Department of Environmental Conservation

KATHY HOCHUL
Governor

AMANDA LEFTON
Commissioner

June 6, 2025

Jeff Head
Marine Drive JV LLC
350 West Hubbard St., Suite 500
Chicago, IL, 60654

Re: Marine Drive Apartments East Site
Site ID No. C915398
Buffalo, Erie County
Remedial Investigation and Alternatives Analysis, Remedial Work Plan, & Decision Document

Dear Jeff Head:

The New York State Department of Environmental Conservation (Department) and the New York State Department of Health (NYSDOH) have reviewed the Remedial Investigation and Alternatives Analysis Report (RI-AAR) and Remedial Work Plan (RWP) for the Marine Drive Apartments East site dated December 9, 2024, and May 22, 2025, respectively and prepared by C&S Engineers, Inc. on behalf of Marine Drive JV LLC. The RI-AAR and RWP are hereby approved. Please ensure that a copy of the approved RI-AAR and RWP are placed in the document repository. The draft plans should be removed.

Attached is a copy of the Department's Decision Document for the site. The remedy is to be implemented in accordance with this Decision Document. Please ensure that a copy of the Decision Document is placed in the document repository.

Please contact the Department's Project Manager, Veronica Kreutzer, at (716) 851-7220 or veronica.kreutzer@dec.ny.gov at your earliest convenience to discuss next steps. Please recall the Department requires seven days notice prior to the start of field work..

Sincerely,

Michael J Cruden

Michael Cruden, P.E.
Director
Remedial Bureau E
Division of Environmental Remediation

DECISION DOCUMENT

Marine Drive Apartments East Site
Brownfield Cleanup Program
Buffalo, Erie County
Site No. C915398
June 2025

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

DECLARATION STATEMENT - DECISION DOCUMENT

Marine Drive Apartments East Site
Brownfield Cleanup Program
Buffalo, Erie County
Site No. C915398
June 2025

Statement of Purpose and Basis

This document presents the remedy for the Marine Drive Apartments East Site a brownfield cleanup site. The remedial program was chosen in accordance with the 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 decision is based on the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Marine Drive Apartments East Site and the public's input to the proposed remedy presented by NYSDEC.

Description of Selected Remedy

The elements of the selected remedy are as follows:

1. Remedial Design:

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and 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 gases 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;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and

- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

As part of the remedial design program, to evaluate the remedy with respect to green and sustainable remediation principles, an environmental footprint analysis will be completed. The environmental footprint analysis will be completed using an accepted environmental footprint analysis calculator such as SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA), SiteWise(TM) (available in the Sustainable Remediation Forum [SURF] library) or similar NYSDEC accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial design program, as appropriate. The project design specifications will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial design program.

Additionally, the remedial design program will include a climate change vulnerability assessment, to evaluate the impact of climate change on the project site and the proposed remedy. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress and drought), flooding, and sea level rise will be identified, and the remedial design program will incorporate measures to minimize the impact of climate change on potential identified vulnerabilities.

2. Excavation

Prior to remediation, an archeological investigation will be performed in a small section on the BCP Site which can be seen in Figure 4. The majority of soil removed from these areas for archeologic investigation will be put back in place to be handled as part of the site remediation.

Excavation and off-site disposal of all on-site soils which exceed Unrestricted Use Soil Cleanup Objectives (USCOs), as defined by 6 NYCRR Part 375-6.8. Approximately 37,000 cubic yards of contaminated soil will be removed from the site, with removal depths ranging from 2 to 16 feet. Collection and analysis of confirmation samples at the remedial excavation depth, and limited sidewall sampling, will be used to verify that SCOs for the site have been achieved. If confirmation sampling indicates that SCOs were not achieved at the stated remedial depth, the Applicant must notify DEC, submit the sample results, and in consultation with DEC, determine if further remedial excavation is necessary.

To ensure proper handling and disposal of excavated material, waste characterization sampling will be completed for all identified contaminated site material. Waste characterization sampling

will be performed exclusively for the purposes of off-site disposal in a manner suitable to receiving facilities and in conformance with applicable federal, state, and local laws, rules, regulations, and facility-specific permits.

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in as needed to replace the excavated soil and establish the designed grades at the site.

