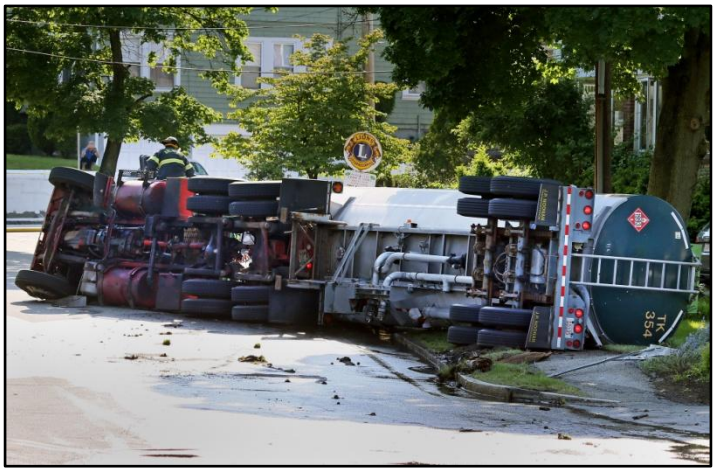
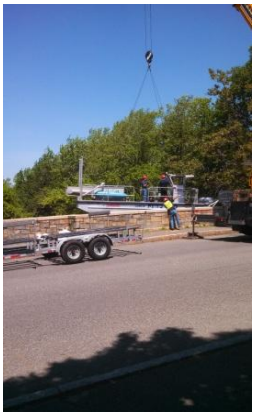
MassDEP Field Assessment and Support Team (FAST)

After Incident/Interim Report	RTN 3-31576
Arlington - Diesel Fuel Spill into Mystic River	May 2013





Background

At approximately 4:15 PM on Friday, May 31, 2013, a 10,000 gallon tanker filled with red-dyed diesel fuel overturned at the intersection of Mystic Valley Parkway and Medford Street in Arlington, immediately adjacent to the Mystic River. All but about 400 gallons of fuel discharged from the tanker onto the roadway, where it flowed into catch basins and then into the Mystic River.

MassDEP was notified of the event and immediately dispatched a field responder. Shortly thereafter, additional agency assets were activated and deployed, including a boom trailer, and the MassDEP Field Assessment and Support Team (FAST).

Initial response efforts were focused on the deployment of containment booms downstream of the spill area, beginning at the Harvard Ave/River Street Bridge, immediately followed by 3 additional upstream installations. Eventually, 9 booms were placed in various river locations, to contain separate-phase oil, and facilitate recovery operations (see Figure 3).

Air Impacts

FAST assets and staff arrived at the site at approximately 6:30 PM. A weather station was immediately deployed, to evaluate wind speed and direction. A series of maps were then printed and disseminated to responders to facilitate assessment and containment efforts.

On-site winds were found to be from the south/southwest, consistent with regional conditions recorded at the Bedford Airport (see Figure 1). However, near-ground wind speed on site was only about 1 MPH.

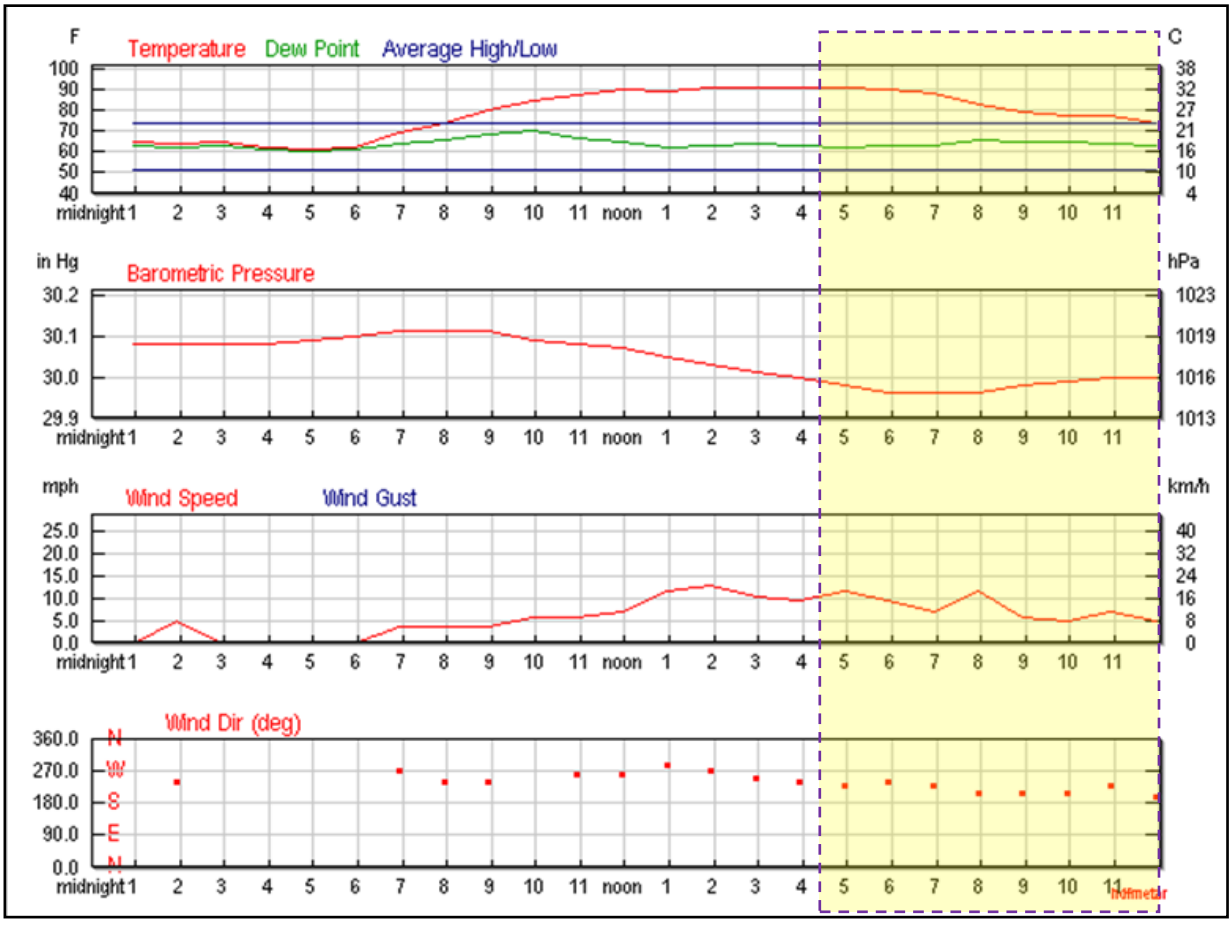


Figure 1 - Regional Meteorological Conditions for 5/31/13

Based upon wind direction and detected odors, 4 ambient air samples were collected at and near the fuel release location, as indicated in Figure 3. Each sample was obtained in a 1 liter bag from the breathing zone (4-6 feet above grade), and was immediately analyzed on-site in the FAST mobile laboratory using a HAPSITE gas chromatograph/mass spectrometer (GC/MS).

Data reports for these analyses are provided in Appendix 1, and summarized in Table 1, along with relevant health metrics.

As can be seen, except for AA-3 (on Mystic Valley Road), all air samples were found to contain detectable levels of diesel fuel. However, as detailed in Table 1, the concentrations of individual diesel fuel constituents, as well as the estimated collective concentration of all diesel fuel constituents were below levels considered safe for short-term exposure to the general population.

The Total Ion Chromatogram for sample AA-1, obtained at the location of the tanker rollover at 7:53 PM, is provided below in Figure 2, and is reflective of the general chemistry of air samples containing diesel components.

