P U B L I C H E A R I N G

before

SENATE ENVIRONMENTAL QUALITY COMMITTEE

"Sludge Management in New Jersey: Meeting the deadline to cease ocean disposal; incineration and other land-based alternatives to ocean dumping"

May 21, 1990
Room 407
State House Annex
Trenton, New Jersey

MEMBERS OF COMMITTEE PRESENT:

Senator Richard Van Wagner, Chairman
Senator Paul Contillo, Vice-Chairman
Senator Daniel J. Dalton

ALSO PRESENT:

Patricia Cane
Office of Legislative Services
Aide, Senate Environmental Quality Committee

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Hearing Recorded and Transcribed by
Office of Legislative Services
Public Information Office
Hearing Unit
State House Annex
CN 068
Trenton, New Jersey 08625

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New Jersey State Legislature
SENATE ENVIRONMENTAL QUALITY COMMITTEE
STATE HOUSE ANNEX, CN-068
TRENTON, NEW JERSEY 08625-0068
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NOTICE OF A PUBLIC HEARING

The Senate Environmental Quality Committee will hold a public hearing on:

Sludge Management in New Jersey: Meeting the deadline to cease ocean disposal; incineration and other land-based alternatives to ocean dumping.

The hearing will be held on *Monday, May 21, 1990 at 10:00 a.m. in Room 407, State House Annex, Trenton, New Jersey.*

The public may address comments and questions to Mark T. Connelly or Patricia Cane, Committee Aides, and persons wishing to testify should contact Carol Hendryx, secretary, at (609) 292-7676.

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SENATOR RICHARD VAN WAGNER (Chairman): Okay. I'd like to call this public hearing to order. Unfortunately, we're starting about 15 minutes late. Senator Dalton will be up shortly, as will Senator Contillo.

Let me first outline, very briefly, what the purpose of this hearing is, so that everyone has a clear idea of the direction that -- at least as the Chairman of this Committee -- I would like to see us try to move in. As you know, we have set in New Jersey now, in law, by statute, a deadline under which we in New Jersey intend to come out of the ocean. The purpose of today's hearing is to hear from various panels who will tell us of the various alternatives that are now available so that we can meet that deadline.

We are not proceeding on any assumption whatsoever, at least as far as the Chair is concerned, that there will be an extension of that deadline. The purpose of this meeting is to explore alternatives toward meeting that deadline.

I realize that many may say that's unrealistic, and perhaps so. It is my own considered opinion that in the last several years, at least, we have not explored sufficiently enough alternatives that are available in many cases that are proven technologies and are available to us for the purpose of meeting this important goal of getting out of the ocean.

I'd like to start today with a panel composed of the Clean Sludge Coalition, and that would be: Ms. Cindy Zipf, Dr. Rod Fujita -- if I say anything wrong, please tell me -- Dr. Mel Finstein, and Don Clark. If you would each please identify your connection, and if you have to bring additional chairs up, do so.

C I N D Y Z I P F: Thank you, Mr. Chairman, for holding this hearing, and Senator Van Wagner, I know that you and I have worked very hard together to set the date for this hearing, and to convene this meeting. We're delighted for the opportunity to speak here today.

My job is to give you an overview of the Clean Sludge Coalition and what our task has been, and the issue of sewage sludge as far as the Clean Sludge Coalition is concerned.

What has brought us here, as you so very well know, is a 20-year battle to end ocean disposal of sewage sludge. By the end of this day, over 26,000 tons of sludge will be dumped at the 106-mile sludge dump located off Cape May, New Jersey. New York and New Jersey now dump 9.5 million tons of sludge in this environmentally sensitive, economically important, marine ecosystem. Citizens and legislators have fought to end ocean dumping, and at long last, a New Jersey and a Federal ban will end ocean dumping by New Jersey on March 17, 1991. The question is: Will New Jersey meet the deadline, and what will they do with their sludge?

In early 1989 a core group including local, State, regional, national, and international organizations formed a coalition to insure that New Jersey and New York would meet the deadlines to stop ocean dumping and that the dumpers would implement sound environmental alternatives. In other words, insure that the cleanup of our ocean does not result in the contamination of our air or land. The Clean Sludge Coalition meets monthly to discuss and review alternatives, and briefs interested officials on the issues. The Clean Sludge Coalition held an alternatives conference, and participated in the EPA's Sludge Round Table. The Clean Sludge Coalition has met also with Constantine Sidamon-Eristoff, EPA Region II Administrator, with encouraging support.

New Jersey dumps 34% of all sludge dumped at the 106-mile site. It is 50% of all the sludge generated in New Jersey. The six New Jersey sludge dumpers are: Bergen County Utilities Authority, Joint Meeting of Essex and Union, Linden-Roselle Sewerage Authority, Middlesex County Utilities Authority, and Rahway Valley Sewerage Authority. New Jersey is

now facing the same challenge met by cities such as Philadelphia, Camden, Boston, and many others: What to do with their sludge?

After careful consideration, the Clean Sludge Coalition is convinced that the most viable alternatives for all ocean dumpers is to implement beneficial reuse, not incineration.

As a result of the New Jersey legislation banning the ocean dumping of sludge, the New Jersey Department of Environmental Protection issued a report which described, specifically, what the ocean dumpers were planning to do to cease ocean dumping. New Jersey ocean dumpers have a two-phase plan: The short-term plan, in order to meet the March 17 deadline, and the long-term plan, what they will ultimately do with their sludge. This is a copy of the report, here, that was issued to all of you by the DEP.

The Clean Sludge Coalition finds the report to be shortsighted and unacceptable. New Jersey's waste management hierarchy identifies incineration as a last resort; however, the long-term plans for almost all of the sludge dumpers call for incineration. It is the Clean Sludge Coalition's opinion that a serious examination into beneficial reuse options was not undertaken by New Jersey sludge dumpers, and it seems the New Jersey DEP did not require it. If the proposed plans are implemented, the end of ocean dumping will result in contamination of our air. This is unacceptable, and there are alternatives.

It would be useful for us to briefly review the six ocean dumpers' plans for short-term, and for long-term. The short-term, again, is to meet the March 17 deadline. All but two of the dumpers will rely on out-of-state landfilling. Middlesex County and Rahway Valley are implementing beneficial reuse options for the short-term. Passaic Valley, Bergen, Linden-Roselle, and Joint Meeting, will depend on out-of-state

landfilling. To depend on finding a host state is risky business. It is 10 months until March 17, and none of these dumpers have yet found a willing state. It is possible that they won't find a host state, and there are no backup plans.

As for the long-term, all but Middlesex County plan to incinerate their waste. This option is a grave mistake, both economically and environmentally. Be assured that because of the adverse environmental impacts, incineration will be fought by environmental concerns. The City of Newark already authorized $1 million to fight the incinerator proposed by Passaic Valley.

The best long-term alternative is to implement beneficial reuse. New York City is well on their way to implementing these beneficial reuse options.

Our panel here today brings you the best in sludge: "Everything you wanted to know about sludge, but were afraid to ask." There is nothing scary about sludge. It is a wonderful organic material that is used beneficially in many ways throughout the nation, and it is cheaper than incineration. What makes sludge management difficult is the industrial components dumped by industry into the sludge. Better implementation of the pretreatment program by the dumpers would clean up sludge quickly, and the sludge would meet beneficial reuse quality.

The panel will discuss the concerns of incineration and the merits of beneficial reuse in detail. Dr. Rod Fujita, of the Environmental Defense Fund will discuss the concerns of incineration. Nina Sankovitch, an attorney with the Natural Resources Defense Council will discuss beneficial sludge alternatives used in other cities and what New York has done, the economic merits of its use, and market strategies for this region. Dr. Melvin Finstein, Professor at Rutgers University, is an expert on sludge and will discuss the viability and the

merits of composting. Don Clark, Executive Secretary of the Cornucopia Network will discuss the demand and many uses for sludge composting on land.

The Clean Sludge Coalition is dedicated to environmentally sound land-based alternatives; meaning an end to ocean dumping and the implementation of beneficial reuse.

We call on the Legislature to help insure that cleaning up the ocean doesn't mean contaminating the air. Sludge dumpers can clean up the sludge and implement alternatives.

Specifically we're calling on the Committee to: one, pass legislation to stop sludge incinerators until a thorough review of beneficial reuse options are explored, and two, to require New Jersey DEP to redo its report to the Legislature because it relies on incineration and did not include a thorough, meaningful exploration of beneficial reuse options.

We also look forward to working with this Committee in any way possible to continue our effort to implement beneficial reuse.

I do have several samples here for the Committee to look at: I have sewerage sludge product that's been turned into compost; a pelletizing product called Enviro-Gro; and the third one is Chem-fix, which is a soil product which Middlesex County is going to be implementing.

I'll hand it over now to Dr. Rod Fujita. Thank you very much for the opportunity to testify today.

R O D F U J I T A, Ph.D.: Good morning. My name is Rod Fujita. I'm a staff scientist with the Environmental Defense Fund. I also thank you for this opportunity to present some perspectives on sewage sludge management for New Jersey. I'm a biologist with research experience in geochemistry and ecology. I also serve on the Steering Committee of the Clean Sludge Coalition, have been studying the effects of ocean dumping of sludge on marine life, and have been evaluating land-based sludge management options.

There are a number of strong reasons for putting an end to ocean dumping as soon as possible: One is that it poses a great risk to the marine environment. Another is that it provides little incentive to reduce inputs of toxic metals and organic compounds into the municipal sewage systems. Yet another is that it represents a tremendous waste of nutrients and organic carbon that are ultimately derived from fossil fuels and soils.

Reasonable alternatives will redress all three of these major problems. However, five of the six sewerage authorities which are currently ocean dumping in New Jersey plan to incinerate their sludge. Incineration solves none of these problems. In fact, it brings the risks associated with the toxins of sewage sludge closer to home. Gasification, a new untested technology under consideration by the Passaic Valley Sewerage Commission, may prove to pose less risks than incineration, but fails to address the problems of wasting resources and also fails to provide incentives to reduce toxin inputs.

What are the risks associated with sludge incineration? They include incinerator breakdown, failure of pollution control equipment, large capitalization and maintenance costs, and risks to public and environmental health. Multiple hearth incinerators which are used to burn 80% of the sludge incinerated in the U.S. are notoriously unreliable. The effectiveness of state-of-the-art, and even conventional air pollution equipment has yet to be demonstrated.

These incinerators are also extremely energy intensive, requiring between $1200 to $7700 per dry ton in energy costs. They perform very badly when used intermittently, for example in communities with no capacity to store sludge. Fluidized bed incinerators, the other major technology available, produces large amounts of particulate pollution which damage air pollution equipment. They are also

subject to jamming problems and breakdowns in temperature control which also have adverse effects on pollution control equipment. The very fine particulates produced by incinerators capture organic toxins and metals and make them more available to people's respiratory systems, resulting in chronic bronchitis and aggravating asthma and emphysema, particularly in children, smokers, and the elderly.

Sludge incinerators produce significant amounts of dioxins and furans, among the most toxic compounds on earth. The combined effects of air pollution control failures and the emission of toxic, extremely fine particles, enhances the risks that dioxins and furans will enter food chains or be inhaled directly. Sludge incinerators also produce sulfur dioxide, nitrogen oxides, and carbon monoxide, which, of course, exacerbate existing air pollution problems in New Jersey.

Because public opposition to incineration is strong throughout the State, Passaic Valley is considering gasification as an alternative. First and foremost, we should recognize that this technology has not been tested at the municipal scale. Although gasification appears likely to result in low sulfur dioxide, nitrogen oxide, and carbon monoxide emissions, we simply do not know what other products may be emitted. Like incineration, gasification is essentially a disposal technology and wastes the nutrients and organic matter that New Jersey soils are starved of. Likewise, gasification, like incineration, requires very high initial investment. Sewerage sludge has a much higher value when converted into a soil amendment than when it is used to produce energy.

Gasification and incineration share another serious shortcoming. They both detract from the need to reduce the loadings of toxic metals and organic compounds in the municipal systems. Sewerage plants appear to be a major source of

volatile organic carbons or VOCs, and airborne toxic compounds, emitting more than 10,000 tons of VOCs per year in the New York/New Jersey region.

The entire State of New Jersey has large areas which are out of compliance with the Clean Air Act for ozone. Large reductions in VOCs, NO_x, and airborne toxins will be needed to attain compliance. Therefore there is a pressing need to control VOC and airborne toxic emissions from sewage plants. Strong incentives should be provided to sewerage authorities to enforce pretreatment laws and to industries to reduce the amounts of toxins they use in industrial processes. However, technologies such as incineration and gasification are perceived to be able to destroy and stabilize toxins. Even though this perception is false, it removes incentives to cut toxin inputs. Municipal waste incineration detracts from recycling and source reduction in much the same way.

If beneficial use is a top priority for the management of sewage sludge, as it should be, then clearly, incineration and gasification should receive low priority. Incineration and gasification are essentially ways to dispose of sludge and do not provide any beneficial use. They pose substantial risk to human health by exacerbating air pollution problems and introducing new toxins into the environment. They waste nutrients and organic carbon that should be returned to the soil.

So let's talk about some real solutions to the problems posed by ocean dumping, not technology that will just perpetuate and add to them. Thank you very much.

I'd like to introduce Nina Sankovitch from the Natural Resources Defense Council.

SENATOR VAN WAGNER: Could I interrupt for about 30 seconds? Senator Rice is here. He did want to address the Committee on this issue. He has to go on to another committee

of which he is a member, the Budget Committee, so if you would, I would like to have him give his testimony, with your indulgence. Senator?

S E N A T O R R O N A L D L. R I C E: Thank you, Mr. Chairman. Let me just thank the speakers also for being so kind. I'll be very brief.

Just sitting here listening to the speakers who have just previously spoken, I don't disagree that there must be alternatives evaluated to address this sludge situation. Certainly the economics of the whole situation are going to have to be looked at from an objective and reasonable perspective.

I just want to go on record to say that this issue is not going to go away just at this hearing, and there are those who will be hearing from me later. I just hope that representing one district -- Passaic Valley happens to be one of the authorities in my area, along with Joint Meeting -- that we have no problem with alternatives. The concern is what it is going to cost, and how do we reach those solutions? I just don't want legislators and special interest groups in this State not to be cognizant of the needs of others in this State.

It disturbs me to read in the South Jersey press when folks tell us that they really don't care about my district. It's not a district issue, sludge; it's a people issue, a statewide issue. It's a taxpayers' issue. I'm asking that whatever we come up with in terms of a compromise, that everybody be looked at as a State, as a whole, as one united New Jersey. I just wanted to indicate that there was a real tug of war about approving $100 million to clean the ocean up, but I voted in the affirmative on that. I wasn't happy doing that, but I didn't see it as a district need. I saw it as a New Jersey need, and a people's need.

The people I represent don't go to the beach that much. They can't afford to. There are beach fee concerns

right now that are going to impact on people whom I represent. There was talk in the past, and there was legislation in the past of taxing the hotels in my city at a time when Newark and other communities around me, Elizabeth etc., were trying to grow economically. Newark had a 6% sales tax, and all of a sudden the State wants to tax every hotel with the revenues going directly to clean the ocean. The point I'm making is that when we look at the cleanup of sludge, we need to look at the economic impact with this billion-dollar State deficit and make certain that all of us are given a reasonable opportunity to address it.

Finally, I want to say that under the former administration, communications with the State DEP and others as they relate to the authorities -- particularly in my area -- have not been the best. I can recall many times calling the State and writing the State about answers to questions. You know, Passaic Valley said, "Well, can we do A, B, C, or can we not do A, B, C?" They just wanted a yes or no answer to move forward. We could not get that. I hope that this administration is more sensitive to strict communication, constant communication, if we are to address this problem in a reasonable amount of time.

I just want to go on record to make those factors known. My gut feeling is that most of the speakers here are going to be speaking on alternatives and what happens if you can't meet those alternatives by certain deadlines, etc. If they are going to speak, I just want to make sure that we are including the process of recognition, because the greatest impact economically on this sludge piece, as it stands right now, is going to be in the area that I represent in terms of dollars. Believe me, Newark cannot go beyond its $16 tax rate this year that we are projecting without some State help.

I just want to thank you once again for giving me the opportunity to have a few words to say for the record. I can

assure this Committee and those who are here that they will hear from me again on this issue unless we can come to some compromising solution to the problems that impact on the people whom I represent.

Thank you very much.

SENATOR VAN WAGNER: Thank you, Senator. Nina?

N I N A S A N K O V I T C H, ESQ.: Hi. Thank you for this opportunity to speak this morning.

SENATOR VAN WAGNER: Just so everyone knows, unless there's a question from the Committee, we're just going to proceed and listen, okay?

SENATOR DALTON: Mr. Chairman, if I could just-- For all the speakers, through you, we have a deadline that's nine-and-a-half months away. I would hope that what we would hear is viable alternatives -- viable alternatives that can be implemented in nine-and-a-half months.

SENATOR VAN WAGNER: Yeah, I thank you for saying that, Senator. It's helpful to know of the shortcomings of many of the alternatives. It is better for us to know the longcomings of those that we can put into place. The objective of this hearing is what we are going to do. Thank you, and I see that you've covered that in your testimony, which I am happy to see, thank you.

MS. SANKOVITCH: My name is Nina Sankovitch. I am a coastal attorney with the Natural Resources Defense Council in New York City. NRDC is a member of the Clean Sludge Coalition.

The State of New Jersey has placed beneficial reuse alternatives for sludge management at the top of its sludge management hierarchy, consistent with its solid waste management hierarchy. Disposal of sludge through incineration is at the very bottom of the hierarchy. Beneficial reuses include:

* The direct application of wet sludge or dewatered sludge to agricultural land, forest land, or land requiring revegetation, such as strip mines.

* The use of composted sludge and pelletized sludge on farmlands as well as on sod farms, nurseries, public parks, golf courses, cemeteries, university lands, and airport lands.

* The use of composted sludge as landfill cover or to establish vegetation after a landfill has been closed.

Sludge contains exactly those components and nutrients needed by soil to retain moisture, slow the release of nutrients and metals, improve soil aeration and texture, and support those soil microbes which protect plants from disease and enhance plant nutrient uptake. In short, these materials, which include organic carbon, nitrogen, phosphorus, and potassium, enhance overall plant growth while maintaining soil quality.

Beneficial reuse of sludge is a viable alternative for the New Jersey ocean dumpers both in the short-term, and in the long-term. For all the current ocean dumpers, with perhaps the exception of Linden-Roselle, a strengthened pretreatment program whereby industries are prevented from discharging heavy metals and other toxics into the sewer lines, could quickly and easily result in sludge that is clean enough to meet even the strictest New Jersey regulations for land application. Linden-Roselle may take a little longer to clean up, but again, it is possible. Beneficial reuse is something that is possible in the short-term for all six dumpers.

In addition to being environmentally sound, beneficial reuse makes economic sense. For example, a 1988 study performed for Nassau County, New York, demonstrated that in-vessel composting averages a cost of $300 to $400 per dry ton; pelletizing averages $400 per dry ton; while incinerating averages $700 to $800 per dry ton.

Forty percent of the sludge produced nationwide is beneficially reused through land application and through distribution and marketing of sludge compost or fertilizer products. Over 115 municipalities nationwide compost their

sludge, including: Phoenix, Philadelphia, Seattle, Denver, Los Angeles, and Washington, D.C. Municipalities that pelletize their sludge include: Milwaukee, Hartford, Connecticut, Youngstown, Ohio, and very soon, Boston.

Both composting and pelletizing facilities produce soil conditioner or fertilizer products. These products have been successfully marketed by municipalities around the country, lowering costs even further.

For example, in Milwaukee, 160 dry tons are thermally dried per day, producing a pellet fertilizer called Milorganite. Milorganite generates approximately $5 million per year in revenue. Milwaukee had to aggressively market its sludge, first offering it to anyone who would come get it and then raising the price as interest in the product grew.

In Montgomery County, Maryland, the sewerage authority's in-house marketing staff began marketing their sludge compost at trade shows, offering it at a very low price. Today, most of their product is bought in bulk by landscapers, with the remaining sold under the name, "Compro." Compro has proved so popular there is a waiting list for customers.

A thermal drying facility in Georgia produces sludge pellets that have been so successful as a fertilizer that the product has been patented. The producers keep high quality as the priority, with the result that although no profits are turned, all operating costs are covered.

Successful marketing of sludge produces not only steady customers and lower operating costs, but serves the much needed role of educating the general public about sludge and the many benefits of its use. An informed public will more readily accept the siting of sludge processing facilities and will stop discharging household hazardous wastes down the drains in the interests of producing quality sludge products.

New York City is currently investigating alternatives for sludge management, finding itself under the Federal deadline for ocean dumping. The City has hired a consultant and initiated an in-depth review of the quality of its sludge, the methods of managing sludge, the potential for marketing sludge products, and the potential concerns the public has regarding sludge.

Twenty-three tasks are involved in coming up with New York City's long-term plan for sludge, including a two-volume report on alternatives to sludge management. This report identifies everything from gasification to composting to post lime stabilization to biobricks -- sludge bricks used in construction. This report also evaluates potential markets for sludge, and finds that among New York City controlled markets, in such uses as daily cover for municipal landfills, airport use, and use in City parks, twice the volume of sludge compost that New York City could produce would be utilized. This amount is just below twice the volume of the sludge produced by all six New Jersey ocean dumpers. Private markets in the New York metropolitan area, such as nurseries, golf courses, cemeteries, landscapers, and farmers could double the amount demanded. This report didn't even look at the private and public markets in central, western, and southern New Jersey.

In addition to these 23 tasks, New York City will set up demonstration projects, -- a composting project will begin this summer -- has set up an active Citizens Advisory Committee, and has set up an active Technical Advisory Committee made up of experts in beneficial reuse management of sludge from around the country, including Milwaukee, Boston, and Los Angeles.

In contrast, the six current New Jersey ocean dumpers have displayed little imagination and even less concern for the public interest in developing sludge management plans by quickly settling on first landfilling and then incinerating

their sludge. Only Middlesex County, with its plan to chemically fix its sludge for use as landfill cover, and more recently, Rahway, with its plan to pelletize its sludge in the short-term, have demonstrated any awareness of the beneficial uses of sludge and the economic value of sludge as a product. The other ocean dumpers persist in viewing sludge as a waste to be disposed of.

There are steps that can be taken by the New Jersey Legislature that could turn these recalcitrant dumpers around and get them looking into beneficial reuse alternatives.

First, legislation could be passed requiring the six ocean dumpers to perform a complete review of alternatives to ocean dumping, including analysis of environmental impacts, economic costs, public acceptance, and long-term operating feasibility. This review would enable the dumpers to make an environmentally and economically sound decision for long-term management of sludge on land, and would allow both the Legislature and the public to understand and endorse the final sludge management plan.

Second, the Legislature could require the Department of Environmental Protection to actively oversee and coordinate the review of alternatives undertaken by the ocean dumpers, with the goals of:

a) ensuring compliance with the solid waste managaement hierarchy of New Jersey:

b) facilitating the use of sludge on land through the various permitting processes;

c) developing public education literature; and

d) coordinating implementation efforts of the ocean dumpers.

In addition, DEP should be required to take an active role in developing public markets for the sludge; for example, utilizing sludge compost on parklands and airport lands.

Finally, the Legislature could require DEP to hold public hearings and allow for a public comment period on the long-term sludge management plans. The plans should be subject to approval by the Legislature, with a report to be submitted to the Governor.

Thank you for this opportunity. I now introduce Dr. Melvin Finstein, of Rutgers.

SENATOR DALTON: Mr. Chairman, through you--

SENATOR VAN WAGNER: Yes?

SENATOR DALTON: The testimony that you outline lays out a number of things that we should be doing. We face a deadline of March 1991 -- nine-and-a-half months. Do you propose that we are able, as a State, to effect, or to implement to: A) study and investigate, and B) implement this by the March 1991 deadline?

MS. SANKOVITCH: Well, what has to be done by the March 1991 deadline is the ending of ocean dumping, which means that an interim plan has to be produced for all six ocean dumpers by that time. Rahway, just in the last couple of months, changed its course and has decided to pelletize its sludge. That decision could be made by Passaic Valley. Sludge is clean enough at this time to be pelletized as a fertilizer and for the other ocean dumpers. For Linden-Roselle only, is that a problem.

Now, this process that I've outlined, of doing a review of all alternatives, is primarily for the long-term plan. That could be done now. They aren't planning on beginning their incinerators until 1996 or '95, so this alternative review process is not something out of this world. It is something that could be started now so that their long-term plan is environmentally sound. The interim plan, hopefully, will also be environmentally sound, but the important thing is to meet that deadline and get them on a good course for the long-term plan.

SENATOR VAN WAGNER: I don't think you answered his question. We understand that. What we are saying from a practical point of view-- Perhaps you're not the person we should ask, but we're asking, is it possible, long-term, short-term, or interim, to, in fact, begin to implement the kinds of suggestions you made within a three-, six-, eight-, or nine-and-a-half month period?

MS. SANKOVITCH: Yes, it is.

SENATOR VAN WAGNER: And have them in place at that point in time--

MS. SANKOVITCH: Yes, it is. Middlesex--

SENATOR VAN WAGNER: --so that the major portion of this material is, in fact, being disposed of in a safe alternatively, environmentally sound fashion?

MS. SANKOVITCH: Yes.

SENATOR VAN WAGNER: Yes?

MS. SANKOVITCH: Middlesex County is already on its way to using it beneficially in the short-term. Rahway, as I said, made its decision in the last two months to do that. That same decision could be undertaken by the other ocean dumpers without any financial loss, without any problem with their sludge quality. The only exception, as I say, is Linden-Roselle. So the short-term date can be met in an environmentally sound way by the five other ocean dumpers, if they choose to do so. It's feasible.

SENATOR VAN WAGNER: Senator Contillo?

SENATOR CONTILLO: I heard you just say that the sludge from the Passaic Valley sewer is currently clean?

MS. SANKOVITCH: According to their own data, that they've shared with us.

SENATOR CONTILLO: Okay. That's in conflict with the information that they've given me. The problem that they are having -- which seems to impede all the processes -- is that their sludge has to be pretreated before it comes to them.

Until that happens, until the sludge that goes into the sewer system is pretreated, it's not going to be safe to dump it in the ocean, it's not going to be safe to compost it, and it's certainly not going to be safe to burn it. It seems to me whatever solution we come upon, it's going to require extensive, expensive, and time-consuming pretreatment.

Now, I sat through this hearing a number of years ago. Those who were pressing for this March 17 deadline -- and I voted against it, by the way -- said to me, "We know that that's not going to happen. All we want to do is, when the Federal deadline is over and when New York gets out of the ocean, that New Jersey should also get out of the ocean, but unless we hold your hand to the fire, you won't get out at the Federal date."

I told you at that time that once you put that date in place, no one's going to back off of it. We have an artificial date now that's different from New York's, and my understanding was that -- you're from New York, aren't you? -- that New York has entered into some consent agreements with EPA to extend further down the road, and they've given you a plan. But again, this isn't going to work unless they pretreat. Now they have imposed enough time in here--

You know, it seems to me if we're going to go and take our sludge from this area and ship it to another state-- It's environmentally unsound to dump that sludge in the ocean. We all agree with that. But it's just as environmentally unsound to put that sludge in the ground in another state. Just because it's not our State, doesn't mean it's okay to do it. The only problem with that is, we spent $100 million just to ship it out for the year, and the next year, and the next year. Shouldn't that money be better spent on developing pretreatment? Shouldn't that money be better spent to say, "Extend the ban," at least to match the Federal ban, and let

them use that money, and take it from the users of the system, increase their fees, and make them pretreat, because until you pretreat, you can't compost?

MS. SANKOVITCH: You raised a number of points, and first I would like to say that I completely agree. Pretreatment is essential, but as you yourself just said, the cost of pretreatment should be borne by those who are dumping their waste into the sewer lines, and there should be a stronger pretreatment program. That does require money, but the data that Passaic Valley has shared with us has shown that their sludge is clean. Today they're--

SENATOR CONTILLO: Do you have that with you?

MS. SANKOVITCH: I don't have that with me, but Sheldon Lipke is here and he can--

SENATOR CONTILLO: Because I have seen data contrary to that.

MS. SANKOVITCH: Well, we have been shown data-- We have been told by Mr. Lipke that their sludge is clean, so--

SENATOR CONTILLO: I don't accept that. I reject that.

SENATOR VAN WAGNER: Well, they're here, so we can hear--

MS. SANKOVITCH: They're here, so we'll find out what the truth is on that. Pretreatment can bring about changes within nine months if it's a strong pretreatment program. To say extend the deadline, I don't think will work, because again, you're giving them more time, and they'll just wait up to the last minute as they've done before.

As far as New York City's consent decree, it's the same process that New Jersey entered into, a consent decree. New York City will dump until June of 1992, but for the six months after the dumping deadline they'll pay the very high penalties that are in the Federal Act.

SENATOR CONTILLO: But that money is then turned back to them for mitigation. That was the stupidity of this State,

putting an artificial date down that our fines will not be used for mitigation if we were to-- We can't even enter into an agreement with them because we have an artificial State--

MS. SANKOVITCH: But the amount of sludge that New York City has to work with is equal to all amounts of the six ocean dumpers here. So, their task is actually monumental, and their sludge from some treatment plants is quite dirty. So their task in many ways is much more difficult than that facing each of the individual six ocean dumpers in New Jersey.

SENATOR DALTON: Why would you say that?