3. Groundwater

Groundwater sampling for semi-volatile organic compounds (SVOCs) and metals will be performed following excavation of impacted materials to confirm the impacts of these contaminants observed in groundwater are mitigated via excavation of soil exceeding unrestricted use SCOs. The following local use restriction will be relied upon to prevent ingestion of groundwater as regulated by the Buffalo Water Board, which prohibits potable use of groundwater without prior approval.

Declaration

The remedy conforms with promulgated standards and criteria that are directly applicable, or that are relevant and appropriate and takes into consideration Department guidance, as appropriate. The remedy is protective of public health and the environment.

6/6/2025	Michael J Cruden
Date	Michael Cruden, Director Remedial Bureau E

DECISION DOCUMENT

Marine Drive Apartments East Site
Buffalo, Erie County
Site No. C915398
June 2025

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of contaminants at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of contaminants at this site, as more fully described in this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum.

The New York State Brownfield Cleanup Program (BCP) is a voluntary program. The goal of the BCP is to enhance private-sector cleanups of brownfields and to reduce development pressure on "greenfields." A brownfield site is real property, where a contaminant is present at levels exceeding the soil cleanup objectives or other health-based or environmental standards, criteria or guidance, based on the reasonably anticipated use of the property.

NYSDEC has issued this document in accordance with the requirements of New York State Environmental Conservation Law and 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

NYSDEC seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by NYSDEC in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repository:

DECInfo Locator - Web Application
https://gisservices.dec.ny.gov/gis/dil/index.html?rs=C915398

Buffalo & Erie County Public Library
1 Lafayette Square
Buffalo, NY 14203-1887
Phone: (716) 858-8900

Receive Site Citizen Participation Information By Email

Please note that NYSDEC'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 and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location:

The Marine Drive Apartments East Site is an approximately 2.447-acre site which only consists of a parking lot that is currently used by the adjacent Marine Drive Apartment Complex. The site is located near the Buffalo waterfront and along the edge of the downtown corridor, in the City of Buffalo, Erie County. The site is owned by Buffalo Municipal Housing Authority (BMHA). Directly adjacent to the west of the site is the Marine Drive Apartments complex, followed by the Buffalo Naval Park and the Buffalo River to the west. The apartment complex to the west consists of seven 12-story residential structures constructed in the late 1940s and early1950s. Marine Drive separates the site from the apartment complex. Marine Drive also bounds the southern end of the site, with Canalside beyond. The elevated Buffalo Skyway roadway bounds the site to the east and Erie Street bounds the site to the north. Land uses immediately adjacent to the BCP Site include commercial, residential uses, and public recreation (Canalside and the Buffalo River).

Site Features:

The BCP Site consists entirely of an asphalt parking lot with several small grass islands. The site is used daily by residents of the adjacent apartment complex.

The BCP Site lies within the National Register-eligible Erie Canal Harbor Archaeological District. A phase of the investigation is set to take place with five to ten 1 meter by 1 meter test units excavated in a small central section of the site prior to remediation. This section can be seen in Figure 4.

Current Zoning and Land Use:

Under the City of Buffalo Zoning Map, the Marine Drive BMHA properties are located within the D-R Residential Campus District, and the N-1C Mixed-Use Core District. The BCP site, is located on the east side of Marine Drive, within the N-1C District. N-1C Districts are mix-use centers of high intensity, in strategic locations, such as on the edges of downtown or proximate to light rail rapid transit, and often features mid-rise buildings. Permitted uses in both the D-R and N-1C Districts include, among others, single and multi-residential, civil, lodging, infrastructure, retail and service, and transportation uses.

Additionally, the site is part of the Canalside Land Use Improvement Project being undertaken by the New York State Urban Development Corporation (UDC) d/b/a Empire State Development and the Erie Canal Harbor Development Corporation, a subsidiary of UDC.

Past Uses of the Site:

According to historical records and past assessments, the site has been used for residential and light-industrial purposes from at least 1889 to 1950. Specific site uses in the area included foundries, laundry, boiler shop, plating shop, and auto garage. Industrial operations in the area may have use solvents and oils and automotive repair shops may have used petroleum products.

