

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Brookfield Avenue Landfill Site
Operable Unit No.2
New York City, Richmond County, New York
Site No. 243006

The Proposed Remedial Action Plan (PRAP) for the Brookfield Avenue Landfill Site, was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on January 4, 2007. The PRAP outlined the remedial measure proposed for the contaminated surface water, sediment and biota at the Brookfield Avenue Landfill Site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on February 1st, 2007, which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period was to have ended on February 2, 2007, however it was extended to February 15, 2007, at the request of the public.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the Department's responses:

Natural Resources

COMMENT 1: When referring to the wetlands in the area of Richmond Creek and Brookfield Avenue Landfill in OU-2, the PRAP refers to the term "fair degree of value and function." What does this mean?

RESPONSE 1: The term "fair degree of value and function" means that the wetland, as it exists today, is adequately serving many of the functions that we attribute to tidal wetlands per the New York State's Part 661 regulations, as follows: the wetland is protecting the inland area from damage from wave energy; is absorbing flood waters, is cleansing the waters of the creek by absorbing and retaining contaminants in the plants and sediments; is serving as habitat for the aquatic organisms (those that are free swimming and those that live at the bottom of the Creek); and is providing nesting, foraging, and other functions for regional wildlife.

COMMENT 2: Are there contaminants in the Creek? What is the degree of contaminants found in the Creek sediment? How will the presence of these contaminants impact the fish and crabs?

RESPONSE 2: There are contaminants in the creek bed and in the marsh sediments. However, though there were hazardous wastes in the landfill, the remedial investigation did not find contaminants at the hazardous level in the creek or the marshes. With regard to the sediment, New York State has sediment criteria that categorize the level of contamination as A, B, or C. Class A is considered relatively clean, and we would not

expect to encounter any impacts to aquatic resources. Class B is the intermediate category, where some level of chronic impacts may occur. Class C levels suggest possible acute impacts to some aquatic biota. Within the creek and salt marsh we found a number of contaminants present, at levels ranging from A to C. The contaminant levels in OU-2 marsh and creek sediments are significantly lower than those found in Brookfield Avenue Landfill soils and similar to many other areas throughout NY Harbor. The inference from data is that there is likely some negative impact to the biota because of the presence of these contaminants. Any uptake of contaminants by the benthic biota can move up the food chain through consumption by fish and crabs. The ubiquitous level of contamination throughout the Harbor is one of the main reasons why there are State-imposed restrictions on the consumption of fish and crabs from New York Harbor waters.

COMMENT 3: Since we are capping the landfill why are we not capping the sediment?

RESPONSE 3: After careful consideration of the remedial alternatives, it was determined that removing or capping the sediments would do more harm than good in that it would destroy all of the identified functions and values of the existing creek/marsh system; functions and values that we may never be able to recreate through artificial means. Moreover, any cap would be quickly contaminated by the loads brought in with tidal and freshwater flows from upstream and downstream of the site. Ultimately, we will achieve a higher level of function sooner by stopping inputs from the landfill and allowing the system to improve on its own.

Public Health

COMMENT 4: Why are you concerned about human consumption of shellfish, such as crabs, from the Richmond Creek in the vicinity of the landfill? If shell fish and other fish can be caught, why shouldn't they be eaten without restriction?

RESPONSE 4: The shell fish and other fish can bioaccumulate many contaminants that they encounter in the environment. This means that contaminant concentrations that are low in small organisms at the bottom of the food chain tend to increase in organisms higher in the food chain. Fish advisories now apply to all waters throughout the entire Arthur Kill, the Newark Bay area and most waters around New York City and are not limited to Richmond Creek. Further, these advisories are not related to Brookfield Avenue Landfill. Contaminants from thousands of sources in the region affect water quality and impact shell fish and other fish. Numerous programs are now in place to reduce the load of pollutants discharged into our local waterways (including the remediation of Brookfield Avenue Landfill). We expect that the regional environment (surface water, sediment and the fish and shell fish that inhabit them) will slowly improve in chemical quality over a long period of time.

COMMENT 5: The report states that "only limited current dermal contact with surface water is expected." Why is this?

RESPONSE 5: For several reasons. First, the access to the creek is limited by dense natural vegetation that makes access difficult. Second, the waters in the creek are not easily navigable because they are relatively shallow, especially at low tide. These sediments are largely organic clay and silt material that provide a very difficult substrate for walking and thus will discourage repeated visits and subsequent long-term dermal contact exposures.