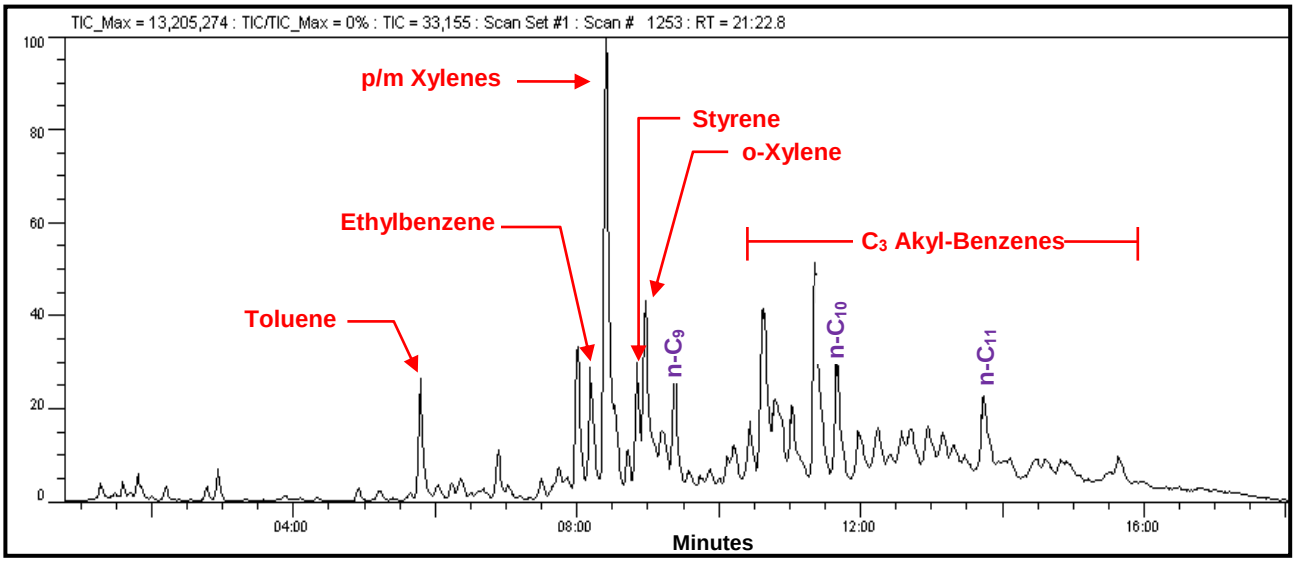


Figure 2 – Total Ion Chromatogram of Air Sample at Site of Tanker Rollover, 7:53 PM

The chromatographic "fingerprint" depicted in Figure 2 is consistent with a diesel vapor signature, most notably in the peak elutions between 9 and 16 minutes, containing the C_9 through C_{11} normal alkanes, and a variety of C_3 Alky-Benzenes, such as the trimethylbenzenes. Two of the more toxic constituents of fuels, benzene and naphthalene, were not identified in this or any sample chromatogram. For perspective, the largest single peak in Figure 2, containing a combination of the diesel fuel constituents para and meta Xylene ("p/m Xylenes"), was quantified at approximately 0.07 ppmV; 10 times less than what is considered a safe short-term exposure level to the general public. The total estimated concentration of all diesel fuel constituents in this sample chromatogram was 0.3 to 0.4 ppmV, well below the most conservative short-term guidance value of 1.5 ppmV (see Table 1).

While the detected concentrations were not considered a significant human health risk, there was a pronounced fuel oil odor throughout the area, even 6 hours after the spill event. This is because of certain diesel fuel constituents, including aromatic compounds, which are highly odorous even at low levels in air.

Most people can detect diesel fuel odors at an air concentration of about 0.1 ppmV.