Prior to the construction of the Marine Drive Apartments complex in about 1950, the site and surrounding parcels were associated with the "Canal District", which included a series of streets, canals, and tenement buildings. Included in this area were the former Canal, Peacock, Evans, Norton, Water, Fly, State and Lecouteulx Streets, and Date Place.

In 1936, a large natural gas explosion occurred in the area, affecting multiple structures. Following the explosion, the entire site and surrounding area were demolished. Construction of the seven 12-story towers commenced in the 1940s, with project completion in 1952. The BCP site is located within the asphalt parking lot associated with the apartment complex. The site has been used as a parking lot from 1952 to present.

Geology and Hydrogeology:

Fill material identified on-site consisted of any one or mixture of the following materials:

Crushed Rock	Sand
Silt	Clay
Plastics	Construction Debris
Lumber	Ash/Cinders
Ceramics	Bricks
Metal	Slag

Historic fill material (HFM) was generally observed across the site beneath the asphalt surface. Pervious investigations indicate approximately 0.2 feet of asphalt material at the top of each boring and/or test pits. Beneath the asphalt layer was approximately 2 to 3 feet of blast-furnace slag likely associated with the construction of a sub-base fill layer beneath the parking lot. Two geotextile fabrics were observed in most of the borings and test pits at the bottom of that sub-base layer.

The second type of HFM was observed beneath the geotextile fabric. This HFM consisted of a mixture of soil types (sand, silt, and/or clay), ash coal, gravel, and construction demolition debris. This HFM extended from approximately 3 to 16 feet below ground surface (fbgs).

Underlying the HFM were mixed deposits of native silt, clay, and sand down to at least 20 fbgs. The mixed deposits vary from each soil boring and test pit location; however, soils generally consisted of alternating grey and brown zones of silty sand, sand, clayey silt, sand silt, and glacial

deposits. Most native soils contained abundant amounts of decomposing organic matter. A 1- to 2-foot thick black or reddish peat layer was observed throughout the Site.

Groundwater was encountered at depths approximately 7 to 9 fbgs. Based on groundwater elevations, the groundwater flow on-site is split. Groundwater flows to the west toward Lake Erie and to the east toward the Buffalo River.

Groundwater at and in the vicinity of the site is not used for public drinking water supply.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

NYSDEC 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, an alternative which allows for unrestricted use of the site was evaluated.

A comparison of the results of the Remedial Investigation (RI) against unrestricted use standards, criteria and guidance values (SCGs) for the site contaminants is available in the Remedial Investigation – Alternatives Analysis (RI-AA) Report.

SECTION 5: ENFORCEMENT STATUS

The Applicant under the Brownfield Cleanup Agreement is a Volunteer. The Applicant does not have an obligation to address off-site contamination. However, NYSDEC has determined that this site does not pose a significant threat to public health or the environment; accordingly, no enforcement actions are necessary.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A remedial investigation (RI) serves as the mechanism for collecting data to:

- characterize site conditions;
- determine the nature of the contamination; and
- assess risk to human health and the environment.

The RI is intended to identify the nature (or type) of contamination which may be present at a site and the extent of that contamination in the environment on the site or leaving the site. The RI reports on data gathered to determine if the soil, groundwater, soil vapor, indoor air, surface water or sediments may have been contaminated. Monitoring wells are installed to assess groundwater and soil borings or test pits are installed to sample soil and/or waste(s) identified. If other natural resources are present, such as surface water bodies or wetlands, the water and sediment may be sampled as well. Based on the presence of contaminants in soil and groundwater, soil vapor will also be sampled for the presence of contamination. Data collected in the RI influence the

development of remedial alternatives. The RI-AA Report is available for review in the site document repository and the results are summarized in section 6.3.

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 RI were compared to media-specific SCGs. The NYSDEC has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a contaminant 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 below. Additionally, the RI-AA Report contains a full discussion of the data. The contaminants of concern identified at this site are:

Acetone
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Chrysene
Dibenzo(a,h)anthracene
Indeno(1,2,3-cd)pyrene
Arsenic
Lead
Mercury

The contaminants 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 Decision Document.

There were no IRMs performed at this site during the RI.

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. The RI report presents a detailed discussion of any existing and potential impacts from the site to fish and wildlife receptors.

