

# STATE OF CONNECTICUT

## DEPARTMENT OF PUBLIC HEALTH

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Commissioner



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### Evaluation of Environmental Data and Potential Exposures at the Mystic River Boathouse Site

123 Greenmanville Avenue, Stonington, CT

December 11, 2018

#### Background, Environmental Data and Exposure Potential

In November 2018, the Ledge Light Health District requested technical assistance from the CT Department of Public Health's Environmental and Occupational Health Assessment Program regarding potential exposures to high school crew athletes using the Mystic River Boathouse site in Stonington.

The Mystic River Boathouse site, located at 123 Greenmanville Avenue in Stonington, CT is approximately 1.42 acres in size and borders the Mystic River. Historically, it was a coal staging area for the Rossi Velvet Mill, located across Greenmanville Street. The property is now owned by the Town of Stonington. The Town has state brownfields grant funding to investigate the nature and extent of contaminants on the property. Environmental data for the site is contained in a March 2018 Phase II/Limited Phase III Environmental Site Assessment prepared by Fuss and O'Neill (Fuss and O'Neill 2018). According to this report, the entire site is "made land" comprised of fill ranging in thickness from 6 to 12 feet and containing coal ash, slag, coal fragments, metal fragments, glass, concrete, brick and wood. Numerous borings were advanced across the site and analytical data for samples collected from soil at depth confirm the presence of elevated levels of petroleum hydrocarbons, metals, polycyclic aromatic hydrocarbons (PAHs) and one small area with polychlorinated biphenyls. Surface soil samples were collected from 6 locations along the upland slope of the high tide line along the river. The shoreline portion of the site runs for approximately 300 feet. Results of the surface samples indicate elevated levels of metals, petroleum hydrocarbons, and PAHs albeit at concentrations



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generally lower than in the soil boring samples taken from various depths below the surface in locations on the property inland from the beach area.

Most of the property is covered with grass and appears relatively free from visible debris at the surface. Along the river shoreline, coal slag, broken glass, bricks and other debris consistent with the onsite fill is visible at the surface (email from Stephen Mansfield to Margaret Harvey, December 5, 2018).

The Town would eventually like to create public, recreational access to the River at this site. Currently, the Stonington High School Crew Team uses a garage on site for boat storage and has on occasion stored boats outside on the grassed area. Athletes have also used the property to launch boats into the River during a 5-day per week, 2-month summer training program. Because of the debris present on the river's edge, athletes were required to use water shoes to protect their feet (email from Chad Frost to Stephen Mansfield, December 4, 2018).

As stated above, environmental data is contained in the March 2018 Phase II/Limited Phase III Environmental Site Assessment prepared by Fuss and O'Neill. Information about site usage by Stonington High School Crew Team athletes is contained in a December 4, 2018 email from Fuss and O'Neill, which is based on their direct communication with the director of rowing for Friends of Stonington Crew. A description of current site conditions is included in the Environmental Site Assessment report and was also provided by Ledge Light Health District (photos and email), based on a December 5, 2018 site visit they attended.

### Potential Health Implications

Testing in the Mystic River beach portion of the property shows that contaminant concentrations (arsenic, lead, petroleum hydrocarbons and polycyclic aromatic hydrocarbons) in surface soil/sediment are somewhat elevated above Connecticut's Residential Direct Contact cleanup standards for soil (see Table in Attachment A). However, these cleanup standards are based on residential exposure assumptions (young children with high daily soil ingestion because of their intense hand-to-mouth contact, and an exposure frequency of 365 days per year). High School-aged athletes using this site have significantly less frequent and less intense contact with beach soil/sediment than a residential exposure scenario. Additionally, portions of the site (other than the beach area) that athletes could access are either well-grassed or paved; both of which will significantly limit direct contact with soil.

This evaluation considered the current site conditions, the contaminant concentrations, and the frequency and intensity of use by athletes. Given these site-specific considerations, the level of exposure to contaminants present at the site does not present a public health concern (full details are contained in Attachment A).

## Conclusions and Recommendations

Based on the environmental data and information reviewed for this evaluation, contaminant concentrations at the site are not high enough to pose an exposure concern to athletes who access the property to store crew boats and/or participate in a short-term summer crew training program.

