

Planning and Implementing the New York/New Jersey Ash Paving Demonstration

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PLANNING AND IMPLEMENTING THE NEW YORK/NEW JERSEY ASH PAVING DEMONSTRATION.

Abstract

The saga of the multi-agency ash demonstration project, while not yet ended, has passed the climactic moment, the installation of the ash amended asphalt paving and a conventional control section on Center Drive, a Port Authority owned roadway in Elizabeth, New Jersey. Environmental and physical monitoring is under way, and the participants are breathing a communal sigh of relief.

It's been a difficult eight years for the members of the Project Management Team (PMT), the ad hoc body created to manage the demonstration on behalf of the participants. Initially strong, but ultimately wavering or even vanishing local political support, forcing the abandonment of the original project site and of a second, even better site on Interstate Route 80, wreaked havoc with the project schedule and added years to the time from initial planning to pavement installation. Personnel and policy changes, especially the New York State Energy Authority's late 1993 decision to withdraw from further active participation and support, also contributed to costly delays.

PMT selection of a new, publicly owned and controlled site, coupled with determination to proceed and a further infusion of funds, brought the effort close to fruition. However, it finally took the intervention of the New Jersey Attorney General to prevent the destruction of the ash stockpile in Warren County and to defeat the City of Elizabeth's attempt to halt the paving project. The ash amended paving was installed during the night of June 19, 1996; the control section, the following night.

Now that the field demonstration has progressed from proposal to reality, it's time to revisit the events of the past eight years and attempt to extract the implementation lessons they offer.

Two major lessons emerge. The first and most important is that failure to anticipate the non-technical impediments to implementation can doom the best designed field demonstration to failure. The second is that achieving and maintaining an ongoing multi-agency supported demonstration requires an extraordinary effort, doggedness and administrative creativity.

A brief account of implementation problems and ultimate solutions is presented in support of the above assertions.

The Long Struggle

I am delighted to have the opportunity to share some of the insights obtained and strategies employed during the struggle now known in my agency as the "ash wars." The wars are not over yet, but the Long Island Regional Planning Board (LIRPB) and its partners have finally scored a major victory. A short stretch of ash amended paving and a comparable control section are now in place on Center Drive in an

industrial park in Elizabeth, New Jersey and monitoring is proceeding as planned.

Long Island's interest in ash goes back close to fifteen years when, legally forced to abandon landfilling by 1990 because of concern for the area's sole source aquifer, municipality after municipality made the decision to avail itself of state financial assistance and to rely on waste-to-energy for the disposal of its ever increasing municipal waste stream. Following an unsuccessful State-sponsored attempt to establish a single ashfill to serve all of Nassau and Suffolk Counties, the New York State Energy Research and Development Authority (the Energy Authority) and the regional office of the State Department of Conservation (NYSDEC) approached the Board with an offer of co-funding for a research and demonstration project to investigate the potential for the beneficial use of MSW combustor residue.

In early 1986, the Board, aided by the two counties, fourteen of the fifteen towns and the two small cities put together the local share of the funding, obtained the services of Chesner Engineering and formulated a two state program for approval of the co-funders and submission to the Energy Authority. Although the proposal was accepted by October, execution of the funding agreement was delayed until the end of March, 1987, because of unacceptable contract language.

Sample collection for physical and chemical characterizations was just getting under way when the Board received the first hint that externalities might affect the R and D effort. Owners or managers at two of the facilities where ash was to be collected expressed reluctance to allow access because of the recently filed Environmental Defense Fund (EDF) legal action. However, when all involved agreed not to divulge the source of the ash, permission to collect the necessary samples was granted. Subsequently, management of a third facility also requested that it not be identified.

In late spring 1988, the New Jersey Department of Transportation (NJDOT), a member of the New Jersey Interagency Engineering Task Force, and the Port Authority of New York and New Jersey (PA), also a member, and owner of the Essex County Resource Recovery Facility then under construction, approached the Planning Board's consultant indicating a possible interest in a joint NJDOT, PA, Energy Authority and LIRPB project to demonstrate the feasibility of using waste-to-energy facility ash in road paving. Following an initial exploratory meeting in Hauppauge, the participants decided to continue discussions and to ask the New Jersey Department of Environmental Protection (NJDEP) to bring its expertise and support to the proposed undertaking.

The Board was delighted with what appeared to be a win/win opportunity. Aware that raising the additional funds and finding a site or sites for the demonstration phase of its program within the bi-county area would be difficult if not impossible, the LIRPB welcomed the chance to participate in an interstate, interagency cooperative undertaking at modest financial and virtually no potential political cost to itself. The Energy Authority viewed the proposed arrangement as further support for its beneficial use initiative and a means of leveraging its already considerable investment.

The Board, its consultant and the Energy Authority took the lead in formulating the project scope and establishing an acceptable management organization. Two problems immediately emerged: the first, designing an acceptable work plan, was well within the technical competence of the group and the consultant; the second, setting up an administrative structure to handle program management and the receipt and disbursement of funds, required a modicum of political and legal creativity.

Today those of us who are or have been involved in the New York/New Jersey ash paving demonstration project feel considerably older and wiser for the experience. An account of the group's eight year

struggle to implement a carefully planned research and development demonstration project provides a cautionary tale, an extreme example of the vicissitudes that can accompany a seemingly non-controversial undertaking.

