

US EPA ARCHIVE DOCUMENT

1.0 INTRODUCTION

This Limited Groundwater Evaluation Work Plan has been prepared by EA Engineering, Science, and Technology, Inc. (EA) on behalf of the E.A. McNulty Real Estate Group for the Berkeley Commons/River Run Residential Development Projects in Cumberland, Rhode Island. The purposes of this evaluation are to prove that the site is not a contributor of groundwater contamination in the area, as well as to prove that the site is hydraulically upgradient of known contamination sources to the south. This plan covers upcoming site activities, including the installation of monitoring wells, the surveying, gauging, and sampling of these wells, and analysis of the groundwater data.

Figure 1 is a Site Locus showing the location of the subject sites. Figure 2 is a Site Plan detailing the current condition of the sites and surrounding properties as well as applicable sampling locations from previous environmental investigations.



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Superfund Records Center

SITE: Peterson PuritonBRIDGE: 1.2OTHER: 0002

SDMS# 214679

2.0 SITE DESCRIPTION AND HISTORY

The site of the proposed Berkeley Commons/River Run Residential Developments is located southwest of Mendon Road (RI Route 122) in the Town of Cumberland, Rhode Island. The site encompasses approximately 80 acres. The study area for this investigation is designated on the Town of Cumberland Tax Assessor's Map as Plat 14, Lots 2 and 4 and Plat 15, Lot 1. Bordering the site to the south there are freshwater wetlands associated with New River. Further to the south are active Providence and Worcester Railroad tracks, the inactive J.M. Mills Landfill, and the Blackstone River. An area of single-family residential development and the Monastery Brook are between the two development projects. Adjacent land use along Mendon Road is a mixture of residential and commercial development, including single and multi-family homes and retail operations such as a hair salon and insurance office. There is a high concentration of industrial land use to the north and west of the site. There are currently no structures on the River Run Development (Plat 14, Lots 2 and 4) portion of the site. Former structures include a scale house and a structure supporting a large material crusher. At the time of this evaluation, construction has begun on the Berkeley Commons Development and some foundations have been laid.

Groundwater at the site is characterized as GAA by the Rhode Island Department of Environmental Management (RIDEM), meaning groundwater is suitable for public consumption without treatment. Areas within a 0.5-mi radius of the site, most notably the J.M. Mills Landfill south of the New River and the Peterson Puritan site to the north, are in non-attainment with this GAA designation. Soils at the site are characterized in the Soil Survey of Rhode Island (1981) as "Pits, gravel." The sand and gravel deposits are associated with the floodplains and terraces of the Blackstone River. At approximately 90 feet below the undisturbed ground surface, there is a 10-15 foot thick layer of glacial till, followed by Blackstone Metamorphic bedrock. The aquifer is described as highly transmissive due to the permeable nature of the sand and gravel deposits. However, the historic removal of overburden material by the sand and gravel operation has significantly altered the topography of the site.

The site has been owned by the McNulty Family since 1934. Prior to the purchase of this land, it was open space. The site owners subdivided the property and the residential development between the two current developments began in the late 1930's. The site has been used as a sand and gravel mining operation since that time. Site improvements over the course of site operations included the installation of haul roads, a reinforced concrete base for the material crusher, and a scale house. In 1993, the McNulty Family also purchased the former Admiral Inn property along Mendon Road at the eastern boundary of the site, now included in the Berkeley Commons Development. In 2000, seven new residential lots were developed by the family as part of the existing residential

development between the River Run and Berkeley Commons Developments. The two site development projects have been planned for 7 years and extensive RIDEM coordination and permitting has been completed.

Interviews with the site representative do not indicate the generation or disposal of hazardous materials or waste on the site at any time during site history. According to the site representative, residential development was always the intended use of the site following the termination of sand and gravel mining operations. The only known use of oil or hazardous materials at the site was the application of "MC-2," an oil-based dust suppression material, along haul roads at the height of operations in the 1950's and 1960's. It is not expected that this historical use of MC-2 has impacted site groundwater.