Nature and Extent of Contamination:

Soil and groundwater samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), pesticides, and per- and polyfluoroalkyl substances (PFAS). Based on the submitted RI-AA Report, the primary contaminants of concern are select (VOCs, SVOCs, metals, and pesticides in the soil. PFOAs, PFOS, SVOCs, and select metals were found in the groundwater on-site.

Surface Soil:

As most of the site is an asphalt parking lot, no surface soil samples were collected.

Subsurface Soil:

Samples were collected from fifty locations at depths ranging from two to nineteen fbgs and analyzed at a variable frequency for VOCs, SVOCs, PCBs, pesticides, and PFAS. No PFAS were detected at levels exceeding current guidance values for unrestricted use in soil. The subsurface soil sample data does not indicate a potential for off-site migration.

Multiple VOCs were detected in on-site subsurface soils above the Department's Part 375 USCOs. The VOCs that exceeded USCOs (with the number of exceedances and highest concentration) include:

- Acetone (28 samples exceeded the 0.05 ppm USCO; maximum detection 2.6 ppm)
- 2-Butanone (1 sample exceeded the 0.12 ppm USCO; maximum detection 0.17 ppm)

Several SVOCs, specifically polycyclic aromatic hydrocarbons (PAHs), were detected in on-site subsurface soils above the Department's Part 375 USCOs. The SVOCs that exceeded USCOs (with the number of exceedances and highest concentration) include:

- Benzo(a)anthracene (7 samples exceeded the 1 ppm USCO; maximum detection 42 ppm)
- Benzo(b)pyrene (8 samples exceeded the 1 ppm USCO; maximum detection 30 ppm)
- Benzo(b)fluoranthene (9 samples exceeded the 1.0 ppm USCO; maximum detection 11 ppm)

- Benzo(k)fluoranthene (5 samples exceeded the 0.8 ppm USCO; maximum detection 11 ppm)
- Chrysene (8 samples exceeded the 1 ppm USCO; maximum detection 38 ppm)
- Phenanthrene (1 sample exceeded the 100 ppm USCO; maximum detection 110 ppm)
- Dibenzo(a,h)anthracene (6 samples exceeded the 0.33 ppm USCO; maximum detection 3.8 ppm)
- Indeno(1,2,3-cd)pyrene (7 samples exceeded the 0.5ppm USCO; maximum detection 15 ppm)
- Dibenzofuran (2 samples exceeded the 7 ppm USCO; maximum detection 12 ppm)
- 3-Methylphenol/4-Methylphenol (4 samples exceeded the 0.33 ppm USCO; maximum detection 4.4 ppm)

Several metals were detected in on-site subsurface soils above the Department's Part 375 USCOs. The metals that exceeded USCOs (with the number of exceedances and highest concentrations) include:

- Arsenic (4 samples exceeded the 13 ppm USCO; maximum detection 45 ppm)
- Cadmium (1 sample exceeded the 2.5 ppm USCO; maximum detection 12.4 ppm)
- Chromium (5 samples exceeded the 30 ppm USCO; maximum detection 478 ppm)
- Lead (12 samples exceeded the 63 ppm USCO; maximum detection 2,480 ppm)
- Manganese (4 samples exceeded the 1,600 ppm USCO; maximum detection 7,890 ppm)
- Mercury (19 samples exceeded the 0.18 ppm USCO; maximum detection 20.6 ppm)
- Nickel (7 samples exceeded the 30 ppm USCO; maximum detection 44.8 ppm)
- Zinc (8 samples exceeded the 109 ppm USCO; maximum detection 401 ppm)

Pesticides were detected on-site in one subsurface soils sample above the Department's Part 375 USCOs. This sample was taken from within one of the small soil-covered areas on-site. The pesticides that exceeded USCOs (with the number of exceedances and highest concentrations) include:

- 4,4'-DDE (1 sample exceeded the 0.0033 ppm USCO; maximum detection 0.0349 ppm)
- 4,4'-DDT (1 sample exceeded the 0.0033 ppm USCO; maximum detection 0.0168 ppm)

In addition to analysis of subsurface soil samples, a radiological survey and sampling focused on the upper three feet below the asphalt determined that technologically enhanced, naturally occurring, radiological material (TENORM), typical of slag material, was present on-site. Samples were taken from 11 test pits throughout the site and results indicated that the TENORM was all below 5 picocuries per gram (pCi/g) so it is considered TENORM (background comparable) as per DMM-5.