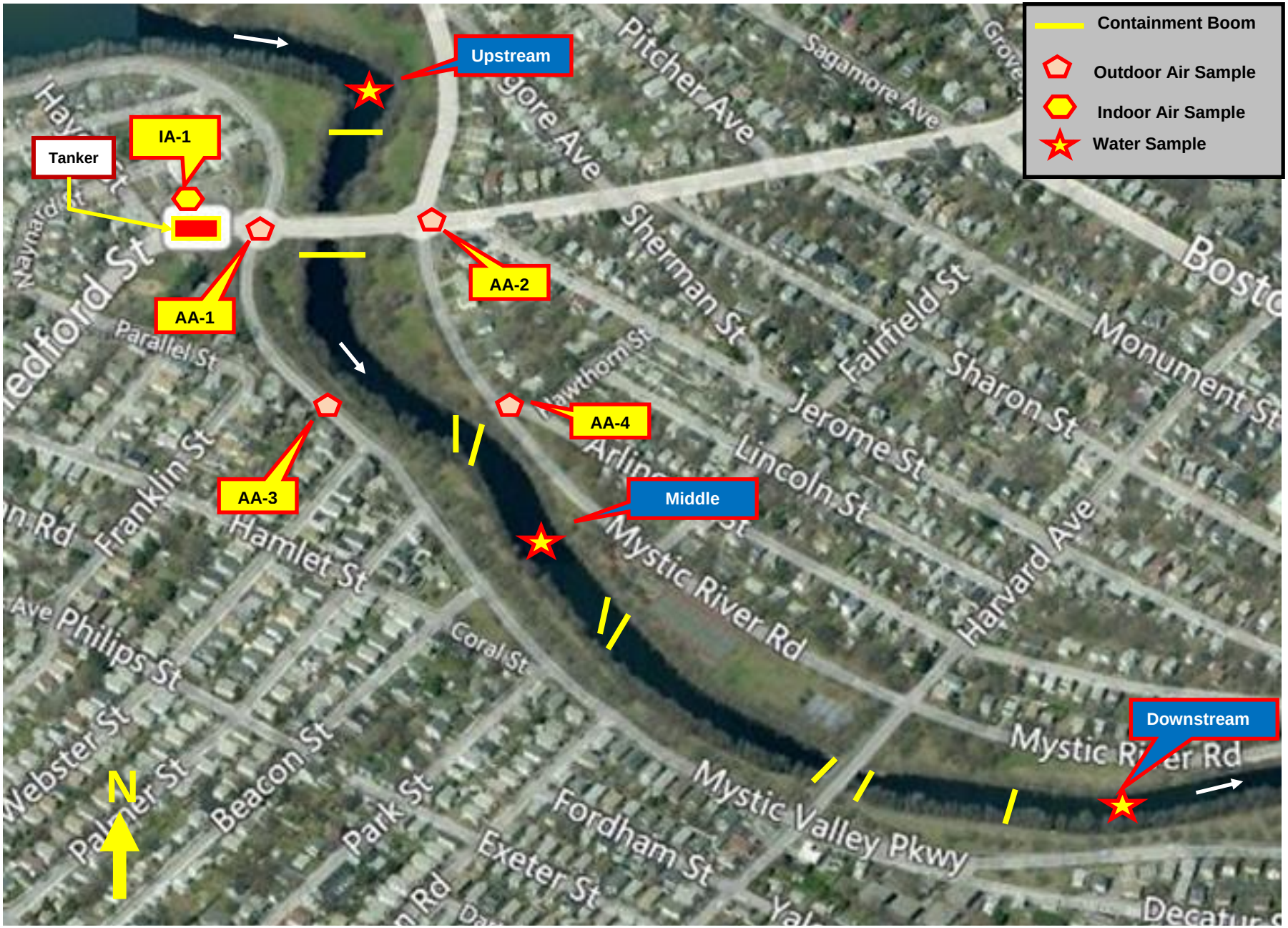


Figure 3 - Location of Containment Booms and Environmental Samples

Table 1 – Results of Air Testing, May 31, 2013											
Contaminant	Air Concentrations (ppmV)						Safe Levels in ppmV[1]				
	AA-1	AA-2	AA-3	AA-4	IA-1	RL	General Public				Worker
	7:53 PM	7:59 PM	8:25 PM	8:40 PM	9:53 PM		1 hr	8 hrs	5 yrs	30 yrs	
Methylene Chloride	N.D.	N.D.	N.D.	N.D.	**0.0037**	0.002	4	0.86	0.86	0.01	25
Benzene	N.D.	N.D.	N.D.	N.D.	N.D.	0.001	52	9	0.07	0.001	0.1
Toluene	**0.027**	**0.007**	N.D.	**0.015**	**0.0032**	0.001	200	200	13.3	1.35	100
Chlorobenzene	**0.0028**	N.D.	N.D.	**0.0014**	N.D.	0.001	10	10	0.043	<0.001	75
Ethylbenzene	**0.022**	**0.0054**	N.D.	**0.025**	**0.0039**	0.001	33	33	2.3	0.23	100
p/m-Xylenes[2]	**0.037**	**0.0085**	N.D.	**0.037**	**0.0065**	0.001	5	0.8	0.23	0.023	100
Styrene	**0.033**	N.D.	N.D.	**0.0018**	N.D.	0.001	20	20	0.059	0.01	50
o-Xylene	**0.029**	**0.007**	N.D.	**0.034**	**0.0058**	0.001	5	0.8	0.23	0.023	100
1,1,2,2-Tetrachloroethane	**0.0018**	N.D.	N.D.	**0.0021**	N.D.	0.001	0.5	0.1	0.01	<0.001	1
1,3,5-Trimethylbenzene	**0.016**	**0.0038**	N.D.	**0.025**	**0.0049**	0.001	140	45	NA	NA	25
1,2,4-Trimethylbenzene	**0.045**	**0.011**	N.D.	**0.077**	**0.014**	0.001	140	45	NA	NA	25
Approx Total Diesel Vapors	**0.3 – 0.4**	**0.2 – 0.3**	N.D.	**0.5 – 0.8**	**0.2 - 0.3**	0.1	8	1.5	1.1	0.1	16

[1]Safe Levels

For individual chemical contaminants :

1 hr = the lowest available 1 hr EPA AEGL-1 or 1 hr California REL or (DOE TEEL-0)/2;

8 hr = the lowest available 8 hr EPA AEGL-1 or (California REL1hr)/5, or (DOE TEEL-0)/10;

5 yr and 30 year exposure levels per MassDEP MCP;

Worker = lower of OSHA PEL or NIOSH REL for 8 hrs.

For Total Diesel Vapors,

1 hr = (DOE PAC-1)/2 value

8 hr = (DOE PAC-1/10)

5 yr and 30 year exposure levels per MassDEP MCP for C_9-C_{10} Aromatic Hydrocarbon compounds (worst case diesel vapor chemistry)

Worker = American Conference of Governmental Industrial Hygienists Threshold Limit Value, 8 hours exposure

All Diesel values assume 6.4 mg/m^3 = 1 ppmV

[2]Because of co-elution issues, the concentration of p/m Xylenes is up to 2 times the reported concentration values

ppmV = parts per million by volume *RL = Reporting Limit (i.e., lowest conc that can be detected by the instrument)* *N.D. = Not Detected*

Once it was determined that hydrocarbon levels in the ambient air were safe, attempts were made to evaluate the homes nearest the overturned tanker, to ensure that diesel fuel present in impacted catch basins was not creating a vapor intrusion pathway via drainage connections to the houses (e.g., via basement sump pumps).

Of the residents contacted, only one, at 186 Medford Street, expressed concern over odors in the home. At 9:53 PM, a sample of air was obtained in the first floor kitchen area of this home, where an odor was detected. However, agency staff also noted opened windows in the structure, suggesting the source of the odor may have been from the ambient (outdoor) air, as opposed to a subsurface pathway.

This sample, IA-1, was immediately analyzed in the on-site laboratory. The results, contained in Table 1, are consistent with ambient air conditions and contaminant concentrations, and did not pose an immediate health risk to the occupants.

Oil Containment and Recovery

A substantial quantity of diesel fuel (9600+/- gallons) was discharged into the Mystic River. Fortunately, it appears that virtually all of the oil was contained by response crews.

With the considerable assistance of local and regional fire services personnel, agency staff were able to deploy the first containment boom at the Harvard Ave/River Street bridge by about 6:30 PM. While this was over 2 hours after the spill occurred, the fuel had not yet reached this point – 2500 feet downstream - in the slow-flowing river.

Soon thereafter, personnel and assets began arriving from response companies, starting with Moran Environmental, who were activated by MassDEP under its state-funded contractor program, and Clean Harbors, who were retained by the owner of the oil tanker, J.P. Noonan.

By midnight, 3 additional booms had been deployed across the Mystic River, and oil was being actively recovered from the waterway by a combination of on-water skimming devices, shore-based vacuum trucks, and oil-absorbent pads and booms. By early Saturday morning, over 30 response contractors, five (3500 to 6000) gallon vacuum trucks, and two 20,000 gallon fractionation tanks were on site. Oil recovery was significantly increased by 8 AM Saturday when a large on-water skimmer craft was lowered into the Mystic River by crane from the Harvard Ave/River Street Bridge.

Recovery efforts were further enhanced by the lack of rainfall, and by the controlled opening of the Amelia Earhart Dam, which was closely coordinated with DCR personnel. Lastly, the intense sun and high temperatures (90°F +) also served to promote the removal of fuel from the river system via evaporation.

By Sunday, the rollover site had been cleaned, scarified, and re-paved, and virtually all trapped oil had been removed from impacted catch basins and drainage systems. Of the 9600 gallons of diesel fuel that were spilled, approximately 6800 gallons had been recovered by skimming and vacuuming operations, and another 1000 gallons was believed to have been recovered in absorbent materials. Moreover, up to 1000 gallons may have been lost through evaporation.

Some quantity of oil may remained trapped in small pockets on the river bank; a scenario that is now being investigated by a series of systematic shoreline inspections.

Finally, a small amount of oil dissolved into the river water, flowing downstream from the impacted areas. However, given the limited solubility of diesel fuel in water – a maximum 2 to 6 mg/L – the mass amount of oil loss via this mechanism is likely to be low, less than 50 gallons.

Impacts to Mystic River

There have been no fish kills noted by agency responders within the impacted areas of the river. A few lightly oiled ducks were observed, and promptly reported to the Division of Fish and Wildlife and Animal Rescue League for follow-up actions.

Once the majority of the separate-phase oil had been removed from the river, attention was turned to the lesser concern of dissolved hydrocarbons in the water column. Although only sparingly soluble, there are components of diesel fuel –most notably polycyclic aromatic hydrocarbons (PAH) – that can have deleterious impacts on aquatic life, especially over a long period of time.

Accordingly, on Monday afternoon, 6/3/13, water samples were obtained at 3 locations in the river; upstream of the spill, in the middle of the impacted area, and downstream of the impacted area (see Figure 3). Each sample was obtained 8 to 12 inches below the water surface, in the middle of the channel. One set of samples was obtained by a consulting firm retained by J.P. Noonan, another by a MassDEP scientist. The set of samples obtained by the consulting firm will be analyzed for Volatile Petroleum Hydrocarbons (VPH) and Extractable Petroleum Hydrocarbons (EPH). The samples obtained by MassDEP were tested by a screening procedure, to identify volatile hydrocarbons via a headspace technique. While the VPH and EPH data will provide more definitive information on contaminant levels, the MassDEP screening results provide a more immediate indication of potential threats.

The data reports for the MassDEP screening test are provided in Appendix 2, and summarized and evaluated in Table 2.

As can be seen in Table 2, no volatile diesel fuel constituents were detected in the upstream or "middle" samples. The downstream sample had low levels of common diesel constituents – well below levels that are likely to impact aquatic life. However, the Total Ion Chromatogram for this sample did detect a number of alkyl aromatic hydrocarbons contained in diesel fuel, though again at low concentration levels. Of greater concern are the heavier/less volatile components of diesel fuel (polycyclic aromatic hydrocarbons) that will be detected in the EPH test method.

