



**Independent Review of the  
Cleanup Plan for the East 115<sup>th</sup> Street  
Manufactured Gas Plant Site  
New York, New York**

**Peter M. Strauss  
PM Strauss & Associates**

**Lenny Siegel  
Center for Public Environmental Oversight**

**Prepared on behalf of the Parents Association' of the  
Manhattan Center for Science and Mathematics**

**June 12, 2009**

The East 115<sup>th</sup> Street Manufactured Gas Plant site covers nearly six acres between Pleasant Avenue and FDR Drive in the New York City Borough of Manhattan. Operated as a Manufactured Gas Plant (MGP) between 1895 and 1936, the site has housed the Benjamin Franklin High School building since 1941. Current occupants of the building are the Manhattan Center for Science and Mathematics and the Isaac Newton Junior High School of Science and Math. Though most of the Gas Plant was demolished, some structures and residual contamination remain on site, under and adjacent to the school building. Consolidated Edison (Con Ed), which purchased the property from the original plant operator, has taken responsibility for cleanup, and oversight is provided primarily by the New York State Department of Environmental Conservation (DEC) under its 2002 statewide Voluntary Cleanup Agreement with Consolidated Edison.

In April 2009 Consolidated Edison released for public comment an Alternatives Analysis Report and a Conceptual Site Management Plan. Based upon Con Ed's findings, DEC circulated a Draft Decision Document proposing a six-part remedy:

1. Construction of barrier wall along the eastern edge of the site.
2. Selective soil excavation and removal outside the school building.
3. Installation of a sub-slab depressurization system underneath the school.
4. A deed restriction requiring that Con Ed be notified of changes in school use.
5. Development of a Site Management Plan.
6. A periodic certification of engineering and institutional controls.



**Manhattan Center for Science and Mathematics**

Most important, the site remedy anticipates that significant levels of MGP-related wastes will remain on the property indefinitely.

The Parents' Association of the Manhattan Center for Science and Mathematics has retained the Center for Public Environmental Oversight, including subcontractor Peter M. Strauss, to review the site documents and prepare comments for Con Ed and the regulatory agencies. In addition to reviewing these and other documents, CPEO Executive Director Lenny Siegel and Peter Strauss have visited the site, met with parents and staff, and discussed the site with representatives of Con Ed, DEC, and the New York State Department of Health.

While we believe that site contamination poses a long-term risk to building occupants, in general they are not currently being exposed to toxic substances at levels that pose acute, significant, or unusual health risks. That is, we do not recommend school closure nor the withdrawal of students or staff from the building.

In general, we support the proposed remedy, but we believe that both the remedy and the supporting documentation should be strengthened to provide long-term protection for students and staff.

### **Document Status**

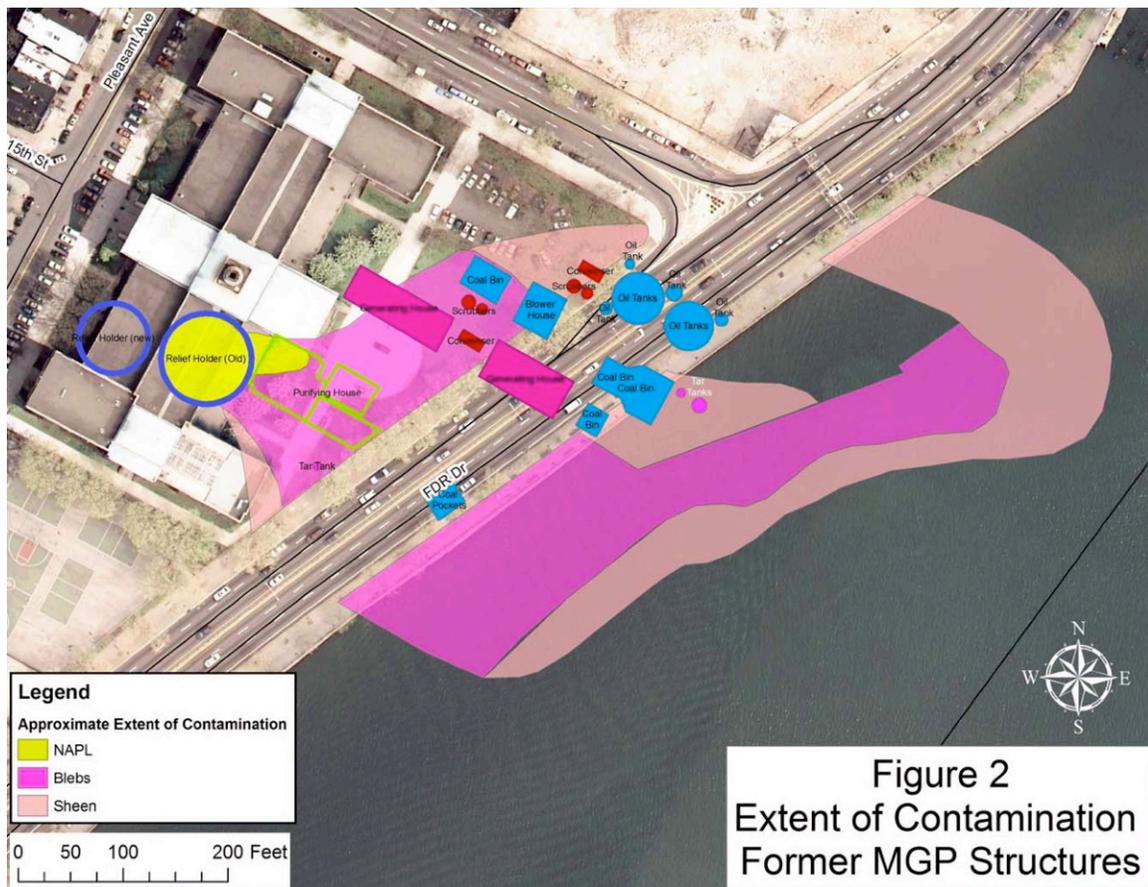
For starters, we are confused by the status of the various documents. In November 2007, Con Ed explained, in a "Frequently Asked Questions" fact sheet:

