



Former National Fireworks Site Hanover and Hanson, Massachusetts

May 2018 Update and Information to Address Frequently Asked Questions

This document has been developed to provide information that addresses frequently asked questions regarding the current cleanup activities being conducted at the Former National Fireworks Site (the Fireworks Site or the Site) in Hanover and Hanson. The Towns of Hanover and Hanson as well as the Massachusetts Department of Environmental Protection (MassDEP) are committed to providing periodic updates of cleanup activities to keep the community informed as the investigation and cleanup progresses. For additional information about the Site, including a more detailed Site map, please visit the Town of Hanover's Fireworks web page and the Town of Hanson's web page at:

<http://www.hanover-ma.gov/home/pages/fireworks-site>

<http://www.hanson-ma.gov> (see News and Announcements)

In addition, the MassDEP file for the Former Fireworks Site can be found at:

<http://eeaonline.eea.state.ma.us/EEA/FileViewer/Rtn.aspx?rtn=4-000090>

Summary of November 15, 2017 Public Community Meeting

A public community meeting was held at Hanover High School by the Town of Hanover and MassDEP on November 15, 2017 to provide updates on recent assessment and cleanup activities at the Site. Formal presentations were given by MassDEP and Tetra Tech Inc. (Tetra Tech), the environmental consultant conducting the assessment and cleanup (also known as response actions) at the Site for the Fireworks Site Joint Defense Group, also known as the Cooperating Parties. In addition, the Massachusetts State Police Bomb Squad was in attendance to explain its involvement in the detonation of unexploded munitions discovered during the cleanup process. Copies of the power point presentations can be found at the Town of Hanover web link noted above.

Questions were raised by the public at the community meeting. MassDEP has summarized information to address the questions as presented in the following paragraphs.

Oversight of the Cleanup Activities at the Former National Fireworks Site

The Fireworks Site is undergoing site assessment and cleanup pursuant to the Massachusetts Oil and Hazardous Material Release Prevention and Response Act (M.G.L. c. 21E) and Massachusetts Contingency Plan (310 CMR 40.0000; the MCP). Under this law and these regulations, persons liable for the contamination of a site are required to assess and cleanup the contamination under the direction of

a Licensed Site Professional (LSP). The Licensed Site Professional assesses, conducts, manages, and certifies that all assessment and cleanup work at the Site has been performed in accordance with the requirements of the MCP.

In 1995 MassDEP issued Notices of Responsibility to several Potentially Responsible Parties (PRPs), namely, Susquehanna Corporation, Tronox (formerly Kerr-McGee Chemical Corporation, National Coating Corporation, the Massachusetts Institute of Technology (MIT) and the Department of Defense (DoD). In 2009 Tronox filed for bankruptcy and MassDEP asserted a claim to obtain funds for Tronox's share of the response action costs for the Site. An expendable trust fund was established in 2011 with the proceeds from the Tronox bankruptcy. The trust, managed by MassDEP, must be used to cleanup the Site. In addition, and within the liability structure of M.G.L. c. 21E, as a property owner, the Town of Hanover is also considered a Potentially Responsible Party.

The cleanup at the Fireworks Site is currently being conducted by National Coating Corporation and MIT (the remaining "Cooperating Parties"). The Cooperating Parties have contracted with Tetra Tech to conduct the assessment and cleanup and provide Licensed Site Professional services. All reports generated are submitted to MassDEP, Bureau of Waste Site Cleanup for review and approval and the Bureau consults with MassDEP's Office of Research and Standards as necessary.

Given the complex nature of this Site, MassDEP is providing direct oversight of the assessment and cleanup. Direct oversight consists of reviewing and approving all work products prepared by Tetra Tech. The review and approval process includes all work plans proposed before the work is conducted and all reports documenting Site conditions or work performed. MassDEP has a dedicated team that is involved in the review process for the Fireworks Site that includes scientists, engineers and risk assessors.

