Report on Fuel Oil Spill Remediation

Joseph J. Mount, Jr., CR

September 1992

STATEMENT

This statement and complete report was assembled by Joseph J. Mount, Jr., President of Mount Restoration Corporation. An on sight inspection was performed by myself on August 16th, 1991, and with the initial information of 250 gallons of fuel oil spilled, my primary assumption was of a "worse case scenario". With hardly any free standing fuel oil left on the basement floor, the obvious conclusion was that it left the containment area by means of a floor drain in the corner of the basement to which the oil had flowed. This property was located about 150-175 feet from the Delaware River and approximately 30' above the water level. The soil under the structure was found to be being a sandy river bed material that was conducive to easy penetration and migration of the fuel oil. It is imperative to note that in a situation such as this, that two of the properties of fuel oil are that it is lighter and thinner than water, and therefore will penetrate places where water cannot reach. Our approach to this type of situation is to try and stabilize the loss by taking immediate steps to protect the structure and contents from any further contamination. As this procedure is going on, steps are taken to try and determine the total extent of the oil, in terms of how wide did it spread in the soil around the drain, and how deep did it penetrate into the soil. In working a claim of this nature, it is absolutely impossible to put together any type of cost estimates. We work on a time and material basis and keep complete records that are forwarded on to the insurance company along with our billing.

The time needed for drilling and sampling and analyzation to put together any type of reasonable estimate, would only raise the chance that the situation will get worse. Our job is to limit everyone's liability by acting as quickly as possible to prevent the oil from reaching the water table or a well. That truly is a "worse case scenario".

All work performed on the job was overseen and approved by a team from the Pennsylvania Department of Environmental Resources, and a consulting firm hired by the insurance company. The purpose of this report is to show the exact extent of the damage, and to show that all the remediation procedures were done according to Federal and State laws. Also, this report will show that the property and structure have been restored with absolutely no loss of value to the homeowner and no future liability to the insurance company, the fuel oil company, the contractor and the homeowner.

The following is a list of Consultants, Sub-Contractors, and Agencies whose documents are included in this report:

A) Insurance Company Adjustors & Consultants:

1. Mr. Jack Kalodner
   Independent Adjustor
   Medbury Claims Service
   Delaware County, PA

2. Michael Detamasso
   Staff Adjustor, Environmental Claims
   Harleysville Insurance Company
   Harleysville, PA 19438

A) Insurance Company Adjustors Cont'd

3. Dr. Lee Steiner
Environmental Scientists
International Environmental Services
595 East Swedesford Road
Wayne, PA 19087

4. Mr. Bruce L. Vibel P.E.
Structural Engineer
International Environmental Services
595 East Swedesford Road
Wayne, PA 19087

B) Government Agencies

1. Mr. Peter Noll
Area Representative of PA. D.E.R.
Bucks County Department of Health
Neshaminy Manor
Doylestown, PA 18901

2. Mr. Michael Rybecki
Field Inspector
Pennsylvania Department of Environmental Resources
555 North Lane
Conshohocken, PA 19428

3. Mr. Patrick Bowling
Hydrogeologist
Pennsylvania Department of Environmental Resources
555 North Lane
Conshohocken, PA 19420

C) Contractors Consultants & Sub-Contractors

1. Mr. Matt Burkhart, P.E.
Structural Engineer
Aegis Corporation
2nd Street Pike
Southampton, PA 18966

2. Ms. Amy Meacock
Project Supervisor
Geological Reclamation Operations and Waste Systems,
100 New Ford Mill Road
Morrisville, PA 19067

C) Contractors Consultants & Sub-Contractors Cont'd

3. Mr. Jean Mateson
   Hygienist
   Mateson Environmental Corporation
   Montgomery Avenue
   Philadelphia, PA

4. Q C Testing Labs.
   Ground Water Specialists
   Feasterville, PA 18947

5. E & B Contractors
   Pressure Grouting Specialist
   Cleveland, OH

D) Other Companies Involved

1. Mr. Frank Fetterolph
   Insurance Agent for Fuel Oil Company
   Steely & Smith Insurance Agency
   Pools Corner
   Buckingham, PA 18912

2. Mr. Brad Brinker
   Brinker's Fuel Oil Company
   S. West Street
   Doylestown, PA 18901

My impartiality in this report is confirmed by documents from independent testing laboratories and government agencies. There was no room for speculation or assumptions on this job, the results are in black and white for all to see. As soon as a remediation or restoration contractor gets embroiled in a job of this nature, their first concern is to handle the enormous liability that hangs over all involved. This can only be accomplished by having a complete understanding of what is required, and the proper performance of those requirements.