However, surface soil/sediment in the beach portion of the property has not been extensively characterized. There are 5 surface soil samples along the entire stretch of beach but it appears that only two or three samples (SS-01, SS-02, SS-03) are in the southern (closer to the Seaport) beach area where boats are launched. An additional two surface soil samples (SS-08 and SS-09) were collected near SS-01 but were only analyzed for extractable total petroleum hydrocarbons (ETPH). The conclusion of no health concern is based on contaminant concentrations in the testing locations with the general boat launching area. Additional testing data from this area could strengthen and confirm this conclusion. Also, there is visible evidence of glass and other debris in the tidal area that could pose a safety hazard. Therefore, if the training program uses the property again during the summer 2019, athletes should continue their practice of wearing water shoes when accessing the beach area to launch boats. Further, it would be prudent to wash sediment/soil from shoes after boats are removed from the water. Finally, volunteer beach cleanup events should not be held on this parcel and the town should not open this parcel for use by the general public until remediation is complete.

Prepared by Margaret Harvey  
Environmental and Occupational Health Assessment Program  
Environmental Health Section

### References:

Fuss and O'Neill 2018. Phase II/Limited Phase III Environmental Site Assessment, Mystic River Boathouse Project, prepared for Kent & Frost Landscape Architecture by Fuss & O'Neill March 2018.

Email from Stephen Mansfield, Director of Health-Ledge Light Health District to Margaret Harvey, CT Department of Public Health, December 5, 2018.

Email from Chad Frost, Kent & Frost Landscape Architecture to Stephen Mansfield-Director of Health-Ledge Light Health District, December 4, 2018.

DEEP 2018. Technical Support Document: Recommended Numeric Criteria for Common Additional Polluting Substances and Certain Alternative Criteria, CT Department of Energy and Environmental Protection, December 10, 2015, rev. September 20, 2018.

DEEP 2013. Remediation Standard Regulations, CT Department of Energy and Environmental Protection, June 27, 2013.

## Appendix A

Contaminants detected at concentrations greater than CT Residential Direct Exposure Criteria (R-DEC)<sup>1</sup> in surface soil samples from river shoreline, Mystic River Boathouse Site, 2018.

Contaminant	Concentration Range (mg/kg)	R-DEC (mg/kg)	Frequency of samples exceeding R-DEC	Site-specific R-DEC <sup>2</sup> (mg/kg)
Arsenic	1.96 – 34.7	10	4/6	90
Lead	22.5 - 807	400	1/6	3,650
Benzo(a)anthracene	0.3 – 5.4	1	2/6	9
Benzo(a)pyrene	0.3 – 5.1	1	3/6	9
Benzo(b)fluoranthene	0.3 – 4.1	1	2/6	9
Indeno(1,2,3-cd)pyrene	0.3 – 3.8	1	2/6	9
Extractable Petroleum Hydrocarbons	<61 – 3,800	500	1/8	4,560

<sup>1</sup> Residential Direct Exposure Criteria include fast-track additional polluting substances (DEEP 2018) and Remediation Standard Regulations (2013).

<sup>2</sup> Adjusted to account for lower exposure frequency at the boathouse site than the residential exposure scenario used to derive the R-DEC. Adjusted R-DEC are rounded.

As the table shows, maximum concentrations of a number of contaminants exceed residential direct exposure criteria (R-DEC). However, R-DEC are based on a residential exposure scenario, assuming 365 days per year exposure frequency and exposure to young children (6 years and younger). Exposures at the Mystic River Boathouse Site are less frequent and do not include young children. Therefore it is appropriate to adjust the R-DEC based on site-specific exposures.

Site-Specific Exposure Frequency during summer training:

5 days/week \* 4 weeks/month \* 2 months/yr = 40 days/yr

R-DEC are based on 365 day per year exposure frequency.

Site-specific exposure frequency adjustment: 40 days/365 days = 0.1096

Site-specific frequency adjusted R-DEC = R-DEC / 0.1096

As the table shows, none of the maximum concentrations detected in surface soil at the site exceed the site-specific residential direct exposure criteria. This means that risks from exposures at the site are expected to well below exposure and risks associated with the R-DEC and therefore do not pose a public health concern.

This approach of upwards adjustment of the R-DEC based upon a lower site-specific exposure frequency is conservative because:

- The adjustment does not account for the fact that very young children (6 years and younger) do not visit the site. The R-DEC assume exposure by young children with a higher soil ingestion rate (two fold higher) than older children and adults.
- The adjusted (site-specific) R-DEC are compared with the maximum detected concentration in surface soil/sediment at the site rather than an average concentration.