Superfund Program
Proposed Plan for Record of Decision Amendment

U.S. Environmental Protection Agency, Region 2

Emmell's Septic Landfill Superfund Site Operable Unit Two

July 2017

EPA ANNOUNCES PROPOSED PLAN

The United States Environmental Protection Agency (EPA) is issuing this Proposed Plan to present the EPA's Preferred Alternative to amend the Operable Unit Two (OU2) Record of Decision (ROD) in order to address impacted and threatened potable wells located at the distal end of the contaminated groundwater plume associated with the Emmell's Septic Landfill Superfund Site (Site). Since issuance of the Operable Unit One (OU1) and OU2 RODs, which provided for the extraction and treatment of contaminated groundwater at the Site, the EPA has determined that additional residential wells have been impacted or are threatened by Site-related groundwater contamination.

The EPA's preferred remedy to address impacted or threatened potable wells in the vicinity of the Site is Alternative 2, which provides for the replacement of impacted or threatened potable wells. The replacement wells will be drilled to a depth of approximately 350 feet below ground surface (bgs) in a water-bearing unit which is separated from the shallower contaminated and threatened groundwater by a 50 to 100 foot thick clay unit. The impacted or threatened wells will then be decommissioned.

This Proposed Plan includes a summary of 3 alternatives to address threatened potable wells in the vicinity of the Site. This document is issued by the EPA, the lead agency for Site activities, in consultation with the New Jersey Department of Environmental Protection (NJDEP), the support agency. This Proposed Plan also summarizes information from the OU1 and OU2 RODs and subsequent remedial actions and investigations.

The EPA, in consultation with NJDEP, will select a remedy modification for the OU2 remedy after reviewing and considering all information submitted during a 30-day public comment period. The EPA, in consultation with NJDEP, may modify the preferred alternative or select other response actions presented in this Proposed Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives presented in this document.

The EPA is issuing this Proposed Plan as part of its community relations program under Section 117(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, commonly known as Superfund). This Proposed Plan summarizes information that can be found in greater detail in the Focused Feasibility Study for Operable Unit 2 Downgradient Residential Wells (Residential Well FFS) and other documents contained in the Administrative Record for the Site.

MARK YOUR CALENDAR

PUBLIC COMMENT PERIOD:
July 20, 2017 – August 21, 2017
EPA will accept written comments on the Proposed Plan during the public comment period.

PUBLIC MEETING: August 3, 2017
EPA will hold a public meeting to explain the Proposed Plan and all of the alternatives presented in the Focused Feasibility Study. Oral and written comments will also be accepted at the meeting. The meeting will be held at 7:00PM at the Galloway Township Middle School, 100 South Reeds Road, Galloway, New Jersey 08205.

For more information, see the Administrative Record at the following locations:

U.S. EPA Records Center, Region 2
290 Broadway, 18th Floor.
New York, New York 10007-1866
(212) 637-4308
Hours: Monday-Friday - 9 am to 5 p.m., by appointment.

www.epa.gov/superfund/emmells-septic

Atlantic County Library
Galloway Township Branch
306 East Jimmie Leeds Road
Galloway Township, NJ 08205
(609) 652-2352
Hours: Tues -Thurs 9am – 8pm, Mon, Fri & Sat 9am – 5pm

SITE DESCRIPTION

The Site is located at 128 South Zurich Avenue in a predominantly rural area of Galloway Township, Atlantic County, New Jersey (see Figure 1). The Site consists of a 38-acre former septic waste and sludge disposal facility,

and the groundwater contaminant plume which has emanated from the Site property.

Residential properties are located to the east/northeast and west/northwest of the Emmell's Site, along Liebig Street and Zurich Avenue. The area immediately south of the Site is undeveloped and heavily wooded. Further to the south and southeast of the Site is the Morses Mill Stream and its associated wetlands and surface impoundments. The campus of Stockton University is located approximately 0.8 miles southeast of the Site. Groundwater in the vicinity of the Site is utilized as a potable water source. However, residents located on Lisa Drive, Liebig Street and Zurich Avenue who previously used private wells for drinking water have been connected to the public water supply. Residents further east of the Site, in Galloway Township and the City of Port Republic, also utilize groundwater as a potable water source through private wells.

SITE HISTORY

From 1967 to 1979, the Site was used for the disposal of septic wastes and sewage sludge which were reportedly disposed of in trenches and lagoons. Other wastes, including chemical wastes, drums of paint sludge, gas cylinders, household garbage, and construction debris, were also disposed of at the Site. Operations at the Site ceased in August 1979.

Sampling conducted at the Site in 1984 by the NJDEP indicated the presence of soil and groundwater contamination. Also in 1984, the Atlantic County Health Department (ACHD) sampled residential wells in the vicinity of the Site. Results of this sampling indicated the presence of elevated concentrations of volatile organic compounds (VOCs) in five residential wells. The contaminated wells were subsequently closed and replaced with deeper wells.

In 1996, NJDEP and consultants for Galloway Township conducted additional investigations at the Site. Results of these investigations indicated the presence of VOCs in groundwater. An Expanded Site Inspection Report prepared for NJDEP in 1997 confirmed the presence of site-related groundwater contamination.

