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Shaw® Shaw Environmental, Inc.

June 13, 2006
Proposal 501252085/21000101

Mr. Trent Cave
Napa Vallejo Waste Management Authority
1195 Third Street, Room 101
Napa, California 94559

Re: Proposal to Conduct Environmental Monitoring Services for Year 2006/2007 for the American Canyon Sanitary Landfill

Dear Trent:

Shaw Environmental, Inc (Shaw) is pleased to submit this proposal to the Napa Vallejo Waste Management Authority (Authority) to provide environmental services for fiscal year 2006/2007 for the American Canyon Sanitary Landfill (ACSL).

These services are described below as six tasks:

- Task 1 - Quarterly Groundwater, Surface Water, Leachate, and Vadose Zone Gas Probe Monitoring
- Task 2 - Quarterly Analytical Results of Monitoring Samples
- Task 3 - Quarterly and Annual Environmental Monitoring Reports
- Task 4 - Quarterly Leachate Monitoring Reports for Vallejo Sanitation District (VSFCD)
- Task 5 - Special Leachate Monitoring Events for VSFCD
- Task 7 - Minor Well Repairs (if needed)
- Task 8 - Retest Event (if needed)

Since Shaw's monitoring contract with the Authority expires July 1, 2006, we have prepared a cost estimate for environmental services for the third and fourth quarters of 2006 and first and second quarters of 2007.

Groundwater monitoring is required at ACSL by the San Francisco Regional Water Quality Control Board (RWQCB) Waste Discharge Requirements (WDRs) and Monitoring and Reporting Program (MRP) Order No. 97-072.

Task 1 - Quarterly Groundwater, Surface Water, Leachate, and Vadose Zone Gas Probe Monitoring

Groundwater Monitoring. The groundwater-monitoring program includes 12 monitoring wells, as listed on Table 1. Samples will be collected as specified in the Sampling and Analysis Procedures (EMCON, November 1994). The monitoring parameters for the ACSL as required in the MRP are summarized on Table 2.

The complete list of constituents of concern (COCs) for the ACSL is also presented on Table 2. During the first quarter of 1996, the first five-year COC monitoring event was conducted, which is required by RWQCB General WDR Order 93-113. A second COC event was conducted in third quarter 2001, and a third COC event was conducted in first quarter 2006. Therefore, the next COC monitoring event is scheduled to occur in the year 2011.

Leachate Monitoring. The MRP had required semiannual monitoring of leachate wells L-1 and PL-2 in the fiscal year 1998/1999. Thus, leachate analytical monitoring is no longer required in the MRP, except if any leachate seeps occur. Leachate seeps are to be sampled and analyzed as noted on Table 2 as well as for semi-volatile organic compounds. The COCs for the ACSL are listed on Table 2. If leachate seep or leachate COC sampling is required, a cost estimate for this sampling event will be prepared separately.

The MRP requires the monthly leachate volumes transported to the VSFCD Waste Water Treatment Plant to be reported in the quarterly monitoring reports. Shaw assumes that the Authority will supply us with the amount of leachate hauled on a monthly basis to VSFCD.

In addition, Shaw will sample each leachate tank as required by the VSFCD. We will include the analytical data in the quarterly and annual reports to the RWQCB. This special individual tank testing is an additional expense.

Surface Water. The slough on the east side of the site, which drains into the Napa River, will be monitored in two locations: an upstream monitoring point (S-1) and a downstream monitoring point (S-2). Sampling will take place as the tide is receding to best show the effects of site recharge to the slough. Samples will be collected on a quarterly basis for the monitoring parameters listed on Table 2.

Vadose Zone Gas. Shaw will conduct the quarterly vadose zone gas probe monitoring, as described in the "Landfill Gas Monitoring Plan" (EMCON, April 1994). This includes monitoring of seven in-place gas probes (MP-1 through MP-7) and two on-site facilities (maintenance building and gas plant). The analysis for methane will be conducted in the field with a GasTech® Model 1939-OX. The results will be included in the quarterly and annual report as described in Task 3. NSPS compliance monitoring of the landfill gas (LFG) extraction system is included in a separate proposal.