MS. SANKOVITCH: Because they have 14 treatment plants, they come up with as much sludge as all six New Jersey dumpers do. Many of the treatment plants come up with a sludge that is very dirty that will have to be cleaned up, and they have a small area in which to site facilities. So they have a more difficult problem.

SENATOR DALTON: I guess one of the key issues on pretreatment is everyone seems to have a different perspective. You're sitting here saying that every authority save one in our State can go ahead and can move into alternatives almost immediately, and the information that Senator Contillo gets, and we get individually, doesn't corroborate that fact, so that's number one.

Number two is that if you have a nine-and-a-half month deadline, are you going to impose a successful pretreatment program during that interim period of time, and also implement it, and then also implement alternatives?

They're the big questions out there. They're, obviously, more than the million dollar questions that we are wrestling with right now.

You seem to hold New York out as a model. I would reject that, period.

MS. SANKOVITCH: In terms of how they're running their program this time around, they've involved the public. They've

asked for help from other cities which have done beneficial reuse with urban areas with dirty sludge which had to clean up their sludge. In that sense I'm holding them out as models.

SENATOR CONTILLO: And when will they be out of the ocean?

MS. SANKOVITCH: In June, 1992.

SENATOR CONTILLO: June, 1992? Again, have they not entered into consent agreements with the EPA to extend past that date?

MS. SANKOVITCH: No.

SENATOR CONTILLO: They have not?

MS. SANKOVITCH: No.

SENATOR DALTON: That's 15 months after we're out of the ocean.

SENATOR CONTILLO: Again, contrary to what I've heard.

MS. SANKOVITCH: Right. We have someone here from EPA who can talk about the decrees. I have personally seen the data of Joint Meeting of Essex and Union--

SENATOR DALTON: Did you go in front of New York and say that they should be out by March of 1991?

MS. SANKOVITCH: That wasn't the date they agreed to in their consent decree.

SENATOR DALTON: Did you ever press for that before a Federal agency or before a state agency in New York?

MS. SANKOVITCH: We pressed that they meet the Federal deadline.

SENATOR DALTON: That's ironic because folks are here pressing us to go March 1991, prior to the Federal deadline. The real irony is, then you're saying they have 15 months more, and you're holding them out as a model, and we're scurrying.

MS. SANKOVITCH: I believe that their tasks, again, are different in terms of the amount of sludge that they have to work with and the different plants that they have. If you were to take each New Jersey ocean dumper as itself, and each

ocean dumper were to investigate alternatives and enforce a pretreatment program, many of the problems that we're talking about here wouldn't be problems. There is someone here to testify today who is a private composting firm. There are a lot of firms like that out there which can take sludge and turn it into a beneficial product.

SENATOR VAN WAGNER: Why don't I make a suggestion, because we understand that we're talking about beneficial reuse? As you can see, there are members of the Committee who perhaps took some issue with whether or not we should have New York City as our model, which is obviously a sore point. So, rather than belabor that, why don't we move on to Dr. Finstein, and see what he has to say, and then we can get on with--

M E L V I N S. F I N S T E I N, Ph.D.: May I use this?

SENATOR VAN WAGNER: That is not a loud speaker microphone. It is a public record microphone.

DR. FINSTEIN: Fine. Thank you very much, Senator Van Wagner. I have submitted a package of scientific and technical reprints that will support my testimony today.

As a professor in the Department of Environmental Sciences at Cook College, Rutgers University, it is especially gratifying for me to testify before this Senate Committee. Our department at Rutgers was, in fact, established by an Act of the New Jersey State Legislature. This was in 1920, some 70 years ago. As such, our departmental program is the first of its kind. All would agree in 1990 that this was a farsighted legislative act. A little bit of that history is documented in one of the reprints that I submitted.

I joined the department some 25 years ago, as a professor. My own scientific discipline is microbiology. Early on, I was attracted to the investigation of the unusual microbial ecosystem commonly called "composting." This quest, pursued through field and laboratory research with a number of valued coworkers, has proved very rewarding. Few things could

be more rewarding and satisfying than to get to understand the inner workings of a complex, yet in some ways simple, ecosystem; the composting system. This is hinted at in a recent summary report which you have a copy of entitled, "Activities on Composting as a Waste Treatment Technology," written by invitation of a prominent waste management journal.

To some extent, this information has been applied to the pressing problem of sludge management to good effect, and I will develop that specific case shortly. At the same time, there is a serious -- a most serious gap between what is understood at the practical working level, and what is usually done in practice; that is, how to design and operate a sludge composting facility to get the job done at a minimal construction and operating cost with the most rapid possible construction and which leads to the prevention of odors among other necessary operational factors. This is very well understood.

Although this understanding inexorably enters into practice, it does so at an agonizingly slow pace. In fact, there is a serious gap between science and practice in this field of composting, which I shall return to shortly.

I hope to explain how composting could make a decisive contribution to the realization of the intention embodied in both State and Federal laws.

To avoid some confusion that has already crept into the discussion, at this point I should clearly distinguish between composting, and compost. I would make the distinction between the process and the process residue; between the verb and the noun. All waste treatment processes, whether physical, chemical, or biological result in residues.

SENATOR VAN WAGNER: Doctor, could I ask you a question? Would you mind if I asked you to do something?

DR. FINSTEIN: Not at all.

SENATOR VAN WAGNER: We have a long list of people and I would like to get to the specific areas of recommendation. I don't mean to interrupt you or shorten--

DR. FINSTEIN: Well, I'd be willing to do that, Senator. I will comment that a big problem that has gotten us to where we are today--

SENATOR VAN WAGNER: All right. You may crystallize on that, if you would?

DR. FINSTEIN: A big problem, and where that has gotten us into the jam that we're in today, is a neglect of the scientific underpinnings of the technology that people would use. I will jump immediately to a case in point.

SENATOR VAN WAGNER: Say that in a more--

DR. FINSTEIN: I will develop it this way: The Sussex--

SENATOR VAN WAGNER: Let's say I was out on the stump and I was sitting in front of an audience, and I was to say to them, "Here's the basic problem." Explain it to me as you just put it.

DR. FINSTEIN: Well, we're not out on a stump and I was hoping for a more considered evaluation, but let me develop the case of--

SENATOR VAN WAGNER: You'll get a considered evaluation.

DR. FINSTEIN: --the Sussex County Municipal Utilities Authority. The Sussex County Municipal Utilities Authority constructed a composting facility that came into operation in mid-1984. I was completely unaware of this facility at the time. It had six troubled months of operation. It failed outright in January of 1985. It was shut down. The symptom of that failure was odor.

We then became involved through the insistence of a private citizen, not through the regulatory process, and then through a request of the Board of Freeholders of Sussex

County. We set up, as a public service, a demonstration of a rational composting process, design and operation, which is not part of the establishment system or the regulatory system.

SENATOR VAN WAGNER: Why would you say that?

DR. FINSTEIN: Well, that's a question-- Allow me to finish the development.

Basically what this amounted to was that we educated the personnel at the facility as to the cause and effect relationships which govern the behavior of the composting system. They did not understand these relationships prior to that period.

The personnel were then in a position to reconstruct-- This happened to be a structurally simple facility. They were then in a position to reconstruct that facility in-house, rather cheaply, to bring it into operation; to partially bring it into a rational condition, start up their facility, and they did so in mid-1986.

SENATOR VAN WAGNER: So, what you're saying, in essence--

DR. FINSTEIN: The facility--

SENATOR VAN WAGNER: --is that your research led you to believe that it was a behavioral, or a structural management problem, rather than necessarily a technological problem?

DR. FINSTEIN: Well, as I was hoping to develop, the composting microbial ecosystem works or does not work based on the activity of the microbes, on the decomposition of the sludge.

The New Jersey State guidance in this area is thoroughly confused, and that leads to a minimal rate of activity, where what you want is a maximal rate. Sussex County was brought to the point -- was brought from a minimal rate of activity to a moderate rate of activity. That earned them an EPA award in 1988.

SENATOR VAN WAGNER: What do you mean by, "rate of activity"?

DR. FINSTEIN: Sludge composting works by having the indigenous microbes decompose the waste. The rate at which this decomposition takes place determines the difference between failure, success, and mediocre performance. Unless the system is designed and operated to foster maximal rate of activity, it drifts toward a minimal rate. How to make it operate at a high rate is very well understood, very well proven in routine practice in some places, and in fact, leads to facility design that is cheap in terms of construction, in terms of operation, and in terms of the time required to build the facility.

Among other things, we have put these matters into a document, and you have a copy of this.

SENATOR VAN WAGNER: Would you say that again in a-- Micro-- What is that called?

DR. FINSTEIN: Composting is a microbial system. The workers are microbes, indigenous microbes, the same kind of organisms that are found in garden soil.

SENATOR VAN WAGNER: So, bear with me, okay?

DR. FINSTEIN: Yes, by all means.

SENATOR VAN WAGNER: So you understand how my considered evaluation comes about, okay?

DR. FINSTEIN: Yes.

SENATOR VAN WAGNER: In other words, by introducing certain kinds of processes into a system, the sludge materials are broken down so that they become basically, less harmful?

DR. FINSTEIN: Let's take this example: With a well designed facility--

SENATOR VAN WAGNER: Well, let me finish now. The rate or speed of that activity is what--

DR. FINSTEIN: Yes, that's correct. The rate is the critical factor -- the rate of activity, the rate of microbial decomposition.

SENATOR VAN WAGNER: Microbial decomposition?

DR. FINSTEIN: That's correct. There are hundreds of considerations in the design of a composting facility. The key consideration is the rate of microbial decomposition, which has simply been ignored by the regulatory system and by the consulting industry, with some rare exceptions.

SENATOR VAN WAGNER: Okay. Go ahead.

DR. FINSTEIN: Now, given a facility which can be built rather quickly and rather cheaply, given a facility which pushes toward a maximal rate, the following can be accomplished: Let's say we come in with 100 pounds of sludge cake, as produced at the sewage treatment facility. In approximately 10 days of composting in a properly designed facility, you end up with 30 pounds of dry, stabilized, sanitized, processed residue. This is done by decomposing exactly the kinds of materials you want to decompose in the sludge, the putrescible materials, and, to a significant extent, industrial organic compounds. The decomposition of these materials in a properly designed composting facility drives the vaporization of water. You do not burn fossil fuel. You do not put it into what I would call biodegradable cement. You decompose the organic material at the expense of the water in the sludge, which is a major part of the problem.

So, you come in with 100 pounds of sludge cake; you come out with 30 pounds of processed residue which is stabilized, sanitized, and dry. That does not mean that you have 30% of the problem left over, because the 30 pounds of the processed residue is storable, transportable, and amenable to final disposition.

SENATOR VAN WAGNER: How do you get the 100 pounds of dry cake?

DR. FINSTEIN: Well, that's before the composting operation. All of the facilities, no matter what--

SENATOR VAN WAGNER: Is that after you dewater?

DR. FINSTEIN: Yes, mechanical dewatering; belt filter presses, usually.

SENATOR VAN WAGNER: Oh, okay.

DR. FINSTEIN: Mechanical dewatering, that's correct. This is a precursor to almost any of these processes.

SENATOR CONTILLO: Could I ask the professor a question?

SENATOR VAN WAGNER: Yes.

SENATOR CONTILLO: How do the microbes react to the arsenic, and the cadmium, and the chromium, and the copper, and the lead, and the mercury?

DR. FINSTEIN: The dirtiness of sludge is irrelevant to composting. The microbes are not affected whatsoever. The presence of these materials has a strong bearing on how sludge can be used, how it should be used, how it should not be used. The presence of these metals is irrelevant to the processing. The composting system is extremely resilient.

SENATOR CONTILLO: But the residue still has these items in it?

DR. FINSTEIN: Well, the residue will have metals in it. It probably will not have industrial organic compounds.

SENATOR CONTILLO: But, I read you a list. I read you a list. Those items on the list will remain in more concentrated form as a percentage of the compost than it was in the original--

DR. FINSTEIN: That's correct.

SENATOR CONTILLO: But isn't that really the problem we have? If it wasn't for the presence of these metals -- or whatever they're called, we could probably dump the material on the ground or burn it or put it in the ocean without major problems to the environment.

DR. FINSTEIN: No, sir. No, sir. The presence of these metals is a universal problem. Regardless of what you do with the sludge, whatever technology you use, in whatever

manner the final residue is disposed of, these metals are a problem. I'm very glad to learn that there are significant strides being made in the rebuilding of these metals.

SENATOR CONTILLO: Pretreatment?

DR. FINSTEIN: Pretreatment, and probably a better term is, "pollution prevention."

SENATOR CONTILLO: That's correct. We are involved with that also.

DR. FINSTEIN: But the presence of the metals is irrelevant to the composting. It's no more relevant to the composting than it is to the incineration. I mean, just simply the process, it is not relevant. It is highly relevant to the residues, whether those residues be emissions in the atmosphere, whether those residues be biologically stabilized residues, or heat-dried residues, which are obtained through--

SENATOR CONTILLO: Would these metals not prevent the use of the residue as fertilizer?

DR. FINSTEIN: Yes, they would, but I don't think-- You see, that's part of the problem of confusing composting with compost. The purpose of setting up a sludge composting facility is not to produce fertilizer, sir.

SENATOR CONTILLO: It's to reduce the volume.

DR. FINSTEIN: The purpose is to stabilize the sludge, which includes volume and mass and pathogen reduction, that's correct. All technologies leave you with residues that must be managed, and composting is no exception. The strength of composting is how it stabilizes the sludge so effectively if the facility is properly designed; cheaply, efficiently. That is the strength of composting.

The ultimate disposition of the residue-- I'm afraid that this term, "beneficial use," can become a slogan that can obscure the rather important details. For example, a very beneficial use of composted process residue would be as material for the final cover of landfills. We have no end of

landfills in this State needing final cover. Now that is quite a different beneficial use than putting it on agricultural land.

I think that no sludge derived product, compost or otherwise, should be indiscriminately or even put on food chain crop lands. There are plenty of other uses. I would keep it out of food chain crop lands, whether it's heat dried, whether it's composted, or whatever the use is. So these are separate issues that simply have to be disentangled, or otherwise the evaluation cannot go forward in a considered manner.

SENATOR VAN WAGNER: Doctor, I wonder if I could ask you to sum up? The panel's been on for an hour.

DR. FINSTEIN: Yes.

SENATOR VAN WAGNER: We do have a lot of people who are waiting to testify.

DR. FINSTEIN: Yes, well--

SENATOR VAN WAGNER: The DEP has arrived. The EPA is here. We have some people from--

DR. FINSTEIN: Well, I did hand out a number of reprints.

SENATOR VAN WAGNER: Yeah, we can--

DR. FINSTEIN: I do have a copy for each of you of an op-ed article in The Trenton Times, of December 8, 1987, that I wrote pointing out one aspect of the difficulty with the DEP guidance in this area. This is available to all of you.

SENATOR VAN WAGNER: Okay. I'd like to get their view now, and then we can--

DR. FINSTEIN: Sure, I would end up by saying that we did-- One of the documents that you have is entitled the following, sir. It is put out by the Rutgers Cooperative Extension, Publication E-136: "Elements of a Request for Proposal -- RFP -- for Sludge and Municipal Solid Waste Composting Facilities, Scientific and Technical Aspects." We wrote this-- This is based on a body of undisputed scientific and technical literature. The purpose of this document was to

give the raw ammunition to authorities to devise their own scientifically and technically valid RFPs for composting facilities. This is the point at which the system currently fails. The RFPs that go out, to the extent that they go out for composting facilities, are devoid of scientific and technical content. Hence the initial failure at Sussex, and it was the science and technology that resulted in the turnaround at that particular facility.

Thank you very much.

SENATOR VAN WAGNER: Would you remain, though, because--

DR. FINSTEIN: Yes, I certainly will.

SENATOR VAN WAGNER: You should know -- anybody who is here today -- that I hope to develop a continuum of dialogue through a working committee type of system which will ultimately bring together what we are talking about today.

I may disagree with you, necessarily, on your legislative recommendations because I don't think they are going to be necessary. I think we can accomplish that which is in those without fighting the battle of whether we can require somebody to do something.

I'd like to ask the DEP if they would come forward now -- I think that they have arrived. And perhaps joining them in order to, unless he feels uncomfortable-- I understand the DEP is here?

A S S I S T A N T C O M M. J O H N S. K E I T H: Yes.

SENATOR VAN WAGNER: If you would come up. Would you mind if you were joined by Mr. Bruce Kiselica? He's with the Ocean Program Section, Region II of the U.S. EPA.

ASSISTANT COMMISSIONER KEITH: Certainly.

SENATOR VAN WAGNER: And maybe he can come forward. You can bring a chair up, if you like. What I am going to try to do is consolidate as much as possible so no one is precluded from getting their remarks in, but at the same time--

Okay, let me first-- This is John Keith, right--

ASSISTANT COMMISSIONER KEITH: Yes.

SENATOR VAN WAGNER: --Assistant Commissioner for Environmental Management and Control. And, is it Kiselica? Is that pronounced right?

B R U C E K I S E L I C A: That's correct.

SENATOR VAN WAGNER: And you are?

H E L E N P E T T I T: Helen Pettit. I'm Chief of the Bureau of Pretreatment and Residuals.

SENATOR VAN WAGNER: Okay. You did not hear some of the testimony that came from the first panel that testified, and I must apologize to Mr. Don Clark, who is here. Don, you will get an opportunity. I just wanted to get some dialogue.

Summing up: It has been stated -- not in any accusatory fashion -- but just simply stated that we here in New Jersey, and particularly the DEP, have not moved aggressively enough in areas such as pretreatment, and have also not provided, perhaps, some guidance to the six authorities which are required to meet these deadlines, for them to implement other than incineration and gasification programs.

That is not to put you on the defensive. As I said, it was not said in an accusatory fashion at all; just simply stated. And that the areas of the beneficial reuse of sludge as alternatives to ocean dumping really have not -- from a process point of view, management point of view, and a technological point of view -- been sufficiently explored.

You're on.

ASSISTANT COMMISSIONER KEITH: I would like to address-- Again, my name is John Keith, Assistant Commissioner for Environmental Management and Control. I'd like to address four different areas in my testimony today.

The first is some comments on the general departmental policies, specifically as they relate to the beneficial use and reuse of sludge. Second is a status report, more or less, on

where the six authorities that dump sludge in the ocean are and what their plans are. The third is comments about pretreatment programs specifically related to the six authorities. And the fourth is some comments about alternatives and technologies, or the technology options available, and some comments about the advantages and disadvantages of those.

The Department policy on sludge management as defined in the Solid Waste Management Act, it mandates, to the extent possible, the beneficial use and reuse of sludge. That was reiterated on the November 4, 1987 promulgation of the New Jersey Statewide Sludge Management Plan. Our basic set of priorities within the Department at this time -- and I won't speak for all time past; this is for this time -- for sludge management is: First, that we must eliminate ocean dumping, and we cannot extend the March 17 deadline. Second, that landfill disposal of sludge is an unacceptable practice for the long-term, and it should be related to only emergency or overriding circumstances; it's not a long-term option. Third, that the hierarchy that's to be followed for sludge management -- very similar to the hierarchy that we would expect for solid waste -- is first to improve quality and reduce quantity, second to recycle and extract some sort of value from the product, and third is to market the product in a reusable fashion. And finally, as the last alternative, incineration or land disposal; land disposal, as opposed to beneficial use as fertilizer -- land disposal being landfilling.

That is consistent, as I say, with our solid waste hierarchy. It is the Department's policy that New Jersey should be self-sufficient in sludge disposal as well as waste management. We cannot continue to rely on out-of-state alternatives that in the long-term could leave us with no options if other states figure out ways to exclude our sludge and waste. I think that's well known enough that we don't have to go into that.

New Jersey has had a beneficial use initiative for some time. In 1985 we became the only State to embrace the beneficial use concept in adopting, on March 15 of 1985, the concept that land disposal -- landfilling, I should say -- is for emergency and overriding uses only. The Sludge Management Plan in 1987 initiated a program to require long-term sludge planning for all new or expanding treatment plants incorporating the beneficial use hierarchy that I mentioned before. Since that time we have had a number of specific accomplishments for beneficial use projects, such things as the Camden County Municipal Utilities Authority in-vessel composting project, and a similar one for the Musconetcong Sewerage Authority. We've instituted reed beds -- which is a land disposal type alternative, where the reeds eat the sludge -- at a number of small facilities throughout the State. There are a number of other projects where we've actually demonstrated that we can reuse the material.

The status of the six ocean dumpers, the six utilities where sludge continues going in-- First, the Department has entertained, and will continue to entertain and evaluate, alternatives other than those specifically proposed and on the books at this time by the authorities. However, that being said, we cannot entertain any plans that would extend ocean dumping.

SENATOR VAN WAGNER: Do you have an ongoing proactive, management program for technically assisting the six authorities in reviewing the alternatives that they can explore, and a fast track process for approval?

ASSISTANT COMMISSIONER KEITH: Since there are six authorities, we are dealing with them. You know, we don't have a huge unit--

SENATOR VAN WAGNER: Do you have that, what I just asked you about?

ASSISTANT COMMISSIONER KEITH: Yes.

SENATOR VAN WAGNER: Do you have it?

ASSISTANT COMMISSIONER KEITH: Yes, but let me go into it. Perhaps the first example is Bergen County. Their interim program is for dewatering and then hauling to an out-of-state landfill. They have proposed to go into a joint venture with Passaic Valley. There are problems with Passaic Valley that I will get into when I talk about them.

SENATOR VAN WAGNER: How far along is that in terms of the agreements, and what steps are you taking to solve the problems?

ASSISTANT COMMISSIONER KEITH: Bergen County originally proposed to have on-site dewatering at their facility in Little Ferry. They signed an agreement to accomplish that.

SENATOR VAN WAGNER: Right.

ASSISTANT COMMISSIONER KEITH: Sometime last fall they decided at their own option that they wanted to explore a joint venture with Passaic Valley.

SENATOR VAN WAGNER: Right.

ASSISTANT COMMISSIONER KEITH: At that point they slowed down, or ceased work on their original alternative of sludge centrifugation at Little Ferry and fell behind in their milestones. We have recently had a number of meetings with Bergen County to see what we are going to do about this. The problem has arisen that there is a serious air emission problem with the Passaic Valley Sewerage Authority. There Zinpro, a sludge management process, is a major contributor of volatile organic substances in the State, to the tune of 1100 to 1300 tons per year. It's a very large number.

SENATOR VAN WAGNER: Who is this?

ASSISTANT COMMISSIONER KEITH: Passaic Valley.

SENATOR VAN WAGNER: Who is contributing?

ASSISTANT COMMISSIONER KEITH: Pardon?

SENATOR VAN WAGNER: Who is contributing to that problem, did you say?

ASSISTANT COMMISSIONER KEITH: The Passaic Valley Zinpro sludge.

SENATOR VAN WAGNER: What is that, again?

ASSISTANT COMMISSIONER KEITH: Zinpro, a wet air oxidation sludge process.

SENATOR VAN WAGNER: Zinpro?

ASSISTANT COMMISSIONER KEITH: Right. It's a technology.

SENATOR VAN WAGNER: Okay. And that's creating an air emissions smell.

ASSISTANT COMMISSIONER KEITH: That device oxidizes sludge, reducing the volume of it, but in the process it generates a lot of volatile organic substances which are currently discharged to the atmosphere after limited control. Passaic Valley installed--

SENATOR CONTILLO: They approved this?

SENATOR VAN WAGNER: Yeah, I was going to say, how the hell did they get to that point?

ASSISTANT COMMISSIONER KEITH: Let me give you the background; let me give you the background.

SENATOR VAN WAGNER: Would you mind telling me how they got to the point where they got a system--

ASSISTANT COMMISSIONER KEITH: Certainly.

SENATOR VAN WAGNER: --that created a bigger problem than the system they had? You know, I'm curious.

I'm sorry for the use of the word hell, but I'm-- I'll tell you why. I'm getting frustrated. I'm hearing the problem restated. I know what the problem is. I've lived with it for 16 years, okay? I've been through more hearings than most people in this room, as have the other members. But what I would like to know is: One, you apparently approved this process yourself. I don't know? Perhaps you didn't know it was going to create that problem when they started, and I'm sure the Authority didn't know it. So now that you have the problem, can you fix it?

ASSISTANT COMMISSIONER KEITH: Okay. Let me--

SENATOR VAN WAGNER: I'm sorry. I don't mean to get on you, Mr. Keith. I realize that you're the deliverer of the message, but now you have this problem. Can it be fixed, or are you going to break up the joint venture?

ASSISTANT COMMISSIONER KEITH: Let's talk about it, okay?

SENATOR CONTILLO: They're going to break up the joint venture. That's what they're going to do.

SENATOR VAN WAGNER: Okay, so Bergen is going to go on their own, and they have a dewatering process that will begin.

ASSISTANT COMMISSIONER KEITH: May I discuss exactly what's happening here?

SENATOR VAN WAGNER: Okay, go ahead. I'm sorry.

ASSISTANT COMMISSIONER KEITH: In 1984 the Zinpro system was approved by the Air Permit Section and everyone else within the Department, employing activated carbon as the best available control technology. The activated carbon didn't work like everybody thought it would -- everybody, including the Department. They have made a lot of changes to try to improve it; but it still doesn't work.

SENATOR VAN WAGNER: Okay. There it is, right there.

ASSISTANT COMMISSIONER KEITH: So, Bergen County now wants to add sludge to Passaic Valley--

SENATOR VAN WAGNER: Which would exacerbate--

ASSISTANT COMMISSIONER KEITH: --which would aggravate the emission problem.

SENATOR VAN WAGNER: Okay, that's good. Okay, fine.

ASSISTANT COMMISSIONER KEITH: In summary, we would aggravate the emissions problem, potentially as much as 100 to 130 tons per year.

SENATOR VAN WAGNER: So, have you recommended that Bergen County go back on track with their dewatering process on their own?

ASSISTANT COMMISSIONER KEITH: We have been meeting with Bergen County. We have told them that because of the air emission problem at Passaic Valley, we cannot approve the joint venture in its current form. We have also committed to Bergen County that we will work with them on any alternative that is viable, and we are currently working towards an agreement that is acceptable to all, to bring them on track for March 17.

SENATOR CONTILLO: Except, there's another system at Passaic Valley. I think it uses a centrifugal system.

ASSISTANT COMMISSIONER KEITH: Centrifuges, correct.

SENATOR CONTILLO: Which they put into place because it was a better system or a more modern system which, by the way, they put into place without being prodded by the Department, and now they have capacity in the new system and the old system. And I understand that Passaic Valley has permission to use the old system because that was their permit. Now what they are doing is cutting down what they are using in the old system and using the new and more modern system. If Bergen puts their drop or two in the bucket, which is infinitesimal in comparison to the volume, it uses more of the old system and not the new system, and that's where the rub is.

ASSISTANT COMMISSIONER KEITH: Yeah. What it comes down to is, one of the alternatives to reduce the existing air permit violation with this Zinpro system is to use the Zinpro less and use the centrifuges more. If Bergen County sludge, which would represent roughly 6% of the total amount of sludge from Passaic Valley-- If that sludge were to be brought down, then the amount of sludge that could be transferred from the Zinpro to the centrifuges would be less, and that difference -- the amount less -- would be 130 tons.

SENATOR VAN WAGNER: Okay, I got the point. I got the picture.

ASSISTANT COMMISSIONER KEITH: Okay. It's complicated.

SENATOR VAN WAGNER: You see, I would uncomplicate it, very frankly. I would go back and I would say, "Okay, now that we've run across this difficulty, let's go back and redo our management model. Let's still concentrate and focus on these six authorities, because that's what we have to be concerned about in New Jersey, relative to this. Let's see how we can, in each case, help them to reduce the amount of material that they are going to have to deal with ultimately, if not completely reduce it to zero if that's possible, so that they can meet the mandated deadline."

SENATOR CONTILLO: Senator, this whole process is simply a dewatering process. Am I correct?

ASSISTANT COMMISSIONER KEITH: That's correct.

SENATOR CONTILLO: And in all this--

ASSISTANT COMMISSIONER KEITH: This is the interim solution. This is still an interim solution.

SENATOR CONTILLO: This permits them to spend maybe $100 million a year to take this poisonous material and bury it in the ground somewhere.

ASSISTANT COMMISSIONER KEITH: We'll have to qualify the word "poisonous," and we'll get into that in a little bit.

SENATOR CONTILLO: Categorize it as you want, I pride myself on not being a technical fellow.

ASSISTANT COMMISSIONER KEITH: But you're right. Centrifuging solidifies--

SENATOR CONTILLO: Squeezes out the water a little bit.

ASSISTANT COMMISSIONER KEITH: --reduces the volume, and the interim plan for Bergen County and Passaic and for every utility except Middlesex, is to haul the material out-of-state to landfills.

SENATOR CONTILLO: But the material is just as toxic as when it starts.

ASSISTANT COMMISSIONER KEITH: That's correct.

SENATOR CONTILLO: But it's even more concentrated now, right?

SENATOR DALTON: We've been told -- through you, Mr. Chairman -- by previous speakers that what we can do in this State, is that we can remove the toxicity via a pretreatment program. We can implement much better reuse alternatives, develop and implement those reuse alternatives, all within a nine-and-a-half month period. Do you agree with that?

ASSISTANT COMMISSIONER KEITH: I would like to get into that in more detail in a few minutes. Yes, we do have-- Part of the handouts before you, discussing pretreatment and the option of land treatment, and what the difficulties are--

SENATOR VAN WAGNER: Before you do that, maybe I can take it one step further, Senator.