Removal of Unexploded Munitions

In May 2017, the Cooperating Parties submitted a Plan under the MCP for the excavation and disposal of munitions-related debris, non-munitions metallic scrap, construction debris and soil contaminated with lead, mercury or other contaminants in the Southern Conservation Commission Area of the Town of Hanover's Fireworks Open Space area.

During the initial excavation conducted, a broader range of munitions and munitions debris, including munitions that were fused, were encountered. As a result, various engineering controls to protect Site workers from the potential explosive hazards at the Site were put into place.

The current work activities include investigation of potential areas containing munitions and munitions debris using historic records, aerial photographs and geophysical surveys; clearance of trees and shrubs; excavation and detonation of unexploded munitions and materials potentially presenting an explosive hazard (MPPEH); and off-Site disposal of metallic debris, construction debris, and contaminated soil. Properly trained and experienced staff oversees the excavation work necessary to identify potential explosive hazards. The Massachusetts State Police Bomb Squad directs the handling, transportation and detonation of the munitions with support from Tetra Tech. Surface soil samples are being collected for analysis where detonations are performed to ensure that the soil is not contaminated by the detonation and munitions items.

Due to the nature of the munitions response investigation and disposal work being conducted, it is necessary to temporarily restrict Site access to protect public safety. Work areas and restricted excavation areas have been clearly marked and active Site security has been increased to protect the

public. The public should avoid the Southern Conservation Area, including Factory Pond, while this work is being conducted.

The munitions removal action will not be complete until the explosive hazard has been eliminated. It is anticipated that this work will be completed by Fall/Winter 2018.

Air Monitoring During Detonations

Particulate monitoring was performed by Tetra Tech during detonations to ensure that there is no transport of particulates that would create potential health concerns to the public. The particulates were continuously monitored during two separate 5-day periods in which detonations were performed to ensure that there was no transport of particulates that would create a potential short-term or long-term health concern. Monitoring was performed in August and November 2017. Particulates were monitored within the immediate detonation area and monitors were positioned on the perimeter access roads at the edges of the Site as close as possible to the nearest residential areas (the Hanover Waterford residential neighborhood and the residences in Hanson across Lower Factory Pond).

The monitors measured particulate matter that is small enough to be transported deep into the lungs, but large enough not to be immediately exhaled (referred to as the “respirable particulates”). A second measurement was made of the total airborne particulates to evaluate potential migration of particle-related contamination. Particulate action levels were developed to allow these measurements to be evaluated taking into consideration the US Environmental Protection Agency (USEPA) National Ambient Air Quality Standards and the potential metals and explosives composition of the particulates generated by the detonations.

The results of the particulate monitoring indicated that detonation activities being performed at the Site as part of the cleanup are not creating off-Site air impacts that are considered a risk to human health. The August and November 2017 RAM Particulate Air Monitoring Reports may be accessed using the MassDEP link above.

Oil and Hazardous Material Contamination at the Site

As a result of the historical use, storage, and disposal of oil and/or hazardous materials (OHM) associated with the manufacturing and development of munitions and pyrotechnics many oils and hazardous materials have been released to the environment at the Site. Contaminants that have been found at the Site include:

- Volatile Organic Compounds (VOCs) – primarily the chlorinated solvent trichloroethylene (TCE);
- Semi-volatile Organic Compounds (SVOCs) – primarily polycyclic aromatic hydrocarbons (PAHs);
- Metals – primarily antimony, barium, lead, mercury, chromium and zinc; and
- Explosives.

The results of sampling and analysis indicate that the soil, sediments in the wetlands and ponds, and groundwater have been impacted by releases of oil and hazardous materials at the Site. In addition, sampling and analysis of fish tissue have shown that elevated concentrations of mercury have been detected in fish tissue.

The potential risk associated with each of the media at the Site are outlined below.

Potential Risk Associated with Oil and Hazardous Material Released at the Site

A Phase II Comprehensive Site Assessment Report submitted by the Cooperating Parties in November 2005, documented the sources, nature and extent of non-munitions-related contamination at the Site.

