planning process.

Agreed.

1.b. However, the plan disappoints in many ways, such as: by failing to provide sufficient detail in its implementation section (Chapter 19); by presentation flaws; by failing to state effectively and convincingly how the City will address the challenge of implementing a successful, comprehensive recycling program.

Chapter 19 has been revised to address these concerns.

DETAILED COMMENTS:

[What follows is a more detailed list of "contributions" of the plan and "failures" of the plan, which enumerates the items referred to in the general comments above, and which does not require a response.]

COMMENTS FROM THE BROOKLYN, QUEENS, AND STATEN ISLAND SOLID-WASTE ADVISORY BOARDS are largely duplicative of comments provided by the Bronx and Manhattan SWABS (which included the reports of the "inter-SWAB" committees) and other oral and written comments.

COMMENTS FROM THE CITYWIDE RECYCLING ADVISORY BOARD are also duplicative of comments provided by the Bronx and Manhattan SWABS (which included the reports of the "inter-SWAB" committees).

21.2.3 Responses to Reports by the Comptroller and NYPIRG.

21.2.3.1 "Smokescreen."

Smoke Screen: How the Department of Sanitation's Solid Waste Plan and Environmental Impact Statement cover up the poisonous health effects of burning garbage, Elizabeth Holtzman, Comptroller, June, 1992

[I. SUMMARY]

II.A. DOS tries to minimize differences in toxic air emissions under different scenarios.

This interpretation is not justified. For purposes of a "bottom-line" comparison of alternative scenarios, the GEIS does indeed present calculations of "net loadings" to the environment. However, these loadings are also presented on a facility-specific basis in a variety of places, so that all of the assumptions and calculations are well-documented.

II.B. Air quality standards do not adequately protect human health.

The analysis of public-health impacts in the plan was prepared by an expert in environmental medicine, Michael Gochfeld, M.D., Ph.D.. Dr. Gochfeld reviewed the projected emissions of pollutants from all the facilities in each alternative studied in the plan. The emissions data that he used came from measurements from facilities that are similar to those considered in the plan. The projected emissions were compared to health-based standards, including National Ambient Air Quality Standards and New York State standards. Dr. Gochfeld concluded that the facilities proposed in the plan would not jeopardize human health.

Dr. Gochfeld also indicated that the impacts of a facility depend on the site selected for the facility, the way the facility is operated, and the design of the facility. Because it makes a difference where a heavy industrial facility, such as a waste-to-energy facility, is located, site-specific environmental reviews, including a health-risk assessment for the surrounding area, must be performed for such facilities. The one new waste-to-energy facility proposed in the City's near-term implementation plan -- the Brooklyn Navy Yard plant -- has been the subject of an environmental impact statement and a health-risk assessment. The State Department of Environmental Conservation conducted extensive hearings on the facility and concluded that it was safe. In addition, the State Deparatment of Health reviewed the health risk assessment and accepted its conclusions.

This comment fails to recognize that, for purposes of regulatory review, the projected ambient concentrations that were compared to standards in the plan represent the highest concentration that would occur over five years, whereas actual concentrations at all other locations would be considerably lower -- even in the vicinity of the "maximum impact" area. The New York State Ambient Guideline concentrations are based on an assessment of negligible risk from a lifetime of breathing those concentrations. The reference value against which projected dioxin concentrations was compared is based on the maximum projected concentration from the Brooklyn Navy Yard facility, which was the subject of the full health-risk assessment cited above. The highest cumulative effects of all potential facilities proposed in the full-scale plan are well below health-based standards for all but three pollutants. Emissions of these three (dioxin, mercury, and cadmium) will be reduced below the levels projected through enhanced emissions controls for which credit was not taken in developing these emissions factors; in the case of mercury and cadmium, substantial reductions of these metals in the waste stream are expected through battery-removal and other recycling programs (e.g., those that remove plastics

that contain cadmium stabilizers).

II.C. Potential adverse effects on reproductive health are ignored in the standards.

Health-based standards are generally based on the most sensitive significant health "end point." Since most such standards for cancer-causing agents are based on a risk model that assumes that any level of the pollutant may cause a risk of cancer (i.e., "no-threshold models"), cancer thus becomes the de facto end point for standards for such pollutants, and a standard that protects against cancer will therefore protect against reproductive and teratogenic effects as well. In the case of non-carcinogens (such as inorganic mercury), the standards are based on the next-most-sensitive endpoint, and should therefore protect against reproductive effects.

II.D. Air-quality standards do not exist for many toxic emissions.

There are, however, health-based guidelines for most of the pollutants of potential public-health concern, and these were used for the evaluation of the impacts of emissions of these pollutants.

II.E. DOS has misreported the results of its public-health study.

This interpretation is not justified. Dr. Michael Gochfeld wrote both the full report printed as Appendix 7-H, and the summary report which appeared in the main volume; these two discussions are entirely consistent.

III.A. The consultant did not conduct a health-risk assessment at all.

See response I.B. above. Detailed health-risk assessments, as noted there, can only be performed on a project-specific/site-specific basis (as they are required to be done), but the generic evaluation performed was based on a comparison of projected emissions to standards and guidelines that are themselves based on an evaluation of potential public-health impacts. With reference to Dr. Gochfeld's comments concerning the relationship of certain standards to "technological considerations," what was meant was that some standards are based on the highest technological performance achievable, which has the effect of limiting emissions to levels well below those that would be justifiable on health-based considerations.

III.B. The study did not include an analysis of undesirable or

worst-case conditions for emissions estimates.

The plan reports the average values because they are most representative of long-term exposure, which is the basis of most of the health standards and guidelines. Worst-case emission factors are more appropriate for the short-term, site-specific environmental-impact analyses -- which would be performed as supplements to this plan, and on the basis of which permit limits would be established -- than for a generic EIS.

III.C. Conclusions are based on a ratio of emissions to standards or guidelines.

Contrary to the Comptroller's assertion, the health consultant did address "the combined effects of the projected new emissions" (the maximum impacts presented represent the combined effects of all proposed facilities) and did "assess their effects in combination with already existing emissions" (since these "existing emissions" are a part of the background levels against which the incremental effects of the plan were compared). Again, contrary to the assertion here, data on background levels are presented, both in the main volume and in Appendix Volume 6.

III.D. The study does not discuss bioaccumulation or biomagnification.

As stated in the plan, these eco-system effects are more appropriately examined on a site-specific/project-specific basis, as will be done in appropriate supplemental environmental impact statements.

III.E. Effects on sensitive populations are not considered.

See response I.B. above. It should also be understood that the health-based standards and guidelines which were used for assessing the impacts of projected emissions are based on potential health effects on sensitive receptor populations.

III.F. DOS also ignores the health consultant's discussion of implications for siting.

See response I.B. above.

IV.A. Recycling is not garbage collection; it is a business.

The Sanitation Department agrees with the argument presented here; the plan, contrary to the interpretation here, does indeed propose the development of a recycling system that is "tailored to the needs of the market," which will develop a dependable

supply of materials to stimulate market growth, and which includes market-stimulating activities such as procurement.

IV.B. Markets exist or can be developed for much of the City's recyclable material.

Agreed. The basis for this argument is presented in the plan. There are no upper limits imposed on recycling rates in the plan, nor are market constraints considered in any way a limiting factor in the City's long-term program (except insofar as conservative revenue assumptions are made for purposes of system-cost projections). 80 percent of the waste stream is "targetted" for recycling and composting; projections of lesser actual recycling rates simply represent what are considered more conservatively realistic assumptions that are based on existing experience throughout the country, but do not impose limits on the amount of material that could be recycled through implementation of the proposed plan.

IV.C. The City should eliminate 10-20 percent of waste at the source.

And all whiskey should be old, all horses fast. The plan proposes as many aggressive initiatives to reduce waste as are considered feasible and effective, and they are projected to achieve waste reductions on the order of 10 percent. Nothing in the design of the City's plan limits the amount of waste prevention that can be achieved. Her levels would be desirable; the 10 percent estimate, however, is based on what the Department of Sanitation considers the most realistic assumptions available.

IV.D. Achieving the waste-reduction and recycling goals proposed by the Comptroller's office would save as much landfill space as the DOS plan.

The landfill needs would not be the same. The Comptroller's landfill volume calculations are wrong. In-place densities of the raw MSW remaining for landfilling after prevention, recycling, composting, and waste-to-energy have taken place were calculated in the plan to be about 1600 pounds per cubic yard (see p. 17.2-26). In-place ashfill densities are approximately 2,500 pounds per cubic yard. Therefore, using the figures cited on p.38 of "Smokescreen," the City's proposed plan would require 33.4 cubic yards of landfill space for every 100 tons of MSW generated, while the alternative proposed by the Comptroller would require 40 cubic yards of landfill space -- an increase of 20 percent. Moreover, the analysis presented in the plan shows that these alternative prevention and recycling goals do not have a high probability of being achieved.

V.A. DOS ignored facts not favoring incineration.

The assertion here is not that "facts" are not presented in the generic environmental impact statement, but that they are not reflected in the proposed implementation plan. This interpretation is not justified: the planning process consisted of an evaluation of the range of feasible alternative waste-management systems based on the data presented in the plan, and the selection of the alternative that, overall, would minimize environmental and economic costs, and maximize benefits to the City.

V.B. The DOS-proposed solid-waste-management plan fails to meet the requirements of the State Solid-Waste-Management Act.

Contrary to this assertion, the plan does not "propose" to recycle only limited proportions of the City's waste, in violation of the State's waste-management hierarchy. Rather, the projections of recycling rates are simply estimates of what might occur, based on available data and experience. The plan proposes steps to maximize recycling to the greatest extent feasible, so that the possibilities of recycling waste quantities well in excess of the estimates are in no way constrained. Job-creation impacts were considered in the overall evaluation of alternatives, and this analysis is documented in the plan.

V.C. The draft generic environmental impact statement fails to meet several important requirements of the State Environmental-Quality-Review Act.

Health impacts were appropriately considered on a generic basis; see Response I.B. An energy analysis was a component of the plan. Potential adverse impacts are mitigated to the greatest degree feasible through two fundamental elements of this planning process: First, the selection of the proposed plan was based on a prior evaluation of the full range of feasible alternatives. Second, this plan will be implemented in stages, so that appropriate modifications on the amount of waste-management capacity of one type or another can be made in light of evolving circumstances and experience to date.

21.2.3.2 "What Goes Around."

What Goes Around Comes Around: Good News About Recycling Markets, Elizabeth Holtzman, Comptroller, June, 1992

I.A. The program must produce material suitable for the market.

The assertion here is that "DOS currently commingles and compacts materials in a way that makes it difficult for the City to gain access to the best markets." The Comptroller then goes on to acknowledge that this current situation is explicitly recognized in the plan, which then proposes the most feasible solutions for overcoming this problem.

I.B. The program must include a market-development plan.

Agreed. This is the intent of the proposed plan, which, among other things, is committed to developing a dependable, long-term supply of recyclable materials of the highest specifications possible, even in the absence of existing markets, as a primary means of stimulating long-term market demand. (The Department of Sanitation's most recent steps to achieve its market-development objectives are in a new subappendix added to Appendix Volume 3.1, "Market Development Status Report," Market Development Unit, July 6, 1992.)

II.A. Markets exist for the City's recyclable materials.

Contrary to the Comptroller's assertions, the Department of Sanitation does not view a lack of markets for recyclables as a significant barrier to recycling. (Most of the data, in fact, that the Comptroller uses to support this contention is presented in the plan, and forms the basis for the recommendations in the plan.) The City has found markets for all of the recyclables now being collected, and the Sanitation Department is taking aggressive steps to develop markets for the additional materials that the City plans to separate and recycle in the next five years (see the new subappendix referred to in the response above). The types and amounts of materials proposed by the Comptroller for recycling and composting do not differ from those targetted in the City's proposed program: this is the most important misunderstanding (or misrepresentation) in this Comptroller critique.

II.B. The City should reduce its waste stream by 10-20 percent, and special efforts should focus on items that are difficult to recycle.

See Response IV.C. to "Smokescreen." Contrary to the assertion here, the City does not "plan to emliminate only seven percent of residential waste." Rather, the City's plan is to maximize waste prevention to the greatest extent feasible by proposing initiatives that are considered to be most effective. The seven-to-eight percent estimate in the plan should not in any way be understood as a constraint imposed on the degree of prevention that will be achieved, but as a realistic estimate of what is most likely. The Sanitation Department is in entire agreement

with the Comptroller's truism: the more prevention that can be achieved, the better. The near term plan projects waste-prevention achievments on the order of nine to 10 percent.

III.A. With better collection and processing practices, the City's materials can reach more lucrative markets.

The proposed plan has been designed to optimize market access through use of the collection and processing techniques that are most feasible for producing the highest-grade materials.

III.B. Government and private-sector purchasing power must be harnessed to buy recycled-content products.

Agreed. The City's commitment to fostering such efforts is noted in the plan.

III.C. The City should attract recycling businesses to the area.

Agreed. The most notable example of the City's current efforts is the decision by Ponderosa Fibers to locate a newsprint/de-inking mill in the Harlem River yards to process 100,000 tons of paper a year, which was announced on June 30.

21.2.3.3 "Burn Baby" and "Fire and Ice."

INTRODUCTION

The Comptroller of the City of New York, Elizabeth Holtzman, issued a report in January 1992 on the subject of incineration.[12] A companion report claims burning waste adversely affects global warming.[13] The sweeping indictment of incineration, based on cost and alleged hazards to health and the environment, concludes with a call to phase out all existing incinerators and cancel plans for future waste-to-energy projects. The report advocates, instead, a waste management strategy for the City based solely on recycling (which includes composting and waste reduction measures) and landfilling.

In contrast, the Mayor of New York City has issued a draft Comprehensive Solid Waste Management Plan (CSWMP) and Generic EIS

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[12] Holtzman, Elizabeth, "Burn, Baby, Burn: How to Dispose of Garbage by Polluting Land, Sea and Air at Enormous Cost," January 1992.

[13] Holtzman, E., "Fire and Ice: How Garbage Incineration Contributes to Global Warming," March 1992.

to conform to the New York State hierarchy: maximum achievable waste reduction and recycling, recovery of energy from that portion of the City's waste that is not practical to recycle; and landfilling of the residue.

Incineration is a generic term for burning solid or liquid wastes of many types. Facilities that recover energy from the heat generated by burning municipal solid waste (MSW) are variously called resource recovery or waste-to-energy facilities. Such facilities are distinguished from older incinerators by extensive, automated combustion and emission controls. In this response document, the term "waste-to-energy" is used when discussing the Navy Yard and other similar modern plants; the Comptroller's report, on the other hand, uses the term "incineration" exclusively.

Many of the claims in the Comptroller's report against incinerators without energy recovery, as well as waste-to-energy systems, are based on emissions information in the 1985 Final Environmental Impact Statement (FEIS) for the 3,000 ton-per-day Brooklyn Navy Yard waste-to-energy project. Use of these data result in a misleading prediction of effects. The Navy Yard EIS, in accordance with standard EIS methodology, was an analysis of "worst-case" emissions assumptions. These assumptions have now been demonstrated to be overestimates when compared to actual measurements of operating plants that are performing at levels far better than the 1985 Navy Yard EIS projections. Because of the experience at these operating plants, the permit for the Brooklyn Navy Yard plant requires that the facility achieve much lower emission rates than had been assumed in the FEIS. Specifying these lower rates in the Navy Yard permit was recommended by the Environmental Defense Fund, the Natural Resources Defense Council and the Citizens Advisory Committee (the public interest intervenors in the Navy Yard hearings), and they are to serve as interim permit limits until stack tests of the operating Navy Yard plant indicate whether the limits should be made even more stringent.

All emission projections in the Comptroller's report are based on an assumption that the City plans to burn 10,000 tons/day of municipal waste. This is the most extreme scenario of several that have been examined in preparing the CSWMP. In fact, the only waste-to-energy facilities that are scheduled to receive permits before the year 2000 are ~~three~~ one modernized existing incinerators~~, for a total of 2,750~~ at 750 tons/day, and the Brooklyn Navy Yard at 3,000 tons/day. Advances in recycling and composting might reduce the need for building the full 10,000 tons/day capacity that is analyzed in Scenarios A and B of the CSWMP.

The report also largely ignores quantitative exposures to emissions in reaching its conclusions on health effects. In not considering levels of exposure to pollutants from waste-to-energy, the significance of these exposure levels compared to other sources, the report wrongly suggests that trace quantities of any substance will cause adverse health effects. This is not the case. Actual exposures from modern waste-to-energy facilities, like the Brooklyn Navy Yard, have been shown to be minute fractions of standards established to protect public health.

By asserting a preference for landfilling over recovering energy from the waste that cannot be recycled or composted, the recommendations of the Comptroller's report are at odds with widely accepted national and state solid waste management policies in which landfilling is reserved for residues of other waste management options, including energy recovery.

In addition to the environmental misinformation given in the Comptroller's report, the cost and economic conclusions are erroneous and misleading.

First, the report indicates that the City will bear the financial burden of a costly incineration program. In fact, the Brooklyn Navy Yard waste-to-energy facility will be built at minimal capital cost to the City. The project will be the first major solid waste management facility in the City to become "privatized," a form of public-private partnership for waste disposal services has become increasingly common throughout the United States. Wheelabrator will design, construct, own and operate the facility under a Service Agreement with the City, and will finance the project through Industrial Development Bonds and corporate equity. Under the Service Agreement, Wheelabrator will be providing several guarantees to the City including credit support, a Project Completion Agreement and a Cash Deficiency Agreement, so that the development of the project requires minimal City risk.

Second, the Comptroller ignores the significant value of energy recovery from these facilities. The waste-to-energy facility will generate enough energy to save one million barrels of foreign oil a year - $25 million annually at $25 per barrel of oil. The City will share in the revenue from the energy sales.

While the Comptroller is correct that waste-to-energy plants employ fewer people than labor-intensive materials separation plants, the nearly 100 permanent jobs at the Brooklyn Navy yard plant would offer higher salaries and a strong career ladder for entry level workers. Construction would also benefit the regional economy, employing nearly 700 skilled and unskilled

workers over a 39-month period, with a strong multiplier effect in purchases of local goods and services during construction and continuing through operation.

These responses are concerned with correcting some of the major mistaken assumptions in the Comptroller's report, and the mistaken conclusions that flow from them. We have grouped together and condensed points in the interests of space and organization. But, since scientifically responsible explanations cannot be achieved with short-hand answers, the information is presented in some detail, and the reader is asked to consider the responses in full.

- *State-of-the-art incineration control technology does not completely eliminate the escape of toxic and carcinogenic elements.*

No form of waste disposal or human activity is completely free of toxic or carcinogenic elements. What matters is the quantity or the dosage that people could be exposed to. Of the 34 types of waste management facilities examined in the Comprehensive Solid Waste Management Plan, all emit some pollutants that are measurable, whether from combustion of waste or combustion of fuel used for equipment to process the waste.[14] While emissions data from non-burning facilities are very limited, some estimates of potentially toxic emissions could be made based on preliminary tests of a materials recovery facility (MRF). Air quality modeling of a prototypical MRF found that the maximum ground level effects of such toxics would be negligible compared to health based standards and guidelines. Similar modeling of a larger waste-to-energy facility found that the effects would be greater, but still well below health based standards and guidelines.[15]

Taking into consideration the predicted exposures to combined cancer and non-cancer effects of various pollutants, USEPA developed a ranking of health-based environmental risks in the New York-New Jersey region. In this health-based ranking, municipal solid waste incinerators rank as 'Very Low' risk, while motor vehicle emissions rank 'Very High,' along with use of ozone-depleting chemicals (chlorofluorocarbons), radon, and indoor air pollutants other than radon. Landfilling, on which New York City is so heavily dependent, is ranked by EPA as a 'Medium' health-based environmental risk (not accounting, however, for gaseous emissions), compared to the 'Very Low' health risk of incineration.[16]

- *Emissions that escape control systems cause serious health risks.*

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[14] Department of Sanitation, Comprehensive Solid Waste Management Plan (CSWMP), Appendix 5-B: Air Emissions, March 1992.