Very briefly, the paving project is a multi-agency effort to test the engineering and environmental feasibility of the beneficial use of bottom ash from a waste-to-energy facility as a substitute for a portion of the natural aggregate normally used in asphalt paving. It has included the physical and chemical characterization of the combined residue as well as the component ash streams from the Warren County, New Jersey MSW combustor, the first in the Garden State; the construction of a 500 ton bottom ash stockpile and the monitoring of runoff and dust resulting from the outdoor storage and handling of the ash; the preparation and laboratory testing of various ash/aggregate/asphalt paving mixes; the installation of a 700 foot section of ash amended pavement and a conventionally paved 725 foot control section on Center Drive in an Elizabeth, New Jersey industrial park; and the physical and environmental monitoring that commenced in late June of 1996 and continues today. Intensive interagency monitoring is scheduled for a period of two years, after which the New Jersey participants will monitor on a less frequent schedule for up to seven years. Summaries of the engineering and environmental data will be available for general distribution as soon as possible after completion of the first two years of monitoring. Arrangements are in place for removal of the paving in the unlikely event of excessive wear or an unexpected environmental condition that might pose a risk to the public.

Although the demonstration is not yet at an end, it is far enough along to permit a review of problems encountered, obstacles overcome and, most important, lessons learned.

What problem or problems posed threats to the continued viability of the project, imposed additional costs and added two and one half years to the time required to put the demonstration paving in place? In retrospect, it appears that the proponents and their local allies, the Freeholder Director and the Pollution Control Finance Authority of Warren County (PCFAWC) were incredibly naive. There was a price to pay for the failure to anticipate the delays associated with a multi agency undertaking and to recognize the vast gap between perception and reality in environmental matters.

It didn't take the study team long to learn that while development of a comprehensive, technically sophisticated, environmentally vetted research and development program designed to further an innovative solution to a current problem may be sufficient to foster interagency cooperation and assure public funding, it is hardly a guarantee of public acceptance, let alone approval. Thanks in part to the EDF, combustor ash, once the concern of solid waste planners and scientists, had surfaced as a newsworthy environmental issue and the term "toxicash" had replaced the two word description in the media's lexicon.

Start up delays also contributed to the problem since the two year period from initial discussion of the proposal through technical and administrative design to completion and execution of legal documents coincided with increasing public disaffection with combustion as the key to solid waste management, especially when coupled with a reduction in governmental support.

The initial task, formulating a technically acceptable, comprehensive study plan required six drafts before all five participating agencies were in agreement. Cost estimates were prepared and oral commitments for cash and in-kind services obtained. It was necessary to devise an administrative structure, the Project Management Team (PMT), that would permit work to proceed without exposing any single agency to claims for environmental liability. It was agreed that all management actions

would require the unanimous consent of the five agency representatives who constituted the Project Management Team. Others, especially support staff and the project consultant could advise, but final responsibility for technical, administrative and budgetary decisions would rest with the PMT. Since most agencies, especially those with deep pockets, were reluctant to be the first to make a legally binding commitment to the project, the Long Island Regional Planning Board and the New York State Energy Research and Development modified an existing ash research funding agreement to provide for participation in the ash paving project, effective upon the execution of agreements between the Energy Authority and the three other participants. A supplemental memorandum of understanding between the NJDOT and the NJDEP established responsibility for pavement removal and cleanup, if required; and another, assured cooperation between the NJDEP and the Waste Management Institute Laboratory at SUNY Stony Brook, a Long Island Regional Planning Board subcontractor.

The PMT, having already dealt with a mountain of preparatory minutiae and having weathered a change of administration in New Jersey, assumed that once all the documents had been approved and signed, it was simply a matter of proceeding with the tasks as outlined in the work plan. To that end, it established a Technical Working Group (TWG) consisting of knowledgeable staff from the two New Jersey agencies and the Port Authority, the Energy Authority project officer and Warren Chesner, the ash expert and project engineering consultant. Chesner Engineering undertook the tasks of site evaluation and the preparation of detailed plans for various project activities, with the input and/or actual assistance of the other members of the TWG, and the cooperation of the Warren County Engineer.

Work proceeded uneventfully until late March, 1991, when the PMT and the project engineering consultant received a wake up call. Informed by the PCFAWC's ashfill manager of growing local opposition to the use of the PMT's preferred site and to the program itself, the group was invited to listen to a tape recording of constituent complaints and allegations and asked to prepare a defense of the undertaking to be presented at the regular PCFA meeting in April.

The PMT members were taken aback! Suddenly they were forced to defend a project whose value and built-in environmental safety had seemed beyond question. Ill-prepared to deal with the emotionally charged allegations of a small but noisy group of Hackettstown residents and allied anti-combustion activists, the PMT attempted to provide the PCFAWC, Freeholders, Mayor and Council in Hackettstown and any others who cared to listen with a factual description of ash, of the project activities completed or to be undertaken, of safety measures provided and of potential fiscal benefits for Warren County.

Between April and the end of June 1992, the PMT's technical experts made numerous presentations and answered countless questions, appearing before the PCFA, the Hackettstown Mayor and Council and Hackettstown residents. The Mayor, stating that he was not opposed to the project, requested funds to support local review of the proposed paving by the Town's engineering consultant and a second review by the consultant to the Hackettstown Municipal Utility Authority (HMUA). The PMT assented; the LIRPB drafted the necessary agreements and forwarded them to Hackettstown.