Water Level Surveys. Quarterly water level measurements will be made for the wells listed on Table 1.

Leachate Level Surveys. Quarterly leachate level measurements from the LFG extraction wells are required by the MRP in order to prepare a leachate contour map. Shaw will measure leachate in the wells quarterly to prepare a leachate contour map. Table 1 lists the leachate wells to be used for these measurements. Approximately 70 LFG wells are used for these measurements.

Subtask 2 - Quarterly Analytical Results of Monitoring Samples

We will submit the samples it collects under Task 1 to BC (groundwater and surface water) and Alpha (leachate) labs to conduct the analytical services for the ACSL. We will work closely with BC and Alpha Labs in order to obtain high quality analytical reports and results for the site. In order to simplify the billing process, we will incorporate the laboratory costs into our monthly invoice to the Authority at costs plus 10 percent to cover administrative services. The estimated lab costs are shown on Table 4.

Task 3 - Quarterly and Annual Environmental Monitoring Reports

Results of the quarterly environmental monitoring of groundwater, surface water, leachate and gas, as well as on-site observations, are to be reported to the RWQCB as stipulated by the site's WDR/MRP. The reporting details are summarized below.

Quarterly Monitoring Reports. Monitoring reports will be prepared each quarter and submitted by the fifteen of the month following the quarter. These reports will include the following, as required in the tentative WDR/MRP:

- Transmittal letter discussing compliance, noted violations, corrective actions taken

- Tables of the groundwater, surface water, leachate, and vadose zone gas monitoring results
- Tables of the monthly leachate discharge volumes
- Tables of the leachate analytical results for discharges to the VSFCD
- Certified analytical reports including laboratory quality control reports
- Evaluation of the groundwater and surface water quality
- Groundwater contour map showing direction of flow
- Leachate contour map
- Groundwater velocity calculations
- Sampling, equipment, and purging details
- Map of observation and monitoring points
- An evaluation of the effectiveness of the leachate monitoring and extraction facilities which includes:
  - Evaluation of the leachate mound within the landfill
  - Summary of leachate volumes removed from the landfill
- Standard observations summary and certification

The reports will be submitted to the Agencies on CD disks in PDF format and emailed to the Authority in PDF format. One paper copy of the quarterly reports will be sent to the RWQCB in conformance with their requirements. The report and data will also be submitted to the State's GeoTacker website.

Annual Monitoring Reports. The WDR/MRP requires that an annual report be submitted by January 31st of each year. This report may combine the fourth quarter monitoring results with a summary of the monitoring for the previous three quarters. The combined fourth quarter and annual report is required to include all of the information required for the quarterly reports as detailed above, as well as annual report per the site's WDR/MRP:

- Tables and graphs of the monitoring data
- Comprehensive discussion of the year's compliance record and corrective actions taken or planned to obtain full compliance

- Written summary of groundwater analysis indicating any change in the quality of the groundwater
- Location and operational condition of leachate and groundwater monitoring wells
- Groundwater and leachate contours for each monitoring event
- Tables of the monthly leachate volumes discharged to the VSFCD for the year
- Tables of the leachate analytical results going to the VSFCD for the year
- Leachate monitoring system evaluation
- Vadose zone gas monitoring results
- Landfill gas extraction system evaluation

The annual report will be submitted to the Agencies on CD disks in PDF format and emailed to the Authority in PDF format. One paper copy of the annual report will be sent to the RWQCB in conformance with their requirements. The annual report will also be send to the State's GeoTracker website.

Groundwater and Surface Water Data Evaluation. The site's MRP requires the groundwater and surface water data be compared to maximum contaminant levels (MCLs) for appropriate constituents. Where not appropriate, the tentative MRP requires the use of intrawell statistical comparisons of the data. We will thus use the Federal and California MCLs to evaluate the data when MCLs exists. We will use the Sanitas® software program to statistically evaluate the inorganic data using intrawell methods. Sanitas is specifically designed to evaluate water quality monitoring data for landfills. It automatically performs all pre- and post-analysis tests required so that the data do not violate size and distribution assumptions of the relevant statistical analysis.