[15] DOS CSWMP, Appendix 6-A, Air Quality, Prototypical Facility Modeling, March 1992.

[16] USEPA, Risk Ranking Work Group, Region II, Overview Report: Comparative Risk Ranking of the Health, Ecological and Welfare Effects of Twenty-seven Environmental Problem Areas in Region II, February 1991.

This is not true because the traces of emissions not captured by the control systems and their effects at ground level are too minute to cause any adverse health effects. The presence of a pollutant does not, in itself, pose a hazard; health effects are proportional to the amount of a pollutant a person is exposed to. For example, the incremental exposure to dioxin from the Brooklyn Navy Yard resource recovery facility would be less than 1% of the existing background level, and the form of dioxin of greatest concern would be 1/10 of 1% of the background level estimated by the Environmental Defense Fund.[17]

This speculation has been substantiated by an extensive air sampling program for dioxins at hundreds of locations in the vicinity of four waste-to-energy plants in Connecticut, prior to and after operation. Pre-operation results from tests taken largely in winter months were low compared to Connecticut's air quality standard, but they were slightly higher (not statistically significant) than after operation, probably because the tests were not taken in the winter heating season.[18] Results of the Connecticut tests are shown in Figure 1.

The intensely scrutinized health risk assessment for the Brooklyn Navy Yard plant analyzed the risk or chances of cancer--cancer being the most sensitive indicator--for a hypothetical person who spends a lifetime at the point of greatest effect of the plant emissions; who eats 10% of his/her vegetable diet grown at that very point; and who has been exposed to numerous other pathways of the pollutant since infancy. This intentionally exaggerated exposure would result at the end of 70 years in less than one in a million chances of cancer.[19] Since NYSDEC and most regulatory agencies consider ten chances in a million to be acceptable for the best controlled facilities, such odds are truly negligible--and the realistic (as opposed to hypothetical) effects for the population would be even less.

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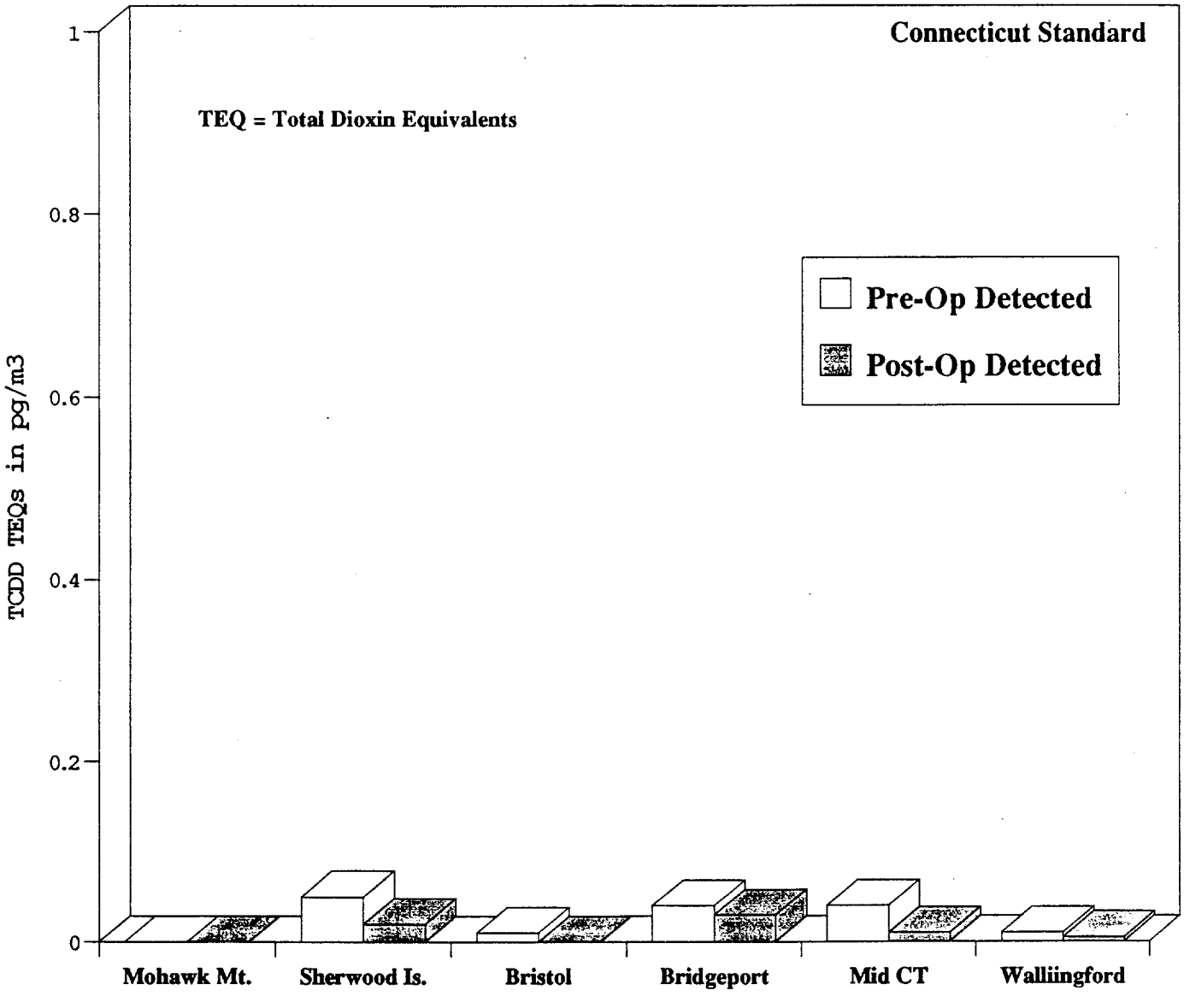
[17] Robert P. O'Connor, Administrative Law Judge, Hearing Report, DEC Project No. 20-85-0306 in the matter of permit application for the Brooklyn Navy Yard resource recovery facility, p. 118.

[18] Connecticut Department of Environmental Protection, Bureau of Air Management, Report on the Ambient Air, Stack Effluent and Continuous Emissions Monitoring of Dioxins at the Bridgeport, Bristol, Mid-Connecticut and Wallingford Resource Recovery Facilities, December 2, 1991.

[19] O'Connor, Op Cit., p. 118.

Figure 21.2.3-1:

PRE- AND POST-OPERATIONAL DIOXIN MEASUREMENTS IN AMBIENT AIR IN VICINITY OF FOUR RESOURCE RECOVERY PLANTS COMPARED TO CONNECTICUT STANDARD



Mohawk Mt represents rural background
Sherwood Is represents NYC metro area influence

Source: Connecticut Deptartment of Environmental Protection

Such findings were endorsed not only by the toxicologists of the NYS Department of Health who participated in the Navy Yard assessment[20], but are echoed by the World Health Organization[21], and the nation's chief health authorities. Dr. Vernon Houk, Assistant Surgeon General for Health and Human Services at the Centers for Disease Control told an audience at a 1991 symposium on solid waste options in Lee County, FL: "You can make [the] decision [not to build a waste-to-energy plant] if you want to, but you cannot make it on the basis of health effects, because there is no credible scientific information that a well-designed, well-run, quality controlled system is going to produce things that result in adverse health effects."[22] The conclusion will have to be proven again when a health risk assessment is repeated using the emissions measured when the Brooklyn Navy Yard starts up.

Recent reports in the general press that EPA is investigating non-cancer effects of dioxins fail to note that the exposure levels being studied are more than 2,000 times higher than EPA's extremely stringent recommended dose. Thus, while EPA may not relax its guideline to be consistent with the much higher guidelines of other U.S. and European health agencies, there is no basis for asserting that it will be made more stringent than assumed in the health risk assessment of the Navy Yard.[23]

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[20] Hawley, J.K., Director of Bureau of Toxic Substance Assessment, NYS Department of Health, January 22, 1988.

[21] World Health Organization, Working Group on Risks of Dioxin from Incineration of Sewage Sludge and Municipal Waste, Summary Report, April, 1986.

[22] Resource Recovery, Institute of Resource Recovery of the National Solid Wastes Management Association, Vol. 3, No.3, October 1991.

[23] Birnbaum, L., Director of Environmental Toxicology Division, Health Research Laboratory, USEPA, telephone conversation, May 11, 1992.

- *Lead is already a hazard to a large number of New York City children. Emissions from new waste-to-energy plants--assuming 14.5 tons/yr of lead from the Navy Yard facility, which would increase lead levels by 9.2%--are likely to push more children into a "danger zone".*

Well controlled waste-to-energy facilities are an inconsequential source of lead in the urban environment. By generating energy from burning trash, less lead is emitted than would be by oil or coal. Steam generated by the Brooklyn Navy Yard plant will displace one million barrels of oil a year used by Con Edison which emits seven times more lead in the same area as the Navy Yard will, based on lead measurements from a "sister plant" and on EPA lead factors for residual oil.

It is true that lead exposures are too high in New York and many cities, but since the phase out of leaded gasoline, air is no longer a significant route of lead exposure. In the last ten years, airborne lead has decreased 85%.[24] In New York City, 1990 lead levels were less than 1/10 the federal standards.

After a major investigation, the New York State Joint Legislative Commission on Toxic Substances and Hazardous Waste concluded in March 1992 that the major current sources of lead are lead paint and soil/dust containing lead from paint and leaded gasoline. A lesser, but still significant, source is drinking water tainted by lead in pipes and solder. The lead contribution of incinerators, according to the NYS Department of Health, is insignificant. The Department observed that deposition analyses of four modern waste-to-energy plants in the state showed lead concentrations would be several orders of magnitude below measured background levels in soil.[25]

The estimate in the Brooklyn Navy Yard FEIS of 14.5 tons/year of lead emissions did not account for the air pollution controls that will actually be used on the Navy Yard plant. It can be seen from Table 21.2.3-1 that if emission factors from the CSWMP are used, the emissions would be 0.085 tons/year. When operating data from a similar waste-to-energy plant in Bridgeport, CT (also owned by Wheelabrator) are applied to the

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[24] "EPA Releases 18th Annual Urban Air Quality Trends Report," Journal of Air and Waste Management Association, January 1992.

[25] Stasiuk, Dr. William N., Director for the Center for Environmental Health of the NYS Department of Health, letter to the NYS Joint Legislative Commission on Toxic Substances and Hazardous Wastes, September 5, 1991.

Table 21.2.3-1:

COMPARISON OF ANNUAL EMISSIONS OF SELECTED POLLUTANTS FROM THE BROOKLYN NAVY YARD FEIS; LIKELY EMISSION RATES AND AVERAGE EMISSION RATES ASSUMING 3,000 TPD

Pollutant	Maximum Annual Emissions (tons/year) (a)	Most Likely Annual Emissions (tons/year) (c)	Average Annual Emissions (tons/year) (e)
Mercury	5	2	2
Benzene	2	2 (d)	2 (f)
Hydrogen chloride	537	33	215
Formaldehyde	27	8 (d)	8
Carbon monoxide	366	119	267
Nitrogen oxides	1,189 (b)	802 (b)	1007 (b)
Volatile organic compounds	65.7	11.9	6
Lead	14.5	0.012	0.085 (g)

(a) Annual emission rates taken from the Brooklyn Navy Yard FEIS.
(b) Annual nitrogen oxides emission rate assumes a 60% reduction.
(c) Annual emission rates calculated using Bridgeport CT Resource Recovery Facility test data.
(d) Since data for benzene and formaldehyde were not reported for the Bridgeport CT Resource Recovery Facility, the Brooklyn Navy Yard annual emissions were not changed for benzene. Average annual emissions for formaldehyde calculated from data found in the Comprehensive Solid Waste Management Plan (CSWMP), March 1992 were used as a surrogate.
(e) Annual emission rates calculated using emission factors found in the CSWMP.
(f) Since data for benzene were not reported in the CSWMP, the Brooklyn Navy Yard annual emissions were not changed.
(g) Average annual lead emissions calculated with data from the CSWMP excluding one anomalous test result.

proposed Navy Yard plant, the emissions of lead would be 1,200 times lower than reported in the Navy Yard FEIS, 0.012 tons/year as opposed to 14.5 tons/year. These lead emission levels would reduce the increase of 1990 background levels of 0.13 micrograms per cubic meter at the point of highest effect of the plant from the 9.2% cited by the Comptroller (actually the EIS says 4.5%) to 0.06% based on the CSWMP or to 0.008%, based on Bridgeport, either a truly negligible impact. Actually, Table 3 (following page 14) shows that a reduction in background lead levels will occur due to the lower lead per unit of energy from waste than from the oil that would be replaced by the waste-to-energy plant.

It should be noted that with the CSWMP lead data the most likely maximum concentration of lead is 0.005% of the federal air quality standard for lead, and with the Bridgeport data it is 0.0001%. The maximum concentration of lead at even the original FEIS emission data would be 21 times less than the level that the Environmental Defense Fund asserted in permit hearings was adequate to protect public health.[26] Thus, even if the lead standard is revised to be twice as stringent, the greatest effect of the plant would be a negligible contribution to the standard.

In addition to the more effective controls than assumed in the EIS for the Navy Yard, there will be less lead in the waste due to the New York State ban on lead acid batteries in refuse and a $5 surcharge on new batteries if the used battery is not returned. The emission data above reflects tests of waste in which batteries are estimated to account for 65% of the lead. Newsprint and metals from residential and institutional wastes, that will be recycled rather than burned, also contain a high level of lead. Thus, the highest exposure from a waste-to-energy plant equipped with the required modern controls would be a reduction of lead in the urban environment.

- *If the City burns an assumed 10,000 tons/day, and uses air pollution controls assumed to be 99.4% effective in removing particulates, the current emissions of particulates will triple to more than 500 tons/year. Metals attach to the very small particles that escape the controls, and are then inhaled into the lungs.*

As stated above, the City does not intend in the near-term to burn 10,000 tons of waste a day. That quantity was a worst-

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[26] Robert P. O'Connor, Administrative Law Judge, Hearing Report, DEC Project No. 20-85-0306 in the matter of permit application for the Brooklyn Navy Yard resource recovery facility, p. 118.

case assumption in the CSWMP/Generic EIS for purposes of impact analysis. The Comptroller's calculation is based on an assumption of a simple linear increase of emission per ton of waste burned; it does not account for the substantial improvement in control efficiency at the three existing City incinerators (from 96 to 99.5%) or the higher performance of any new facilities (a range of 99.6 to 99.9%) and the ten to one reduction of particulates from Con Ed due to replacing oil with waste as a source of energy. As particulate emissions drop dramatically, so will associated metals.

Current particulate pollution in New York City is actually much worse than suggested in the Comptroller's report, but future particulate conditions will be much better than suggested. Replacing the present poorly controlled solid waste disposal system with modern facilities will reduce citywide particulates to 32 times less than now, from about 3,440 tons/year to less than 106.3 tons/year. The future emissions will be entirely offset by the reduction of particulates from oil that waste-to-energy plants will replace, 128 tons/year for the Brooklyn Navy Yard/Con Ed Hudson Avenue plants alone.

Following is a comparison of particulate emissions from incinerators in 1990 (the baseline year used in the City's solid waste management planning), with emissions from proposed future waste-to-energy plants, assuming 5,750 tons/day of capacity, operating 365 days a year, which is more than would occur.

Control devices on the three existing City incinerators have been only 96% effective, allowing 1.5 pounds of particulate per ton of waste to escape. Burning about 1,000 tons/day in 1990, they emitted an estimated 279 tons of particulates a year. The 570 tons/day burned in the virtually uncontrolled existing apartment house incinerators emitted 3,120 tons/year. The 70 tons of medical waste burned per day in uncontrolled on-site hospital incinerators emitted about 44 tons of particulates a year based on data in the NYC Medical Waste Management Plan. Not even counting the fugitive particulates from Fresh Kills landfill, that's a total of 3,440 tons of particulates a year. Equations for these calculations may be found in Appendix A.

In contrast, future particulates from incineration will be much less. Apartment house incinerators and nearly all hospital incinerators will soon be shut down, eliminating their emissions altogether. When the City's incinerators are upgraded with controls that are predicted to be 99.5% effective--an efficiency 20% greater than the 99.4% assumed in the Comptroller's report--they will emit 0.19 lb/ton of particulates compared to the 1.5 lb/ton they emit now. Considered on an annual basis, current burning operations of 1000 tons/day emit 279 tons of particulate

a year. When increased to a combined rate of 2,750 tons/day, the three upgraded municipal incinerators will release 95 tons of particulates a year, which is 184 pounds a year less than now. They will also be equipped with energy recovery that will be offset by particulates from oil otherwise burned by utilities that may be in New York or elsewhere in the regional electrical grid.

The completely new 3,000 tons/day Brooklyn Navy Yard waste-to-energy plant will have an even greater control efficiency of 99.95%, which is 1,200% more efficient than the 99.4% assumed in the Comptroller's report. At a rate of 0.02 lbs of particulates per ton of waste, this facility will emit 11 tons/year. This efficiency has been demonstrated at the Bridgeport, CT facility and other operating Wheelabrator waste-to-energy plants. Limited medical waste incineration (48 tons/day currently under construction), would generate 0.3 tons/year. If any additional 4,000 tons/day *were* to be built, using average control efficiencies, the particulates would be 108 tons/day, but these would also be offset by the reduction in utility emissions.

A total of 106.3 tons of particulates a year would be emitted from the waste-to-energy plants that might eventually be built, compared to 451 tons/year emitted in 1990 by incinerators and a portion of the Con Ed Hudson Ave plant. Due to the combination of more efficient incinerator controls and elimination of pollutants from oil replaced by waste-to-energy, burning five times more waste than in 1990 will reduce existing particulates from these sources by 75%.

New air pollution control systems on waste-to-energy facilities are especially effective in trapping small particles that could be inhaled. Metals and organic compounds become attached to particle surfaces by condensation and other mechanisms; these particles are filtered out on the surfaces of thousands of finely woven bags in the emissions control system, creating a "cake" of dust on the inside of the bags that permits only the cleaned air to pass through and exit the stack into the outside air. Periodically, the cake is shaken off and the cleaning cycle begins again. The redundancy of the filtering systems, and the design and operation of the systems to maintain a continuous level of control under all operating conditions, assures that nearly all small particles are captured. the particulates that are eliminated from oil burning contain many of the same pollutants (lead, mercury, cadmium, chromium, arsenic and formaldehyde) that are found in waste-to-energy emissions and some organics that are not generally found in waste.

Because of the efficiency of controls and dispersion of emissions from a very tall stack, the maximum ground level

concentration of fine particulates likely to occur from the Brooklyn Navy Yard plant is 0.14% of the fine particulate standard to protect the health of sensitive people. In actuality, there will be a benefit due to the offset of oil by waste-to-energy.