Meanwhile the activists were busy turning up the heat, including the proposed site in a statewide "toxic tour", organizing a petition drive condemning the ash paving and the arrangements for Town and HMUA review, issuing press releases and circulating a flyer depicting a skull and crossbones and exhorting readers to join the Concerned Residents Against Ash Paving to fight State and County efforts to find a cheap and convenient way to dispose of "toxic ash".

In February 1992, Hackettstown, having decided that it really didn't need any technical evaluation,

enacted a resolution opposing the paving. In March, the HMUA followed suit.

Tired of responding with too little and too late, the PMT decided to take the offensive and scheduled an information session for the press immediately preceding the activists' well advertised baby stroller and poster media event planned for the April 29, 1992 PCFAWC meeting. At that meeting, the project team announced that the demonstration paving would be limited to a single segment containing a small percentage of bottom ash rather than two segments, one containing bottom ash and one containing combined ash. Still not satisfied, the opponents threatened civil disobedience, litigation and reprisals at the polls if they didn't get their way. The press, in an unusual display of evenhandedness, observed that the noisy attendees included a large number of outsiders, many of whom didn't even know what public entity was hosting the meeting.

Reluctant to appear unresponsive to legitimate local concerns, the project participants agreed to make one last effort to explain the proposed demonstration to an orderly meeting of Hackettstown officials and other residents. Soon thereafter, the Democratic Mayor found an ally in the Republican Speaker of the Assembly, Chuck Haytaian, a resident of a neighboring town. Haytaian, acting at the Mayor's request, contacted the Deputy Commissioner of NJDEP and the Director of the Division of Solid Waste. The message to the PMT was a clear, "Find another site, perhaps Interstate 80."

Considering that the environs of Route 80 in Warren County were home to far more deer than voters and that the NJDOT was planning to resurface the paving in that area in 1993, Route 80 seemed like a promising alternative. The PCFAWC had approved the arrangements for stockpile construction at the ashfill and, at the PMT's request, the engineering consultant and the TWG undertook the evaluation of several new potential sites, including Route 80.

Not content with a victory in the Hackettstown, the critics continued their barrage of allegations, personal attacks and demands -- for more information, for a citizens' advisory panel and a citizen supported laboratory to conduct reviews -- and to press for enactment of town resolutions prohibiting the use of ash on any local roads.

In an effort to seize the offensive, to be proactive rather than reactive, the PMT, with the assistance of the Freeholder Director and Chairman of the PCFAWC scheduled a mid-September information meeting at the Warren Hills High School. Although the session was poorly attended, the usual anti-combustion die-hards were there.

In January, 1993, the PMT formally approved and notified Warren County and the Town of Allamuchy officials of the selection of the Interstate 80 site. The Hackettstown opponents immediately refocused their efforts and rushed to the aid of the Allamuchy residents. Once again, they stepped up the attack with a flurry of letters to the editor; statements warning of imminent danger, especially to children; demands for further delay or immediate abandonment; promises of litigation; and election year maneuvering.

The Town of Allamuchy, having already acted at the behest of its environmental council, was on record as opposing the use of ash on any site. With the Route 80 paving scheduled for the fall, a new spokesperson affiliated with the local school administration came forward to lead the fight, insisting on a meeting with the New Jersey members of the PMT and technical personnel and requesting even more information, which was subsequently provided. It didn't matter. Facts and reason had become irrelevant!

With the press faithfully reporting every allegation or threat of civil disobedience or ballot box reprisals, the once strong support of the PCFAWC, the Freeholder Director and other elected officials rapidly melted away. In late September, the Freeholders passed a resolution rejecting ash paving on Route 80 and urging abandonment of the project. Counsel for the PCFAWC publicly asserted that the Authority "owned" the ash in the stockpile and could therefore decide whether or not to release it. Next the Freeholder Director and Chairman of the PCFAWC, in a last ditch effort to salvage his political career, joined the chorus requesting postponement of the paving. The NJDOT notified the Freeholders that paving of the Allamuchy section of the Interstate would not occur until the spring of 1994. Meanwhile, by a vote of three to two, the PCFAWC resolved to ban the use of the ash in Warren County but to maintain the integrity of the stockpile pending clarification of legal issues.

In October, Assembly Speaker Haytaian, the Republican Party Chairman, anxious to ensure the election of Governor Whitman, turned down a PMT request for support the demonstration project. In so doing, he rejected a project undertaken pursuant to a New Jersey law that he had co-authored and on a site he had selected. Reluctantly, the PMT voted to abandon Route 80 and look for a third site, this time on property owned and controlled by the Port Authority. Meanwhile, the Energy Authority, under the management of a newly appointed chairman who had no use for waste-to-energy or for New Jersey, was rapidly losing interest in the project. This became clear at the October 5, 1993 PMT meeting when the Energy Authority member indicated that he could not agree to the language of the resolution abandoning the Route 80 site nor to the resolution relating to the identification of alternate sites. At the meeting he did approve the resolution requesting that the PCFAWC preserve the stockpile and two days later signed an Energy Authority amended version of the resolution abandoning Route 80.

A weakened PMT now faced a decision whether to cut its losses and close down the project, limiting further efforts to the preparation of a brief stockpile monitoring report and tabular presentations of the raw environmental and engineering test data; whether to close down the project but provide a more extensive set of reports, including several assessment reports; or whether to attempt to proceed with the field demonstration, including the necessary planning, design and environmental assessments and final reports.

