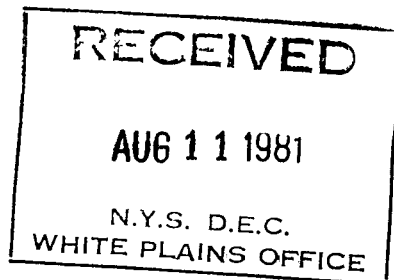




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INTERIM REPORT: CROTON POINT SANITARY LANDFILL INVESTIGATION

JULY, 1981

- I. Background
- II. Progress to Date

INTERIM REPORT

CROTON POINT SANITARY LANDFILL INVESTIGATION

I. Background

Croton Point is a two mile-long peninsula on the Hudson River in upper Westchester County. It is the site of Westchester County's only active refuse landfill which accepts garbage. A public park is located adjacent to the landfill. Between 1927 and 1971, the landfill was a site used for disposal of waste from local industries. After 1971, only local refuse, garbage and specifically permitted substances have been allowed to be deposited in the landfill. The landfill has operated since 1975 under a consent decree issued by the District Federal Court of New York.

Between 1927 and 1975, the County Department of Parks, Recreation and Conservation (DPRC) was responsible for the administration and operation of the landfill. Since that time the County Department of Public Works (DPW) has been assigned this responsibility. The County Department of Health (DH) and New York State Department of Environmental Conservation (NYSDEC) have regulatory authority over the landfill.

On April 20, 1981, a fire occurred at Croton Point Park, caused by the inappropriate handling of batteries following their unauthorized removal and diversion from the landfill. Alfred B. DelBello, County Executive, immediately called for a comprehensive investigation of the Croton Point Sanitary Landfill (CPSL) to assure that no hazard to the public's health or to the health of employees at the landfill exists. Commissioners of Public Works; Health; and Parks, Recreation and Conservation were charged with conducting the investigation with the Department of Health designated lead agency. This

study, as defined by Mr. DelBello, was to examine the environmental impact and health effects, if any, of the landfill, and to determine its desirability for future recreational use.

II Progress to date

In order to respond to the County Executive's charge to investigate the health and environmental impact of the Croton Point Sanitary Landfill, an extensive literature search was conducted which revealed that there is no established procedure for investigating the health effects of a sanitary landfill. As in most research concerning the health of populations, this study must be designed to fit the unique set of circumstances found, including such factors as: Geographic location; physical construction; use or potential use; potential for exposure; and demographic makeup of the population at risk.

Experts were consulted to assist in the design of the study. These multi-disciplined consultants represented a variety of institutions including cancer research centers, the Centers for Disease Control, National Institute for Occupational Safety and Health, New York State Department of Health, New York State Department of Environmental Conservation and university research centers.

A review of existing reports reveals that the U.S. Attorney's Office for the Southern District of New York filed a suit against the County in May 1972 in connection with operation of the landfill. During the early phase of this suit, the Boyce-Thompson Institute for Plant Research, Incorporated, was retained by the County for the purposes of studying the effect on the adjacent marshes of leachate from the landfill and recommending methods of restoring the marshes. In Boyce-Thompson's 1975 Ecology Report, the effects of environmental stresses were identified. Vegetation destruction and changes were documented and recommendations for correction were

made. The rate of leachate release was analyzed.¹ At the time of this study, County efforts to reverse undesirable changes in the vegetation of the tidal marsh adjacent to the landfill were already underway and were acknowledged by Boyce-Thompson.

In addition, Geraghty and Miller, Inc., Consulting Ground-Water Geologists were retained in 1973 and 1974 to: Undertake a hydrogeologic investigation of the Croton Point Sanitary Landfill; further define the impact of the landfill on the local ground-water system; examine and report methods for abating or eliminating these conditions. Recommendations were made concerning the existing operation of the landfill and regarding future expansion.²

The 1975 consent decree resulting from the suit, required the County of Westchester to submit annual written reports to the United States Environmental Protection Agency (EPA) and the NYSDEC citing activities at the Croton Point Landfill. The reports include details regarding site elevation, final grade and shape, final cover, capping, sealing and gas venting, results of monitoring of the ground-water level, leachate flow and leachate quality. Also presented are assessments of the tidal marsh and tidal stream to determine the ongoing effects of the landfill on marsh life and to address the issue of restoring or recovering certain areas of the marsh which deteriorated prior to the early seventies.

