

**January 17, 2018**

**SUBSURFACE INVESTIGATION REPORT**

**RTE 639/LADY SMITH ROAD IMPROVEMENTS**

**P0639-016-624, P101; UPC#106670**

Cardno completed the above captioned report on January 3, 2018. The project consists of widening RTE 639 (Lady Smith Road) corridor to four lanes and improving its intersections with both Route one (Jefferson Davis Hwy) and Interstate I-95. The Hazmat investigation identified and evaluated recognized environmental conditions (RECs) within the proposed project corridor and its immediate vicinity that could be source of environmental risks. RECs are located at the intersections of RTEs 639 and 1 and RTEs 639 and 712 (Green Rd.). They are current and former gas stations (GS), former dry cleaners, the hometown Reality Office (HRO) at the south eastern corner of Routes 1 and 639, and the Lady Smith Tire & Auto.

At the completion of reviewing historical aerial photographs from 1953 to 2015, the environmental database resources of Milford Connecticut, Virginia Department of Environmental Quality (VDEQ) files, and the September 1, 2017 site inspection, the consultant selected the following sites/facilities for the subsurface investigation (See Tables 1 and 3).

- Ladysmith Citgo located at 18055 Jefferson Davis Highway (JDH),
- Former Dry Cleaners (FDC) located at 18070 JDH,
- Hometown Reality Office (HRO) located at 7350 Ladysmith Road,
- McDonald's located at 8265 Ladysmith Road,
- Exxon GS located at 8270 Ladysmith Road, and
- Ladysmith Tire and Auto located at 18031 Green Road.

Conducted on November 6 and 8, 2017, the subsurface investigation installed 14 soil borings at a four-foot increment for a maximum of 24 feet below ground surface (BGS) to collect composite soils and ground water samples should water arise. Soil samples were sent to Air, Water, and Soil (AWS) Laboratories, Inc. of Richmond for analysis as well as groundwater sample of SB-1 borehole, the only source of water. Samples were analyzed for total petroleum hydrocarbons both gasoline range organics (TPH-GRO) and diesel range organics (TPH-DRO) as well as volatile organic compounds (VOC). Selection was based on observations, photoionization detector (PID) readings, and proposed project activities.

As Tables 1 and 2 (Pages 3 and 4) illustrate, petroleum contaminated soil was detected in four (4) of the investigated facilities (Former Dry cleaners site, the HRO, McDonalds Restaurant, and Exxon GS). TPH Concentrations ranged from traces at Exxon (0.79 milligrams per Kilogram of soil) to moderate levels surpassing the VDEQ reportable quantity of 100 mg/Kg at HRO and Mc Donald's. An underground storage tank (UST) was also observed south of the HRO (at the southeastern corner of the intersection) of Routes 1 and 639. There were no VOCs at the former Dry cleaner or TPH in groundwater.

Based on the above findings, the consultant concluded the followings.

1. Excavated Soil from
  - a. SB-5, SB-7, and SB-9 from 0-4' and SB-12 from 4-8' should be clean fill standards while
  - b. SB-7 from 4-8' and SB-8 from 8-12' is likely to be above the VDEQ reportable quantity of 100mg/Kg of soil.
2. Accordingly, soil resulting from the first set of excavations (a) shall be managed in conformity with DEQ Clean fill requirements or restrictions (VSWMR 9 VAC 20-81-660),
3. Soil excavated at SB-7 and SB-8 instead will be managed in accordance with DEQ guidance on Management of Petroleum Contaminated Soil at VDOT Road Construction Sites, allowing its re-deposition at its source of origin or its immediate vicinity provided required criteria are met (DEQ.2011, Section 6.2.4),
4. Still, an offsite disposal or treatment is allowable should the project manager (PM) or engineer for construction norms or standards elect contaminated material not to be suitable.
5. As the HRO is a total take its UST shall be removed and disposed of at a permitted facility while surrounding soil will be managed accordingly to findings and proposed project activities. Thus right of way could include aforementioned associated costs in property acquisition negotiations.
6. Copies of the report will be sent to the VDEQ and available to contractors associated to the project for decision making and environmental compliance requirements.
7. Finally, if updated engineering plans require excavations around SB-7 and SB-8 to reach the contamination area 4-8 and 8-12 feet respectively, a special provision for the management of petroleum contaminated soil will be prepared.