Four of the five PMT members were not yet ready to give up. Technical staff from the NJDOT and NJDEP and the engineering consultant joined the Port Authority PMT member in a tour of potential sites. The NJDOT representative agreed to discuss interagency working arrangements with the Port Authority and the NJDEP representative agreed to initiate discussions with the Chairman of the PCFAWC to see what, if anything, could be done to ensure the continued availability of the stockpiled ash and thus avoid the need to obtain, characterize and stockpile a comparable supply of bottom ash from the Essex Waste-to-Energy Facility. The DOT and the DEP pledged continued in-kind support and, in order to conserve project resources, the PMT decided to discontinue the stockpile monitoring at the end of one year (December 31, 1993) and cover the stockpile.

While the PMT and the TWG were attempting to regroup and to organize a last effort to complete the demonstration project in which they had already invested so much time and money, the environmental activists kept up their local media blitz with accusations of official shortcomings and governmental failure to respond to requests for "critical information" or to provide "guarantees". They continued to press their demand that the PCFAWC destroy the stockpile.

The PCFAWC, divided on the issue and unsure of the ownership of the ash, was looking for a way to end the attacks, make certain it could retain the PMT provided stockpile weather station and get on with

its normal activities; the PMT needed assurance that the stockpile would be preserved. A series of discussions between the PCFAWC's attorney and Deputy Attorney General, Dale Lessne representing the PMT, finally culminated in a Draft Ash Agreement that declared the PMT owner of the ash and responsible for any future liability related thereto. In return, the PCFAWC agreed to release the ash to the PMT upon request and to dispose of any ash that was not needed for the demonstration.

With the stockpile dilemma apparently about to be resolved, the PMT faced a new problem, the reluctance of the Energy Authority to continue its involvement in the project. The NJDOT and the Port Authority noted their willingness to commit additional resources and to move ahead at a new site. All parties agreed that maintaining Energy Authority involvement was critical and asked the LIRPB to draft a letter from the PMT to Frank Murray, the Chairman of the Energy Authority, requesting the agency's continued participation. Months passed without any response to that letter, to a subsequent communication from the PMT or to numerous letters of support from local and New York State officials stressing the importance and value of the demonstration.

By April, it was clear that paving in 1994 was no longer feasible and, that unless the PMT could reach a "go" or "no go" decision by early May, the 1995 season could be lost as well. Noting that establishment of a new administrative structure to allow the group to act without the Energy Authority would be difficult and time consuming, the PMT decided to appeal to Frank Murray once again and to defer consideration of closing down the project until the next PMT meeting.

Meanwhile, the Department of Energy's National Renewable Energy Laboratory demonstrated its support by agreeing to provide approximately \$50,000 to help defray the cost of an Ash Stockpile Monitoring Report, thus assuring documentation and evaluation of ash storage and handling activities.

The absence of the Energy Authority's PMT member at the May meeting meant that no official business could be transacted. However, those present agreed that the LIRPB and its attorney would assist the Deputy Attorney General in preparing one final letter to Frank Murray, this time indicating that the Energy Authority's lack of response to PMT communications constituted a de facto abandonment of the project and that in the event of a failure to respond by a specific date all contracts with the New Jersey agencies, the Port Authority and the LIRPB would be considered void. The group also decided that the letter should request the release of the remaining project funds so that the LIRPB and its consultant could apply them to the completion of the expanded stockpile report. Finally, the remaining PMT members determined that they wished to continue the demonstration and agreed to investigate arrangements for a new contract administrator and potential sources of funding.

By late July, the DOT and the Port Authority had come up with an excellent site and sufficient commitments of cash and in-kind services to allow the PMT to proceed, provided the latter could bypass the administrative problems created by the Energy Authority's non-participation. An early August visit to senior Energy Authority management and presentation of a long list of reasons why its continued participation could prove mutually advantageous, even if limited to administrative matters such as interagency contractual relations and the receipt and disbursement of funds, enabled the LIRPB representative to secure the Energy Authority's agreement to continue to provide administrative assistance in a "low profile" or reduced role.

At the next PMT meeting all five agencies were represented, including the PMT member and additional staff from the Energy Authority, who joined in a comprehensive and productive discussion of the proposed site, funding and in-kind service commitments, consultant costs, contract modification

procedures and the need to adhere to an extremely tight schedule if paving was to occur in 1995. The schedule, like many before it, was overly optimistic given the number of participants and the complexity of agency funding and management procedures. Preparation of a revised work plan and consultant budget took longer than anticipated; however, by early November the PMT was able to agree on a revised plan and a consultant services budget that conformed to the requirements of the Port Authority.

In November, Tom Fiesinger announced that, due to a readjustment of priorities, manpower and budgetary resources at the Energy Authority, he could no longer serve as Chair of the PMT or participate in day to day activities. The PMT accepted Tom's resignation with regret.

With financial and administrative matters apparently under control and planning for retesting the now somewhat aged stockpile under way, the PMT again focused on the proposed agreement with the PCFAWC respecting ownership and release of the ash. Noting that it would like the agreement to include language allowing the return of any unused ash and of excess ash/asphalt product, the group asked the engineering consultant to contact the PCFAWC landfill manager to discuss the proposed additions to the draft agreement.