Thus, the Comptroller is wrong in stating that particulates and associated health effects will worsen as a result of expanded, modernized incineration. Particulate levels from future incineration, including upgraded municipal incinerators and the Navy Yard waste-to-energy plant, will be much lower, although some particulate emissions will occur from non-combustion waste management processes, such as materials processing and composting, that will become more widespread.

- *Based on the Final EIS for the proposed Brooklyn Navy Yard waste-to-energy facility, a 3,000 ton/day plant would emit tons of mercury, benzene, hydrochloric acid, formaldehyde and carbon monoxide each year.*

The emission estimates reported in the Brooklyn Navy Yard FEIS were maximum levels that did not take credit for the effectiveness of the emission controls because in 1985, when the FEIS was completed, these controls were just coming into use elsewhere. The health risk assessment analyzed the emissions without effective controls, as well as alternate emission rates that did take account of the state-of-the-art controls. Actual stack test data from operating plants of the same design as the Brooklyn Navy Yard plant show even lower emissions than those in the analysis (with controls) for the Navy Yard. The emissions cited by the Comptroller are compared to actual emission rates, based on the CSWMP data and on Bridgeport tests in Table 1. The table shows that all emissions are substantially less than cited in the Comptroller's report.

In reality, the Navy Yard facility emissions will be lower still since the plant will be subject to recent federal New Source Performance Standards, and will benefit from changes in waste composition. For example, according to USEPA, batteries account for 88% of the mercury in the waste. Industry has pledged and New York State law requires that the mercury content of batteries be reduced by 98% by 1993.[27] Additionally, new plants in New York City will be equipped with activated carbon

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[27] Balfour, R., Rayovac, and Telzrow, T., Eveready, Presentations on Battery Manufacturing by the National Electrical Manufacturers Association, Meeting Summary, Precombustion Control of Mercury Emissions from Batteries, USEPA, February 8, 1990.

injection which has been demonstrated to remove from 75 to 97% of any remaining mercury.[28] In addition, all emissions of incineration will be reduced as a result of shutting down old uncontrolled apartment house and on-site medical waste incinerators, and upgrading municipal incinerators.

Thus, the emissions from a new 3,000 ton/day plant will be significantly less than cited in the Comptroller's report.

- *While it is known that incinerators deviate from performance specifications, and perform at less than optimal levels, continuous monitoring for the most toxic pollutants is not planned, and will occur only annually for the first four years.*

All new and upgraded waste-to-energy facilities will possess among the most stringent monitoring and testing devices in the country. The Brooklyn Navy Yard permit was one of the first in the nation to specify annual testing. Since the permit's issuance, comprehensive annual testing of emissions has become a federal requirement. The emissions of air toxics are not continuously monitored because the laboratory analysis required cannot be done instantaneously and because none of these emissions, at the levels that could occur, are associated with short-term effects. In addition, other operating parameters will be continuously monitored that have been demonstrated to be correlated with effective removal of air toxics, such as furnace and stack temperature, carbon monoxide, carbon dioxide, oxygen, opacity, inlet and outlet sulfur dioxide, and bag leak detection systems. The highly automated Navy Yard facility is programmed to respond instantly to out-of-specification conditions or changes in the waste stream so that corrections can be made within minutes. Similar combustion controls will be installed on City incinerators.

Key indicators of operating conditions will be reported on a continuous basis electronically to the State, which uses substantial funds from the operator to assure that resources are always available for frequent inspection and monitoring. It is this kind of technological vigilance that enables states to react quickly and penalize even borderline violations of permits (e.g., fines for Newark for emission levels that were not excessive, but that continued for longer than allowed in the

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[28] Clarke, M.J., "A Review of Activated Carbon Technologies For Reducing MSW Incinerator Emissions," proceedings of the Second Annual Municipal Waste Combustion Conference, USEPA and Air & Waste Management Association, Tampa, FL, April, 1991.

permit). The Navy Yard permit would also fund a community oversight group to review all plant records and performance.

The control systems, which have built-in redundancies, have become increasingly reliable. For the Brooklyn Navy Yard permit hearings, an examination was conducted of operating records at Wheelabrator facilities, performed as part of an "upset" analysis. The examination concluded that long-term averages would, conservatively, be 11% greater than short-term test data; these adjustments were built into the health risk assessment which concluded there would be negligible risk. Long-term averages of inorganic emissions were determined not to be significantly affected by "upset" conditions.[29]

In the last three years, in an area smaller than New York City, four waste-to-energy plants have been operating without adversely affecting their neighboring communities--Babylon, Hempstead, Huntington and Islip. The emission controls of these plants are similar to those planned in New York City, but they do not include enhancements that would further reduce emissions from any New York City plant.

- *New York City is out of compliance with federal Clean Air Act standards which would be worsened by incineration. Incineration of 3,000 tons/day of waste emits 1,000 tons/day of nitrogen oxides which form ozone, a pollutant that exceeds standards.*

The City is out of compliance with the federal Clean Air Act for carbon monoxide and ozone; the chief cause of the non-compliance is the growing vehicular travel throughout the city and region. In Manhattan, where diesel buses are heavily concentrated, exceedances of federal fine particulate standards are attributable primarily to buses. These air quality problems are serious, but well-controlled incineration will not cause violations of standards. The air quality modeling of the Brooklyn Navy Yard waste-to-energy plant shows that even such a large facility would contribute one percent or less of all federal Clean Air Act standards (see Table 21.2.3-1). The table shows maximum ground level concentrations, using the Bridgeport facility emission rates and nitrogen oxide controls added as a result of recent federal requirements. Table 21.2.3-1 also shows the results with the eight plant averages used in the CSWMP. The

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[29] Wheelabrator Environmental Systems, Brooklyn Navy Yard Resource Recovery Facility, Analysis of Start-Up, Shutdown and Upset Emissions, Exhibit-241, January 1988.

Table 21.2.3-2:

ESTIMATED MAXIMUM IMPACT FROM A 3,000 TPD MSW INCINERATOR USING 2 SCENARIOS

Pollutant and Averaging Period of Standard	CSWMP* Emission Factors (lb/ton) (a)	CSWMP* Emission Rates (g/s) (b)	Brooklyn Navy Yard Norm. Gr. Level Concentration (ug/m3 per g/s) (c)	CSWMP* Maximum Impact (ug/m3) (d)	Federal Standard (ug/m3) (e)	% of Standard
CO (1-hour)	4.88E-01	7.69E+00	8.43E-01	6.49E+00	40,000	0.02
PM-10 (24-hr)	1.48E-01	2.33E+00	2.25E-01	5.25E-01	50	1.05
SO2 (24-hr)	9.58E-01	1.51E+01	2.25E-01	3.40E+00	365	0.93
NO2 (annual)	4.61E+00	2.91E+01 (f)	3.07E-02	8.92E-01	100.00	0.89
Lead (3-month)	1.56E-04	2.46E-03	3.07E-02	7.56E-05	1.50	0.005
	Bridgeport Emission Factors (lb/ton) (a)	Bridgeport Emission Rates (g/s) (b)	Brooklyn Navy Yard Norm. Gr. Level Concentration (ug/m3 per g/s) (c)	Bridgeport Maximum Impact (ug/m3) (d)	Federal Standard (ug/m3) (e)	% of Standard
CO (1-hour)	2.18E-01	3.44E+00	8.43E-01	2.90E+00	40,000	0.01
PM-10 (24-hr)	2.00E-02	3.15E-01	2.25E-01	7.09E-02	50	0.14
SO2 (24-hr)	1.94E-01	3.06E+00	2.25E-01	6.88E-01	365	0.19
NO2 (annual)	3.66E+00	2.31E+01 (g)	3.07E-02	7.09E-01	100	0.71
Lead (3-month)	2.26E-05	3.56E-04	3.07E-02	1.09E-05	1.50	0.001

* CSWMP = Comprehensive Solid Waste Management Plan.

(a) Data taken from emission rates used in the CSWMP, with the exception of lead as noted in Table 1.

(b) Emission rates in g/s were calculated using the following equation: emission factor (lb/ton) x 3,000 tons/day x 454 g/lb x 1 day/86,400 s.

(c) Brooklyn Navy Yard normalized ground level concentrations were back calculated from maximum ground level impacts and emission rates found in the Brooklyn Navy Yard FEIS.

(d) Maximum ground level impact calculated by multiplying emission rate by the normalized ground level concentration.

(e) National Ambient Air Quality Standards.

(f) Emission rate assumes a 60% reduction in emissions due to thermal De-NOx.

(g) Assume a 60% reduction in the reported Bridgeport nitrogen oxide levels due to requirements of Federal New Source Performance Standards.

Note The notation used is scientific notation. The power of ten of the given number follows the "E" in each number. For instance example, 1.0E-03 is the same as 0.001 in decimal form or 1×10^{-3} in an alternate form of scientific notation.

Table 21.3-3:

COMPARISON OF ANNUAL EMISSIONS:
CON EDISON HUDSON AVENUE GENERATING PLANT
AND BROOKLYN NAVY YARD WTE PLANT

	Con Ed (a)	BNY WTE (b) (Bridgeport data)	BNY WTE (c) (SWMP data)
	1 mill bbls oil	1.095 mill tons MSW	
Particulates	128	11	81
Sulfur dioxide	1,435	95	524
Nitrogen oxides	1,300	802	1,007
Carbon monoxide	132	119	267
VOCs	26	4	6.4
Lead (d)	0.088	0.012	0.085

(a) Brooklyn Navy Yard EIS, June 1985.
(b) Based on Bridgeport emissions plus NOx controls to be added to the BNY control system to meet federal New Source Performance Standards.
(c) Based on Solid Waste Management Plan emissions, as described inTable 1.
(d) Annual lead emissions from oil combustion offset by the Brooklyn Navy Yard was calculated from a lead emission factor found in USEPA AP–42 Air CHIEF, (August 1991) assuming a heating value of 150,000 Btu/gal of residual oil, also found in Air CHIEF. Actual Con Ed emissions may be somewhat less due to refining of low sulfur oil. The calculation is shown below:

(2.8 x 10–5 lb Pb/mmBtu) x (150,000 Btu/gal res. oil x 42 gal/bbl) x (1 x 106 bbl res. oil/year) = 176.4 lb Pb/year = 0.088 ton Pb/year

Note: Clean Air Act requires offsets of 1.3 to 1.0 for nitrogen oxides and volatile organic compounds (VOCs) and 1.0 to 1.0 for carbon monoxide and particulates. Lead and sulfur dioxide do not require offsets because they are in attainment of standards.

CSWMP reports an analysis of modeling the cumulative impacts of all contemplated facilities, including up to 10,000 tons/day of waste-to-energy. The maximum impact for all pollutants was well below the strictest health based guideline.[30]

Under the 1990 Clean Air Act Amendments, for any pollutant which exceeds a standard, after 1992 offsets from existing sources will be required before a major new source of that emission is permitted. These offsets can be achieved by accounting for the emissions from burning fossil fuels to produce steam or electricity that would be displaced by recovering energy from refuse. The net reduction of all Clean Air Act "criteria" pollutants can be seen in Table 3. While recovering energy from the three upgraded City incinerators may not produce quite as favorable emissions offsets, it is clear waste-to-energy facilities will comply with clean air programs.

- *Incinerators form toxic ash. Metals become more concentrated in ash than in ordinary garbage. Workers who handle ash are exposed to toxics through skin contact and breathing. Metals in ash leach into groundwater.*

The wet ash produced by waste-to energy plants which quickly solidifies is the safest place for metals to be contained to prevent them from entering the environment.

In a modern waste-to-energy plant, metals and other pollutants are intentionally captured in ash so that they do not escape into the air or groundwater. It is true that metals become more concentrated in ash than in ordinary garbage, but that does not result in more hazard. When ordinary garbage is landfilled, metals are leached out by acids created by raw, organic wastes. This leaching does not occur with landfilled ash because there are no organics remaining after burning to generate the acids that leach out the metals. And ash is sufficiently alkaline to buffer acidic rainwater. Samples of actual leachate analyzed for USEPA show "they are close to being acceptable for drinking water use, as far as metals are concerned."[31] In addition, the level of organics in ash leachate examined in the

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[30] Comprehensive Solid Waste Management Plan, Volume 7-2, Appendix 2-B.

[31] NUS Corporation, Final Characterization of Municipal Waste Combustion Ash, Ash Extracts, and Leachates, EPA Contract Number 68-01-7310, February 1990.

same EPA study were "much lower than the levels of phenol found in the leachates from the MSW landfills or co-disposal sites."[32]

Ash management requires safeguards so that it does not create problems due to improper storage, management, or disposal. Ash is doused in water inside the plant so that dust does not become airborne. Studies of indoor air in the ash handling areas at a waste-to-energy plant in Florida determined that dust levels were 3,000 times lower than the Occupational Safety and Health Agency standard, and metals in the air were undetectable in air that was drawn through a filter for an 8-hour workday. When the filtering period was increased to 48 hours, the concentration of lead (the highest metal) was found to be about the same as in the outside air measured before the plant began operating. That concentration was 10 times lower than the federal air quality standard for lead.[33]

The ash remains moist during transport so that no fugitive emissions are generated between the plant and the disposal site. Ash from the Brooklyn Navy Yard facility, will, as a permit condition, be barged from the facility in closed containers ~~to Fresh Kills Landfill~~. Ash from the ~~municipal~~ Southwest Brooklyn incinerators will be ~~delivered to Fresh Kills~~ removed in sealed trucks. To test for airborne emissions when ash is landfilled, elaborate measurements were made of the air downwind of actual ash unloading and spreading at an ashfill in Massachusetts. The tests detected no increase in particulates or metals due to the ash, only due to the fresh soil used to cover the ash.[34]

In addition, Wheelabrator has developed practical technology for immobilizing metals such as lead and cadmium in the ash. The Brooklyn Navy Yard facility would utilize an ash immobilization

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[32] Roffman, H., "Major Findings of the USEPA/CORRE MWC-Ash Study," proceedings of the Second Annual Municipal Waste Combustion Conference, USEPA and Air & Waste Management Association, Tampa, FL, April, 1991.

[33] Hahn, J.L., et al., "A Comparison of Ambient and Workplace Dioxin Levels from Testing in and around Modern Resource Recovery Facilities with Predicted Ground Level Concentrations of Dioxins from Stack Emission Testing with Corresponding Workplace Health Risks," proceedings, 8th International Meeting on Dioxin and Chlorinated Compounds, 1988.

[34] Hahn, et. al., "Fugitive Particulate Emissions Associated with MSW Ash Handling--Results of a Full Scale Field Program," presented at the 83rd Annual Meeting of the Air & Waste Management Association, Pittsburgh, June 1990.

process, which significantly reduces the leaching of metals during laboratory tests such as the Toxicity Characteristic Leaching Procedure (TCLP). The process has been evaluated and confirmed as highly effective by the U.S. Environmental Protection Agency (EPA), the U.S. Corps of Engineers (Waterways Experiment Station), independent laboratories at the University of New Hampshire the Environmental Defense Fund, and in testimony before the Administrative Law Judge at the Brooklyn Navy Yard permit hearings.

Once in the ashfill, the ash, which is composed principally of lime, silica and moisture--very nearly the composition of cement--quickly hardens so that rain water cannot penetrate. Nevertheless, ashfills are required to have a liner made of multiple layers and a leachate collection, treatment and monitoring system. ~~(The Fresh Kills ashfill will have double liners.)~~

Four years of EPA studies of the ashfill in Oregon (Marion County waste-to-energy facility) provide long-term characterization data of leachates in an ash monofill, ash aging, airborne dust, etc. Leachates continue to be below EPA and TCLP toxicity levels for metals and organics. The major constituent of the leachate is salt.[35] (The Marion County plant has similar emission controls to those that would be used at the BNY or SW Brooklyn facilities.)

Other long-term tests sponsored by USEPA of leachate from ashfills have found none that could be considered hazardous.[36] Thus, incinerator ash, properly managed, presents no environmental hazard.

- *A solid waste program of 50% recycling and 50% landfilling uses only 4 cubic yards more landfill space per 100 cubic yards of garbage than a program of 100% incineration.*

The Comptroller's report compares landfill space requirements in cubic yards (cy) of space per 100 cubic yards or 25 tons of waste, for four waste management scenarios, none of

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[35] Center for Resource Recovery Technology & Science, Municipal Waste Combustion, Ash and Leachate Characterization Monofill-Fourth Year Study, Woodburn Monofill, Woodburn, Oregon, March 1992.

[36] Roffman, H., "Characterization of Municipal Waste Combustion Ash, Ash Extracts, and Leachates," NUS Corporation, EPA Contract No 68-0017320, February 1990.

which conform to the State's waste management hierarchy. The scenarios are: 100% landfilling (44 cy of space); 100% incineration (20 cy of space); 30% recycling-70% landfilling (32 cy of space); and 50% recycling-50% landfilling (24 cy of space). To arrive at these landfill space estimates, the analysis is based on a set of assumptions about density of waste in collection vehicles, waste not burned due to facility downtime, waste compaction rates once landfilled, etc. that are questionable (see discussion of assumptions below). But, in addition to the questionable assumptions, the major issue of concern is the waste management scenarios the Comptroller has chosen not to analyze for their impact on landfill capacity.

The report neglects to compare an array of integrated waste management scenarios that combine recycling, incineration, and landfilling (presumably at Fresh Kills Landfill), that might be considered more realistic and more favorable in terms of landfill space use than any of the three alternatives to total landfilling cited in the report. Still using the Comptroller's assumptions, consider the following: recycling 30% and incinerating (rather than landfilling) the remaining 70% of raw waste would require 19 cy of landfill space per 100 cy of waste, 5% less than would be needed in an all-incineration scenario, and 41% less than would be needed if 30% were recycled and 70% landfilled without incineration. With a 50% recycling and 50% incineration program, only 15 cy of landfill space would be required per 100 cy of waste, 25% less than a 100% incineration program, and 38% less than a program of 50% recycling and 50% landfilling of raw waste, which the Comptroller's report favors. A more realistic integrated scenario might consist of 40% recycling, 40% incineration, and 20% landfilling which, based on the Comptroller's assumptions, would require 21 cy of landfill space per 100 cy of waste collected, only 5% more than would be required if all the waste were incinerated. The Comptroller's analysis of a carefully selected number of waste management programs therefore skews the landfill space analysis to support the Comptroller's position.

In addition to the selection of scenarios analyzed, the Comptroller's conclusions about landfill space needs may, also be challenged on the basis of the assumptions used in the space analysis.

The report assumes that 6% of the City's waste is non-combustible and would be diverted directly to the landfill, without burning. According to the report, this 6% consists of bulky waste, tires, waste oils, and some construction and demolition waste (C&D) that is not now being recycled. The report neglects to state that the City's plans include recycling most of the waste items included in the Comptroller's 6%; thus,

these materials would be neither landfilled nor incinerated. The report also assumes that no compaction of this supposed 6% of non-combustible, non-recycled materials would take place at Fresh Kills Landfill, even though many items in this category would be compacted under the weight of 70,000 lb. landfill compacting equipment.

