MassDEP Field Assessment and Support Team (FAST)

After Incident Report

DEP RTN 3-28,599

Newburyport Gasoline Tanker Rollover

July 6, 2009

BACKGROUND

At about 9:15 AM on Monday, July 6, 2009, a gasoline tanker overturned on Route I-95 North in Newburyport, just south of the Ferry Road overpass. The tanker was carrying 10,200 gallons of gasoline (9000 gallons of Sunoco regular; 1200 gallons of Sunoco premium). Approximately 1600 gallons of fuel was off-loaded from the tanker during salvage operations. Another 400 gallons +/- of gasoline was recovered by Vacuum truck from highway areas, catch basins, and the Merrimack River, leaving a net of approximately 8200 gallons remaining in the environment.

Gasoline leaking from the overturned tanker discharged into a swale on the easterly side of the roadway. Some of the gasoline flowed into catch basins and into a storm drain that discharged north of the site into the Merrimack River. An unknown but potentially significant amount of gasoline leached into the ground, given the pervious nature of soils in this area (i.e., sands and gravels).

The spill site is located approximately 150 feet west of a residential development, including Laurel Road, which runs parallel to Route 95. Homes in this area were evacuated, and power to Laurel Road was cut off.

The spill site is also in a mapped Zone II, and is approximately 1200 feet west of one public water supply well, and 1200 feet southeast of another well. Details are provided in Figure 1.

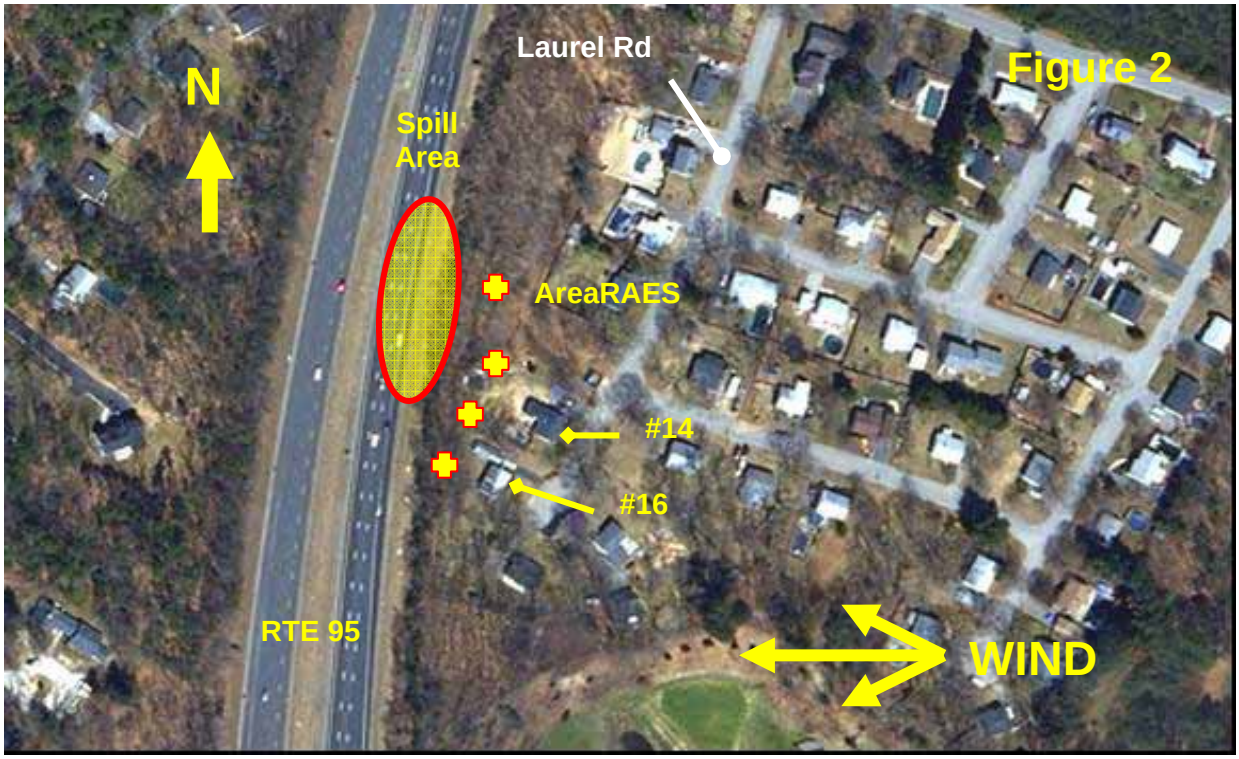
FAST ACTIVATION AND DEPLOYMENT

Monday, July 6, 2009

FAST was notified of the incident at about 10:30 AM. The FAST vehicle was loaded with the appropriate equipment, departed from Wilmington at 11:00 AM, and arrived at the site at 12:10 PM. Team members included John Fitzgerald (Team Leader), Andy Clark, Tim Dame, and Nicole Whitney. Larry Immerman was called to the site late in the day to assist in critical GC and well installation operations.