9/14/92

Joseph J. Mount, Jr.
President

INTRODUCTION

The initial assessment was to perform emergency services for an oil spill, and there were three areas to be addressed:

1) To do what was necessary to start remediation procedures on the oil spill.
2) To alleviate the odor problem that was present in the living quarters.
3) To report back with an initial assessment of the situation to the principals of the fuel oil company.

The Service Manager of the fuel oil company had been directed to call us on the 16th of August, 1991. That was two days after the spill occured. Specifically, the assignment was for us to step into the breech and deal with the government agencies that were already on the scene. We were needed to start addressing and answering the myriad of questions that they had been getting hammered with for the past two days. Our objective was to as quickly and precisely as possible, determine the following information:

: How did the spill occur?

: What actions were taken to date?

: How much oil was spilled?

: How much oil was recovered?

: Where was the remaining oil?

: Had it somehow left the containment area?

: How far laterally had the oil spread?

: How far vertically had the oil penetrated?

: What was the soil make-up?

: What was the water table level?

: Is there any natural water in the immediate area?

: What are the locations of area wells?

: Number of adults living in the home?

: Any children living in the home?

: What is the health situation of all the residents?

: Any adverse reactions to the odor? To the fumes?

The Service Managers name is Gene Hamilton, and his work address is: Brinker's Fuel Oil Company

West Street, Doylestown, PA, 18901

This report is being prepared by Joseph J. Mount, Jr., President of Mount Restoration Corporation.

BACKGROUND

On August 16th, 1991 the General Manager of Brinkers Fuel Oil Company, Gene Hamilton, called me and gave me the following information:

1) An oil spill had occurred on August 14th in the basement of a residence located at 9 South Main Street in New Hope.

2) The owner of the property was 88 year old Dr. Libey, one of the areas most prominent residents.

3) The house was on the National Historical Registrar.

4) Their calculations showed approximately 250 gallons of #2 fuel oil had leaked from one of the basement tanks.

5) They estimated recovering 15 gallons of oil using standard oil dry.

6) There were two hot air heating systems in the house, and oil had run under the two heater units.

7) Both systems contained air conditioning coils and utilized the same ducts.

8) The odor of oil was extremely strong through out the basement and all three floors of the structure .

9) Brinkers had responded immediately to the spill with a supervisor and two servicemen. They found the cause and made the repair, and stabilized the situation by the use of oil dry.

10) A clean-up crew from Brinkers returned the following day (Aug 15th), and they realized the situation could possibly be a lot worse then initially thought.

11) Brinkers had properly notified the state and local authorities of the spill.

12) Brinkers on sight supervisor had determined that the cause of the spill had been an improperly attached fuel line filter.

13) Brinkers had recently serviced that filter, and therefore was taking full responsibility for the spill.

We were requested by Brinkers to take whatever steps were necessary to try and alleviate the strong odor problem in the living quarters of the residence. Also I was specifically told to report back to them immediately with my initial assessment of the damages, so they could make a determination about turning this into their insurance carrier.

A very important side note to this entire job, was that the elderly doctor had recently lost his wife. His refusal to leave the house and his physical and mental state, would require a tremendous amount of patience , and understanding from all involved. A good restorer has the experience and mind set necessary in dealing with this type of situation.