SENATOR DALTON: Do you agree with that?

ASSISTANT COMMISSIONER KEITH: Can we achieve that within nine-and-a-half months?

SENATOR DALTON: Yeah.

ASSISTANT COMMISSIONER KEITH: I think it would be extraordinarily difficult. There are some major obstacles that need to be overcome, and I would like to discuss them further.

SENATOR VAN WAGNER: Well, let me also add something to that: It has also been stated that the primary reason why we have reached this dilemma is that we have focused too much attention, to a large extent, on the dewatering process and the process of reaching the interim solution, and not enough on the process of dealing with the pretreatment arguments. We have not moved aggressively enough in that area. That's the second part of that.

ASSISTANT COMMISSIONER KEITH: I would agree that we need-- And I will confirm that when we get into the slides, that further emphasis on the pretreatment is definitely required.

With Bergen County, therefore, we are trying to get back on track with dewatering, and then the interim measure is

to-- Since there is an interest in it, why don't I go straight to the pretreatment. You might already know the status of the six authorities.

SENATOR CONTILLO: Is that in your handout anywhere, what you're going to talk about?

ASSISTANT COMMISSIONER KEITH: The status?

SENATOR CONTILLO: No, the pretreatment.

ASSISTANT COMMISSIONER KEITH: The status is in there. There is a series of slides in the handouts that I would like to get into. They're the extended page.

SENATOR VAN WAGNER: Slides, did you say?

ASSISTANT COMMISSIONER KEITH: I'm sorry. Handouts.

What we have on the legal sized paper -- and there are six of them -- is a history of the metals concentration for each one of the six authorities now discharging into the ocean. What you can see on each of them, is that over time there has been, in many cases, a very significant reduction in the metals concentration in the sludge. I should add that the major problem with the toxicity in the sludge currently relates to the metals concentration. There is also, of course, concern about things like PCBs and organic substances, but metals are the major problem, particularly the major problem relating to land reuse options.

Underneath each graph on this handout are two notes. There is a Class A limit and a Class B limit. Those refer to class of sludge as they relate to land use alternatives. The State requires to consider a land application, that all sludge meet at least Class B sludge criteria. In each case at the current time, the authorities have at least one metal that is over this limit. That is a significant problem. If we want to go to land disposal, we need to have further pretreatment alternatives to take care of these metals -- concentrations. I should add that incineration does not remove metals; it just moves it from one place to another. And composting does not

remove metals either; it stays there. There is no effective way to remove the metals from sludge except to take it out at the source; that is, where it's coming from -- upstream from the sewage treatment plant.

SENATOR VAN WAGNER: Is that-- That can be done?

ASSISTANT COMMISSIONER KEITH: That can be done, and I think the graphs here demonstrate that it is being done. If you look at the first one for Bergen County, you'll note that in the last several years there's been a dramatic reduction in the chromium concentration. The land application standard is 1000 milligrams per kilogram. Bergen County, in 1989, is down to 216.

SENATOR CONTILLO: Why would the arsenic be up so much?

MS. PETTIT: The arsenic reflects a laboratory problem. The detection limit at the lab they were using was too high, so whatever the arsenic value was, it was below that. We have since returned to Bergen County and have required them to use a better detection limit.

SENATOR CONTILLO: So, that's a reflection of a better testing technique?

MS. PETTIT: No.

ASSISTANT COMMISSIONER KEITH: We believe there's problems with the testing in there, that they can't measure down to a low enough concentration. We can't say what it really is. They're correcting the problem. They're using a better laboratory, or a better laboratory procedure. Hopefully that will show that the concentrations are, in fact, a lot lower.

SENATOR VAN WAGNER: Let me ask Mr. Kiselica: Do you, as a Federal administrator, set any of these controls, or is this basically State initiated?

MR. KISELICA: No. It's actually joint.

SENATOR VAN WAGNER: Jointly?

MR. KISELICA: Yes. In terms of pretreatment controls, the State is delegated the NPDES program, including delegation of pretreatment regulation, and they're implementing both Federal standards as well as State regulations.

ASSISTANT COMMISSIONER KEITH: If you look at the other ones you'll see, on the second page -- the first page, with Bergen County, the metal of concern right now which we're addressing, which hopefully will not be of concern when we get better analytical results, is arsenic. The second handout here is related to Joint Meeting. The one of most significant concern is copper; the land application standard being 1200, and they're over it for copper.

Copper is an interesting metal in terms of how you handle it for pretreatment. A lot of the copper comes from copper pipe, not surprisingly. Particularly acidic waters have a tendency to dissolve a low concentration of the copper and it comes out in the sludge. This could be significantly -- could be very difficult to reduce substantially -- the copper. Where copper is coming from specific point sources, specific industries, they need to be identified and reduced to an absolute minimum, but there will always be this copper residue that we need to deal with.

SENATOR CONTILLO: Does the lead come from plumbing, also?

ASSISTANT COMMISSIONER KEITH: Lead plumbing -- lead solder -- is also of genuine concern. That's correct. I was going to comment on lead.

SENATOR VAN WAGNER: Well, rather than commenting on the overall, you know, each and every problem that we have which seems to have been slowly reduced in some cases, but as you point out, by not enough in other cases, and creating some other problems in other cases--

ASSISTANT COMMISSIONER KEITH: You will note that it varies from authority to authority. Some are having dramatic

success, some not so much. Linden-Roselle, unfortunately, has had the least success in reducing their concentrations and has some of the highest levels.

SENATOR CONTILLO: Is that because they put people out of business, or is that because they have improved their own filtering techniques?

ASSISTANT COMMISSIONER KEITH: The story varies from authority to authority, but it relates to going back to the source. Passaic Valley, for example, had a very intensive investigation of possible mercury sources and an intensive investigation of plating operations, and effected significant reductions as a result of that. In some cases, people went out of business. As I said, there is very little you can do at the source.

Linden-Roselle, you should note, has improved their treatment effectiveness such that we believe that one of the reasons concentrations haven't been reduced is that metals that were previously not removed in the treatment process, are now being removed. So the concentration going out to the Arthur Kill is less, but the concentration in the sludge has not been reduced. The benefit to the environment is good, but we still don't have a sludge that is suitable for land application.

SENATOR DALTON: So the fact that the chart goes up might indicate that the--

ASSISTANT COMMISSIONER KEITH: For that particular case, it might indicate that we're actually taking more out that was previously going into the water, right.

SENATOR CONTILLO: How does that answer Senator Dalton's question?

ASSISTANT COMMISSIONER KEITH: Okay, let's get on. That's the history of the pretreatment. Are we doing--

SENATOR CONTILLO: You're hypnotizing us here, you know.

SENATOR VAN WAGNER: Could we get to where-- Let us get to what you are going to do about it. Okay? Let's get to that, if we can, because this has been going on for years. That we've known.

ASSISTANT COMMISSIONER KEITH: But the point is, we are making progress, or the authorities are making progress, in reducing metals concentrations in the sludge to levels that would be acceptable for land application.

What do we have to do further? We need to have further more extensive pretreatment alternatives, investigation of sources, and better treatment at the source.

SENATOR DALTON: John, tell us how we get to that.

ASSISTANT COMMISSIONER KEITH: Under the Clean Water Enforcement Act, more stringent programs are mandated to be implemented by the sewer authorities, so the tools are there.

SENATOR DALTON: At what point in time?

ASSISTANT COMMISSIONER KEITH: How fast?

SENATOR DALTON: Yeah.

SENATOR VAN WAGNER: That's another way to put it; how fast, or at what point in time?

ASSISTANT COMMISSIONER KEITH: How fast are we going to achieve compliance with all the standards? That's a good question.

SENATOR DALTON: Okay. So we really don't know.

ASSISTANT COMMISSIONER KEITH: No, we don't.

SENATOR DALTON: Okay. And pollution prevention, another mechanism--

ASSISTANT COMMISSIONER KEITH: That's correct.

SENATOR DALTON: --has just passed one committee of one house of the Legislature. So now what we have is a date, March 11.

SENATOR CONTILLO: Seventeenth.

SENATOR DALTON: Excuse me. That's a very holy day. And what are the counties now, the regional authorities,

doing? What have they submitted to you as to what they will be doing as of that date?

ASSISTANT COMMISSIONER KEITH: The interim plan is the dewatering of and hauling out-of-state, with the exception of Middlesex County, which is planning to go with the Chem-fix solidification process and use the material as landfill cover. Their proposal was to use it at Edgeboro landfill, and of course, we have concerns about the future of Edgeboro landfill right now because of proposals related to that particular landfill. Events developing around Edgeboro landfill could potentially affect Middlesex County's plan. They may need another alternative for the interim, as well. It's too uncertain to know what's going to happen to it right now.

SENATOR DALTON: So five out of six of these authorities are actually doing something that has a negligible or perhaps even a more negative impact upon the environment? In other words, we're taking it out of one medium, i.e. the ocean, and putting it into another medium, i.e. the land.

ASSISTANT COMMISSIONER KEITH: That's correct.

SENATOR DALTON: And I would assume that you would suggest to me, or strongly indicate to me, that that is unacceptable.

ASSISTANT COMMISSIONER KEITH: As I indicated, we believe that landfilling of sludge is not a good or desirable long-term strategy. It should be used on an emergency basis only.

SENATOR DALTON: Okay. Without getting into why we are allowing, and the history of allowing these folks to do something that is environmentally unacceptable, what are we doing as far as the long-term, John? What have these authorities indicated that their long-term plans are?

ASSISTANT COMMISSIONER KEITH: On your Table 3 there is a summary of the interim and long-term plans. As you can see, the current plan for each one of the authorities, with the exception of Middlesex, is some sort of thermal processing.

SENATOR DALTON: Thermal processing?

ASSISTANT COMMISSIONER KEITH: Right.

SENATOR DALTON: What's that mean?

SENATOR VAN WAGNER: Is that burning?

ASSISTANT COMMISSIONER KEITH: Yes.

SENATOR DALTON: That's incineration. Okay.

SENATOR VAN WAGNER: That's a new name. That's like a euphemism for taxes is revenue enhancement. We now have thermal processing. I see.

ASSISTANT COMMISSIONER KEITH: That's right. Well, it's better than resource recovery, you know.

SENATOR VAN WAGNER: Let me get to this--

SENATOR DALTON: Excuse me, Mr. Chairman? Just one more question? What we are doing-- Do you believe that incineration is an appropriate long-term disposal method for sludge?

ASSISTANT COMMISSIONER KEITH: As I stated at the very beginning, we believe that in the hierarchy of reduction of volume, improvement of quality is the first thing that should be done; beneficial reuse is second; and then only after that should we get down to these other alternatives.

SENATOR CONTILLO: What was second?

ASSISTANT COMMISSIONER KEITH: Beneficial reuse; land application, which is either with or without composting.

SENATOR DALTON: So you would suggest then, John, that the plans that have been laid out by the authorities, with the exception of Middlesex, are unacceptable?

ASSISTANT COMMISSIONER KEITH: That's the difference between unacceptable and the most desirable, okay. What I'd like to go on to--

SENATOR CONTILLO: My recollection is that the Department objected to the March 17 deadline originally, because they knew that the authorities couldn't come out in an orderly fashion.

ASSISTANT COMMISSIONER KEITH: There is a significant problem with them meeting the deadline of March 17. That is why every one of them has come forward with an interim plan that has landfilling.

SENATOR CONTILLO: But I'm saying the Department -- DEP -- opposed this deadline when it was first proposed. Is that correct?

MS. PETTIT: That's correct. Yes, we did, because we were concerned that there wouldn't be the amount of time necessary to explore the wide range of alternatives in order to meet that deadline, and that would necessitate their returning to their 201 Plans, which they had all evaluated, and--

SENATOR CONTILLO: I'm sorry, I don't know what a 201 Plan is?

MS. PETTIT: A 201 Plan is a plan which was developed under Section 201 of the Federal Clean Water Act, which is necessary for securing a Federal grant for construction of wastewater facilities. Each one of the ocean dumpers planned for many years to get out of the ocean and, after analyzing dozens and dozens of alternatives, each one of the ocean dumpers identified some form of thermal reduction, be it-- There are various types of thermal reduction, but they each identified some form of thermal reduction as their alternative in those plans.

SENATOR CONTILLO: But no one will, by St. Patrick's Day, be doing any of these things. All they will be doing is the Zinpro type of thing, which pollutes the air, so they can then take the material and place it in land.

ASSISTANT COMMISSIONER KEITH: Well, no. They're not-- Only Passaic Valley has a Zinpro. The others have the centrifuge, which doesn't have the air pollution.

SENATOR CONTILLO: I understand that, but what percentage of the problem will be done that way? Quite a large percentage?

ASSISTANT COMMISSIONER KEITH: Well, the solidification, I mean dewatering, will be done by all.

SENATOR CONTILLO: I guess the whole issue here all morning has been: Yes, we should be doing this and that. But, are we defeating the purpose by saying it must be done within nine months, with everyone scrambling about to put a system in place to get out of the ocean that is no better than being in the ocean?

ASSISTANT COMMISSIONER KEITH: That continues to rely on landfilling. That's the significant problem.

SENATOR CONTILLO: It's worse than landfilling because they're all aiming at the least productive method, that you agree is your last choice, and that the previous speaker said is their last choice.

ASSISTANT COMMISSIONER KEITH: That's correct.

SENATOR CONTILLO: Why are we forcing our hand, to spend hundreds of millions of dollars to do something that nobody wants to do? Why don't we, in effect--

ASSISTANT COMMISSIONER KEITH: We have. And it's appropriate that you're considering the issue. We have a legislative mandate for March 17 and the Department is trying to live up to that mandate.

SENATOR CONTILLO: Yeah, but that's the purpose of this hearing. Is that legislative mandate sensible? I sat through the hearing and was told quite--

SENATOR VAN WAGNER: No, that's not the purpose of the hearing.

SENATOR CONTILLO: No? I'm sorry. I thought this was on-- Is this not on Senator Rice's bill?

SENATOR VAN WAGNER: No.

SENATOR CONTILLO: Oh, I'm sorry. I apologize. I thought this was on Senator Rice's bill.

MS. PETTIT: If you'll forgive me? Perhaps what we're doing is putting the cart before the horse in our consideration

of pretreatment. One of the big problems we have in pretreatment is establishing what a valid limit is that can be held up when an industry litigates against us. We can't just pick a limit out of the air and say, "You have to comply with this limit." There has to be a justified technical basis for that limit.

The first thing the ocean dumpers all have to do is install dewatering. That can be done fairly quickly. It's a routine procedure. Everyone can get dewatering up by March 17, but where do they take it? The only place that you can take it by March 17, fast, is probably a landfill, and then that sets what your criteria for limits are. You look at this management mode -- landfilling. What are the criteria for sludge quality going into a landfill? And the only quality is nonhazardous, so that's where we start.

The next tier is, what is the long-term management mode? What are the criteria for that management mode? If they have selected incineration, then they have to wait until their permits are complete to see what the sludge quality limits are for their incinerators before they can back those limits into the industries that discharge into their systems. If they had selected land application -- which they could have -- or composting, we would have backed up the land application limits to their industries so that they could meet those limits.

But it's a question of one step at a time. The cart must follow the horse, and in this case, establishing the management mode then establishes the limit, and that's where we are today.

SENATOR CONTILLO: But, are the dollars not being wasted, these hundreds of millions of dollars, on sending it to a land-based facility, because the law says you must be out by March 17? If you extended that, could not those hundreds of millions of dollars be spent for pretreatment? In the long-run, over the next decade, would that not be-- In other

words, instead of aiming at an interim plan to get us out in a few months, if you looked at the 10-year proposal of what you had to do sensibly, and dealt with the dollars in that way, we would be better off in the long-run. To get the heavy metals out -- and I don't care if you burn it or landfill it or compost it -- you're going to have to get them out.

ASSISTANT COMMISSIONER KEITH: That's correct. An aggressive pretreatment process is absolutely necessary.

SENATOR CONTILLO: I mean, that has to be done. We all know that by the year 2000 they're going to be out, one way or another.

ASSISTANT COMMISSIONER KEITH: Let me first say that sludge dewatering is a necessary step for virtually all of the technologies that are available, so that money is not wasted. Landfilling at an appropriate landfill with leachate collection and caps and liners and things like that: It's at least, if not desirable, a controlled discharge to the environment as opposed to straight ocean dumping.

One thing I would like to get into is, what can be done for land application? What could we do to drive this, since we all agree that that's a better -- higher in the hierarchy than landfilling or incineration? I've given on Table 4-- What calculates the last column over there is how many acres would actually be required for the six authorities per year, assuming they all meet Class B sludge requirements for metals.

This acreage per year is acres that would be consumed; that is, you could apply it once at both metals concentrations, and then you could not reapply it. So you would need this number of new acres every year. The total comes out to some 2000 acres every year, three square miles. Three square miles of land that you could not apply sludge to again.

SENATOR VAN WAGNER: But you're talking about applying it on a landfill basis, right?

ASSISTANT COMMISSIONER KEITH: No. This is land application as compost or as fertilizer for agricultural areas.

SENATOR VAN WAGNER: You're saying that it would take three miles of land per year to occupy the use of this material as composting?

ASSISTANT COMMISSIONER KEITH: To apply the sludge such at a-- And then you couldn't reapply it, so as to number one, protect the soil quality so that it would-- You're not generating metals, dust, or anything like that that would be harmful, or you wouldn't be affecting the agricultural products that you're raising.

The point here, three square miles a year, a significant amount of land. If we go into a land application with or without composting, we need to find the land. You're not going to find the land in northeastern New Jersey, because they don't have a lot of agricultural land to begin with. Various alternatives, such as agricultural land or transportation land, need to be explored for this, but it is a significant amount of land.

How does this get back to the ocean dumping situation?

SENATOR VAN WAGNER: How long have you known this?

ASSISTANT COMMISSIONER KEITH: We've known this-- It isn't new knowledge. I can't say how long it's been around.

If we say we want to go to land application, and we get the metals down to Class B sludge requirements, we then need to find appropriate amounts of land. Again, within New Jersey, because we want to have self-sufficiency. We don't want to depend on other states or to be held hostage to them. Those areas of the State where this could be done -- rural areas, perhaps southern Jersey; areas away from generation -- their interests in this would have to be considered as well.

SENATOR CONTILLO: You'd better believe it.

ASSISTANT COMMISSIONER KEITH: We have several factors -- call them obstacles -- for promoting these land application

alternatives. I'll give you a quick list of them: First, there is the liability of the farmers. You know farmers have protection from nuisance suits due to odors if they're applying, say, animal manure. The current legislative framework does not give protection from that sort of nuisance suit if they are applying sludge if there are odors relating to it.

Second, there is extensive monitoring required. We want to make sure that those metals stay in compliance and that the application rates are suitable so that we don't have any buildup of metals in the soil. That increases the costs, and it is also a liability issue. Who is liable for the metals concentration in the soil: the farmer, the DEP, or the authority?

SENATOR CONTILLO: John, may I interrupt for one second?

ASSISTANT COMMISSIONER KEITH: Surely.

SENATOR CONTILLO: I don't want to take you off your point. The point is, there are questions with regard to land application. However, the only type of land application that I've heard you talk about is agricultural land application.

ASSISTANT COMMISSIONER KEITH: Or application on such things as the median dividers of highways and things like that.

SENATOR VAN WAGNER: May I tell you something?

SENATOR CONTILLO: Okay, did you consider golf courses, cemeteries, university lands, public parks?

ASSISTANT COMMISSIONER KEITH: Yes, that would be the same thing. Yes, all of that's in there.

SENATOR CONTILLO: Okay. So-- By the way, they have all of those in different regions of the State, right?

ASSISTANT COMMISSIONER KEITH: That's correct.

SENATOR CONTILLO: Okay, we'll acknowledge that. So it doesn't have to be a South Jersey cemetery. (laughter)

ASSISTANT COMMISSIONER KEITH: Absolutely.

SENATOR CONTILLO: One of the things, too, as far as not seeing you exploring -- and tell me if you are going to get to it -- is the reuse issue a la Middlesex County.

ASSISTANT COMMISSIONER KEITH: Yes, I am going to get to it.

SENATOR CONTILLO: Okay. And ultimately you will tell us, I am sure, that you have now turned 180 degrees and changed your mind with regard to the incineration of this.

ASSISTANT COMMISSIONER KEITH: I am going to end where I started from: that we have a hierarchy of management alternatives that we prefer to see, yes.

SENATOR CONTILLO: Well, in between, tell us how you're going to drive State public policy away from the least beneficial alternative, okay? That's what this Committee, I think, wants to get at.

SENATOR VAN WAGNER: Well, I want to go one step further, okay, before you finish? You can finish anytime, but I'm going to say to you that I would like -- and I will do this formally -- I would like you to develop a management policy, and ultimately, hopefully, through a mechanism of an advisory council on sludge management alternatives, to implement that as quickly as possible; to begin to move forward with the help of -- considering Senator Dalton's legislation that was released from this Committee last week -- considering the Clean Water Enforcement Act that will be signed on Wednesday, considering that as your driving force in the areas that you talked about, begin to develop an overall management plan to be implemented as quickly as possible -- begin to forget about where we have been and start looking at where we're going.

I simply cannot accept the fact that after all of these years of discussing this situation that we come to a conclusion, among other things, that according to your calculations we're going to need three miles of new land every year to apply this material if it's going to be considered for

beneficial reuse. I will tell you that if that's your conclusion, to me personally, that's a totally unacceptable conclusion -- a totally unacceptable conclusion. That if that's what all of this technological research, and all of this discussion, and all of this dialogue has brought us to, that's totally unacceptable. It is totally, completely, without question, unacceptable, that we have reached that conclusion.

There are people here I am sure in this room, and I hope to get them to testify at some point, who have technologies, who have explored technologies. I don't understand why we have to find three miles of parkland, median dividers, farmland, every single year different properties because we're simply saying we can't reduce this material to the extent that it can be applied year after year on a continuing basis the way people--

Are you telling me that ChemLawn should be-- Maybe we should be going out and looking at ChemLawn and all those companies? They shouldn't be applying that every year to the lawns. That seems to be what you're saying to me.

SENATOR DALTON: Senator Contillo's going to have a hearing on that.

SENATOR VAN WAGNER: I use them, you know, a lot of the other companies-- I don't mean to pick them out.

ASSISTANT COMMISSIONER KEITH: The achievement of that conclusion-- This is predicated on the assumption that all these authorities, and the numbers, are going to be worse than what you like.

SENATOR VAN WAGNER: I don't care about them. You know, I know all about the numbers. We'll have another set of charts in two months.

ASSISTANT COMMISSIONER KEITH: This assumes that they are going to meet Class B sludge. If we can get better pretreatment there is a potential to reduce that number from three square miles to something less. However, we have only

been talking about the sludge from these six authorities, which represents roughly one-half the sludge generated in the State. We want a sludge management plan that addresses all the sludge in the State.

Admittedly, most of the sludge in the State is of better quality than in the most industrialized areas, but we still have copper pipes throughout the State, and we have lead solder. We have serious problems. We're always going to have some residual concentration of metals as a result of the general usage of water and the construction materials of our water systems.

There will be -- whether we like it or not -- a significant amount of land required because of residual metals below which we cannot get. That land would have to be found someplace. What I am suggesting to you is that when we look at land application models, the Department -- the administration -- would like to see several programmatic problems, legislative problems that are obstacles to beneficial reuse of these materials considered, and that's what -- the list I was giving you: protection for the farmers from the suits, the monitoring requirements, the fact that the food processors prohibit sludge use because they are concerned about contaminants in the food products -- a genuine concern -- the interaction between sludge management and soil conservation districts-- We need to--

SENATOR VAN WAGNER: Will you give us a--

ASSISTANT COMMISSIONER KEITH: We can write something up for you.

SENATOR VAN WAGNER: Well, would you please present to the Committee a list of those initiatives you would like us to consider?

ASSISTANT COMMISSIONER KEITH: Certainly.

SENATOR VAN WAGNER: In exchange for that, I will present you with a formal request to immediately move forward with some type of advisor, group -- and we can probably develop

the group's size and composition -- to work with them and the Legislature in moving toward a management model that will change the direction that we've been going in, and start to look at it as a can-do/will-do situation, rather than coming up with a thousand reasons why this sludge is no good, and that sludge is too much of a problem. And industry will work with us. They will work with us. I can guarantee you they will.

ASSISTANT COMMISSIONER KEITH: The administration has already taken steps to institute an objective evaluation and reconsideration of our sludge future. We are committed already to doing this.

SENATOR VAN WAGNER: Good. That's good.

ASSISTANT COMMISSIONER KEITH: Without prodding, we're going to do it. I've already got plans on the books to do that.

SENATOR VAN WAGNER: There's nothing wrong with prodding.

ASSISTANT COMMISSIONER KEITH: Okay. You can prod.

SENATOR VAN WAGNER: We get prodded. You're going to prod us; we're going to prod you.

ASSISTANT COMMISSIONER KEITH: We are going to do that. And yes, we can come back with some of the problems with it. It is an enormous amount of sludge. It requires a lot of land. That land has to be found someplace. There is political opposition from people who live near where the sludge would go. Whether it's a golf course or a cemetery or whatever, there are people who live by them. There are odor considerations, and a lot of technical considerations. We want to move beyond them, but there has got to be the recognition-- It's not an easy problem, and it's not going to go away just because, you know-- Some of these issues -- enormous land volumes, the transport from highly developed areas to less developed areas -- are not going to go away.

SENATOR VAN WAGNER: Okay. Let's give you a break, so we can get on to other people, too. Let's give Mr. Kiselica a

chance to say what he might do as a Federal administrator to help us along the way here, now that we've changed our management direction and are going to start moving in another way. Let's see what you can do to help us move that way, and then I'd like to get some of the authorities that are here to give their opinion and then, after that, some of the private industry people.

SENATOR DALTON: Mr. Chairman? Again, at some point, and we'll-- Someone is going to have to answer the question; that is, ultimately what are we going to do? What is the long-term strategy of this State for dealing with sludge, and what are we moving toward as an option? No one has addressed that question as of yet. No one, okay? I have been told about what is the most desirable, what is the least desirable. No one has indicated what we are going to do.

MR. KISELICA: With that, I'll start. I corrected my testimony here. I'll start with a good afternoon. My name is Bruce Kiselica. I am the Chief of the Ocean Programs Section within Region II of the U.S. Environmental Protection Agency. Our Region includes the States of New Jersey and New York, Puerto Rico, and the U.S. Virgin Islands. I am pleased to be here today and thank the Committee for this opportunity to discuss implementation of the Ocean Dumping Ban Act of 1988.

The Ocean Dumping Ban Act states that an ocean dumper, the state in which it is located, and the EPA shall enter into a compliance or an enforcement agreement as a condition of issuing a permit for continuing ocean dumping. The Act also requires a compliance agreement to include a negotiated plan for the ocean dumper to terminate its ocean dumping by December 31, 1991 through the design, construction, and full implementation of an alternative, or long-term system for the management of the sludge. If that cannot be accomplished by December of '91, the parties must enter into an enforcement agreement.

The nine existing New Jersey and New York municipal sewage sludge generators submitted complete permit applications for the ocean dumping of sludge a number of years ago. The EPA then drafted the permits containing numerous new conditions to minimize the adverse impacts and to ensure a more controlled dumping operation. Nine permits were issued on August 4, 1989 and became effective August 14. Judicial consent decrees and enforcement agreements were successfully negotiated with each ocean dumping authority, and all of the agreements were signed on or before August 4 of last year.

Regarding the specific interim schedules for ceasing ocean dumping, the ocean dumpers have developed the following plans as part of their agreements. As you know, the six New Jersey authorities plan to cease ocean disposal by March 17, 1991, in accordance with State law. Nassau County Department of Public Works and Westchester County Department of Environmental Facilities plan to completely cease ocean disposal by December 31, 1991. Nassau County will phase out 50% by June 30, 1991, six months earlier. New York City plans to completely phase out by June 30, 1992, with an initial phaseout of 20% by December of 1991. The City will be assessed a penalty of $600 per dry ton of sludge dumped in the ocean during 1992, that six-month period that they will be going after the Federal deadline. At this point we've estimated that to be approximately $29 million in penalties. I think it was mentioned earlier that a majority of it does work its way back to the ocean dumper who paid the penalty or fee. In this case, approximately $1.8 million would not be returned to the City.

The dumpers also have schedules for implementing long-term sludge management alternatives between 1991 and 1998. The ocean dumpers contend that these schedules are tight and EPA and the states agree.

Since New Jersey has been, and will continue to be discussed quite a bit in detail today, I though I'd concentrate a little bit on the New York authorities.

Nassau County initiated planning in late 1987.

SENATOR CONTILLO: But if they don't come out of the ocean-- They've given you a plan to come out and you're going to charge them "X" dollars. That money, as I say, cycles back to them for their own mitigation of the problem, doesn't it?

MR. KISELICA: As is currently done with all of the authorities, both--

SENATOR CONTILLO: Well, not for New York, though, because we have a State law we have to comply with, so we'll be out before--

MR. KISELICA: All authorities started paying, or are liable for ocean dumping fees as of August 14 of last year. In '89 the fees were $100 a dry ton. This year they're $150 a dry ton. All authorities are paying those fees right now.

SENATOR CONTILLO: And that money goes to whom?

MR. KISELICA: The majority of the money goes into trust accounts that have been set up by each of the authorities. Fifteen dollars a dry ton comes to EPA. We have to split our five (sic) between the Coast Guard and NOAA.

SENATOR CONTILLO: I guess my question to you is a charade. New York City says they are coming out of the ocean.

MR. KISELICA: That's what we have agreed to.

SENATOR CONTILLO: Okay. Where are they going to put the material, Long Island? Mario's not letting them put it upstate. I mean, where's it going?

MR. KISELICA: Okay. I'll be covering that.

SENATOR CONTILLO: Or are they just going to pay the fine and put it in the till until they get to where they are going?

MR. KISELICA: No.

SENATOR CONTILLO: Okay.

MR. KISELICA: For Nassau and Westchester Counties, they jointly issued a request for proposal for privatization of land-based disposal options. Four joint responses, six

Nassau-only responses, and eight Westchester-only responses were received. In reporting on its RFP responses, Nassau County requested an agreement modification and extension for pursuing potential off-island dewatering with two of the private vendors instead of constructing dewatering facilities at one of its own treatment plants. EPA and New York State objected, primarily because reliance upon vendors to obtain approvals for off-site dewatering would not ensure timely achievement of the milestones, and did not, by the avoidance of critical siting issues, represent sound environmental management.

Nassau County disagreed and pursued the matter in court by entering a modification motion. The court expeditiously issued its decision in light of Nassau County's tight time frame for implementing its interim plan and denied the motion, citing concerns about how Nassau County would meet its consent decree milestones and the statutory deadline for ceasing ocean dumping.

Hence, Nassau County is currently proceeding with its schedule for constructing the additional dewatering facility itself. They have proposed to construct this at one of their facilities called Bay Park, and have issued their environmental impact statements on their interim and long-term plan for public comment. Nassau County has completed final design and recently received bids for constructing its dewatering facility.

New York City initiated planning in late 1988. Several reports concerning transportation, existing conditions, and sludge quality are being prepared. Design of eight dewatering facilities is being completed; a number of construction contracts have been bid. The City's centrifuge dewatering equipment order is being filled. Site work is underway at one of the largest dewatering facilities. New York City, like Westchester and Nassau, is using a two-staged RFP process for privatized land-based disposal options.

Thirty-nine initial proposals were received; most respondents were asked to participate in the second, more detailed stage. The City is reviewing the 10 final RFP technical and cost responses. The public review of New York City's interim plans will take place this summer.

SENATOR VAN WAGNER: Sir? May I assume-- I appreciate this testimony, but I want to make one distinction. You were talking about New York City sludge and a management plan that affects them, and they have virtually no metals. Is that correct?

MR. KISELICA: No, that's not correct.

SENATOR VAN WAGNER: Very few. Very little in comparison with New Jersey?

MR. KISELICA: I would have to--

SENATOR VAN WAGNER: The answer to that is, "Yes." Okay? Go ahead.

MR. KISELICA: No, it's not.

SENATOR VAN WAGNER: We have the analysis, so we know the answer to that is yes.

MR. KISELICA: Well, New York City--

SENATOR VAN WAGNER: Compared to New Jersey the amount of heavy metal content is not as much, but, go ahead.

MR. KISELICA: It depends on which plant. They have 14 different treatment plants, and 14 different sludge--

SENATOR VAN WAGNER: On an overall basis, though, New York City and Westchester and Nassau have comparatively low metal content.

ASSISTANT COMMISSIONER KEITH: We have to note that it also relates to the effectiveness of the treatment: Are their treatment plants removing the metals so that they are not being discharged into the ocean?

SENATOR VAN WAGNER: Okay. They may have a more effective pretreatment plan, no?

ASSISTANT COMMISSIONER KEITH: We would have a more effective treatment so more metals end up in the sludge rather than in the ocean.

SENATOR VAN WAGNER: Okay, okay, fine. I'm sorry. I didn't mean to interrupt.

MR. KISELICA: I would point out the copper problem is also pervasive--

SENATOR VAN WAGNER: Pervasive in New York?

MR. KISELICA: Yeah, especially in Westchester and Nassau, where sludge generally-- Yes. Both of those are cleaner. Basically they serve domestic areas and are not heavily industrialized in Nassau and Westchester Counties. Nonetheless, the amounts of copper concentrations remaining in the sludge are a concern and are putting tough restrictions in terms of their ability to deal with sludge on the land.

In concluding for New York City, the public review of their interim plans will take place this summer.

Westchester County initiated planning in January 1989. It has prepared a series of reports that address data collection and analysis, and alternatives development and screening. They completed the final design of, and advertised for the dewatering equipment. A nearby homeowners' association filed a lawsuit in the State Supreme Court challenging Westchester County's decision to select its Yonkers treatment plant for the installation of the dewatering equipment, without preparing a full environmental impact study. This suit has been removed to Federal Court and it's currently pending review. Westchester will decide whether to select a private vendor from the RFPs that were received or to proceed with an interim alternative on its own.

SENATOR VAN WAGNER: Sir, could you sum up by telling us in your view as an EPA Region II Director, what you think the reality of New York being able to take a percentage out of the ocean, safely, will be, by 1991 or '92, whenever their deadline is?

MR. KISELICA: In other words, do I think it will occur?

SENATOR VAN WAGNER: Yes.

MR. KISELICA: Yes.

SENATOR CONTILLO: Where will it occur? Where will it go?

MR. KISELICA: At present, since they're evaluating now about eight to ten RFP responses, they haven't been selected. Each private vendor has different--

SENATOR CONTILLO: Tell me where the eight are, then? Where are they? Landfills, I presume? Where?

MR. KISELICA: Well, primarily the City is looking within the City for certain disposal of part of the material. Number one, I don't think the City will proceed and contract with--

SENATOR CONTILLO: Within the confines of New York City?

MR. KISELICA: Part of it.

SENATOR CONTILLO: Within the five boroughs?

MR. KISELICA: Part of the sludge may end up within the five boroughs.

SENATOR VAN WAGNER: I'm sure.

MR. KISELICA: I don't think they are going to-- There's not going to be one place. This is maybe crystal-balling it a little bit, since they haven't selected the vendors, and there again, I don't think they're going to select just one vendor, who has-- Even one vendor may have multiple disposal options.

SENATOR CONTILLO: And I say to you that they don't intend to get out of the ocean.

MR. KISELICA: Well, I would beg to differ.

SENATOR CONTILLO: You're going to tell me they are going to landfill and compost this material within the confines of the City of New York?

MR. KISELICA: I'm saying part of the sludge may end up within the five boroughs.

SENATOR CONTILLO: Where will the rest of it go?

MR. KISELICA: Either upstate New York, or out-of-state.

SENATOR CONTILLO: Yeah, or the moon, or wherever. I mean, you know, have there been any concrete proposals?

MR. KISELICA: Yes. Those are currently under review by the City, and they will go out for public comment this summer.

SENATOR CONTILLO: Is it going to be compost? Is it going to be incineration?

MR. KISELICA: The alternatives range from composting, chemical stabilization, land application. One was an incinerator--

SENATOR CONTILLO: I know the spectrum.

MR. KISELICA: --landfill-- Yeah, the complete spectrum. Again, I don't see the City picking one alternative or one vendor. They may try to match sludge quality with different alternatives. Neither will all of the sludge go out-of-state, upstate, or within the City.

SENATOR VAN WAGNER: Is any going to Fresh Kills Landfill?

MR. KISELICA: Will it go?

SENATOR VAN WAGNER: Is any going to there?

MR. KISELICA: I'm not sure at this point.

SENATOR CONTILLO: But if they don't act, it will go to 106 miles off of the coast.

MR. KISELICA: If they don't, well, yes.

SENATOR VAN WAGNER: In other words, we have a bunch of plans which depend primarily on dewatering, and to some extent pretreatment which may or may not take a certain percentage of the sludge somewhere other than -- well, take all of the sludge -- somewhere other than the ocean by June of

1992, but will, in effect -- in effect does not have a definitive hierarchy of implementation -- in a sense. It's just, "Let's get through the dewatering, let's get it out. Let's find the landfill, let's make our deal, and then we'll worry about long-range next."

MR. KISELICA: No. I don't think so.

SENATOR VAN WAGNER: You don't think so?

MR. KISELICA: New York City itself is applying a similar hierarchy--

SENATOR VAN WAGNER: To New Jersey?

MR. KISELICA: --to New Jersey, as well as the Federal government, in terms of incineration. Landfilling would be the last alternative, both for the interim, and certainly for the long-term.

SENATOR VAN WAGNER: I wonder if I could just take a break from the agencies that are here for a minute, and then move to a couple of-- Stay in proximity, if you would, because I'm going to ask you to respond.

I'd like to call up a couple of--

ASSISTANT COMMISSIONER KEITH: Excuse me. I did want to make one comment in response to a question that I didn't get back to, and that was on the chemical fixation alternative, which has been discussed. That's the process of solidifying the sludge with other materials and then using it as landfill cover or for other areas where low-grade soil materials could be used.

SENATOR VAN WAGNER: I guess what we want to know though, John, is, do you have an analysis of: "This much will be dewatered and will be used and will be eligible for use as landfill cover. This much will be done in this fashion because of the pretreatment that has been put in place. It will be eligible for use for other types of land application, including composting and fertilizing. This much we're going to have left, and we're going to have to figure out whether or not we

should incinerate it, or if that will create problems or we should, on an interim basis, make landfilling arrangements in other places, or in New Jersey itself, if that's possible"?

ASSISTANT COMMISSIONER KEITH: We've done that.

SENATOR VAN WAGNER: Do we have that?

ASSISTANT COMMISSIONER KEITH: We intend to revisit that, because a lot of those depend upon the assumptions of pretreatment, metals concentration, and of course, reflect the ocean dumping--

SENATOR VAN WAGNER: Well, you're going to have to put assumptions in, but you're going to have that ready, when?

SENATOR DALTON: When is the earliest incinerator going on-line, John?

ASSISTANT COMMISSIONER KEITH: We have 10 sludge incinerators in the State at the current time.

SENATOR DALTON: No, when is the earliest of the five out of six authorities going to incineration?

ASSISTANT COMMISSIONER KEITH: I don't have a date on that.

SENATOR DALTON: Okay. Let me just say this: We don't have a statewide plan, okay? That's plain to see. We do not have a statewide plan. We are going to follow-- We are following the same mistakes and making the same mistakes with regard to solid waste, we're making the same mistakes with regard to sludge.

SENATOR VAN WAGNER: No question about it.

SENATOR DALTON: And if we don't have a plan, and we don't have a plan driving public policy, then we will revisit the past, and the past everyone feels is unacceptable.

ASSISTANT COMMISSIONER KEITH: The administration agrees. We need a plan and that's why we've already elected to start reconsidering this, our sludge futures. You're right.

SENATOR DALTON: Well, John, at some point -- and through the Chairman -- we'd love to have you back and discuss your plan.

SENATOR VAN WAGNER: Well, we're going to do more than that.

SENATOR DALTON: We would love to have you come back. I would love to just hear you say that you have a plan. You can't allow people to use incineration, and drive towards incineration without a plan. You talked about the cart before the horse. That's exactly what this is -- the cart before the horse. The State's got to drive it.

SENATOR VAN WAGNER: You know what the prevailing word is outside in the environmental services industry, just to give you an insight? I don't know when you came on board here in the DEP or how long you've been around, but for the last several years people I've talked to in other areas of technology who are interested in this industry -- because that's what it's going to become -- who have said that they generally have felt that the door has been closed to them in New Jersey; that if they're not incineration oriented, they're not welcome.

ASSISTANT COMMISSIONER KEITH: We have certainly heard that sentiment, and with this current administration we are intending to change that, and develop a plan.

SENATOR VAN WAGNER: Okay. Thank you, John. I appreciate that. I know we put you under some tough questioning, but I think we got, at least--

SENATOR CONTILLO: Does he have a little time frame for this plan? I mean, he admits he doesn't have--

SENATOR VAN WAGNER: Well, I think we have to develop a time frame together. I think that's the next step.

SENATOR CONTILLO: Does the Department have a time frame for projecting the plan?

MS. PETTIT: We have a statewide plan now.

SENATOR CONTILLO: You do have a plan?

MS. PETTIT: The Statewide Sludge Management Plan is a component of the Solid Waste Management Plan.

SENATOR VAN WAGNER: That's why it's not a plan.

MS. PETTIT: Because we have some 500-plus sewage treatment plants in the State, it was also under the statutory provisions that the State not do the planning for those agencies; that it be left to them.

ASSISTANT COMMISSIONER KEITH: As you pointed out before, the old plan basically said that each individual district shall provide a plan, similar to what we had in the garbage scene. Now we're seeing that that didn't work too well. We had every county -- 22 solid waste districts -- go in their own direction, and what sort of coordination was there?

This is a 1987 document. We're in agreement that we need to rethink this. The work is going to be done this summer. First of all, we don't believe that it should be the Department's plan, but that we should get input from a wide sector of the community; take all factors into consideration. We have not closed the doors on any specific technology other than ocean dumping and landfilling as a last resort, because that would be, again, making your conclusions before you've done the evaluation.

I do not have, today, a firm schedule as to when we are going to have a new plan. It's going to be actively worked on, and we can certainly put a schedule together on what that would look like, and how long it is going to take to do this.

SENATOR CONTILLO: Doesn't the March--

ASSISTANT COMMISSIONER KEITH: In the meantime, we do have March 17, and we expect every ocean dumper to live up to their obligations to stop ocean dumping by that date. That does mean execution of their interim plans. We would not want to jeopardize progress of that and put things on hold while we redo something else. That doesn't necessarily mean the long-term alternatives have got to charge full speed forward, but if we are going to meet March 17, then we cannot stop progress and we cannot sit around waiting for some further evaluation. They need to be working now, is what we're saying.

SENATOR DALTON: And at the same time, I believe you need to be sending out the right signals to the authorities, okay? You're saying to them, "Continue on down the road toward incineration." I don't know how far down the road they are, those six, but that to me is, again, repeating the mistakes of the past.

MS. PETTIT: Well, they're in their enforcement agreements, which are consent decrees with the Federal courts right now, which has set out scheduled milestones for implementing the plans that they selected back on April 30, 1989, when they were required to submit their plans. In order for them to get an ocean dumping permit, they had to deliver up a plan with an implementation schedule, and that was memorialized in the enforcement agreement pursuant to Federal statute. They are now consent decrees, so they cannot deviate from those milestones without incurring significant penalties at this point.

SENATOR DALTON: I would suspect that that assumes that the courts wouldn't look on other options as equally acceptable.

MS. PETTIT: Yes. And, in fact, we do have-- For example, Passaic Valley is looking at any number of other options. At the same time, so they don't expose themselves to these serious penalties while they're exploring these other options, they must continue to meet their milestones on their existing plans. Otherwise, they have serious money penalties.

ASSISTANT COMMISSIONER KEITH: Basically, there are advantages with going a parallel path method; saying, "Let us proceed, but let us explore alternatives." In that way we come to resolution of the whole issue as quickly as possible.

SENATOR DALTON: Yeah.

SENATOR CONTILLO: Doesn't the artificial date of March 17 make long-term planning more difficult? I know it makes it more expensive.

ASSISTANT COMMISSIONER KEITH: As I said, sludge dewatering, which is basically what all but Middlesex are doing in New Jersey, is a necessary precondition for the other alternatives. That money is not wasted.

As far as disposal at landfills-- Disposal at a high quality landfill is at least a controlled placement, as opposed to an uncontrolled discharge to the ocean. So therefore we would feel that it is environmentally better to have it landfilled, emergency, last resort, than ocean dumping.

SENATOR VAN WAGNER: Okay. I'm going to ask you now, if I may, to move on. I'd like to kind of mix it up a little bit. I thank you all for being here and I ask you, if you would, to keep yourselves available, depending on your own schedules, because I want to continue this type of hearing; not toward the end of having people just come in here so that we can argue with each other, but at each stage of the game what I would like to be able to do is to implement a joint planning process that involves the Legislature to the extent that it can move forward with some of the legislation that has been recommended, to clear away some of the impediments to implementing some of the plans: to prod, if necessary.

I would like -- and I'm going to request of the Commissioner -- is that we form an advisory council on this issue; that we involve as many people from industry and technology and academia and science as we can in assisting and working with us; and that we also make available these working group sessions to the six authorities that are most pressed by this, and in fact, to all members of any authority in the State which are interested in listening to some of the recommendations. Also, that we begin to look at the possibility of fast tracking some of these RFP processes so that we can review them on a technical and scientific basis more readily.

Those kinds of things I hope to generate from the Committee as recommendations, if you will, and whatever kind of resources you can provide for us-- I notice in your testimony you do have sludge management seminars and things of that nature that are available, and that's good, but I would like to try to get-- And I'm going to do this so everybody gets an opportunity to say something before we run into our next meeting schedule--

I would like to call up some of the people here who are from what appears to be some of the industry areas involved in this. I'm going to ask that they come up in this order. Then as a wrap-up, I would like to hear from Mr. Lipke from the Passaic Valley Sewage Authority; Mr. Jacobs from the Middlesex Utilities Authority; and Mike Brinker from the Joint Meeting of Essex and Union Counties.

I would like to call now Mr. Patrick Witmer of the Air Products Co; Dr. H. Schulz from Global Energy; Roger Tuttle of Earthline Sales Co; and Don Clark -- in that order -- from the Cornucopia Network. So, in that order, if you would come forward, I would appreciate it.

ASSISTANT COMMISSIONER KEITH: Okay. I would like to stay, but I do have a 1:00 commitment, so I apologize.

SENATOR VAN WAGNER: No, that's all right.

ASSISTANT COMMISSIONER KEITH: We'll have some observers remain.

SENATOR VAN WAGNER: That's all right. We'll find you again.

ASSISTANT COMMISSIONER KEITH: Good.

SENATOR VAN WAGNER: Thanks, John. Thank you.

So, Mr. Witmer and Dr. Schulz, if you would like to come forward. Mr. Witmer? Are you here? (no response) Okay, Dr. Schulz?

F R A N K G. C A P E C E, ESQ.: Mr. Chairman, it's just going to take a second.

SENATOR VAN WAGNER: Yes, I understand that. Mr. Witmer is gone? (no response)

You don't have to show us sludge, okay?

MR. CAPECE: How about brickettes?

SENATOR VAN WAGNER: You don't have to give us the background. Just tell us what it is you're recommending, how you think it can--

MR. CAPECE: Mr. Chairman, as you know I'm Frank Capece, and I represent Global. Anticipating that you'd run out of time, what we're going to give you, number one, instead of L.A. Law this Thursday--

SENATOR VAN WAGNER: We are only going to run out of time today, so--

MR. CAPECE: Well, instead of L.A. Law, which you can watch this Thursday night-- This is just a tape.

SENATOR VAN WAGNER: Okay, I'll be glad to look at it. Thank you.

MR. CAPECE: Mr. Chairman, we'll be very brief, because we know that you are under some time-- Global is currently in negotiations with Passaic Valley on a system of gasification. Very quickly, we think there has been some confusion. There is a distinction between gasification and incineration. The two are not married; they are not even going together. There is a distinction between the two, and I think Dr. Schulz will get into the--

SENATOR VAN WAGNER: Just so you can be clear, it was not intimated that it was. What was said was that although gasification is a more acceptable alternative to incineration, it continues the disposal technology mind-set. No one was criticizing it, only criticizing it as a pursuable end, I guess.

MR. CAPECE: Chairman, Global -- of which Dr. Schulz is the President -- is a project team comprised of Bechtel, British Gas Petroleum, APB, and First Boston. Dr. Schulz is not new to this. He's been at this for 15 years, and I

daresay, he brings more experience to this than virtually anybody in the State of New Jersey. Because of your time constraints, what I've asked Dr. Schulz to do is to be very brief and to give you an analogy. Unlike most groups, he encourages your questions. We think that might be a more positive use of our limited time, but Dr. Schulz will just give you a brief overview of Global, and more importantly, on the success of gasification. I did bring the brickettes, which are, in fact, what happens at the end of the process.

SENATOR VAN WAGNER: You can add them to our collection.

MR. CAPECE: We have a lot of brickettes today, but if you have them, that's fine.

SENATOR CONTILLO: Just tell me where they were produced?

H E L M U T W. S C H U L Z, Ph.D.: Passaic Valley. This is Passaic Valley sludge. We also have Houston sludge, and also from Stamford, Connecticut.

SENATOR CONTILLO: That's where the sludge came from. Where were they produced?

DR. Schulz: Yes. They were just produced-- They are compacted with eastern bituminous coal, and actually they were done in Minneapolis at the Bepex Corporation.

SENATOR CONTILLO: Minneapolis?

DR. SCHULZ: Yes.

SENATOR CONTILLO: Is there a plant there, or is it a pilot?

DR. SCHULZ: Oh, no. They are the producers of the largest compacting machinery in this country and they have a pilot installation there.

SENATOR CONTILLO: Pilot?

DR. SCHULZ: Yeah. But, I mean, we have made brickettes for the U.S. Bureau of Mines on a commercial scale. I mean, compacting by bricketting is an art that is over 70

years old and we made actually 350 tons of brickettes for the U.S. Bureau of Mines for a large-scale demonstration. This was based on Baltimore County garbage and eastern coal.

The brickettes here are illustrative of Passaic Valley sewage sludge, and this is what we're here primarily to address.

SENATOR CONTILLO: I guess my question is: Is this being done on a operating basis anywhere--

DR. SCHULZ: No, sir.

SENATOR CONTILLO: --or is this just a pilot program you're talking about? Is the process being used fully anywhere?

DR. SCHULZ: No.

SENATOR CONTILLO: No?

DR. SCHULZ: No. Actually all the components of the process are used on a very large commercial scale, but the combination has not been used. I mean, bricketting is done on a scale of 60 tons per hour in one single unit, one single press, and gasification-- The British Gas Corporation has a completely, commercially operable unit in Scotland. They have 200 million pounds of development in this and it has been around for about 14 years. Similarly, all of the components are commercially available. Oxygen plants are as standard as blueberry pie, and the use of gas turbines and electric generators are, of course, fully established, and those are the components of the BIOPLEX process.

SENATOR VAN WAGNER: Do you have a proposal, sir, before any agency, authority, or any instrumentality that is presently involved with the requirement to reduce or eliminate their sludge material, or dispose of it?

DR. SCHULZ: We have made presentations to the Region II, EPA, and also to the State of New Jersey DEP, and we are in negotiations with Passaic Valley Sewage Commissioners. We have been working with them, actually, for four-and-a-half years, and I must say that Passaic Valley has been farsighted to recognize that incineration would be unacceptable, and composting would be unacceptable.

I'd like to, if I may, focus on the very fundamental distinction between slag gasification and incineration. I think there is very little appreciation that is an environmentally superior, an economically competitive alternative to incineration and to composting. May I address that question?

SENATOR VAN WAGNER: Please.

DR. SCHULZ: Slag gasification employs a prepared burden, much as a blast furnace. A slag gasifier is very much like a blast furnace, which has had a remarkable track record for over a century. So this is not a new technology, something untried. It is fundamentally different from incineration in that it uses a reducing atmosphere throughout the gasifier, above the hearth, whereas incineration uses an oxidizing atmosphere.

One consequence is that it is chemically impossible to form dioxins and furans in the gasifier, whereas it is possible to do that in an incinerator during operation upsets. Also, our gasifier is a completely closed system. It has no primary stack emissions; nothing is vented to the atmosphere except the effluent from the gas turbine, which is as benign as burning natural gas.

Furthermore, we have no stacks and no stack emissions. Also, as compared with incineration, slag gasification produces no toxic incinerator ash that must be disposed of in landfills at mounting costs. Instead we produce a glassy frit, which is like little glassy BBs that completely encapsulate all of the inorganic components, including the toxic heavy metals.

This is where this is so highly applicable to the disposal of sewage sludge, because all metals are incorporated in this silica-alumina matrix and rendered totally nonleachable by the EP Toxicity Test. In fact, the tests have shown that leachate has the quality of drinking water, and yet it was not appreciated that there is such a distinction.

My colleague from Rutgers University mentioned that all of the residues are equivalent. It is true that composting is subject to leaching of heavy metals into the water table and so is incinerator ash, but this is not true of the glassy frit produced by slag gasification.

Furthermore, by the admixture of coal which is a high energy product, with the sludge, we produce three to seven times as much energy as mass burning incineration, and this is the reason why this process is economically competitive to incineration. The energy credits from the sale of electricity are a very important point in reducing the need for high tipping fees. So for all of these reasons we are betting on the--

Of course, New York City is also following this very closely, and I think they have recognized that there's no way in which they could dispose of the prodigious amounts of compost that would be produced from New York City sludge. This would, regardless of the fact that I think it would be unacceptable to let the heavy metals leach into the water supply--

SENATOR VAN WAGNER: What do you do with the brickettes?

DR. SCHULZ: The brickettes are simply fed into the top of the gasifier, just in-- Coal gasification, of course, has been around for over a century, but these brickettes gravitate down the gasifier. They're totally consumed and they're turned into a clean gas, and the fact that we use pure oxygen instead of air and the fact that the gasifier operates under high pressure, means that the total volume of product gas is 2% to 5% of the volume of the corresponding amount of incinerator effluent. That means that we can use very meticulous cleanup procedures. This is also free tested and the procedure is in operation at the Great Plains Gasification Project, where they are operating 14 gasifiers, each with the

capacity of 1000 tons per day. That's 14,000 tons per day, and the gas cleanup system is provided by Lurgi Corporation of Germany, which is associated with us. British Gas--

SENATOR VAN WAGNER: Are there any air emissions problems, sir, that are--

DR. SCHULZ: No. The system is totally enclosed and nothing is vented to the atmosphere. The gases are completely scrubbed and anything that is scrubbed out of the gas is recycled into the gasifier. The organic material is completely decomposed into small fuel molecules such as carbon monoxide, hydrogen, and methane, which make a fuel gas equivalent to natural gas.

SENATOR VAN WAGNER: And what happens to those products, by-products, methane, and--

DR. SCHULZ: They go into a gas turbine. In other words, after they are completely cleaned, they are combusted and fed into a gas turbine, under pressure, which generates electricity and steam, by cogeneration. Then the combustion products, which are the equivalent to the burning of natural gas, are discharged through a stack, but this is completely free of any of the combustion products produced.

SENATOR CONTILLO: I don't care about the technical stuff. I don't understand it. I'd be more interested in-- But I can't go anywhere and see this operating, can I?

DR. SCHULZ: Yes. For instance, at Westfield, in Scotland, there's an exact prototype of the gasifier that we would build for this, and this has been in operation for--

SENATOR VAN WAGNER: Is there anywhere closer we can go?

DR. SCHULZ: No.

SENATOR CONTILLO: I'll be in Scotland next week. I'm dead serious.

DR. SCHULZ: Well, I think the Passaic Valley Commissioners are going there on June 15.

SENATOR CONTILLO: Well, I'm paying for my own trip, and I hope they are, too.

SENATOR VAN WAGNER: Let me, without belaboring this -- and I can appreciate the technical knowledge and background you have, Doctor-- Can you provide the Committee with a model? You do have it? Okay?

SENATOR CONTILLO: Something smaller than that thing?

DR. SCHULZ: What?

MR. CAPECE: We have the Monarch review version.

SENATOR CONTILLO: A little four-page, four-color brochure?

SENATOR VAN WAGNER: We would appreciate seeing that. I would also ask you just one question: Is there an extent to which the sludge must be dewatered before it is gasified?

DR. SCHULZ: Yes, sir. Now, if I may, just to make a small distinction-- There are two ways in which you can dispose of this. One is if you just want to get rid of the sewage sludge, you have to dry the sludge to about 80% solids and then you compact it with coal and you make brickettes, just like those we showed you. But if you want to co-dispose sludge with municipal solid waste, then all you need to do is to dewater it to 25% or 30% in a belt filter or centrifuge, and by mixing it with the RDF, you can get the proper amount of moisture for bricketting.

SENATOR VAN WAGNER: Okay.

DR. SCHULZ: That's important; the moisture content is critical.

SENATOR VAN WAGNER: Thank you very much. We appreciate your coming today.

DR. SCHULZ: Thank you for the opportunity.

MR. CAPECE: Mr. Chairman, we're just going to leave it with your staff. (referring to demonstration materials)

SENATOR VAN WAGNER: We appreciate that. Just leave it right up here.

MR. CAPECE: This is the revised version, for Senator Contillo.

SENATOR VAN WAGNER: Okay, we're going to have Mr. Tuttle. Is he here?

R O G E R T U T T L E: Yes.

SENATOR VAN WAGNER: Okay. Mr. Tuttle and Mr. Clark, if you would come forward. Then we will have Mr. Lipke. The anchormen will be Mr. Sheldon Lipke, Mr. Mike Brinker, and Mr. Alan Jacobs, and we will hear from the people who have to meet this deadline. Probably in reverse order. They're the most important, really. Sir, go ahead.

MR. TUTTLE: My name is Roger Tuttle, and I am President of a company called Earthline Sales, which is a division of Bird Compost Management Inc. We've been marketing and reusing compost for 10 years. We cannot get enough compost that is clean and on spec to market. If we were able to get our hands on 500,000 yards, a million yards, every single year, year after year after year, there would be a beneficial reuse for this.

SENATOR VAN WAGNER: Have you ever looked at New Jersey's potential?

MR. TUTTLE: Yes.

SENATOR VAN WAGNER: Okay.

MR. TUTTLE: And in my opinion there-- I would like to come back and somehow share some more particulars--

SENATOR VAN WAGNER: You're going to.

MR. TUTTLE: Okay.

SENATOR VAN WAGNER: Your wish is going to be granted.

MR. TUTTLE: I think there are several dilemmas. I need to give you a quick background.

SENATOR VAN WAGNER: Go ahead.

MR. TUTTLE: If you were to ask, "Name the top three states' regulatory agencies that you've dealt with over the last 10 years"-- and we've been in 22 states -- New Jersey,

Pennsylvania, and Florida have to be at the top of the list. One of the interesting things is, I think we need to spend, and identify that we agree from a watchdog standpoint, a regulatory standpoint, and a legislative standpoint: We probably all agree on 85% of what we're all saying, and we need to identify how we manage that other 15%, but I've found the New Jersey regulatory agency very easy to deal with from a composting standpoint.

I think the most important issue that we have is pretreatment. We must be bold and have the courage to say, unanimously, from a legislative standpoint and a regulatory standpoint-- Every Senator, every person who is a legislator in the State of New Jersey, must unanimously vote, we have to have clean sludge. And if that's done, and it's never backed off-- I've been involved where -- as an analogy -- where the rubber meets the road. What happens is we've tried to get compost out to some sites. What occurs is we get calls behind the scenes: "Please back off. Don't go over there. You can't do this." So, we all have to say--

SENATOR CONTILLO: What does that mean, "We get calls behind the scenes"? I don't understand that.

MR. TUTTLE: For instance, I believe that there are counties within the State of New Jersey which do not support clean land application of compost. They may say they do, but when you actually go to take the compost there, they are prohibiting and trying to not have land application. Again, you've got to say-- We say it must be clean. If it's clean, then it can be used. Our services were highlighted in--

SENATOR CONTILLO: But isn't that really the problem of any alternative method other than pure incineration? That's the feeling I get from most municipalities. The answer to that is yes, but I believe that it can be successfully done. It was successfully done in other states and other counties and other cities, and it can be done here.

MR. TUTTLE: Some major customers have used-- Compost was used at Trump Castle, in 200 country clubs in New Jersey, and at about 500 athletic fields.

SENATOR VAN WAGNER: We understand the issue.

MR. TUTTLE: Excuse me?

SENATOR VAN WAGNER: We understand the issue.

SENATOR CONTILLO: I'm curious where Trump compost is--

MR. TUTTLE: Eighty tractor-trailer loads on the top of the second floor in Trump Castle has compost.

SENATOR CONTILLO: Excuse me?

MR. TUTTLE: On the second floor, where all his shrubs are outside, 80 tractor-trailer loads of compost and sand were mixed together to make a growers' mix, and are used there right now.

SENATOR CONTILLO: Oh, I see what you are saying. A one-time thing.

MR. TUTTLE: Right.

SENATOR CONTILLO: Okay.

MR. TUTTLE: Just to share a thought with you, we are one of the eight joint participants in New York City. It's a package of seven people. We have five sites that we have and we're permitting throughout four states to-- And we have a serious interest. We're spending major dollars in making that presentation to New York City, so I do believe that there are people who are stepping up to the plate as private industry, willing to risk significant dollars, that they can compost and then participate in beneficial reuse.

SENATOR CONTILLO: Comment on a comment from the DEP, that it is going to take three square miles per year, alternate, different three square miles just to deal with the sludge.

MR. TUTTLE: I think that that's true. He assumed the lowest possible Class B sludge.

SENATOR CONTILLO: Prior to pretreatment.

MR. TUTTLE: Class B sludge.

SENATOR VAN WAGNER: I think that when you hear from Mr. Clark, you will get an insight from something that he says.

MR. TUTTLE: If you, on the other hand, fought for Class A sludge -- and clean sludge, which can be done-- We just have to make a commitment together then at significantly less volume of land.

SENATOR CONTILLO: Okay, which I agree with; which has been my point from day one. Are we wasting money pressuring to get out within a few months? Should the money not be better spent for pretreatment?

MR. TUTTLE: If I was a businessman who was hired by the State of New Jersey to solve the short-term problem, I would take and compost at three or four strategically located locations in the State of New Jersey with -- either at landfills that were accessible-- And I would use portable in-vessel systems that are available, where you could put portable walls up, in-vessel, with agitation, and do that as a short-term basis. Use that compost for closing all the landfills. There are 300-plus landfills that need organic material. Meanwhile, have a vigorous pretreatment program to get the product then into general population and general use, but that can be done, and that can be done--

SENATOR VAN WAGNER: Pretty quickly.

MR. TUTTLE: Excuse me?

SENATOR VAN WAGNER: Pretty quickly.

MR. TUTTLE: Very quickly.

SENATOR CONTILLO: Is it being done?

MR. TUTTLE: Is that being done? Sure.

SENATOR CONTILLO: Where?

MR. TUTTLE: Fairfield, Connecticut put up walls very quickly. There's new portable walls where you put I beams up and drop panels in and you can--

SENATOR CONTILLO: Where are they doing that? In Fairfield?

MR. TUTTLE: Yeah, in Fairfield. It's an in-vessel system. Just in-vessel, agitated systems.

SENATOR CONTILLO: And how many tons do they do there?

MR. TUTTLE: Their system isn't very large. Let's go to examples that are successful. Philadelphia is producing a successful compost product that can find its way to beneficial reuse and certainly the landfill final vegetative cover.

SENATOR VAN WAGNER: What's the difference between the cost of doing that-- What's the average cost of doing that per ton?

MR. TUTTLE: The average cost of doing that?

SENATOR VAN WAGNER: Tipping fee.

MR. TUTTLE: Well, you heard the figure of the $300 for in-vessel which came out of Westchester. I think that's a typical figure. You shouldn't go any higher than that.

SENATOR VAN WAGNER: Three hundred dollars a dry ton?

MR. TUTTLE: Right.

SENATOR VAN WAGNER: And they're probably spending what, Mr. Lipke, sir?

S H E L D O N L I P K E: Yes.

SENATOR VAN WAGNER: Back there? (referring to Mr. Lipke's location in the audience) What would you spend per dry ton to send it somewhere else, for example?

MR. LIPKE: (speaking off microphone from audience) Probably anywhere between -- a rough guess: between $250 and $350.

SENATOR VAN WAGNER: So, comparable.

SENATOR CONTILLO: Does that include the penalty you paid, or is that--

MR. LIPKE: There is no penalty after you stop ocean dumping.

MR. TUTTLE: I think it's important -- if I may share this-- I think it's important to share, in concurrence with Dr. Finstein, in that, I believe that the legislative body

needs to mandate: 1) proper composting so final compost can come out; 2) if we're going to mandate recycling, whether it's from leaves or MSW or sludge, we need to mandate DOT, Garden State Parkway, parks commissions, and many of the people to use the product, because I go in later on, after I have the product, and have a very difficult time getting them to say yes.

SENATOR VAN WAGNER: You're not going to believe what the problem is there, but I'm going to tell you.

SENATOR CONTILLO: It works too well.

SENATOR VAN WAGNER: It works very well, which means the maintenance crews are out cutting the grass more often than they are normally cutting the grass, believe it or not.

SENATOR CONTILLO: Well, you can pin it down.

SENATOR VAN WAGNER: You're laughing. You're laughing, but this is a fact.

MR. TUTTLE: But there are management-- For instance--

SENATOR VAN WAGNER: You talk about government-- You think government is easy?

MR. TUTTLE: --the American Beach Grass is dying in New Jersey, and dune stabilization is desperate, and if we used compost there, we could solve that problem. That work is being done and it's successful.

SENATOR VAN WAGNER: I want to stop you there, because whether you like it or not, you are going to be involved, okay? So, stay on call. Don?

D O N A L D B. C L A R K: Okay, I'm not going to give my testimony: It's in two parts, as well. I guess all I would like to say is that the organic matter content of New Jersey farmland right now is only 1.5% to 2% after 200 years of agriculture. Also, we've had a very high erosion rate in New Jersey. Our soils would be better off if they contained at least 4% to 6% organic matter, and actually, if it were 8% to 10% it would be far better than that. It takes about 10 tons of organic matter per acre to raise that 1%, and we have over 3

million acres of land, including over 850,000 acres of farmland in this State that can benefit from compost -- compost sludge, compost period; anything organic, and it's very valuable.

Some organic farms -- and we're going toward organic farms in New Jersey -- use 30 to 40 tons of compost a year, year after year, with spectacular growing results. It just seems to disappear on these lands, and we can take you to some of them. The microorganisms in the compost help dissolve the inorganic minerals that help make them viable growing plants. A healthy soil grows strong plants that do a good job of resisting pests. You don't need your pesticides. The organic matter helps the soil in its use of moisture. The nutrient value of compost in sludge is sizable. The need for chemical fertilizers drops dramatically when you use compost and composted sludge. Organic or sustainable farmers really now are depending heavily on compost and we think that compost and composted sludge, or just plain sludge, applied, is a valuable resource, and probably the best resource this State has.

SENATOR VAN WAGNER: Is there concern on the part of farmers about liability, about complaints of odor?

MR. CLARK: Well, yes. They have all those, and there have been farmers in the State who have taken sludge -- just sludge from treatment plants -- and just spread it on their soil without any management plan, and without even a conservation plan, and there have resulted--

SENATOR VAN WAGNER: So you're saying this is more of a specific kind of a thing than it is of a general thing.

MR. CLARK: So, it's gotten a bad name in a couple of places, but it's going on throughout the whole country. I've got all kinds of reprints over there about what is happening. Oklahoma City sludge happens to be stabilized with lime and is land-applied on 12,000 acres all the time. And by the way, the reapplication of this can go on. All you have to do is worry about a few of these things. And by the way, we're not even so

sure that some of the levels that we call Grade 1 and Grade 2 are accurate. Sometimes these dear old microorganisms have an ability to not attack the metals, just leave them there. They go after what they need for that metabolism, and then that's transported to the plant. We're not so sure that some of the heavy metals that are in the sludge are that dangerous.

SENATOR VAN WAGNER: How about aquifer contamination? Groundwater, aquifer?

MR. CLARK: Well, with organic matter-- Organic matter helps to retain the moisture and use it more effectively. You don't put on as much; you don't irrigate, and all of that which then drives it down. Hopefully you are going to use a lot less fertilizers and pesticides, and that's what we're worried about mostly in the aquifers.

In fact, there is a lot of research going on now throughout this country which shows that farmers can reduce-- For example, just in this Oklahoma City -- and you've got a reprint of it there -- the farmers, after they paid for the sludge-- They have to pay $10 an acre for the sludge that goes on their land, and a little bit more than that because they have to pay for the transportation of if as well. They've saved over $80 per acre over the cost of the sludge in avoided fertilizer costs alone. That's not counting their increased productivity from their crops which go -- depending on the crop-- Corn goes up at least 20%; yields increase per year.

SENATOR VAN WAGNER: Okay. I'd like to ask both of you gentlemen if you would make yourselves available to the Committee, because I sense what I wanted-- Step one, legislatively, what I would like to do is to gather in some of the legislative proposals that have been made today, and formulate some type of working group arrangement where we can start to look at them realistically. I would like to involve-- (brief pause in proceedings while the Chairman confers with legislative aide)

Before I suggest what our next step is going to be, let me call Mr. Lipke, of the Passaic Valley Sewerage Authority, Mr. Alan Jacobs, and Mr. Mike Brinker. If you would come forward, gentlemen, and tell us the tale. You guys are on the firing line, really, and maybe you can give us some ideas on how we can help. I know money is going to be one of them, but, go ahead.

MR. LIPKE: Thank you Mr. Chairman.

SENATOR CONTILLO: They don't care about money. They just raise their rates.

SENATOR VAN WAGNER: I don't think they really want to do that.

MR. LIPKE: My name is Sheldon Lipke, Superintendent of Plant Operations for the Passaic Valley Sewerage Commission, and I'd like to thank you for giving us this opportunity to express the Commissioners' viewpoints on this subject.

The Passaic Valley Sewerage Commissioners are presently constructing sludge dewatering and loading facilities to meet the March 17, 1991 deadline to halt ocean dumping. We're not here to protest the end of ocean dumping, definitely. We are prepared to meet all of the requirements of the Act, and we're constructing $59 million worth of facilities right now that we will have to abandon when the long-term alternative begins operation in 1996. Of the $59 million, approximately $14 million is for expediting the project to meet the March 17 date.

To give you just a quick rundown on the size of Passaic Valley's problem: We're going to make approximately 1000 tons a day, seven days a week, 365 days a year, of material that we have to get rid of in the interim, to a landfill.

SENATOR CONTILLO: I don't want to interrupt your testimony, but you're saying $60 million. Is it a dewatering plant?

MR. CLARK: That's the dewatering, and facilities to load the cake onto trucks.

SENATOR CONTILLO: Well, my understanding-- Everything I've heard this morning indicates that you'll always be dewatering anyhow?

MR. CLARK: That's a true statement, but because we had to have our facility on-line so quickly, we had to use whatever existing facilities there were, which was a Zinpro dewatering system.

SENATOR CONTILLO: Oh. That's the one they want to phase out as soon as they can.

MR. CLARK: That's right, and a filter press that we had built in 1981 to get out of the ocean. Then, in order to make--

SENATOR VAN WAGNER: That was the first deadline?

MR. LIPKE: That was the first deadline, so we built that facility and put it in mothballs. It's not large enough for all of our sludge, so we had to build an auxiliary facility for the--

SENATOR CONTILLO: Centrifugal?

MR. LIPKE: That's the centrifuges, and in order to get them to both work together, they had to be located in such a place where we can't use them for whatever long-term alternative. So, in order to meet the date, we just had to do what had to be done to meet the date. Unfortunately, that's the facility that we're going to have to abandon. That's under construction right now.

To give you some idea, as I said, we're going to make 1000 tons-- To put this into perspective, if we were to take our sludge and compost it--

SENATOR VAN WAGNER: This is dry?

MR. LIPKE: That would be wet tons.

SENATOR VAN WAGNER: Wet tons.

MR. LIPKE: That's actually tons that go onto a truck. We'll load about 55 trucks on average everyday. If we were to compost, we would make, every year, a football-field-size pile 40 stories tall. Something on the order of 2000 cubic yards a day. That's 100 tractor-trailer loads every single day. You can't get rid of compost continuously during the year; it's only a five- or six-month season, so what we would have to do in order to successfully implement compost is: One, we would have to find a site which has about 250 acres to conduct a composting operation, and the biggest problem we have with all of these land alternatives is to find a place that can get rid of the huge volumes that we produce. I'd like to just talk a little bit, and then I'll come back to that, if I may.

We're very interested, of course, in the period between March 17 and December 31, 1991. We know that the date March 17 was contained in the Act and was set to end at the five-year term at which the 106-mile disposal site was deauthorized. The choice of that date didn't really coincide with any oceanographic event, but was really an arbitrary choice made for symbolic reasons, really to get us out of the ocean. Because New York may continue dumping until 1992, our taxpayers are going to be faced with a huge increase in their sewer bills, while the amount that we reduce going to the dump site will only be a 30% reduction, and of that, 15% is Passaic Valley's.

The City of Newark's bill will increase by $14 million for that eight-month period; Jersey City by $4 million; Paterson by $4 million; and Passaic by $1.4 million. We're really asking, is it really fair for the poorest cities in New Jersey to pay for a symbolic gesture? We want to know why our taxpayers are being discriminated against, when New York can continue dumping well into 1992?

Scientists have expressed concern about the negative impact on the ocean environment due to the poorly understood long-term effects of disposal. We are not advocating long-term continuation of ocean disposal, but only the short-term relief that our taxpayers would receive if we were treated the same as New York.

It's interesting to note, everyone who has testified here today -- and probably enough people to fill this room twice -- have been to our facility to talk about various alternatives to ocean dumping, including Mr. Tuttle and Dr. Schulz. I can tell you exactly what we've told them. What we have said to them is that we are very interested in anything except incineration at PVSC sites. We do not want to build the world's largest sludge incinerator in Newark. We have told them this, basically: Give us a proposition. Just give us some idea of what you're talking about and a guarantee that you will remove our sludge every single day. That's all we ask for. Guarantee to remove the product.

So far we have had only two companies, with one alternative, that have met that condition. That is our only condition. Mr. Tuttle came to our offices-- This is just an example, I'm not singling him out. But he was in our offices about three months ago. We talked, and we had a great meeting. We haven't seen him since.

We're up to, I guess, alternative Number 43. On this list of people who have visited us, we have told them exactly the same thing: Give us a proposition and guarantee to remove the product. We don't--

SENATOR VAN WAGNER: Don't you limit your suppliers by insisting that one person take care of all of it?

MR. LIPKE: Actually, we would like to have one person or one group take care of the product, okay? We make about 1000 tons of cake, or on a dry basis, 500 tons a day. Everybody said that after a number of years they could work up

to about 100 tons, 100 tons compost, maybe 50 to 100 tons of other material for other uses -- land application. The only persons who have really said that they can get it, to take all of our material, are people with incineration options and two gasification options. Those two are Dr. Schulz, who is Global Energy, and the Texaco Corporation, which also has a competing technology. Neither of those technologies are actually proven, as they have admitted to us.

What we did, in order to move this forward, because what they seemed to say, although it's not proven, is that it's environmentally superior to incineration-- What we said to them was: "Okay, we set up meetings with the N. J. DEP, and the U. S. EPA to get testing protocols from the State." In other words, tell them exactly what the State needs in order to give this a clean bill of health, and the State has been excellent. They have worked with them. They gave them the information, and we think sometime this fall there are going to be some full-scale tests -- multimultimillion dollar tests -- of these technologies to determine whether, in fact, they have no negative environmental effects.

SENATOR VAN WAGNER: Mr. Brinker?

M I C H A E L B R I N K E R: Thank you, Senator. While I didn't plan to make a formal statement, I would like to thank you for the opportunity to fill you in on the Joint Meeting's progress to date.

Joint Meeting is presently on the road to complying with the mandate to cease ocean dumping by March 17, 1991. At the present time we're constructing a $22 million sludge dewatering facility in Elizabeth at our treatment facility which will utilize dewatering centrifuges to dewater the sludge to 25%, and with lime addition, it will probably bring it to approximately 30%, for out-of-state disposal between the interim period of 1991 and 1996. The $22 million figure is approximately 50% over the budget estimated originally for the

construction of that dewatering facility, and it's the Joint Meeting's opinion that the March 17 date rather than the December 31 date is probably to blame for that 50% increase, primarily because of the tight time constraints imposed upon Joint Meeting, and thus its contractor, for only 13 months worth of construction.

The Joint Meeting recently put out on the street for bid, a document which would require a contractor or contractors to take our dewatered sludge out-of-state to an approved site. Thirty-five documents were picked up by 35 prospective bidders. However, only three bidders responded on April 19, all three of which were for landfill disposal options out-of-state. The document that the Joint Meeting prepared allowed for creative alternatives to landfilling. It did not specifically drive home the landfilling option, but left open the option to a prospective bidder to come in with a composting, landfilling, pelletization, chemical stabilization, or even a gasification proposal for the Joint Meeting, but only the three bids that we received were for landfills out-of-state in West Virginia, Ohio, Pennsylvania, and upstate New York.

Technical difficulties with the documents required us to reject the documents, the bids, a week after, and we are going to presently rebid in June. This was done through the public bidding process. The cost is estimated to be approximately $30 million a year to haul and dispose of this sludge -- $30 million over a five-year period, or approximately $6 million a year.

Joint Meeting's long-term plan is to incinerate its sludge at the site in Elizabeth, along with that of Rahway Valley. However, our plan does not really take effect until 1998. During that time period we will obviously apply for a sludge incineration permit on behalf of ourselves and Rahway Valley. However, we are also considering other possible

alternatives to the incineration mode; namely, the gasification process, by working with Public Service and Texaco at the present time.

SENATOR VAN WAGNER: Thank you, sir. Mr. Jacobs?

A L A N J A C O B S: Thank you, Senator. I have a couple of items that I would like to talk about. One is the process and the alternatives that Middlesex has developed, and if time permits, I have a brief statement that Richard Kurtz has prepared. He's the Executive Director of the Middlesex County Utilities Authority, who couldn't be here today, and asked me if I would present it to you.

Middlesex's plan is chemical fixation of the dewatered sewage sludge. At the present time the Authority is in the process of constructing the sludge dewatering plant. The total facility has an estimated cost of $56 million. That's spending money at an incredible rate over the next 10 months of approximately $5 million a month of construction. Cindy Zipf, who was here earlier, gave you a sample of the chemical-fixed product. Basically what that is is taking the dewatered sewage sludge, mixing in lime and cement, or cement kiln dust, and producing a synthetic soil out of the sludge product. In fact, if you analyzed that material, if you gave that material to an agronomist and said, "What is this?" he would tell you that that is soil of a silty, loam, type of nature.

Our intent is to use that sludge as landfill cover -- intermediate and daily landfill cover -- in place of natural soil covers that are becoming scarce. The Authority did a test plot of that material last year, using 200 yards of that material, and prepared the documentation and reports for the DEP which has approved it for that use.

The material also has value as a soil agricultural product because of its high lime content and the acid soils that we -- the low pH soils that we have in many parts of New Jersey. And we are presently exploring utilizing a portion of

that material that we'll produce as an agricultural product. That's our plan, basically, to get out of the ocean on March 17.

There's another thing we want to do: We're planning on taking a portion of Middlesex sludge and producing what's called a heat-dried product. You've heard that mentioned today, the Milorganite product; the type of product that you can go into K mart and buy in a 50-pound bag off the store shelves. Many of those contain dried sludge products from Milwaukee, or from Houston, or from other parts of the country. That process, however, requires more sophisticated equipment and will take us beyond March 17 in order to construct.

So, the plan for Middlesex is to get out of the ocean with the chemical fixation process using it as landfill cover. So that we don't put all of our eggs in one basket down the road, we also want to take a portion of the sludge and dry it and produce a commercial fertilizer product as well.

Mr. Chairman, may I read this brief statement from Mr. Kurtz?

SENATOR VAN WAGNER: Sure, go ahead.

MR. JACOBS: "I would like to preface my remarks by offering my sincere congratulations to Ms. Helen Pettit of the N.J. DEP, and Dirk Hoffman of the Wastewater Trust. These people and their staffs provided assistance unparalleled in my 30 years of dealing with State agencies. Not only did they make decisions in a timely fashion, but they prodded others to move forward at a pace uncharacteristic of any large bureaucracy. The people of Middlesex are indebted to the results of their sincerity and dedication.

"Getting out of the ocean will not be easy for Middlesex within the constraints imposed by New Jersey legislation. Our situation is, we may meet the March 17, 1991 deadline. The building is under construction, the equipment is now being tested, and our proposals for the final phase are due

on May 21, 1990. And while the contracts call for sludge processing to commence on or before March 17, 1990, the weather, the courts, and the simple truth that things don't always happen on schedule, will dictate the actual date of completion.

"The Legislature should accept the Federal deadline of December 31, 1990 for no other reason than to reduce the overwhelming amount of paperwork which will be thrust upon an already understaffed N.J. DEP to enforce the ill conceived March 17, 1991 date. Other large metropolitan areas will not be out of the ocean by March 1, 1991, or even December 31, 1991. New York City and Boston will continue to discharge sludge into the Atlantic long after New Jersey authorities have stopped. And while it may be nice to be first, there must be accommodation for those who, while trying, are unable to meet the arbitrarily imposed New Jersey deadline.

"Other considerations from the Middlesex perspective are far more important than the date of March 17, 1991. We, like all our sister agencies, have an impressive record of cleaning our sludge through the industrial waste pretreatment program."

And by the way, Mr. Chairman, the Middlesex sludge is a Class A sludge in the State of New Jersey, which is the cleanest category assigned to sludge in New Jersey.

"During the past six years, we have reduced zinc by 96.6%, copper by 97.2%, and lead by 99.6%. We are now at Class A sludge, the highest recognized by the DEP.

"Middlesex wants to diversify its sludge reclamation option by manufacturing fertilizer products. A few months ago we made a fertilizer through a test program at Middlesex. This fertilizer is a good material. It has a high nitrogen content. There is a market for this product in New Jersey. We import thousands of tons of sludge-derived fertilizers from

other states each year and you, the Legislature, should take whatever steps are necessary to allow us to go forward to be competitive within New Jersey.

"As an example, the State of Wisconsin, where Milorganite is made" -- that's the Milwaukee sludge product -- "requires the use of Milorganite as the fertilizer on all public projects in Wisconsin. They don't have an option. That's to promote the use of Milorganite. The New Jersey State Highway Authority alone could utilize all of the sludge products from Middlesex County -- heat dried sludge -- if they were asked to do so.

"Finally, I would ask that you keep in mind that authorities don't pay fines and penalties, people do. While our State is in the mode of keeping New Jersey tougher than anyone else, remember the people. For while the record may eventually show that millions have been collected in fines, to the delight of so-called environmentalists, our politicians, it is the homeowner who suffers. It is time to review the record on the selection of March 17, 1991. It is time to discuss the issue with the people on the front line of compliance, the engineers, the contractors charged with implementation, and it is time to ask ourselves why the taxpayers must suffer the consequences of an arbitrary, ill conceived, impossible deadline? By comparison, it takes the State of New Jersey more time to construct a simple traffic signal, or to improve a highway intersection than was given to the authorities to comply with the ocean dumping law.

"I urge you to adopt the Federal schedule."

SENATOR VAN WAGNER: Thank you.

First, I think I have to correct something which staff tells me. The date of March 17 was not arbitrarily selected, okay, number one. We keep hearing that word. It was not an arbitrary selection. It was selected as a date because that is

the date upon which the 106-mile site will be dedesignated as a dumping site. So, it was not arbitrarily reached. The conclusion was not reached to do that.

Secondly, I would like to say that I concur very much with the remarks that were just made, and remarks that were made by others about the cost of this. It ultimately does fall to those of us who are the ratepayers; no question about that. But interestingly enough, I've talked to a lot of the ratepayers over the course of time, over 16 or 17 years of elected public office, and I've talked to those ratepayers in various locations, and believe it or not, many of them are, in fact, willing to pay that price, to be first. Many of them are willing to pay, if they know that there is going to be an improvement in the environment. I realize that sometimes these issues break down on a regional basis, but in most cases of people whom I have talked to, north, south, east, and west, there is a general recognition that the ocean and the waterways of this State -- particularly the ocean -- are very important economic factors, as well as environmental and recreational factors. People from practically every walk of life and in every section of this State have either, through fishing, or swimming, or just sitting on the beach, looked forward to enjoying that.

So, I don't think it's just a question of the Legislature versus the utilities authorities, or environmentalists versus politicians, or politicians versus everybody else, or the fact that perhaps we haven't moved fast enough or hard enough. I think it's really a question of, in this decade -- at least it seems to me -- that we've come to an awareness, and I will subscribe to one point that Mr. Kurtz made, an awareness that it's time for the people who have to implement these difficult decisions to come to the front line and say how they are going to do it. And that's what I hope to start to accomplish with this hearing today: to bring you now,

the front-line troops, further into the process, because the front line is manned by a lot of people, not just public officials. It's manned by citizens, too.

What I would like to do is to formulate a real working group of people. You three would be a great start, because you represent half of the authorities who have to face this difficult task, and all of you presented your cases well. The first panel we heard, the people who are involved there-- There is diversity of opinion, but that's what makes the world go around. I would like to have some of them involved. Some of the people from the industry groups, representing both gasification techniques and composting. I would like to have them involved. And the DEP, Mr. Keith, Ms. Pettit, or Dirk Hoffman, or a designee from that Department -- to have them involved, along with myself and our staff to try to reach, quickly, some decisions as to what legislation we need to have. For example, perhaps mandatory legislation requiring that composted materials be required for public use, parks, medians, publicly-owned lands, whatever; mandating tougher pretreatment by certain dates; looking at it realistically; and consolidating the long- and short-term plans to the extent that we understand them and we know what direction they're going in, and bringing them together. Mr. Keith already mentioned that there is a distinct change in the management approach now, that's going to be taken.

Bringing together some of the things that we've already done; the outcomes of the Clean Water Enforcement Act, which will be started on Wednesday. What can we reasonably expect from that? The outcome of Senator Dalton's legislation, the pollution reduction legislation. What can be reasonably expected of that? And say that on March 17, 1991 we will have come up with the following facilities to deal with this portion of our problem in the following manner: 20% -- whatever percent -- of the amount of sludge that is still being produced will,

in fact, by a date certain, be placed in a composting mode to be utilized for that purpose. Another 10% we found can be effectively dealt with through the process of gasification. I'm throwing out numbers; they don't-- Another "X" percent will be utilized by doing something else, and the remaining, unfortunately, we will be trying to negotiate contracts for out-of-state disposal -- landfill disposal. By a certain date, we will have dewatered all of it to the point where we can do that. But, you know, real livable, workable targets, so that we're not just filing reports that say that we are doing something, and creating cost factors that aren't really accomplishing the things that we hope to do, but we're really meeting realistic targets. We really can go out and quantify our result, and say, "This is what we've done; this is what we've accomplished. This is the legislation that we've put in place to do that. These are the codes and the regulations that we've put into place to do that. This is the technical assistance we have to raise money for and give to you to meet your targets so you don't have to lay all the weight on the ratepayer." That kind of an approach, I think, we can accomplish.

I think we have the capability in this State of doing that. It's not going to be easy. There is going to be a lot of screaming and shouting, but I'd rather be in a room screaming and shouting about something that we're going to try to resolve, than screaming and shouting about something where we're only going to be back five months later screaming and shouting about. As Senator Dalton said several times, you know, we keep revisiting the same thing. So what I hope to be able to accomplish with this, is to not revisit the same thing.