The report asserts that a waste-to-energy facility would be available only 85% of the time because of downtime for maintenance; therefore that 15% of the waste would "bypass" the facility and go directly to Fresh Kills. The 85% "availability" assumed in the Comptroller's report is based on contractual guarantees for the Brooklyn Navy Yard plant, whereas the record of plant availability for operating Wheelabrator waste-to-energy facilities is actually 93% or better. In any case, using either 85% or 93% availability, however, waste would not be rejected at the waste-to-energy plant and sent to the landfill during maintenance. A plant, such as the Brooklyn Navy Yard facility, which will have four redundant processing lines, will continue to process waste during a shutdown of any one line by using the remaining operating lines of the facility.

When calculating landfill space requirements, it must also be considered that the removal through recycling of inert materials, such as glass and metals, from the waste stream will increase the volume reduction of the combustible materials achieved by burning. Thus, the actual reduction achieved by a facility such as the Brooklyn Navy Yard would be much higher than estimated in the Comptroller's report.

A further weakness in the Comptroller's analysis stems from the report's assumption of absolute values for waste density and compaction ratios. The Comptroller's report assumes a collected waste density of 500 lbs per cubic yard, while the Solid Waste Association of North America (SWANA) estimates a range from 500 to 1000 lbs per cubic yard, depending on waste composition. Factors such as season, weather, percent recycled, and types of residences all affect waste composition and density. The Comptroller's analysis further assumes 1,250 lbs per cubic yard compaction of waste once in the landfill. The Fresh Kills Landfill 1990 Annual Report[37] uses a range of 1,400 to 1,800 lbs per cubic yard to estimate in-place density of landfilled waste.

[37] New York City Department of Sanitation, Fresh Kills Landfill Consent Order 1990 Annual Report, February 28, 1990.

- *With incineration, "one form of pollution, landfilling of unprocessed garbage, is transformed into a mix of pollution forms, burning garbage and burying the resulting ash."*

When the report refers to landfilling, the reference is to Fresh Kills, the only remaining landfill in New York City. Fresh Kills Landfill is not just "one form of pollution." It consumes land, emits odors and generates gases that contribute to global warming: carbon dioxide, and methane. Byproducts of bacterial degradation of organic wastes in the landfill include potential carcinogens, such as benzene and vinyl chloride, in quantities sufficient that USEPA now requires that landfill gases be captured and burned.

The problems caused by the leachate discharge from Fresh Kills should also not be understated. To reduce by a minimum of 80% the enormous quantity of leachate (estimated at over 1 million gallons a day) that has been escaping into groundwater and surface water, a system must be constructed that is costing the public hundreds of millions of dollars and will still not capture approximately 200,000 gallons.[38]

Thus in New York City and many other areas, the use of landfills for raw waste is to be curtailed by reducing waste, achieving high levels of recycling, processing the remaining raw waste in waste-to-energy facilities, and disposing of ash in properly designed ash monofills.

- *The Comptroller's report urges that, since New York City and the world would be severely affected by global warming, recycling and composting of wastes are preferable to burning waste to produce energy because wastes generate more carbon dioxide than does the fuel that is displaced.*

These accurate statements are among the many reasons that the City's solid waste management plan places greatest emphasis on waste reduction and recycling. However, the Comptroller's report omits any consideration of greenhouse gases from landfilling which is the Comptroller's preferred companion to recycling. A genuine concern about global warming would recognize that one of the nation's greatest sources of the principal greenhouse gases--carbon dioxide and methane--is landfills. In comparison, landfilling waste produces 12 times more greenhouse gases than converting waste to energy that would

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[38] IT Corporation for NYC Department of Sanitation, Fresh Kills Leachate Mitigation System Project, Literature Review Report, March 1991.

otherwise be generated by burning coal (the major source of electricity in the U.S.). "Even with hopeful estimates for methane recovery [from landfills], waste-to-energy is 6 times more desirable [from a global warming perspective than landfilling."[39] In New York City, where the fuel displaced would more likely be oil, which produces about 83% as much carbon dioxide as coal,[40] converting waste to energy would produce about 1/5 the greenhouse gases as landfilling (with 50% methane recovery).

- *The Comptroller's report asserts that the calculation of global warming benefits of waste-to-energy and recycling compared to landfilling and recycling does not account for two other emissions that may contribute to global warming.*

The other emissions of concern to the Comptroller are nitrogen dioxide and carbon monoxide, both of which the Comptroller acknowledges have a questionable role in global warming and may actually reduce the effects. In any case, relative to the 2006 pounds of carbon dioxide per ton of waste, the emissions of nitrogen oxides (1.84 lb/ton) and carbon monoxide (0.48 lb/ton)[41] are too trivial to warrant the Comptroller's attempt to discredit the only available analysis of the greenhouse effects of waste-to-energy and landfilling.

- *Landfilling is assumed by the Comptroller to be more benign because it "sequesters" carbon-based material from the atmosphere.*

This perspective is as short sighted as the national debt, implying that the carbon is sequestered forever, whereas it is released over time. "From the global warming perspective, the question is not the rate of generation of gas, but rather the

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[39] Taylor, Hunter F., P.E., "Comparison of Potential Greenhouse Gas Emissions from Disposal of MSW in Sanitary Landfills vs. Waste-to-Energy Facilities," USEPA/AWMA Second Annual International Specialty Conference, April 15-19, 1991.

[40] Marland, G. and Pippin, A., Oak Ridge National Laboratory, "United States Emissions of Carbon Dioxide to the Earth's Atmosphere by Economic Activity," Energy Systems and Policy, V. 14, pp. 319-336. (Burning coal releases 24.12 kg CO_2 per billion joules; burning petroleum liquids releases 19.94 kg CO_2 per billion joules.)

[41] Emission factors are from Comprehensive Solid Waste Management Plan, Appendix 5-B, and from H. Taylor, op. cit.

total amount of gas that will eventually be released."[42] By favoring landfilling over waste-to-energy for that portion of the waste that cannot be recycled, the Comptroller is simply handing the greenhouse effect to the next generation.

- *Composting is described by the Comptroller as contributing less to global warming than either waste-to-energy or landfilling.*

Both composting and waste combustion are aerobic processes in which carbon in the waste is oxidized to form carbon dioxide. The principal difference between the two oxidation processes is the rate of release, which from the long term perspective of global warming is not significant. Waste-to-energy offers the additional advantage of offsetting some carbon dioxide generated by oil. On the other hand, composting is far more desirable than landfilling, an anaerobic process, that, in addition to generating carbon dioxide, generates methane, which is at least 25 times more potent a greenhouse gas than carbon dioxide.

21.2.3.4 "Tale of Two Cities."

- *The Comptroller asserts that the City of New York opposes incineration in New Jersey and supports it within the City.*[43]

The City of New York has filed briefs in a suit against a proposed GAF hazardous waste incinerator in Linden, NJ just west of Staten Island. The positions in the City's brief on the GAF plant and the Brooklyn Navy Yard (BNY) resource recovery facility are not inconsistent, as the Comptroller has charged. The principal basis for the City's opposition to the GAF plant is that the air quality and health risk analysis were inadequate and inaccurate, not that incineration itself is undesirable. In contrast to the assessment of the GAF plant, the air quality and health risk assessment of the BNY was thorough and was upheld in repeated regulatory and judicial reviews. The Comptroller's attempt to make these two cases comparable is unfounded.

One example of the difference in the analysis of the two plants is how exposure to pollutants was studied. Studies of exposure must consider all pathways to human or animal intake. The City justifiably argued that the GAF incinerator violated New

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[42] Taylor, H., op. cit.

[43] Holtzman, Elizabeth. "A Tale of Two Incinerators: How New York City Opposes Incineration in New Jersey while It Supports it at Home," Comptroller, May 1992.

Jersey's own health risk assessment guidelines by only examining inhalation. In contrast, the BNY health risk assessment and others have shown that ingestion poses a greater risk than inhalation. The BNY health risk assessment considered every conceivable pathway in a New York City setting--eating backyard vegetables, fish from Prospect Park Lake, drinking water from the Central Park reservoir, dust that infants ingest from crawling on the floor, among others.

- *The Comptroller contends the two plants pose equivalent health risks because the emission rates are similar.*

The key issue in risk assessment is the level of exposure to the emissions.

Even though the GAF plant (1/20 the size of the BNY), will emit about the same quantity of pollutants, its ground level effect will be greater. The relatively short stack of the GAF plant, 213 feet, which is not Good Engineering Practice Height, would cause higher ground level concentrations of similar emission rates than the 500 foot stack of the BNY, due to poorer dispersion from a shorter stack. Because of the difference in stack heights, prevailing winds and other factors, for each gram per second of any pollutant emitted, the GAF plant annual impacts would have 6 times the annual impact of the BNY, despite its smaller size. When this factor of 6 is applied to the impacts of four of the six pollutants cited in the Comptroller's report, the Brooklyn Navy Yard would have a lower impact than the GAF hazardous waste incinerator for those pollutants.

The relative effect can be seen in the modeled lead concentrations, which are 25.8 times higher from the GAF plant (based on the maximum emission rate on the GAF facility permit application) than from the BNY[44], not even accounting for the reduced emissions of lead from oil burning at Con Ed that would result from development of the BNY.

The two other pollutants cited by the Comptroller as having higher emissions from the BNY than the GAF plant, mercury and PCBs, would not cause as great a difference as the report suggests. Mercury (also based on the maximum emission rate on the GAF application) would be 2.5 times more from the BNY using the Plan emission factor, but as has been discussed in an earlier response, these emissions from the BNY will be reduced dramatically (as a result of a law requiring reductions in

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[44] New York City Department of Sanitation, "Response to Reports by the Comptroller Regarding Waste to Energy Facilities," Table 1, May 1992.

mercury levels in batteries and providing for the removal of batteries from the waste stream).[45] Impacts from PCBs could be higher from the BNY, but emissions would still only total 10 ounces a year, if the conservative emission factor from the Incinerator 2000 study is used.

- *The Comptroller objects to the Department of Sanitation basing its estimates of safety on comparisons to standards, while the City objected to that practice in the GAF case.*

The Comptroller's assertion is inaccurate. The conclusion of the Department, as well as of the City and the State, about the safety of the BNY was based on just the kind of full multi-pathway health risk assessment which the City is saying should be performed for the GAF facility. Future facilities in the Plan would be subject to a similar assessment. The BNY risk assessment, using the most representative emission rates, arrived at a maximum risk of 0.97 (less than 1 chance in a million), which by all standards is truly negligible.

Comparison to standards and guidelines was used in the Plan, which as a Generic Environmental Impact Statement is not subject to a full health risk assessment. However, the standards and guidelines that were used are based on levels that the toxicological literature indicates will lead to a negligible risk from a lifetime of continuous exposure. The exception in the Plan is the reference value for dioxin, which, in the absence of a State guideline, was derived from the BNY health risk assessment.

The Comptroller is wrong that the City's brief "implies" that the standards and guidelines do not represent negligible risk. The discussions in the brief focus only on whether the potency factors used in the risk assessment fully account for early childhood response. There is no discussion of standards and guidelines in the brief.

- *The Comptroller says that the need for cumulative risk assessment of all sources which the City seeks in the GAF plant should be applied to the BNY.*

The City argues in the GAF analysis that only the incremental risk of the GAF plant was considered, rather than adding its effects to background concentrations of trace toxics. The latest NYSDEC guidance states: "The assumption that

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[45] Ibid.

background is insignificant is valid for most contaminants in terms of relative contribution...However, nearby industrial sources are not part of the general background concentration. The contribution of these nearby industrial sources must be considered when addressing ambient air quality."[46] Thus, the City's concern that the GAF analysis did not study nearby industrial sources of toxics is reasonable.

The position on assessing cumulative impacts is not inconsistent with the analyses of the BNY or the Plan. The BNY EIS reported the cumulative effects of eight potential waste-to-energy plants that were under consideration at the time. In the case of the Plan, the cumulative air quality and ecological impacts of all waste management facilities were modeled. The resulting concentrations at the point of greatest effect were found to be well below health effects standards and guidelines, with the exception of mercury. However, the mercury levels that were reported in the Plan would be greatly minimized by the prospective dramatic reductions in mercury emissions which were not accounted for in the Plan analysis. A cumulative air quality analysis has also been done by the New York State Department of Environmental Conservation (NYSDEC) and the EPA of all contemplated incinerators in the New York-New Jersey region with a similar conclusion as in the Plan.[47] The significance of background concentrations from vehicular and industrial sources is now being evaluated by the State and federal government.

- *The Comptroller asserts that the BNY and the Plan use a deposition model that the City argues in the case of GAF understates the impact by 100-500 times.*

In the GAF brief, the City has raised some complex issues in regard to deposition modeling. At the present time, USEPA guidance in regard to the choice of a deposition model is determined on a case-by-case basis. However, use of the currently available version of the ISCST deposition algorithm, urged by the City's witness for the GAF plant, is "not encouraged" by USEPA.[48] The principal issue raised by the

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[46] New York State Department of Environmental Conservation, "DRAFT New York State Air Guide-I: Guidelines for the Control of Toxic Ambient Air Contaminants," September 1991 Edition.

[47] New York State Department of Environmental Conservation, "Incineration 2000," October 1990.

[48] Collechia, Anna-Maria, United State Environmental Protection Agency, Region II, June 10, 1992.

Comptroller is that the California Air Resources Board (CARB) deposition model that was used in the BNY and the Plan, was inappropriate on the grounds that sufficient particle size distribution information was unavailable. Such data are available for a waste-to-energy plant with a scrubber and fabric filter. Therefore, the use of the CARB model is appropriate for the BNY (which was also recommended for use by NYSDEC for the Plan). The necessary particle size data may not be available for a hazardous waste incinerator of the GAF design.

- *The Comptroller asserts that there is a variability in emissions in actual operations of a plant which the City wants accounted for in the GAF plant, but was not accounted for in the BNY analysis.*

The City argued that the emission rates of the GAF plant did not account for the variation in emissions of hazardous waste incinerators in actual practice. By contrast, the BNY health risk assessment did account for the potential hours of uncontrolled emissions and arrived at an adjustment factor of 1.11 (i.e., 11% greater) that was applied to all organic emissions. This is conservative because new plants are built to automatically prevent bypass of the air pollution control system, so that it is always effective, even in the rare instance of a shutdown of the furnace. The premise of the Plan was to report average which reflect long term emissions, not worst case, short term conditions, which may be more appropriate for a site-specific permit application.

- *The Comptroller contends that the concern about the two plants should be the same because BNY will emit about the same quantity of potentially toxic emissions, and, it is believed, very much more PCBs than the GAF incinerator.*

The fact that the 150 ton/day GAF plant would release nearly the same quantity of emissions as the BNY plant, which is 20 times as large, indicates the special caution needed in assessing a hazardous waste incinerator. The one emission rate which the Comptroller asserts would be much greater--490 times greater--at the BNY than at the Linden plant is PCBs. In fact, data from the Plan, which is the apparent source of the other emission rates,[49] shows that the BNY annual PCB emission rate would be higher by a factor of about 62, not 490, if one used the highest possible emission rate.

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[49] The source of the reported emission rates is not reported; however, they appear to be close to those reported in the Plan.

The PCB emission factor in the Plan was not based on measurements at existing waste-to-energy facilities (since they were not or could not be measured), as was the case for most other pollutants. The PCB emission factor in the Plan came from NYSDEC and the EPA's Incinerator 2000 study, in which the emission factors used are considerably higher (95th percentile) than actual performance of waste-to-energy plants. Even at 62 times the annual emissions of PCBs from the GAF facility, the annual emissions of PCBs from the BNY total only about 10 ounces annually.

21.2.3.5 NYPIRG'S "Setting the Record Straight" and Cost Assertions in Comptroller's "Burn Baby" and "Fire and Ice."

The NYPIRG report incorrectly and inconsistently evaluates the costs of NYC current and proposed recycling programs as well as the cost of waste-to-energy facilities.

NYPIRG underestimates the cost of recycling programs and overestimates the cost of waste-to-energy facilities. In particular, the analysis is inconsistent in its use of avoided costs. NYPIRG includes the avoided cost to the City associated with the use of recycled asphalt but excludes the avoided cost to the Health and Hospitals Corporation of disposing of its medical waste. It also ignores the avoided costs for both recycling and waste-to-energy associated with landfill depletion. Either all avoided costs must be included as part of a comprehensive analysis (as is done in Solid Waste Management Plan ("SWMP") or all must be excluded. Had NYPIRG been consistent in excluding avoided costs over 40 percent ($67/ton) of the "discrepancy" between NYPIRG's $141/ton cost of recycling and the $303/ton figure quoted by Department of Sanitation would be explained.

NYPIRG also is inconsistent in its use of direct costs. It includes overtime costs when evaluating waste-to-energy and landfill disposal methods but excludes overtime expenses from the cost of recycling. Additionally it includes revenues generated when evaluating the cost of recycling, but excludes some revenues from waste-to-energy. The analysis arbitrarily excludes enforcement and the cost of facility construction from analysis of recycling programs and excludes higher costs recycling programs, such as wood bulk recycling, buyback centers, and leaf waste composting, but includes new programs that will make the cost of waste-to-energy and landfilling higher (such as new pollution control investments). This arbitrary use of cost information accounts for 20 percent ($33/ton) of the "discrepancy" between NYPIRG's $141/ton cost of recycling and the $303/ton figure quoted by the Department of Sanitation.

There are also significant analytical errors in the NYPIRG analysis regarding the capital cost assumptions which underestimate recycling costs and overestimate waste-to-energy costs.

Although the text claims that debt service for equipment would cover the cost the of entire recycling fleet, the figures quoted in the debt service calculation support a fleet that is only two-thirds of the size of the fleet that was actually in use in FY1991. Debt service for the upgrade of existing incinerators are said to be based on the City's Ten Year Capital Plan; however, figures shown in debt service calculation commitments 40 percent greater than that level of funding.

Excluding a portion of the fleet from debt service and maintenance calculations accounts for over 10 percent ($20/ton) of the "discrepancy" between NYPIRG's $141/ton cost of recycling and the $303/ton figure quoted by Department of Sanitation. Errors in calculating incinerator debt service increase NYPIRG's estimate of the FY2000 cost per ton for existing incinerators by over 15 percent.

The NYPIRG analysis incorrectly assumes that current costs for solid waste management systems will not change over the next decade.

The NYPIRG analysis extrapolates 1991 numbers to the year 2000. The FY1991 programs for recycling, incineration, and landfilling will not be the ones that will be in place in FY2000. The mix of recycling programs will change: in FY1991 curbside and containerized recycling accounted for 54 percent of all DOS recycling; in FY2000 it will account for 67 percent of the Department's efforts. Collection routes for both recycled and unrecycled material will be more efficient and participation in the recycling program will increase. Additionally, staffing at the incinerators and the landfill will be different as new equipment and procedures are developed. Many of the cost figures that NYPIRG quotes as being the current DOS figures for waste-to-energy are actually extrapolated from an analysis that is 8 years old. The SWMP incorporates the costs of new pollution control technologies. Even using NYPIRG flawed analysis as a base, the changing mix of recycling programs would result in a FY2000 cost per ton of recycling of $281, 40 percent higher than the estimate quoted in the NYPIRG report.

The Comptroller incorrectly calculates the cost of the Brooklyn Navy Yard facility by double-counting, under-counting and over-counting various figures.

Based on her independent assessment of the cost of the Brooklyn Navy Yard facility, and extrapolating that analysis to a larger waste-to-energy program, the Comptroller concludes in Burn, Baby, Burn that waste-to-energy capacity would cost more than the figures used by the Department of Sanitation in developing its budgets as well as the analysis in the SWMP.