Groundwater:

Eight overburden groundwater samples were collected from four on-site wells and analyzed for VOCs, SVOCs, metals, pesticides, herbicides, PCBs, and PFAS. Two rounds of sampling were

performed four weeks apart. Based on the historic site use being an unlikely source for contamination, the PFAS found in groundwater likely originated off-site and are not considered to be contaminants of concern at this site.

Contaminant exceedances from the first round of sampling (with the number of exceedances and highest concentrations) include:

- Benzo(a)anthracene (2 samples exceeded the 0.002 ug/L NY-AWQS: highest concentration 0.22 ug/L)
- Benzo(a)pyrene (2 samples exceeded the 0.002 ugLl NY-AWQS: highest concentration 0.19 ug/L)
- Benzo(b)fluoranthene (2 samples exceeded the 0.002 ug/L NY-AWQS: highest concentration 0.24 ug/L)
- Benzo(k)fluoranthene (2 samples exceeded the 0.002 ug/L NY-AWQS: highest concentration 0.08 ug/L)
- Chrysene (2 samples exceeded the 0.002 ug/L NY-AWQS: highest concentration 0.19 ug/L)
- Indeno(1,2,3-cd)pyrene (2 samples exceeded the 0.002 ug/L NY-AWQS: highest concentration 0.11 ug/L)
- Antimony (1 sample exceeded the 3 ug/L NY-AWQS; highest concentration 4.1 ug/l)
- Cadmium (1 sample exceeded the 10 ug/L NY-AWQS; highest concentration 10.15 ug/L)
- Iron (4 samples exceeded the 300 ug/L NY-AWQS: highest concentration 5,550 ug/L)
- Magnesium (1 sample exceeded the 35,000 ug/L NY-AWQS: highest concentration 63,700 ug/L)
- Manganese (1 sample exceeded the 300 ug/L NY-AWQS: highest concentration 591.3 ug/L)
- Sodium (4 samples exceeded the 20,000 ug/L NY-AWQS: highest concentration 1,050,000 ug/L)
- Perfluorooctanoic Acid (PFOA) (2 samples exceeded the 0.0067 ug/L NY-AWQS: highest concentration 0.04 ug/L)
- Perfluorooctanesulfonic Acid (PFOS) (2 samples exceeded the 0.0027 ug/L NY-AWQS: highest concentration 0.00758 ug/L)

Contaminant exceedances from the second round of sampling (with the number of exceedances and highest concentrations) include:

- Benzo(a)anthracene (1 sample exceeded the 0.002 ug/L NY-AWQS: highest concentration 0.11 ug/L)
- Benzo(a)pyrene (1 sample exceeded the 0.002 ug/L NY-AWQS: highest concentration 0.08 ug/L)
- Benzo(b)fluoranthene (1 sample exceeded the 0.002 ug/L NY-AWQS: highest concentration 0.1 ug/L)
- Chrysene (1 sample exceeded the 0.002 ug/L NY-AWQS: highest concentration 0.08 ug/L)

- Indeno(1,2,3-cd)pyrene (1 sample exceeded the 0.002 ug/L NY-AWQS: highest concentration 0.04 ug/L)
- Cadmium (1 sample exceeded the 10 ug/L NY-AWQS: highest concentration 25.04 ug/L)
- Chromium (1 sample exceeded the 50 ug/L NY-AWQS: highest concentration 61.15 ug/L)
- PFOA (3 samples exceeded the 0.0067 ug/L NY-AWQS: highest concentration 0.0332 ug/L)
- PFOS (3 samples exceeded the 0.0027 ug/L NY-AWQS: highest concentration 0.00796 ug/L)

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*.

Contact with site contaminants in soil is unlikely because the majority of the site is covered by an asphalt-paved parking lot. Contaminated groundwater at the site is not used for drinking or other purposes, since the site is served by a public water supply that obtains its water from a source not affected by site contamination. Environmental sampling indicates that soil vapor intrusion is not a concern on-site or off-site.

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 objectives for this site are:

Soil:

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

RAOs for Environmental Protection

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

Groundwater:

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards **RAOs for Environmental Protection**
- Restore groundwater aquifer to pre-disposal/pre-release conditions, to the extent practicable.

- Prevent the discharge of contaminants to surface water.
- Remove the source of ground or surface water contamination.

SECTION 7: ELEMENTS OF THE SELECTED REMEDY

The alternatives developed for the site and the evaluation of the remedial criteria are presented in the Alternative Analysis. The remedy is selected pursuant to the remedy selection criteria set forth in DER-10, Technical Guidance for Site Investigation and Remediation and 6 NYCRR Part 375.

The selected remedy is a Track 1: Unrestricted use remedy.

The selected remedy is referred to as the Track 1 Excavation remedy.

The elements of the selected remedy, as shown in Figure 3, are as follows:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and 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 gases 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;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

As part of the remedial design program, to evaluate the remedy with respect to green and sustainable remediation principles, an environmental footprint analysis will be completed. The environmental footprint analysis will be completed using an accepted environmental footprint analysis calculator such as SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA), SiteWise$^{(TM)}$ (available in the Sustainable Remediation Forum [SURF] library) or similar

NYSDEC accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial design program, as appropriate. The project design specifications will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial design program.

Additionally, the remedial design program will include a climate change vulnerability assessment, to evaluate the impact of climate change on the project site and the proposed remedy. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress and drought), flooding, and sea level rise will be identified, and the remedial design program will incorporate measures to minimize the impact of climate change on potential identified vulnerabilities.

2. Excavation

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To ensure proper handling and disposal of excavated material, waste characterization sampling will be completed for all identified contaminated site material. Waste characterization sampling will be performed exclusively for the purposes of off-site disposal in a manner suitable to receiving facilities and in conformance with applicable federal, state, and local laws, rules, regulations, and facility-specific permits.

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in as needed to replace the excavated soil and establish the designed grades at the site.

3. Groundwater

Groundwater sampling for SVOCs and metals will be performed following excavation of impacted materials to confirm the impacts of these contaminants observed in groundwater are mitigated via excavation of soil exceeding unrestricted use SCOs. The following local use restriction will be relied upon to prevent ingestion of groundwater as regulated by the Buffalo Water Board, which prohibits potable use of groundwater without prior approval.

Figure 1: Site Location Map

Brownfield Cleanup Program (BCP) Boundary

N

0 500 1,000 2,000 Feet

1 in. = 1,000 feet
When printed at 11 in. by 17 in.

Marine Drive Apartments East
Phase 1 Site
Brownfield Cleanup Program

Sources: . Created by C&S Engineers, Inc.

Figure 2: Site Plan

Site Detail

Brownfield Cleanup Program (BCP) Boundary

0 30 60 Feet

1" = 30'

When printed on 24 in. by 36 in.