INVESTIGATION

When dealing with any type of environmental problem, you must be prepared to take the necessary actions to limit the loss, but with full knowledge of the ramifications facing you. An on sight investigation such as I performed here, is absolutely essential. But unlike a normal fire or water damage claim, where a competent contractor has the ability to determine the scope by performing a thorough on sight inspection, a claim of this nature required the input of a variety of experts. Even then, no one was sure of the complete scope until the work was well in progress.

There were questions that I asked to both Gene Hamilton and Dr. Libey that gave me the initial information that provided me with the direction the investigation should take. Their answers to my inquiries, raised more questions that needed to be answered in order to help determine the seriousness of the spill, and the scope of the remediation that would be required. The total gathering of data actually lasted over a two month period.

Gene Hamilton was able to give me the following information: Date and time of the spill, the amount spilled, the amount recovered, the cause of the spill, the emergency response work done to date by the oil company, and background information on the homeowner, the HVAC system, and knowledge of any previous occurrences.

Dr. Libey supplied me with answers to the following queries: Who lived in the house, any health problems, any adverse reactions to the spill, the location of the well, sump pump, sewer system, dry basement, and any structural information like cracks in the slab, walls, drains etc.

David Noll from the Bucks County Board of Health, and the local representative for the P.A. Department of Environmental resources, answered questions on the sub soil for the area, and the water table. In return, his questions to me also gave me insight as to his concerns and helped me set up a remediation plan that paralleled what he was looking to accomplish.

Other questions that were left unanswered, but would require immediate action were obvious. The most pressing problem facing us is that there were 250 gallons spilled, 15 gallons recovered, where had the remaining 235 gallons gone? Did it leave the containment of the basement, and if so, how? What can be done to head off any uncontained oil from possibly contaminating a well, the aquifer or near by ground water.

You must be prepared, because shortly after your arrival on the scene as the remediation contractor, you are going to have to answer queries from both state and local authorities. Your answers are written down and your procedures come under close scrutinity. Your only gratification is when you produce positive results.

INSPECTION

The initial inspection was performed at 11:00 a.m. on August 16th, 1991 by Mr. Joseph J. Mount, Jr. , President of Mount Restoration Corporation. Also present at the inspection were: Robert Horton, General Manager of Mount Restoration, Gene Hamilton, General Manager of Brinkers Fuel Oil Company, Dr. D.K. Libey, the homeowner, and Mr. David Noll from the Bucks County Board of Health. The weather conditions had no bearing on the performance of the inspection, and the basement lighting was adequate for the purpose.

The property located at 9 South Main Street, New Hope is a 75' by 200' lot that supports a 40' x 70' three story framed victorian structure. The house sets back 15' from the side walk, and the property is bordered by the original hand forged ornate wrought iron fence. There are some plantings in the front yard, and rose bushes and plants along the side yard fencing. The exterior of the house has been properly maintained during the doctor's 53 years of occupancy.

The interior of the structure contains thirty rooms or areas on the three levels. The walls and ceilings are plaster and the floors are finished hardwood. The 10' first floor ceilings have an ornate plaster crown molding, as do the 9' high door way arches. The Living room, Foyer, Main stairway & Hall and Master Bedroom all have wall to wall carpeting. There are eight working fireplaces, with six faced in colored marble. The structure is both heated and cooled by a forced air duct system. There are priceless antique furniture pieces, numerous art objects and valuable paintings throughout the house.

The two main areas of consideration are the basement areas where the physical spill occurred. The storage area for the oil tanks measured 10' x 15' x 6', and the heater area measured 15' x 20' x 8, this area had been excavated 18" in 1972 for the purpose of installing the two heaters that were in place. The walls are stone foundation walls with one frame support wall in the heater area. The floors are both concrete with as yet an undetermined a thickness that varied from 2-4 inches.

There was no physical damage to the interior of the structure aside from the oil contamination. The 6" of oil dry was removed from the floor to check for cracks in the floors or walls. What we found was a drain in the corner that the oil had run towards. This had not been mentioned by the doctor because he had not considered it a drain since it wasn't connected and it didn't go anywhere except into the ground. The drain was the logical escape route for the oil that I had been looking to find. After removing the cover, a sample of soil was taken and it was saturated with oil.