COMMENT 6: Which of the agencies is responsible for putting up signs, particularly the Fish Advisories, around the Brookfield Avenue Landfill Site and how is this done?

RESPONSE 6: The fish advisories apply to the regional water bodies of New York Harbor and are not related in any way to Brookfield Avenue Landfill, nor are they altered by this ROD. Since the advisories are not caused by contaminants from the Brookfield Avenue Landfill, this ROD does not mandate signage as a part of the remedy for the Site. However, with the understanding that the ultimate end use of the Landfill is to build and operate a public park, NYC DEP has agreed to install signage that will notify citizens in the area, including park users, of the existence the New York Health advisory and the recommendations of the New York State Department of Health. This is discussed in greater detail later in this Summary in Response 15.

Sources of Contamination

COMMENT 7: Where did the contamination in the creek come from?

RESPONSE 7: The waters of Richmond Creek are directly connected with those of the Fresh Kills and the Arthur Kill through tidal flows that carry water in and out of the creek twice each day. In addition to leachate discharges from Brookfield Avenue Landfill and the adjacent Fresh Kills Landfill, contaminants enter these water bodies from numerous other sources, including thousands of industries along the shoreline and throughout the large water shed, urban runoff, contaminated storm-water flows, sewage treatment plant overflows and many other contaminated drainage sources. Analysis of data from this and other studies indicates that Brookfield Avenue Landfill is a minor source of the overall contaminant load in Richmond Creek and the adjacent water bodies.

COMMENT 8: Are the Creek sediments hazardous?

RESPONSE 8: Extensive studies show that the sediments in Richmond Creek do not exhibit RCRA hazardous waste characteristics and are therefore not considered a hazardous waste. Additional information is included in Response 2.

COMMENT 9: Is there any evidence to support your conclusion that Brookfield Avenue Landfill is not the principal source of contaminants in Richmond Creek?

RESPONSE 9: During the Remedial Investigation, samples were collected near the landfill and in various directions away from the site. Generally, contaminants tend to cluster adjacent to a primary source and you would expect to see an increase in concentrations as you move closer to that source. This is called an increasing gradient toward the source. Samples in the Creek did not show any pattern of increase in concentrations (increasing gradient) as we moved closer to the Brookfield Avenue Landfill. No 'hot spots', or areas of highly concentrated contamination, were identified in the study area. For many contaminants, the concentrations actually increased the farther we moved away from the landfill. Thus they showed a decreasing gradient toward Brookfield Avenue Landfill, the opposite of what would be expected if the landfill was a major source of contamination. Although contamination was found in Richmond Creek, no hazardous concentrations were

identified at any location. Levels of contamination in the creek were similar to contaminant concentrations elsewhere in the Arthur Kill.

COMMENT 10: Other than a desire to protect wetland habitat, are there any other reasons why NYSDEC and NYSDOH has decided not to dredge the Richmond Creek?

RESPONSE 10: There are a variety of reasons. First, and most importantly, dredging is not necessary. The remedial investigation did not identify any 'hot spots' in the vicinity of the landfill (see above) that would necessitate removal by dredging. Second, the quality of the remedy on the landfill is among the best ever applied to a landfill this size in the U. S. When the remedy is complete, the cap, barrier wall and leachate and gas collection systems will stop contamination from leaving the landfill and entering the creek. Thus, halting future discharge will enable existing contaminant levels to improve under natural processes. Third, monitoring of sediment in the Fresh Kills tidal estuary, including Richmond Creek, has shown substantial improvement over the last 8 years since closure of the adjacent Fresh Kills Landfill. These improvements are attributed to sharp reductions in pollutant loading to the estuary by Fresh Kills Landfill. Improvements from reduction of leachate from Brookfield Avenue Landfill can also be expected, although they will be much less than those registered for the much larger Fresh Kills Landfill. Fourth, if local dredging was performed, contamination in those sediments not removed immediately downstream and upstream would be carried in by tidal action and would recontaminate the area cleansed by dredging. Fifth, dredging would involve movement of large amounts of wet sediment material. Dewatering would require dedication of materials handling on the landfill area and would impede remedial work in these areas until the dredging operations were completed. While feasible, this would add several years to the duration of the remedy. Sixth, dewatering would require multiple handling of the dredge material on the property and would increase the short-term impacts related to potential dust and odors.

COMMENT 11: How will the performance of landfill remedy be monitored?