In viewing the incident and meeting with Coast Guard, EPA, and DFS personnel, a decision was made by the Team Leader to temporarily re-assign Andy Clark from FAST to BWSC/NERO/ER, as that section was short of staff. Based on a discussion with BWSC/NERO/ER lead responder Paul Giddings, a decision was also made that FAST resources could best be utilized to monitor potential impacts to the Laurel Road neighborhood. Accordingly, the FAST vehicle was deployed to end of Laurel Road, in front of House #16.

Four AreaRAEs were set up as shown in Figure 2, i.e., between the spill area and neighboring homes.

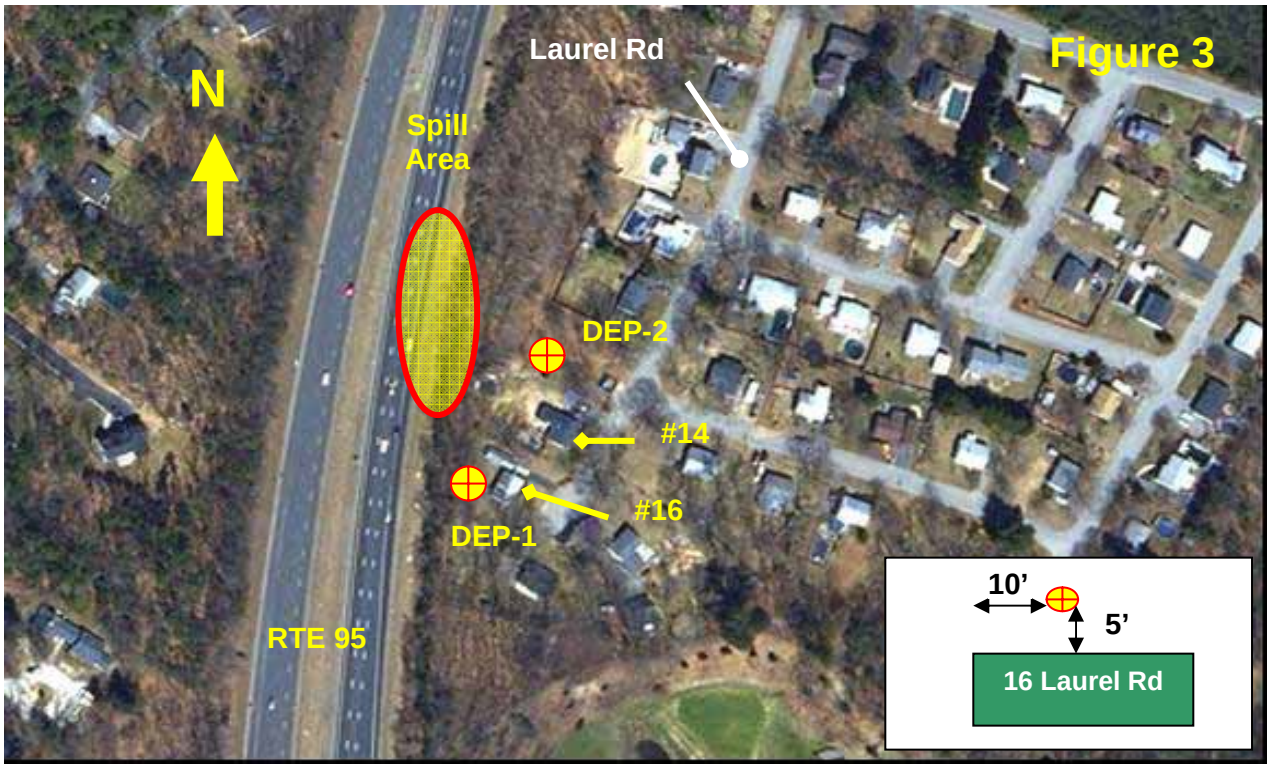


The AreaRAEs were monitored remotely from the FAST vehicle from 4:30 PM to 9 PM. VOC readings on all units were generally 0 (i.e., Not Detected), with occasional readings of 0.1 to 0.3 ppmV. This is consistent with the wind direction, which was blowing westerly all day, initially at about 2.5 mph, dropping off to less than 1 mph at night. It was also consistent with the lack of odors in this area. This is in contrast to the significant gasoline odors that were present in the spill area, along with PID readings in the 30 – 50 ppmV range.

