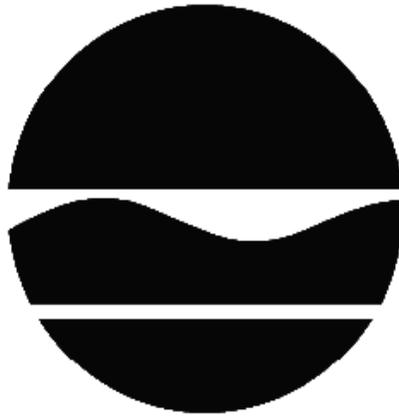


# PROPOSED REMEDIAL ACTION PLAN

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K - Front Street Holder Station  
State Superfund Project  
Brooklyn, Kings County  
Site No. 224063  
October 2017



Prepared by  
Division of Environmental Remediation  
New York State Department of Environmental Conservation

# PROPOSED REMEDIAL ACTION PLAN

K - Front St. Station  
Brooklyn, Kings County  
Site No. 224063  
October 2017

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## **SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN**

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the above referenced site. The disposal of hazardous wastes at the site has resulted in threats to public health and the environment that would be addressed by the remedy proposed by this Proposed Remedial Action Plan (PRAP). The disposal of hazardous wastes at this site, as more fully described in Section 6 of this document, has contaminated various environmental media. The proposed remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This PRAP identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for the preferred remedy.

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York; (6 NYCRR) Part 375. This document is a summary of the information that can be found in the site-related reports and documents in the document repositories identified below.

## **SECTION 2: CITIZEN PARTICIPATION**

The Department seeks input from the community on all PRAPs. This is an opportunity for public participation in the remedy selection process. The public is encouraged to review the reports and documents, which are available at the following repositories:

Brooklyn Community Board 2  
Attn: Robert Perris  
350 Jay Street, 8th Floor  
Brooklyn, NY 11201  
Phone: 718-596-5410

Brooklyn Public Library  
Brooklyn Heights Branch  
109 Remsen Street  
Brooklyn, NY 11201  
Phone: 718-623-7100

**A public comment period has been set from:**

**10/12/2017 to 11/11/2017**

**A public meeting is scheduled for the following date:**

**10/18/2017 at 7:00 PM**

**Public meeting location:**

**PS 287 Bailey K. Ashford, 50 Navy Street, Brooklyn, NY 11201**

At the meeting, the findings of the site characterization (SC) will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP.

Written comments may also be sent through 11/10/2017 to:

Scott Deyette  
NYS Department of Environmental Conservation  
Division of Environmental Remediation  
625 Broadway  
Albany, NY 12233  
scott.deyette@dec.ny.gov

The Department may modify the proposed remedy or select another of the alternatives presented in this PRAP based on new information or public comments. Therefore, the public is encouraged to review and comment on the proposed remedy identified herein. Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

**Receive Site Citizen Participation Information By Email**

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at

### **SECTION 3: SITE DESCRIPTION AND HISTORY**

**Location:** The Front Street Holder Station site is comprised of one parcel of land located at #218 Front Street in the Vinegar Hill neighborhood of Brooklyn, Kings County. The site is approximately 1.13 acres in size, identified as Block 55, Lot 20, and is bordered by Front Street to the north, by Gold Street to the east, by York Street to the south, and by Bridge Street to the west. The current owner of the site property is Great Front Realty Corp.

**Site Features:** The main site feature is a one-story building at #218 Front Street, which is used as a warehouse. There are also three open-air at the south side of the property with an address of 171 York Street. The three open-air buildings are actively used for lumber and building material storage. These buildings cover approximately 90 percent of the site. The rest of the property is covered in dirt and pavement and used for loading and unloading of materials in the lumber yard.

**Current Zoning and Land Use:** The site is currently zoned for C2-4/R6A, which allows for residential, commercial and light industrial uses. The actual use is commercial with an active warehouse, and lumber yard. The nearest residential area is directly adjacent to the site at the northwest and southeast site boundaries.

**Past Use of the Site:** The site was operated as a Manufactured Gas Plant (MGP) holder station by The Brooklyn Union Gas Company from approximately 1867 to 1935. The station operated solely for gas distribution, and no gas production facilities were present at the site. The site consisted of two water-sealed gas holders, identified as Holder No. 4 and Holder No. 5. The first gas holder (No. 4) was completed circa 1867, and the second gas holder (No. 5) was constructed around 1890 in the southwestern portion of the site. Both holders and all associated MGP buildings were removed between 1935 and 1938. The property was used as a parking lot until it was sold in 1951. Subsequent, including current was as a lumber yard, and warehousing.

**Site Geology and Hydrogeology:** The site is underlain by varying amounts of fill which is underlain by natural deposits of fine to coarse sand with gravel and cobbles. Material within the holder tanks is primarily fill consisting of sands and gravel and varying amounts of brick, concrete, and wood.

Regional groundwater occurs at a depth of approximately 40 feet below grade with flow to the north towards the East River. Perched groundwater was encountered within the Holder No. 5 tank, and is not hydraulically connected to the regional groundwater.

