Shaw Environmental, Inc.

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October 29, 2009
Project Number: 137020

Mr. Greg Pirie
Napa County Local Enforcement Agency
1195 Third Street
Napa, California 94559-3082

Re: Landfill Gas Corrective Action Testing of Monitoring Probe MP-4R at the American Canyon Sanitary Landfill, Napa County, California

Dear Mr. Pirie:

The purpose of this letter is to present a follow-up of the results of the corrective action testing conducted at MP-4R. This is testing program was described in a September 2, 2009 letter.

The testing was to assess the high landfill gas (LFG) methane concentrations at monitoring probe MP-4R at the American Canyon Sanitary Landfill (ACSL). The location of this probe is shown on the attached figure. The landfill has a LFG monitoring network of seven probes that surround the landfill at approximately 1,000-foot centers.

Background

In first quarter 2008 probes MP-3R and MP-4R started to have methane levels above 5 percent by volume in air (which is the lower explosive limit [LEL]) at the landfill property line. These high readings were unusual because this is the first indication of migration from the landfill since the inception of perimeter probe monitoring in 1991. Based on the high LFG readings the Napa Vallejo Waste Management Authority (Authority) developed and has been executing the following plan:

- Fortistar Methane Group (Fortistar), the on-site operator of the LFG to energy system, hooked-up the standpipes in the leachate trench that are near these probes to the LFG extraction system to pull LFG back into the landfill

- Fortistar also began a balancing program to increase the vacuum on the existing LFG extraction wells near these probes

- Golder Associates Inc. (Golder), the Authority's LFG compliance consultant, has provided guidance to Fortistar on the vacuum balancing of the extraction network to maximize the effort to reduce methane migration from the landfill

These enhanced LFG extraction efforts were successful in reducing methane readings in probe MP-3R to below the LEL (see attached table). However, as shown on the table, MP-4R did not responded in a similar manner.

Corrective Action Testing

The corrective action testing at MP-4R included the following steps:

- Route a vacuum tube from LFG extraction well GS-80 to probe MP-4R on September 11, 2009
- Vacuum was applied to probe MP-4R to purge the methane from the probe from September 11, 2009 to September 21, 2009
- Monitored the methane content of MP-4R when the probe is under vacuum (September 11, 2009 to September 21, 2009)
- Disconnected the vacuum line to MP-4R on September 21, 2009
- Monitored the methane content of MP-4R when the probe is under static (non-vacuum) conditions from September 21, 2009 to September 29, 2009
- Applied atmospheric air under a pressure of 20 pounds per square inch for 30 minutes into MP-4R on September 29, 2009 to help kill off the anaerobic bacteria that could be producing methane
- Monitored the methane content of MP-4R when the probe is under static conditions from September 29, 2009 to October 16, 2009

The methane test readings that were collected while these actions were conducted are shown on the attached Table. The test results from MP-4R indicate the following:

- The vacuum, which varied from a 5.7 to 23.8-inches of water, lowered the methane level from 34.7% to 2.0% in ten days of extraction
- After 4 days of no vacuum the methane level rebounded to 12.8%

- The injection of oxygen to reduce the methanogenic conditions initially reduced the methane level to 1%, but methane rebounded again to 26.6%

- The probe is functioning properly. The application of vacuum and pressure affects the methane level.

- The methane intrusion observed at MP-4R is not isolated to the near vicinity of the probe, but represents a larger area

LFG observed at this probe is not an exposure problem because the landfill is surrounded by surface water bodies. Water filling the pore space in the soil, blocks the pathway for the escape of LFG beyond the landfill property. A surface sweep was performed around the probe and the area between the probe and the landfill. The presence of methane was not recorded at the ground surface. This indicates that the high methane reading observed in probe MP-4R is not causing a surface emission problem.

A meeting was held with the California Integrated Waste Management Board on October 7, 2009 to present this data. In addition, a meeting was held with Foristar on October 19, 2009 to discuss options for further LFG mitigation.

The review of LFG system operational data from the individual extraction system by Golder indicated that several wells near MP-4R are not functioning properly. These wells include GS-80, GS-83, and L-6. In addition, a LFG header appeared to be blocked that provided vacuum to the wells in the vicinity of MP-4R.

Fortistar will conduct a maintenance appraisal of these wells and the vacuum header leading to these wells. The purpose of this appraisal is to determine if a vacuum deficiency to the wells in this general portion of the landfill could have added to the methane intrusion problem at MP-4R. Fortistar will be given 30 days to perform the assessment. If positive results are not taken by Fortistar within that time period, the Authority will take a more active role in LFG control at the site.