Since it was now apparent where the oil had gone, we scheduled concrete core samples to be taken to determine the horizontal spread of the oil under the slab, and soil samples to be taken to determine the depth of penetration vertically.

SCOPE

This was the type of job where it is completely impossible for anyone to put together a complete scope of what has to be done. The best that a knowledgeable contractor can accomplish is to put together a good initial scope. This is a plan of action designed to meet the following goals:

1) Containment if possible
2) Protection of unaffected areas
3) Stabilization
4) Exploratory testing
5) Contacting the proper agencies

This process allows the work to start immediately, and with a purpose. The next step for a contractor, after gathering the initial information, is to put together a worse case scenario. This scope is for the contractor's use only, and is used in the decision making process for the remainder of the job. This allows the contractor to take all the necessary steps needed to avoid the worse case scenario.

4) **Slab Removal:**

This was accomplished by use of an electric jack hammer. All concrete debris was hauled in 5 gallon buckets onto a tarp in the storage area. There was some protective measures taken in the form of bracing, walk off mats, content protection etc.

5) **Soil Excavation:**

This was done by hand labor. The material was also hauled out and stored on site. As this phase started, we got our first glimpse of the sub soil and the actual depth of the footings etc. This phase also greatly increased the odor problem by continually exposing more oil. Initial soil samples were sent to the disposal facility for testing and approval.

6) **Proper On Site Storage:**

During the excavation process, the contaminated debris was stored in such a manner that there was no chance that the contamination would spread. We spread a large reinforced tarp on the ground and covered the pile nightly to protect against rain. This storage is taken seriously because it has taken us an average of 8-10 weeks to obtain the proper permission for disposal. This portion of the job took over three months because of the amount of soil and because of the high oil content.

7. **Bracing Of The Structure:**

As it became obvious that two main support columns had to be removed, because the soil underneath was contaminated, a structural engineer was brought in to design the bracing that would allow us to remove the columns and effectively continue to work in the area.

8. **Boring Into Substrata Shale:**

Once the excavation took us down 5-6', a couple of major concerns needed to be addressed.

A) How much further did the oil travel through the fissions in the shale?

B) If we needed to go farther, how much farther could we go safely? With the shale on a 30 degree angle downward, it was very possible that the support footings may just kick inward.

C) If we had to go deeper than the safe limits as determined by the structural engineer, how could we accomplish this? A company specializing in drilling through rock was hired. The borings were all saved and cataloged by the engineer. These borings answered all of the above questions.

9. **Back Filling:**

The structural engineer required that the excavation be back filled using a mixture of clay and sand. This was wet down every couple inches of height and tamped using both gas and hand tampers.

10. **Pouring Footings:**

Footings were formed and poured for the two new support columns that would be installed. Specs were issued by structural engineer.

11. **Installing New Supports:**

After the support footings had set up, new support columns were installed and bracing was removed. As an added precaution, we inspected the upstairs for any signs of structural problems before we removed the old supports, and we again reinspected after new supports were installed to check if any new damaged had occurred.

12. **Pressure Grouting:**

To satisfy the government agencies, because it was economically unfeasible and structurally unsound to proceed further, it was proposed that a pressure grouting process be used to seal in what ever oil we were unable to extract and prevent any future migration.

13. **Place Concrete Slab:**

After pressure grouting, the entire floor area was covered with 1/2" of a product called Radox. This would act as an air tight vapor barrier. On this we poured a 4" slab of reinforced concrete.

14. **Cleaning And Sealing Ductwork:**

For purposes of construction dust along with a small amount of vaporized fuel oil entering the system, we decided to vacuum the duct system as best as possible and followed with a proper application of duct sealant. This procedure was effective in helping to solve the dust and odor problem throughout the structure.

15. **Cleaning Of The Entire Structure:**

From our point of view this was necessary to remove the construction dust that had made its way through out the house. From the home owners view point the cleaning process was needed to remove the fuel oil film that had permeated the entire structure. In the final stages of any form of decontamination clean up, the contractor must take into account the physiological damage that may have been done to the effected party. In reality we just changed our wording only, and instead of cleaning we decontaminated the structure for the homeowner. The process and price were not effected.

