, Jr. of DiPlacido Development in attendance. AUL sub-area A was observed to have rutted areas from motorcycle use. However, the underlying geotextile fabric layer was not exposed. Mr. DiPlacido stated that he has attempted to keep trespassers out of the property by working with the local police department, placing No Trespassing signs throughout the site, installing padlocked gates, two-ton blocks and mounds of dirt at access points. These efforts have reduced but not eliminated motorcycle use on the site. I asked him to fill in and level the dirt bike paths with clean fill, which he agreed to do. He will also submit a letter documenting the approximate number of times he and his engineers have inspected the AUL areas. AUL sub-area B, consisting of former Lagoons 1 and 2, were observed to be undisturbed and dry. Several of the groundwater monitoring wells were present and in good condition. The former tailrace was mostly dry with areas of standing water. Concrete slabs from the former manufacturing buildings are present.

On September 29, 2017, MassDEP received correspondence from Mr. DiPlacido, Jr. stating that during the week of September 18, 2017, he filled and leveled areas of AUL subarea "A" which had been eroded due to motorcycle use. He also noted that his company has conducted a minimum of quarterly inspections of the AUL areas over the past 5 years.