When the pilot study is completed, the Remedial Alternatives Selection Report will be finalized and available for public review and comment. The final step would be a comprehensive Remedial Action Work Plan (RAWP) presenting the proposed remedial alternative. Upon approval of the final RAWP by the NYSDEC and NYSDOH, the plan will be implemented.

But in May 2009, DEC representatives told us that there will be no Final RAWP. Instead, they plan to issue a Final Decision Document along with responses to comments that they receive on the Alternatives Analysis Report (AAR) and the Conceptual Site Management Plan (CSMP). The Pilot Study has not been completed. There will be no Final AAR nor Final CSMP, though presumably at some point there will be a final Site Management Plan.

**For the remedies to be properly implemented, there must be a complete, transparent, detailed, unambiguous, enforceable workplan or Decision Document, defining the extent and timing of each element of the remedy.** Particularly when key decisions are postponed to the Design Phase of the response, those decisions should be carefully circumscribed by *remedial objectives* within the decision document. In other words, in the absence of a Final Remedial Action Work Plan, the DEC should include in the Final Decision Document sufficient language to guide the remedial response and for the public to evaluate its decisions.

Furthermore, because contamination will remain on the property, a Site Management Plan is necessary to prevent unsafe exposures. In fact, Con Ed and DEC are legally obligated to prepare a Site Management Plan at the time the remedy is selected. There are elements of the SMP that cannot be determined until the remedy is in place, so we accept the term “Conceptual.” However, we find that the draft CSMP has serious gaps. **We urge the creation of a final Conceptual Site Management Plan that requires long-term monitoring to ensure that the performance objectives in the Decision Document are sustained, and which also contains contingency plans that call for specific actions if those objectives are not met.**



### Extent of MGP Wastes (from Draft Decision Document)

#### The Right to a Safe Environment

MCSM and Isaac Newton students, faculty, and staff work and live in a dense urban environment. We understand that they may be exposed to more toxic substances than they would if living in a typical suburban or rural area. Yet we think it is the obligation of the New York City Department of Education, those responsible for past pollution, and the DEC to assure that exposure, while in school or using the school grounds, is kept to a minimum and does not exceed health-based standards promulgated

either by the DEC, the New York State Department of Health, or the U.S. Environmental Protection Agency.

In numerous locations at the site the concentrations of contaminants in soil are well above DEC's health-based Recommended Soil Cleanup Objectives (RSCOs), both at the surface and below the surface. In several sections of the AAR and other background documents, it is stated that the concentrations of contaminants were typical of urban fill in New York City, or that they appear to be related to urban background conditions not related to former MGP operations, although contaminants may be the same as those associated with MGP operations. This suggests that schoolchildren who are attending the two schools are not entitled to the same level of environmental protection as students attending schools elsewhere. We are not advocating that the grounds or the air be cleansed to pristine levels, but we do think that Con Ed and the DEC have an affirmative duty to demonstrate that the school environment is as protective as it practically can be.

*A. The remedy should be protective of vulnerable populations, such as young people.*

The risks to students from exposure to contaminants are greater than those for adults. Young people consume more calories, drink more water, and breathe more air per pound than do adults, and therefore take in larger amounts of any harmful substances that may be present in the environment. Their natural curiosity often exposes them to health risks adults readily avoid. Young adults and children also have immature systems that are less able to handle toxins. Their body tissues more readily absorb many harmful substances. They have more time to develop disease. All these factors should be taken into consideration when deciding how protective the remedy should be.<sup>1</sup>

*B. "Background" comparisons do not, in themselves, justify inaction.*

Background levels of contamination generally refer to levels found in the surrounding environment. Where contaminants are naturally occurring, such as arsenic in some soils, responsible parties may argue that it is not their responsibility to lower concentrations below background, even if exposures exceed health-based standards.

But the contaminants of concern at East 115<sup>th</sup> Street are not naturally occurring. Thus, background contamination, either attributed to "historic fill" or from normal urban conditions, may still require remediation where levels exceed health-based standards. In our view, background levels should be tolerated only if removal would simply lead to re-contamination. We do not accept the argument that because everything is contaminated, nothing should be cleaned.