A site location map is attached as Figure 1(orthophoto) and 2 (site plan).

### **SECTION 4: LAND USE AND PHYSICAL SETTING**

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to commercial use (which allows

for industrial use) as described in Part 375-1.8(g) are/is being evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the investigation to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

## **SECTION 5: ENFORCEMENT STATUS**

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The PRPs for the site, documented to date, include:

The Brooklyn Union Gas Company  
National Grid USA

The Department and The Brooklyn Union Gas Company d/b/a KeySpan Energy Delivery New York & KeySpan Gas East Corporation d/b/a KeySpan Energy Delivery Long Island entered into an Order on Consent, as respondents, on March 4, 2007 (Index #A2-0552-0606). The Order, including subsequent modifications, obligates the respondents to implement a full remedial program for this and 31 other former MGP and Holder Station sites.

## **SECTION 6: SITE CONTAMINATION**

### **6.1: Summary of the Site Characterization**

A Site Characterization (SC) has been conducted. The purpose of the SC was to define the nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the SC Report.

The following general activities are conducted during an SC:

- Research of historical information,
- Test pits, soil borings, and monitoring well installations,
- Sampling of waste, surface and subsurface soils, and groundwater,
- Sampling of surface water and sediment.

The analytical data collected on this site includes data for:

- groundwater
- soil

### **6.1.1: Standards, Criteria, and Guidance (SCGs)**

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the SC were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: <http://www.dec.ny.gov/regulations/61794.html>

### **6.1.2: SC Results**

The data have identified contaminants of concern. A "contaminant of concern" is a hazardous waste that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized in Exhibit A. Additionally, the SC Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

benzene	benzo(b)fluoranthene
toluene	dibenz[a,h]anthracene
ethylbenzene	indeno(1,2,3-CD)pyrene
xylene (mixed)	benzo[k]fluoranthene
1,2,4-trimethylbenzene	chrysene
isopropylbenzene	cyanides(soluble cyanide salts)
naphthalene	arsenic
1,2-dichloroethene	chromium
trichloroethene (TCE)	lead
tetrachloroethene (PCE)	mercury
benzo(a)anthracene	1,3,5-trimethylbenzene
benzo(a)pyrene	

As illustrated in Exhibit A, the contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- soil

### **6.2: Interim Remedial Measures**

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

There were no IRMs performed at this site to date.

### **6.3: Summary of Environmental Assessment**

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for the site.

Based upon investigations conducted to date, which included sampling for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOC), and inorganics, the primary contaminants of concern are benzene, toluene, ethylbenzene and xylene (together known as BTEX), 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene; polycyclic aromatic hydrocarbons (PAHs); and metals and cyanide.

Soil - The subsurface soil on-site exceeded the unrestricted soil cleanup objectives (SCOs) for petroleum related VOCs, metals and SVOCs only inside the holder tanks (See Figure 3). However, sampling of subsurface soil was limited due to inability to access much of the property with a drill rig, and a source area of higher contaminant concentrations may be present beneath the buildings. The soil within the holder tanks had concentrations of naphthalene ranging from 1.3 to 280 parts per million (ppm), and xylene ranging from non-detect to 120 ppm. (See Figure 4, soil which exceeds restricted residential SCOs, and Figure 5, soil which exceeds commercial SCOs).

There were no detections of chlorinated solvents or total cyanide above unrestricted SCOs in soils either on- or off-site.

The PAHs which exceeded unrestricted SCOs were benz(a)anthracene (range from ND to 8.4 ppm), benzo(a)pyrene (range from ND to 8.8 ppm), and benzo(b)fluoranthene (range from ND to 8.2 ppm), chrysene (range from ND to 9.1 ppm), all have an SCO of 1 ppm; dibenz(a,h)anthracene (SCO of 0.33 ppm) ranged from ND to 1.9 ppm; and indeno(1,2,3-cd)pyrene (SCO of 0.5 ppm) ranged from ND to 6.7 ppm. Adjacent to the site, the soils only slightly exceeded the unrestricted SCOs, which is more indicative of historic, urban fill.

The only inorganics of concern in subsurface soils to exceed unrestricted SCOs were lead (SCO of 63 ppm) at a range from ND to 926 ppm, and mercury (SCO of 0.18 ppm) ranging from ND to 4.0 ppm.

The current use of the property as a lumber yard prevented the collection of surface soil samples that would have been representative of past holder station operations from the small area where soil is exposed. However, since the working level of the former holder was below the current ground elevation, surface soil contamination related to the holder station operation is not expected.