In 1997 and 1998, EPA's Removal Action Branch (RAB) and Environmental Response Team conducted soil and groundwater investigations at the Site. A number of VOCs were detected in soil, soil gas, and groundwater samples, including trichloroethene (TCE) and its associated degradation products, and various chlorinated benzene compounds. Waste materials, including paint-like substances, sludge, and drums, were observed in test pit excavations. The results of this investigation indicated that waste materials at the Site were a continuing source of groundwater contamination.

The Site was proposed for inclusion on the National Priorities List (NPL) in April 1999, and was placed on the NPL on July 22, 1999, making it eligible for Superfund cleanup.

In July 1999, EPA's RAB initiated a removal action at the Site to address buried drums and waste material which were continuing to serve as a source of groundwater contamination. This removal action, which was completed in February 2000, resulted in the excavation and off-site disposal of 435 drums, eleven compressed gas cylinders, and approximately 28,000 cubic yards of contaminated soil.

On February 16, 2000, EPA initiated a Focused Feasibility Study (FFS) for groundwater contamination at the Site. The FFS was intended to evaluate whether it was appropriate to implement an interim remedy for groundwater contamination while the site-wide Remedial Investigation/Feasibility Study (RI/FS) was being conducted. On September 30, 2003, EPA issued the OU1 ROD which selected an interim remedy to control the migration of groundwater contamination near the disposal area of the Site until a site-wide remedy could be implemented. The interim remedy provided for the extraction and treatment of contaminated groundwater on the Site property with discharge of treated groundwater to recharge basins constructed at the Site.

Groundwater investigations conducted during the OU1 FFS indicated that residential wells in the vicinity of the Site were in danger of being impacted by site-related groundwater contamination. Therefore, during the summer of 2003, EPA connected 36 residences to the nearby municipal water supply.

The site-wide OU2 RI was conducted from the Summer of 2002 through 2006. The RI included the installation and sampling of additional groundwater monitoring wells in the deep zone of the aquifer, as well as a membrane interface probe investigation to delineate the possible extent of non-aqueous phase liquid (NAPL) beneath the Site. NAPL was not detected during this investigation.

In September 2008, EPA completed the site-wide OU2 RI/FS. Also in September 2008, EPA issued the OU2 ROD which selected a final remedy for contaminated soil and groundwater related to the Site. The major components of the OU2 remedy include:

- Excavation and off-site disposal of soil contaminated with polychlorinated biphenyls (PCBs);
- Extraction and treatment of groundwater contaminated with VOCs, with discharge of the treated groundwater to an on-site recharge basin;
- Installation of biosparging wells downgradient of the capture zone of the groundwater extraction system, to enhance the aerobic degradation of vinyl chloride in the groundwater;
- Implementation of a long-term groundwater monitoring program to monitor the effectiveness of the groundwater remedy; and
- Establishment of a Classification Exception Area, which is an institutional control, to minimize the potential for exposure to contaminated groundwater until the groundwater in the shallow and deep zones of the aquifer meets the cleanup goals.

During 2008, 2010 and May 2017, EPA replaced residential wells in the vicinity of the Site which were either impacted or threatened by site-related groundwater contamination. Nine replacement wells were installed to a depth of greater than 300 feet bgs in a clean water-bearing zone as part of these removal actions.

Construction of the components of the OU1 interim groundwater remedy was completed in September 2010. This remedy was designed to control off-property migration of contaminated groundwater and involved the construction of a groundwater extraction and treatment system and two recharge basins at the Site. Operation of the groundwater component of the OU2 site-wide remedy was initiated during the Fall of 2012. As part of the groundwater component of the OU2 remedy, the groundwater extraction and treatment system and recharge basins constructed for the OU1 interim groundwater remedy were expanded to provide for the treatment and discharge of additional groundwater. The OU2 groundwater extraction and treatment system is currently pumping and treating 250 gallons per minute of contaminated groundwater.

During 2015, a biosparging pilot study was conducted to evaluate the effectiveness of biosparging to address VOCs in groundwater downgradient of the capture zone of the OU2 groundwater extraction system. In September 2016, a Biosparging Pilot Study Report was prepared which recommended that biosparging not be implemented at this time due to declining concentrations of VOCs in the area of the plume that was considered for biosparging. Long-term monitoring of groundwater quality is currently being conducted by the EPA in the vicinity of the Site.

SITE CHARACTERISTICS

In order to ensure the protection of residences downgradient of the site-related groundwater plume, from 2006 through 2016 the EPA periodically sampled potable wells in this area. The results of the February 2016 potable well sampling event indicated the presence of site-related VOCs in the samples collected from several potable wells located downgradient of the effective capture zone of the OU2 groundwater extraction and treatment system (see Figure 2). Specifically, site-related VOCs such as vinyl chloride, trichloroethene (TCE) and 1,1-dichloroethene were detected in potable wells at concentrations in excess of their respective New Jersey Groundwater Quality Criteria (NJGWQC). Vinyl chloride was detected in potable well water at concentrations up to 2.3 micrograms per liter (ug/L), in excess of its NJGWQC of 1 ug/L. In addition, TCE and 1,1-dichloroethene were detected at concentrations up to 3.6 ug/L and 6.3 ug/L, in excess of their respective NJGWQC of 1 ug/L and 2 ug/L.