Marine Drive Apartments East
Phase 1 Site
Brownfield Cleanup Program

Sources: Survey created by Niagara Boundary and Mapping Services

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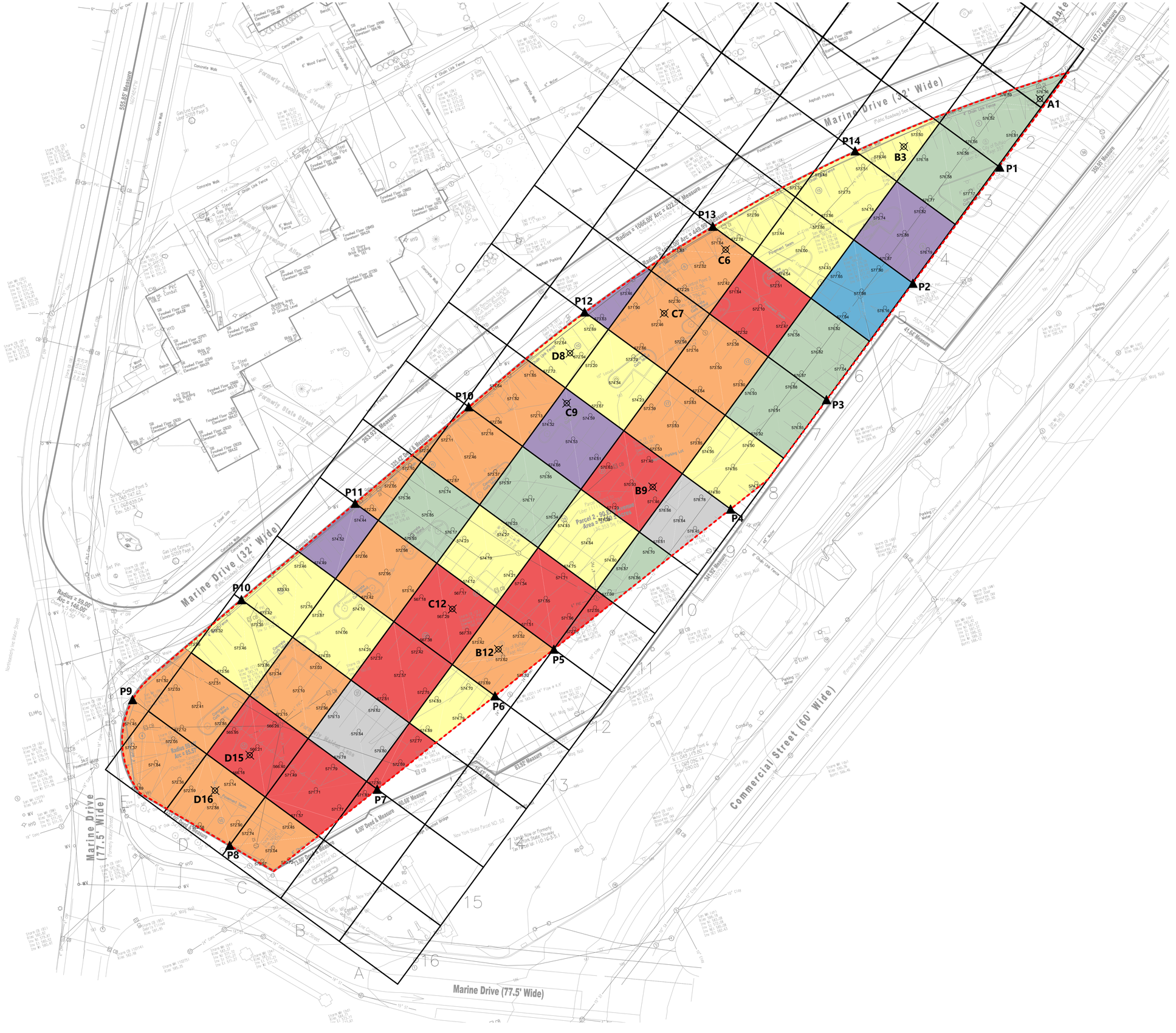

Figure 3: Elements of the Remedy

Track 1 Cleanup

- Brownfield Cleanup Program (BCP) Site
- Excavation Grid (50-feet by 50-feet)
- Confirmatory Soil Sample Location
- Perimeter Soil Sample Location

Excavation Depth (feet)

- 4 - 6
- 6 - 7
- 7 - 8
- 8 - 9
- 9 - 10
- 10 - 11
- 11 - 17

574.85 Anticipated Final Grade Elevation (subject to change based on confirmatory sample results and field observations)

- Material consists of non-hazardous contaminated historic fill material and impacted native soil
- Excavation based on in-place volumes of contaminated material. Potential volume of recyclable concrete, asphalt or brick is not included.
- Assumes a tonnage conversion factor of 125 per cubic foot or 1.75 per cubic yard.

Total Cubic Yards = 37,000
Potential Tonnage = 64,750

N

0 30 60 Feet

1" = 30'

When printed on 24 in. by 36 in.

Sources: Survey created by Niagara Boundary and Mapping Services

Figure 4: Archaeological Area

Brownfield Cleanup Program (BCP) Site

Sampling Grid (50-feet by 50-feet)

0 30 60 Feet

1" = 30'

When printed on 24 in. by 36 in.

Marine Drive Apartments East Phase 1 Site Brownfield Cleanup Program

Sources: Survey created by Niagara Boundary and Mapping Services