The statistical evaluation method of the non-impacted wells (and the tentatively impacted wells) at ACSL is to use an intrawell approach, i.e., to set concentration limits using each well as its own background. This is because there is spatial variation among the wells at the site. When conducting intrawell analysis, the concentration limits are to be updated on an annual basis. For the upgradient, impacted wells G-3A and G-8, and the tentatively impacted wells G-1 and G-10, we will use a trend analysis method to determine if water quality is improving over time. The trend analysis will be conducted each quarter. Trends are only conducted on data that has been detected at least four times above the practical quantitation limit. For surface water, an interwell method is used to compare the downstream water quality data to a concentration limit set on the upstream water quality data. Interwell concentration limits are to be updated on a regular basis to provide an ongoing definition of the upstream water quality.

The MRP note that if a limit is exceeded, the Discharger must immediately resample the compliance point and submit a report in writing to the RWQCB within 7 days of the exceedance. If the resampling confirms the exceedance, the Discharger must amend the Report of Waste Discharge and submit an Evaluation Monitoring Program to the RWQCB for approval and implementation.

Leachate Monitoring System Evaluation. The WDR/MRP requires that Leachate Monitoring System Evaluation be submitted as part of the annual report. This report is to include:

- A discussion of the leachate monitoring wells and collection sumps
- An evaluation of the effectiveness of the leachate extraction system
- Contour maps of the leachate as measured from quarterly elevation measurements of the existing leachate sumps, leachate wells, and gas extraction wells
- Evaluation of the overall effectiveness of the leachate extraction system in reducing leachate mound within the landfill

Vadose Zone Gas Probe Monitoring Results. As required by the site's WDR/MRP, the annual report is to include a summary of the quarterly vadose zone gas monitoring results. We will include a summary of the year's gas monitoring results in the annual report. In addition, we will include the quarterly gas monitoring results in the quarterly environmental monitoring reports.

Gas Extraction System Evaluation. As required by the site's WDR/MRP, a discussion of the gas extraction system is to be included in the annual report. We will collect information regarding the LFG extraction system under a separate contract. This information will be summarized in the annual report.

Task 4 - Quarterly Leachate Monitoring Report for VSD

The VSFCD permit requires quarterly analytical sampling of the ACSL leachate from the leachate truck at their facility or from the leachate pipeline at the landfill. The MRP requires these results to also be included in the quarterly monitoring reports. The VSFCD has established criteria for acceptance of leachate at their facility. These criteria and the analytical results from the quarterly sampling events will be summarized and submitted in a letter report to the VSFCD and the Authority. If the VSFCD criteria are exceeded, we will call the Authority and the VSFCD upon discovery.

Task 5 – Special Leachate Monitoring Events for VSFCD

Shaw is currently conducting a special leachate-sampling program for VSFCD due to high chromium in certain leachate wells. The following leachate-monitoring plan has been implemented to assure that the leachate from the landfill does exceed the VSFCD's limits for chromium:

- Samples will be collected from the individual leachate tanks at the landfill to be tested for the 11 metals in the permit prior to delivery of the leachate to the VSFCD facility. This individual tank metallic leachate testing will be conducted to assure that no leachate tanks are sent to VSFCD without prior testing. The chemical results of the individual tanks will be sent to VSFCD to gain permission prior to transport. This individual tank testing is above and beyond the normal testing program.

- Quarterly samples will be collected from all of the 33-leachate wells to be tested for 11 metals. This quarterly individual leachate well testing will be conducted to assure that an adequate understanding of the metallic mass balance loading from each well is obtained.

This monitoring program was developed to confirm that leachate from the landfill stays within the VSFCD's acceptance limits. This monitoring program is in addition to routine quarterly monitoring described in Task 4.

Task 6 – Minor Repair Wells (if needed)

Normal wear and tear of wells from use and exposure requires the periodic need for repairs. Shaw has included costs for minor well repairs if needed during the year. If required, services will be billed on a time and expense basis only after receiving authorization to complete the work from the Authority. If a drill rig is required to replace or abandon a well a separate estimate will be prepared.