A pre-PMT meeting conference between Ken Afferton representing the NJDOT, Deputy Attorney General Dale Lessne, Warren Chesner and Bart Carhart of the PCFAWC produced a revised draft that was subsequently distributed to those attending the PMT meeting. A newly assigned Port Authority attorney raised numerous questions, requested changes in wording and asked for time to submit additional comments. It was agreed that copies of the final language, including all changes, would be sent to the Port Authority and to the PMT members for further comment, if any, by February 2, 1995. The draft would then be transmitted to the PCFAWC attorney and, if possible, presented for approval at the March 1, 1995 PCFAWC meeting.

Progress reports and discussions of the design and implementation of construction and monitoring occupied the PMT as the Port Authority moved slowly toward official approval and commitment of funds for the project. However, during the winter several members of the PMT and the support staff began to express increasing unease and frustration over what, at best, could be assumed to be confusion associated with an unusual assignment; at worst, deliberate foot dragging. Port Authority demands for elimination of certain items from the budget, for completion of new TCLP tests establishing the ash as nonhazardous, for obtaining an agreement from the PCFAWC guaranteeing access to the ash and for obtaining commitments from asphalt producers -- all before asking the Commissioners for formal approval of the demonstration project -- suggested something more than standard bureaucratic management procedures. As the PMT attempted to come to terms with the Port Authority approval process and with the mixed signals already emanating from the Port Authority, it received welcome assistance from the State of New Jersey. In a move to shore up any flagging enthusiasm and to avert further complications, the Commissioners of the NJDEP and the NJDOT informed the bi-state Port Authority of their interest in and strong support for the paving demonstration.

By early April the Commissioners of the Port Authority had formally approved the undertaking, the PCFAWC had voted to execute the proposed agreement, the stockpiled ash had tested nonhazardous, the DEP expected to issue a Certificate of Authority to Operate (the New Jersey equivalent of an R and D permit) and the precise wording of the Port Authority bid documents was under discussion. The engineering consultant informed the PMT that the draft environmental assessment would be completed by the end of May and suggested a target date of May 22, 1995 for publication of the request for bids.

On April 5, 1995, the relative calm was shattered. Environmental activists monitoring the PCFAWC meeting at which the Authority approved the agreement with the PMT learned that the demonstration project was going to be implemented on a third site, Center Drive, in Elizabeth. Quick to report on a potential controversy, the press interviewed the usual opponents, printed uninformed and inflammatory quotes from the usual sources, including one calling attention to the "danger to children living at the site". Six days later, the Mayor of Elizabeth joined the fray, complaining about not being informed, demanding all test results, reports and studies, generally parroting the allegations of the perennial foes and threatening "appropriate action". Although briefly noting that the Port Authority had offered to sit down and discuss the project with the Mayor, press coverage focused on the comments of a new set of opponents from Union County and the City of Elizabeth, who described the ash as "absolutely toxic" and accused the NJDEP of "tinkering" with its own standards so the demonstration could proceed.

In May, the Concerned Citizens of Union County, together with their Warren and Morris County allies and members of the clergy organized their first paving project media event, a march and protest in front of the Union County Court House. The featured speaker, a Concerned Citizen of Morris County, discussed the topic, "How and Why the Project Was Defeated in Warren County."

On June 26, 1995, the Port Authority advertised for bids but soon found it necessary to delay the release of bid documents pending a design revision to meet federal requirements and its incorporation in an addendum. At about the same time, Port Authority personnel and the LIRPB's consultant noted that the design group had overlooked several major items when developing an estimate of project costs, and that bids could be significantly higher than expected. Faced with pressure to complete the paving of Center Drive, opposition from the environmental activists and Elizabeth elected officials and, now, an apparent escalation of estimated project costs, the Port Authority official in charge of the demonstration agreed to allow the project to proceed to the receipt of bids, but indicated that if they came in too high, as he expected they would, the Port Authority would reject them. Noting that he expected a shortfall of \$300,000 or more, he stated that, "then the PMT will have to decide if the project is too expensive".

Once again, the viability of the undertaking was in doubt. Whether the cause was an agency structure that limited effective coordination and control or the manifestation of a hidden agenda, the demonstration was clearly at risk. The bid opening on August 8, 1995 confirmed the PMT's worst fears. All five bidders came in well above the Port Authority's estimate.

Clearly the situation called for PMT discussion and high level intervention. When the LIRPB member was unable to reach her DEP counterpart, the former shared her concerns with the latter's secretary, who had the good judgement to ask whether the Commissioner should be apprised of the likelihood of unilateral Port Authority action that could end the demonstration project. The response was a grateful "yes" and, within a matter of days, the Port Authority announced its intention to attempt to negotiate with the low bidder.

The first of two well attended negotiating sessions took place August 29th; the second, September 7th. At the second session, the Deputy Director of the NJDOT forced the Port Authority's hand by agreeing to provide an additional \$100,000 to help defray the higher than anticipated costs. Two meetings, with PMT members and others in attendance, and a \$100,000 contribution encouraged a Port Authority and the low bidder to narrow the distance between them. One on one negotiations between the Port Authority official and the contractor enabled them to reach a final agreement. The contract for the installation of the paving and the monitoring equipment was finally executed in mid October.

As early as August, the engineering consultant warned that, even if the Port Authority obtained a satisfactory bid, the fall paving might have to be postponed because of the time required for necessary preliminary work, for purchase and testing of Center Drive monitoring equipment and for completion of the asphalt production plant monitoring arrangements. During the October PMT meeting at which the PMT formally authorized the Port Authority to proceed with the project as set forth in its contract authorization letter to the low bidder, the DOT representative specifically requested that Warren Chesner, the engineering consultant assist the Port Authority staff in coordinating and implementing all project activities.