---

<sup>1</sup> Partially from Landrigan *et al*, "Children's Health and the Environment: A New Agenda for Preventive Research," *Environmental Health Perspectives*, June 1998, and the Healthy Schools Network.

In the case of vapor exposures, we accept that indoor air cannot be made cleaner than ambient (nearby background) air. Background contamination will simply diffuse back into cleansed spaces.

However, health-based standards for soil contamination should not be set aside because the background is contaminated. We believe that benzo(a)pyrene, one of the more potent polycyclic aromatic hydrocarbon (PAH) compounds, will not recontaminate to the site to current levels. It is not universally agreed upon that being close to a high traffic zone like FDR Drive will lead to more deposition of benzo(a)pyrene. At least one report states that it is *not* found in the exhaust of autos with catalytic converters,<sup>2</sup> and few diesel vehicles are allowed on FDR Drive. Furthermore, we do not agree that the surface contamination found at the site is within urban background levels, as cited in a report that was developed by a Con Ed consultant.

Con Ed, in its Remedial Investigation for the site says that PAH contamination is characteristic of “urban fill,” but it is equally plausible that the compounds found at the site result from residual MGP wastes as well as demolition of the plant itself.

## REMEDIAL ACTIONS

The most fundamental decision in the remedy selection process has been the decision not to remove or treat at this time buried remnants of the MGP plant or the coal tars that remain under the school building. Con Ed reports (AAR ES-1):

The feasibility of In-Situ Chemical Oxidation (ISCO) and In-Situ Thermal Treatment (ITT) were thoroughly evaluated as potential methods to remove NAPL from underneath the school. Both technologies were determined to be extremely difficult to safely implement at the site and to have uncertain effectiveness.

The AAR recommended a plan for a pilot study of ITT and horizontal drilling for the extraction of coal tars from the most contaminated areas under the building. The Work Plan for the pilot study is attached to the AAR as an Appendix. Yet, without documentation or explanation, Con Ed—with DEC’s approval—rejected the idea before bench scale tests were done to demonstrate the effectiveness of ITT. One final section of the AAR (p. 5-2) states:

Enhanced (via ITT or Chemical Treatment) NAPL recovery using horizontal wells to remove source material from underneath the school building was evaluated in detail and is not recommended. ***Results of that evaluation are provided in the Pilot Study Work Plan (Appendix A)*** [emphasis added]. Neither ITT nor Chemical Treatment is expected to be capable of removing a significant amount of the NAPL present beneath the building. Horizontal drilling and effective NAPL removal are technically challenging under the current Site conditions.

---

<sup>2</sup>[http://oehha.ca.gov/air/toxic\\_contaminants/html/benzo%5Ba%5Dpyrene.htm](http://oehha.ca.gov/air/toxic_contaminants/html/benzo%5Ba%5Dpyrene.htm)

**We agree that major remediation beneath the school might not be practical at this time**, but we had hoped that the pilot study would demonstrate an approach that could be used to dramatically reduce the mass of coal tars at the source. We are concerned that no explanation was provided for dismissing the Con Ed consultant's recommendation, and no evaluation was provided, despite the above-cited paragraph. **Regardless, Con Ed should remain responsible for addressing sub-school contamination should the school ever be demolished or undergo reconstruction.**

### Vapor Intrusion Mitigation

Con Ed has proposed a subslab depressurization system under the southern half the school building to prevent vapors from the subsurface from entering occupied areas. This is a proven technology for eliminating hazardous exposures, as long as the system is operating properly and successfully. Though long-term monitoring, operation, and maintenance are required, this approach is relatively inexpensive: "The estimated cost to install and operate an active vent system over a 30-year period using a net present value discount of 5% is \$100,000 to \$150,000." (AAR 4-44) The Site Management Plan also calls the 8- to 12-inch concrete floor an effective vapor barrier (p. 32), but concrete is generally not considered a barrier to the migration of volatile organic compounds.

The Draft Decision Document calls for "Installation of a sub-slab depressurization system beneath the school foundation slab. The system will provide a negative pressure below the building to prevent soil vapor from entering the building in the future." (p. 2) It does not limit the system to half the building, but given Con Ed's half proposal, the extent of the remedy needs to be clearly defined.



**Soil Gas Sampling Point in MCSM Basement**



In its draft Alternatives Analysis Report, Con Ed does not argue over the need for the subslab system in the northern half of the building. Instead, it ignores that half of the building entirely, presumably because the wastes are not believed to result from manufactured gas plant operations. **We believe that DEC should ensure that the subslab depressurization system be extended under the entire slab, because the health of the students, teachers, and other staff necessitates it.**

Furthermore, we believe that under its 2002 statewide Voluntary Cleanup Agreement with Con Ed, the company is indeed responsible for addressing the PCE, even though it is not an MGP-related waste, because the PCE is “commingled or intermingled with wastes from the MGP operations.” MGP-related contaminants measured above state comparison levels in Indoor Air Sample #5 on August 20, 2008, and PCE is found under the southern part of the building. It is impossible to fully separate the two types of contamination, and operation of a depressurization system that only covers half the building could have the unintended consequence of drawing vapor under the building, only to be released inside the building through a preferential pathway (e.g., crack in the floor, or utility conduits).

We were disappointed that Con Ed ignored the PCE contamination, instead of putting forward an argument that someone else should mitigate it. We ask Con Ed to join us in requesting that DEC investigate the source of the PCE, and if found, holding the responsible party liable for a portion of response costs. But until that happens, we ask Con Ed to expand the planned system. The cost is low, and the health benefits are clear. If Con Ed chooses to contest this approach, then we believe it is obligated to study the likely impact of its planned half-building system on the circulation of PCE vapors under and inside the entire school.

At the May 12, 2009 meetings, it was made clear that the precise configuration of the subslab system will be defined during the design phase of the work. We have no problem with that, as long as the Decision Document prescribes a clear *performance objective*. **We suggest that the subslab depressurization at MCSM be designed to keep MGP and non-MGP vapors levels in the indoor air, including the basement, below both New York State and federal inhalation levels associated with an excess lifetime cancer risk of  $10^{-6}$  (one in a million).** We recognize, however, that a subslab system cannot prevent indoor air contamination caused by highly contaminated outdoor air or by sources within the building.

To ensure that the system achieves that objective, we support Con Ed’s proposal for two initial semi-annual sampling events, but **we strongly recommend that indoor air sampling continue annually as long as the subsurface remains contaminated and there are students in the school.** Pressure tests should continue quarterly or semi-annually; inspections should be conducted daily; and system monitoring should occur continuously.

We recognize that the monitoring of system parameters give a strong indication that the system is working as designed, but based upon our observations nationwide,

including at MCSM, it is unrealistic to expect parents to accept a finding that their children are safe based upon indirect measurement. Some level of direct exposure measurement is necessary. Because subsurface conditions, system operation, and the integrity of the building may change over time, we believe that some level of indoor air sampling should continue indefinitely, as long as there is a possibility of a completed exposure pathway. Finally, because this is a science high school, the requirement for annual monitoring offers an educational opportunity. In keeping with our recommendation that DEC and Con Ed to work with the school's professional staff to devise a curriculum, we urge them to directly involve students in the measurement of their exposure to volatile organic compounds in the school's indoor air.

## **Excavation**

### **Subsurface Soil and Coal Tar**

The goal of excavation, as defined in the AAR is to remove, to the extent practical, MGP materials, particularly non-aqueous phase liquids (NAPL) such as coal tar, above the water table. We support this goal, but we find that the proposed limited excavation, as described in the AAR, would fail to meet that goal.



**Tar in an MGP Test Pit**

Coal tar found at this site is viscous and associated with the carbureted coal gas (water gas) process. It is an emulsion that as a whole is slightly denser than water, but which contains toxic compounds that literally float on water. When deposited in tar wells, pits, or leaking from the brick-bottomed gasholders, the tars slowly sink beneath the

water table, and then they move with groundwater. In addition, MGP plants of this era, particularly water gas plants, generated enormous volumes of difficult-to-separate tar-water mixture. There were many instances where these emulsions were haphazardly dumped at the MGP facilities. We have no evidence that this occurred here, but it is important to keep this possibility in mind when developing a clean-up strategy. Both the tar and the tar-water mixture may surface, over time. At other locations in the United States we have seen this phenomenon occur due to upward groundwater gradients, extensive flooding, or separation of the coal tars into light and heavy liquids. Because this site was formerly a swampy area—meaning that the ground was saturated close to the surface—the remedy should protect against such releases.