Several ambient air samples were also taken in the neighborhood area for analysis on the FAST GC/PID/ELCD. The results of these analyses indicated essentially background concentrations of gasoline contaminants.

Crews from National Grid and personnel from the Newburyport Fire Department made inquiries to FAST personnel as to whether homes could be re-occupied and whether electrical power could be restored to Laurel Road. Team Leader Fitzgerald provided a recommendation that such actions appeared to be appropriate, though there was still a potential issue with #16 Laurel Road. This home had a discernable odor of gasoline present in the basement. A sample of the basement air was analyzed on the GC/PID/ELCD, revealing a clear gasoline chromatographic signature, and elevated levels of gasoline constituents such as Toluene (36 ppbV). After the basement was ventilated for several hours, the odors had diminished. Another sample was then analyzed and found to contain near background levels of VOCs (e.g., Toluene was reduced to 4 ppbV).

To evaluate whether a subsurface vapor intrusion pathway may have been the source of the gasoline contaminants found in this basement, a soil gas probe, DEP-1, was installed 5 feet westerly of the structure, as shown in Figure 3. The probe was driven 15 feet into the ground (where refusal was encountered, possibly on a boulder). No water was present in the probe (indicating that the groundwater table was more than 15 feet below grade). A soil gas sample was obtained from this probe and analyzed on the GC/PID/ECLD, revealing low but discernible levels of gasoline vapors (consistent with a PID reading of 12 ppmV). Because of the uncertainty of a vapor intrusion pathway, the resident elected to spend the night elsewhere, and National Grid elected not to restore power to the structure.



To further evaluate the possibility of subsurface gasoline migration toward other areas of the neighborhood, another probe (DEP-2) was driven 20 feet into the ground northwesterly of #14 Laurel Road, as shown on Figure 3. Groundwater was encountered in this probe between 15 and 20 feet below grade. A groundwater sample was obtained, which contained a considerable amount of fine sands. Non-aqueous-phase gasoline was not observed. Analysis of this sample on the GC/PID/ELCD indicated low but discernible levels of dissolved gasoline constituents.

ENPRO, the cleanup company retained by the Responsible Party, terminated its soil excavation activities in the spill area at around 9 P.M. Plans were communicated to resume excavation between 7 A.M. and 8 A.M. the following morning. Given the lack of odors/vapor impacts in the neighborhood, and continuing winds from the east, FAST demobilized at around 9:30 PM, with plans to return the following morning, to continue to monitor vapor emissions toward the neighborhood, and to resample DEP-1 and DEP-2.

Tuesday, July 7, 2009

FAST personnel (Fitzgerald, Dame, and Kelley Michael) arrived at the site between 7 AM and 8 AM. The FAST vehicle was again stationed in front of #16 Laurel Road.

Because of light to moderate rainfall, only two AreaRAE units were deployed behind #16 and #14 Laurel Road. Both units were covered with a plastic bag, with small openings for the sample inlet and outlets. Monitoring was conducted from 8:45 AM to 3 PM. Once again, the wind was from the east, and once again, the two AreaRAEs continued to detect no or low (up to 0.3 ppmV) levels of VOC.

DEP-1 was re-sampled and re-analyzed. Only trace levels of gasoline constituents were identified. The indoor air at #16 Laurel was also re-analyzed; no evidence of gasoline was identified. On the basis of this data, Team Leader Fitzgerald requested that ENPRO contact National Grid to restore power to the home, which was accomplished a few hours later. The resident returned to the home and was advised of these findings.

A water sample was again obtained from DEP-2 and re-analyzed on the GC/PID/ELCD. A trace amount of gasoline constituents were noted (well below drinking water levels).

It was theorized that the gasoline odors present in the basement of #16 Laurel Road on 7/6/09 were likely the result of atmospheric transport from the spill zone (as opposed to a subsurface transport pathway). The elevated levels of gasoline vapors detected in DEP-1 (behind #16 Laurel Road) were likely due to diffusion out of the basement and/or “barometric pumping” from the overlying ambient air. In any event, a subsurface vapor intrusion pathway appeared unlikely.

It is not clear why discernable levels of gasoline constituents were identified in a water sample from DEP-2 on 7/6/09, which all but disappeared the following day. It is possible that rainfall may have dissolved vapor phase constituents in the ambient air and transported them to the water table interface. In any event, a groundwater plume did not appear to be present at this location at this time.

Due to a heavy rain, ENPRO terminated soil excavation activities at about 3 PM. FAST personnel demobilized shortly thereafter.

MEDIA

A reporter and camera crew from WBZ Channel 4 TV interviewed Team Leader Fitzgerald on 7/7/09. The interview occurred inside the FAST vehicle, with camera shots of the various pieces of equipment.