MEMORANDUM

TO: Mr. Joseph Martella
Office of Land Revitalization and Sustainable Materials Management
Rhode Island Department of Environmental Management

FROM: David Rusczyk, GZA GeoEnvironmental, Inc. (GZA)
Kenneth Lento, The Narragansett Electric Company (National Grid)

GZA PROJECT NO. 05.0043654.60

DATE: March 25, 2022

SUBJECT: Former Tidewater Facility
200 Taft Street
Pawtucket, Rhode Island

As you are aware, The Narragansett Electric Company d/b/a National Grid (National Grid) is in the process of implementing a Rhode Island Department Environmental Management (RIDEM) approved environmental remedy at the above referenced Site which includes installation of a steel sheetpile containment wall with sealed interlocked joints and a revetment cap system along the banks of the river to mitigate the potential migration of non-aqueous phase liquids (NAPLs) from the upland portion of the Site.

Construction of the remedy is being performed in phases in coordination with other Site related projects. The first three phases of work were focused in the central and southern portions of the Site and were initiated in December 2020. The waterfront work in these three phases included the installation of approximately 500 feet of revetment and approximately 700 feet of the containment wall and the in-water and riverbank work within the first three phases was completed in August 2021.

The next phase of work (Phase 4) was initiated in October 2021 and was focused within the northern portion of the Site. The Phase 4 work included the installation of approximately 864 feet of revetment on the riverbanks of the Site and approximately 380 feet of containment wall. Installation of the revetment required removal/demolition of the existing deteriorated granite stone block walls, timber piles, and steel sheeting and re-grading of the riverbank to create a uniform slope prior to installation of the riprap materials. As of February 11, 2022, all in-water remedial work for Phase 4 and the remedial project has been completed and the associated in-water controls have been removed.

As requested, GZA GeoEnvironmental, Inc. (GZA) has prepared this memorandum to provide RIDEM a description of the in-water controls that were in-place at the time of the December 1, 2021 petroleum sheen breach that was reported by the contractor performing the work (Charter Contracting Company

[Charter]), the routine inspections that were performed to monitor the controls prior to the breach, and the modifications to the controls, inspections, procedures, and revetment cap design that were subsequently implemented to mitigate a subsequent breach in the in-water controls.

We note that prior to the December 3, 2021 breach, the United States Coast Guard (USGC) and RIDEM received a November 5, 2021 complaint of sheens with a petroleum odor observed at the Riverside Cemetery located approximately 800 feet downriver from the Site. Both the USGC and RIDEM visited the Site on November 12, 2021 in response to this complaint. At the time of the Site visit, Charter was performing maintenance on the in-water controls and was replacing spent absorbent booms but no other in-water work was being performed. Charter and GZA also informed the USGC and RIDEM that petroleum sheens had not left the work area to their knowledge and that the sheens were not likely from the Site since the November 5, 2021 complaint was reported 3 days prior to the start of the Phase 4 in-water work. Although it did not appear that the sheens from the November 5, 2021 complaint originated from the Site, National Grid directed Charter to proactively install additional absorbent booms within the river.

More recently, three additional instances of petroleum sheens were observed on the river by Charter/GZA personnel during our daily inspection of river quality.

- On January 13, 2022, GZA and Charter staff observed a petroleum sheen flowing downriver to the Tidewater site. Upon evaluation, it appeared the sheen was originating proximate to the I95 overpass and collecting near the jetty of the Town Landing boat launch. GZA notified the USCG (Case No. 1326484) and RIDEM and GZA and Charter met with the USCG and RIDEM at the Site the same day. GZA and Charter reviewed conditions and work activities at the Site with USCG and RIDEM and then walked upriver with them. During the upriver walk, heavy sheens were observed to be actively flowing downriver towards the Site; however, a definitive source of the sheens was not observed. The RIDEM representative indicated that he believed that oil may have been dumped into the river upriver of the Town Landing boat launch and the Site.

- On March 10, 2022, GZA and Charter staff again observed a petroleum sheen flowing downriver to the Tidewater site. This sheen observation was approximately 3 weeks after Charter completed the in-water portion of the Phase 4 work and all of their in-water controls were removed. Upon further evaluation, the sheen appeared to be again originating somewhere between the I95 overpass and the Town Landing boat launch. GZA notified the USCG (Case No. 1330734) and RIDEM of the observed sheen and the USCG responded the same day. After visiting the Site, the USCG subsequently indicated that they were removing Charter's activities at the Site as a possible source of the recent reported sheens in the river.