The sources, nature and extent of contamination must be adequately determined to facilitate a comprehensive Risk Characterization, which assesses the potential risk of harm to health, safety, public welfare and environment. A Risk Characterization is conducted at a site to provide a quantitative and qualitative approach to determine if an MCP condition of No Significant Risk exists or has been achieved or whether remedial actions are necessary to achieve a level of No Significant Risk.

MassDEP approved that Phase II Comprehensive Site Assessment Report and its findings on August 16, 2006. As described below, supplemental assessment activities have been conducted at the Site by the Cooperating Parties.

General Risk Characterization Approach

A Risk Characterization assesses both current and future risks posed by contamination at a site by identifying:

- Current and potential future human receptors (for example lifelong residents, women of childbearing age, children ages one to eight years);
- Environmental receptors (wildlife, fish and shellfish, plants);
- Site Activities and Uses (applicable groundwater and soil categories);
- Exposure Points (locations of potential contact between human and environmental receptors and oil and/or hazardous material);
- Exposure Point Concentrations; and
- Exposure Pathways.

To determine if releases of oil and/or hazardous material to the environment pose a risk to human health and/or the environment, there must be a complete exposure pathway to a receptor. If there is not a complete exposure pathway then there is not a risk.

If exposure exists, the risk depends on the type and duration of exposure, the toxicity of the contaminant and the concentration of the contaminant.

A description of the potential risk to human health at the Site associated with the release of oil and hazardous material to groundwater, soil, sediment and surface water is presented below.

Potential Risk from the Release of Oil and/or Hazardous Material to Groundwater

The Phase II Comprehensive Site Assessment did not identify any significant risks to human health as a result of exposures to groundwater at the Site. The Fireworks Site is not located in a current drinking

water supply area and the residents and businesses in the vicinity of the Site are serviced by either the Town of Hanover or Town of Hanson municipal water supply systems. The area of an aquifer that contributes groundwater to municipal wells, known as the Zone II Wellhead Protection Area, is delineated for municipal water supply wells in the Commonwealth and the delineated Zone II is approved by MassDEP's Division of Water Supply. The Site is not within any Zone IIs for either Hanover or Hanson and, as such, the groundwater at the Site does not flow to the municipal wells. Therefore, there is no exposure pathway, and therefore no risk, with respect to the public water supplies.

Groundwater may also supply private drinking water supply wells and irrigation wells near a Site. There are no known private drinking water supply wells in the vicinity of the Site. If you live near the Site and have either a private water supply well used for drinking water and/or irrigation well please contact MassDEP (contact information below) so the potential impact to the well can be evaluated.

The irrigation wells used for the town athletic fields are not in an area where the groundwater is impacted by the Site.

Potential Risk from the Release of Oil and/or Hazardous Material Which May Impact Indoor Air

Groundwater contaminated with VOCs has the potential to impact the indoor air of buildings and structures above and near the VOC-contaminated groundwater. The contaminants can volatilize from the groundwater and the vapors can migrate upwards through the soil and into indoor air. This is known as vapor intrusion. The vapor intrusion pathway to the buildings in the commercial/industrial park located in the Upper Northern Area was evaluated as part of the Phase II Comprehensive Site Assessment and it was determined at that time that the VOCs in the groundwater did not pose a health risk with respect to the vapor intrusion pathway.

However, recent scientific studies reviewed by the U.S. Environmental Protection Agency (EPA) now indicate that even short-term exposure to very low concentrations of TCE, a chlorinated VOC, might result in health effects under certain conditions. Based on this information, MassDEP has re-evaluated and lowered its environmental standards for TCE relative to indoor air. As such, MassDEP is currently evaluating the potential impact to the indoor air of buildings in the Upper Northern Area of the Site (the King Street Industrial Association Park) to determine if the potential vapor intrusion exposure pathway exists. Similar re-evaluations are ongoing at other MCP sites with TCE in groundwater across the Commonwealth.