16. **Cleaning Of All Contents:**

The reason here is the same as above. We found out that the doctors' main concern and fear is that the oil fumes would effect his valuable art collection. We didn't disagree with him, but went along with him and took steps to alleviate those fears. Mr. Mount, himself, spent 3 full days, with the doctor in attendance, caring for his art collection. Again the process remained the same along with the price, the only addition was time and some flair spent on the art work.

17. **Soil Removal & Disposal:**

Because of the high percentage of oil in the original samples, we were unable to arrange for disposal of the soil. Since I had sent them samples that represented a "Worse case scenario", I was allowed to take a second set of samples that would be a more composite representation of the debris. The next major obstacle we had to over come was obtaining a special state permit for disposal, since the amount was over 25 cubic yards. When this was all accomplished, the soil was loaded by means of a conveyor belt into our dump truck and transported to the registered land fill. See attached copies of manifests at back of report.

18. **Landscaping:**

Once the contaminated debris had been removed, and the tarp rolled up, we had a large section of dead grass to replace. This was removed along with a couple of inches of soil and hauled away. New top soil and sod was added and laid. Any shrubbery that had been damaged was replaced.

19. **Exterior Clean Up:**

All concrete that had leaked from the pressure hoses was cleaned up from the lawn and all walk ways. The carport area, basement entrance way, and front yard were also cleaned and straightened so that there were absolutely no signs of any work ever having been done.

20. **Locating And Coordinating Sub Contractors:**

This to include the following:

A) Heating company to remove and replace both heater units.

B) Testing company for progress testing and final certification of both soil and air in the basement and wipe test and air samples in the living areas.

C) Testing company to sample water from area wells.

D) Company to research all underground utilities and then actually locate them and mark the property for excavation purposes.

E) Structural engineer

F) Hydrogeologists

G) Core drilling company that drilled 15' deep core samples into the basement shale.

H) Pressure grouting company

I) Disposal facility to accept the large amount of contaminated soil.

21. **Handling All Government Agencies:**

All state and local officials were continually kept abreast of all progress and problems. They were invited to all decision making meetings, and received copies of all pertinent documents.

All of the above tasks were required to recover as much of the oil as possible without endangering the structural integrity of this historical property. It had been determined early on in the discovery process that the oil had spread very little horizontally, but had traveled a great distance vertically down through the river bed soil and had saturated the sub surface shale through its countless fissions. This proved to be the most difficult and most dangerous task of the whole remediation process, and required the daily supervision of a structural engineer. (Read engineers initial report) When our excavation had reached the limits of safety, work was stopped until an agreed upon solution was reached. The factors used in making this decision where 1) economical; An estimated cost of to would be required for underpinning the structure to allow us to safely proceed with the excavation of another three-six feet. 2) environmental; In reality how much more oil could we expect to remove if we went down three or six or nine more feet? It was estimated between 5 & 10 gallons. An environmental assessment was done by D.E.R. that determined this gallon figure along with a probable impact study if it were to remain.

3) Liability; This was actually the strongest of the three factors, because there wasn't any government official that was willing to assume the liability if the structure were to sustain damage because of their insistence to proceed further . This liability factor outweighed the economic and environmental factors, because up to this point in time, we and our experts as a whole had shouldered all responsibility and liability. I do firmly believe that the property being on the national historic registrar had a lot to do with the liability factor and the subsequent final decision that we had gone far enough.

The results initially expected were for total removal of all contaminated soil, therefore effectively removing all of the soil. For this job, this was found to be both economically unfeasible, and environmentally unnecessary.

SPECIFICATIONS AND PRICES

Mount Restoration was the general contractor for this job. This job was done strictly on a time and material basis, with Mount Restoration handling the bulk of the work. Mount was also responsible for the hiring and coordination of the sub contractors that were used to perform specialized tasks. The insurance carrier was given a breakdown of the labor charges before proceeding with the work, they also received the estimates of the sub contractors for preapproval before that contractor was engaged by Mount. Along with each billing was sent a complete breakdown of the bill and a day by day accounting of the labor. An estimate of the cleaning of the upstairs structure and contents was also submitted separately and it was compiled using the standard restoration clean up rates.