I will generate a letter to all of you who have been here today asking for your time constraints, what they may or may not be -- what kinds of times that may be available to

you. We'll begin the process as quickly as possible -- hopefully we'll start within the next two weeks -- and then we'll worry about deadlines.

I appreciate all of you coming. If I didn't get to someone, I'm sorry. Please submit your remarks.

(HEARING CONCLUDED)

APPENDIX

CLEAN SLUDGE COALITION

Bayonne Citizens for Clean Air
Clean Ocean Action
Cornucopia Network
Environmental Defense Fund
Greenpeace USA
Ironbound Committee Against Toxic Waste

95 Fleming Ave.
Newark, NJ 07105
(201) 589-4668

Natural Resources Defense Council
NJ Environmental Federation
NJ Grass Roots Environmental Organization
NJ Public Interest Research Group
Staten Island Citizens for Clean Air

Testimony on behalf of the Clean Sludge Coalition before the Senate Environmental Quality Committee at the Public Hearing on Sludge Management in New Jersey: Meeting the Deadline to Cease Ocean Dumping.... Monday, May 21, 1990

Thank you Mr. Chairman for holding this hearing and allowing us to provide the Committee with an overview of sludge issues. My name is Cindy Zipf, Coordinator of Clean Ocean Action, and member of the Clean Sludge Coalition (CSC).

What has brought us here is a 20 year battle to end ocean disposal of sewage sludge. By the end of this day, over 26,000 tons of sludge will be dumped at the 106 mile sludge dump located off Cape May, NJ. New York and New Jersey now dump 9.5 million tons of sludge in this environmentally sensitive, economically important marine ecosystem. (See attached for a quick review of sludge dumping). Citizens and legislators have fought to end ocean dumping, and at long last, a New Jersey and federal ban will end ocean dumping by New Jersey on March 17, 1991. The question is, will New Jersey meet the deadline, and what will they do with their sludge?.

In early 1989 a core group including local, state, regional, national and international organizations (those listed above) formed a coalition to insure that NJ and NY would meet the deadlines to stop ocean dumping and that the dumpers would implement sound environmental alternatives. In other words, insure that the clean up of our ocean, not result in the contamination of our air or land. The Clean Sludge Coalition meets monthly to discuss and review alternatives, and briefs interested officials on the issues. The CSC held an alternatives conference, and participated in the EPA's Sludge Round Table (EPA's national sludge workshop on alternatives). The CSC has met with Constantine Sidamon-Eristoff, EPA Region II Administrator, with encouraging support.

N.J. dumps 34% of all sludge dumped. It is 50 % of all sludge generated in NJ. The six New Jesery sludge dumpers are: Bergen County Utilities Authority, Joint Meeting of Essex and Union, Linden-Roselle Sewerage Authority, Middlesex County Utilities Authority, and Rahway Valley Sewerage Authority. New Jersey is now facing the same challenge met by cities such as , Philadelphia, Camden, Boston, and many others, what to do with their sludges.

After careful consideration, the Clean Sludge Coalition is convinced that the most viable alternative for all ocean dumpers is to implement beneficial reuse, not incinertion.

As a result of the NJ legislation banning the ocean dumping of sludge, the New Jersey Department of Environmental Protection issued a report which described, specifically, what the ocean dumpers were planning to do to cease ocean dumping. NJ ocean dumpers have a two phase plan. The Short Term, in order to meet the March 17th deadline, and the Long Term, what they ultimately will do in state with the sludges.

The CSC finds the DEP report to be short-sighted and unacceptable. NJ's waste management hierarchy identifies incineration as a last resort, however the Long Term plans (for the most part) call for incineration. It is the CSC's opinion that a serious examination into beneficial reuse options was not undertaken by NJ sludge dumpers, and it seems the NJDEP did not require it. If the proposed plans are implemented, the end of ocean dumping will result in contamination of our air. This is unacceptable. There are alternatives.

It would be useful to briefly review the six ocean dumpers plans. For the Short Term, again to meet the March 17th deadline, all but two will rely on out-of-state landfilling. Middlesex County and Rahway Valley implementing beneficial reuse options (Chem-fix and Enviro-Gro, respectfully). Passaic Valley, Bergen, Linden-Roselle, and Joint Meeting will depend on out-of-state landfilling. To depend on finding a host state is risky business. It is 10 months until March 17th, none of these dumpers have yet found a willing state. It is possible that they won't find a host state, and there are no backup plans.

As for the Long Term all but Middlesex County plan to incinerate their waste. This option is a grave mistake both economically, and environmentally. Be assured that because of the adverse environmental impacts, incineration will be fought by environmental concerns. The City of Newark already authorized $1 million to fight the incinerator proposed by Passaic Valley.

The best long term alternative is to implement beneficial reuse. New York City is well on their way to implementing reuse options. All of the ocean dumpers can do it.

2x

Our panel here today brings you the best in sludge, everything you wanted to know about sludge, but were afraid to ask. There is nothing scary about sludge. It is a wonderful organic material that is used beneficially in many ways and it is cheaper than incineration. What makes sludge management difficult is the industrial components dumped by industry into the sludges. Better implementation of the pretreatment program by the dumpers would clean up sludge quickly, and the sludge would meet beneficial reuse quality.

The panel will discuss the concerns of incineration and the merits of beneficial reuse in detail.

Dr. Rod Fujita, of the Environmental Defense Fund, will discuss the concerns of incineration. **Dr. Barry Commoner** may also speak on this topic.
Nina Sankovitch, attorney with Natural Resources Defence Council, will discuss beneficial sludge alternatives used in other cities and what New York has done; the economic merits of its use, and market strategies for this region.
Dr. Melvin Finstein, Professor at Rutgers University, is an expert on sludge and will discuss the viability and merits of composting.
And **Don Clark, President of the Cornucopia Network** will discuss the demand and many uses for sludge composting on lands.

The Clean Sludge Coalition is dedicated to environmentally sound land based alternatives-- meaning an end to ocean disposal and the implementation of beneficial reuse. Our message, sludge can be great. We call on the legislature to help insure that cleaning up the ocean, doesn't mean contaminating the air. Sludge dumpers can clean up the sludge and implement alternatives.

Specifically we ask the Committee to:

1) Pass legislation to stop sludge incinerators until a thorough review of beneficial reuse options are explored (similar to the one done by New York City).

2) Require NJDEP to re-do its report to the legislature because it relies on incineration and did not include a thorough, meaningful exploration of beneficial reuse options.

Thank you for this opportunity for the panel to speak.

3x

BACKGROUND ON SLUDGE DUMPING

Responding to a massive Fish Kill off the New Jersey/New York coasts, federal legislation was passed banning ocean dumping of sewage sludge by 1981. Ocean dumping was reduced; Philadelphia, Camden and other stopped ocean dumping. New York and New Jersey fought for, and won the right to continue ocean dumping. NJ and NY continued to dump 8 million tons of sludge at the 12 mile sewage sludge dumpsite off Sea Bright, NJ; a site known to fishermen as the "dead sea". A reprieve for these inshore waters came when in 1985 EPA ruled that the 12 mile Site was severely impacted by dumping and moved the sludge dumping activity to the 106 mile Site off Cape May, NJ.

A total of 9.5 millions is now dumped annually; 34% NJ; 66% NY.

The 106 mile Site is an environmentally and economically important. Over 200 fish eggs and larvae have been identified in the waters effected by sludge. Whales, sea turtles and birds frequent this habitat off the continental shelf. Lobsters, tile fish, winter flounder, fluke, and big game fish are all commercially harvested in the area.

Ocean dumping began in these deep waters in the early 1960's. Over 100 industrial dumpers disposed of waste there. DuPont Chemical, the last ocean dumper, stopped dumping in July 1988.

No background data was ever collected. These waters are very complex and the area of potential impact is vast. Due to the magnitude of the problem and the lack of data it is doubtful that science will have the ability to determine the impact of sludge dumping in these waters.

4x

Let's protect our earth

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Assistant Commissioner
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TESTIMONY FOR MAY 21, 1990 LEGISLATIVE HEARING ON BENEFICIAL USE OF SEWAGE SLUDGE

PRESENTED BY ASSISTANT COMMISSIONER FOR ENVIRONMENTAL MANAGEMENT AND CONTROL JOHN S. KEITH

35 +

Table 1

SUMMARY OF EXISTING SLUDGE PRODUCTION BY MANAGEMENT MODES (dry lbs/day)
as of July 1989

	Short Term On-Site	Long Term On-Site	Incineration (as customer)	Incineration (owner)	Land Application	Ocean Disposal	Out-of-State	Undetermined	County Total	Number of Plants
Atlantic	0	0	4,034	30,478	720	0	76	116	35,424	13
Bergen	0	0	11,539	14,450	0	52,591	4,206	94	82,880	19
Burlington	0	1,414	2,026	0	23,699	0	33,105	1,352	61,596	52
Camden	0	1,066	16,040	7,923	16,234	0	51,412	97	92,772	28
Cape May	0	0	92	0	14,847	0	3,534	258	18,731	21
Cumberland	0	0	488	0	16,519	0	7,865	1,066	25,938	7
Essex	0	303	22,250	0	0	496,565	0	0	519,118	6
Gloucester	0	0	2,877	0	0	0	29,982	433	33,292	10
Hudson	0	202	26,014	0	0	0	70,824	2	97,042	18
Hunterdon	0	28	1,078	0	2,299	0	5,422	128	8,955	30
Mercer	0	0	20,521	0	0	0	25,049	28,261	73,831	20
Middlesex	0	9	2,228	0	0	222,707	23,612	2,735	251,291	21
Monmouth	0	412	43,673	15,608	14.379	0	17,368	1,143	92,583	32
Morris	0	416	35,492	35,796	8,719	0	809	387	81,619	68
Ocean	0	0	0	0	128	0	31,509	558	32,195	15
Passaic	0	0	7,238	17,123	0	0	1,640	204	26,205	30
Salem	0	0	0	0	2,866	0	1,007	1,143	5,016	15
Somerset	0	0	8,127	18,000	2,141	0	0	153	28,421	39
Sussex	0	0	1,877	7	3,411	0	261	113	5,669	31
Union	0	0	3,106	0	0	89,761	0	0	92,867	6
Warren	0	0	9,672	0	346	0	0	1,450	11,468	21
	0	3,850	218,372	139,385	106,308	861,624	307,681	39,693	1,676,913	502
%TOTAL	0.00%	0.23%	13.02%	8.31%	6.34%	51.38%	18.35%	2.37%	100%	

Note: 1980 N.J population = 7,364,823 therefore existing sludge production per capita equals 1,864,995 divided by 7,364,823 or.253 pounds per capita per day.
This per capita figure will increase as the primary treatment plants are upgraded to meet more stringent treatment requirements.

TABLE 2

NJDEP APPROVED SLUDGE MANAGEMENT FACILITIES AND OPERATIONS

County	Facility	Type of Operation	Specific Process	Daily[a] Capacity (dry lb/d)
Atlantic	Atlantic County SA	Incineration	Incineration	32,000
	Buena Boro MUA	Land Application	Composting	1,000
Bergen	Northwest Bergen SA	Incineration	Incineration	28,800
Burlington	Applied Land Sciences	Land Application	Land Application Storage & Lime Stabilization	7,310
	Applied Land Sciences	Land Application	Land Application	2,270
	Pemberton Twp. MUA	Land Application	Land Application	3,250
	Mack McKenzie Inc.	Land Application	Land Application Storage & Lime Stabilization	5,313
	Beverly City SA	Longterm on-site	Reed Beds	826
	Johnstone Training Center	Longterm on-site	Reed Beds	111
	Mount Holly SA	Volume Reduction/ Stabilization	Wet Air Oxidation	29,000
Camden	Camden Co. MUA MOA to Philadelphia	Land Application	Composting	18,333
	Camden Co MUA	Land Application	In-Vessel Composting	100,000
	Gloucester Twp. MUA	Incineration	Incineration	6,800
	Ancora State Psych Hospital	Longterm on-site	Reed Beds	378
Cape May	Caprioni's Sewerage Service	Land Application	Land Application & Lime Stab	907
	Cape May County MUA	Land Application	In-Vessel Composting	40,000[b]
	Woodbine Dev't. Ctr.	Longterm on-site	Reed Beds	224
Cumberland	Cumberland County MUA	Land Application	Land Application	4,284
	Cumberland County MUA	Land Application	Land Application	3,430
	Millville SA	Stabilization Only	Wet Air Oxidation	7,000
	Landis SA	Land Application	Land Application & Storage	9,475
Essex	Passaic Valley SC	Volume Reduction/ Stabilization	Wet Air Oxid.	1,152,000
	Essex Co. Hospital Center STP	Longterm on-site	Reed Beds	303
Gloucester	Gloucester County UA	Incineration	Incineration	72,000
Hudson	US Military Ocean Terminal at Bayonne	Longterm on-site	Reed Beds	202
	Spectraserv	Transfer Station	Mobile Dewatering	-
	Spectraserv	Transfer Station	Dewatering and Transfer Station	-

Hunterdon	Lambertville SA	Land Application	Land Application	2,720
	Readington-Lebanon SA	Land Application	Land Application	350
	Russell Reid	Transfer Station	Transfer Station	-
	Salvation Army Camp Tecumseh	Longterm on-site	Reed Beds	24
Mercer	Stony Brook RSA	Incineration	Incineration	144,000
	Mercer County IA	Land Application	Oil-Immersion Dehydration	222,000
Middlesex	Old Bridge Bd of Ed.	Longterm on-site	Reed Beds	9
	Jamesburg Training School	Land Application	Land Application	1,688
Monmouth	Middletown Twp. SA	Land Application	Composting	10,000
	Bayshore Regional SA	Incineration	Incineration	19,200
	Marlboro Psych Hospital	Longterm on-site	Reed Beds	412
Morris	Pequannock, Lincoln Park, Fairfield SA	Incineration	Incineration	72,000
	Parsippany-Troy Hills	Incineration	Incineration	104,000
	Washington Twp.- Schooley's Mtn	Longterm on-site	Reed Beds	416
	Musconetcong SA	Land Application	In-Vessel Composting	8,000
Ocean	Ocean County UA	Land Application	Oil-Emersion Dehydration	128,000
Passaic	Wayne Twp. DPW	Incineration	Incineration	40,000
Salem	Pennsville SA	Land Application	Composting	2,000
Somerset	Bernards Twp SA	Land Application	Land Application	2,141
	Somerset Raritan Valley SA	Incineration	Incineration	105,600
Sussex	Sussex County MUA	Land Application	Composting	24,000
Union	None			
Warren	AgOrganic	Land Application	Land Application Storage & Lime Stabilization	3,730
	Warren County- Pequest River RSA	Land Application	Composting	920

a - Daily capacities are based on existing permit limits.
b - Phase 2 of Cape May County Compost Operation will accommodate 60,000 dry lbs/day.

Table 3

SUMMARY OF OCEAN DUMPERS' LAND BASED SLUDGE MANAGEMENT PLANS

SLUDGE OCEAN DUMPERS	CURRENT SLUDGE PRODUCTION (Dry T/D)	INTERIM PLAN	LONG-TERM PLAN
Bergen Co. Utilities Authority	30.6	DEWATERING, STABILIZATION, OUT-OF-STATE LANDFILLING	THERMAL REDUCTION ON-SITE WITH RESOURCE RECOVERY
Joint Mtg. of Essex & Union Co	20.6	DEWATERING, STABILIZATION, OUT-OF-STATE LANDFILLING	THERMAL REDUCTION ON-SITE WITH RESOURCE RECOVERY
Linden-Roselle Sew. Auth.	8.3	PLAN TO CUSTOMER INCINERATE ABANDONED. OUT TO BID.	THERMAL REDUCTION ON-SITE WITH RESOURCE RECOVERY
Middlesex County Ut. Authority	106.5	DEWATERING AND CHEMICAL STABILIZATION FOR USE AS DAILY AND INTERMEDIATE LANDFILL COVER MATERIAL	
Passaic Valley Sew Commission	473.0	DEWATERING, STABILIZATION, OUT-OF-STATE LANDFILLING	THERMAL REDUCTION ON-SITE WITH RESOURCE RECOVERY
Rahway Valley Sew Authority	16.5	DEWATERING, OUT-OF STATE CONTRACT LF, COMPOSTING or REUSE	THERMAL REDUCTION AS CUSTOMER OF JMEU

Table 4

EVALUATION OF OCEAN DUMPER'S ABILITY TO COMPOST

SLUDGE OCEAN DUMPERS	CURRENT SLUDGE PRODUCTION (Dry T/D)	EQUIVALENT COMPOST PRODUCTION (Dry T/D)[1]	TOTAL EXISTING PLANT SIZE (acres)	LAND REQUIREMENTS[2] FOR COMPOST PROCESSING		LAND[3] REQUIREMENTS FOR COMPOST DISTRIBUTION
				IN-VESSEL (acres)	STATIC PILE (acres)	(Acres/Year)
Bergen Co. Util. Auth	30.6	22.95	100[4]	3.2	10.5	153
Essex-Un. Jt. Mtg.	20.6	15.45	NA	2.1	7.1	51
Linden-Roselle SA	8.3	6.23	28	0.85	2.8	26
Middlesex Co. UA	106.5	79.90	165	11.0	36.5	529
Passaic Valley SC	473.0	354.75	155	48.7	162.2	1241
Rahway Valley SA	16.5	12.38	35	1.7	5.7	44
					Total Acreage/Year Requirements =	2044 acres

x 14

NA - Not available at time of writing.
1 - Estimated from first column.
2 - Estimated using figures derived from attached Table "Size of Existing Composting Facilities" which yields average static pile processing site requirement of 0.343 acres/dry ton, and average in-vessel processing site requirement of 0.103 acres/dry ton.
3 - All values represent one-time acreage usage (acreage is exhausted after this quantity of loading) and assumes sludge quality has been improved to meet Class B criteria or better (see attached Table 2-1 taken from the New Jersey Statewide Sludge Management Plan).
4 - Most of this acreage is in wetlands.

SIZE OF EXISTING COMPOSTING OPERATIONS

FACILITY	TYPE	QUANTITY (dt/d)	SITE ACREAGE
Sussex Co. MUA	Hybrid Static	12	2
Philadelphia	Static Pile	160	78
Middletown SA	Static Pile	4	1.5

FACILITY	TYPE	QUANTITY	SITE ACREAGE
Cape May County	In Vessel	20	3
Camden Co. MUA	In Vessel	50	2.8

Table 2-1:

SLUDGE QUALITY CRITERIA FOR LAND APPLICATION (1)

METALS (ppm, dry weight basis)

	Class A	Class B	Class C (6)
Cadmium (2)	20	40	
Copper (2)	600	1200	
Lead (2)	2400	4800	
Nickel (2)	625	1250	
Zinc (2)	1200	2400	
Chromium (3)	1000	1000	
Mercury (3)	10	10	
Arsenic (3)	10	10	

PESTICIDES AND PCB'S (ppm, dry weight basis) (4)

	Class A	Class B	Class C (6)
Aldrin	0.10	0.10	
Chlordane	0.10	0.10	
Dieldrin	0.10	0.10	
Endrin	0.10	0.10	
Heptachlor	0.10	0.10	
Heptachlor epoxide	0.10	0.10	
Lindane	0.10	0.10	
Methoxychlor	0.25	0.25	
Mirex	0.25	0.25	
p,p'-TDE (DDD)	0.25	0.25	
p,p'-DDT	0.25	0.25	
p,p'-DDE	0.25	0.25	
Toxaphene	1.0	1.0	
Polychlorinated biphenyls (total PCB's)	0.5	0.5	

MISCELLANEOUS	Class A	Class B	Class C
Phenols (ppm, total) (5)	22	22	
Oil and grease (percent) (5)	3	3	

(1) Sludge must be treated with a "Process to Significantly Reduce Pathogens", or a "Process to Further Reduce Pathogens" as per 40 CFR 257.
(2) See B 1. b. "Basis For Land Appliable Criteria".
(3) From EPA 430/9-77-004, 1977. Municipal Sludge Management:- Environmental Factors. Controlled Municipal Sludge.
(4) Recommended levels for SQAR parameters. Current regulations are being revised and these values may change.
(5) New Jersey Median Sludge Quality from Singh, A., Chase, H.P., and Morris, M.L., 1983.
(6) Class C sludges contain contaminants in excess of Class B criteria, but below Hazardous Criteria as per Federal regulations.

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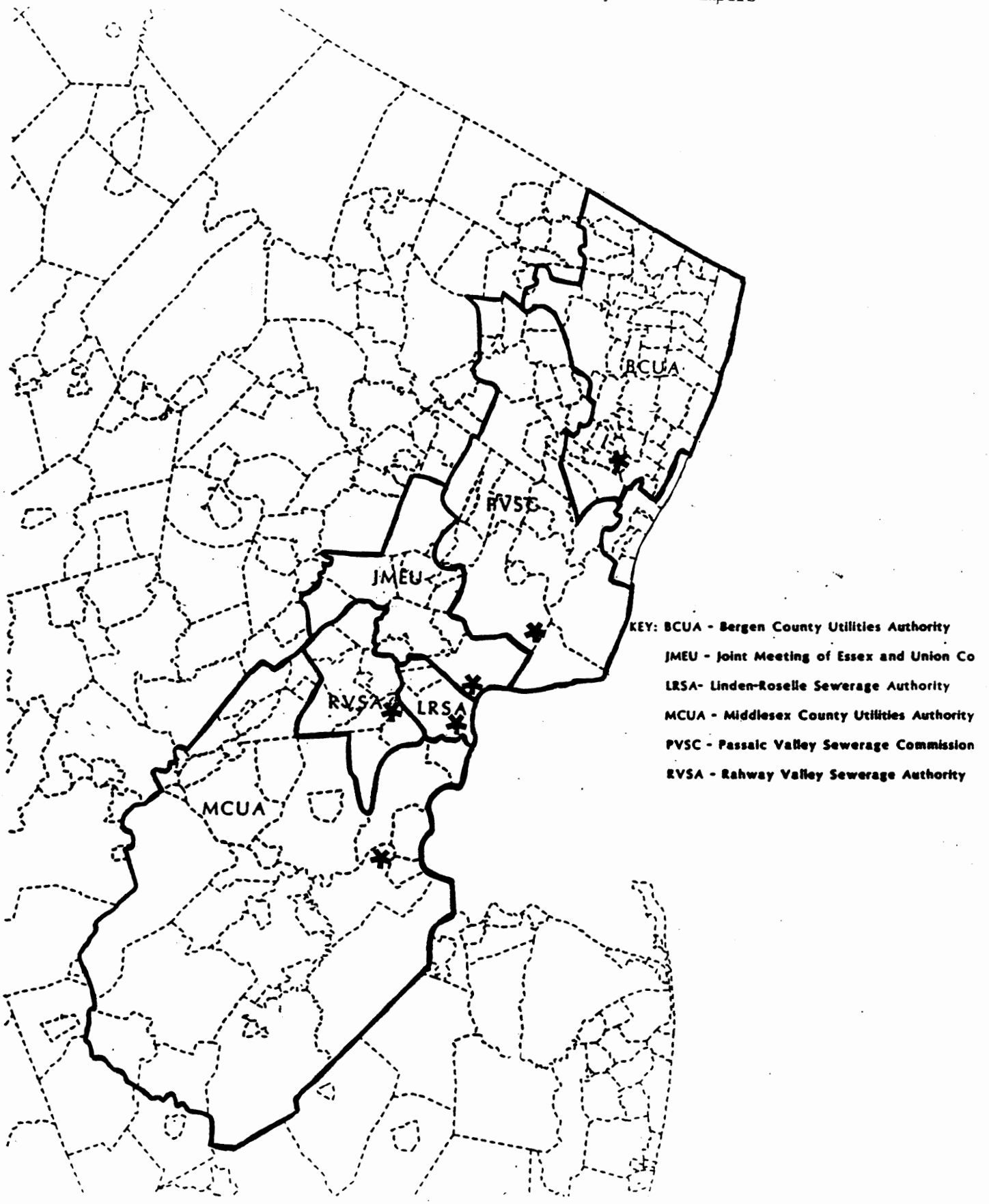
Table 5

EXISTING NEW JERSEY SLUDGE INCINERATORS

Facility	Incinerator Existing Operational Capacity (dry lbs/day)
Bayshore Regional SA	19,200
Pequannock, Lincoln Park, Fairfield SA	88,800
Stony Brook Regional SA	144,000
Somerset Raritan Valley SA	18,720
Parsippany Troy Hills SA	36,000
Northwest Bergen SA	28,800
Wayne Township SA	43,200
Atlantic County SA	32,000
Gloucester Township MUA	6,800
Gloucester County UA	28,080

Figure 1

Location and Service Areas of New Jersey Ocean Dumpers



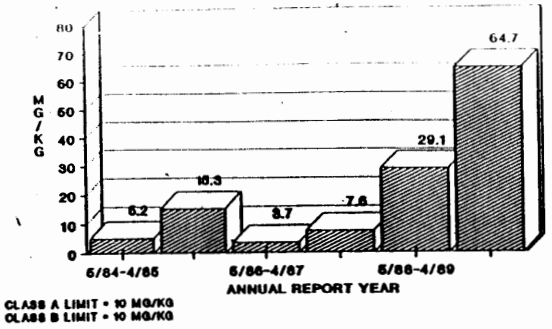
45X

Figure 2

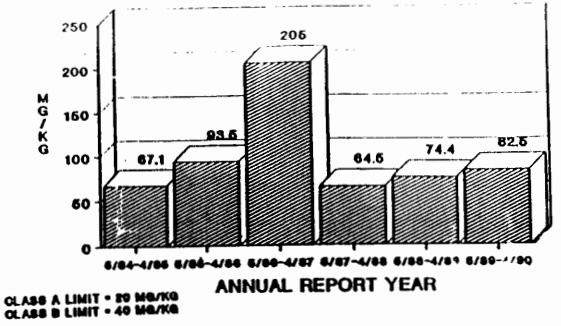
Bergen County Utilities Authority
Trends in Heavy Metals Contamination

(Average Concentrations for Months Shown, Last Arsenic Value of 64.7 represents laboratory detection limits)

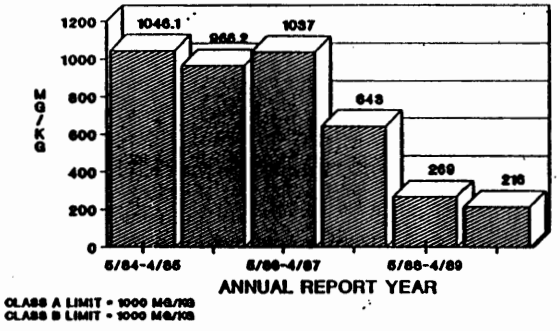
ARSENIC CONCENTRATION, MG/KG



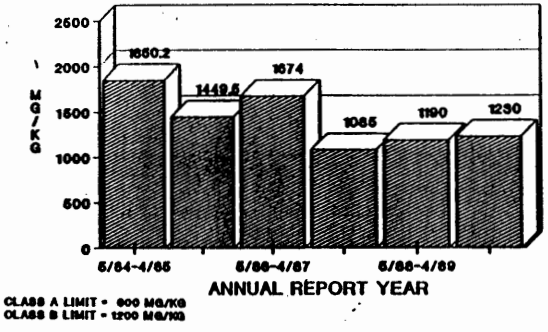
CADMIUM CONCENTRATION, MG/KG



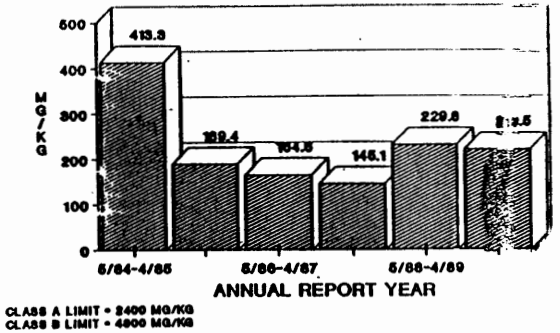
CHROMIUM CONCENTRATION, MG/KG



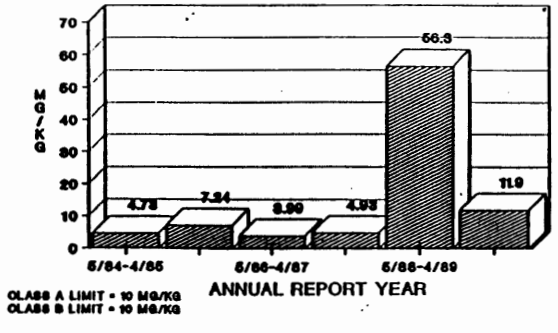
COPPER CONCENTRATION, MG/KG



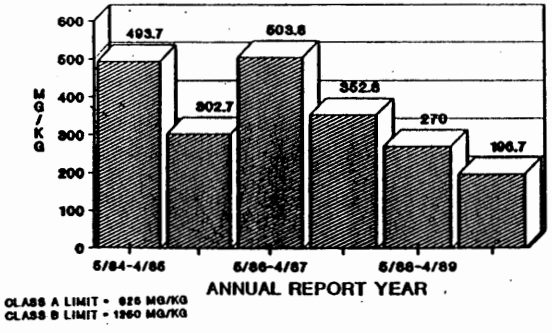
LEAD CONCENTRATION, MG/KG



MERCURY CONCENTRATION, MG/KG



NICKEL CONCENTRATION, MG/KG



ZINC CONCENTRATION, MG/KG

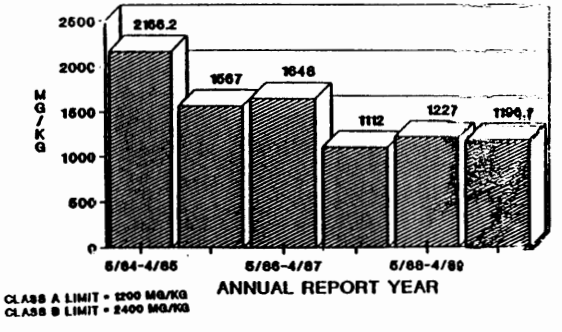
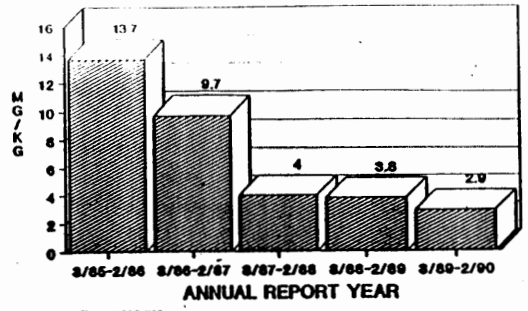


Figure 3

Joint Meeting of Essex and Union Counties
Trends in Heavy Metals Contamination

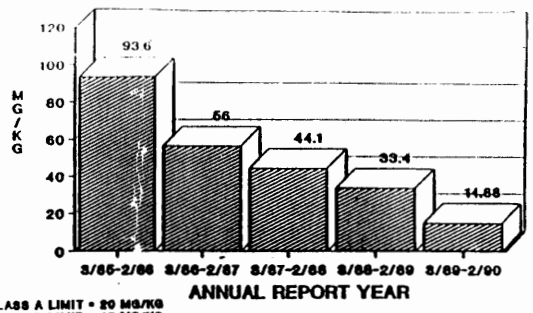
(Average Concentrations for Months Shown)

ARSENIC CONCENTRATION, MG/KG



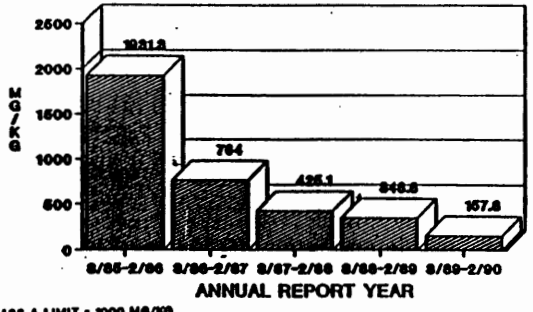
CLASS A LIMIT = 10 MG/KG
CLASS B LIMIT = 10 MG/KG

CADMIUM CONCENTRATION, MG/KG



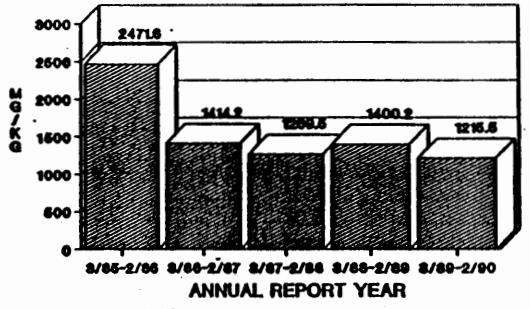
CLASS A LIMIT = 20 MG/KG
CLASS B LIMIT = 40 MG/KG

CHROMIUM CONCENTRATION, MG/KG



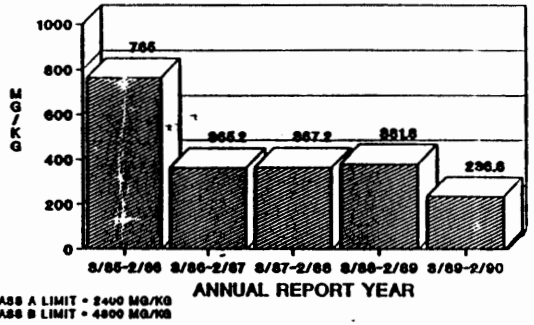
CLASS A LIMIT = 1000 MG/KG
CLASS B LIMIT = 1000 MG/KG

COPPER CONCENTRATION, MG/KG



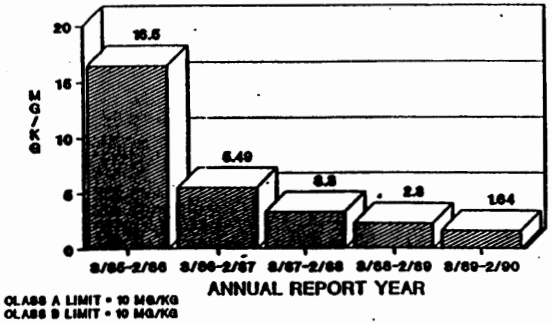
CLASS A LIMIT = 600 MG/KG
CLASS B LIMIT = 1200 MG/KG

LEAD CONCENTRATION, MG/KG



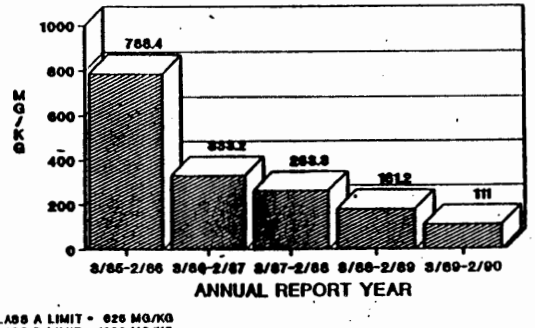
CLASS A LIMIT = 2400 MG/KG
CLASS B LIMIT = 4800 MG/KG

MERCURY CONCENTRATION, MG/KG



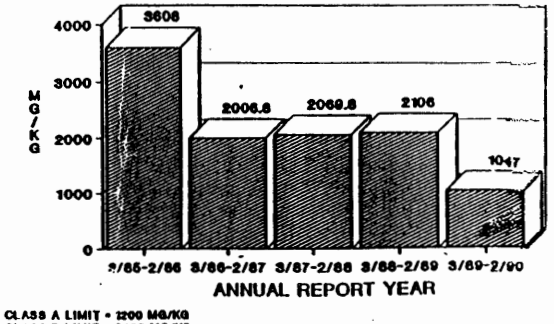
CLASS A LIMIT = 10 MG/KG
CLASS B LIMIT = 10 MG/KG

NICKEL CONCENTRATION, MG/KG



CLASS A LIMIT = 625 MG/KG
CLASS B LIMIT = 1250 MG/KG

ZINC CONCENTRATION, MG/KG



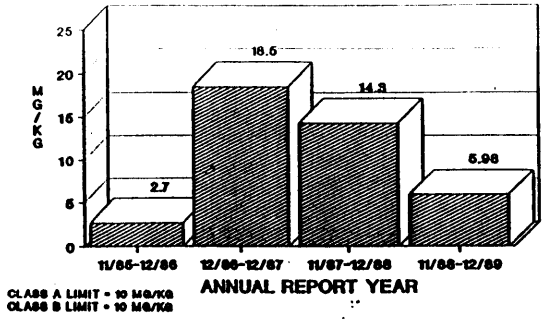
CLASS A LIMIT = 1200 MG/KG
CLASS B LIMIT = 2400 MG/KG

Figure 4

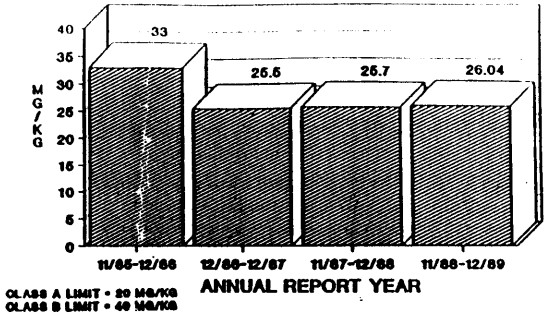
Linden-Roselle Sewerage Authority
Trends in Heavy Metals Contamination

(Average Concentrations for Months Shown)

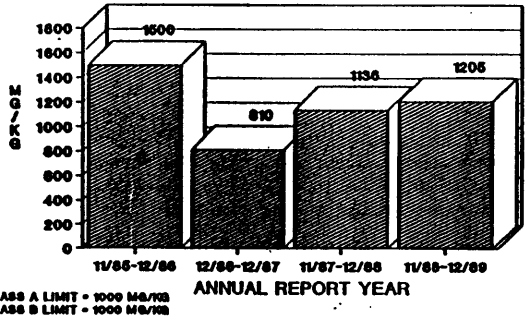
ARSENIC CONCENTRATION, MG/KG



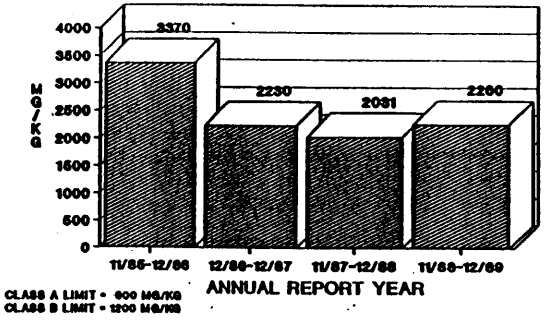
CADMIUM CONCENTRATION, MG/KG



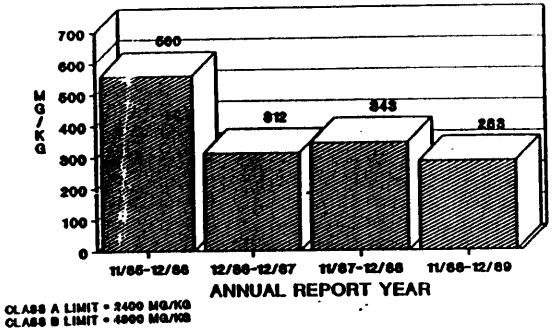
CHROMIUM CONCENTRATION, MG/KG



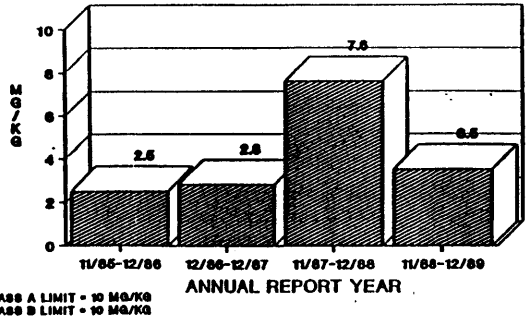
COPPER CONCENTRATION, MG/KG



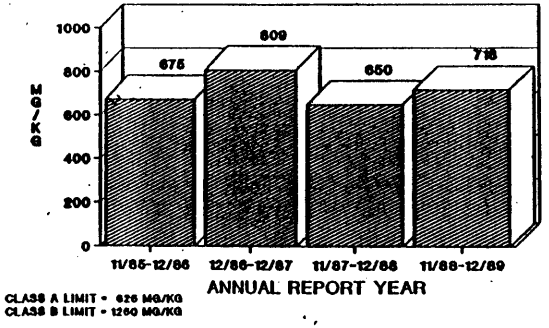
LEAD CONCENTRATION, MG/KG



MERCURY CONCENTRATION, MG/KG



NICKEL CONCENTRATION, MG/KG



ZINC CONCENTRATION, MG/KG

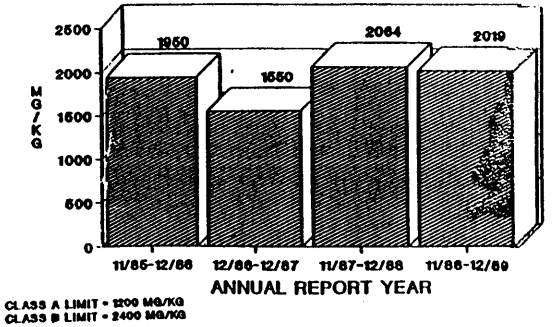


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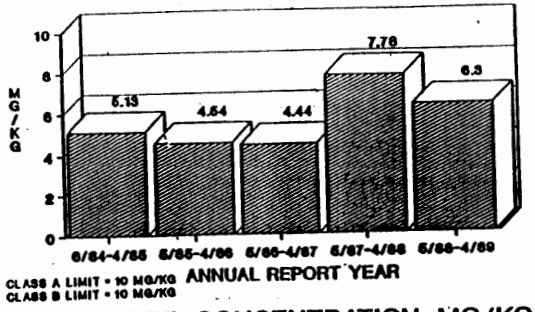
Figure 5

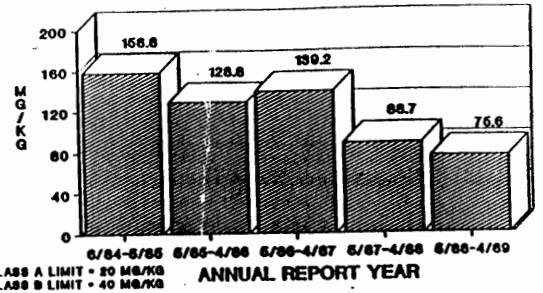
Middlesex County Utilities Authority
Trends in Heavy Metals Contamination

(Average Concentrations for Months Shown)

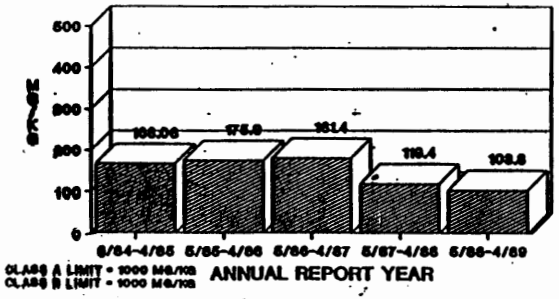
ARSENIC CONCENTRATION, MG/KG



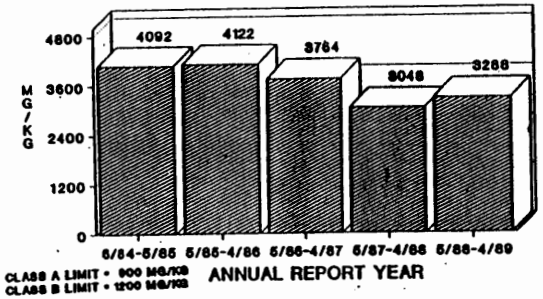
CADMIUM CONCENTRATION, MG/KG



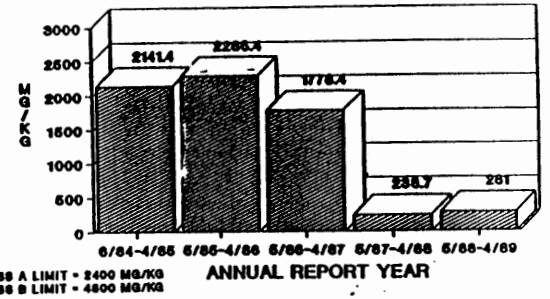
CHROMIUM CONCENTRATION, MG/KG



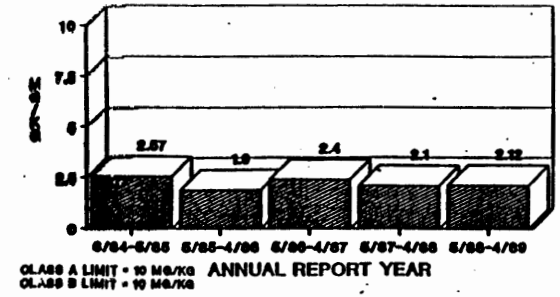
COPPER CONCENTRATION, MG/KG



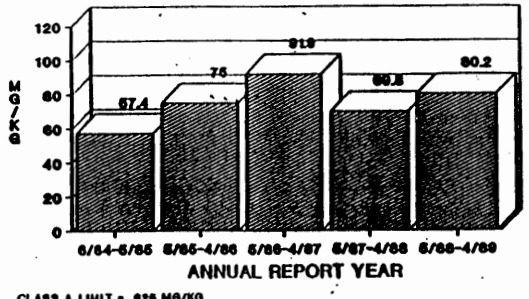
LEAD CONCENTRATION, MG/KG



MERCURY CONCENTRATION, MG/KG



NICKEL CONCENTRATION, MG/KG



ZINC CONCENTRATION, MG/KG

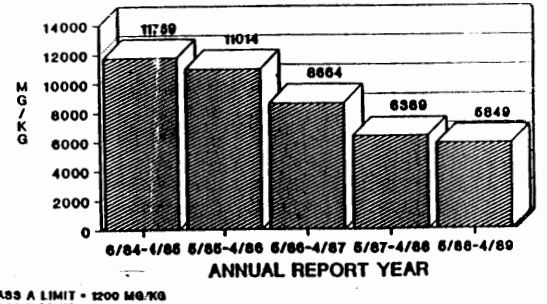
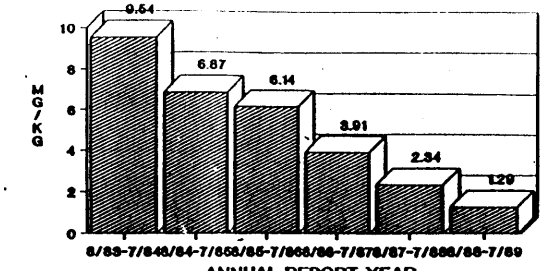


Figure 6

Passaic Valley Sewerage Commissioners
Trends in Heavy Metals Contamination

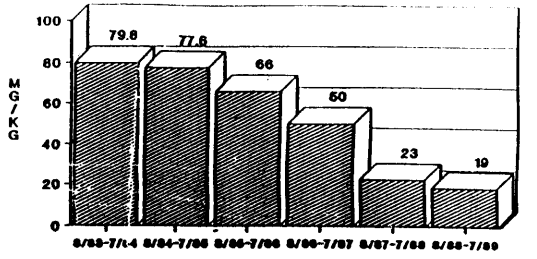
(Average Concentrations for Months Shown)

ARSENIC CONCENTRATION, MG/KG



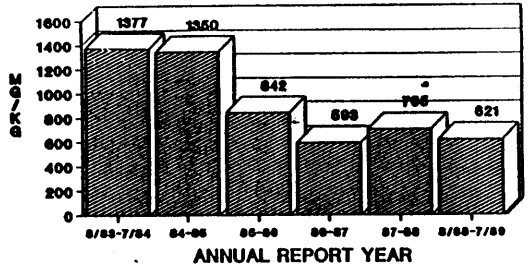
CLASS A LIMIT = 10 MG/KG
CLASS B LIMIT = 10 MG/KG

CADMIUM CONCENTRATION, MG/KG



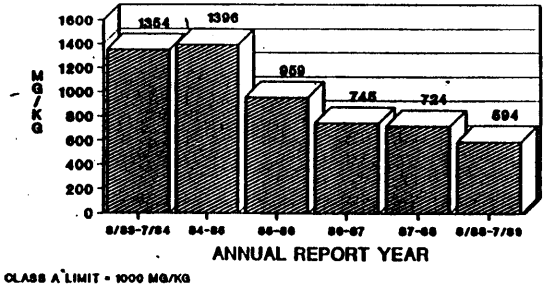
CLASS A LIMIT = 20 MG/KG
CLASS B LIMIT = 40 MG/KG

COPPER CONCENTRATION, MG/KG



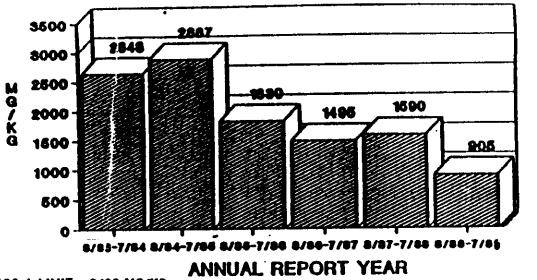
CLASS A LIMIT = 600 MG/KG
CLASS B LIMIT = 1200 MG/KG

CHROMIUM CONCENTRATION, MG/KG



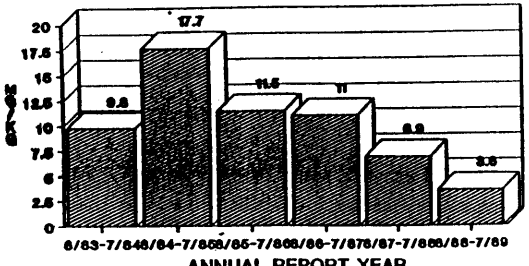
CLASS A LIMIT = 1000 MG/KG
CLASS B LIMIT = 1000 MG/KG

LEAD CONCENTRATION, MG/KG



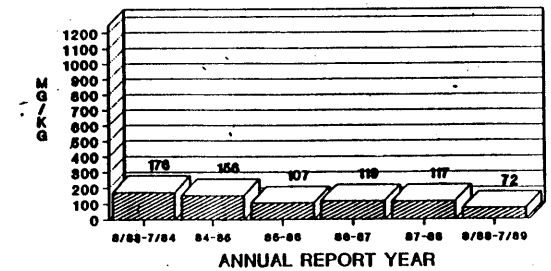
CLASS A LIMIT = 2400 MG/KG
CLASS B LIMIT = 4800 MG/KG

MERCURY CONCENTRATION, MG/KG



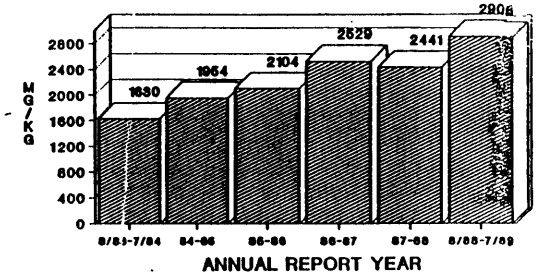
CLASS A LIMIT = 10 MG/KG
CLASS B LIMIT = 10 MG/KG

NICKEL CONCENTRATION, MG/KG



CLASS A LIMIT = 625 MG/KG
CLASS B LIMIT = 1250 MG/KG

ZINC CONCENTRATION, MG/KG



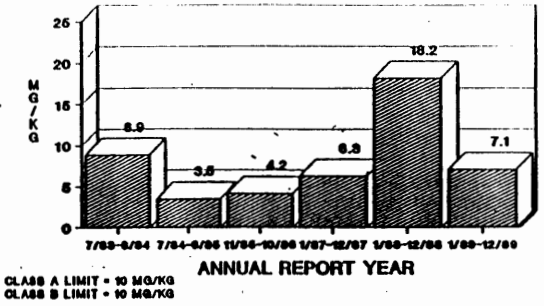
CLASS A LIMIT = 1200 MG/KG
CLASS B LIMIT = 2400 MG/KG

Figure 7

Rahway Valley Sewerage Authority
Trends in Heavy Metals Contamination

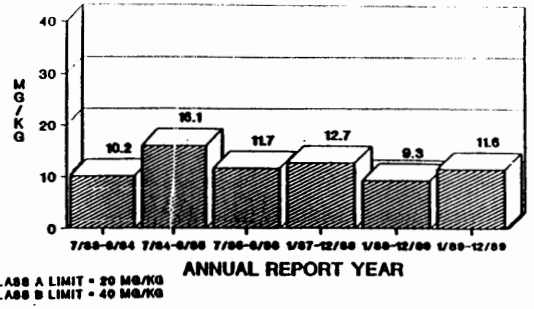
(Average Concentrations for Months Shown, Arsenic Value of 18.2 represents laboratory detections limits)

ARSENIC CONCENTRATION, MG/KG



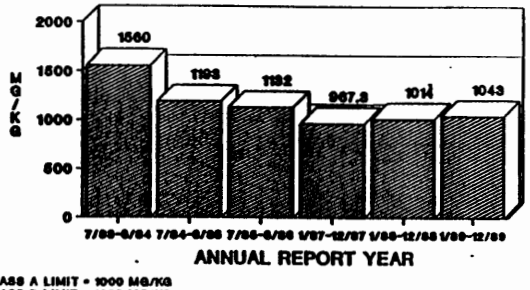
CLASS A LIMIT = 10 MG/KG
CLASS B LIMIT = 10 MG/KG

CADMIUM CONCENTRATION, MG/KG



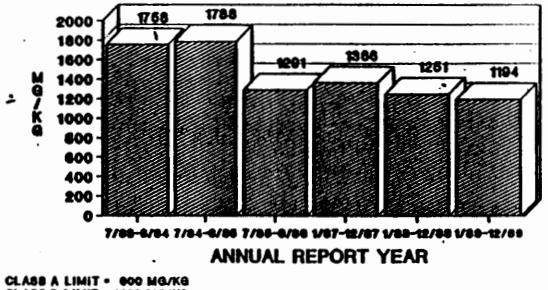
CLASS A LIMIT = 20 MG/KG
CLASS B LIMIT = 40 MG/KG

CHROMIUM CONCENTRATION, MG/KG



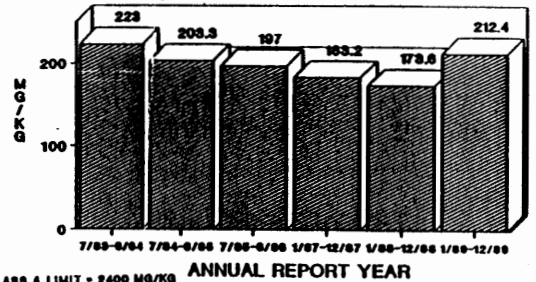
CLASS A LIMIT = 1000 MG/KG
CLASS B LIMIT = 1000 MG/KG

COPPER CONCENTRATION, MG/KG



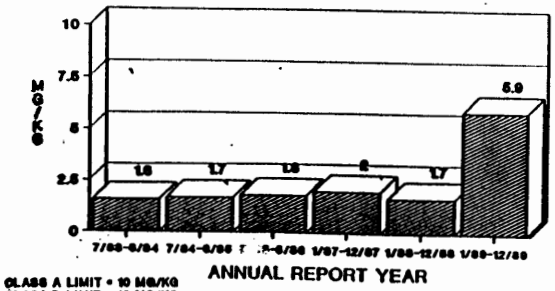
CLASS A LIMIT = 900 MG/KG
CLASS B LIMIT = 1200 MG/KG

LEAD CONCENTRATION, MG/KG



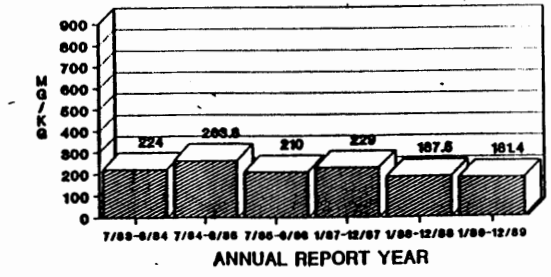
CLASS A LIMIT = 2400 MG/KG
CLASS B LIMIT = 4800 MG/KG

MERCURY CONCENTRATION, MG/KG



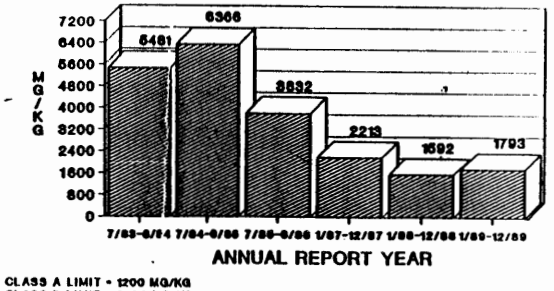
CLASS A LIMIT = 10 MG/KG
CLASS B LIMIT = 10 MG/KG

NICKEL CONCENTRATION, MG/KG



CLASS A LIMIT = 625 MG/KG
CLASS B LIMIT = 1250 MG/KG

ZINC CONCENTRATION, MG/KG



CLASS A LIMIT = 1200 MG/KG
CLASS B LIMIT = 2400 MG/KG

TESTIMONY OF
BRUCE KISELICA
CHIEF, REGION 2 OCEAN PROGRAMS SECTION
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SENATE ENVIRONMENTAL QUALITY COMMITTEE
OF THE
STATE OF NEW JERSEY

May 21, 1990

Good morning. My name is Bruce Kiselica. I am the Chief of the Ocean Programs Section within Region 2 of the U.S. Environmental Protection Agency (EPA). Our Region includes the States of New Jersey and New York, Puerto Rico, and the U.S. Virgin Islands. I am pleased to be here today and thank the Committee for this opportunity to discuss EPA's implementation of the Ocean Dumping Ban Act of 1988 (ODBA).

The ODBA states that an ocean dumper, the State in which it is located, and EPA shall enter into a compliance or an enforcement agreement as a condition of issuing a permit for the ocean dumping of sewage sludge. Section 104B(c)(2) of the ODBA requires a compliance agreement to include a negotiated plan for an ocean dumper to terminate its ocean dumping by December 31, 1991 through the design, construction, and full implementation of an alternative system for management of the waste or sludge. If an ocean dumper does not propose to implement long-term land-based

sludge management by December 31, 1991, the parties must enter into an enforcement agreement.

The nine existing New Jersey and New York municipal sewage sludge generators submitted complete permit applications for the ocean transport and disposal of municipal sewage sludge. EPA drafted permits containing numerous new conditions to minimize adverse environmental impacts and to ensure a more controlled dumping operation. The nine permits were issued on August 4, 1989 and became effective on August 14, 1989. A judicial consent decree and enforcement agreement (Agreement) was successfully negotiated with each ocean dumper. All of the Agreements were signed on or before August 4, 1989.