At the behest of the PMT, the consultant contacted the PCFAWC ashfill manager to discuss possible arrangements for the transport of excess ash and left over ash amended asphalt to the Warren County facility. A week later the PMT had the first draft of a letter agreement and, by mid November, a final version was circulated for signature. By Thanksgiving, all permits and authorizations were in place, the road base was prepared and the contractor was still planning to complete the paving and installation of the monitoring devices before the asphalt plant shut down for the winter.

Once again, Murphy's Law prevailed. Rain, snow and abnormally cold temperatures forced the seasonal closure of the asphalt plant; work on the partially finished Center Drive would have to wait until Spring.

By early December, project foes learned that the contractor was behind schedule and that the PCFAWC had agreed to allow the PMT to return excess ash and to use excess paving mix for the construction of a pad for recycling equipment at the ashfill. Believing that the paving would occur during the week of December 11th, they mounted an all out effort to stop the demonstration once and for all.

The press had a field day as the activists increased the volume, frequency and inflammatory nature of their allegations and castigated the PCFAWC and its ashfill manager for participating in the project. The activists' Freeholder allies considered suing the PCFAWC to prevent the return of leftover ash and ash amended asphalt. While the County Attorney conferred with the PCFAWC Attorney and with the PMT in the hope of heading off an embarrassing law suit, the activists organized another Union County protest.

By the mid-December Freeholder meeting, the PMT and the County Attorney had agreed that there would be no shipment of ash amended asphalt to Warren County and that Warren County would not interfere with the paving in Elizabeth. In an effort to placate their local activist constituency, the Freeholders again passed a resolution opposing the demonstration and petitioning the New Jersey agencies to abandon the project and request the PCFAWC to landfill the ash stockpile.

In January project opponents, along with additional recruits from among the clergy, again focused their energies on Elizabeth, staging a candlelight vigil to protest the paving just before the City Council was to vote to adopt a resolution opposing the project.

Assured by the Port Authority that it, not the City of Elizabeth had authority over Center Drive, the PMT ignored the City Council's threatened passage of a local law prohibiting the use of "toxic ash" in paving and resumed preparations for the installation of the demonstration paving, which was expected to occur in late March.

It didn't. Once again the exigencies of politics thwarted the PMT's plans. It seems that the Mayor of Elizabeth was facing a June 13th primary and was most anxious to postpone further Center Drive

controversy until after that date. The opponents, who didn't know that the paving had been postponed until mid June, kept up a steady barrage of attacks, demanding more information and calling for public hearings. Finally, after having provided local officials and avowed opponents with information about every aspect of the demonstration project, the PMT said, "Enough!" Since the law did not require a public hearing, there would be none.

Meanwhile, due in part to changes in the PCFAWC membership, arrangements for release of the ash were coming unglued. One old member had publicly rejected the existing agreement and called for burial of the ash. Two new members insisted on meeting with the DEP and demanded answers to a list of questions. A coalition of anti-incineration, anti-paving activists and like minded clergy kept up a campaign of political and religious pressure.

The Deputy Attorney General, in a letter to Jim Broscius, counsel to the PCFAWC, acknowledged the PMT's concern respecting the PCFAWC's intentions and reminded him that the State considered the April 11, 1995 Stockpile Agreement as remaining in force and fully binding and expected all parties to fulfill their obligations under the Agreement. On a more conciliatory note, she indicated that the DEP would be contacting the PCFAWC to set up a meeting to discuss the members' request for additional information. Shortly after that meeting and the subsequent receipt of a written response to their list of questions, the PCFAWC members yielded to the well organized clamor and, meeting in closed session, voted to landfill the stockpile. The project opponents and the Elizabeth officials were elated. Not reported in the press was the fact that the PCFAWC also voted to delay action for two weeks, ostensibly as a courtesy but also in the hope that the State would move quickly to force the Authority to honor the Agreement, thus allowing the PCFAWC to avoid legal consequences and providing political cover.

Once again, Commissioner Shinn (DEP), joined by Commissioner Wilson (DOT), reiterated the State's support for the project. Both requested the Attorney General's Office to seek the approval of the Governor's Office for the initiation of legal action against the PCFAWC in order to prevent the imminent destruction of the stockpile. Permission was granted, and on May 14, 1996, a Deputy Attorney General, acting on behalf of DEP and DOT, appeared before the Superior Court of New Jersey seeking an Order to Show Cause with Temporary Restraints to prevent the PCFAWC from touching the stockpile. The judge granted a temporary restraining order and instructed the State and the PCFAWC attorneys to submit documents in support of their respective allegations and indicated that he would set a date for oral arguments and a decision on the State's request that the Court make the temporary restraining order permanent and require the PCFAWC to comply with the terms of the April 11, 1995 Agreement.

At a PMT teleconference on June 4th, the Deputy Attorneys General handling the litigation informed the conferees that a letter requesting surrender of the ash by June 17th had been sent to the PCFAWC counsel for action at the Authority's meeting the next day. They indicated that if the response was negative as expected, they would immediately file for Summary Judgment on Short Notice.

On June 7th, Judge Diana found in favor of the State, noting in his decision that the papers showed that, "there will be no measurable risk" and that, "the State should not be denied the potentially invaluable opportunity to determine the utility of ash as a paving material". On the 10th, the PMT notified the Mayor of Elizabeth and the Chairman of the Union County Board of Freeholders that the Port Authority would be paving Center Drive during the week of June 17th.

Defeated in Warren County, the hard core crusaders turned to Michael Gordon, an environmental

lawyer, who proceeded to attack the State alleging violation of its own solid waste management plan by bringing ash to Union County without prior County approval. Elizabeth officials, invited to join the activists' litigation, did so, alleging that installation of the paving would violate a local ordinance.

On June 14th, the Deputy Attorneys General were in another court before another judge and still fighting to protect and preserve a seven year old interagency demonstration project. Judge Beglin, after indicating that he lacked the authority to rule on the City's complaint, deferred his ruling on the environmentalists' allegation pending the submission of legal arguments by the attorneys for both sides. However, in recognition of the expense and inconvenience that would be incurred as a result of extended delays, he agreed to announce his decision early in the day on June 19th, barely nine hours before the PCFAWC was scheduled to release the ash to the Port Authority's contractor.

While awaiting the decision, the Port Authority and its contractor made preparations to install the ash amended pavement during the night of June 19th-20th and the control section the following night, the predicted heavy rains notwithstanding. Then, on the morning of the 19th, as Judge Beglin upheld the legality of the DEP's actions, the trucks that were to collect and transport the ash to the asphalt plant began to roll. By the time the contractor was ready to put down the paving, the rain ceased and the task was accomplished, with only one or two unhappy opponents on hand to videotape the proceedings. On June 21st, the local daily carried the headline, "Critics Fume As Ash Pavers Strike In The Night". The PMT and TWG members, the engineering consultant and involved Port Authority, DOT and DEP staff expressed their relief and satisfaction that, with the able assistance of the Deputy Attorneys General, the "good guys" had finally won the battle.

With the paving on Center Drive in place and subject to heavy traffic for about ten months, and ongoing monitoring of its physical condition and regular collection of runoff and soil samples, it's time to reflect on the events of the past eight years, to identify the non-technical insights gained and to share conclusions and caveats with those who may be tempted to undertake controversial R and D projects.

In my opinion, the ash paving project has made it abundantly clear that 1) failure to understand and anticipate the non-technical impediments to implementation can doom the best designed field demonstration and 2) achieving and maintaining an ongoing multi-agency managed and supported demonstration requires an extraordinary effort, doggedness and administrative creativity.

In retrospect, it seems that the proponents were surprisingly naive. As residents of the highly urbanized Northeast, the project participants shared a conviction that MSW combustion together with energy production and, if possible, the beneficial use of sizeable portion of the residue represented an essential, if not the essential component of a practical, environmentally friendly municipal solid waste management program.

The New Jersey participants viewed the project as an environmentally friendly effort undertaken in partial fulfillment of a legislative mandate directing the NJDOT to investigate the feasibility of using secondary materials in paving. At the time the demonstration was conceived, the DOT had already been experimenting with crumb rubber, New York City was using ground glass and there was increasing interest in the beneficial use of ash. Assuming that ash could be recycled in paving without contravention of any NYSDEP standards, who could possibly object?

The Port Authority, unaccustomed to controversy over "small" projects, was concerned with finding a beneficial use for at least some of the residue to be generated at its Essex County waste-to-energy

facility then under construction. As an agency involved in the construction and operation of major public facilities, it was sensitive to potential environmental concerns and liability issues but was ready to accept the NJDEP approval as assurance that the project was safe and would go forward.

The New York State Energy Research and Development Authority, originally a relatively independent agency dedicated to fostering innovative energy producing or conserving technology, had little experience with and little expectation of public controversy. Willing to assume a major role in program design and administration, the Energy Authority appeared to regard the road paving and stockpile construction and monitoring as an appropriate follow up to the Energy Authority assisted LIRPB study of the potential for beneficial use of residue from municipal solid waste combustors.

The LIRPB, with two small and three larger waste-to-energy facilities already operating or in start up within the bi-county area, was aware of local resistance to further planned construction. Relieved that the proposed paving site was located in New Jersey rather than on litigious Long Island, the Board staff chose to accept the Freeholder Director and the Pollution Control Finance Authority assurances that Warren County had a suitable site, and refrained from asking questions. Furthermore, since NJDOT funds were to pass through to Warren County which would then pay construction costs, the Board regarded the DOT/Warren County arrangements as a given. In so doing, it failed to call for consideration of the need for some kind of public outreach to inform local officials and community leaders of the importance and safety of the project.

The participants failed to recognize that today a field demonstration project is often not just a scientific real world test of a promising technology but a made-to-order opportunity for individuals and organizations to further a variety of goals, many of them unrelated to the demonstration. This was clearly the case in Hackettstown where the initial opposition came from alarmed residents of the Willow Grove Street area, who were soon joined by persistent enemies of the PCFAWC, other foes of incineration and environmental fellow travelers energized by the prospect of excitement, publicity and the opportunity to further their respective causes.

Empowered by their victory in Hackettstown, most of the original opponents simply transferred their attention to the Route 80 site in Allamuchy where they managed to enlist new recruits. Again, public officials, in an attempt to preserve a semblance of rational impartiality, asked questions and requested stacks of reports and reams of data. Then they promptly acceded to the activists' misinformation-based demands. When the PMT decided to move to Center Drive, the activists took up the fight on two fronts, capitalizing on their support in Warren County by trying to force the PCFAWC to destroy the stockpile and joining their Union County and Elizabeth allies in protests and a lawsuit.

Had the PMT been more proactive in seeking broader public support, in providing information and explaining the demonstration project before being forced to defend it and in observing political niceties, such as notifying the Mayor of Hackettstown before he read about the project in the newspaper, the PMT might have succeeded on the first try. It seems unlikely, however, since the demonstration addressed a problem of little immediate public concern and was therefore unlikely to attract the strong support needed to offset the allegations of the organized nay sayers.

The forced abandonment of the Route 80 site can be credited to the increasingly effective tactics of the anti-incineration alarmists, unfortunate timing and the foolish assumption that adherence to the recommendation of a powerful politician automatically guarantees his support. Start up delays and the time lost in attempting to site the demonstration in Hackettstown caused the paving of Route 80 to be

scheduled in a critical election year, thus endangering political support for an already controversial activity.

Successful project implementation at the Center Drive site can be attributed to three factors: public agency ownership of and unquestioned jurisdiction over the site, the unwavering support of Commissioner Shinn of the DEP and the willingness of the Governor's office to permit the Attorney General to initiate or defend against legal action as necessary to preserve the stockpile and to allow the paving to proceed.

Achieving and maintaining interagency consensus and coordination proved to be complicated, sometimes frustrating but ultimately manageable. Initially there were some sticky issues of governance, of authority and liability, of technical competence and work plan scope; later, of Energy Authority support, of the procurement of additional funding and the maintenance of administrative coherence and continuity.

Creation and maintenance of an ad hoc management organization was only the first of several challenges. If the demonstration was to go forward, it was essential to find a way to make management by committee actually work. The establishment of a Project Management Team consisting of representatives of the five agencies committed to decision by consensus and the subsequent creation of a Technical Working Group to advise the decision makers ensured responsible and relatively efficient project governance and administration.

Establishment of contractual arrangements for a cooperative endeavor involving two New York, two New Jersey and one interstate agency was also no easy matter. The key was the retention and modification of an existing Energy Authority agreement of 1987 covering the scope and funding for a then ongoing but virtually completed investigation of the potential for beneficial use of MSW combustor ash. That agreement was amended by the addition of language describing work to be accomplished, cash and services to be provided and administrative and technical responsibilities to be assumed by each of the cooperating agencies, effective only upon execution of the amended Energy Authority/LIRPB agreement and the execution of parallel agreements between the Energy Authority and NJDOT, the Energy Authority and NJDEP and the Energy Authority and the Port Authority.

This arrangement accomplished three things, not the least of them securing the approval of five sets of independent-minded attorneys. It also allowed the group to maintain uninterrupted access to the Board's highly qualified engineering consultant without contravening the rules or contracting procedures of the New Jersey or interstate partners. And, finally, by assigning primary responsibility for PMT administrative matters and fiscal management to the Energy Authority, it allowed policy determination by consensus without impairment of day to day progress.

Interagency consensus building and maintenance have proved time consuming but critical throughout the course of the project. Even before the drafting of the Energy Authority/LIRPB contract amendment and the new agreements, the consultant and agency experts wrote and revised five versions of a relatively detailed work scope and a clear, task by task, assignment of responsibilities. Except for the changes necessitated by the need to plan for three different sites, the project scope is essentially the same as in the initial interagency agreements.

The project schedule and budget are another matter. If any of the participants had envisioned the probability and potential consequences of normal bureaucratic and/or environmental activist related

delays, they might well have questioned the feasibility of the undertaking.

Fortunately, the group had a lot going for it. The idea of interagency cooperation was and remains tantamount to governmental "motherhood" and therefore clearly a plus. The fact that the program was designed to build on already completed publicly-financed research and represented an attempt to reduce the cost of MSW management through an environmentally friendly beneficial use of combustion residue demonstrated genuine concern for both the local taxpayer and the environment.

On balance, the strong leadership and "can do" attitude of the DOT representative and the willingness of the DEP and the Port Authority to stay the course, the agencies' ability to reallocate or provide additional funds or services when needed, and the unparalleled access to engineering, environmental and legal talent and services provided by the project consultant and agency staffs more than offset the difficulties encountered in maintaining a continuity of effort and expertise in the face of agency downsizing and reorganization.

Finally the strong, timely support of a dedicated public official, willing to defend government's ability to pursue and test innovative solutions to current problems, through legal action if necessary, proved critical to the PMT's ability to pave Center Drive.

In closing, let me leave you with a personal observation. I've spent a lot of time thinking about the events of the past eight years and of the changing milieu in which we now find ourselves. The ash project has confirmed my suspicion that there is a "Gresham's Law" of environmental politics. Substitute the word "science" for the word "money" in the principle that bad money tends to drive good money out of circulation and you have a succinct description of one of the key factors affecting our ability to engage in and benefit from a demonstration project. A suggested restatement of Gresham's time honored principle of economics might say that, "Almost inevitably, junk science -- the exciting vehemently asserted, emotion-laden half truths and misinformation -- will rapidly replace the less simplistic but technically valid findings and conclusions derived from properly collected and scientifically analyzed data as the currency of political dialogue. In our case, public acceptance and media repetition of activists' outrageous claims and demands for proof of the unprovable quickly precluded rational discussion. Legitimate concerns were transformed and project participants demonized in order to support a multiplicity of agendas in a local power struggle with statewide and national implications.