RESPONSE 11: The landfill remedy, including the cap, barrier wall and leachate and gas collection systems, will be monitored by a series of effective onsite systems. These include hydraulic head monitoring inside and outside of the barrier wall to ensure an inward hydraulic gradient and inward leakage; groundwater monitor wells outside the barrier wall to detect leakage; and flow totalizer readings for leachate that is pumped from the collection systems to monitor performance of leachate removal operations. Also, samples of chemical quality of leachate collected can determine changes over time. The PRAP also called for surface water sampling during two annual events after the completion of the remedy on the landfill. However, this monitoring has less resolution and is less valuable for the purpose of warning landfill managers of a breach in the leachate containment system than those listed above.

COMMENT 12: The community had expressed a desire for additional monitoring in Richmond Creek after the remedy is complete on the landfill. Can more be done in this area?

RESPONSE 12: After discussion with community representatives, NYSDEC has agreed to expand the monitoring program to include sediment samples at each of the surface water stations identified in the PRAP. Further, the number of sampling rounds will be increased from two to three and the timing of the work will be adjusted to accommodate the informed and valuable suggestion by the Science Advisory Committee. It will be

performed in the 5th year, 10th year and 20th year after the remedy is complete. Considerable additional monitoring is planned for Richmond Creek and the Fresh Kills estuary under the closure program for Fresh Kills Landfill. That work includes annual and biannual sampling of surface water and sediments, respectively, and biota sampling. Review of the Richmond Creek component of the Brookfield Avenue Landfill remedial program will also include evaluation of the data and information generated at Fresh Kills Landfill.

Institutional and Engineering Controls

COMMENT 13: What are institutional controls and engineering controls?

RESPONSE 13: Engineering Controls are engineered systems built at remedial sites to provide for protection of public health and the environment. An example of an engineering control is the cap to be built on top of the Brookfield Avenue Landfill to contain and encapsulate the wastes below. This is an engineering control that will protect both public health (from direct contact with waste) and the environment. An institutional control is a restriction or other non-structural requirement that is placed on a property. Institutional controls are often used to insure that engineering controls are properly operated, maintained and monitored. An institutional control for the landfill cap, for instance, would be a requirement for quarterly inspections of the cap to insure that erosion has not occurred and periodic certification to New York State by a qualified environmental professional that the cap continues to perform as it was designed. Other types of institutional controls prohibit certain types of activities on a site. An example would be a prohibition on the use of a site for vegetable gardening. Institutional controls apply to the listed property.

COMMENT 14: Are there any institutional controls to be applied to OU-2?

RESPONSE 14: A portion of OU-2 is part of the site that was listed on the New York State Registry of Inactive Hazardous Waste Disposal Sites (the 'listed site'). That portion is part of the upland marsh area to the west and north of the OU-1. Under the remedy required for OU-1, institutional controls will be applied to the entire listed site including portions of OU-2. Generally, these controls will include: prohibition from use of groundwater for potable purposes; prohibition from vegetable gardening; performance of site inspections and filing of a periodic certification that the remedy remains in place and continues to perform as designed; and management of residual contamination under a Site Management Plan.

COMMENT 15: Are there any additional controls to be applied to OU-2?

RESPONSE 15: Yes. After receiving input from community representatives, NYSDEC and NYSDOH have consulted with NYCDEP. NYCDEP has agreed to several additional controls that are relevant to OU-2. These include (1) the installation of signage acceptable to the NYSDOH at a number of sites along the periphery of OU-2 that provide notification of the current fish consumption advisory that has been placed by the NYSDOH for waters in New York Harbor. These signs will be written in two languages, English and Spanish.; (2) installation of a visual demarcation barrier (fencing of a wooden post and rail type is envisioned) that will be placed along the periphery of OU-2. It is expected that the barrier and the signage locations will coincide. The barrier will be constructed during the construction of OU-1; and (3) performance of a photographic survey of the wetland flora and fauna at the conclusion of the remedy to be used as a baseline for subsequent wetland

assessments. While these controls are not required by NYSDOH as a means to protect public health, and thus are not a mandated component of this ROD, they have been agreed to by NYCDEP in order to address community concerns and interests. The status of the signage and the visual demarcation barrier will be incorporated into the inspections of the site. Under the Site Management Plan, inspections of the site will be performed on a minimum quarterly basis.

COMMENT 16: What is an Environmental Easement and how will it apply to Brookfield Avenue Landfill? Is it different than a deed restriction?