Groundwater - Samples collected from monitoring wells on-site (water contained inside the Holder No. 5 tank) exceeded groundwater quality standards (GWQS) for benzene at 210 parts per billion (ppb) with a standard of 1 ppb, toluene at 55 ppb (standard of 5 ppb), ethylbenzene at 110 ppb (standard of 5 ppb), xylenes at 210 ppb (standard of 5 ppb), naphthalene at 70 ppb (standard 10 ppb), 1,2,4-trimethylbenzene at 6 ppb (standard of 5 ppb), isopropylbenzene at 10 ppb (standard of 5 ppb), five PAHs (benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene and indeno(1,2,3-cd)pyrene; all with an standard of 0.002 ppb) ranging from ND to m1.8 ppb, cyanide at a 287 ppb (standard of 200 ppb), and three metals consisting of arsenic at 38 ppb (standard of 38 ppb), chromium at 130 ppb (standard of 50 ppb), and lead at 5,210 ppb (standard of 25 ppb). The groundwater sampled from one of four off-site monitoring wells, only, contained chlorinated VOCs (1,2-dichloroethene, tetrachloroethene (PCE), trichloroethene (TCE)) and naphthalene exceeding GWQS. (See Figure 6, Groundwater Exceedances). It should be noted that the chlorinated solvents were not used during the holder station operations, and are not considered related to the site.

Soil vapor sampling has not been conducted at the site due to existing infrastructure and operating businesses.

#### **6.4: Summary of Human Exposure Pathways**

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure*.

Persons who enter the site could contact contaminants in the soil by digging or otherwise disturbing the soil. Contaminated groundwater at the site is not used for drinking or other purposes and the site is served by a public water supply that obtains water from a different source not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. The potential exists for people to inhale site contaminants in indoor air due to soil vapor intrusion within the on-site buildings. Access to conduct the recommend sampling within the on-site structures has been impeded due to existing infrastructure and operating businesses. Environmental sampling indicates soil vapor intrusion is not a concern for off-site buildings.

#### **6.5: Summary of the Remediation Objectives**

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

### **Groundwater**

#### **RAOs for Public Health Protection**

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.

### **Soil**

#### **RAOs for Environmental Protection**

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

### **Soil Vapor**

#### **RAOs for Public Health Protection**

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

## **SECTION 7: SUMMARY OF THE PROPOSED REMEDY**

To be selected, the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, which are presented in Section 6.5.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Exhibit C.

The basis for the Department's proposed remedy is set forth at Exhibit D.

The proposed remedy is referred to as the Interim Site Management with Institutional Controls remedy.

The estimated present worth cost to implement the remedy is \$219,000. The cost to construct the remedy is estimated to be \$129,000 and the estimated average annual cost is \$3,000.

The elements of the proposed remedy are as follows:

1) Cover System: A site cover will be required to allow for restricted residential use of the site in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup

objectives (SCOs). Where a soil cover is to be used it will be a minimum of two feet of soil placed over a demarcation layer, with a minimum of six inches of soil of sufficient quality to maintain a vegetative layer. Soil cover material, including any fill material brought to the site, will meet the SCOs for cover material for the use of the site as set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and components may be allowed where such components already exist or are a component of the tangible property to be placed as part of site redevelopment. Such components may include, but are not limited to: pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs.

2) Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- requires the remedial party or site owner to complete and submit to the Department an annual certification of institutional and engineering controls in accordance with Part 375-1.8(h)(3);
- allows the use and development of the controlled property for restricted residential, commercial and industrial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or the NYC Department of Health; and
- requires compliance with the Department-approved Interim Site Management Plan.

3) A Interim Site Management Plan (ISMP) is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 2 above.

Engineering Controls: The Cover System discussed in Paragraph 1 above.

The ISMP will include, but may not be limited to:

- an Excavation Plan which details the provisions for management of limited excavations in areas of remaining contamination;
- a provision for further investigation and remediation should large scale redevelopment occur, if any of the existing structures are demolished, or if the subsurface is otherwise made accessible. The nature and extent of contamination in areas where access was previously limited or unavailable will be immediately and thoroughly investigated pursuant to a plan approved by the Department. Based on the investigation results and the Department determination of the need for a remedy, a Remedial Action Work Plan (RAWP) will be developed for the final remedy for MGP contamination at the site, including removal and/or treatment of any source areas to the extent feasible. This removal or treatment will be sufficient in scope to address the site as a source of on-site and potentially of off-site groundwater contamination. The presumptive remedy for MGP contamination will be excavation of both former holder tank structures and MGP-related source material, unless an alternative, equivalent remedy is developed based on new

information. If a remedy is determined to be necessary to address sources of non-MGP contamination present at the site, this will be evaluated separately for further action. Citizen Participation Plan (CPP) activities will continue through this process. Any necessary remediation will be completed prior to, or in association with, redevelopment;

- a provision for evaluation of the potential for soil vapor intrusion for any buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;

- a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Paragraph 1 above will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs);

- provisions for the management and inspection of the identified engineering controls; and,
- maintenance of site access controls and Department notification.

In addition, the ISMP will include:

- descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;

- the steps necessary for the annual reviews and certification of the institutional and/or engineering controls.

b. a monitoring plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- a schedule of monitoring and frequency of submittals to the Department; and
- monitoring for vapor intrusion for any buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

4) Green remediation principals and techniques will be implemented to the extent feasible in the site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;

- Reducing direct and indirect greenhouse gas and other emissions;

- Increasing energy efficiency and minimizing use of non-renewable energy;

- Conserving and efficiently managing resources and materials;

- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste.