

attorneys, industries, and governmental agencies and others in environmental quality litigation, hearings and in permitting of solid waste and hazardous waste facilities and wastewater discharges/runoff.

4. I have extensive university research and public and private consulting experience over a 40-year period devoted to the evaluation of the impacts of solid waste landfills on public health and the environment. I have served as an advisor/consultant in the review of over 60 landfills in the U.S. and other countries. Further, I have published extensively in the peer-reviewed literature on landfill impact assessment and management. My papers and reports on this matter are available from my website, www.gfredlee.com. Further, through my personal research and review of the literature, I am familiar with water quality issues in New York Harbor and its associated waterways. Also, I have specific litigation experience regarding the problems associated with developing golf courses on old landfills, and I am familiar with the potential environmental problems associated with these types of projects.

5. I have reviewed the Environmental Assessment dated September 30, 1999, prepared by TRC Environmental Corporation on behalf of Ferry Point Partners LLC. I have focused my comments on the Hazardous Materials section, Attachment G, and the Pollutant Loading Analysis section, Attachment M.

6. The Environmental Assessment finds hazardous chemicals at the former municipal landfill Ferry Point Park, but fails to adequately identify and characterize two important routes by which hazardous/deleterious landfilled waste materials/chemicals can escape and expose the surrounding community and environment. The Environmental Assessment does not identify and characterize current groundwater pollution and the extent to which polluted groundwater is currently escaping the site and polluting surrounding areas. Nor does the Environmental Assessment adequately identify and

characterize ways that construction and development on the site might affect polluted groundwater migration. The report also does not examine the possibility of “transmigration,” the process where vegetation on the site can draw up hazardous chemicals through their root systems and bring them to the surface, where park goers, especially children, may be at risk of exposure. To adequately address these concerns, additional testing and site characterization is required.

7. During the environmental investigation, the respondents collected 16 soil boring samples advanced approximately 10 feet below the surface at most sites. Chemical analysis of the collected test samples found various hazardous chemicals, including volatile organic compounds, semi-volatile organic compounds, pesticides, PCBs and heavy metals.

8. Methylene chloride, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, dibenz(a, h)anthracene, 1,2-dichloroethylene, benzene, xylene, naphthalene, 2-methylnaphthalene, acenaphthene, dibenzofuran, fluorene, phenanthrene, fluoranthene, pyrene, and PCBs were detected in the waste materials and/or landfill-associated soils.

9. During the environmental investigation, the respondent created 38 test pits at various locations on the site where they dug 15 feet into the ground and characterized the materials they found, the depth to the groundwater, and the thickness of the cover materials. Groundwater was found between 3-12 feet below the surface. At many of the test pits, solid waste was found below the groundwater table, signifying that portions of the solid waste are sitting in groundwater. Considering the high levels of hazardous materials identified in the soil boring samples, the groundwaters underlying the landfill are polluted by hazardous and so-called “nonhazardous” deleterious chemicals. While no information is provided on the hydrogeology of the groundwaters underlying the landfill, there is a high

probability that these groundwaters are transporting hazardous and deleterious chemicals to adjacent areas, potentially including surface waters in the area.

10. In the Environmental Assessment, TRC evaluated the possible impact of the proposed development on surface water runoff. However, the impact that construction/ development of the proposed project could have on the groundwater transport of hazardous and nonhazardous (deleterious) chemicals offsite has not been evaluated. In Attachment M, the respondents mention that the proposed development will lead to an increase of impervious cover which "...reduces the infiltration of precipitation, leading to a decrease in ground water recharge and an increase in surface runoff." (M-1) The ability of the new impervious areas to adequately cap the former landfill and protect surrounding groundwater and surface water from additional discharge of polluted groundwater from the site is not adequately examined. Another area of concern with respect to impacting groundwater dynamics and, in turn, the pollution of adjacent areas by groundwater transport of hazardous and deleterious chemicals is the proposed irrigation of the golf course area, which could lead to increased leaching of the landfilled wastes and further pollution of the groundwaters. The statements regarding controlled irrigation of the golf course, to be able to prevent irrigation water infiltration into the underlying landfill wastes, are not in accord with practice. Any large-scale development of the site may cause significant changes to the dynamics of groundwater flow due to disturbance of cover materials, changes in the flow of precipitation into the site, the addition of cover fill and the effects of golf course irrigation. Changing the groundwater dynamics may have a significant effect on the environment if contaminated groundwater continues to escape the site to impact surrounding areas, including a residential community and the East River.

11. TRC also evaluated the post-construction conditions, and ways that any adverse environmental impact will be mitigated. One of the post-construction conditions discussed is cover materials. In the report, minimum amounts of cover fill of 12 to 24 inches are described. However, the ability of that cover material to protect park-goers from exposure to hazardous materials located on-site is not explained. That amount of cover material may not be sufficient to protect against transmigration of hazardous materials that are below the fill layer when vegetation draws contaminated materials up through their root systems and deposits pollutants on the surface. Once these chemicals are at the surface level, people that use the golf course and park may be at risk of exposure. This consideration is especially troublesome with respect to children, who are more likely to come in contact with surface soils and materials because of their stature and increased likelihood of hand-to-mouth contact. In addition to potential adverse effects on human health, the transmigration of hazardous/deleterious chemicals represents a threat to wildlife and the environment. The possibility of transmigration is not mentioned/evaluated in the Environmental Assessment.

12. Attachment M gives a detailed description of surface water conditions, possible impacts from construction and development and steps taken to mitigate surface water runoff impacts. However, the site conditions affecting water discharge were only analyzed (albeit incorrectly) from the point of view of impact on surface water runoff. The impacts of construction and development on groundwater discharge are not addressed. Neither Attachment M, nor a section on hydrologic conditions in Attachment G evaluates all of the factors that determine groundwater migration, including soil density, groundwater hydrology, gradient, groundwater flow rates and natural and technical barriers from the point of view of groundwater migration. The comment on current conditions states that “the existing cover material and topography of the majority of the site do not appear to have been designed to limit

infiltration of precipitation or to encourage runoff.” (4-9) This finding alone is a cause for additional investigation of site hydrological conditions and examination of ways to adequately cap the site to “limit infiltration of precipitation.” In Attachment M, steps taken to *encourage* infiltration of surface water into the ground, where the water can become contaminated with hazardous materials present in the buried solid waste, are described. The only possible impact on groundwater that is discussed in Attachment G is the effects of irrigation, which are to be mitigated by a “state of the art” irrigation system and an on-site irrigation expert. It is my experience that it will not be possible to adequately irrigate the golf course without infiltration of some of the irrigation water into the underlying wastes. The report mentions 26 acres of new impervious areas that are created by parking lots and other structures, but the current rates of groundwater discharge from the site, steps necessary to protect the surrounding areas from migration of contaminated groundwater and the sufficiency of the proposed development to adequately cap the landfill to prevent the creation of new contaminated groundwater, are not examined.

13. There is no plan to monitor the post-project development conditions to insure that hazardous chemicals present in the landfill are not transported to the surface through plant roots or to surrounding water bodies through groundwater flow. A highly comprehensive monitoring program should be required *ad infinitum* to protect public health and the environment to the maximum extent possible over the very period of time that the waste in the landfill will be a threat.

14. Significant changes in the construction plan, including increasing the amount of fill brought into the site by 500,000 cubic yards, may impact groundwater conditions. Further testing and site characterization would need to take place to understand the impacts associated with increasing the fill material.

G. FRED LEE

Sworn to before me
on November , 2000

Public Notary