RESPONSE 16: An Environmental Easement is a document regarding real property, created under and subject to provisions of Article 71, Title 36 of the New York State Environmental Conservation Law. The Environmental Easement will apply to the listed property. It provides a permanent notice to title holders of the requirements that apply to a remediated site to manage residual contaminants in perpetuity. It lists all engineering and institutional controls and notes that property owners must adhere to the Site Management Plan approved by NYSDEC. The City of New York would covenant and agree that it shall annually, or such time as NYSDEC may allow, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury that the controls employed at the listed property are unchanged from the previous certification or that any changes to the controls employed at the listed property were approved by the NYSDEC, and that nothing has occurred that would impair the ability of such control to protect the public health and environment or constitute a violation or failure to comply with any Site Management Plan for such controls. It gives access to the listed property to New York State to evaluate continued maintenance of such controls. Environmental Easements are enforceable in law in perpetuity.

The Environmental Easement will be recorded with the County Clerk prior to completion of the remedy for the Site. NYSDEC will not sign off on the completion of the remedy until the Environmental Easement is recorded. An Environmental Easement performs a similar function to a deed restriction. However, an Environmental Easement is more protective in that it yields rights to management of the residual contamination to the State of New York.

COMMENT 17: How long will the inspections and certifications be in place at the Site? What criteria will be used to terminate them?

RESPONSE 17: Inspections and certifications will be required in perpetuity.

COMMENT 18: Is the perimeter fence (now in place) an engineering control?

RESPONSE 18: The perimeter fence is an interim engineering control that provides protection and site security until the remedy is complete.

End Use

COMMENT 19: Do you have any idea when the park is supposed to be available to the public?

RESPONSE 19: While the park is not part of the remedy, NYCDEP has stated that the landscaping on the landfill, the final stage of site preparation, is scheduled to be completed sometime in 2013.

Non-OU-2 Issues

COMMENT 20: Will you guarantee that Hudson dredge material will not be put on the Brookfield Landfill for Operable Unit 1?

RESPONSE 20: No guarantee can be provided that dredge material will not be used for capping of OU-1. Dredge material is routinely used on remedial sites in New York City as a cover material. The design for that work specifies chemical criteria that will apply to all material that will be imported to the site for use as site cap. Imported material must comply with those criteria.

APPENDIX B

Administrative Record

Administrative Record

Brookfield Avenue Landfill Site

Operable Unit No. 2

Site No. 243006

Proposed Remedial Action Plan for the Brookfield Avenue Landfill Site, Operable Unit No.2, dated December 2006, prepared by the New York State Department of Environmental Conservation.

Orders on Consent, Index Nos. 2-0952 and 2-43-006, between the Department and the New York City Department of Sanitation executed on December 16, 1985 and April 17, 1990 respectively and an Order on Consent between the Department and the New York City Department of Environmental Protection executed on May 15, 1992. The DEC index number for the May 15, 1992 order is 2-43-006. In addition, there is a modification to the May 15, 1992 Consent Order. The index number for this modification is A2-0546-0406 executed on July 10, 2006.

3. "Brookfield Avenue Landfill Operable Unit 1 Record of Decision" prepared by the New York State Department of Environmental Conservation (NYSDEC) dated March 2002
4. "Brookfield Avenue Landfill Operable Unit 2 Remedial Investigation/Feasibility Study Workplan" prepared for the New York City Department of Environmental Protection by Camp Dresser & McKee dated June 2003

"Brookfield Avenue Landfill Operable Unit 2 Final Remedial Investigation Report" prepared for the New York City Department of Environmental Protection by Camp Dresser & McKee dated September 2005

"Brookfield Avenue Landfill Operable Unit 2 Final Feasibility Study Report" prepared for the New York City Department of Environmental Protection by Camp Dresser & McKee dated December 2006

Draft CP Plan for the Brookfield Avenue Landfill Project prepared by the New York State Department of Environmental Conservation dated June 28,2006.

"Fact Sheet, Proposed Remedial Action Plan Public Meeting Announced" prepared by the New York State Department of Environmental Conservation dated January 2007
9. Transcript of the OU-2 PRAP public meeting
10. Letter dated February 13, 2007 from Denis Newcomer, Senior Project Manager, Ransom Environmental (Consultant to the Environmental Committee, New York City (NYC) Community Board 3, Staten Island)

Letter dated February 13, 2007 from Gregory Markow, Chair, Environmental Committee, NYC Community Board 3 (Submitted via email)

12. Email submitted by Barbara Warren, Member, Environmental Committee, NYC Community Board 3 dated January 16, 2007
13. Email submitted by Barbara Warren, Member, Environmental Committee, NYC Community Board 3 dated January 29,2007