SCOPE AND ROLE OF THE ACTION

EPA has addressed the cleanup of this Site by implementing immediate actions to address situations which present an imminent threat to human health, and a long-term cleanup. Immediate actions, known as removal actions, which have been implemented to date include: the removal of 435 drums, eleven compressed gas cylinders and approximately 28,000 cubic yards of contaminated soil from the disposal area of the Site; the connection of 36 residences threatened by Site-related groundwater contamination to the municipal water supply, and the replacement of 9 residential wells threatened by site-related groundwater contamination

The long-term cleanup has been conducted in two discrete phases, or Operable Units. Operable Unit One (OU1), which was the subject of a 2003 Record of Decision, provided for implementation of an interim groundwater remedy to control further off-site migration of groundwater contaminants near the disposal area of the Site while the site-wide remedy was being designed and constructed. Construction of the OU1 interim groundwater extraction and treatment system was completed in September 2010. Operable Unit Two (OU2), provided for implementation of a remedy to address PCB-contaminated surface soils located near the disposal area of the Site, as well as a final remedy for the VOC-contaminated groundwater in the OU2 study area. The removal of PCB-contaminated soil from the Site was completed in September 2011. The OU2 final groundwater extraction and treatment system has been operating at the Site since the Fall of 2012.

The scope and role of the Preferred Alternative is to modify the remedy selected in the OU2 ROD to provide for the replacement of additional potable wells which are impacted or threatened by site-related groundwater contamination. All other components of the OU2 remedy will remain unchanged.

SUMMARY OF RISKS

Prior to issuance of the OU2 ROD, a baseline human health risk assessment was conducted to analyze the potential adverse human health effects caused by exposure to hazardous substances at the Site in the absence of any actions to control or mitigate exposure under current and future land uses.

A four-step human health risk assessment process was used for assessing site-related cancer risks and noncancer health hazards. The four-step process is comprised of: Hazard Identification of Chemicals of Potential Concern (COPCs), Exposure Assessment, Toxicity Assessment, and Risk Characterization (see adjoining box "What is Risk and How is it Calculated").

The baseline human health risk assessment began with selecting COPCs in the various media (i.e., on-site soil and off-site groundwater) that could potentially cause adverse health effects in exposed populations. These populations included on-site visitors, recreational visitors (dirt bike riding and horseback riding), and construction workers who may be exposed to contaminants in the soils by ingestion, inhalation, and dermal contact, and also off-site adult and child residents who may be exposed through ingestion and inhalation of groundwater used as a potable water supply or by inhalation through vapor intrusion. In this assessment, exposure point concentrations were estimated using either the maximum detected concentration of a contaminant or the 95th-percent upper-confidence limit (UCL) of the average concentration. Chronic daily intakes were calculated based on the reasonable maximum exposure (RME), which is the highest exposure reasonably anticipated to occur at the site. The RME is intended to estimate a conservative exposure scenario that is still within the range of possible exposures. Central tendency exposure (CTE) assumptions, which represent typical average exposures, were also developed.

For groundwater, future exposure to groundwater through ingestion, dermal contact and inhalation of contaminated groundwater was evaluated for both future off-site adult and child residents. The estimated cancer risks for off-

WHAT IS RISK AND HOW IS IT CALCULATED?

A Superfund baseline human health risk assessment is an analysis of the potential adverse health effects caused by hazardous substance releases from a site in the absence of any actions to control or mitigate these under current- and future-land uses. A four-step process is utilized for assessing site-related human health risks for reasonable maximum exposure scenarios.

Hazard Identification: In this step, the contaminants of concern at the site in various media (i.e., soil, groundwater, surface water, and air) are identified based on such factors as toxicity, frequency of occurrence, and fate and transport of the contaminants in the environment, concentrations of the contaminants in specific media, mobility, persistence, and bioaccumulation.

Exposure Assessment: In this step, the different exposure pathways through which people might be exposed to the contaminants identified in the previous step are evaluated. Examples of exposure pathways include incidental ingestion of and dermal contact with contaminated soil. Factors relating to the exposure assessment include, but are not limited to, the concentrations that people might be exposed to and the potential frequency and duration of exposure. Using these factors, a "reasonable maximum exposure" scenario, which portrays the highest level of human exposure that could reasonably be expected to occur, is calculated.

Toxicity Assessment: In this step, the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response) are determined. Potential health effects are chemical-specific and may include the risk of developing cancer over a lifetime or other non-cancer health effects, such as changes in the normal functions of organs within the body (e.g., changes in the effectiveness of the immune system). Some chemicals are capable of causing both cancer and non-cancer health effects.