These annual reports indicate that concerted efforts have been made to protect and restore damaged marshland adjacent to the landfill. Examples of activities involved in this effort are:

1. Improved compaction, grading and covering of solid wastes.
2. Improved utilization of heavy equipment.
3. Ban of hazardous and sewage wastes.
4. Improved intermediate cover

5. Seeding of landfill slopes.
6. Implementation of a ground-water monitoring system.³
7. Installation and operation of a leachate recirculation system on the northwest side of the landfill.⁴
8. Construction of new access roads to control erosion.
9. Installation of methane venting systems and test wells.
10. Cost analysis of methane gas recovery system for generating power.⁵
11. Installing total leachate collection at the Railroad I area.⁴

In 1977, a marsh survey conducted by Ecological Analysts, Incorporated, noted the recovery of marsh flora and fauna to a significant degree.⁴

In 1977, the NYSDEC conducted two surveys, the Hazardous Waste Survey and the Industrial Chemical Survey. The DEC Hazardous Waste Survey questioned 73 County firms selected as major hazardous waste generators, to obtain information regarding the following: (a) chemical classes used; (b) on-site treatment; (c) discharge to storm and/or sanitary sewers; (d) in-house treatment capability; (e) industrial waste produced; (f) disposal in used or abandoned landfill; (g) waste dump or lagoon on property; (h) waste production and frequency; (i) waste composition; (j) hazardous properties; (k) method of on-site storage; (l) length of time and amount stored; (m) storage site diked or drainage collected; (n) waste hauler; (o) method of final disposal, and (p) facility receiving waste.

The Industrial Chemical Survey consisted of questionnaires to 201 Westchester firms which were selected on the basis of Standard Industrial Classification (SIC) codes assigned to different industries. Of the 201 County firms from which information was requested, 163 responded.

While the surveys appeared to be all inclusive, upon closer examination, it was found that it was not possible to readily extract

quantifiable information on Westchester County. This may be attributed to several factors including: 1) the voluntary nature of the responses; 2) incomplete or inaccurate responses; 3) too narrowly defined study objectives; 4) use of non-comparable chemical categories; and 5) deficiencies in the regulatory reporting requirements. These reports are now being extensively reviewed to ascertain their value to this study.

Based on the above research, the following study was designed:

A. Goal

To evaluate the potential for buried wastes to have adverse effects on the population at risk, on the immediate environment of the CPSL, and on future uses of the Croton Point Park.

B. Objectives

1. To determine the extent to which existing reports define the past and present conditions of the CPSL.
2. To determine type, quantity and location of industrial waste and refuse, other than garbage, rubbish and construction and demolition waste, buried at the Croton Point Sanitary Landfill.
3. To determine level of specific constituents in leachate from the fill and to identify if any fall into the class of hazardous substances as defined by the Federal EPA.
4. To determine effects of leachate on ground-water, the marsh, the Hudson River, fish and on vegetation in the area surrounding the landfill.
5. To investigate the health status of past and present employees at the Croton Point Sanitary Landfill.
6. To present findings, conclusions, and recommendations to the County Executive.

C. Methods

Objective 1

- a. Obtain and summarize existing environmental studies.

Objective 2

- a. Review the files in the Department of Health; Parks, Recreation and Conservation; and Public Works and the New York State Department of Environmental Conservation Industrial Waste Survey to develop a qualitative and quantitative list of industrial wastes deposited at the CPSL and the approximate date of disposal of such material.
- b. Interview employees at the CPSL as appropriate.
- c. Map the areas where industrial wastes are buried if such locations are known.
- d. Review the list of industrial wastes developed to determine which wastes are listed on the Federal EPA hazardous waste list.

Objective 3

- a. Review reports prepared by consultants, or by the County to determine which chemicals could be found in the leachate.
- b. From the reviewed reports determine the following:
 1. Parameters studied by the consultants
 2. Constituents analyzed
 3. Location of sampling points (marsh, river, ditches, etc.)
 4. Location of sampling wells.
- c. Prepare a comprehensive plan showing the location of all former sampling points and sampling wells. In

addition, verify:

1. Location of these points in the field to determine if they are still accessible. If not, establish alternate representative sampling points.
2. Location of sampling wells in the field, and determine if they are accessible and usable.
3. Establish new wells if necessary.
- d. Review list of constituents for which analyses were performed.
- e. Determine if analyses should be made for additional constituents.
- f. Design sampling program.
- g. Perform sampling and analysis program.
- h. Evaluate concentrations of constituents for which analyses were run to determine if they exceed existing applicable standards.

Objective 4

- a. Obtain special expertise to undertake the following:
 1. Inspect vegetation in marsh area to determine impact of leachate on vegetation and determine effects of methane, if any, on vegetation in surrounding areas. Compare results with previous studies.
 2. Trap fish and compare with fish previously studied.
- b. Compare leachate samples collected with results of analyses of leachate samples previously collected.

Objective 5

- a. Develop an employment history form to identify former and current employees of the County Department of Parks,

Recreation and Conservation and of the County Department of Public Works who have worked at the Croton Point Sanitary Landfill.

- b. Develop a health status questionnaire and administer to individuals identified in (1) above.
- c. Examine responses to this questionnaire. Medical, epidemiological, and biostatistical personnel will pinpoint medical problems registered in the responses.
- d. Perform statistical analysis of the data, including factors other than employment at Croton Point, such as life styles and family medical histories.
- e. Offer specific diagnostic evaluations to employees if indicated by responses to the questionnaires.
- g. Compare results with data from other population groups.

