OP-TECH

150 Rotterdam Industrial Park
Schenectady, NY 12306
Phone: (518) 355-0197
Fax: (518) 355-3256
www.op-tech.us

October 5, 2009

Phil Muller
MACTEC Engineering and Consulting, Inc.
107 Audubon Road
Wakefield, MA 01880 12158

Re: Al Tech Specialty Steel Landfill Site
Leachate Line Jetting and Video Inspection Activity Summary

Dear Mr. Muller:

On July 22nd and 23rd OP-TECH Environmental Services, Inc. (OP-TECH) conducted jetting, video inspection and locating of leachate lines at the AL Tech Specialty Steel Landfill in Colonie, NY. The scope of work also included the inspection and photographing of the unnamed manhole inside the landfill. The following shall serve to detail site activities and general information obtained during the leachate system investigation.

Video inspection utilizing a push camera and crawler system was recorded on a portable DVD system. As you are already aware the majority of inspection activities were conducted on July 23rd (leachate collection line, leachate transmission line inside the landfill and the manhole inspection). An unexplained technical problem with the DVD recorder has left the DVD created on July 23rd un-viewable. The DVD was submitted to the camera rental company and reinstalled in the original DVD burner without positive results. The manufacturer of the recording equipment was also unable to access the information burned onto the disc. The original DVD was given to Gerald Pratt of the NYSDEC for evaluation by Audio/Visual staff of his choosing. I have been told the information on the disc could not be recovered by whomever the NYSDEC submitted it to. It had been hoped this video data would be available for review prior to submitting a written activity summary.

Although the recorded video information from July 23rd is un-viewable, both you and Gerald Pratt of the NYSDEC were able to review most recorded information collected when you were not present onsite. Mr. Pratt was present to view firsthand the video inspection of the manhole near WW-16, and the shallow leachate transmission line entering the same manhole. Additionally both you and Mr. Pratt were able to view firsthand, the inspection of the shallow leachate transmission line from the cleanout located inside the landfill.

OP-Tech regrets the loss of the recorded information from July 23rd inspection activities. We are providing with as much detail possible, written descriptions of the piping and manhole conditions identified during the inspections.

Jetting, Inspection and Locating Activities July 22, 2009:

OP-Tech mobilized equipment and materials to the site. After conducting a brief site safety meeting, equipment was set in place for conducting a confined space entry into the manhole near WW-16 (inside the landfill). Equipment utilized for the manhole entry included a safety harness, a tripod and retrieval winch, a manhole ventilation fan with flexible ducting and a four gas meter. Prior to entry a confined space entry permit was completed and air quality inside the manhole was tested. Air quality inside the manhole at depth was within normal parameters (no carbon monoxide, no hydrogen sulfide, no measurable lower explosive limit and oxygen levels of 20.4%).

Confined space entry into the manhole was required to install the jetting line and inspection equipment into the pipe connecting the manhole near WW-16 to Manhole-1 (MH-1). Prior to video inspection the pipe line was jetted several times to clean it prior to inspection. The jetting equipment was removed and a crawler type inspection camera was placed in the pipe.

1) Leachate transmission line.

The pipe connecting the manhole near WW-16 to MH-1 appears to be constructed with solid sections of 6" PVC pipe. Pipe sections are approximately 20 feet in length. All couplings or connections appeared to be in good condition. There were no visible signs of damage or infiltration of water from outside the pipe. The overall pipe run was 261.5 feet from manhole to manhole. At several locations of the pipe run there is either no pitch or a slight deflection upward (due to installation defects or settling after installation). These areas hold standing water that completely submerged the inspection camera (occurring at 30 to 42 feet, 50 to 60 feet, and 65 to 80 feet heading east from the manhole near WW-16). The inspection crawler was able to advance past these submerged portions of the pipe and leachate should also be able to freely pass these areas. Over time sediment may settle in these low spots and slowly create an obstruction to flow in the pipe.

Because the origin and end point of the pipe transmitting leachate between manholes is known, no pipe location activities were conducted on this line.

2) Leachate collection line.