Risk Characterization: This step summarizes and combines exposure information and toxicity assessments to provide a quantitative assessment of site risks. Exposures are evaluated based on the potential risk of developing cancer and the potential for non-cancer health hazards. The likelihood of an individual developing cancer is expressed as a probability. For example, a 10^{-4} cancer risk means a "one-in-ten-thousand excess cancer risk"; or one additional cancer may be seen in a population of 10,000 people as a result of exposure to site contaminants under the conditions explained in the Exposure Assessment. Current Superfund guidelines for acceptable exposures are an individual lifetime excess cancer risk in the range of 10^{-4} to 10^{-6} (corresponding to a one-in-ten-thousand to a one-in-a-million excess cancer risk). For non-cancer health effects, a "hazard index" (HI) is calculated. An HI represents the sum of the individual exposure levels compared to their corresponding reference doses. The key concept for a non-cancer HI is that a "threshold level" (measured as an HI of less than 1) exists below which non-cancer health effects are not expected to occur.

site adult residents (5×10^{-3}) and off-site child residents (4×10^{-2}) were above the EPA acceptable cancer risk range from exposure to VOCs in the groundwater, primarily trichloroethene, vinyl chloride, 1,1,2-trichloroethane, and 1,2-dichloroethane. In addition, the non-cancer hazard for the adult resident (12) and child resident (101) exceeded EPA's acceptable hazard index of 1 due to concentrations of VOCs (1,1,2-trichloroethane, 1,2-dichloroethane, 1,4-dichlorobenzene, chloroform, tetrachloroethene, trichloroethene, and vinyl chloride) and mercury. Based upon these findings, EPA determined that implementation of the remedy selected in the OU2 ROD was necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

As part of the Residential Well FFS, an updated human health risk evaluation for residential use of groundwater was conducted using more recent data collected from the distal part of the groundwater contaminant plume which was not previously evaluated as part of the baseline human health risk assessment. The estimated cancer risks for residential use of groundwater in the distal part of the groundwater contaminant plume (1×10^{-4}) falls at the upperbound of the EPA's risk management range of 10^{-4} to 10^{-6}. The non-cancer hazard for residential use of groundwater (13.3) exceeds EPA's acceptable hazard index of 1 due to concentrations of VOCs.

Conclusion of the Risk Evaluation

It is the EPA's current judgment that the Preferred Alternative identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

REMEDIAL ACTION OBJECTIVES

The OU2 ROD identified Remedial Action Objectives (RAOs) for contaminated soil and groundwater to address the human health risks and environmental concerns posed by site-related contamination.

Soil Remedial Action Objective

- Prevent or minimize potential human and ecological receptor exposure to contaminated surface soil that presents an unacceptable risk to human health and the environment.

Groundwater Remedial Action Objectives

- Prevent ingestion and dermal contact with contaminated groundwater which may present an unacceptable risk to current and potential users of groundwater in the vicinity of the Site.

- Restore the aquifer, within a reasonable time frame, to Class I-PL Ground Water Quality Standards (GWQSs) for groundwater west of the Garden State Parkway (GSP), and to Class II GWQSs for groundwater east of the GSP.

The excavation of PCB-contaminated soil from the Site, which was completed in September 2011, addressed risks presented by contaminated surface soil. Furthermore, implementation of the OU2 groundwater extraction and treatment system satisfies the groundwater RAOs for the majority of the Site. However, impacted groundwater located outside of the capture zone of the OU2 groundwater remedy has either impacted or threatens to impact additional residential wells. Therefore, the groundwater RAO for this area is:

- Prevent ingestion and dermal contact with contaminated groundwater which may present an unacceptable risk to current and potential users of groundwater in the vicinity of the Site.

SUMMARY OF REMEDIAL ALTERNATIVES

Three remedial alternatives for threatened or impacted residential wells were assembled based upon engineering judgement and experience at other similar sites.

Alternative 1 – No Action

No corrective action of any kind would be implemented under this alternative. The No Action Alternative was retained, as required by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), and provides a baseline for comparison with the other alternatives.

Total Capital Cost	$0
Operation and Maintenance	$0 (Total)
Total Present Net Worth	$0
Construction Duration	0 months

Alternative 2 – Replace Residential Wells

This alternative consists of installing new residential wells for homes which are threatened or impacted by VOC-contaminated groundwater at the Site. It is currently estimated that 14 residential wells would need to be replaced. The replacement wells would be drilled

to a depth of approximately 350 feet bgs into the Rio Grande water bearing unit. The shallower contaminated groundwater is separated from the Rio Grande unit by a 50 to 100 feet thick clay unit. Water samples collected from the Rio Grande unit have demonstrated that water below the clay is not impacted by contamination. The replacement wells would be double cased to prevent downward migration of groundwater contaminants. After construction, each well would be connected to the existing service line. The property owner would be responsible for future maintenance of the replacement well. The existing shallow residential wells would then be decommissioned in accordance with NJDEP requirements. If necessary, additional potable wells could be replaced in the future if threatened or impacted by site-related contamination.

Total Capital Cost	$1,075,757
Operation and Maintenance	$0 (Total)
Total Present Net Worth	$1,075,757
Construction Duration	6 months

Alternative 3 – Connection to Public Water Supply

Under this alternative, over 2 miles of waterline would be installed, beginning at the New Jersey American water main located on East Moss Mill Road. The water main would extend to the intersection of East Moss Mill Road and Pomona Road and southwest down Pomona Road and northeast up English Creek Road and Riverside Drive. Over 2200 feet of service connections would then be installed for properties in the threatened area. It is estimated that 14 potable wells would also be decommissioned in accordance with NJDEP requirements as part of this alternative. Residents connected to the waterline would be responsible for paying future New Jersey American water bills.

Total Capital Cost	$3,302,845
Operation and Maintenance	$0 (Total)
Total Present Net Worth	$3,302,845
Construction Duration	1-2 years

EVALUATION OF REMEDIAL ALTERNATIVES

Nine criteria are used to evaluate the different remedial alternatives individually and against each other in order to select the best alternative. This section of the Proposed Plan profiles the relative performance of all alternatives against the nine criteria, noting how they compare to the other options under consideration. The nine evaluation criteria are discussed below. A more detailed analysis of the presented alternatives can be found in the Residential Well FFS Report.

THE NINE SUPERFUND EVALUATION CRITERIA

1. Overall Protectiveness of Human Health and the Environment evaluates whether and how an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.

2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) evaluates whether the alternative meets federal and state environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.

3. Long-term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.

4. Reduction of Toxicity, Mobility, or Volume (TMV) of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.

5. Short-term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, the community, and the environment during implementation.

6. Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.

7. Cost includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.

8. State/Support Agency Acceptance considers whether the State agrees with the EPA's analyses and recommendations, as described in the RI/FS and Proposed Plan.

***9.* Community Acceptance** considers whether the local community agrees with EPA's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

Overall Protection of Human Health and the Environment

Alternative 1 would not provide for protection of human health and the environment as it does not prevent ingestion and dermal contact with contaminated groundwater which may present an unacceptable risk to current and potential future users of groundwater. Alternatives 2 and 3 would both be protective of human health as both alternatives prevent ingestion and dermal

contact with contaminated groundwater by providing an alternate water supply for current and potential users of groundwater in the threatened area.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

Alternative 1 would not comply with ARARs in that residential well water in the impacted and threatened area would continue to exceed Federal and New Jersey Drinking Water Standards. Alternatives 2 and 3 would both comply with ARARs because they would supply an alternate water source which would meet Federal and New Jersey Drinking Water Standards.

Long-Term Effectiveness and Permanence

The No Action Alternative would not be effective in the long-term because this alternative would not provide adequate controls of risk to human health over the long-term as there are no mechanisms to prevent future exposure.

Alternatives 2 and 3 would both be effective in the long-term because both alternatives control risk by providing an alternate water supply. In addition, both alternatives would permanently eliminate exposure to contaminated groundwater by requiring that shallow potable wells are decommissioned.

Reduction of Toxicity, Mobility, or Volume Through Treatment

The implementation of Alternatives 1,2 and 3 would not treat groundwater contaminants and would not reduce their toxicity, mobility, or volume. However, this criterion is met through operation of the OU2 groundwater extraction and treatment system.

Short-Term Effectiveness

The No Action Alternative includes no construction and would have no short-term impacts at the Site. However, this alternative would not achieve the RAO.

Alternative 2 would be expected to have short-term impacts on the residents and local community during construction of the remedy, which is estimated to take approximately 6 months. These impacts would be expected to include additional noise and truck traffic during construction. Implementation of Alternative 3 would be expected to have the same impacts on the local community but for a longer duration, given the estimated 1 to 2 years required to construct this remedy.

Implementability

Alternative 1 is the most readily implementable as no action would be required. Alternatives 2 and 3 are also implementable as no special techniques, materials or labor are required to implement these alternatives. However, under Alternative 3, the water main would be extended from a nearby New Jersey American Water Public Supply Main in Galloway Township into portions of the threatened area which are located in the City of Port Republic. New Jersey American Water Company's franchise area does not include the City of Port Republic and the franchise area would require expansion to fully implement this alternative. In addition, Alternative 3 would require extensive excavation of 2 miles of existing roadways in order to install the water main and service connections. Therefore, Alternative 2 is easier to implement compared to Alternative 3.

Cost

The No Action Alternative would have no cost as no action would be required. The total estimated present worth cost for Alternative 2 is $1,075,757 to install 14 new residential wells and decommission the existing potable wells. Alternative 3 is estimated to have a present worth cost of $3,302,845 to install over 2 miles of water main, 2,200 feet of service connections and to decommission the existing potable wells in the impacted and threatened area.

State/Support Agency Acceptance

The State of New Jersey agrees with the preferred alternative which is presented in this Proposed Plan.

Community Acceptance

Community acceptance of the preferred alternative will be evaluated after the public comment period ends and will be described in the Responsiveness Summary of the OU2 Record of Decision Amendment. The Record of Decision Amendment is the document which will formalize the modification of the OU2 remedy for this Site.

SUMMARY OF THE PREFERRED ALTERNATIVE

EPA's Preferred Alternative to modify the remedy selected in the OU2 ROD is Alternative 2, Replace Residential Wells. As part of this alternative, new residential wells would be installed for homes which are threatened or impacted by VOC-contaminated groundwater from the Site. It is currently estimated that

14 residential wells would need to be replaced. The replacement wells would be drilled to a depth of approximately 350 feet bgs into the Rio Grande water bearing unit. The shallower contaminated groundwater is separated from the Rio Grande unit by a 50 to 100 feet thick clay unit. Water samples collected from the Rio Grande unit have demonstrated that water below the clay is not impacted by contamination. Furthermore, the replacement wells would be double cased to prevent downward migration of groundwater contaminants. After construction, a pump would be installed and the well would be connected to the existing service line. All replacement wells would be sampled to ensure that they meet drinking water standards. Finally, the existing shallow residential wells would then be decommissioned in accordance with NJDEP requirements. The EPA estimates that replacement of these residential wells would cost $1,075,757 and can be completed in 6 months. The EPA is not proposing to amend any other components of the remedy selected in the OU2 ROD.