Objective 6

- a. Prepare written report presenting findings, conclusions and recommendations and outlining scope of work for development of a plan, if necessary, for eliminating or mitigating effects of hazardous wastes.

The following tasks have been accomplished.

Health Department files on the CPSL have been assembled and reviewed. While the initial review did not disclose the specific types of industrial waste deposited at the CPSL, several leads were noted which are being investigated.

Reports, maps, and other data detailing locations of previous sampling points, prepared by consultants and by the County were reviewed. A site visit was then conducted by Health Department staff to locate sampling points for collection of leachate.

Results of analyses of samples of liquid collected on March 19,

1981 by the NYSDEC from eleven sites at CPSL (including test wells drilled during 1973 and 1974) were obtained. The samples had been analyzed for selected physical parameters, inorganic constituents, and selected pesticides. Except for the pesticides, samples were not collected for organic analysis by DEC.

The results were compared with standards set forth in 6 NYCRR730.6 (Effluent standards and/or limitations for discharges to class GA Waters*). The review shows that, for the constituents analyzed, the effluent standards were exceeded for iron at eight sites, lead at three sites, zinc at one site and manganese at four sites.

Although the ground-water at Croton Point is not used as a source of water supply, the results of analyses were compared to the standards set forth in 6 NYCRR 703.5 (Classes and quality standards for ground-waters). This review shows that the water quality standards were exceeded for the same constituents and at the same sites as stated above, except that the water quality standard for iron was exceeded at two additional sites. Under these circumstances, none of these constituents are hazardous to the public or to employees in and about the landfill area.

A consultant has been contacted for details regarding new studies to update earlier information on the marsh areas, fish and vegetation surrounding the landfill. This consultant advised that it would be best to do the marsh vegetation work in late August or early September and the fish and benthic organism studies in the Spring.

On June 10, 1981, the Commissioner of Health and key members

*"GA waters are those whose best usage is as a source of potable water supply. They are fresh ground-waters found in the saturated zone of unconsolidated deposits and consolidated rock or bedrock."

of her staff were taken on a tour of the Croton Point Sanitary Landfill by the Commissioner of Public Works and one of his staff members to review the site and facility operations.

Particular emphasis was placed on inspecting the marshland and associated tidal channels which, according to the Geraghty and Miller, Inc., report², are the main interface and environmental buffer between the landfill and the Hudson River, and recovery of marsh biota is considered the most significant environmental indicator of appropriate landfill management.

Employment history forms have been developed for identification of past and present Croton Point Sanitary Landfill workers. A review has been made of the personnel files in the Departments of Public Works and Parks, Recreation and Conservation to ascertain the availability of pertinent information.

The health assessment instrument is in the process of being developed in consultation with an epidemiologist from The National Institute for Occupational Safety and Health, specifically assigned to work with the Health Department on this study.

The Health Department has entered into a contract with the Calder Center of Fordham University for a special mosquito Surveillance and arbo-virus study in Westchester County, including the environs at Croton Point. Mosquito trapping equipment has been installed at Croton Point and a reconnaissance survey made. While not directly related to hazardous wastes, this study will provide valuable information concerning breeding of mosquitos in artificial containers and other environs in the vicinity of the CPSL and their public health implications, if any.

Health Department staff have recently sampled the leachate for synthetic organics, heavy metals, and PCB's. Results have not yet

been received from the laboratory.

Nothing in our investigation to date, indicates that a health hazards exists. However, all other activities described in the method section will be undertaken and the findings will be presented in the final report.

Reference

- ¹ Boyce-Thompson Institute for Plant Research Inc., Assessment of Environmental Impact of Waste Disposal Area at Croton Point, Westchester County, New York, Yonkers, N. Y., 1975.
- ² Geraghty & Miller, Inc., Consulting Ground-Water Geologists, Phase II Program of HydroGeologic Investigations at the Croton Point Landfill Site, Westchester County, New York, Port Washington, N. Y., July 1975.
- ³ First Annual Report of the County of Westchester Pursuant to Section 3G of the Consent Decree of the United States vs. Edwin G. Michaelian, Concerning Croton Point Sanitary Landfill, Croton-on-Hudson, New York; Reporting Date February 11, 1976.
- ⁴ Fourth Annual Report of the County of Westchester Pursuant to Section 3G of the Consent Decree of the United States vs. Edwin G. Michaelian Concerning Croton Point Sanitary Landfill, Croton-on-Hudson, New York.
- ⁵ Second Annual Report of the County of Westchester Pursuant to Section 3G of the Consent Decree of the United States vs. Edwin G. Michaelian Concerning Croton Point Sanitary Landfill, Croton-on-Hudson, New York; Reporting Date February 11, 1977, p. 11.