After completing inspection of the leachate transmission line from the manhole near WW-16 to MH-1, OP-Tech conducted an additional permitted confined space entry. This entry was required to place the jetting line into the leachate collection pipe installed in the landfill (pipe exits manhole near WW-16 generally heading southwest). Initial jetting encountered some form of obstruction in the line, the jetting nozzle was stopping (getting hung up) at a location 20 to 30 feet outside the manhole. Several attempts were made to provide slack in the jetting line and increase velocity of the nozzle advance in the pipe. The jetting line was able to pass the obstruction at 20 feet and was able to advance 275 feet into the landfill. During withdrawal of the water jet solids were visible exiting the leachate line with jetting water. Two passes beyond the obstruction were made between 250 and 275 feet into the landfill. A visible pile of rocks, mineral scale and sediment was observed at the bottom of the manhole adjacent to the leachate collection line.

Jetting, Inspection and Locating Activities July 23, 2009:

OP-Tech again mobilized to the site. After conducting a brief site safety meeting, equipment was set in place for conducting a confined space entry into the manhole near WW-16 (inside the landfill). Equipment utilized for the manhole entry again included a safety harness, a tripod and retrieval winch, a manhole ventilation fan with flexible ducting and a four gas meter. Prior to entry a confined space entry permit was completed and air quality inside the manhole was tested. Air quality inside the manhole at depth was within acceptable parameters after active ventilation was conducted. Initial oxygen levels at depth in the manhole were low upon arrival ranging from 17-19%. Carbon monoxide, hydrogen sulfide and lower explosive limit levels were all measured at zero.

No specific reason or cause for the low oxygen levels in the manhole could be identified. It is possible that jetting activities cleaned and opened up the fill material adjacent to perforations in the leachate line and allowed "trapped" air to exit the landfill. This venting landfill air may have contained low levels of oxygen. On several occasions during the day confined space entry activities had to be delayed until suitable oxygen levels existed in the manhole (even with continuous ventilation). On one occasion entry had to be terminated due to low oxygen levels in the manhole.

1) Leachate collection line.

Because the nature of the obstruction in the leachate collection pipe was unknown, initially installing and video inspecting with the crawler was considered risky. The crawler could become tangled or stuck in the pipe making it difficult to retrieve and potentially obstruct the pipe itself. A decision was made to have a technician push or advance the push camera into the leachate line from the bottom of the manhole.

The leachate collection pipe exiting the manhole near WW-16 appears to be constructed with perforated sections of 6" PVC pipe. Pipe sections were approximately 20 feet in length. There were two rows of circular perforations in the piping. The leachate piping exits the manhole heading southwest into the landfill. Approximately 3 feet outside the manhole the pipe makes a slight (approximately 33 degree) turn farther south. The push camera was advanced to 20 feet outside the manhole were a pipe break and repair was observed. The broken area of the pipe and repair were measured to exist from 20 to 25 feet from the manhole. The push camera system could not be advanced past 113 feet outside the manhole due to friction in the pipe and fighting gravity (pushing uphill). The push camera became submerged at 91 feet outside the manhole and remained under water at the final distance of 113 feet. With the exception of the break and repair, all viewed couplings or connections appeared to be in good condition. There were no other visible signs of damage to the pipe. The overall length of the pipe run is unknown, however jetting advanced 275 feet outside the manhole.

Jetting, Inspection and Locating Activities July 23, 2009 continued:

Leachate collection line continued.

The broken section of the leachate collection pipe had visibly been repaired. The quality of the repair was less than desirable. The significant depths (25 to 30 feet below grade) of the leachate collection line and leachate transmission line in the manhole near WW-16 may have been a contributing factor in the quality of the repair. Both ends of the broken PVC leachate line had jagged/splintered broken ends. The top of the pipe was missing and had been covered with a section of corrugated ADS style drainage pipe.

The fit of the repair pipe was not tight against the PVC original pipe. Rocks of various sizes and course sand and gravel were visible in the space between the original PVC leachate collection pipe and the ADS pipe used to repair the break.