Task 7 - Retest Event (if needed)

In the event that one or more of the wells needs to be retested due to the exceedance of a concentration limit, costs for a retesting event are included. These costs are based on a one-day sampling event and a lump sum for analytical costs. If a retest event is required, it will be billed on a time and expense basis only after receiving authorization from the Authority.

COST ESTIMATE

A cost estimate of $152,872 for all the above-described services is included in Table 4. Costs for Task 1 through 5 only are $147,268, which assumes no well repairs (Task 6), or no retest events (Task 7) were needed throughout the year. Because no COC testing is required this year the estimated costs are lower than last year's estimate.

If you have any questions or need additional information, please do not hesitate to call.

Sincerely,

SHAW ENVIRONMENTAL, INC.

J. C. Isham
Geology Manager

Enclosures: Table 1 - Monitoring Network
Table 2 - Analytical Parameters and Laboratory Methods as required by the ACSL's WDR/MRP
Table 3 - Analytical Parameters and Laboratory Methods as required by the VSFCD
Table 4 - Proposed Cost Estimate

Table 1

Monitoring Network

Monitoring Points to be Sampled Quarterly (unless noted)				
G-1*	G-6AR	G-10	S-1 [1]	Leachate truck [2]
G-2*	G-7	G-2D	S-2 [1]	
G-3A [1]	G-8 [1]	GW-4		
G-4	G-9	GW-6		
[1] Includes semiannual sampling (first and third quarters) for semi-VOCs. [2] Analytical sampling as required by VSFCD (see Table 3).				
Wells Included in the Quarterly Water Level Survey				
G-1	G-10	GR-1**	GR-9**	approx. 70 gas extraction wells
G-2	G-12	GR-2**	GR-10**	L-1 to L-6, L-8 to L-20, and L-22 to L-35
G-3A	G-1D	GR-3**	GR-11**	EW-4, 7, 9, 11, 13, 16, 17, 18, 23, 27, and 29
G-4	G-2D	GR-4**	GR-12**	GS-2, 7, 13, 18, 24, 25, 29, 37, 46, 48, 58, 60, 68, 69, 71, 73, 74, 80, 83, 85, 86, and 89
G-6AR	G-3D	GR-5**	GR-13**	
G-7	GW-2	GR-6**	GR-14**	
G-8	GW-4	GR-7**		
G-9	GW-6	GR-8**		
**Wells require overnight recharge prior to sampling.* ***Leachate wells (GR, L, EW, and GS series wells).* *G series wells monitor the first-encountered water-bearing zone in the Bay Mud.* *GW series wells monitor sand units within the Bay Mud.*				

Table 2

Analytical Parameters and Laboratory Methods as required by the ACSL's WDR/MRP

Analytical Parameters	Analytical Method
COCs (next event - year 2006)	
Semi-VOCs	USEPA Method 8270
Organochlorine Pesticides and polychlorinated byphenyls (PCBs)	USEPA Method 8080
Chlorinated Herbicides	USEPA Method 8150
Chloride	USEPA Method 300.0
Nitrate + Nitrite as Nitrogen	USEPA Method 353.2
Total Kjeldahl Nitrogen	USEPA Method 351.4
Total Organic Carbon	USEPA Method 415.1
Sulfide	USEPA Method 376.1
26 ICAP Metals	USEPA Method 6000 and 7000 Series
Cyanide	USEPA Method 335.2
Total Dissolved Solids	USEPA Method 160.1
Organophosphorus Pesticides	USEPA Method 8140
Monitoring Parameters for Groundwater and Surface Water	
Semi-VOCs [1]	USEPA Method 8270
VOCs [2]	USEPA Method 8260
Arsenic	USEPA Method 7060
Cadmium	USEPA Method 6010
Chromium	USEPA Method 6010
Copper	USEPA Method 6010
Lead	USEPA Method 7421
Nickel	USEPA Method 6010
Turbidity [3]	Field Meter
pH [3]	Field Meter
Electrical Conductivity [3]	Field Meter
Total Dissolved Solids	USEPA Method 106.1

[1] Semiannual monitoring (first and third quarters) for G-3A, G-8, S-1 and S-2.
[2] VOC analysis to include Methyl/Tert/Butyl Ether.
[3] Field measurement.