Table 2 – River Water Samples 6/3/13 – Headspace Screening Data

Contaminant	Concentration in µg/L						
	River Samples				Drinking Water Standard	Potentially Toxic to Aquatic Life[1]	
	Up Stream	Middle	Down Stream	RL		Acute Exposure	Chronic Exposure
Benzene	N.D.	N.D.	N.D.	2	5	4600	460
Toluene	N.D.	N.D.	**2**	1	1,000	1400	1,400
Ethylbenzene	N.D.	N.D.	**2**	1	700	1800	180
Total Xylenes	N.D.	N.D.	**8**	1	10,000	200	200
1,3,5-Trimethylbenzene	N.D.	N.D.	**3**	1	NS	5400	540
1,2,4-Trimethylbenzene	N.D.	N.D.	**10**	2	NS	5400	540

[1]MassDEP guidance; proposed changes to the Massachusetts Contingency Plan, 2013.

RL = Reporting Limit (i.e., lowest conc that can be detected by the instrument)

N.D. = Not Detected N.S. = No Standard

Conclusions

1. Air samples obtained and analyzed by MassDEP in the hours following the tanker incident detected only low levels of diesel fuel and diesel fuel constituents that did not pose an immediate or significant risk to human health.

2. Three days after the spill, after most of the separate phase (floating) diesel fuel had been removed from the Mystic River, dissolved concentrations of volatile diesel fuel hydrocarbons were found in downstream samples at low levels, less than values that would be expected to impact aquatic life. However, more definitive information will be obtained from samples currently being analyzed for Extractable Petroleum Hydrocarbons.

MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA				RTN:	3-31576
City or Town:	Arlington		Address:	Medford Street					Location:
Date Sampled:	5/31/13	Time:	7:53 PM	Field ID:	AA-1	Collector:	Clark		Spill Area
Date Analyzed:	5/13/13	Time:	8:15 PM	Lab ID:	002	Analyst:	Fitzgerald		

Method Analytes	Conc. in ppmV		Safe Levels[1] (below concentration for given time period) - ppmV						
	Sample	RL	1 hour	8 hour	5 yrs	30 yrs	Odors	Worker	µg/m³/ppb
Vinyl Chloride	N.D.	0.002	250	70	0.06	0.001	150	1	2.58
Bromomethane	N.D.	0.005	1	0.2	0.013	0.001	10	20	3.89
Chloroethane	N.D.	0.002	50	10	NA	NA	4.2	1000	2.64
Trichloromonofluoromethane	N.D.	0.002	500	100	NA	NA	5	1000	5.6
1,1-Dichloroethene	N.D.	0.001	2.5	0.5	NA	NA	120	NA	3.97
Methylene Chloride	N.D.	0.002	4	0.86	0.86	0.01	78	25	3.48
1,1,2-Trichlorotrifluoroethane	N.D.	0.001	500	100	NA	NA	45	1000	7.65
1,1-Dichloroethane	N.D.	0.002	50	10	1.2	0.12	15	100	4.05
Cis 1,2-Dichloroethylene	N.D.	0.001	140	140	0.088	0.009	8.5	100	3.97
Chloroform	N.D.	0.001	0.03	0.01	0.01	<0.001	43	2	4.87
1,2-Dichloroethane	N.D.	0.001	5	1	0.01	<0.001	0.3	1	4.05
1,1,1-Trichloroethane	N.D.	0.001	230	230	9.5	0.95	6	NA	5.46
Benzene	N.D.	0.001	52	9	0.07	0.001	0.8	0.1	3.19
Carbon Tetrachloride	N.D.	0.001	44	19	0.02	<0.001	5	2	6.3
1,2-Dichloropropane	N.D.	0.001	5	1	0.02	<0.001	0.1	75	4.62
Trichloroethylene	N.D.	0.001	130	77	0.15	0.003	130	100	5.36
cis-1,3-Dichloropropene	N.D.	0.001	0.02	0.045	0.008	0.001	0.5	NA	4.54
trans-1,3-Dichloropropene	N.D.	0.002	0.5	0.1	0.008	0.001	0.5	1	4.54
1,1,2-Trichloroethane	N.D.	0.001	5	0.1	0.02	<0.001	NA	10	5.46
Toluene	**0.027**	0.001	200	200	13.3	1.35	4	100	3.76
1,2-Dibromoethane	N.D.	0.001	17	4.6	NA	NA	10	0.045	7.69
Tetrachloroethylene	N.D.	0.001	35	35	<0.001	<0.001	2.3	100	6.79
Chlorobenzene	**0.0028**	0.001	10	10	0.043	<0.001	0.11	75	4.62
Ethylbenzene	**0.022**	0.001	33	33	2.3	0.23	0.23	100	4.34
p/m-Xylene (see note)	**0.037**	0.001	5	0.8	0.23	0.023	0.005	100	4.34
Styrene	**0.033**	0.001	20	20	0.059	0.01	0.16	50	4.25
o-Xylene	**0.029**	0.001	5	0.8	0.23	0.023	0.005	100	4.34
1,1,2,2-Tetrachloroethane	**0.0018**	0.001	0.5	0.1	0.01	<0.001	0.76	1	6.87
1,3,5-Trimethylbenzene	**0.016**	0.001	140	45	NA	NA	0.23	25	4.91
1,2,4-Trimethylbenzene	**0.045**	0.001	140	45	NA	NA	0.4	25	4.91
1,3-Dichlorobenzene (meta)	N.D.	0.001	1	0.33	0.33	0.033	NA	NA	6.01
1,2-Dichlorobenzene (ortho)	N.D.	0.001	13	0.33	0.33	0.033	25	50	6.01
1,4-Dichlorobenzene (para)	N.D.	0.001	5	0.1	0.03	0.001	0.09	75	6.01
1,2,4-Trichlorobenzene	N.D.	0.002	0.27	0.27	0.27	0.027	1.5	5	7.4
HexachloroButadiene	N.D.	0.002	0.01	0.002	0.001	<0.001	0.56	0.02	10.67

Instrument: HAPSITE Smart Plus GC/MS Method: FAST TO-14 Last Calib: 3/14/13 Reporting Limit (RL) is lowest calib standard

Quality Control: 3-6 point calib w/ %RSD<30, Internal Stds, daily blank, daily calib check standard N.D =Not Detected = Less than RL

Actual concentration of p/m Xylenes could be twice listed value (due to co-elution of congeners duiring calibration operations)

[1]Safe Levels: 1 hr =1 hr EPA AEGL-1 or 1 hr California REL or (DOE TEEL-0)/2; 8 hr = 8 hr EPA AEGL-1 or (California REL1hr)/5, or (DOE TEEL-0)/10; 5 yr and 30 year exposure levels per MassDEP MCP; Worker = lower of OSHA PEL or NIOSH REL for 8 hrs.