Based on information currently available, the EPA believes that its Preferred Alternative to amend the OU2 ROD meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. The EPA expects the Preferred Alternative to satisfy the following statutory requirements of CERCLA §121(b): (1) be protective of human health and the environment; (2) comply with ARARs; (3) be cost-effective; (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and (5) satisfy the preference for treatment as a principal element or explain why the preference for treatment will not be met.

Consistent with the EPA Region 2's Clean and Green policy, the EPA will evaluate the use of sustainable technologies and practices with respect to the remedial alternative selected for the Site.

Geochemical modeling conducted in support of the remedy selected in the OU2 ROD estimated that it will take approximately 25 years to achieve the remediation goals throughout the groundwater contaminant plume. Therefore, it was determined that, per EPA policy, Five-Year Reviews would be performed until remediation goals are achieved. Five-Year Reviews will continue to be conducted until remediation goals are achieved.

COMMUNITY PARTICIPATION

EPA provided information regarding the cleanup of the Emmell's Septic Landfill Site to the public through public meetings, the Administrative Record file for the Site and announcements published in the Press of Atlantic City New Jersey newspaper. EPA encourages the public to gain a more comprehensive understanding of the Site and the Superfund activities that have been conducted there.

For further information on EPA's preferred alternative for the Emmell's Septic Landfill Superfund Site:

Joe Gowers	Cecilia Echols
Remedial Project Manager	Community Relations
(212) 637-4413	(212) 637-3678

U.S. EPA
290 Broadway 19th Floor
New York, New York 10007-1866

The dates for the public comment period; the date, the location and time of the public meeting, and the locations of the Administrative Record files, are provided on the front page of this Proposed Plan.

GLOSSARY

ARARs: Applicable or Relevant and Appropriate Requirements. These are Federal or State environmental rules and regulations that may pertain to the Site or a particular alternative.

Carcinogenic Risk: Cancer risks are expressed as a number reflecting the increased chance that a person will develop cancer if exposed to chemicals or substances. For example, the EPA's acceptable risk range for Superfund hazardous waste sites is 1×10^{-4} to 1×10^{-6}, meaning there is 1 additional chance in 10,000 (1×10^{-4}) to 1 additional chance in 1 million (1×10^{-6}) that a person will develop cancer if exposed to a Site contaminant that is not remediated.

CERCLA: Comprehensive Environmental Response, Compensation and Liability Act. A Federal law, commonly referred to as the "Superfund" Program, passed in 1980 that provides for response actions at sites found to be contaminated with hazardous substances, pollutants or contaminants that endanger public health and safety or the environment.

COPC: Chemicals of Potential Concern.

FFS: Focused Feasibility Study. Analysis of the practicability of multiple remedial action options for the Site.

Groundwater: Subsurface water that occurs in soils and geologic formations that are fully saturated.

HHRA: Human Health Risk Assessment. An evaluation of the risk posed to human health should remedial activities not be implemented.

HI: Hazard Index. A number indicative of noncarcinogenic health effects that is the ratio of the existing level of exposure to an acceptable level of exposure. A value equal to or less than one indicates that the human population is not likely to experience adverse effects.

HQ: Hazard Quotient. HQs are used to evaluate noncarcinogenic health effects and ecological risks. A value equal to or less than one indicates that the human or ecological population are not likely to experience adverse effects.

Nine Evaluation Criteria: See text box on Page 6.

Noncarcinogenic Risk: Noncancer Hazards (or risk) are expressed as a quotient that compares the existing level of exposure to the acceptable level of exposure. There is a level of exposure (the reference dose) below which it is unlikely for even a sensitive population to experience adverse health effects. The USEPA's threshold level for noncarcinogenic risk at Superfund sites is 1, meaning that if the exposure exceeds the threshold; there may be a concern for potential noncancer effects.

NPL: National Priorities List. A list developed by the USEPA of uncontrolled hazardous substance release sites in the United States that are considered priorities for long-term remedial evaluation and response.

Operable Unit (OU): a discrete action that comprises an incremental step toward comprehensively addressing site problems. This discrete portion of a remedial response manages migration, or eliminates or mitigates a release, threat of a release, or pathway of exposure. The cleanup of a site can be divided into a number of operable units, depending on the complexity of the problems associated with the site.

Present-Worth Cost: Total cost, in current dollars, of the remedial action. The present-worth cost includes capital costs required to implement the remedial action, as well as the cost of long-term operations, maintenance, and monitoring.

Proposed Plan: A document that presents the preferred remedial alternatives and requests public input regarding the proposed cleanup alternatives.

Public Comment Period: The time allowed for the members of a potentially affected community to express views and concerns regarding the USEPA's preferred remedial alternative.