The camera equipment utilized on this project contained a transmitter known as a sonde that emits a signal that in many instances can be found at the surface utilizing a special locator. This locator was utilized to identify the location of the push camera inside the leachate collection pipe inside the landfill. Although the pipe depth was significant, the sonde locator did identify at the surface the probable location of the camera at 113 feet from the manhole. This location was marked with a stake for future reference. The locator could not lock on to the transmitter strong enough to identify the depth of the pipe. The locator was again utilized and identified the probable location of the break and repair of the leachate collection pipe. This location was also marked at the surface with stakes for later reference.

2) Shallow leachate transmission line at manhole.

Confined space entry was required to install the jetting line and inspection equipment into the shallow leachate transmission pipe in the manhole near WW-16. This line is thought to connect the manhole to a line that extends to the upper portion of the landfill to the west. Prior to video inspection the pipe line was jetted several times to clean it. During jetting activities a cleanout located southwest of the manhole was opened and monitored. During active jetting of the line, the high pressure water could be heard and suction was noted at the cleanout (indicating some form of connection between the cleanout and the line entering the manhole).

The jetting equipment was removed and a push camera was placed in the pipe. This pipe appears to be constructed of black colored, high density polyethylene (or HDPE). The pipe is probably a low pressure 4 inch pipe and exits the manhole heading south (it has an approximate outer diameter of 4.5 inches and inner diameter of 3.5 inches). No perforations were visible when inspecting this pipe. The push camera became submerged under water 50 feet outside the manhole; the camera could not be advanced past 77 feet. The cloudiness of the water contained in the pipe made it impossible to identify what prevented further advance of the camera. The sonde locator did identify at the surface the probable location of the camera at approximately 77 feet south of the manhole (on a steep slope adjacent to a drainage swale). This location was marked with a stake for future reference. The locator could not lock on to the transmitter strong enough to identify the depth of the pipe.

3) Shallow leachate transmission line at cleanout.

A push camera was placed in the cleanout located southwest of the manhole. The cleanout was constructed of 6"cast iron at the surface and transitioned to what appeared to be black HDPE pipe underground. No perforations were visible when inspecting this pipe. Friction and residual sediment in the pipe prevented the push camera advancing past 150 feet east-northeast of the cleanout. Pipe joints were visible at approximately 40 foot intervals. The sonde locator could not identify at the surface the probable location of the camera at approximately150 feet from the cleanout. The area around the transmitter was a drainage swale that was stabilized utilizing gabions or some other form of heavy wire mesh that interfered with the locator's ability to lock on to the transmitter. When the transmitter was withdrawn outside the swale the locator could identify the signal. This location, about 70 feet due east from the cleanout was marked with a stake for future reference.

4) Manhole inspection.

Confined space entry was required to conduct inspection of the manhole near WW-16. Even with ventilation this confined space entry had to be terminated due to low oxygen levels in the manhole. A push camera was used to record and allow personnel at the surface to view the condition of, and piping that exit and enter the manhole. The manhole is constructed out of (approximately 4 foot diameter) precast concrete cylinders with ladder rungs installed. With the exception of the seam between the 2nd and 3rd section having a minor amount of water dripping in on the south side of the manhole, all seams appeared to be tight and free of leakage. Physical assessment and probing for the bottom of the manhole indicate that a sump approximately 2 feet deep exists. Piping at the bottom of the manhole are about two feet off the bottom. The sump contains 1 to 1-1/2 feet of sediment and solids cover by a ½ to 1 foot layer of water.

There was some speculation that the bottom of the manhole had at one time had drilled or formed holes to allow for leachate collection (similar to dry well construction). Visual inspection of the bottom section of the manhole showed signs of several rings of mineral-scale build up above the top of the leachte pipes. The bottom section also had been covered with some form of skim coat or water proofing layer. There were no signs of minor indentations in this coating to indicate the bottom section had contained perforations or holes to allow leachte in.

If you have any questions regarding this report of site activities please call. Two copies of the video recorded on July 22, 2009 will be provided. This recording only covers inspection of the pipe running between both manholes.

Sincerely,
OP-TECH ENVIRONMENTAL SERVICES, INC.

Michael A Watson
Project Manager