Dilution Fact = **3** If sample was diluted, the Reporting Limits listed above must be multiplied by this Dilution Factor

COMMENTS: Total Ion Chromatogram suggests low levels of C9-C11 Diesel Fuel hydrocarbons ; 0.3 to 0.4 ppmV

MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA				RTN:	3-31576
City or Town:	Medford		Address:	High St Traffic Circle					Location:
Date Sampled:	5/31/13	Time:	7:59 PM	Field ID:	AA-2	Collector:	Clark		
Date Analyzed:	5/13/13	Time:	8:48 PM	Lab ID:	003	Analyst:	Fitzgerald		

Method Analytes	Conc. in ppmV		Safe Levels[1] (below concentration for given time period) - ppmV						
	Sample	RL	1 hour	8 hour	5 yrs	30 yrs	Odors	Worker	µg/m³/ppb
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Chloroethane	N.D.	0.002	50	10	NA	NA	4.2	1000	2.64
Trichloromonofluoromethane	N.D.	0.002	500	100	NA	NA	5	1000	5.6
1,1-Dichloroethene	N.D.	0.001	2.5	0.5	NA	NA	120	NA	3.97
Methylene Chloride	N.D.	0.002	4	0.86	0.86	0.01	78	25	3.48
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1,1-Dichloroethane	N.D.	0.002	50	10	1.2	0.12	15	100	4.05
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1,3,5-Trimethylbenzene	**0.0038**	0.001	140	45	NA	NA	0.23	25	4.91
1,2,4-Trimethylbenzene	**0.011**	0.001	140	45	NA	NA	0.4	25	4.91
1,3-Dichlorobenzene (meta)	N.D.	0.001	1	0.33	0.33	0.033	NA	NA	6.01
1,2-Dichlorobenzene (ortho)	N.D.	0.001	13	0.33	0.33	0.033	25	50	6.01
1,4-Dichlorobenzene (para)	N.D.	0.001	5	0.1	0.03	0.001	0.09	75	6.01
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MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA			RTN:	3-31576
City or Town:	Arlington		Address:	In front of 266 Mystic Valley Road				Location:
Date Sampled:	5/31/13	Time:	8:25 PM	Field ID:	AA-3	Collector:	Clark	
Date Analyzed:	5/13/13	Time:	9:23 PM	Lab ID:	004	Analyst:	Fitzgerald	

Method Analytes	Conc. in ppmV		Safe Levels[1] (below concentration for given time period) - ppmV						
	Sample	RL	1 hour	8 hour	5 yrs	30 yrs	Odors	Worker	µg/m³/ppb
Vinyl Chloride	N.D.	0.002	250	70	0.06	0.001	150	1	2.58
Bromomethane	N.D.	0.005	1	0.2	0.013	0.001	10	20	3.89
Chloroethane	N.D.	0.002	50	10	NA	NA	4.2	1000	2.64
Trichloromonofluoromethane	N.D.	0.002	500	100	NA	NA	5	1000	5.6
1,1-Dichloroethene	N.D.	0.001	2.5	0.5	NA	NA	120	NA	3.97
Methylene Chloride	N.D.	0.002	4	0.86	0.86	0.01	78	25	3.48
1,1,2-Trichlorotrifluoroethane	N.D.	0.001	500	100	NA	NA	45	1000	7.65
1,1-Dichloroethane	N.D.	0.002	50	10	1.2	0.12	15	100	4.05
Cis 1,2-Dichloroethylene	N.D.	0.001	140	140	0.088	0.009	8.5	100	3.97
Chloroform	N.D.	0.001	0.03	0.01	0.01	<0.001	43	2	4.87
1,2-Dichloroethane	N.D.	0.001	5	1	0.01	<0.001	0.3	1	4.05
1,1,1-Trichloroethane	N.D.	0.001	230	230	9.5	0.95	6	NA	5.46
Benzene	N.D.	0.001	52	9	0.07	0.001	0.8	0.1	3.19
Carbon Tetrachloride	N.D.	0.001	44	19	0.02	<0.001	5	2	6.3
1,2-Dichloropropane	N.D.	0.001	5	1	0.02	<0.001	0.1	75	4.62
Trichloroethylene	N.D.	0.001	130	77	0.15	0.003	130	100	5.36
cis-1,3-Dichloropropene	N.D.	0.001	0.02	0.045	0.008	0.001	0.5	NA	4.54
trans-1,3-Dichloropropene	N.D.	0.002	0.5	0.1	0.008	0.001	0.5	1	4.54
1,1,2-Trichloroethane	N.D.	0.001	5	0.1	0.02	<0.001	NA	10	5.46
Toluene	N.D.	0.001	200	200	13.3	1.35	4	100	3.76
1,2-Dibromoethane	N.D.	0.001	17	4.6	NA	NA	10	0.045	7.69
Tetrachloroethylene	N.D.	0.001	35	35	<0.001	<0.001	2.3	100	6.79
Chlorobenzene	N.D.	0.001	10	10	0.043	<0.001	0.11	75	4.62
Ethylbenzene	N.D.	0.001	33	33	2.3	0.23	0.23	100	4.34
p/m-Xylene (see note)	N.D.	0.001	5	0.8	0.23	0.023	0.005	100	4.34
Styrene	N.D.	0.001	20	20	0.059	0.01	0.16	50	4.25
o-Xylene	N.D.	0.001	5	0.8	0.23	0.023	0.005	100	4.34
1,1,2,2-Tetrachloroethane	N.D.	0.001	0.5	0.1	0.01	<0.001	0.76	1	6.87
1,3,5-Trimethylbenzene	N.D.	0.001	140	45	NA	NA	0.23	25	4.91
1,2,4-Trimethylbenzene	N.D.	0.001	140	45	NA	NA	0.4	25	4.91
1,3-Dichlorobenzene (meta)	N.D.	0.001	1	0.33	0.33	0.033	NA	NA	6.01
1,2-Dichlorobenzene (ortho)	N.D.	0.001	13	0.33	0.33	0.033	25	50	6.01
1,4-Dichlorobenzene (para)	N.D.	0.001	5	0.1	0.03	0.001	0.09	75	6.01
1,2,4-Trichlorobenzene	N.D.	0.002	0.27	0.27	0.27	0.027	1.5	5	7.4
HexachloroButadiene	N.D.	0.002	0.01	0.002	0.001	<0.001	0.56	0.02	10.67

Instrument: HAPSITE Smart Plus GC/MS Method: FAST TO-14 Last Calib: 3/14/13 Reporting Limit (RL) is lowest calib standard

Quality Control: 3-6 point calib w/ %RSD<30, Internal Stds, daily blank, daily calib check standard N.D =Not Detected = Less than RL

Actual concentration of p/m Xylenes could be twice listed value (due to co-elution of congeners duiring calibration operations)

[1]Safe Levels: 1 hr =1 hr EPA AEGL-1 or 1 hr California REL or (DOE TEEL-0)/2; 8 hr = 8 hr EPA AEGL-1 or (California REL1hr)/5, or (DOE TEEL-0)/10; 5 yr and 30 year exposure levels per MassDEP MCP; Worker = lower of OSHA PEL or NIOSH REL for 8 hrs.

Dilution Factor = 1 If sample was diluted, the Reporting Limits listed above must be multiplied by this Dilution Factor

COMMENTS: Only very low levels of hydrocarbons present; no clear diesel fuel signature

MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA			RTN:	3-31576
City or Town:	Medford		Address:	Mystic River Road @ Arlington St				Location:
Date Sampled:	5/31/13	Time:	8:40 PM	Field ID:	AA-4	Collector:	Clark	
Date Analyzed:	5/13/13	Time:	9:55 PM	Lab ID:	005	Analyst:	Fitzgerald	