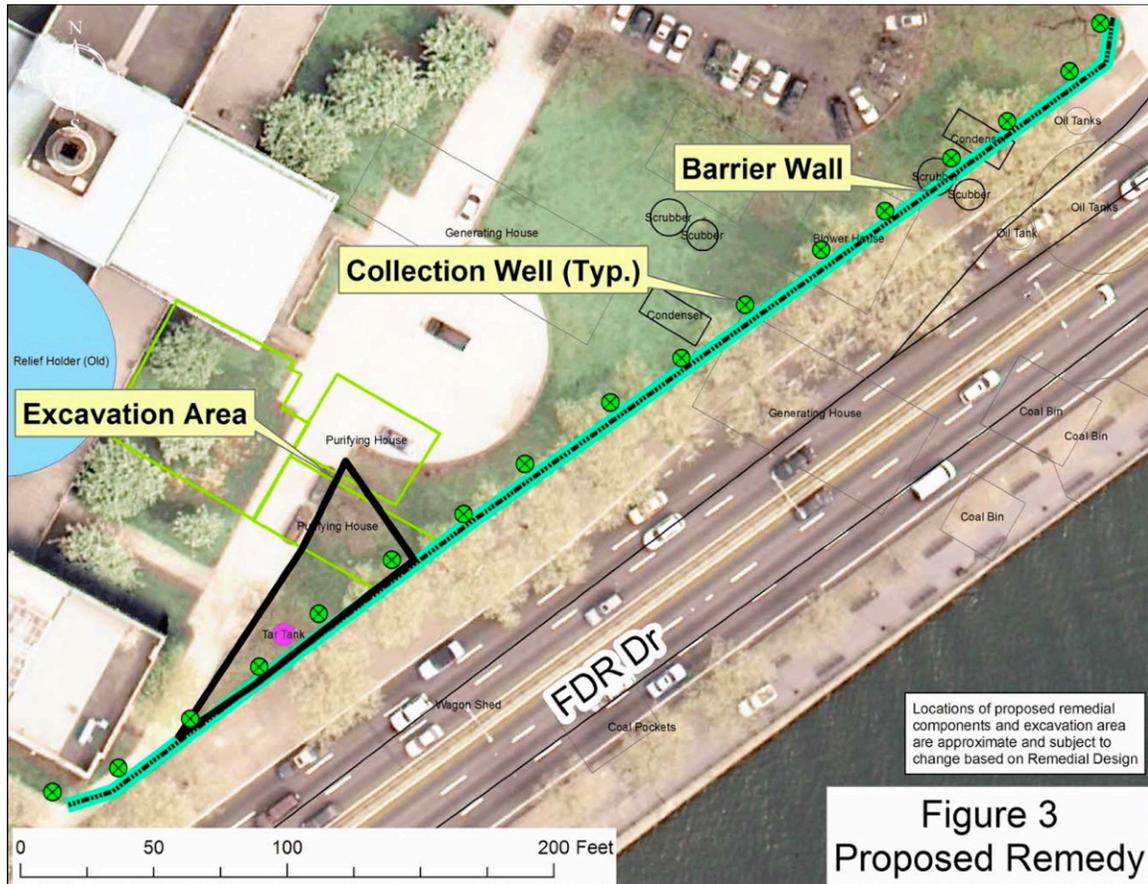
Many surface and subsurface soil samples at the East 115<sup>th</sup> Street site are contaminated with MGP compounds, including cancer-causing PAHs, above New York State's RSCOs. The highest concentrations have been found near or below the water table. We concur with the AAR that excavation below the water table would not be constructive, but we believe that official RSCOs should be the starting point for defining the area of excavation.

Con Ed proposes only to excavate a small triangle on the southeastern portion of the school property. Its boundaries were defined for the most part by Test Pits 3 and 4, which were examined during the Remedial Investigation (RI) phase. These found debris together with what appeared to be some purifier waste (Pit 3). Olfactory observations and Photo Ionization Detector readings from both pits indicate the presence of staining, sheen, globules, or NAPL as high as eight feet from the surface. We concur that this area needs to be further delineated before excavation proceeds, and a rigorous protocol of confirmatory sampling needs to be performed to demonstrate that no NAPL exists above the water table at this location.

The proposed excavation triangle seems arbitrary, and DEC appears to agree. In the Draft Decision Document it states, "The proposed excavation area will be further defined by test borings and/or test pits as part of the remedial design, and will be extended as dictated by this delineation." **If so, strict removal criteria need to be established prior to excavation, focusing on the levels of contamination and their proximity to the surface. We suggest that coal tar be investigated to eight feet below the surface, and if found, either in globules or staining, that it be removed.** These criteria should be contained in the Final Decision Document as performance objectives.

More specifically, Test Pit 2 in the south courtyard was only completed to a depth of approximately five feet. It was close to the building foundation, and excavation stopped because it hit debris. It was located in the vicinity of the purifier house, and some spent purifier wastes, but no cyanide, were found. Soil borings in this vicinity showed fairly high levels of PAHs. At Test Pit 5, which is located to the east of the outside wall, excavation was also stopped before it hit the water table, because of debris. Excavation up to that point indicated fairly high levels of PAHs, exceeding RSCOs. Soil borings in the area also had high levels of PAHs. **We recommend that the areas around Test Pit**

2 and Test Pit 5 undergo further investigation and any contamination (down to approximately eight feet) be removed.



**Proposed Excavation Triangle and Barrier Wall**

### Surface Soil

Similarly, the AAR proposes not to excavate surface soil, even though the Remedial Investigation reported that eight of nine surface soil samples exceeded the RSCOs. Individual PAH concentrations ranged from non-detect to nearly 20 mg/kg, although we note that benzo(a)pyrene, the most predominant PAH, has a RSCO of 0.61 mg/kg. Comparison of the toxicity of individual PAHs is difficult and is similar to comparing “apples to oranges.”

The AAR (p. 2-1) suggests that surface soil removal is unnecessary because:

PAHs and inorganics were detected in some surface soil samples at concentrations above NYSDEC RSCOs (NYSDEC, 1994). However, concentrations of PAHs and metals are similar to those found in a recent background study conducted in Manhattan (Characterization of Soil Background PAH and Metals, Manhattan, New York, RETEC, 2007). The presence of these constituents in surface soil may be the result of urban pollution possibly associated with the adjacent FDR Drive and streets.