Regarding the specific interim schedules for ceasing ocean disposal, the ocean dumpers have developed the following plans as part of their Agreements. The six New Jersey authorities plan to cease ocean disposal by March 17, 1991 in accordance with State law. The Nassau County Department of Public Works and the Westchester County Department of Environmental Facilities plan to completely cease ocean disposal by December 31, 1991 (Nassau

County will phase-out 50% by June 30, 1991). The New York City Department of Environmental Protection plans to completely phase-out ocean disposal by June 30, 1992 with initial phase-out of 20% by December 31, 1991. The City will be assessed a penalty of $600/dry ton of sludge ocean dumped during 1992. The dumpers also have schedules for implementing long-term sludge management alternatives between 1991 and 1998. The ocean dumpers contend that these are tight schedules; EPA and the States agree.

The New Jersey ocean dumpers have already selected interim and long-term land-based sludge management alternatives and conducted public hearings on their alternatives. The Middlesex County Utilities Authority has decided to chemically fix its dewatered sludge and use the resultant product as daily landfill-cover material; the other New Jersey ocean dumpers have selected incineration for their long-term plans. The New York ocean dumpers are each evaluating the feasibility and environmental acceptability of the entire range of sludge management options. In support of the dumpers efforts, EPA has been encouraging the respective States to assist the ocean dumpers in seeking interim sludge management opportunities. EPA and the respective State are working to ensure that the ocean

dumpers meet their implementation schedules and that the land-based alternatives to ocean dumping will consistently meet the Agency's regulations, standards, and policies.

I will now discuss the Agreement milestone accomplishments of the New York ocean dumpers in greater detail. Nassau County initiated planning activities late in 1987. Nassau and Westchester Counties jointly issued a request for proposals (RFP) for privatized land-based disposal options. Four joint responses, six Nassau-only responses, and eight Westchester-only responses were received. In reporting on its RFP responses, Nassau County requested an Agreement modification and extension for pursuing potential off-island dewatering with two of the private vendors instead of constructing dewatering facilities at one of its wastewater treatment plants (WWTPs) in addition to the existing dewatering capacity under modification at its Cedar Creek WWTP. EPA and the New York State Department of Environmental Conservation (NYSDEC) objected, primarily because this reliance upon vendors to obtain approvals for off-site dewatering would not ensure timely achievement of milestones, and did not, by avoidance of critical siting conditions, represent sound environmental management.

Nassau County pursued this matter in court by entering a modification motion. The court expeditiously issued its decision in light of Nassau's tight timeframe for implementing its interim alternative. The court denied the motion, citing concerns about how Nassau County would meet its consent decree milestones and the statutory deadline for ceasing ocean dumping.

Nassau County is currently proceeding with its schedule for constructing the additional dewatering facility itself. Nassau has proposed to construct this facility at its Bay Park WWTP and issued its draft environmental impact statements on its interim and long-term plans for public comment. Nassau County has completed final design and recently received bids for constructing its dewatering facility.

Nassau County has requested an Agreement modification to extend its analysis of its long-term plan by seven months. EPA and NYSDEC have requested justification for the proposed delay and documentation that it would not impact later milestones.

New York City initiated planning activities in late 1988. Several reports concerning transportation, existing conditions, and sludge quality are being prepared. Design of eight dewatering facilities is being completed; a number of construction contacts have been bid. The City's centrifuge dewatering equipment order is being filled. Site work is underway at one of its largest dewatering facilities. New York City is using a two-staged RFP process for privatized land-based disposal options. Thirty-nine initial proposals were received; most respondents were asked to participate in the second, more detailed stage; the City is reviewing the 10 final RFP technical and cost responses. The public review of New York City's interim plans will take place this summer.

Westchester County initiated planning activities in January 1989. It has prepared a series of reports that address data collection and analysis, and alternatives development and screening. Westchester completed the final design of and advertised for the dewatering equipment. A nearby homeowners' association filed a lawsuit in the State Supreme Court challenging Westchester County's decision to select its Yonkers WWTP for installation of dewatering equipment without preparing a full environmental impact study. The suit has

been removed to Federal Court; it's review is pending. Westchester will decide whether to select a private vendor from the RFP issued jointly with Nassau County or to proceed with an interim alternative on its own.

EPA has been funding various types of sludge treatment, use, and disposal research and experimental projects for many years. All of the resulting documents are part of the public domain, readily accessible by each of the ocean dumpers. EPA is currently sponsoring a technical assessment of chemical fixation, a technology selected by the Middlesex County Utilities Authority and under consideration by some of the other ocean dumpers.

As stated in EPA's national municipal sludge management policy, EPA supports the safe, beneficial use of sludge; however, local communities are responsible for selecting and implementing their own sludge management methods. EPA has contributed technology transfer materials to the ocean dumpers' public participation programs and will continue to provide support in this area. In particular, EPA convened a roundtable workshop for the dumpers and others to discuss development and implementation

concerns associated with land-based sludge management alternatives in November 1989. At the workshop, the ocean dumpers reiterated a firm commitment to meeting their deadlines and successfully terminating ocean dumping. EPA is currently planning a conference to promote beneficial use later this year.

EPA has for years strongly and actively supported the recovery and beneficial utilization of sewage sludge wherever feasible. In June 1984, the Agency issued a Policy on Municipal Sludge Management articulating our support for the beneficial use of sludge. That policy says in part:

> EPA will actively promote those municipal sludge management practices that provide for the beneficial use of sludge while maintaining or improving environmental quality and protecting public health. To implement this policy, EPA will continue to issue regulations that protect public health and other environmental values. The Agency will require States to establish and maintain programs to ensure that local governments utilize sludge management techniques that are consistent with Federal and State regulations and guidelines.

The policy on beneficial uses of sludge is implemented through guidance, training and assistance to local communities. In addition, our concerted effort over the past six years to strengthen Federal, State, and local pretreatment controls for industrial dischargers to municipal treatment works has been aimed, in large part, at "cleaning-up" sewage sludges so that they could be safely reused. The Agency is now turning its attention to pollution prevention as another means of stopping pollution nearer its source. This will further enhance the potential for beneficial reuse of sewage sludge by further reducing the amount of pollutants entering municipal treatment works from industrial sources.

Once the ocean dumpers begin to implement land-based sludge management, they will be subject to the requirements of Section 405 of the Clean Water Act. Although the Agency's preference is for local communities to beneficially use their sewage sludge, an important statutory limitation in Section 405 explicitly prohibits EPA from mandating local choice of sludge management practices. Section 405(e) states:

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> The determination of the manner of disposal or use of sludge is a local determination, except that it shall be unlawful for any person to dispose of sludge from a publicly owned treatment works or any other treatment works treating domestic sewage for any use for which regulations have been established pursuant to Section 405(d) except in accordance with such regulations.

Therefore, EPA is unable to ban any particular use or disposal practice but can establish standards for each practice that will assure protection of public health and the environment.

Under this authority, on February 6, 1989, the Agency proposed standards for five sewage sludge management practices to protect public health and the environment. In the proposed Section 405 regulations, EPA identified those toxic pollutants which can be present in sewage sludge at levels which adversely affect public health or the environment. The regulations will establish numerical limitations and management practices for each sludge use or disposal practice. These Section 405 regulations will reinforce the Agency's efforts to improve municipal sludge quality by helping to

strengthen local pretreatment programs. EPA currently projects final promulgation of this first round of regulation in October 1991. These standards will be implemented primarily through National Pollutant Discharge Elimination System (NPDES) permits.

In addition to State-required public participation opportunities for selecting sludge management alternatives, EPA distributes a report to all interested parties on a semiannual basis on the status of consent decree implementation and related ocean dumping matters. The first issue of this, the "ODBA Advocate," was distributed in April 1990. EPA announced the formation of the mailing list for the "ODBA Advocate" and the establishment of a public file on the dumpers' efforts toward complying with their Agreements in the Federal Register in January 1990.

EPA has recently published the following Reports to Congress in conjunction with the implementation of the ODBA:

- the 1989 Report to Congress on Progress in Stopping Ocean Dumping,
- the Report to Congress on Surveillance and Enforcement of Sewage-Sludge Dumping, and

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- the Report to Congress on Sludge Recycling Alternatives.

The availability of these reports was announced in the April 1990 "ODBA Advocate."

This concludes my presentation. Thank you for your attention and the opportunity to be here today. I would be happy to respond to any questions you may have.

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WATER POLLUTION CONTROL FACILITIES
NEWARK, NEW JERSEY

COMMENTS ON SLUDGE MANAGEMENT IN NEW JERSEY

PRESENTED TO THE
SENATE ENVIRONMENTAL
QUALITY COMMITTEE

PASSAIC VALLEY SEWERAGE COMMISSIONERS

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CHAIRMAN

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VICE CHAIRMAN

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COMMISSIONERS

CARMINE T. PERRAPATO
EXECUTIVE DIRECTOR

ROBERT J. DAVENPORT
DEPUTY EXECUTIVE DIRECTOR

MAY 1990

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Thank you, Mr. Chairman. My name is Sheldon Lipke, Superintendent of Plant Operations for the Passaic Valley Sewerage Commissioners. I would like to thank you on behalf of the Commissioners for this opportunity to share their views on this important subject.

The Passaic Valley Sewerage Commissioners are constructing sludge dewatering and loading facilities to meet the March 17, 1991 deadline for halting ocean dumping contained in the Ocean Dumping Elimination Act of 1988. PVSC is not here to protest the ending of ocean dumping. We are prepared to meet all of the requirements of the Act. We are constructing $59 million worth of facilities that will be abandoned when the Long-Term Alternative begins operation in 1996. Of this amount, approximately $14 million is for expediting the project to meet the March 17 date.

It is the period between March 17, 1991 and December 31, 1991 which concerns us today. The date of March 17, 1991 contained in the Act was set at the end of the five year term of 106 mile disposal site. The choice of this date does not coincide with any oceanographic event, but was an arbitrary choice made for symbolic reasons. Because New York can continue dumping until 1992, PVSC's taxpayers will be faced with huge increases in their sewer bills while reducing the amount dumped at the site by only 15%. The City of Newark's bill will increase by over $14 million, Jersey City's by over $4 million, Paterson's by $4 million, and Passaic's by $1.4 million. We ask if it is fair for the poorest cities in New Jersey to pay for a symbolic gesture. Why are our taxpayers being discriminated against when New York continues using the site well into 1992?

Scientists have expressed concern about the negative impact on the ocean environment due to the poorly understood long term effects of ocean disposal. PVSC is <u>not</u> advocating a long term continuation of ocean disposal but only the short term relief our taxpayers would receive if we were being treated the same as New York.

I would be happy to answer any questions you have about PVSC's Interim or Long Term Alternatives. We are continuing the process of trying to find the best environmental system to implement for the Long Term Alternative. Once again, I'd like to thank the Committee for the opportunity to express the Commissioners views on this important subject.

PASSAIC VALLEY SEWERAGE COMMISSIONERS
Increase in Annual Billing
with Interim Land Based Alternative

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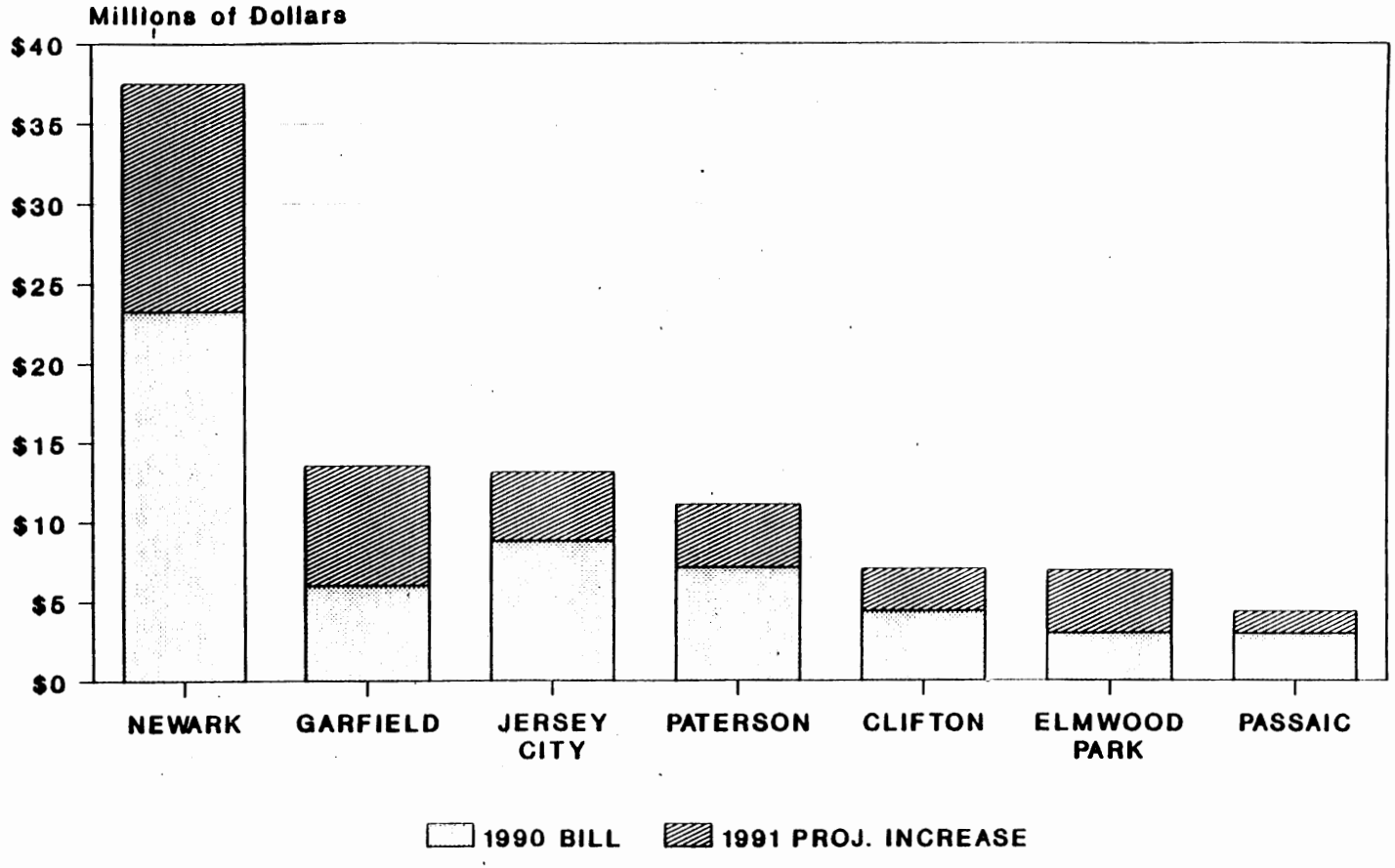

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PASSAIC VALLEY SEWERAGE COMMISSIONERS
INCREASE IN ANNUAL BILLING
WITH INTERIM LAND BASED ALTERNATIVE

Hauling and Disposal
@ $160 per ton

MUNICIPALITY	1990 BILL	1991 PROJECTED ANNUAL BILL	1991 PROJECTED INCREASE	1992 - 1996 PROJECTED ANNUAL BILL
BELLEVILLE TOWNSHIP	$1,080,163	$1,591,571	$511,408	$1,917,555
BLOOMFIELD TOWNSHIP	$1,259,864	$1,835,560	$575,696	$2,211,518
CITY OF CLIFTON	$4,380,072	$7,025,936	$2,645,864	$8,464,983
EAST NEWARK	$157,170	$226,955	$69,785	$273,440
EAST RUTHERFORD	$136,470	$305,316	$168,846	$367,851
ELMWOOD PARK	$2,942,770	$6,912,252	$3,969,482	$8,328,014
FAIR LAWN	$819,061	$1,294,189	$475,128	$1,559,264
GARFIELD	$6,004,381	$13,549,285	$7,544,904	$16,324,439
GLEN RIDGE	$219,233	$319,648	$100,415	$385,118
GLEN ROCK	$256,531	$381,254	$124,723	$459,342
HALEDON	$468,217	$784,425	$316,208	$945,090
HARRISON	$1,028,023	$1,578,942	$550,919	$1,902,340
BOROUGH OF HAWTHORNE	$514,510	$759,990	$245,480	$915,650
KEARNY	$1,256,120	$1,943,104	$686,984	$2,341,090
LITTLE FALLS	$446,502	$613,059	$166,557	$738,625
LODI	$729,963	$1,138,320	$408,357	$1,371,470
LYNDHURST	$650,009	$1,015,835	$365,826	$1,223,898
MONTCLAIR TOWNSHIP	$1,266,332	$1,868,309	$601,977	$2,250,975
NEWARK	$23,259,014	$37,527,535	$14,268,521	$45,213,897
NORTH ARLINGTON	$372,077	$535,347	$163,270	$644,996
BOROUGH OF NO. HALEDON	$128,755	$181,925	$53,170	$219,187
NUTLEY TOWNSHIP	$1,321,015	$1,979,547	$658,532	$2,384,996
ORANGE	$1,193,601	$1,751,721	$558,120	$2,110,508
PASSAIC	$2,904,913	$4,315,142	$1,410,229	$5,198,966
PATERSON	$7,119,146	$11,065,270	$3,946,124	$13,331,650
PROSPECT PARK	$60,978	$93,965	$32,987	$113,210
RUTHERFORD	$154,887	$233,251	$78,364	$281,025
SADDLE BROOK	$329,696	$484,535	$154,839	$583,778
JERSEY CITY	$8,781,752	$13,139,574	$4,357,822	$15,830,812
BOROUGH OF TOTOWA	$557,255	$975,038	$417,783	$1,174,745
WALLINGTON	$493,866	$783,515	$289,649	$943,994
BOROUGH OF W. PATERSON	$390,847	$538,676	$147,829	$649,007
TOTALS	$70,683,193	$116,748,991	$46,065,798	$140,661,435

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TESTIMONY OF DONALD B. CLARK
MAY 21, 1990

I've been asked to comment on the need for the nutrients and organic matter in sludge and on the land application of sludge and derivitives.

I'm the Executive Secretary of the Cornucopia Network of New Jersey. Our purpose is improving the quality, quantity and safety of food. One of our priorities has been the fostering of composting because it is consistent with our purpose and is the means for recovering (for growing purposes) over 50% of the resources contained in our "garbage" and even more in sludge.

It is our contention. based on the extensive literature, that everything organic can be composted - leaves, grass, paper, food wastes from home and processor, sewage sludge - safely, relatively cheaply and responsibly.

Composting requires very little outside energy for the process besides that needed for piling it intelligently, turning it or blowing air into it (for aerobic processes) and transporting it. Nature's own microorganism's do the job from the inside of the windrows that Dr. Finstein researches and the backyard compost piles that we demonstrate. Volume is reduced by factors from 3-7. The finished product is valuable and much needed by New Jersey farmland and open spaces, as well as our yards. The organic matter content of New Jersey farmland is only 1 1/2- 2 %, after 200 years of agriculture and fairly high erosion rates. Our soils would be far better if they contained 4-6 % or even more of organic matter. It takes about ten tons of organic matter/acre to raise it 1%. Over 3 million acres of land including 850,000 acres of farmland could benefit from it besides our backyards and flower pots. Some organic farmers put on 30-40 tons of compost/-acre, year after year, with spectacular growing plants resulting. It just disappears. The micro-organisms in the compost help dissolve the inorganic minerals to make them available to the growing plants. The healthy soil grows strong plants that do a better job of resisting pests. The organic matter helps the soil retain moisture making it more drought resistant & efficient in using moisture. The nutrient value of compost and sludge is sizable. The need for chemical fertilizers drops dramatically. Organic or sustainable farmers depend heavily on compost.

Oklahoma City sludge, stabilized with lime, is land applied to 12,000 acres of farmland in a five mile radius of the plant servinmg 600,000 residents. Farmers save more than $80/acre over the cost of the sludge in avoided fertilizer costs alone and report yields up significantly.

University of Washington research has shown that trees grow twice as fast when they are fed sludge. A tree that would normally be cut down after 60 years could be cut down after 30 years. Tree planting is a major objective in addressing global warming.

The need for compost of all types, coming from all kinds of organic matter, with or without sludge mixed in as well as composted sludge, processed sludge, pelletized sludge and lime stabilized sludge is endless, even though all of it may not be as high quality as we would like, initially.

The National Association of Conservation Districts recently

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announced a resolution urging the Soil Conservation Service to adopt "beneficial compost and sludge application" as a soil conservation measure and add it to the National Handbook of Conservation Practices. I suppose it's "better late than never".

The EPA besides sponsoring the Roundtable mentioned by Nina, is now sponsoring a Beneficial Use of Sludge Awards Program with awards for operating projects, technology developments and activities for greater public acceptance of sludge use, etc..

Properly finished sludge compost or sludge containing compost is, in our view, a natural resource needed for growing which need not and should not be considered a "waste" needing DEP involvement in its application and use. We believe sludge compost to be a concern of the Department of Agriculture because they have expertise in soil and water conservation and have extension services and inspectors that are involved on a daily basis with helping growers of all types (flowerpot to agribusiness). Besides, there are laws on the books with respect to the right to farm and on-farm composting has been commonplace for 200 years.

We are not advocating that DEP be uninvolved in regulating sludge and some garbage composting facilities. We do believe that all other composting belongs in the perview of the Department of Agriculture and needs little regulation.

We wish that there was a way to obtain a technological/-social/economic/whole system assessment of "waste"/resource proposals. Engineers make money by recommending the complex and expensive technologies and by over-engineering lower technologies, making it nearly impossible to obtain appropriate technology, beneficial use, safe facilities. We get the DEP pushing counties and commissions into high technology incinerators requiring ever more complex engineering and regulations, even when the EPA seems eager to help in the selection of safer, more appropriate technologies. After attending the EPA sponsored Round Table on Land-Based Sludge Management last November, we cannot understand why DEP is not aiding in the selection and implementation of any alternative but incineration which is the least acceptable. An incineration plan may well cost over 400% more in actual outlays than what is best, not including the social/health costs and other externalities.

This panel from the Clean Sludge Coalition, respectfully requests that you reject the DEP Report under consideration, direct the DEP to comprehensively explore the beneficial use alternatives and come back with a plan that utilizes them. Further that you draft legislation mandating adherence to the EPA and DEP policies supporting beneficial reuse and ruling out the use of incinerators. Thank you.

DONALD B. CLARK
EXECUTIVE SECRETARY

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SUPPLEMENT TO TESTIMONY
CALLED TO CONSERVE OUR SLUDGE RESOURCE
May 21, 1990

Comments of DONALD B. CLARK
Convenor of Network for Environmental and Economic Responsibility of the United Church of Christ; member Steering Committee of the Eco-Justice Working Group of the National Council of Churches of Christ; member Planning Committee for Environmntal Sabbath of the United Nations Environmental Programme; member Board of Directors of Metropolitan Ecumenical Ministry; Co-Chair Agricultural Task Force of Rural Coalition; member Executive Committee of New Jersey Citizen Action; Executice Secretary, Cornucopia Network of N.J.; pharmacist; former faculty member of Univ. of Buffalo School of Pharmacy; retired professional services and community affairs executive of Hoffmann-La Roche; homeowner in Nutley.

I was part of a briefing by Congresswoman Claudine Schneider and participated in a workshop by her and Worldwatch Institute staff on the over 200 page Global Warming Prevention Act. We heard dramatic and convincing evidence documenting the necessity of rapid and substantial reductions in green house gases. We viewed chart after chart, saw photos of and heard about many win-win applications of least-cost energy planning where global greenhouse gases are being reduced while reducing energy costs at the same time. We learned about gas turbine technology developed by the Navy which is claimed to be 50% more efficient, half as costly to build and a fraction as polluting as existing power plants. We heard about major tree planting projects and the saving in air conditioning costs by planting just three trees beside a home. We saw cars that get over 90 mpg, appliances that use 1/3 less energy, incandescent replacement bulbs that it pays utilities to give away (@ $6 each) even when they are paying only 1/3 of the "real" "total" (externalities included) costs of their operations.

The Congresswoman's bill, with over 100 co-sponsors, establishes a comprehensive least-cost energy planning process throughout the federal government, including all foreign aid programs. It was referred to eleven committees. She claims that the bill could as well be called the "global competitiveness and U.S. productivity enhancement act" because it should help Americans "save several hundred billion dollars per year on their energy bills, create high-efficiency energy-consuming devices for export, reduce foreign oil imports and the trade deficit, and reduce a range of other environmental pollutants in addition to greenhouse gases."

Earth Day 1990 involved more than 200 million people in some 140 of the 177 nations of the world. The theme was "Think Globally, Act Locally." Several books, charts and articles are now published giving all of us many ideas on how we can help save the earth. A copy of two publications that I've been involved with are presented with this testimony: "101 Ways to Help Save the Earth"and Only One Earth.

The Worldwatch Institute and many others feel that we need a major mobilization, like we did in World War Two, like Nicaraqua

 70X

did in achieving literacy, to address our environmental crises. Faith groups the world over have or are adopting priorities lifting up the theological bases for caring for mother earth. The World Council of Churches has adopted the priority of Justice, Peace and the integrity of creation and many faith groups are doing likewise.

We are being asked to be attentive to a sick mother earth, to try to ease her pain, to help restore her, i.e. to live in harmony with nature as best we can, to be as sustainable as possible, to conserve and preserve resources, to reuse, to restore, to recycle, to compost, to adopt appropriate technologies, to use and not abuse what God has given us, to be stewards rather than exploiters, etc.

We are called to reorient our thinking, to be as creative as we can, to work in community, to get everyone involved in solving our problems, to think globally and act locally but also to insure that we are not a party to toxic terrorism and garbage imperialism anywhere..in Africa, or Louisiana, or Pennsylvania !

Burning sludge is the antithesis of what we should be about; the symbol of technology gone awry, of a pathetic missed opportunity to be creative, job generating, environmentally sound, community sensitive, resource capturing and responsible. It is the symptom of an edifice complex, a Neanderthal mentality, elitist tendencies, and gullibility for or in bedness with rather unscrupulous promoters of highly profitable but failed technologies. It was very disappointing to see the proposals of the sewerage treatment permit holders that selected incineration which is unresponsive to public desires, so unimaginative, so out of step, so behind the curve, so seemingly immoral and unjust.

I have noted that the behavior of Helen Pettit of the Department of Environmental Protection (DEP) has fostered, if not necessitated, the selection of the sludge incineration option. It seems to me, the DEP should be doing everything in their power to help the utilities avoid employing the worst option, incineration. Both the DEP and EPA espouse a policy of favoring beneficial reuse of sludge on land over incineration. I read, instead, about DEP's revolving door and hear about political rather than scientific decision making, from renowned scientists. I'm even more disappointed with the DEP.

I don't know what the sewerage treaters think their mission is, or the business they think they are in, but it should be the capture and efficient use of one of this states major resources. It's sewage. Another is its compostable garbage. Making use of this rich organic matter mixed with scarce water is their job, in my view. Making sure that the sludge is substantially free of heavy metals and toxic materials is their challenge for optimizing its utility. And they have made great progress.

The DEP's job is to facilitate the best decisions and then to help the sewerage treaters carry them out, not to promote business for the incinerator builders. Requiring long term secured guarantees appear to rule out the use of appropriate technologies in most instances. Few if any composting facility can obtain a secure market for its product for many years as reuse technologies are still in development and markets must be

developed. The DEP's legalistic, beaurocratic approaches are thwarting the sound solutions and favoring those we can ill afford.

Only one of the severage treaters has a guaranteed long term use for less than agricultural grade sludge. All could employ any one of several alternatives that are far better than incineration but they are more uncertain (not guaranteeable); take more and varied management expertise; require more than engineers to accomplish; and use less of the capital intensive and highly profitable technologies sold by good campaign givers and past cohorts.

Resorting to incineration of sludge is not only the most expensive way to go but still leaves lots of residual waste for disposal and is environmentally unsound, unnecessary, unsafe and unconscionable. Dumping in the ocean was an easy way out for sewage authorities but socially and environmentally unacceptable. Incineration is more repulsive.

I've reproduced an article from an issue of World-Watch entitled DOWN THE TUBES by Marcia D. Lowe and include it as part of my testimony. It notes that the EPA estimates that just the sludge of modern sewage treatment processes has the nutrient content equivalent to 10% of the chemical fertilizers farmers purchase- or a value of over $1 billion per year. Treating sludge as a pollutant rather than a resource is very expensive indeed.

The article goes on to point out the incentives and disincentives to recycling the nutrients in sewage and points out that recycling human wastes in many municipalities now outweighs the drawbacks. It certainly does in New Jersey.

Wastewater irrigation is employed around the world with even Chandler, Arizona irrigating 6900 acres and Oklahoma City land applying sludge to over 12,000 acres. Fish farming using "nightsoil" has been employed for thousands of years in China. The United States already recycles 42% of its sludge. The technologies to handle sewage safely and effectively are in existance and many communities are employing them successfully. There are well over 100 composting facilities in operation in this country, many using the "Beltsville" system of a static, aerated pile. Some recent ones are "in-vessel" systems with advantages in some situations. There are several proven systems and many equipment sellers. Some appear to be grossly overpriced but all are far cheaper initially and a fraction as costly, over time, as incinerators, even without including the externalities of burning.

I would urge you to call upon the DEP to reject the plans for the building of incinerators and to vigorously help the sewerage treaters to boldly explore the many alternatives open to them, (they, hopefully, are more than regulators), to prepare and share what is best and possible (even though the treater's legal authority/mandate is exceeded) and to enter into public dialogue on the alternatives which I would think would include involvements by many segments of society. You need to impress upon the DEP and utilities that they need to work at this with great intensity and with the eye that they must find other alternatives than incineration and landfilling for one of our most valuable resources.

Thank you.

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