- On March 24, 2022, GZA and Charter observed petroleum sheen originating upriver from the Site and flowing south past the Site. GZA notified the USCG (Case No. 1331855) and RIDEM of the observed sheen; however, by the time RIDEM responded the observed sheen was no longer present and the sheen apparently dissipated or flowed downriver.

The sheens observed in January 2022 and March 2022 that originated upriver of the Site were similar in nature and composition to the complaint of sheens reported to the USCG on November 5, 2021. Given the similarity of the sheens, the timing of the November 5, 2021 relative to start of the regrading of the riverbank in the northern portion of the Site, and that Charter was not performing any in-water work during the two reported sheens in March 2022, we suspect that the November 5, 2021 sheen may have also originated upriver from the Site.

PRE-DECEMBER 2021 BREACH IN-WATER CONTROLS AND INSPECTIONS

Prior to performance of the in-water work and consistent with the RIDEM approved June 2018 *Remedial Action Workplan* and the *Soil Erosion and Sediment Control (SESC) Plan* that was included in the combined permit application package submitted to RIDEM, the United Stated Army Corps of Engineers (ACOE), and the Coastal Resources Management Council (CRMC), Charter installed absorbent booms and a turbidity curtain within the river encompassing the active riverbank work area. The turbidity curtain consisted of a closed cell foam material wrapped in a polyester cover that floated on the surface of the water with a permeable woven geotextile skirt that extended below the water surface to within a few feet of the mudline of the river. The ends of the turbidity curtain extended up the banks of the river encompassing the entire active riverbank work area and were secured in-place with large concrete blocks. The in-water sections of the turbidity curtain were also secured in-place with anchors at routine intervals. Oil absorbent booms were secured to the interior face of the turbidity curtain closest to the active riverbank work area.

Consistent with the SESC, GZA performed daily visual inspections of the absorbent booms and the turbidity curtain from the shoreline of the Site. Inspections were also performed after storm events with precipitation amounts greater than 0.25-inch and after severe storm events. GZA also performed periodic inspections of the in-water controls from a work boat during the active in-water work.

To supplement the visual inspections, GZA also collected daily samples of water quality from the shoreline during the performance of riverbank disturbing activities within and outside the limits of the boom/curtain system to measure turbidity levels and to evaluate the performance of the controls.

MODIFIED POST DECEMBER 2021 BREACH IN-WATER CONTROLS AND INSPECTIONS

After performing an analysis of the conditions that resulted in the December 1, 2021 breach, the original in-water controls were determined to be insufficient due to the unanticipated extent of impacted material observed within lower portions of the riverbank in the northern portion of the Site and the velocity of the waterflow within deeper portions of the river. Given these conclusions, the following modifications were implemented to the controls and the inspection procedures prior to continuing the revetment cap work in the northern portion of the Site:

- Two additional turbidity curtains were installed surrounding the active in-water work area. The design of the skirt of the inner most turbidity curtain was also modified to include a layer of oleophilic fabric to adsorb sheens that were potentially suspended within the water column.

- The southern (downriver) ends of the turbidity curtains were rigidly connected to the newly installed sheetpile wall using a roller-system to allow the curtains to rise and fall with the tide.
- Multiple sections of absorbent booms were deployed within each section of turbidity curtain and a section of absorbent boom was installed downriver of all the controls.
- The amount of disturbed riverbank at any given time during regrading of the riverbank and installation of the revetment cap was reduced to limit the potential to generate sheens within the active work area.

Charter also mobilized additional work boats to the Site to perform continuous inspection of water quality within the controls during active in-water work, to allow the rapid collection/recovery of any potential sheens before a potential breach in the controls, to reset the anchors securing the turbidity curtains (as needed), and to repair or replace controls (as needed). One of the boats was also maintained outside the limits of the controls to monitor/inspect water quality conditions outside of the controls during active in-water work. In addition to continuing to monitor turbidity levels within and outside the controls, GZA also performed daily inspections of the shoreline downriver of the Site during low and high tide conditions for potential observations of sheens that may have breached the controls.

National Grid also developed a modified revetment cap design for installation below the Mean High Water elevation in certain areas in the northern portion of the Site to minimize the potential disturbance of impacted materials and the generation of sheens. The modified revetment cap design was approved by RIDEM, CRMC, and the ACOE and was implemented in an approximately 165-foot section of the riverbank in the northern portion of the Site.

Based on the observations made during the daily inspections, the modified design minimized the generation of sheens during installation of the revetment cap and the additional/modified controls and procedures were effective at containing any sheens that were generated within the limits of the immediate work area and allowed the recovery of the sheens prior to a potential breach.

We trust this information meets your current needs. If you have any questions or need additional information, please feel free to contact Kenneth Lento at 617-791-2627.