The Comptroller's assessment starts with the terms of the Brooklyn Navy Yard agreement and adds costs that she claims are omitted in the Department's cost figures, such as land rent, engineering consultants, new air pollution control devices, insurance, construction and performance bonds, and financing costs. However, in the construction cost estimates used by the Department in its planning, many of these items are explicitly itemized, such as land, consultants, pollution controls insurance, and construction bonds while an allocation for contingencies would cover the costs that were not itemized.

Another "discrepancy" between the Comptroller's cost estimates and the Department's concerns the revenue from the sale of energy. The Comptroller assumes that City revenues from waste to energy will be approximately one half of the current value of the oil that would be saved at alternative energy producing facilities. While the amount of revenue generated by waste-to-energy facilities is somewhat speculative, since is based to a large extent on fluctuating oil prices, it is uncertain why the Comptroller would assume that the City would capture such a small percentage.

The Comptroller's under estimates the cost of landfilling by excluding a depletion cost for the use of landfill space.

In determining the cost of landfilling, the Comptroller does not include a value for the depletion of the Fresh Kills. Landfills have a finite capacity and thus have a significant associated depletion cost. In order to price the remaining capacity at the landfill accurately, the Department of Sanitation contracted with National Economic Research Associates to calculate an appropriate landfilling cost per ton, including depletion. That figure, in 1995 dollars (the base year used by the Comptroller) would be approximately $125. Together with collection cost and transfer costs, this would bring the cost of landfilling to a level that would be twice as large as the value that the Comptroller used in her analysis.

As part of the Solid Waste Management Plan, the Department evaluated the cost implications of a system that landfilled one quarter of the City's waste stream, significantly less than the amount proposed by the Comptroller. This analysis, which took into account the depletion costs of landfilling, estimated that

system would cost up to 8 percent more that a system than balanced waste-to-energy and landfilling capacity. On an annual basis, the difference in cost would amount to over $50 million more a year paid by taxpayers to support the waste management system. To put that figure in perspective, $50 million represents nearly twice the amount of money the City currently spends for street cleaning.

As the Comptroller's report correctly notes, the appropriate measure of the cost effectiveness of a waste management approach is determined not by evaluating individual parts but by evaluating how those parts fit together in a comprehensive system. Nonetheless, the Comptroller's analysis incorrectly evaluates the cost of all alternative systems as a whole.

In order to determine the relative value of alternative systems, the Comptroller estimates cost per ton for recycling, waste-to-energy, and landfilling and then weights them based on hypothetical distribution of a 16,000 ton per day waste stream. This methodology is seriously flawed for several reasons. First, the cost of a system is not the weighted average of its component parts. Components of a waste management strategy are not independent of each other: the cost per ton of landfilling, for example, will be different if 1,000 tons per day were processed than if 20,000 tons per day were processed. Secondly, 16,000 tons per day does not represent the City's total waste stream. Currently, a significant portion of the City's commercial waste stream is exported outside the City's border. Pending Federal legislation may restrict this practice. Not providing disposal capacity for City businesses will have as much of a direct impact on the cost incurred by City taxpayers as would failure to provide capacity for household waste. Finally, the Comptroller's analysis does not evaluate a full range of waste management scenarios. Specifically, it does not evaluate the option of balancing waste-to-energy and landfilling capacity.

21.2.4 Responses to Written Public Comments.

ASH DISPOSAL

The plan should include a discussion of ash-disposal alternatives in the event that the proposed Fresh Kills ashfill is not approved. (Cerullo; G. Molinari; S. Molinari; Staten Island Citizens for Clean Air) The proposed ashfill at Fresh Kills would last only an estimated eight years. What will be done with incinerator ash after the ashfill is closed? (Feldman; Staten Island Citizens for Clean Air)

The DEIS for the proposed ashfill identified three alternate sites to the Fresh Kills location which might potentially be feasible: sites at the Edgemere landfill in Queens, near Co-op City in the Bronx, and at the closed Ferry Point landfill in the Bronx. However, instead of building an in-city facility, the City is committed to contracting for out-of-city disposal capacity or having the ash beneficially re-used.

The proposed ashfill at Fresh Kills would last only an estimated eight years. What will be done with incinerator ash after the ashfill is closed? (Feldman; Staten Island Citizens for Clean Air)

The City will rely on out-of-city ash disposal or beneficial re-use, rather than developing the proposed Fresh Kills ashfill.

The draft plan does not discuss the effects of a recent court ruling regarding the need to subject the proposed Staten Island ashfill project to public review pursuant to the Uniform Land Use Review Procedure (ULURP). (G. Molinari)

This ruling occurred after the draft plan was issued. The issue is now moot, however, since the City now does not propose to develop the ashfill.

The Draft GEIS does not adequately address the environmental and public health effects of ash disposal. (S. Molinari; Manhattan CB2; Bayswater Civic Association; Environmental Research Foundation; NYPIRG)

Air emissions and liquid effluent from ashfills were addressed. Air modeling of an ashfill was conducted. State and federal regulations governing ashfills, in recognition of the fact that ashfills are of less environmental and public-health concern than are MSW landfills, specify less-stringent control measures for these facilities.

An above-ground, steel-reinforced concrete building would be a more effective option for ash disposal than the proposed ashfill. (Environmental Research Foundation)

The negligible adverse environmental impacts associated with this proposed facility would not justify the incremental costs associated with such a building.

BROOKLYN NAVY YARD

The proposed Brooklyn Navy Yard waste-to-energy facility should not be included in the City's plan. (Connor; Golden; S. Molinari; S. Silver; S. Solarz; Brooklyn CB6; Clinton Hill-Ft. Greene Coalition for Clean Air; Federation Tenants Council of Williamsburg; Lower East Side Coalition for a Healthy Environment; Bitzer; Shiffman; Terna)

> In the evaluation of alternative scenarios for this plan, alternate systems that included and did not include the proposed Navy Yard facility were considered. Overall, systems that included the Navy Yard were preferable from an economic and environmental perspective to systems that did not.

The costs of the proposed Brooklyn Navy Yard facility "have been vastly underestimated." (NYPIRG)

> The costs used for modeling the economic impacts of this facility are not dramatically different than the cost assessments of this project that are found in a recently issued NYPIRG report, "Setting the Record Straight," May, 1992.

COMMERCIAL WASTE

The draft plan does not reflect the recent proposal by the Department of Consumer Affairs to test a system of exclusive franchises for commercial waste collection service. (NY Chamber of Commerce)

> Although this recent proposal is not specifically mentioned in the plan, it is entirely consonant with the recommendations concerning commercial-waste collection that are made.

The discussion of commercial recycling in the plan is vague; the post-collection processing option should be preserved, but more details about the proposal to mandate source separation of high quality paper needs to be provided. (NY Chamber of Commerce; NYCORE)

> The Sanitation Department is in the process of developing this proposed regulation. The proposed regulation will be issued as a draft for a public comment before it is promulgated.

Commercial waste audits should not be made mandatory, nor should trade associations and business groups be responsible for compliance by their members; businesses should be left to determine their own waste prevention measures. (NY Chamber of Commerce)

> Agreed. It is specified in the plan that such trade-association involvement in waste audits would be voluntary. The purpose of encouraging their voluntary participation is to benefit from the expertise and access to organizational networks that they can provide.

The proposal to increase fines against private carters and transfer stations will adversely affect the costs of doing business in the City and eventually will lead to increased costs for customers. (NY Chamber of Commerce)

> The proposal to increase fines is to make commercial recycling fines consistent with other fines that may be assessed by the Department of Consumer Affairs against private carters. This change should have a minimal impact on the costs of doing business in NYC.

COMPOSTING

The plan does not explore the possibilities of marketing New York City compost to neighboring agricultural or horticultural centers. (Messinger)

> Yes it does. See Appendix 4-C.

The proposed yard waste composting facility at the former Edgemere landfill site should be subject to the Uniform Land Use Review Procedure and the Charter-mandated Fair Share Criteria for the Location of City Facilities (C. Shulman)

> An environmental assessment will be prepared for this project. If it is determined that the proposal may involve one or more significant environmental effects, a supplemental site-specific environmental impact statement will be prepared.

Pilot composting programs should be implemented in the near-term to inform decisions about the future development of large-scale composting facilities. (Queens CB7)

> A pilot food-waste composting program is underway in the Intensive Zone in Brooklyn. Leaf-and-yard waste programs have operated for several years, and are planned for expansion to all low-density districts in the City. An on-

site small-scale in-vessel organics facility is being developed on Rikers Island, a cooperative venture between the Sanitation Department and the Department of Corrections.

DREDGE SPOILS

The draft GEIS does not adequately address the issue of dredge spoils dewatering and disposal. (Staten Island citizens for Clean Air)

Appendix 4-K provides an extensive analysis of this issue. The costs and environmental impacts of a dredge-spoils de-watering facility are presented in Appendix Volume 5, and in Appendix 6.

ECOLOGICAL IMPACTS

The draft plan does not assess the ecological impacts of potential waste-management facilities/systems; in particular, it does not discuss the potential effects of air-pollutant deposition on the estuary's ecosystem. (Messinger; Manhattan CB7; NYC Environment Campaign; NYPIRG; Staten Island Citizens for Clean Air)

See response to Bronx Solid Waste Advisory Board comment I.B.8.

ECONOMIC DEVELOPMENT

Economic development initiatives, including incentives for industries to use recycled products, should be included in the recycling program. (Golden; Brooklyn CB6; Lower East Side Coalition for a Healthy Environment)

The plan recommends a number of strategies to overcome impediments to marketing materials that will collected in the recycling program. These include both direct and indirect economic-development incentives. The City is actively supporting federal minimum-recycled-content legislation because potentially this could have one of the most significant and effective market-enhancement effects.

The plan should contain a more aggressive market-development program that involves greater inter-agency/regional coordination. (R. Messinger; S. Shulman; Brooklyn CB6; Manhattan CB7; Environmental Action Coalition; NYC Environment Campaign; NYCORE; RPA)

See revised Chapter 19.

The plan should take into account the City's ability to attract secondary materials processors/remanufacturers with economic incentives. (Manhattan CB2; Staten Island CB1; Morningside Residents Association)

Agreed. See revised Chapter 19.

ENVIRONMENTAL IMPACTS

Since the City's air quality is already degraded and not in compliance with Clean Air Act standards, further air-pollution emissions from new incinerators would be unacceptable. (Glick; S. Silver; Queens Coalition for Political Alternatives)

Levels of few pollutants in the region, if any, bear any significant relation to waste-management sources. Instead, they are the result of other activities. Regulatory steps are being taken to reduce levels of all pollutants that exceed standards or guidelines, and these steps are most appropriately directed toward the activities that generate the greatest volume of these pollutants (e.g., reduction of vehicular emissions for the reduction of nitrogen oxide/ ozone levels). For the criteria pollutant that exceeds federal Clean Air Act standards -- nitrogen oxide (an ozone precursor) -- new waste-management facilities cannot increase existing levels because greater-than-one-for-one offsets will be required; therefore, development of new waste-to-energy capacity can only take place if nitrogen oxide levels are reduced. On balance, the proposed plan will, in relation to available alternatives, minimize adverse effects to the regions environment and economy.

The plan does not assess "quality-of-life" issues. (Manhattan CB2)

See Chapter 17.

The plan should include the "cost" of environmental impacts. (Queens CB7)

This issue is addressed in section 7.5 of the main plan/draft GEIS document.

The GEIS should address environmental impacts on Jamaica Bay. (Bayswater Civic Association; Friends of Rockaway)

Site-specific impacts will be considered during the course of project-specific environmental reviews.

The air-quality-modelling analysis did not take into account background pollutant concentrations. (Consumer Policy Institute)

Background levels are presented in Appendix Volume 6. Incremental contributions to these background levels from the facilities in the proposed plan are generally insignificant.

The draft plan does not conform with the requirements of the State Environmental Quality Review Act (SEQRA) regarding minimization or avoidance of adverse environmental impacts. (NRDC; NYPIRG)

See responses to Bronx SWAB comment II.A

The air-quality-impact analysis in the draft GEIS is inadequate because: (1) emissions estimates are based on a limited, selective database; (2) the assumptions regarding the environmental performance of new and upgraded incinerators are unrealistic; and (3) monitoring data on ambient conditions is outdated and limited. (NRDC; Staten Island Citizens for Clean Air)

See responses to Bronx SWAB comments III.D.2. a,b. and III.D.3.

The plan does not adequately address the Clean Air Act requirements for emissions offsets. (NYPIRG; Staten Island Citizens for Clean Air)

See response to DEC Comments II (Carol Ash letter).

The energy analysis should take into account offsetting environmental impacts from reduced electricity generation. (Staten Island Citizens for Clean Air)

Emission offsets due to decreased use of fossil fuels are discussed in responses to Bronx SWAB comment III.E.1.f.

The estimates of landfill gas emissions are flawed because they do not take into account the total amount of landfilled garbage. A landfill should have been among the facilities for which air-modelling was performed. (Staten Island Citizens for Clean Air)

See response to DEC Comments (Attachment I, V.J.1).

EXISTING INCINERATORS

The three existing municipal incinerators should not be upgraded; they should be shutdown. (Connor; Environmental Action Coalition; Lower East Side Coalition for a Healthy Environment; NYC Environment Campaign)

> The analysis of alternatives in the plan included consideration of the effects of closing down the existing incinerators. It showed that these facilities can provide cost-effective and environmentally acceptable capacity for waste that is not prevented, recycled or composted. The City proposes to upgrade the Southwest Brooklyn incinerator and to close the Betts Avenue and Greenpoint incinerators.~~; a decision on whether to upgrade or close the Greenpoint incinerator will be made in FY '95.~~

An environmental and public health analysis has not been performed to support the proposed upgrade of the existing municipal incinerators. (Consumer Policy Institute; Environmental Action Coalition; NYC Environment Campaign)

> This is not the case. The plan included evaluation of the environmental effects of these facilities individually and cumulatively. These impacts also were considered in the public health assessment. In addition, the proposed upgrade of the Southwest Brooklyn incinerator will be subject to the applicable regulatory review procedures for permitting purposes, which require detailed facility-specific engineering and environmental analyses.

The existing incinerators should be converted to recycling processing centers at a fraction of the cost of retrofitting them with new air-pollution-control equipment. (Consumer Policy Institute)

> These facilities do not lend themselves to efficient and cost-effective conversion to state-of-the-art recycling processing centers. To provide the needed processing infrastructure, the plan proposes the development of new facilities that will be designed to provide the full range of processing capabilities that are needed to maximize material recovery and marketability.

The plan does not examine alternatives to renovation of the existing incinerators. (NYC Environment Campaign)

> The alternative of closing the existing incinerators and either replacing them with new waste-to-energy capacity or not replacing them with waste-to-energy capacity was

examined in the planning process. The economic and logistical impacts of closing and replacing or not replacing these facilities were compared to the costs and logistical impacts of not closing them (see the comparative tables in Chapter 15 and in Appendix 7.1). The air emissions of these facilities are documented in Appendix 6-B; these can be compared to the emissions from new facilities in Appendix Volume 5.

The upgraded incinerators will emit significantly greater levels of pollutants than the proposed Brooklyn Navy Yard waste-to-energy facility. (NYC Environment Campaign)

It is true that pollutant levels from the proposed Brooklyn Navy Yard facility would be even lower. However, ambient concentrations of pollutants produced by the upgraded Southwest Brooklyn incinerator would still be well below all applicable standards and guidelines and would not create pollutant levels of concern from a public health perspective.

The "permitted capacity" of the existing incinerators is unclear. (NYPIRG)

The planned permit application for the upgrade of the Southwest Brooklyn incinerator will be based for 750 tons per day.

EXPORT

The draft plan overstates the risks of a total ban on interstate waste disposal in view of the currently pending Congressional proposals that would allow the imposition of waste-import restrictions. It also does not mention that disposal of commercial waste at Fresh Kills could be discouraged by raising the tipping fee. (Messinger; NRDC; Conrail)

All of the pending legislative proposals are aimed at constraining interstate waste disposal activity; the effect of any such action, however, will not be know until a specific proposal has been adopted. The plan acknowledges that this is a relevant concern in terms of the potential effects on the remaining capacity at Fresh Kills and for purposes of planning needed new waste-management capacity.

The City's policy has been to establish tipping fees at Fresh Kills that reflect the true costs of disposal at the landfill, including an estimate of the depletion/replacement

cost for this finite resource. The effect of this pricing policy over the past several years has been to discourage use of the landfill by private carters who have found less costly disposal alternatives at locations outside of the City.

New York City will have many out-of-state disposal options capable of handling tens of thousands of tons per day available indefinitely into the future. (Conrail)

While this may be the case, it remains one of the City's planning objectives to provide in-city waste-management capacity for the unprocessed residential and institutional wastes that it directly controls. However, ash that cannot be beneficially re-used will be disposed of out of the city.

FAIR SHARE

The plan should take into consideration the Charter-mandated Fair Share Criteria for the Location of City Facilities. (Connelly; C. Shulman; Brooklyn CB6; Staten Island CB1; NRDC; NYC Environment Campaign; Staten Island Citizens for Clean Air)

See response to Bronx Solid Waste Advisory Board comment I.A.1.

The plan should address the existing concentration of waste-management facilities in the Port Morris and Hunts Point sections of the Bronx. There should be a moratorium on further development of waste-management facilities in the South Bronx. (Ferrer)

The plan considered general areas throughout the city that might be potentially suitable for facilities of the types proposed based on appropriate land-uses, transportation access and other relevant siting criteria. Site selection for specific facilities will take place through subsequent environmental analyses, which will include detailed evaluations of the relative environmental, public-health and socioeconomic impacts of alternative sites. In such an evaluation, the density and impacts of existing waste-management facilities in a given area, such as the Port Morris and Hunts points sections of the Bronx, may indicate that other potential locations may be more suitable for a major facility. Given the City's critical need to develop new waste-management facilities and the relatively limited availability of industrial land, however, it would be inappropriate to preclude potentially suitable areas of the

city from consideration prior to the completion of such a detailed evaluation.

Each borough should be responsible for managing its own waste. (Ferrer; G. Molinari; Brooklyn CB6)

There is no operational rationale for adopting this as a planning objective. The primary goal is to minimize environmental and economic impacts overall to the greatest extent practicable, not simply to spread the "burden" in some fashion that may be perceived as equitable. Although the plan recognizes that reducing truck-transport distances is among the factors affecting the efficiency of a waste-management system, other important considerations, such as the uneven distribution of industrial land in the City that is suitable for major waste-management facilities and the advantages of barge transport, should be taken into account.

FRESH KILLS LANDFILL

The plan should include an independent environmental and public health assessment of the landfill. (Cerullo; Connelly; D'Amato; G. Molinari; Staten Island Citizens for Clean Air)

These assessments are part of the extensive ongoing environmental and engineering studies at the landfill that will be used to design mitigation measures and to support the City's application for a permit. Specifically with regard to public health, the Sanitation Department is assisting the City Department of Health in its review and development of relevant data for an assessment of health-related iussues.

The plan should discuss when and how the Fresh Kills landfill will be closed. (Connelly; G. Molinari)

The details of the closure plans for Fresh Kills will be contained in the permit application documents that will be prepared pursuant to the consent order.