Method Analytes	Conc. in ppmV		Safe Levels[1] (below concentration for given time period) - ppmV						
	Sample	RL	1 hour	8 hour	5 yrs	30 yrs	Odors	Worker	µg/m³/ppb
Vinyl Chloride	N.D.	0.002	250	70	0.06	0.001	150	1	2.58
Bromomethane	N.D.	0.005	1	0.2	0.013	0.001	10	20	3.89
Chloroethane	N.D.	0.002	50	10	NA	NA	4.2	1000	2.64
Trichloromonofluoromethane	N.D.	0.002	500	100	NA	NA	5	1000	5.6
1,1-Dichloroethene	N.D.	0.001	2.5	0.5	NA	NA	120	NA	3.97
Methylene Chloride	N.D.	0.002	4	0.86	0.86	0.01	78	25	3.48
1,1,2-Trichlorotrifluoroethane	N.D.	0.001	500	100	NA	NA	45	1000	7.65
1,1-Dichloroethane	N.D.	0.002	50	10	1.2	0.12	15	100	4.05
Cis 1,2-Dichloroethylene	N.D.	0.001	140	140	0.088	0.009	8.5	100	3.97
Chloroform	N.D.	0.001	0.03	0.01	0.01	<0.001	43	2	4.87
1,2-Dichloroethane	N.D.	0.001	5	1	0.01	<0.001	0.3	1	4.05
1,1,1-Trichloroethane	N.D.	0.001	230	230	9.5	0.95	6	NA	5.46
Benzene	N.D.	0.001	52	9	0.07	0.001	0.8	0.1	3.19
Carbon Tetrachloride	N.D.	0.001	44	19	0.02	<0.001	5	2	6.3
1,2-Dichloropropane	N.D.	0.001	5	1	0.02	<0.001	0.1	75	4.62
Trichloroethylene	N.D.	0.001	130	77	0.15	0.003	130	100	5.36
cis-1,3-Dichloropropene	N.D.	0.001	0.02	0.045	0.008	0.001	0.5	NA	4.54
trans-1,3-Dichloropropene	N.D.	0.002	0.5	0.1	0.008	0.001	0.5	1	4.54
1,1,2-Trichloroethane	N.D.	0.001	5	0.1	0.02	<0.001	NA	10	5.46
Toluene	**0.015**	0.001	200	200	13.3	1.35	4	100	3.76
1,2-Dibromoethane	N.D.	0.001	17	4.6	NA	NA	10	0.045	7.69
Tetrachloroethylene	N.D.	0.001	35	35	<0.001	<0.001	2.3	100	6.79
Chlorobenzene	**0.0014**	0.001	10	10	0.043	<0.001	0.11	75	4.62
Ethylbenzene	**0.025**	0.001	33	33	2.3	0.23	0.23	100	4.34
p/m-Xylene (see note)	**0.037**	0.001	5	0.8	0.23	0.023	0.005	100	4.34
Styrene	**0.0018**	0.001	20	20	0.059	0.01	0.16	50	4.25
o-Xylene	**0.034**	0.001	5	0.8	0.23	0.023	0.005	100	4.34
1,1,2,2-Tetrachloroethane	**0.0021**	0.001	0.5	0.1	0.01	<0.001	0.76	1	6.87
1,3,5-Trimethylbenzene	**0.025**	0.001	140	45	NA	NA	0.23	25	4.91
1,2,4-Trimethylbenzene	**0.077**	0.001	140	45	NA	NA	0.4	25	4.91
1,3-Dichlorobenzene (meta)	N.D.	0.001	1	0.33	0.33	0.033	NA	NA	6.01
1,2-Dichlorobenzene (ortho)	N.D.	0.001	13	0.33	0.33	0.033	25	50	6.01
1,4-Dichlorobenzene (para)	N.D.	0.001	5	0.1	0.03	0.001	0.09	75	6.01
1,2,4-Trichlorobenzene	N.D.	0.002	0.27	0.27	0.27	0.027	1.5	5	7.4
HexachloroButadiene	N.D.	0.002	0.01	0.002	0.001	<0.001	0.56	0.02	10.67

Instrument: HAPSITE Smart Plus GC/MS Method: FAST TO-14 Last Calib: 3/14/13 Reporting Limit (RL) is lowest calib standard

Quality Control: 3-6 point calib w/ %RSD<30, Internal Stds, daily blank, daily calib check standard N.D =Not Detected = Less than RL

Actual concentration of p/m Xylenes could be twice listed value (due to co-elution of congeners duiring calibration operations)

[1]Safe Levels: 1 hr =1 hr EPA AEGL-1 or 1 hr California REL or (DOE TEEL-0)/2; 8 hr = 8 hr EPA AEGL-1 or (California REL1hr)/5, or (DOE TEEL-0)/10; 5 yr and 30 year exposure levels per MassDEP MCP; Worker = lower of OSHA PEL or NIOSH REL for 8 hrs.

Dilution Factor = 1 If sample was diluted, the Reporting Limits listed above must be multiplied by this Dilution Factor

COMMENTS: Total Ion Chromatogram suggests low levels of C9-C11 Diesel Fuel hydrocarbons; 0.5 to 0.8 ppmV

MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA			RTN:	3-31576
City or Town:	Arlington		Address:	186 Medford Street				Location:
Date Sampled:	5/31/13	Time:	9:53 PM	Field ID:	IA-1	Collector:	Clark	1st floor in kitchen
Date Analyzed:	5/13/13	Time:	10:28 PM	Lab ID:	006	Analyst:	Fitzgerald	

Method Analytes	Conc. in ppmV		Safe Levels[1] (below concentration for given time period) - ppmV						
	Sample	RL	1 hour	8 hour	5 yrs	30 yrs	Odors	Worker	µg/m³/ppb
Vinyl Chloride	N.D.	0.002	250	70	0.06	0.001	150	1	2.58
Bromomethane	N.D.	0.005	1	0.2	0.013	0.001	10	20	3.89
Chloroethane	N.D.	0.002	50	10	NA	NA	4.2	1000	2.64
Trichloromonofluoromethane	N.D.	0.002	500	100	NA	NA	5	1000	5.6
1,1-Dichloroethene	N.D.	0.001	2.5	0.5	NA	NA	120	NA	3.97
Methylene Chloride	0.0037	0.002	4	0.86	0.86	0.01	78	25	3.48
1,1,2-Trichlorotrifluoroethane	N.D.	0.001	500	100	NA	NA	45	1000	7.65
1,1-Dichloroethane	N.D.	0.002	50	10	1.2	0.12	15	100	4.05
Cis 1,2-Dichloroethylene	N.D.	0.001	140	140	0.088	0.009	8.5	100	3.97
Chloroform	N.D.	0.001	0.03	0.01	0.01	<0.001	43	2	4.87
1,2-Dichloroethane	N.D.	0.001	5	1	0.01	<0.001	0.3	1	4.05
1,1,1-Trichloroethane	N.D.	0.001	230	230	9.5	0.95	6	NA	5.46
Benzene	N.D.	0.001	52	9	0.07	0.001	0.8	0.1	3.19
Carbon Tetrachloride	N.D.	0.001	44	19	0.02	<0.001	5	2	6.3
1,2-Dichloropropane	N.D.	0.001	5	1	0.02	<0.001	0.1	75	4.62
Trichloroethylene	N.D.	0.001	130	77	0.15	0.003	130	100	5.36
cis-1,3-Dichloropropene	N.D.	0.001	0.02	0.045	0.008	0.001	0.5	NA	4.54
trans-1,3-Dichloropropene	N.D.	0.002	0.5	0.1	0.008	0.001	0.5	1	4.54
1,1,2-Trichloroethane	N.D.	0.001	5	0.1	0.02	<0.001	NA	10	5.46
Toluene	0.0032	0.001	200	200	13.3	1.35	4	100	3.76
1,2-Dibromoethane	N.D.	0.001	17	4.6	NA	NA	10	0.045	7.69
Tetrachloroethylene	N.D.	0.001	35	35	<0.001	<0.001	2.3	100	6.79
Chlorobenzene	N.D.	0.001	10	10	0.043	<0.001	0.11	75	4.62
Ethylbenzene	0.0039	0.001	33	33	2.3	0.23	0.23	100	4.34
p/m-Xylene (see note)	0.0065	0.001	5	0.8	0.23	0.023	0.005	100	4.34
Styrene	N.D.	0.001	20	20	0.059	0.01	0.16	50	4.25
o-Xylene	0.0058	0.001	5	0.8	0.23	0.023	0.005	100	4.34
1,1,2,2-Tetrachloroethane	N.D.	0.001	0.5	0.1	0.01	<0.001	0.76	1	6.87
1,3,5-Trimethylbenzene	0.0049	0.001	140	45	NA	NA	0.23	25	4.91
1,2,4-Trimethylbenzene	0.014	0.001	140	45	NA	NA	0.4	25	4.91
1,3-Dichlorobenzene (meta)	N.D.	0.001	1	0.33	0.33	0.033	NA	NA	6.01
1,2-Dichlorobenzene (ortho)	N.D.	0.001	13	0.33	0.33	0.033	25	50	6.01
1,4-Dichlorobenzene (para)	N.D.	0.001	5	0.1	0.03	0.001	0.09	75	6.01
1,2,4-Trichlorobenzene	N.D.	0.002	0.27	0.27	0.27	0.027	1.5	5	7.4
HexachloroButadiene	N.D.	0.002	0.01	0.002	0.001	<0.001	0.56	0.02	10.67

Instrument: HAPSITE Smart Plus GC/MS Method: FAST TO-14 Last Calib: 3/14/13 Reporting Limit (RL) is lowest calib standard

Quality Control: 3-6 point calib w/ %RSD<30, Internal Stds, daily blank, daily calib check standard N.D =Not Detected = Less than RL

Actual concentration of p/m Xylenes could be twice listed value (due to co-elution of congeners duiring calibration operations)

[1]Safe Levels: 1 hr =1 hr EPA AEGL-1 or 1 hr California REL or (DOE TEEL-0)/2; 8 hr = 8 hr EPA AEGL-1 or (California REL1hr)/5, or (DOE TEEL-0)/10; 5 yr and 30 year exposure levels per MassDEP MCP; Worker = lower of OSHA PEL or NIOSH REL for 8 hrs.