Potential Risk from the Release of Oil and/or Hazardous Material to Soil

At this time, it cannot be concluded that a level of No Significant Risk exists with respect to soil in the Southern Disposal Area due to impacts from metals (chromium and lead) and chlorinated VOCs. Persons using this area could come into contact with contaminated soil. Impacted surficial soil was removed from the Marsh Upland Area in 1989, however, the deeper Marsh Upland Area soil may pose a future risk to construction workers. As such, further response is required in these two areas. The surface soil in the Cold Waste Area that was previously found to pose a risk to recreational users has been removed and replaced with clean fill material.

The soil in the Southern Disposal Area and the Cold Waste Area that were being excavated, sifted and disposed of (as necessary) under the Release Abatement Measure are now being addressed under the modified Immediate Response Action Cleanup of soil will be proposed where needed in the Phase III Remedial Action Plan as part of the Comprehensive Response Actions to be conducted at the Site. Access to portions of these areas has been controlled to prevent exposure to soil.

Potential Risk from the Release of Oil and/or Hazardous Material to Sediment

At this time, it cannot be concluded that a level of No Significant Risk exists with respect to sediment in the Eastern Channel Corridor, Lower Drinkwater River Corridor and Lily Pond/Factory Pond due to impacts from primarily mercury released at the Site. Through the analysis of fish tissue, it can be concluded that fish have been impacted by mercury in the sediment and humans could be exposed through consumption (see Potential Risk from Ingesting Fish below). As such, further cleanup is required and a remedy for the contaminated sediment will be proposed in a Phase III Remedial Action Plan as part of the Comprehensive Response Actions to be conducted at the Site.

Given significant rainfall events (i.e., two 100-year storms) that occurred in 2010, there was a concern that increased stream flow could have re-distributed contaminated sediments in the Drinkwater River system. The Cooperating Parties proposed and MassDEP approved additional sampling of sediment to ensure that impacted areas of sediment were properly delineated. The additional sampling has been completed and a final report is being prepared.

Potential Risk from the Release of Oil and/or Hazardous Material to Surface Water

The Risk Characterization in the Phase II Comprehensive Site Assessment did not identify any significant risks to human health as a result of exposures to surface water at the Site.

Potential Risk from Ingesting Fish

The sampling and analysis of fish from the Site indicate that elevated concentrations of mercury have been detected in fish tissue. As a result, in October 1995 the Massachusetts Department of Public Health issued a fish consumption advisory stating that the general public should not consume any fish from **Factory Pond or the Drinkwater River/ Indian Head River between the Forge Pond and Luddam's Ford Dams**. This is a Site-specific fish consumption advisory. There are fish consumption advisories in place in many communities in Massachusetts as a result of the atmospheric deposition of mercury.

More information on the fish advisory can be found at:

https://eohhs.ehs.state.ma.us/DPH_FishAdvisory

Potential Risk to Public Safety from Unexploded Munitions at the Site

Currently, a primary human health risk at the Site is a potential explosive hazard from unexploded munitions and materials potentially presenting an explosive hazard and as indicated above the current work at the Site is addressing this issue. **Steps are currently being taken to prevent exposure and to limit access to the Site while the investigation and removal of munitions is being conducted.** The public should avoid the Southern Conservation Area, including Factory Pond, while this work is being conducted. As indicated above, the munitions removal action will not be complete until the explosive hazard has been eliminated. It is anticipated that this will be completed by Fall/Winter 2018.

Next Steps

Work will continue to eliminate hazards associated with the munitions at the Site. A final Supplemental Phase II Report that summarizes the additional Site sampling performed in 2015 and updates other pertinent information about the Site will be completed. Thereafter, a Phase III Remedial Action Plan will be finalized.

MassDEP will complete the evaluation of potential vapor intrusion from trichloroethylene in the groundwater in the Upper Northern Area of the Site.

A public meeting will be held upon the completion of the Phase III Remedial Action Plan.