The plan mentions but does not address the landfill stability questions. (Connelly)

The investigation of stability issues is one of the ongoing engineering and planning activities related to the design and long-term management of the landfill. As noted in the plan, these investigations are in a very preliminary stage. More in-field monitoring data (which is now begining to be

collected) are required to determine whether, or to what extent, slope stability may be a future concern, and if so, how to appropriately address it.

A percentage of the landfill tipping fees should be dedicated to the costs of remediating environmental conditions at the landfill. (Connelly)

Nothwithstanding the institutional difficulties of trying to dedicate to a specific purpose revenues that now go into the City's general fund, the mitigation/remediation needs at Fresh Kills should not be dependent on such a limited and uncertain source of funding. Sufficient funds are already committed in the City's capital budget for the needed environmental and operational improvements.

The plan should include a detailed discussion of the closure and long-term remediation plans for the landfill. (Connelly; S. Molinari)

These site-specific details will be contained in technical supporting documents that will accompany the City's permit application for the facility.

Given that the the useful life of the landfill is limited, the City could opt to expend this resource now in order to maximize prevention, recycling and composting over the long term. (Messinger; NRDC; NYC Environment Campaign)

The City's proposed plan would "expend some of this resource" by delaying the development of waste-to-energy capacity beyond ~~6,000~~ 3,750 tons per day so that prevention, recycling and composting programs can be developed first.

The plan/GEIS should contain more detailed assessments of the landfill pollutant effects on air quality, water quality, and soil contamination. (S. Molinari)

These detailed assessments are being done as part of the ongoing environmental and engineering studies pursuant to the consent order that are required for the design and implementation of measures to bring the facility into compliance with the applicable environmental standards. Extensive testing and monitoring of surface and groundwater, and soils in and around the landfill is being conducted, and the Sanitation Department is financing a State-directed air-quality study of emissions from the landfill.

The plan relies on the continued availability of the Fresh Kills landfill without taking into account the possibility that Staten Island might secede from the City of New York. (S. Molinari)

> At this stage of the political process, speculation on whether Staten Island will eventually decide to secede from the City, and on the potential affect, if any, that event would have on the future availability of Fresh Kills was not considered to be a meaningful planning consideration. The plan does acknowledge, however, that there are uncertainties beyond the physical limitations that could affect how long Fresh Kills may be available. The plan clearly states that reducing the City's dependence on Fresh Kills, under any circumstance, is a critical priority.

LANDFILLING

Planning for the City's future landfill requirements after Fresh Kills is exhausted should be initiated. (Queens CB7)

> The City's immediate planning priorities are to plan and develop prevention, recycling and composting and waste-to-energy systems to reduce to the maximum extent possible the need for landfill capacity.

MEDICAL WASTE

The proposal to incinerate regulated medical waste that remains after waste prevention and recycling programs have been implemented is unsupported. (NYPIRG)

> A comprehensive analysis and assessment of a full range of management, treatment and disposal options for medical waste is contained in Appendix Volume 8.

NYC WASTEPLAN MODEL

The NYC WastePlan computer model should be fully disclosed. (NYC Environment Campaign)

> A detailed description of the structure and function of the model is contained in Appendix Volume 7.1.

PLAN ALTERNATIVES

A no-incineration plan should be adopted. (Golden; Holtzman; Friends of the Upper East Side Historic District; Lower East Side Coalition for A healthy Environment, Bitzer)

The State Environmental Quality Review Act requires that, overall, adverse environmental and economic impacts be minimized to the greatest extent feasible given the availability of other reasonable alternatives. This clearly requires an analysis of discrete environmental and economic impacts, since (for reasons outlined in the response to scoping comments in Appendix 9-B), these impacts are not usefully "blended" together to provide some sort of overall environmental bottom line weighted average.

The table on page 17.3-19 presents a summary comparison of the discrete quantifiable environmental and economic impacts associated with the four alternative systems and the projected baseline. It shows that the No-Burn System ranks behind proposed Systems A and B in terms of overall system cost, facility acreage required, and positive energy impacts. If jobs in manufacturing industries that use recycled materials are not included in the analysis (on the assumption that most of these jobs, in all likelihood, would occur outside New York City), the No-Burn system ranks behind A and B in job creation; it ranks ahead of A and B in terms of overall job creation when these jobs that are likely to be outside New York City <u>are</u> included. The No-Burn System ranks ahead of A and B in terms of lowest facility air emissions, but behind the projected baseline: both of these rank higher than A and B because they both involve significantly greater degrees of landfilling. This is because, for many of the pollutants considered, Fresh Kills is expected to emit fewer air emissions than would waste-to-energy facilities, although certain pollutants would be emitted in greater quantities. The No-Burn System also ranks higher in terms of minimum waste-transport distances by road.

In addition, there are non-quantifiable impacts that pertain to public policy objectives, all of which are related to the minimization of adverse environmental and economic impacts. The alternative systems are compared along these dimensions in the summary table on page 17.3-20. From these perspectives, the proposed Systems A and B are preferable to the No-Burn System.

A more cost-effective alternative recycling system could be developed using the low-skilled labor of the City's homeless population. (Homeless Organizations Working Group)

Although labor rates might be lower than the City's current union rates, it is unlikely -- according to the analyses presented in the plan -- that the basic system could be designed in a more cost-effective way.

Composting and then landfilling harbor debris wood waste would be "more appropriate" than the proposal to incinerate this material. (Staten Island Citizens for Clean Air)

As indicated in the plan, the bulk of harbor debris wood waste is from the demolition of piers, and it therefore contains significant quantities of preservatives and other contaminants. It is not suitable for producing a high-quality compost product. Moreover, the amount of volume reduction achieved from composting would be less than that achieved through incineration. Incinerating this waste would destroy the organic contaminants whereas composting would not, and landfilling is the least preferable and most costly disposal option. From an environmental and cost perspective, therefore, incinerating this material is the most appropriate alternative.

The plan should not dismiss the potential benefits of kitchen food-waste disposers/garbage grinders until the Department of Environmental Protection has determined whether it is advisable to permit their use in New York City. (In-Sink-Erator)

The conclusion of the plan's analysis of in-sink garbage grinders is that they would increase City waste-management costs significantly, and produce more adverse environmental impacts. The Department of Environmental Protection is evaluating the issue.

PLAN IMPLEMENTATION

The draft plan fails to contain a complete 10-year program for implementing the proposed waste-management system. (Messinger; Manhattan CB7; NYC Environment Campaign)

Chapter 19, the Implementation Process for the Plan, has been has been revised.

The draft plan fails to make clear commitments to a specific course of action; it should be modified to include an implementation schedule with clear programmatic commitments, timetables, expected tonnages, and projected capital and operating costs. (Messinger; NRDC; NYC Environment Campaign; RPA)

See revised Chapter 19.

The draft plan does not adequately address the long-term financing needs of the proposed waste-management system. The City's 10-Year Capital Plan does not allocate sufficient funds to achieve rapid implementation of full-scale recycling and composting programs. The plan should include a detailed strategy for financing all of its components. (Messinger; League of Women Voters; NYC Environment Campaign)

See revised Chapter 19.

The draft plan does not contain a sufficiently detailed description of the administrative structures that will be needed to implement the proposed waste-management system. (Messinger; NRDC)

See revised Chapter 19.

The draft plan does not contain a sufficiently detailed discussion of the legislative changes that would be needed to implement the plan. (Messinger)

See response to DEC Comments (Attachment II #16 and #17).

The plan is not specific enough about potential sites for needed waste-management facilities. (G. Molinari)

It was not the intent of this plan to select sites for new waste-management facilities. Rather, for purposes of evaluating the feasibility of alternative waste-management systems, the planning process took into consideration the availability of potentially suitable areas of the City for the types of facilities that would be needed.

The schedule for full implementation of a citywide recycling program should be accelerated. (C. Shulman; E. Vitaliano; Queens CB7; Staten Island CB1; Independence Plaza Tenant Association; League of Women Voters; Protectors of Pine Oak Woods; Student Coalition for Earth Preservation; Bitzer)

One of the fundamental premises of this plan is that full implementation and standardization of the curbside program citywide is an essential prerequisite for introduction of the types of program reforms and improvements that are proposed. Accelerating the schedule, therefore, is the Sanitation Department's highest priority, but remains a function of the available budgetary resources.

A supplemental site-specific environmental impact statement should be required for any new waste-management uses at the

former Edgemere Landfill site. (Queens CB14; Bayswater Civic Association; Friends of Rockaway, Inc.)

The State and City environmental review procedures require an assessment of potential environmental effects of waste-management, as well as other projects. If the assessment determines that there is potential for significant impacts, an environmental impact statement (EIS) will need to be prepared. The completion of the Generic Environmental Impact Statement on the City's solid waste management plan will simply allow subsequent project-specific EISs to focus on the potentially significant impacts of a major facility siting proposal.

Supplemental site-specific environmental impact statements should be prepared for all new waste-management facility proposals. (Staten Island CB1)

See response above.

The "bottle bill" should be repealed, or at least amended to reduce the burdens it imposes on retailers, wholesalers and distributors. (NY Chamber of Commerce; NYS Food Merchants Association)

The New York State Returnable Container Law has not only proven to be an effective litter-control measure, but has also had beneficial effects on waste-disposal need. The City recognizes that there have been some difficulties with the program's implementation in New York City. These should be addressed legislatively.

The plan should take into account the potential for regional cooperation in waste-management planning and programs. (Messinger; RPA)

The City recognizes the potential for regional cooperation, and is committed to working with the RPA and other regional entities to achieve this potential.

PLANNING OBJECTIVES

In view of the problems associated with the City's existing waste-management system, why is "minimum disruption of existing systems" a stated objective of the plan. (Staten Island Citizens for Clean Air)

Since the existing system is a given, and all future systems must be developed incrementally as modifications of this system, all other things being equal, a system that can be

implemented relatively smoothly is preferable to one that cannot.

PRIVATIZATION

The plan should take into account the availability of excess private waste-processing capacity. (Ferrer; Council of Trade Waste Associations; Environmental Action Coalition; NYCORE; Staten Island Citizens for Clean Air)

> The plan indicates that there is existing private transfer station capacity that is more than adequate for current needs, and that many of these facilities are equipped for at least some degree of recyclables processing. The plan further identifies the amount of capacity and the type of processing that would be required for the City's proposed recycling program. Plans for specific facilities will be the subject of future project-specific procurement, environmental assessment, and permitting processes. It is likely that at least some of the recycling facilities proposed in this plan will be privately operated. Each such procurement will be done on an open, competitive basis. If the operator of an existing private facility proposes the use of such a facility for the City's purposes, and if such a facility meets all of the substantive requirements of the City's Request for Proposals, it could be selected by the City in lieu of a facility newly constructed for this purpose.

Privatization should not be used as a means of bypassing the City's public review processes. (Ferrer)

> Policy judgements will be made on a project-specific basis as to what regulatory review processes are applicable and/or appropriate.

It is unclear from the discussion in the draft plan whether productivity gains would be achieved by privatizing collection services. (Messinger)

> Data in the plan show that private costs and public costs for collection are very similar: hourly rates and benefits are virtually identical, as are vehicle costs. The major difference between current municipal collection costs and private-carter costs is the length of the productive work day (i.e., route length). This issue is being addressed through negotiation with the municipal sanitation union. If it cannot be resolved successfully, private collection services may be an option. Under an efficiently routed

system, private and public collection costs should be quite comparable.

The plan does not contain an economic and environmental analysis of privatization alternatives. (Manhattan CB7; NYCORE; Staten Island Citizens for Clean Air)

The economic analysis is presented in Appendix 4-B.2. It is not likely that there would be any appreciable environmental impacts associated with privatizing the collection system. Environmental impacts for private or public operation of processing and disposal facilities should be the same.

The City should experiment with privatization of the sanitation system. (NYC Environment Campaign; NYCORE)

This is an option that the City has should the current negotiations with the municipal sanitation union not be resolved satisfactorily.

The plan does not address the impacts of new zoning proposals that could have the effect of putting a number of private transfer stations out of business. (NYCORE)

There is excess private transfer station capacity in the city, as documented in the plan. Should some of these facilities be closed in order to comply with new zoning regulations developed to mitigate current nuisances associated with the operation of transfer stations adjacent to residential or lighter industrial uses, this would not be likely to disrupt the city's waste-management system.

PUBLIC HEALTH

The plan does not adequately address the long-term public health effects of incineration. (Connor; Brooklyn CB6; Manhattan CB7)

These impacts have been addressed exhaustively in numerous prior studies. See, for example, the health-risk assessment which was approved by the NYS DEC and NYS DOH in conjunction with the permit hearings for the proposed Brooklyn Navy Yard facility.

The plan does not take into account public health costs. (Manhattan CB2)

Such an analysis is beyond the scope of this generic environmental impact statement.

Health risks should be assessed in relation to "background" public health conditions and not simply as an incremental effect. (Consumer Policy Institute; NYPIRG; Staten Island Citizens for Clean Air)

> Background conditions are considered. See Appendix Volume 6. Incremental contributions to background conditions from the facilities in the proposed plan are generally insignificant.

The public health assessment assumes that existing governmental guidelines for incinerator emissions are adequately protective of public health. (NYPIRG; Staten Island Citizens for Clean Air)

> The standards and guidelines used have built into them substantial margins of safety; for example, the Ambient Guideline Concentrations are based on negligible risk of cancer or other effect from a lifetime of continuous breathing at the location of the maximum effect of emissions. Thus, being below the standard or guideline has always been considered adequate protection in regulatory reviews.

The DGEIS does not fully evaluate the public health or environmental consequences or propose adequate avoidance or mitigation measures for the potentially significant emissions of lead and mercury that are identified. (NYPIRG)

> Projected lead emissions would not add appreciably to ambient levels; the very conservative mercury emissions projected, for reasons noted in the plan (see Chapter 17.1), represent a considerable overstatement of actual conditions.

PUBLIC PARTICIPATION

There has not been sufficient time to for public review of the draft plan. The public comment period should be extended. (Albanese; Connelly; Ferrer; Fusco; G. Molinari; S. Molinari; Staten Island CB1; Staten Island CB2; Staten Island CB3; Environmental Research Foundation; Staten Island Citizens for Clean Air)

> The City is constrained by local and state-mandated submission deadlines, which could not be met if the public comment period were extended. The City was required by contract with the State to submit a draft plan to the DEC by March 31, 1992. Pursuant to State regulations, submission of the draft plan to the DEC triggered various mandated deadlines (see 6 NYCRR Part 360-15). If the City misses any of these deadlines, it risks forfeiting a substantial State

planning grant. Local Law 23 of 1992 also required the City to submit a draft plan to the Council by March 31, 1992, and a proposed final plan by June 26, 1992.

However, the draft plan is the result of a more-than-two-year planning process, during which there was extensive public participation. (See Appendix Volume 9 for a summary of the public participation process, a chronology of when draft documents were distributed, and responses to the public "scoping" comments that were received throughout the development of the draft plan.) In addition, due to the complexity and large volume of technical analyses involved in preparing the plan, a preliminary draft of 12 volumes of technical appendices containing most of the background information and data that supported the plan's development were made publicly available for early review in late February, well in advance of the official certification and distribution of the draft plan/GEIS in early April. Since that time, Sanitation Department representatives have made numerous public presentations on the plan to community boards and borough boards, as well as at other meetings and forums, and five public hearings have been held. In all, the formal public comment period extended for more than 45 days. More than 1000 pages of written comments were submitted by over 100 different interested parties, and several hundred individuals testified at the public hearings.

There should be opportunities for future public input as the plan is implemented and future waste-management decisions are made. (Connelly; G. Molinari; Staten Island CB3)

Supplemental site-specific environmental reviews will be conducted for projects undertaken in accordance with the final plan. When such projects involve one or more potentially significant environmental effects, supplemental environmental impact statements will be prepared. The public will be provided with opportunities to comment on these projects through the environmental review process. In addition, as noted in Chapter 20, the plan will be updated every two years to reflect developments affecting it and the choice of preferred implementation paths. This process too will provide continuing opportunities for public scrutiny of and participation in future waste-management decisions.

The plan should have been made more accessible to the public. (Fusco)

Over 1000 copies of the draft plan/GEIS main volume and executive summary were distributed in early April after the

document was official certified as complete. Copies were sent to every community board, to every New York City elected official, to every member of the five borough Citizens' Solid Waste Advisory Boards (SWABs) and of the Citywide Recycling Advisory Board (CRAB), and to numerous environmental and civic organizations, to local and citywide media, as well as to anyone who requested a copy. In addition, copies were placed in 10 public depositories throughout the five boroughs. Over 100 sets of the 13 volumes of appendices also were distributed; they went to each community board and to each of the depositories, as well as to a number of environmental organizations, elected officials, and agencies.

RECYCLING

Funds allocated to incineration should be diverted to the recycling program. (Feldman; Messinger; Brooklyn CB6; Manhattan CB7; Staten Island CB1; NYC Environment Campaign)

> Recycling is primarily a labor-intensive, not capital-intensive system. The City's capital budget contains sufficient capital funds to build the required recycling infrastructure.

A citywide recycling program should be implemented to determine its effectiveness before any decisions are made to develop waste-to-energy facilities. (Ferrer; S. Molinari; C. Shulman; S. Silver; Brooklyn CB6; Queens CB7; Independence Plaza Tenant Association; NRDC; NYC Environment Campaign; New York County Democratic Committee; Queens Coalition for Political Alternatives; Blais)

> The City's primary solid-waste-management-policy objectives are to reduce reliance on landfilling, to maximize prevention, recycling, and composting, and to develop incrementally the required waste-to-energy capacity for remaining wastes.

The plan underestimates the percentage of waste that can be recycled. The assumptions used to project recycling rates are too low. (Golden; Messinger; S. Molinari; Manhattan CB7; Environmental Action Coalition; NYPIRG)

> The plan does not attempt to <u>predict</u> the eventual recycling rates that would be achieved in New York City when the proposed programs are fully implemented. Instead, starting with data about the composition and generation of waste in the various sectors of the City, and an assessment of the

range of feasible options for collecting, processing and marketing different materials, the planning process entailed a series of comparative analyses of alternative recycling systems to determine their relative costs and environmental effects. For these comparative analyses, a common set of "mid-range" assumptions was used. The resultant diversion rates (the product of assumed participation and capture rates) are considerably higher than the rates from the City's current program and at least equal to the best performance ever achieved in this country, in cities that are less densely populated, and therefore, with less complicated recycling logistics. However, the mid-range assumptions used for analysis purposes do not in any way limit the amount of recycling that may be achieved, but are intended simply to represent reasonable projections of what rates might be most likely.

Higher and lower assumptions also were used to assess whether such variations would affect the relative rankings of the alternatives that were being analyzed. Using more optimistic or conservative assumptions, however, did not affect the basic program design decisions; rather, these different rates simply show how much recycling diversion could be achieved and what the costs of the overall system would be. Clearly, higher recycling rates would mean that less waste would remain for disposal by alternative methods, and the more recycling diversion that is achieved, the less expensive the overall system would be.

The plan does not satisfy the State requirement for maximizing recycling of all materials that can be technically and economically recycled. (Golden; NRDC; NYC Environment Campaign; NYPIRG)

This is not the case. The plan provides a strategy for maximizing recycling and composting and minimizing the use of waste-to-energy facilities consistent with State solid waste management policy.