We find this argument unpersuasive because:

- 1) Con Ed has not demonstrated that site contaminants are indeed historic fill or from vehicle emissions. In fact, in a letter to Con Ed from DEC (March 2004) stated:

The contribution of vehicle exhaust to the levels of PAHs found in urban surface soil is not known. Although the close proximity of high volume traffic may have contributed to the presence of PAHs, it is not a universally accepted fact that vehicle exhaust is a likely significant contributor.

At this point, no documentation has been provided that, because MCSM is in close proximity to FDR Drive, we should expect higher than background levels of PAHs in the surface soil. We expect at the very least, some deposition studies from high volume traffic zones would be presented before deciding that no cleanup is required. It is our opinion that the entire Island of Manhattan could be considered a high volume traffic zone. Thus, the background study prepared by RETEC is important to review. In our view, the data do not support the conclusion that surface soil at MCSM is typical of urban background, as the RI and the AAR allege.

Additionally, Con Ed has already made a cumulative comparison of the carcinogenic PAHs found at the site by calculating the benzo(a)pyrene toxic equivalency (BaP-TE) factor. The Remedial Investigation (p.3-7) notes that BaP-TE for the surface soils ranged from 1.8 to 7.6 mg/kg. Thus, if the RSCO for benzo(a)pyrene is 0.61 mg/kg, surface soils have a BaP-TE that is approximately 3 to 13 times higher than would be allowed following the RSCO. The RETEC Study also provides a BaP-TE of 0.3 – 3.2 mg/kg for Manhattan background, meaning the BaP-TE at the MCSM site is 2 to 6 times higher than for the rest of Manhattan. Thus, although individual PAHs may be close to background, it is evident that hazard from surface soil at the site is greater than for other background locations in Manhattan.

- 2) DEC informed Con Ed in March 2004:

The site's current use as a school requires that direct contact and incidental ingestion exposure scenarios for children be considered. Surface soil background comparisons in the given references may be considered; however, additional surface soil data from a nearby area that has not been impacted by MGP-related contaminants should be collected.

While we believe that the 2007 RETEC study satisfies the data needs to establish background, it does not provide any consideration of direct contact and incidental ingestion exposure scenarios. In the same letter, DEC notes that surface soil results should not be compared to published background concentrations for "soil containing fill material" (i.e., historic or urban fill).

- 3) It's an environmental injustice to subject people to additional toxic exposures because the entire area is contaminated.



### **Behind the School**

**We therefore recommend removal of surface soil hot spots to a depth of two feet, replacement with clean fill, and confirmatory sampling.** This is especially true for the five locations that have Total PAH (polycyclic aromatic hydrocarbons) levels greater than 25 mg/kg. That value is the maximum value calculated for background by RETEC. Alternatively, Con Ed could calculate the BaP-TE for the carcinogenic PAHs, and surface soil falling below the average (mean) of background would not have to be removed.

### **Barrier Wall and Extraction Wells**

DEC, in the Draft Decision Document, has accepted Con Ed's proposal to construct a barrier wall and extraction wells:

Installation of approximately 500 linear feet of a low permeability subsurface barrier wall along the FDR Drive.... The barrier wall will extend downward into bedrock, to prevent any further movement of coal tar from the site. Construction materials and techniques will be established during the remedial design. Tar will be collected and monitored to prevent migration through or around the barrier wall. Groundwater will be monitored and controlled to prevent groundwater mounding behind the wall.

This proposal is subject to change. That is, though the barrier wall is a major part of the remedy, it is not yet clear that it can be implemented. For example, the AAR states (p. 4-6) "It appears that remedial activities could be conducted on school property

relatively close to FDR Drive,” but “this tentative conclusion must be must be verified with test pits to confirm subsurface features and by assessment by a geotechnical engineer.” The AAR (p. 4-6) also states that there is an underground drain running from the school property under FDR Drive towards the river. The sewer drain is large (ten feet wide by five feet high) and “will be a significant obstacle during remediation.” It states that this is “probably just a storm drain” (as opposed to a combined sanitary and storm sewer line). Obviously the drain and other potential obstacles need further investigation. “Probably” is not a sufficient description.

In addition, the AAR (p. 6-1) indicates that in the design phase Con Ed may consider substituting permeable reactive barrier (PRB) walls for upper portions of the impermeable barrier wall. We support the evaluation of PRBs, which would treat contaminated groundwater as it flows through the barriers.

As the design is not yet set in stone, and the recovery system may be altered during design, **we recommend the inclusion of clear performance objectives for the Barrier Wall in the Final Decision Document. The barrier should prevent the eastward flow of contaminated groundwater, and extraction wells (or other mechanisms) should eliminate the mounding of water and contamination on the west side of the wall.** Because the contaminants move slowly and the large gasholder beneath the school building still contains or is leaking a large amount of tar, the removal systems must be operated as long as there is a source of contamination.