RAOs: Remedial Action Objectives. Objectives of remedial actions that are developed based on contaminated media, contaminants of concern, potential receptors and exposure scenarios, human health and ecological risk assessment, and attainment of regulatory cleanup levels.

Record of Decision (ROD): A legal document that describes the cleanup action or remedy selected for a site, the basis for choosing that remedy, and public comments on the selected remedy.

Remedial Action: A cleanup to address hazardous substances at a site.

RI: Remedial Investigation. A study of a facility that supports the selection of a remedy where hazardous substances have been disposed or released. The RI identifies the nature and extent of contamination at the facility and analyzes risk associated with COPCs.

TBCs: "To-be-considereds," consists of non-promulgated advisories and/or guidance that were developed by the EPA, other federal agencies, or states that may be useful in developing CERCLA remedies.

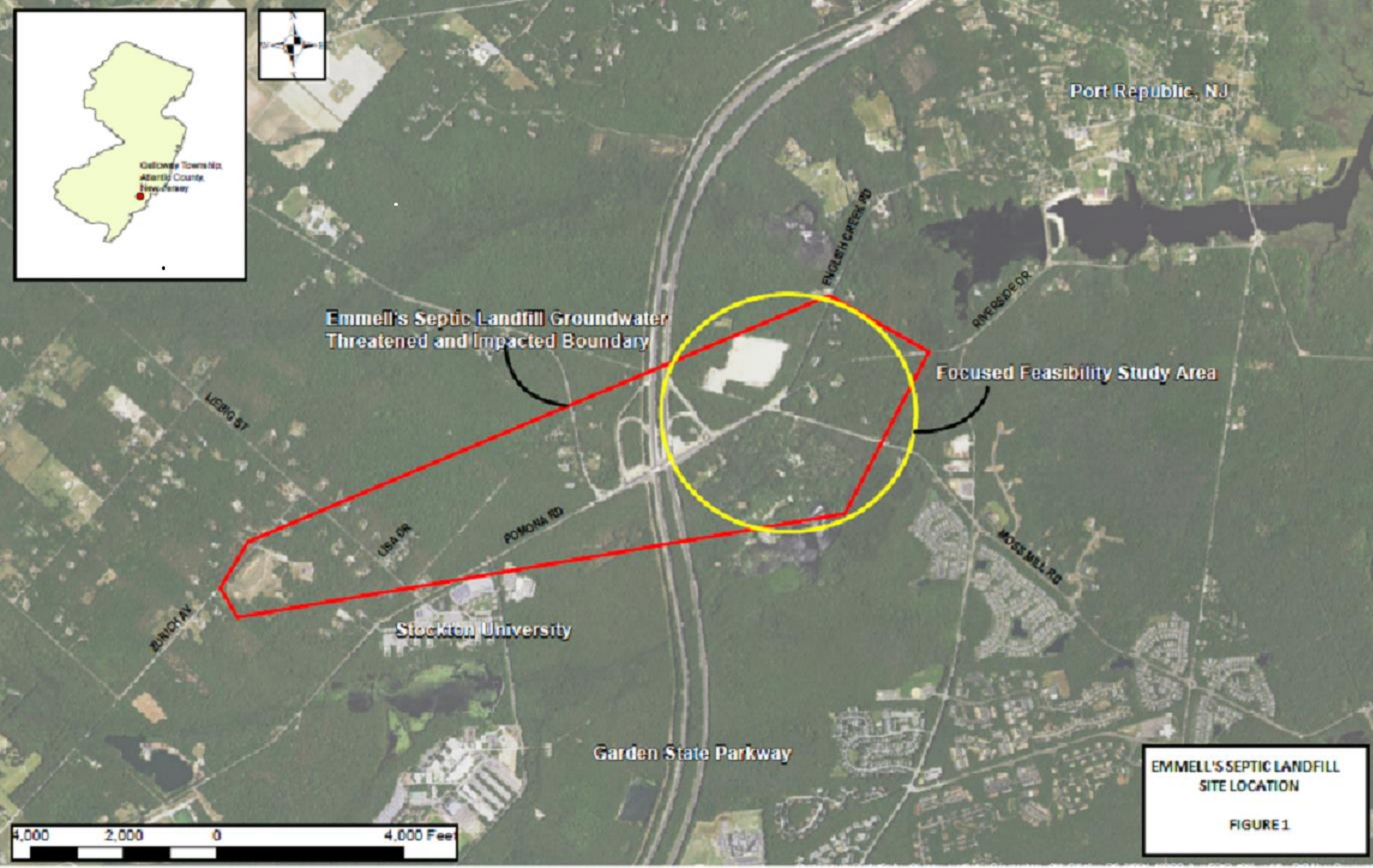
USEPA: United States Environmental Protection Agency. The Federal agency responsible for administration and enforcement of CERCLA (and other environmental statutes and regulations), and final approval authority for the selected ROD.