An assessment is also being made to determine if one of more of the existing LFG extraction wells should be replaced and/or new extraction wells added to the network.

If you have any questions, please call me at 925-288-2381 or call Trent Cave at 707-253-4274.

Sincerely,

SHAW ENVIRONMENTAL, INC.

Julian C. Isham

J. C. Isham PG, CEG, CHG
Project Manager

Attachments:

Monitoring Point and Site Observation Point Map

Methane Readings in Landfill Gas Probes Table

cc: Trent Cave, NVWMA
Rich Merrill, Golder Assoc.

American Canyon Sanitary Landfill
Methane Readings in Landfill Gas Probes
(% volume)

Date	MP-3R	MP4R
07/17/07	7.1	17.7
07/23/07	4.5	11.3
07/30/07	2.7	7.3
08/06/07	1.5	4.9
08/17/07	1.4	4.0
09/14/07	1.4	2.7
10/29/07	0.9	2.1
01/17/08	56.3	59.4
01/23/08	47.8	49.7
01/29/08	2.2	68.5
02/07/08	45.8	68.8
02/11/08	45.4	66.1
02/19/08	28.6	67.6
02/26/08	29.7	58.2
03/06/09	34.9	68.3
03/03/09	32.3	61.7
03/10/08	49.6	41.1
03/13/08	35.4	32.6
03/20/08	38.4	16.6
03/24/08	58.6	17.8
03/31/08	43.6	16.1
04/10/08	42.0	17.5
04/17/08	48.6	18.0
07/16/08	0.7	20.9
10/20/08	0.0	8.5
01/23/09	4.9	5.6
04/06/09	NR	63.0
04/17/09	NR	60.3
04/24/09	37.2	58.8
04/30/09	58.8	52.9
05/06/09	28.8	59.3

American Canyon Sanitary Landfill
Methane Readings in Landfill Gas Probes
(% volume)

Date	MP-3R	MP4R	
05/15/09	51.5	56.9	
05/22/09	38.4	54.0	
06/02/09	21.5	51.8	
06/15/09	13.0	48.6	
07/06/09	0.1	44.1	
07/14/09	0.4	39.7	
07/28/09	0.3	42.6	
08/10/09	0.0	38.6	
08/21/09	0.0	39.8	
08/27/09	0.0	41.6	
09/04/09	0.0	29.3	
09/11/09	0.0	34.7	Vacuum started at 7.1"
09/14/09	0.0	4.1	Vacuum at 7.1"
09/16/09	0.0	1.3	Vacuum at 23.8"
09/18/09	0.0	1.5	Vacuum at 7.6"
09/21/09	0.0	2.0	Vacuum at 5.7" / vacuum stopped
09/23/09	0.0	5.9	
09/25/09	0.0	12.8	
09/29/09	--	1.0	After 20 lbs of pressure applied for 30 minutes.
10/01/09	0.0	2.9	No vacuum or pressure since 9/29.
10/05/09	0.0	7.4	No vacuum or pressure since 9/29.
10/09/09	0.0	11.9	No vacuum or pressure since 9/29.
10/16/09	2.7	26.6	No vacuum or pressure since 9/29.

N 10,000 N 9,500 N 9,000 N 8,500 N 8,000 N 7,500 N 7,000 N 6,500

E 10,000 E 9,500 E 9,000 E 8,500

LEACHATE TANKS

APPROXIMATE PROPERTY LINE

Date of topography: January 20, 2006

LEGEND

- GROUNDWATER MONITORING WELL (G-1)
- OBSERVATION STATION (V-12)
- PERIMETER SITE OBSERVATION POINT (P-9)
- LEACHATE WITHDRAWAL SUMP (GR-1)
- LANDFILL GAS MONITORING PROBE (MP-1)
- SURFACE WATER MONITORING LOCATIONS (S-1)

GS-53 ● EXISTING LFG EXTRACTION WELL
L-10 ○ LEACHATE/LFG EXTRACTION WELL
EW-1 ● LFG EXTRACTION WELL

0 300 600
SCALE IN FEET

Shaw® SHAW ENVIRONMENTAL, INC.

DATE	10/4/07
DWN	CC
APP	JCI
REV	0
DRAWING NO.	123827-B1

FIGURE 2
NAPA VALLEJO WASTE MANAGEMENT AUTHORITY
AMERICAN CANYON SANITARY LANDFILL
NAPA COUNTY, CALIFORNIA
MONITORING POINT AND
SITE OBSERVATION LOCATIONS