As with other performance objectives, the CSMP should describe methods for measuring achievement of the objectives and offer a contingency plan to be implemented should the objectives not be met. The Final CSMP should also resolve the differences between Sections 2.2.2.2 and 3.7.3.2. of the Draft CSMP: The Barrier Wall, while passive, still will require periodic inspection. Section 3.2.1 of the Draft CSMP Monitoring/NAPL Recovery System Design states, “A network of monitoring wells/NAPL recovery wells will be installed to supplement the existing site wells in order to monitor groundwater conditions up-gradient and down-gradient of the proposed Barrier Wall at the site and to recover NAPL upgradient of the Barrier Wall.” It proposes, “Monitoring well network ... will be presented in figures in Appendix F to the SMP *following approval and implementation of the remedy* [emphasis added].” But there is no reason why a conceptual monitoring network cannot be developed at this time and be subject to public comment.

### **Harlem River Sediment Recovery**

Though the Draft Decision Document does not list it, the AAR proposes Monitored Natural Recovery (MNR) as the remedy for adjacent Harlem River sediments. We support this strategy because the contaminants do not appear to be bioavailable. That is, they are too deeply buried in the sediments to come into contact with benthic (bottom-dwelling) organisms or fish. **We request that the Final Decision Document include MNR as part of the remedy, with a performance objective of zero bioavailability to benthic organisms.** The CSMP should outline a *monitoring* plan—by definition, an

essential component of Monitored Natural Recovery. It should address whether monitoring will be focused on biological resources and whether subsurface sediments will be sampled to detect movement and degradation of the contaminants. If monitoring indicates that the objective is not being met, the CSMP should explain how Con Ed would rectify the situation, possibly through removal or capping of the area where exposure is occurring.

Though we tend to believe Con Ed's contention that the contaminants are not bioavailable, the documents do not contain a comprehensive description or survey of the biological community found in the Harlem River. Before final action is taken, we recommend that this characterization take place. Agencies with expertise in this field—DEC's Division of Fish, Wildlife and Marine Resources and the U.S. Fish and Wildlife Service—should make formal concurrence.

## **SITE MANAGEMENT**

Public health and environmental protection, as well as New York law, require the preparation of a Site Management Plan, at the same time remedies are being selected, any time contamination is expected to remain on site at the completion of remedial construction. Site Management includes the operation and maintenance of engineering controls, long-term monitoring, and public notification. By developing a full Conceptual Plan now, it will be possible for Con Ed, the regulatory agencies, and the school community to compare the costs and challenges of leaving contamination in place against the costs and challenges of removing it. At MCSM/Newton, the need for a robust, transparent Site Management Plan is particularly important. Contaminated groundwater is only five to six feet below the basement, where the school cafeteria and classrooms are located.

### **Contingency Plans**

While some elements of the Site Management Plan might not be developed until the remedies are in place, Con Ed should prepare and DEC should evaluate a Final Conceptual Site Management Plan that contains performance objectives for each approved remedy. The Plan should describe how achievement of those objectives will be measured, and it should provide contingency plans that outline what will be done if the objectives are not met.

There are several locations in the Conceptual SMP where contingency is mentioned, both as a separate section (4.4) and as part of the Soil Management Plan, but there is little substance. Contingency plans should be more than emergency evacuation and notification plans; they should also address some of the potential problems that may be encountered during remedial action and after the remedy is complete.

For example, the removal of pavement or trees on the site should trigger soil sampling. If soil sampling above the water table shows contamination above the state RSCOs, then contaminated soil should be excavated. Other likely contingencies include:

- Coal tar is found at the surface after the remedy is complete.
- Cyanide is found at the surface.
- Monitoring of the Harlem River indicates that MNR is not working.
- The Army Corps of Engineers decides that dredging the river is necessary.
- Monitoring indicates that vapor in the building exceed health-based standards.
- There is increased flooding.
- There is a prolonged electrical disruption.
- There is damage to the basement floor.

These are just some of the issues that we think should be addressed in the SMP. We encourage Con Ed and DEC to undertake a structured process to determine what events and responses are probable. It is important to define what would trigger an additional response. Events should not be restricted to physical events: Consideration should be given to failure of institutional controls, failure of the inspection procedures, lack of funding, and a shortage of Department of Education staff to carry out the inspection and monitoring requirements.

### Responsibility

**We recommend that an inspection checklist be developed now.** We see no reason why this could not have been completed prior to submission of the CSMP. Note that Appendix E, "Site Wide Inspection Form" is left blank, to be developed following implementation of the remedy. But the CSMP lists numerous inspection requirements. For example, Section 3.7.1.1 states, "inspections/walk-throughs may be conducted by the school custodian or some other site owner representative. The purpose of these walk-throughs is to identify any changes in the basement interior floor surfaces." Additionally, Section 3.7.3.2 states, "The Barrier Wall will ... be walked and inspected for soil subsidence, water ponding, and other surface effects." These steps, as well as others, could easily be consolidated into a single form.

**To implement the Site Management Plan, the Department of Education should designate a school employee as Environmental Site Manager.** This should be a technically knowledgeable worker who will be trained in techniques for inspecting cracks in the foundation and breaches of the topsoil, procedures for recognizing and resolving equipment malfunctions, and hosting the professional teams that conduct periodic sampling. Additionally, this individual will serve as a contact for complaints or suggestions about environmental conditions at the school. Training and additional personnel costs should be borne by the responsible party, Con Ed.