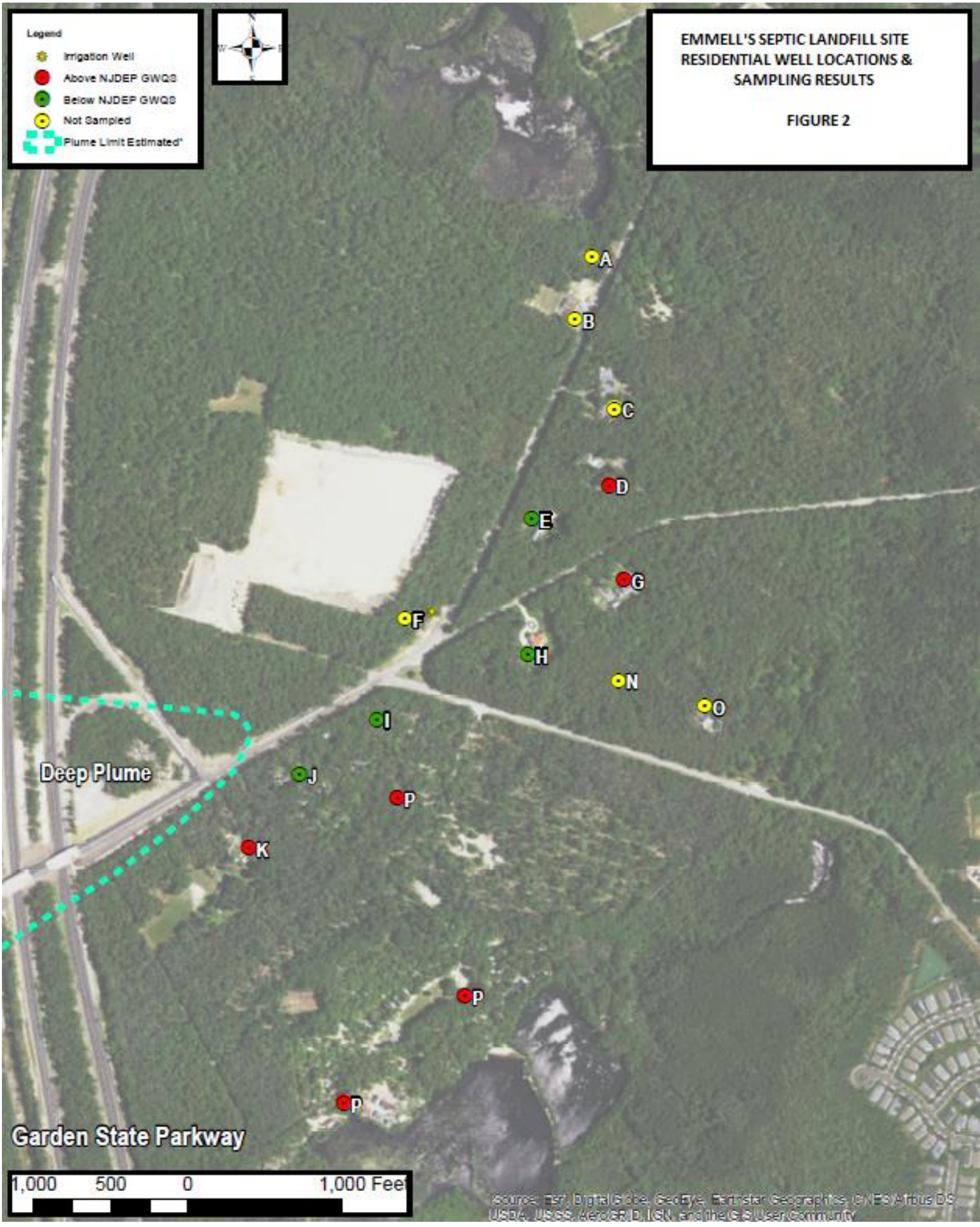
VOC: Volatile Organic Compound. Type of chemical that readily vaporizes, often producing a distinguishable odor.

Water Table: The water table is an imaginary line marking the top of the water-saturated area within a rock column.

TABLE 1
COMPOUNDS DETECTED ABOVE STANDARDS IN POTABLE WELLS

Compound	Federal Maximum Contaminant Level (ug/L)	New Jersey Ground Water Quality Standard (ug/L)	Maximum Concentration Detected (ug/L)
1,1,2-Trichloroethane	5	3	6.7
1,2-Dichloroethane	5	2	3.3
Trichloroethene	5	1	3.6
1,1-Dichloroethene	7	1	6.3
Vinyl Chloride	2	1	2.3


Port Republic, NJ
Emmell's Septic Landfill Groundwater
Threatened and Impacted Boundary
Focused Feasibility Study Area
Stockton University
Garden State Parkway
ENGLISH CREEK RD
RIVERSIDE DR
LEEDS ST
USA DR
POMONA RD
MOSS MILL RD
ZION HWY
4,000
2,000
0
4,000 Feet
EMMELL'S SEPTIC LANDFILL
SITE LOCATION
FIGURE 1


Legend
Irrigation Well
Above NJDEP GWQS
Below NJDEP GWQS
Not Sampled
Plume Limit Estimated*
EMMELL'S SEPTIC LANDFILL SITE
RESIDENTIAL WELL LOCATIONS &
SAMPLING RESULTS
FIGURE 2
A
B
C
D
E
G
F
H
N
O
I
J
P
K
P
P
Deep Plume
Garden State Parkway
1,000 500 0 1,000 Feet
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community