Dilution Factor = 1 If sample was diluted, the Reporting Limits listed above must be multiplied by this Dilution Factor

COMMENTS:Total Ion Chromatogram suggests low levels of C9-C11 Diesel Fuel hydrocarbons; 0.2 to 0.3 ppmV

MassDEP Field Assessment and Support Team (FAST)				SURFACE WATER			RTN:	3-31576
City or Town:	Arlington		Address:	Mystic River				Location:
Date Sampled:	6/3/13	Time:	PM	Field ID:	Up	Collector:	Ross	Upstream of Impacted Area
Date Analyzed:	6/4/13	Time:	2:31 PM	Lab ID:	003	Analyst:	Fitzgerald	

NOTE - ALL REPORTED VALUES ARE ESTIMATES, BASED UPON HEADSPACE ANALYSIS AND APPLICATION OF HENRY'S LAW

Method Analytes	Est Conc µg/L		Sample	Dilution	Hdspc	K	DW	Aquatic Toxicty µg/L	
	Result	R.L.	ppbV	Factor	ppbV	(25°C)	µg/L	Acute	Chronic
Vinyl Chloride	N.D.	1	N.D.	43	N.D.	1.14	2	400,000	40,000
Bromomethane	N.D.	5	N.D.	43	N.D.	0.301	10	300	30
Chloroethane	N.D.	10	N.D.	43	N.D.	0.275	NS	NA	NA
Trichloromonofluoromethane	N.D.	7	N.D.	43	N.D.	4.51	NS	NA	NA
1,1-Dichloroethene	N.D.	1	N.D.	43	N.D.	0.634	7	12,000	1,200
Methylene Chloride	N.D.	5	N.D.	43	N.D.	0.09	5	NA	6,700
1,1,2-Trichlorotrifluoroethane	N.D.	9	N.D.	43	N.D.	14.34	NS	NA	NA
1,1-Dichloroethane	N.D.	35	N.D.	43	N.D.	0.012	70	NA	990
Cis 1,2-Dichloroethylene	N.D.	2	N.D.	43	N.D.	0.167	70	140,000	14,000
Chloroform	N.D.	2	N.D.	43	N.D.	0.151	70	NA	970
1,2-Dichloroethane	N.D.	9	N.D.	43	N.D.	0.024	5	NA	990
1,1,1-Trichloroethane	N.D.	1	N.D.	43	N.D.	0.705	200	9000	900
Benzene	N.D.	2	N.D.	43	N.D.	0.116	5	4600	460
Carbon Tetrachloride	N.D.	1	N.D.	43	N.D.	1.132	5	2000	200
1,2-Dichloropropane	N.D.	2	N.D.	43	N.D.	0.116	5	NA	25,000
Trichloroethylene	N.D.	2	N.D.	43	N.D.	0.197	5	1900	190
cis-1,3-Dichloropropene	N.D.	2	N.D.	43	N.D.	0.146	NS	90	9
trans-1,3-Dichloropropene	N.D.	14	N.D.	43	N.D.	0.036	NS	90	9
1,1,2-Trichloroethane	N.D.	9	N.D.	43	N.D.	0.034	5	NA	15,000
Toluene	N.D.	1	N.D.	43	N.D.	0.272	1,000	1400	1,400
1,2-Dibromoethane	N.D.	13	N.D.	43	N.D.	0.029	NS	NA	9600
Tetrachloroethylene	N.D.	1	N.D.	43	N.D.	0.726	5	NA	1,100
Chlorobenzene	N.D.	2	N.D.	43	N.D.	0.128	100	NA	38
Ethylbenzene	N.D.	1	N.D.	43	N.D.	0.323	700	1800	180
p/m-Xylene (see note)	N.D.	1	N.D.	43	N.D.	0.27	10,000	200	200
Styrene	N.D.	2	N.D.	43	N.D.	0.113	100	2500	250
o-Xylene	N.D.	2	N.D.	43	N.D.	0.114	part of total Xylenes		
1,1,2,2-Tetrachloroethane	N.D.	25	N.D.	43	N.D.	0.015	5	NA	4,000
1,3,5-Trimethylbenzene	N.D.	1	N.D.	43	N.D.	0.272	NS	5400	540
1,2,4-Trimethylbenzene	N.D.	2	N.D.	43	N.D.	0.212	NS	5400	540
1,3-Dichlorobenzene (meta)	N.D.	3	N.D.	43	N.D.	0.108	1	NA	1500
1,2-Dichlorobenzene (ortho)	N.D.	4	N.D.	43	N.D.	0.079	9	780	78
1,4-Dichlorobenzene (para)	N.D.	4	N.D.	43	N.D.	0.099	0.7	NA	310
1,2,4-Trichlorobenzene	N.D.	14	N.D.	43	N.D.	0.058	2	NA	340
HexachloroButadiene	N.D.	5	N.D.	43	N.D.	0.334	6	NA	13

Instrument: HAPSITE Smart Plus GC/MS Method: FAST TO-14 Last Calib: 3/14/13 Reporting Limit (R.L.) is lowest calib standard

Quality Control: 3-6 point calib w/ %RSD<30, Internal Stds, daily blank, daily calib check standard R.L= estimated aqueous conc

Headspace procedure involves half-filling a 40 mL vial and shaking it vigorously 30 seconds twice over a minimum 10 minute time period, at about 25°C. Calculated aqueous concentration assumes 75% of equilbrium conditions using Henry's Law.

N.D. = Not Detected K = dimensionless Henry's Law Constant DW = Drinking Water standard NA = Information Not Available

Aquatic Toxicity values from various sources as selected in MassDEP Method 1 Standard calculations for GW-3 (2013 proposal)

COMMENTS:

MassDEP Field Assessment and Support Team (FAST)				SURFACE WATER			RTN:	3-31576
City or Town:	Arlington		Address:	Mystic River				Location:
Date Sampled:	6/3/13	Time:	PM	Field ID:	mid	Collector:	Ross	Middle of Impacted Area
Date Analyzed:	6/4/13	Time:	3:18 PM	Lab ID:	004	Analyst:	Fitzgerald	