The plan should include a comprehensive, citywide public education program. (Golden; Manhattan CB7; Queens CB7; Staten Island CB1; Cornell Cooperative Extension; Environmental Action Coalition; Lower East Side Coalition for a Healthy Environment; Morningside residents Association; NYC Environment Campaign; NYS Food Merchants Association; Student Coalition for Earth Preservation)

It does. See the revised Chapter 19.

The plan does not indicate how the requirements of Local Law 19 will be met. (Messinger; NRDC; NYC Environment Campaign)

See the revised Chapter 19.

The plan does not demonstrate that the proposed waste-management system will meet the 40 percent State recycling goal. (Messinger; Manhattan CB7; NRDC; NYC Environment Campaign)

The plan makes no commitments to arbitrary recycling percentages at arbitrary deadlines because these involve a myriad of variables, many of which are beyond the City's control. Instead, the plan lays out an aggressive strategy for maximizing recycling to the greatest extent feasible as early as possible. The projected recycling/composting rate is expected to be about 40 percent by 2000.

The plan does not propose a sufficiently detailed materials marketing strategy, nor does it contain proposals for developing materials processing, remanufacturing and product finishing businesses in the City. (Messinger; Manhattan CB7; Staten Island Citizens for Clean Air)

See the revised Chapter 19.

The assumption in Table 16.2.1-2 that over half of the collected high quality recyclables would not be marketed is unfounded; it does not take into account the potential effects of an aggressive market-development role on the part of the City. (Messinger)

This conservative assumption was made so that potential recycling revenues would not be over-estimated. It had no bearing on program design. One of the fundamental premises of the City's plan is that developing such a supply of high-quality materials is one of the most important steps that can be taken to develop secure long-term markets for these materials -- in conjunction with the aggressive market-development role to which the City is committed.

The plan "does not discuss Sanitation work force gains as they relate to recycling." (G. Molinari)

The City is in the process of negotiating with its Sanitation union to achieve these gains.

The plan erroneously assumes low recycling rates in low-income, high-density neighborhoods. (Manhattan CB7)

Low rates are not assumed. Historically, however, high-density neighborhoods have shown the lowest recycling rates.

The relative effects of income versus density are discussed in response to a comment from the Bronx SWAB (I.A.5.).

The plan does not provide for recycling in public spaces such as subways and parks. (Manhattan CB7)

See the revised Chapter 19.

Credit should be taken for the avoided costs of production from virgin materials in determining the costs of recycling. (Lower East Side Coalition for a Healthy Environment; Staten Island Citizens for Clean Air)

Such an analysis appears in several places in the plan: Section 7.5, in the energy analysis in Chapter 17.1, and in the appendix devoted to energy issues, Appendix 7-F.

The plan should not propose to collect recyclables in plastic bags rather than in rigid bins because participation will be discouraged is residents have to purchase bags regularly, because the bags will add to the waste stream, and because there will be more litter resulting from bag breakage and spillage. (Environmental Action Coalition; Lower East Side Coalition for a Healthy Environment) The use of plastic bags for collecting recyclables should be tested on a pilot basis. (NYC Environment Campaign)

See the response to Bronx SWAB comment III.A.1.b. See, also, the contrary opinions by the Manhattan SWAB's Residential Recycling Subcommittee and by the Inter-Swab Committee on Recycling Markets.

The plan should include an analysis of the savings (or increased costs) of "merging the two current curbside collection systems and targeting the full 77 percent of recyclable and compostable materials" identified in Table 15.1.1-1. (NYC Environment Campaign)

This proposal is that embodied in the proposed "System B," the City's "preferred" system. Its implementation -- since it will require two, two-compartment trucks, and citywide source-separation and composting of residential, institutional, and commercial organics -- is contingent on the successful demonstration of the pre-requisite system components in operation in NYC.

By allowing post-collection separation of commercial waste, the plan does not comply with the source-separation requirements of State law. (NYC Environment Campaign)

See the revised Chapter 19.

The plan should include a discussion of the relative effects on material quality from using compactor or non-compactor collection vehicles for recyclables. (Staten Island Citizens for Clean Air)

It does. Essentially, there is no degradation of quality due to compaction for any type of material -- provided that glass and other containers are kept segregated from dry paper and textiles -- with the exception of glass, a significant portion of which will be broken, and so not able to be sorted by color. (An even greater amount of breakage, however, may be due to the operation of the proposed automatic bag-breakers to tear open the plastic bags in which these recyclable materials will be contained.) Since the City has an adequate market for mixed-color cullet in glassphalt, however, the differential glass revenues are far outweighed by the economic advantages of compacted collection.

SLUDGE

The environmental impacts of using stabilized sludge as a capping material at the former Edgemere landfill should be addressed. (Queens CB 14; Bayswater Civic Association; Friends of Rockaway).

This analysis was done in the Department of Environmental Protection's series of Environmental Impacts Statements for the sludge-management plan.

STATE HIERARCHY

The draft plan fails to conform with the State solid waste management hierarchy. (Messinger; Brooklyn CB6; Manhattan CB7; NRDC)

On the contrary, the plan does conform with the State hierarachy.

TRANSFER/TRANSPORT

Since the plan states that there are sufficient transfer stations in operation to handle the transfer requirements for commercial waste, why does the City not impose a moratorium on new transfer stations in the city? (Brooklyn CB6)

There is an established regulatory framework for reviewing and permitting new transfer-station applications. Since this mechanism is intended to protect city residents from

environmental degradation, the imposition of a moratorium is unneccessary.

Figure 3.2.4-1 depicts the distribution of private transfer stations inaccurately because it does not include transfer stations that are currently operating without a permit. (Brooklyn CB6)

It includes all currently operating transfer stations.

The plan does not account for the impacts of existing transfer stations. (Brooklyn CB6)

The impacts of existing transfer stations are primarily local and site-specific. These impacts will be taken into account in the environmental reviews for any project-specific proposals that emerge from this plan.

There have been significant advances in rail-transport technology since the plan's waste-export study, which can give the City added flexibility in addressing its waste-management needs. The plan should acknowledge the benefits of rail-transport options, including their economic and environmental advantages. (Conrail; NY Cross Harbor Railroad)

The plan does acknowledge the benefits of rail-transport options, including their economic and environmental advantages.

The plan should reflect the fact that daily rail carfloat service is available between Brooklyn and New Jersey at lower cost than trucking bulk items such as MSW and dewatered sludge across the harbor. (NY Cross Harbor Railroad)

This comment is noted. Since the City has no current export plans for its own waste, this will not affect the design of the City's near-term system. To the extent that these economies are significant, however, these rail services may be used increasingly by private carters.

USER FEES

The plan does not adequately address the potential effects of a user fee system on the City's poorer residents. (Messinger; Brooklyn CB6)

This potential effect among others is the reason the plan recommends the need for further study and testing of user-fee systems before any decision to implement such a system for the residential sector is implemented.

The discussion of a proposed user-fee system for the City is not detailed enough. (G. Molinari)

> This is because, for reasons noted in response to the Manhattan SWAB's comment (Inter-SWAB Waste-Prevention Committee, #7), there are many unknowns associated with the imposition of such a system in NYC, which will need to be the subject of pilot-scale tests before any full-scale systems can be implemented.

A waste-management user-fee would be an unfair "hidden tax" and would increase illegal dumping. (Brooklyn CB6)

> In order to prevent these problems, pilot-scale studies must be undertaken before the implementation of a full-scale program.

The development of a quantity-based-user-fee system for the residential and institutional sectors should be pursued. (NY Chamber of Commerce; NYS Food Merchants Association)

> This intent is stated in the plan.

WASTE GENERATION

The waste stream analyses do not take into account waste generated by tourists and visitors. (Manhattan CB7)

> All waste generated in the city is included in the Sanitation Department's generation and composition analyses and projections.

WASTE PREVENTION

The plan does not pay sufficient attention to the benefits of waste prevention. A more aggressive waste-prevention program is needed. (Holtzman; Manhattan CB2; Queens CB7; Lower East Side Coalition for a Healthy Environment; Protectors of Pine Oak Woods; Staten Island Citizens for Clean Air)

> See the responses to the Manhattan SWAB's Waste-Prevention Committee and to the NYS DEC on this issue.

The plan does not demonstrate that the proposed waste-management system will meet the 8 to 10 percent State waste-prevention goal. (Messinger; Manhattan CB7; INFORM; NRDC; NYC Environment Campaign)

> The plan projects the attainment of an estimated 7-8 percent reduction in waste through the implementation of a range of

prevention strategies. However, the lack of program data and experience make it particularly difficult to predict quantitative results. As with the State recycling goal, the City's commitment is to pursue an aggressive strategy of waste-prevention program implementation and further studies of new program concepts to achieve maximum feasible levels of waste prevention.

Waste-prevention plans/proposals are not adequately defined. (Brooklyn CB6; NYC Environment Campaign)

As the plan acknowledges, waste-prevention techniques are the least well understood, tested and documented waste-management option. The approach taken in this planning process was to begin with a structural analysis of the most fundamental barriers to waste prevention so that appropriate and meaningful measures could be identified to overcome them and thereby truly maximize prevention achievements. This analysis (contained in Appendix Volume 4.1) contrasts with the more simplistic approach of compiling an "off-the-shelf laundry list" of techniques used elsewhere, many of which are insignificant in terms of tonnage-reduction achievements, and for most of which the documentation of results is scanty or non-existent. As a result, the plan proposes a set of near-term prevention initiatives that can be readily implemented together with recommendations for continuing study, analysis, testing and monitoring of the most promising concepts that will lead to the development of effective new programs and strategies.

A separate Office of Waste Prevention should be established. (Manhattan CB2)

The Sanitation Department's Office of Recycling Programs and Planning was recently reorganized, in part, to reflect a higher priority effort and commitment to waste prevention. Now known as the Bureau of Waste Prevention, Reuse and Recycling, the unit has been elevated within the Department and is headed by an Assistant Commissioner. The advantages of creating a separate Office of Waste Prevention are not clear.

There should be increased commitments to staff and budget (from a dedicated source such as a portion of quantity-based user fees, environmental taxes, unredeemed bottle deposits) for waste prevention programs. (INFORM)

QBUFs in themselves, as noted in the plan, are a waste-prevention measure. The Sanitation Department's policy is to not use dedicated funding sources for its fundamental

waste-management programs, so that the City's priorities can be appropriately and flexibly balanced over time. Since waste-prevention measures are relatively cost-effective and inexpensive, their funding is not a significant obstacle -- in general, they will pay for themselves.

Waste prevention programs for government agencies, including changes in procurement policies and operating practices, as well as a system of quantity-based user fees, should be developed. (INFORM; Morningside Residents Association)

Agreed. This intent is specified in the plan.

A requirement that businesses and institutions conduct waste audits and prepare waste-prevention plans should be considered. (INFORM)

The plan proposes the encouragement of voluntary waste audits. Since commercial waste generators pay on a volume-basis, they have an incentive to perform such audits in order to reduce waste volume. The plan proposes a program through which generators and carters, with City support, and the documentation provided by waste audits, would share these savings.

Excess packaging should be targeted for waste prevention. (INFORM)

Agreed. This intent is specified in the plan.

Waste prevention should be incorporated into school curricula and operations. The development of a vocational high school that teaches students how to repair equipment that otherwise might be discarded as waste also might be considered to enhance waste-prevention efforts. (INFORM; Bradlow)

This suggestion will be considered in ongoing analyses of waste-prevention opportunities by the Sanitation Department's Bureau of Waste Prevention, Reuse, and Recycling.

The "bottle bill" should not be defined as a waste-prevention measure; strategies for promoting refillable beverage containers should be developed. (INFORM)

This suggestion will be considered in ongoing analyses of waste-prevention opportunities by the Sanitation Department's Bureau of Waste Prevention, Reuse, and Recycling. It is not necessarily the case, however -- given transport requirements -- that this alternative is more

economically or environmentally benign than direct recycling systems.

The plan should include an analysis of the savings that would result from various levels of waste prevention. (NYC Environment Campaign)

This was done. See Chapter 7 and Appendix Volume 7.1.

WASTE-TO-ENERGY

The plan relies too heavily on the development of waste-to-energy capacity. (Connelly; Glick; Golden; Holtzman; Messinger; NYC Environment Campaign; Protectors of Pine Oak Woods; Student Coalition for Earth Preservation)

The plan proposes all practicable measures to maximize prevention, recycling, and composting. The amount of waste-to-energy capacity proposed is to dispose of remaining material that would otherwise have to be landfilled.

Incineration poses unacceptable public health and environmental risks. (Glick; Holtzman; S. Silver)

This is not the case. See, for example, the health-risk assessment of the proposed Brooklyn Navy Yard facility which was approved by the NYS DEC and NYS DOH.

Why does the plan propose the development of a waste-to-energy facility in each borough except Manhattan? (G. Molinari)

Manhattan is the borough which has the most significant siting constraints for large-scale waste-management facilities, such as waste-to-energy facilities.

The technology of incineration is evolving. The plan does not consider new technology. (NYCORE)

All feasible technologies are considered. See Appendix Volume 4.2.

21.2.5 Responses to Comments at Public Hearings Held on May 14, 18, 19, 20, 21, 1992.

ASH DISPOSAL

Sites other than at Fresh Kills should be considered for an ashfill.

The DEIS for the proposed ashfill identifies three alternate sites to the Fresh Kills location which might potentially be feasible: sites at the Edgemere landfill in Queens, near Co-op City in the Bronx, and at the closed Ferry Point landfill in the Bronx. However, instead of building an in-city facility, the City is committed to contracting for out-of-city disposal capacity or having the ash beneficially re-used.

The proposed ashfill at Fresh Kills will last only an estimated eight years. What will be done with incinerator ash after the ashfill is closed?

The City will rely on out-of-city ash disposal or beneficial re-use rather than developing the proposed Fresh Kills ashfill.

BROOKLYN NAVY YARD

The proposed Brooklyn Navy Yard waste-to-energy facility should not be included in the City's plan.

In the evaluation of alternative scenarios for this plan, alternate systems that included and did not include the proposed Navy Yard facility were considered. Overall, systems that included the Navy Yard were preferable from an economic and environmental perspective to systems that did not.

COMPOSTING

The plan does not make specific commitments to the development of composting facilities.

See revised Chapter 19, The Implementation Process for the Plan.

Source-separation of kitchen waste would allow more effective post-collection processing of the remaining waste for recycling.

The plan recommends the phased implementation of a source-separated organics collection.

ECONOMIC DEVELOPMENT

Economic development initiatives, including incentives for industries to use recycled products, should be included in the recycling program.

The plan recommends a number of strategies to overcome impediments to marketing materials that will collected in the recycling program. These include both direct and indirect economic-development incentives. The City is actively supporting federal minimum-recycled-content legislation because potentially this could have one of the most significant and effective market-enhancement effects.

ENVIRONMENTAL IMPACTS

The plan ignores cumulative environmental effects.

See Chapter 17.3.

Since the City's air quality is already degraded and not in compliance with Clean Air Act standards, further air-pollutant emissions from new incinerators would be unacceptable.

Levels of few pollutants in the region, if any, bear any significant relation to waste-management sources. Instead, they are the result of other activities. Regulatory steps are being taken to reduce levels of all pollutants that exceed standards or guidelines, and these steps are most appropriately directed toward the activities that generate the greatest volume of these pollutants (e.g., reduction of vehicular emissions for the reduction of nitrogen oxide/ ozone levels). For the criteria pollutant that exceeds federal Clean Air Act standards -- nitrogen oxide (an ozone precursor) -- new waste-management facilities cannot increase existing levels because greater-than-one-for-one offsets will be required; therefore, development of new waste-to-energy capacity can only take place if nitrogen oxide levels are reduced. On balance, the proposed plan will, in relation to available alternatives, minimize adverse effects to the regions environment and economy.

EXISTING INCINERATORS

The three existing municipal incinerators should not be upgraded; they should be shut down.

The analysis of alternatives in the plan included consideration of the effects of closing down the existing

incinerators. It showed that these facilities can provide cost-effective and environmentally acceptable capacity for waste that is not prevented, recycled or composted. The City proposes to upgrade the Southwest Brooklyn incinerator and to close the Betts Avenue and Greenpoint incinerators.~~; a decision on whether to upgrade or close the Greenpoint incinerator will be made in FY '95.~~

An environmental and public health analysis has not been performed to support the proposed upgrade of the existing municipal incinerators.

This is not the case. The plan included evaluation of the environmental effects of these facilities individually and cumulatively. These impacts also were considered in the public health assessment. In addition, the proposed upgrade of the Southwest Brooklyn incinerator will be subject to the applicable regulatory review procedures for permitting purposes, which require detailed facility-specific engineering and environmental analyses.

The existing incinerators should be converted to recycling processing centers at a fraction of the cost of retrofitting them with new air-pollution-control equipment.

These facilities do not lend themselves to efficient and cost-effective conversion to state-of-the-art recycling processing centers. To provide the needed processing infrastructure, the plan proposes the development of new facilities that will be designed to provide the full range of processing capabilities that are needed to maximize material recovery and marketability.

FAIR SHARE

The Plan should take into consideration the Charter-mandated Fair Share Criteria for the Location of City Facilities.

See response to Bronx SWAB comment I.A.1.

The Plan should address the existing concencentration of waste-management facilities in the Port Morris and Hunts Point sections of the Bronx. There should be a moratorium on further development of waste-management facilities in the South Bronx.

The plan considered general areas throughout the city that might be potentially suitable for facilities of the types proposed based on appropriate land-uses, transportation

access and other relevant siting criteria. Site selection for specific facilities will take place through subsequent environmental analyses, which will include detailed evaluations of the relative environmental, public-health and socioeconomic impacts of alternative sites. In such an evaluation, the density and impacts of existing waste-management facilities in a given area, such as the Port Morris and Hunts points sections of the Bronx, may indicate that other potential locations may be more suitable for a major facility. Given the City's critical need to develop new waste-management facilities and the relatively limited availability of industrial land, however, it would be inappropriate to preclude potentially suitable areas of the city from consideration prior to the completion of such a detailed evaluation.

Each borough should be responsible for managing its own waste.

There is no operational rationale for adopting this as a planning objective. The primary goal is to minimize environmental and economic impacts overall to the greatest extent practicable, not simply to spread the "burden" in some fashion that may be perceived as equitable. Although the plan recognizes that reducing truck-transport distances is among the factors affecting the efficiency of a waste-management system, other important considerations, such as the uneven distribution of industrial land in the City that is suitable for major waste-management facilities and the advantages of barge transport, should be taken into account.

FRESH KILLS LANDFILL

An independent public health study of the landfill should be conducted.

The Sanitation Department is assisting the City Department of Health in its review and development of relevant data for an assessment of health-related issues.

The Fresh Kills landfill should be closed. When is the landfill scheduled to close?

The details of the closure plans for Fresh Kills will be contained in the permit application documents that will be prepared pursuant to the consent order.

The plan fails to address environmental and public health impacts of the landfill.

Detailed environmental assessments are being done as part of the ongoing landfill studies pursuant to the consent order that are required for the design and implementation of measures to bring the facility into compliance with the applicable environmental standards. Extensive testing and monitoring of surface and groundwater, and soils in and around the landfill is being conducted, and the Sanitation Department is financing a State-directed air-quality study of emissions from the landfill. The results of these studies will be contained in the technical reports supporting the City's application for a permit.

The plan does not address how the City's waste-management needs will be met after the Fresh Kill landfill is closed.