3.0 POTENTIAL ENVIRONMENTAL CONCERNS

Currently, the site is included in Operating Unit-2 (OU-2) of the Peterson Puritan Superfund site by the US Environmental Protection Agency (EPA). To the northwest of the site, on Martin Street, a significant solvent spill occurred in 1974. Approximately 6,000 gallons of solvent were released from a rail car and product tank at the former Peterson Puritan facility (currently in operation as CCL Custom Manufacturing, Inc.). From this source area roughly south and downstream to just north of the site's western boundary is designated as OU-1. The area downstream of OU-1, including the former J.M. Mills Landfill, the southern portion of both developments and the adjoining wetlands, is designated as OU-2. OU-2 extends south to the Pratt Dam on the Blackstone River and also includes the Lenox Street Well, an inactive public water source closed in 1979 following the discovery of significant volatile organic compound (VOC) contamination. In order to have access to all potential sources and receptors, the EPA has included over a mile of land downstream of OU-1 as OU-2, including approximately 35% of the area of the site (approximately 25 acres).

4.0 GROUNDWATER EVALUATION

4.1 MONITORING WELL INSTALLATION

To fully investigate any groundwater contamination existing on the OU-2 portions of the Berkeley Commons/River Run Developments, EA will install a total of 4 monitoring wells along the southern edge of the properties, adjacent to the wetlands. To allow for the assessment of both the shallow and deep zones of the aquifer, an attempt will be made to install both shallow and deep wells, however, subsurface conditions at the site will dictate the ultimate depths of each of the 4 wells.

Due to the high concentration of gravel and boulders within the aquifer, all wells will be installed using the air rotary method. During drilling operations, a field geologist will be on site to determine the nature of soils at the water table. Continuous split-spoon sampling will occur in the vicinity of the water table. No soil samples will be collected for laboratory analysis, but the soils will be examined and logged. Soils in the vicinity of the water table will also be field screened using a 10.6 eV lamp photoionization detector (PID) for the presence of VOCs. In the shallow overburden, monitoring wells/shallow piezometers will be installed to "straddle" the water table, with approximately 5 feet of 0.010-inch screen above groundwater and 5 feet below. Deeper piezometers will be installed with 5 feet of 0.010-inch screen. The two intervals will be separated by a bentonite seal. All wells/piezometers will be completed with steel, locking guardpipes approximately 2 feet above ground surface and cemented in place.

4.2 GROUNDWATER SAMPLING

Following installation, the monitoring wells will be developed to restore natural hydraulic conductivity and remove silt from the well screens to ensure that representative groundwater samples can be collected. Monitoring wells will be developed by submersible pump, peristaltic pump, or air-lift. The EA Field Geologist will be responsible for monitoring water quality and determining when each well is sufficiently developed. Monitoring wells will be developed until stabilization of all monitored parameters and turbidity has stabilized below 10 nephelometric turbidity units, or for a maximum of 2 hours.

EA will conduct a low-flow sampling event for the newly installed monitoring wells. Prior to sampling, the monitoring wells will be gauged with a Solinst Water Level Indicator to measure depth to water at each monitoring well location. Groundwater samples will be collected using low-flow sampling methods and procedures, in

accordance with EPA protocols. Low-flow well purging will be accomplished using a variable-speed peristaltic pump and dedicated polypropylene discharge lines. Field measurements of water quality indicator parameters, including temperature, pH, conductivity, turbidity, Eh, and dissolved oxygen will be monitored and recorded to document stabilization of water quality prior to sample collection. Stabilization of water quality parameters is necessary to ensure that representative groundwater samples are collected at each monitoring well. Additionally, 1 trip blank will be collected for the sample delivery group. Samples will be analyzed for volatile organic compounds by Organic Low Concentration Method 3.2 (TCL 3.2) and total metals by EPA Methods ILM04.1 and 1632 mod in accordance with the EPA's Contract Laboratory Program.

4.3 HYDRAULIC ANALYSIS

Following the completion of well installation, a licensed surveyor will establish the northing and easting coordinates of the wells, along with their elevation relative to the National Geodetic Vertical Datum. This data will allow EA to establish the hydraulic gradient at the site and determine the direction, laterally and vertically, of groundwater flow at the site.