Points of Contact

Hanover:

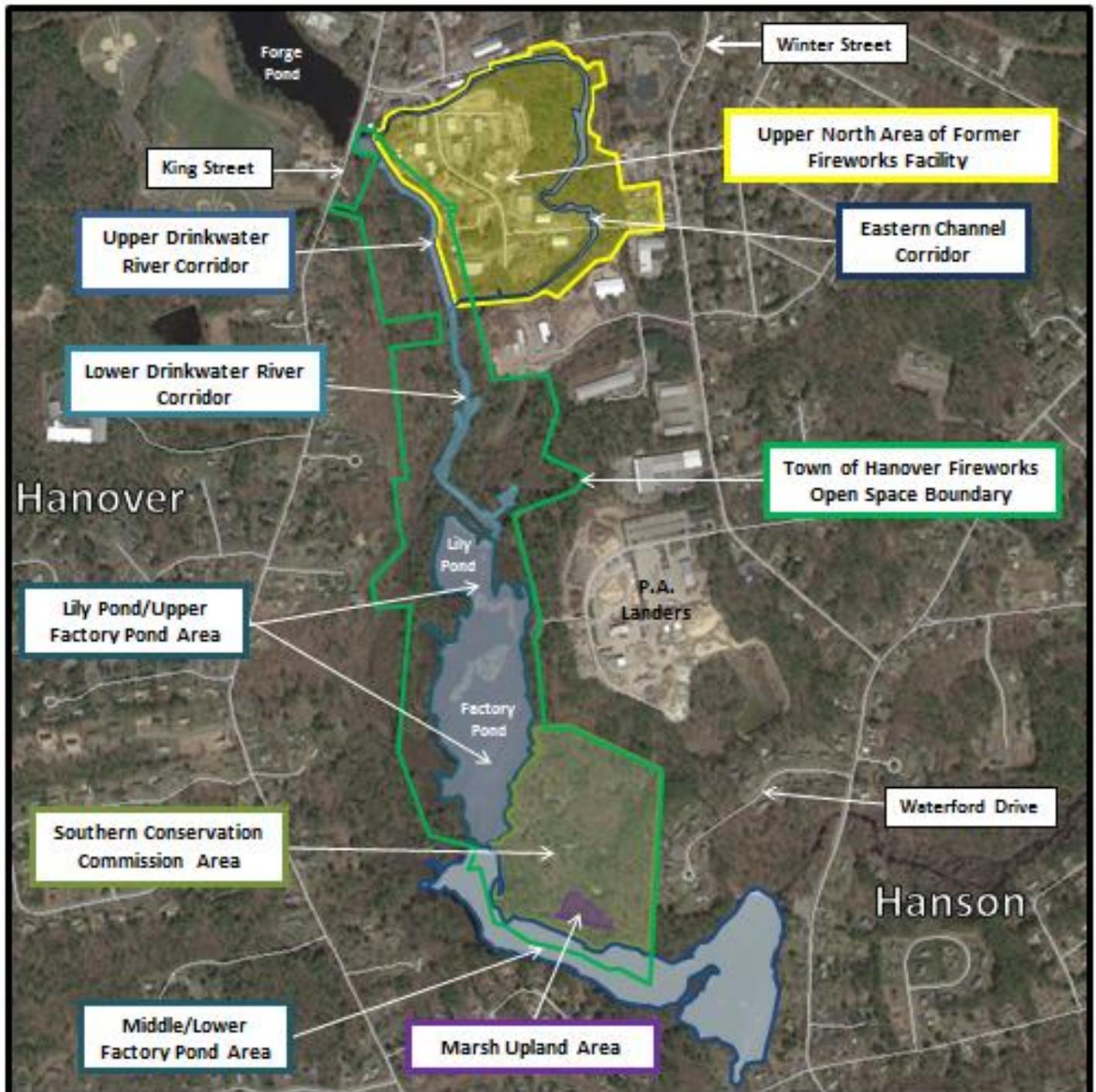
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Former National Fireworks Site

Hanover and Hanson, Massachusetts

April 2018 Project Update

Figure 1 - Site Features

Department of Environmental Protection

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