The following is a list of the different job functions that fell under the preapproved rates:

Supervision:

Billed on a stop by basis of per visit, with a visit being between 1-2 hours. This person was responsible for complete overseeing & coordination of the job.

Billed - 21 visits @

Foreman:

This person was present on a daily basis and was a working foreman. The foreman was responsible for the day to day running of the job. The person worked closely with all involved parties. This position was billed on a daily rate

Billed: 46 days @

Workers:

This category was used for the different labor groups, except cleaning, that performed the myriad of different task this job required. This category was billed at a

er day rate.

Billed: 72 days @

DETAILED LIST OF WORK PERFORMED BY MOUNT RESTORATION:

Supervision and direction

Emergency services

Concrete core drilling

Interior and exterior soil sampling

Slab removal

Bracing

Soil removal

Back filling

Slab replacement

Soil loading and hauling

Landscaping

Exterior clean up

All related paper work, applications, etc.

DETAILED LIST OF WORK PERFORMED BY SUB CONTRACTORS:

Pressure grouting work (including structural engineer)

Sub-foundation boring(including structural engineer)

Air testing of boring holes

Structural engineer analysis and report

Soil testing for disposal approval

Disposal facility

Hygienist analysis and report

Sub soil testing at specific depths

Testing of ground water as per D.E.R.

Concrete finisher

Testing of well water as per D.E.R.

PRICE BASIS

This specific job had a number of factors that affected the total cost of the job. These factors did not have any effect on the hourly rates charged by Mount, but did in fact cause the work to be performed in such a manner that the total time for the job increased. These factors were also taken into consideration by the subs, and also in their bottom line charges.

The single most costly factor was the subsurface shale that the footings were sitting on. Because of their 30 degree angle, it raised the possibility that the footings could move down this slope at any time. The resulting structural damage could have been catastrophic. This single factor required the boring of the shale and the subsequent pressure grouting work to be done at a cost of approximately

The remaining factors were of a less costly nature, but in total, I estimate a bottom line increase in the area of 20 percent for the remaining worth of work. This translates into worth of billing, changing the cost to approximately These factors are as follows:

1) The house was on the historic registrar.
2) The main street location of the property was in a prime tourist area.
3) We were required to work with little or no effect on the tourist.
4) Logistical problems such as: no parking area, unable to get any equipment close to the structure, increased hand labor required to move debris and materials to trucks, etc...
5) Limited work area both inside and outside.
6) Large amount of contaminated soil requiring special state approval for disposal.
7) High content of oil in soil required another state approval for disposal.
8) And last, a daily outside clean-up of the job site.

Our hourly labor prices quoted in the specifications and prices section of this report included the supplying and usage of all standard hand tools, safety equipment and working supplies.

Specialized equipment was either rented and billed according to the invoice, or it was supplied by the subcontractors.

CONCLUSION

As in any complicated job, there were delays while the powers to be made decisions. This job required great attention to detail, and meetings upon meetings. A myriad of questions needed to be answered and not all of the answers were easily worked out. Solutions were reached to everyone's satisfaction only after all the environmental and economical ramifications were taken into account.

The work was completed under the watchful eyes of the homeowner and his lawyer, the adjuster and their environmental consultants, and the state and local authorities. So you can rest assure, what was done, was done correctly.

Our main goal at all times was to solve the contamination problem with the most important point being that we ended our clients' liability and everybody else's both in the present and in the future. The total cost of the work was , but there will be no million dollar law suits coming down the road. Everything was done above board with copies of important documents going to all involved parties. To the credit of the insurance company, once they assumed responsibility for the claim, they never interfered with what we were doing. And finally, a job of this nature can not run as smoothly as this one without the patience and understanding of the homeowner, Dr. D.K. Libey.