The City's immediate planning priorities are to plan and develop prevention, recycling and composting and waste-to-energy systems to reduce to the maximum extent possible the need for landfill capacity.

The plan mentions but does not address the landfill stability questions.

The investigation of stability issues is one of the ongoing engineering and planning activities related to the design and long-term management of the landfill. As noted in the plan, these investigations are in a very preliminary stage. More in-field monitoring data (which is now begining to be collected) are required to determine whether, or to what extent, slope stability may be a future concern, and if so, how to appropriately address it.

A percentage of the landfill tipping fees should be dedicated to the costs of remediating environmental conditions at the landfill.

Nothwithstanding the institutional difficulties of trying to dedicate to a specific purpose revenues that now go into the City's general fund, the mitigation/remediation needs at Fresh Kills should not be dependent on such a limited and uncertain source of funding. Sufficient funds are already committed in the City's capital budget for the needed environmental and operational improvements.

The plan should include a detailed discussion of the closure and long-term remediation plans for the landfill.

These site-specific details will be contained in technical supporting documents that will accompany the City's permit application for the facility.

The plan should not include any proposal for "mining" the Fresh Kills landfill.

> Landfill mining is identified in the plan only as one potential alternative means of developing new landfill disposal capacity. Based on the results of limited pilot tests elsewhere, landfill mining appears to be a promising technique for potential New York City application. However, further studies are required before any commitments can be made to a specific landfill mining project at Fresh Kills.

Why does the environmental monitoring program for Fresh Kills not include groundwater, surface water and soil testing in addition to the proposed air-monitoring system?

> The ongoing environmental monitoring program at Fresh Kills does include extensive groundwater, surface water and soil testing.

The estimates of landfill gas emissions are flawed because they do not take into account the total amount of landfilled garbage.

> See response to DEC Comments (Attachment I, V.J.1).

Landfill odor problems could be alleviated by diverting organic wastes to composting facilities.

> To some extent, perhaps this would be true. However, the City's interest in developing an organic-waste composting program is to divert waste from the landfill that can be managed more cost effectively and with fewer environmental impacts by alternative means.

The plan relies on the continued availability of the Fresh Kills landfill without taking into account the possibility that Staten Island might secede from the City of New York.

> At this stage in the political process, speculation on whether Staten Island will eventually decide to secede from the City, and on the potential affect, if any, that event would have on the future availability of Fresh Kills was not considered to be a meaningful planning consideration. The plan does acknowledge, however, that there are uncertainties beyond the physical limitations that could affect how long Fresh Kills may be available. The plan clearly states that reducing the City's dependence on Fresh Kills, under any circumstance, is a critical priority.

INDUSTRIAL WASTE

The plan should address industrial waste.

Industrial wastes are specifically excluded from the categories of waste required by State law and regulations to be covered in this plan.

MEDICAL WASTE

The Plan does not address the issue of waste reduction in hospitals.

See Appendix Volume 8.

The Plan relies too heavily on incineration for managing medical waste.

A comprehensive analysis and assessment of a full range of management, treatment and disposal options for medical waste is contained in Appendix Volume 8.

The Bronx-Lebanon regional medical waste incinerator should not be permitted to operate.

The planning and permitting processes for that facility pre-date this planning process and were not undertaken by the City. Primary permitting and regulatory authority over that facility rests with the State Department of Environment Conservation.

There should be a full environmental impact study of the Bronx-Lebanon regional medical waste incinerator.

See response above.

PLAN ALTERNATIVES

A no-incineration plan should be adopted.

The State Environmental Quality Review Act requires that, overall, adverse environmental and economic impacts be minimized to the greatest extent feasible given the availability of other reasonable alternatives. This clearly requires an analysis of discrete environmental and economic impacts, since (for reasons outlined in the response to scoping comments in Appendix 9-B), these impacts are not usefully "blended" together to provide some sort of overall environmental bottom line weighted average.

The table on page 17.3-19 presents a summary comparison of the discrete quantifiable environmental and economic impacts associated with the four alternative systems and the projected baseline. It shows that the No-Burn System ranks behind proposed Systems A and B in terms of overall system cost, facility acreage required, and positive energy impacts. If jobs in manufacturing industries that use recycled materials are not included in the analysis (on the assumption that most of these jobs, in all likelihood, would occur outside New York City), the No-Burn system ranks behind A and B in job creation; it ranks ahead of A and B in terms of overall job creation when these jobs that are likely to be outside New York City <u>are</u> included. The No-Burn System ranks ahead of A and B in terms of lowest facility air emissions, but behind the projected baseline: both of these rank higher than A and B because they both involve significantly greater degrees of landfilling. This is because, for many of the pollutants considered, Fresh Kills is expected to emit fewer air emissions than would waste-to-energy facilities, although certain pollutants would be emitted in greater quantities. The No-Burn System also ranks higher in terms of minimum waste-transport distances by road.

In addition, there are non-quantifiable impacts that pertain to public policy objectives, all of which are related to the minimization of adverse environmental and economic impacts. The alternative systems are compared along these dimensions in the summary table on page 17.3-20. From these perspectives, the proposed Systems A and B are preferable to the No-Burn System.

PLAN IMPLEMENTATION

The draft plan fails to contain a complete ten-year program for implementing the proposed waste-management system.

See revised Chapter 19, The Implementation Process for the Plan.

The plan fails to make clear commitments to a specific course of action.

See revised Chapter 19.

PLANNING OBJECTIVES

In view of the fact that a substantial amount of commercial waste is disposed of out of the City, why is "minimum dependence on other jurisdictions" a stated objective of the plan?

> This planning objective is intended to reflect the City's interest in maintaining control over its waste-management future. For the unprocessed residential and institutional wastes over which the City has direct responsibility, it is in the City's interest to avoid the risk of disruptions or uncontrolled costs by planning to provide dependable management systems for that waste. However, the City intends to dispose outside the city ash that cannot be re-used.

In view of the problems associated with the City's existing waste-management system, why is "minimum disruption of existing systems" a stated objective of the plan?

> This planning objective refers only to those elements of the existing system that are, in fact, considered beneficial, in particular the marine transportation system, for which there is an already established and effectively functioning infrastructure.

PRIVATIZATION

Privatization should not be used as means of bypassing the City's public review processes.

> Policy judgments will be made on a project-specific basis as to what regulatory review processes are applicable and/or appropriate.

The plan should take into account the availability of excess private processing capacity for recyclables.

> The plan indicates that there is existing private transfer station capacity that is more than adequate for current needs, and that many of these facilities are equipped for at least some degree of recyclables processing. The plan further identifies the amount of capacity and the type of processing that would be required for the City's proposed recycling program. Plans for specific facilities will be the subject of future project-specific procurement, environmental assessment, and permitting processes. It is likely that at least some of the recycling facilities

proposed in this plan will be privately operated. Each such procurement will be done on an open, competitive basis. If the operator of an existing private facility proposes the use of such a facility for the City's purposes, and if such facility meets all of the substantive requirements of the City's Request for Proposals, it could be selected by the City in lieu of a facility newly constructed for this purpose.

The plan should consider contracting with the private sector for recycling services.

This is an option that is not precluded in the plan.

PUBLIC HEALTH

Health risks should be assessed in relation to "background" public health conditions and not simply as an incremental effect.

Background conditions are considered. See Appendix Volume 6. Incremental contributions to background conditions from the facilities in the proposed plan are generally insignificant.

The plan fails to address the long-term public health effects of incineration.

These impacts have been addressed exhaustively in numerous prior studies. See, for example, the health-risk assessment which was approved by the NYS DEC and NYS DOH in conjunction with the permit hearings for the proposed Brooklyn Navy Yard facility.

PUBLIC PARTICIPATION

There has not been sufficient time for public review of the draft plan.

The City is constrained by local and state mandated submission deadlines, which could not be met if the public comment period were extended. The City was required by contract with the State to submit a draft plan to the DEC by March 31, 1992. Pursuant to State regulations, submission of the draft plan to the DEC triggered various mandated deadlines (see 6 NYCRR Part 360-15). If the City misses any of these deadlines, it risks forfeiting a substantial State planning grant. Local Law 23 of 1992 also required the City

to submit a draft plan to the Council by March 31, 1992, and a proposed final plan by June 26, 1992.

However, the draft plan is the result of a more-than-two-year planning process, during which there was extensive public participation. (See Appendix Volume 9 for a summary of the public participation process, a chronology of when draft documents were distributed, and responses to the public "scoping" comments that were received throughout the development of the draft plan.) In addition, due to the complexity and large volume of technical analyses involved in preparing the plan, a preliminary draft of 12 volumes of technical appendices containing most of the background information and data that supported the plan's development were made publicly available for early review in late February, well in advance of the official certification and distribution of the draft plan/GEIS in early April. Since that time, Sanitation Department representatives have made numerous public presentations on the plan to community boards and borough boards, as well as at other meetings and forums, and five public hearings have been held. In all, the formal public comment period extended for more than 45 days. More than 1000 pages of written comments were submitted by over 100 different interested parties, and several hundred individuals testified at the public hearings.

The plan should have been made more accessible to the public.

Over 1000 copies of the draft plan/GEIS main volume and executive summary were distributed in early April after the document was official certified as complete. Copies were sent to every community board, to every New York City elected official, to every member of the five borough Citizens' Solid Waste Advisory Boards (SWABs) and of the Citywide Recycling Advisory Board (CRAB), and to numerous environmental and civic organizations, to local and citywide media, as well as to anyone who requested a copy. In addition, copies were placed in 10 public depositories throughout the five boroughs. Over 100 sets of the 13 volumes of appendices also were distributed; they went to each community board and to each of the depositories, as well as to a number of environmental organizations, elected officials, and agencies.

There should be opportunities for further public input as the plan is implemented and future waste-management decisions are made.

Supplemental site-specific environmental reviews will be conducted for projects undertaken in accordance with the final plan. When such projects involve one or more potentially significant environmental effects, supplemental environmental impact statements will be prepared. The public will be provided with opportunities to comment on these projects through the environmental review process. In addition, as noted in Chapter 20, the plan will be updated every two years to reflect developments affecting it and the choice of preferred implementation paths. This process too will provide continuing opportunities for public scrutiny of and participation in future waste-management decisions.

RECYCLING

A citywide recycling program should be implemented to determine its effectiveness before any decisions are made to develop waste-to-energy facilities.

The City's primary solid-waste-management-policy objectives are to reduce reliance on landfilling, to maximize prevention, recycling, and composting, and to develop incrementally the required waste-to-energy capacity for remaining wastes.

The plan does not satisfy the State requirement for maximizing recycling of all materials that can be technically and economically recycled.

This is not the case. The plan provides a strategy for maximizing recycling and composting and minimizing the use of waste-to-energy facilities consistent with State solid waste management policy.

The plan does not demonstrate that the proposed waste-management system will meet the 40 percent State recycling goal.

The plan makes no commitments to arbitrary recycling percentages at arbitrary deadlines because these involve a myriad of variables, many of which are beyond the City's control. Instead, the plan lays out an aggressive strategy for maximizing recycling to the greatest extent feasible as early as possible. The projected recycling/composting rate is expected to be in the vicinity of of 40 percent by the year 2000.

The plan does not contain yearly recycling rate projections.

See revised Chapter 19.

The plan does not indicate how the requirements of Local Law 19 will be met.

See revised Chapter 19.

By allowing post-collection processing of commercial waste, the plan does not comply with the source-separation requirements of State law.

The reasons for this, and the benefits of post-collection separation for certain commercial wastes, are identified in the plan, along with a proposal for amending the State law (General Municipal Law section 120-aa) so that the City's Local Law 19 (which allows post-collection separation) conforms to it. A draft bill to accomplish this has been prepared by the City, and is being discussed with the DEC, which is generally supportive of the City's intent. The plan also notes that the City is examining the desirability of extending source-separation requirements to high-grade paper.

The plan should consider the feasibility and potential cost savings of a "blue bag" recycling system involving the co-collection of recyclables and other waste in the same truck.

See response to Bronx SWAB comments (Scenario E).

The plan should include a comprehensive, citywide public education program.

It does. See the revised Chapter 19.

Recycling centers should be established in every neighborhood to reduce the effects of truck traffic.

It is a goal of the plan to make recycling opportunities accessible to all New Yorkers. In recommending an operationally efficient distribution of new recycling facilities, the numbers sizes and general locations were selected to optimize economies of scale, to reduce truck travel distances, and to avoid significant traffic congestion problems.

Funds allocated to incineration should be diverted to the recycling program.

Recycling is primarily a labor-intensive, not capital-intensive system. The City's capital budget contains

sufficient capital funds to build the required recycling infrastructure.

The plan underestimates the percentage of waste that can be recycled. The assumptions used to project recycling rates are too low.

The plan does not attempt to predict the eventual recycling rates that would be achieved in New York City when the proposed programs are fully implemented. Instead, starting with data about the composition and generation of waste in the various sectors of the City, and an assessment of the range of feasible options for collecting, processing and marketing different materials, the planning process entailed a series of comparative analyses of alternative recycling systems to determine their relative costs and environmental effects. For these comparative analyses, a common set of "mid-range" assumptions were used. The resultant diversion rates (the product of assumed participation and capture rates) are considerably higher than the rates from the City's current program and at least equal to the best performance ever achieved in this country, in cities that are less densely populated, and therefore, with less complicated recycling logistics. However, the mid-range assumptions used for analysis purposes do not in any way limit the amount of recycling that may be achieved, but are intended simply to represent reasonable projections of what rates might be most likely.

Higher and lower assumptions also were used to assess whether such variations would affect the relative rankings of the alternatives that were being analyzed. Using more optimistic or conservative assumptions, however, did not affect the basic program design decisions; rather, these different rates simply show how much recycling diversion could be achieved and what the costs of the overall system would be. Clearly, higher recycling rates would mean that less waste would remain for disposal by alternative methods, and the more recycling diversion that is achieved, the less expensive the overall system would be.

The marine transfer stations should be used for recyclables to reduce collection costs by minimizing transport time to recycling facilities.

The use of the marine-transfer system for recyclables is not considered desirable. The process of loading and unloading barges inevitably would increase breakage and contamination of the materials, thus reducing processing efficiency, materials recovery rates and market revenues. However, the

goal of minimizing transport time from collection routes to recycling facilities is embodied in the plan in the form of the wasteshed analysis, which indicates appropriate sizing and geographic distribution of facilities to maximize the operationally efficient of a citywide system.

Recycling facilities should be developed in other boroughs before one is developed on Staten Island.

A contract for the development of the City's first state-of-the-art materials-processing facility on Staten Island has been executed with a leading recycling vendor. Although the Department of Sanitation is now in the process of developing another facility in Brooklyn as well, the Staten Island facility is more advanced and could be in operation in about two years. Given the City's need for processing capacity, there would be no benefit from delaying implementation of the Staten Island facility.

The plan does not mention recycling books and phonebooks.

The plan will be revised to reflect the recent addition of telephone books to the materials collected in the City's current recycling program. Books might be diverted from the waste stream by the proposed auxiliary collection mechanisms identified in the plan: buy-back and re-use/thrift-shop-type centers. However, books are not presently targeted in the curbside collection program because there are no known markets for them.

The plan should not propose to collect recyclables in plastic bags rather than in rigid bins because participation will be discouraged if residents have to purchase bags regularly, because the bags will add to the waste stream, and because there will be more litter resulting from bag breakage and spillage.

See the response to Bronx SWAB comment III.A.1.b. See, also, the contrary opinions by the Manhattan SWAB's Residential Recycling Subcommittee and by the Inter-Swab Committee on Recycling Markets.

The plan does not adequately take into account the effectiveness of community-based recycling.

The plan acknowledges that there is a significant role for community-based recycling programs to supplement the proposed citywide curbside program.

Recycling contracts should be bid competitively.

They have been and will continue to be. The City's established procurement and contracting procedures will be followed.

SLUDGE

The plan should consider alternatives to the disposal of sewage treatment plant screenings at the Fresh Kills landfill.

There is no suitable alternative to landfilling for this material. However, the quantities are quite small in comparison with the other wastes that are landfilled at Fresh Kills.

TRANSPORT

Rail transport is a cost-effective and environmentally preferable means of moving waste that should be included in the City's long-term plan.

The advantages of rail for long-distance hauling are discussed in the plan. Some commercial waste and sludge is currently being exported to out-of-state landfills by rail. However, since one of the City's planning objectives, at least for the waste streams under its direct control, is to minimize the future need for out-of-city capacity by developing new capacity in the City, a specific commitment to the use of rail at this time is inapprorpriate. In the near term, there may be a role for moving recyclables to distant end-users, which the plan does not preclude.

USER FEES

A waste-management user fee should not be a part of the plan because it would be an unfair "hidden" tax and would increase illegal dumping.

In order to prevent these problems, pilot-scale studies must be undertaken before the implementation of a full-scale program.

WASTE PREVENTION

The plan does not pay sufficient attention to the benefits of waste prevention. A more aggressive waste-prevention program is needed.

> As the plan acknowledges, the cost and environmental benefits of waste prevention are quite apparent; the techniques for achieving meaningful levels of waste prevention, however, are less well understood, tested and documented. The approach taken in this planning process was to begin with a structural analysis of the most fundamental barriers to waste prevention so that appropriate, targeted measures could be identified to overcome them and thereby truly maximize prevention achievements. This analysis (contained in Appendix Volume 4.1) contrasts with the more simplistic approach of compiling an "off-the-shelf laundry list" of techniques used elsewhere, many of which are remarkably insignificant in terms of tonnage-reduction achievements, and for most of which the documentation of results is scanty or non-existent. As a result, the plan, proposes a set of near-term prevention initiatives that can be readily implemented together with recommendations for continuing study, analysis, testing and monitoring of the most promising concepts that will lead to the development of effective new programs and strategies.
>
> The plan projects the attainment of an estimated 7-8 percent reduction in waste through the implementation of a range of prevention strategies. However, the lack of program data and experience makes it particularly difficult to predict quantitative results. As with the State recycling goal, the City's commitment is to pursue an aggressive strategy of waste-prevention program implementation and further studies of new program concepts to achieve maximum feasible levels of waste prevention.

WASTE-TO-ENERGY

There should be a moratorium on the development of waste-to-energy facilities in the City.

> None of the analysis results from this comprehensive planning process suggest that there is a substantive basis or rationale for declaring such a moratorium.

Incineration poses unacceptable public health and environmental risks.

This is not the case. See, for example, the health-risk assessment of the proposed Brooklyn Navy Yard facility which was approved by the NYS DEC and NYS DOH.

The plan relies too heavily on the development of waste-to-energy capacity.

The plan proposes all practicable measures to maximize prevention, recycling, and composting. The amount of waste-to-energy capacity proposed is to dispose of remaining material that would otherwise have to be landfilled.

The plan underestimates the costs of incineration.

See responses to Bronx SWAB comments III.B.

Endnotes:

1. The 115m cy capacity depicted represents the theoretical capacity remaining at Fresh Kills as of January 1992; the 100m cy figure assumes that only 85% of that capacity will be usable. The effective density assumptions shown represent the loss of landfill capacity for each pound of waste landfilled, and includes allowances for intermediate cover, final cover, roads, etc., that also exhaust volume. The REMAIN column shows years of landfill life remaining, the DATA column shows the year capacity would be exhausted. (An effective density of 1400 to 1600 lbs per cubic yard represents the most likely range of actual densities.)