**Furthermore, the Environmental Easement called for in the CSMP should ensure that the lines of responsibility for training, long-term management, financial obligations, and unintended events are clear.** We assume that at this time this Environmental Easement has not been drafted, as the Appendix is left blank. We encourage DEC to provide an opportunity for public comment when this is drafted, and there should be time for public comment prior to finalizing remedial decisions. Without

this legally required document one cannot be assured who is legally and financially responsible for implementing the SMP, including long-term monitoring, the training of employees, and addressing non-MGP wastes.

To their credit, both Con Ed and DEC have been open with the school community during the investigation and remedy selection phase of site cleanup. That should continue through long-term site management. **We recommend that the latest version of the Site Management Plan, as well as reports generated under the Plan, be made available and remain available to the public** both on the World Wide Web and in hard copy in the school administrative offices. School entrances should contain plaques or signs notifying the public that the property is subject to an Environmental Site Management Plan, as well as how to view those documents. If the documents are too long or complex for the average person to understand, summaries should also be made available.

**Furthermore, each year the school facilities department should engage an independent environmental professional to review the annual report submitted under the SMP on behalf of the school community.** It is unrealistic to expect the average parent, community member, or even science teacher to have the specialized knowledge to review such environmental documents.

### **An Educational Opportunity**

**In addition to the long-term management activities required by the SMP, we urge Con Ed and DEC to work with the MCSM faculty to create a class that each term focuses on the environmental management of the school property and the adjacent Harlem River.** One of the best ways to ensure that site monitoring and management continues to be protective is to involve the people who regularly use the site. Because this is a science high school, there is no better way to memorialize the site, its potential risks, the remedy, and the obligation for long-term management than by developing a curriculum dealing with these issues. This will provide students with real-world experience, a continuing community that cares about the specific issues at the school, and an opportunity to work with, and understand, all parties' points of view.

We suggest the development an inter-disciplinary high school course. The curriculum could include: the history of the manufactured gas industry; the political and regulatory drivers involved in making cleanup decisions; the mathematics of risk assessment; the chemical properties of some of the compounds; the biological effects on the Harlem River; the engineering controls that are under consideration; and some of the hands-on monitoring that will be necessary as long as this site is used as a school.

## SUMMARY OF RECOMMENDATIONS

### Documents

1. For the remedies to be properly implemented, there must be a complete, transparent, detailed, unambiguous, enforceable workplan or Decision Document, defining the extent and timing of each element of the remedy, together with performance objectives for each element.
2. We urge the creation of a final Conceptual Site Management Plan that requires long-term monitoring to ensure that the performance objectives in the decision document are sustained, and which also contains contingency plans that call for specific actions if those objectives are not met.

### Remedies

3. We agree that major remediation beneath the school might not be practical at this time. But Con Ed should remain responsible for addressing sub-school contamination should the school ever be demolished or undergo reconstruction.
4. We believe that DEC should ensure that the subslab depressurization system be extended under the entire slab, because the health of the students, teachers, and other staff necessitates it.
5. We suggest that the subslab depressurization at MCSM be designed to keep MGP and non-MGP vapors levels in the indoor air, including the basement, below both New York State and federal inhalation levels associated with an excess lifetime cancer risk of  $10^{-6}$  (one in a million).
6. We strongly recommend that indoor air sampling continue annually as long as the subsurface remains contaminated and there are students in the school.
7. Strict removal criteria need to be established prior to excavation, focusing on the levels of contamination and their proximity to the surface. We suggest that coal tar be investigated to eight feet below the surface, and if found, either in globules or staining, that it be removed.
8. We recommend that the areas around Test Pit 2 and Test Pit 5 undergo further investigation and any contamination (down to approximately eight feet) be removed.
9. We recommend removal of surface soil hot spots to a depth of two feet, replacement with clean fill, and confirmatory sampling.

10. We recommend the inclusion of clear performance objectives for the Barrier Wall in the Final Decision Document. The barrier should prevent the eastward flow of contaminated groundwater, and extraction wells (or other mechanisms) should eliminate the mounding of water and contamination on the west side of the wall.
11. We request that the Final Decision Document include Monitored Natural Recovery as part of the remedy, with a performance objective of zero bioavailability to benthic organisms.

### **Site Management**

12. We recommend that an inspection checklist be developed now.
13. To implement the Site Management Plan, the Department of Education should designate a school employee as Environmental Site Manager.
14. Furthermore, the Environmental Easement called for in the CSMP should ensure that the lines of responsibility for training, long-term management, financial obligations, and unintended events are clear. We also recommend that the draft Environmental Easement be subject to public review and comment.
15. We recommend that the latest version of the Site Management Plan, as well as reports generated under the Plan, be made available and remain to the public.
16. Furthermore, each year the school facilities department should engage an independent environmental professional to review the annual report submitted under the SMP on behalf of the school community.
17. We urge Con Ed and DEC to work with the MCSM faculty to create a class that each term focuses on the environmental management of the school property and the adjacent Harlem River.