NOTE - ALL REPORTED VALUES ARE ESTIMATES, BASED UPON HEADSPACE ANALYSIS AND APPLICATION OF HENRY'S LAW

Method Analytes	Est Conc µg/L		Sample	Dilution	Hdspc	K	DW	Aquatic Toxicty µg/L	
	Result	R.L.	ppbV	Factor	ppbV	(25°C)	µg/L	Acute	Chronic
Vinyl Chloride	N.D.	1	N.D.	43	N.D.	1.14	2	400,000	40,000
Bromomethane	N.D.	5	N.D.	43	N.D.	0.301	10	300	30
Chloroethane	N.D.	10	3	43	N.D.	0.275	NS	NA	NA
Trichloromonofluoromethane	N.D.	7	N.D.	43	N.D.	4.51	NS	NA	NA
1,1-Dichloroethene	N.D.	1	N.D.	43	N.D.	0.634	7	12,000	1,200
Methylene Chloride	N.D.	5	N.D.	43	N.D.	0.09	5	NA	6,700
1,1,2-Trichlorotrifluoroethane	N.D.	9	N.D.	43	N.D.	14.34	NS	NA	NA
1,1-Dichloroethane	N.D.	35	N.D.	43	N.D.	0.012	70	NA	990
Cis 1,2-Dichloroethylene	N.D.	2	N.D.	43	N.D.	0.167	70	140,000	14,000
Chloroform	N.D.	2	N.D.	43	N.D.	0.151	70	NA	970
1,2-Dichloroethane	N.D.	9	N.D.	43	N.D.	0.024	5	NA	990
1,1,1-Trichloroethane	N.D.	1	N.D.	43	N.D.	0.705	200	9000	900
Benzene	N.D.	2	N.D.	43	N.D.	0.116	5	4600	460
Carbon Tetrachloride	N.D.	1	N.D.	43	N.D.	1.132	5	2000	200
1,2-Dichloropropane	N.D.	2	N.D.	43	N.D.	0.116	5	NA	25,000
Trichloroethylene	N.D.	2	N.D.	43	N.D.	0.197	5	1900	190
cis-1,3-Dichloropropene	N.D.	2	N.D.	43	N.D.	0.146	NS	90	9
trans-1,3-Dichloropropene	N.D.	14	N.D.	43	N.D.	0.036	NS	90	9
1,1,2-Trichloroethane	N.D.	9	N.D.	43	N.D.	0.034	5	NA	15,000
Toluene	N.D.	1	N.D.	43	N.D.	0.272	1,000	1400	1,400
1,2-Dibromoethane	N.D.	13	N.D.	43	N.D.	0.029	NS	NA	9600
Tetrachloroethylene	N.D.	1	N.D.	43	N.D.	0.726	5	NA	1,100
Chlorobenzene	N.D.	2	N.D.	43	N.D.	0.128	100	NA	38
Ethylbenzene	N.D.	1	N.D.	43	N.D.	0.323	700	1800	180
p/m-Xylene (see note)	N.D.	1	N.D.	43	N.D.	0.27	10,000	200	200
Styrene	N.D.	2	N.D.	43	N.D.	0.113	100	2500	250
o-Xylene	N.D.	2	N.D.	43	N.D.	0.114	part of total Xylenes		
1,1,2,2-Tetrachloroethane	N.D.	25	N.D.	43	N.D.	0.015	5	NA	4,000
1,3,5-Trimethylbenzene	N.D.	1	N.D.	43	N.D.	0.272	NS	5400	540
1,2,4-Trimethylbenzene	N.D.	2	N.D.	43	N.D.	0.212	NS	5400	540
1,3-Dichlorobenzene (meta)	N.D.	3	N.D.	43	N.D.	0.108	1	NA	1500
1,2-Dichlorobenzene (ortho)	N.D.	4	N.D.	43	N.D.	0.079	9	780	78
1,4-Dichlorobenzene (para)	N.D.	4	N.D.	43	N.D.	0.099	0.7	NA	310
1,2,4-Trichlorobenzene	N.D.	14	N.D.	43	N.D.	0.058	2	NA	340
HexachloroButadiene	N.D.	5	N.D.	43	N.D.	0.334	6	NA	13

Instrument: HAPSITE Smart Plus GC/MS Method: FAST TO-14 Last Calib: 3/14/13 Reporting Limit (R.L.) is lowest calib standard

Quality Control: 3-6 point calib w/ %RSD<30, Internal Stds, daily blank, daily calib check standard R.L= estimated aqueous conc

Headspace procedure involves half-filling a 40 mL vial and shaking it vigorously 30 seconds twice over a minimum 10 minute time period, at about 25°C. Calculated aqueous concentration assumes 75% of equilbrium conditions using Henry's Law.

N.D. = Not Detected K = dimensionless Henry's Law Constant DW = Drinking Water standard NA = Information Not Available

Aquatic Toxicity values from various sources as selected in MassDEP Method 1 Standard calculations for GW-3 (2013 proposal)

COMMENTS:

MassDEP Field Assessment and Support Team (FAST)				SURFACE WATER			RTN:	3-31576
City or Town:	Arlington		Address:	Mystic River				Location:
Date Sampled:	6/3/13	Time:	PM	Field ID:	down	Collector:	Ross	Downstream of Impacted Area
Date Analyzed:	6/4/13	Time:	3:56 PM	Lab ID:	005	Analyst:	Fitzgerald	

NOTE - ALL REPORTED VALUES ARE ESTIMATES, BASED UPON HEADSPACE ANALYSIS AND APPLICATION OF HENRY'S LAW

Method Analytes	Est Conc µg/L		Sample	Dilution	Hdspc	K	DW	Aquatic Toxicty µg/L	
	Result	R.L.	ppbV	Factor	ppbV	(25°C)	µg/L	Acute	Chronic
Vinyl Chloride	N.D.	1	N.D.	43	N.D.	1.14	2	400,000	40,000
Bromomethane	N.D.	5	N.D.	43	N.D.	0.301	10	300	30
Chloroethane	N.D.	10	2	43	N.D.	0.275	NS	NA	NA
Trichloromonofluoromethane	N.D.	7	N.D.	43	N.D.	4.51	NS	NA	NA
1,1-Dichloroethene	N.D.	1	N.D.	43	N.D.	0.634	7	12,000	1,200
Methylene Chloride	N.D.	5	N.D.	43	N.D.	0.09	5	NA	6,700
1,1,2-Trichlorotrifluoroethane	N.D.	9	N.D.	43	N.D.	14.34	NS	NA	NA
1,1-Dichloroethane	N.D.	35	N.D.	43	N.D.	0.012	70	NA	990
Cis 1,2-Dichloroethylene	N.D.	2	N.D.	43	N.D.	0.167	70	140,000	14,000
Chloroform	N.D.	2	N.D.	43	N.D.	0.151	70	NA	970
1,2-Dichloroethane	N.D.	9	N.D.	43	N.D.	0.024	5	NA	990
1,1,1-Trichloroethane	N.D.	1	N.D.	43	N.D.	0.705	200	9000	900
Benzene	N.D.	2	N.D.	43	N.D.	0.116	5	4600	460
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Toluene	**2**	1	2	43	105	0.272	1,000	1400	1,400
1,2-Dibromoethane	N.D.	13	N.D.	43	N.D.	0.029	NS	NA	9600
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Chlorobenzene	N.D.	2	N.D.	43	N.D.	0.128	100	NA	38
Ethylbenzene	**2**	1	2	43	71	0.323	700	1800	180
p/m-Xylene (see note)	**3**	1	3	43	118	0.27	10,000	200	200
Styrene	N.D.	2	N.D.	43	N.D.	0.113	100	2500	250
o-Xylene	**5**	2	2	43	91	0.114	part of total Xylenes		
1,1,2,2-Tetrachloroethane	N.D.	25	N.D.	43	N.D.	0.015	5	NA	4,000
1,3,5-Trimethylbenzene	**3**	1	2	43	101	0.272	NS	5400	540
1,2,4-Trimethylbenzene	**10**	2	6	43	275	0.212	NS	5400	540
1,3-Dichlorobenzene (meta)	N.D.	3	N.D.	43	N.D.	0.108	1	NA	1500
1,2-Dichlorobenzene (ortho)	N.D.	4	N.D.	43	N.D.	0.079	9	780	78
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Aquatic Toxicity values from various sources as selected in MassDEP Method 1 Standard calculations for GW-3 (2013 proposal)

COMMENTS: Total Ion Chromatogram indicates presence of C3 alkyl benzene constituents of diesel fuel