Table 3

Vallejo Sanitation and Flood Control District Required Analyses and Laboratory Methods

Monitoring Parameters	Analytical Method*	Maximum Reporting Limits (mg/L)[1]
Arsenic	USEPA Method 206.2	0.004
Beryllium	USEPA Method 210.1/210.2	0.001
Cadmium	USEPA Method 213.1/213.2	0.002
Chromium, Total	USEPA Method 218.1/218.2	0.01
Copper	USEPA Method 220.1/220.2	0.05
Lead	USEPA Method 239.1/239.2	0.05
Mercury	USEPA Method 245.1/245.2	0.001
Nickel	USEPA Method 249.1/249.2	0.05
Selenium	USEPA Method 270.3	0.002
Silver	USEPA Method 272.1/272.2	0.1
Zinc	USEPA Method 289.1/289.2	0.1
Total Phenols	USEPA Method 420.1/420.2	0.2
Total Cyanide	USEPA Method 335.2	0.04
Petroleum Based Oil and Grease	USEPA Method 413.1	10
Total Identifiable Chlorinated Hydrocarbons (Organochlorine Pesticides and PCBs)	USEPA Method 608	- - -
pH [2]	USEPA Method 150.1	- - -
5-Day Biochemical Oxygen Demand	USEPA Method 405.1	5
Total Suspended Solids	USEPA Method 106.2	5

These parameters will be analyzed quarterly for the leachate truck.
[1] As required by the VSFCD
*[2] Will also be measured in the field *Other methods can be used to obtain the VSFCD Maximum Reporting Limits.*

Table 4
Proposed Cost Estimate for Fiscal Year 2006-2007
American Canyon Landfill

Staff	Rate	Amount	Unit	Per Qtr	Per Year	Task Total
Task 1 - Quarterly Groundwater, Surface Water, Leachate Truck, and Vadose Zone Gas Probe Monitoring						
Field Personnel (samplers)	$50	40	hour	$2,000	$8,000	
Sampling Coordinator (organizes event)	$65	12	hour	$780	$3,120	
Project Manager (reviews parameters)	$139	4	hour	$556	$2,224	
Total Labor				$3,336	$13,344	
Markup of field labor		0.15	percent of labor	$500	$2,002	
Equipment	$535	1	lump	$535	$2,140	
Mileage	$0.58	480	miles	$278	$1,114	
				$4,650	$18,599	**$18,599**
Task 2 - Quarterly Analytical Services						
1st & 3rd Quarter groundwater & surface water	$7,000					
2nd & 4th Quarter groundwater & surface water	$6,000					
33 leachate wells & leachate truck quarterly for VSFCD (leachate well testing is special)	$20,000					
100 special leachate tank samples for VSFCD	$24,000					
BC & Alpha Labs	$57,000		plus 10% markup			**$62,700**
Task 3 - Environmental Monitoring Reports						
- Quarterly reports (Third Quarter 2006, First and Second Quarters 2007)						
JC Isham (geology manager, peer review)	$148	12	hour	$1,776	$5,328	
Project chemist, quality control, GeoTracker	$100	16	hour	$1,600	$4,800	
Janine Asmus (data entry, analysis)	$72	16	hour	$1,152	$3,456	
Charles Metzinger (write report, project management)	$139	10	hour	$1,390	$4,170	
Staff Geologist (contour maps, velocity calculations)	$82	8	hour	$656	$1,968	
CADD (design engineering)	$15	6	hour	$90	$270	
Prepare CADD drwgs. and figures	$75	4	hour	$300	$900	
Word Processing	$55	4	hour	$220	$660	
Clerical	$45	2	hour	$90	$270	
Total Labor				$7,274	$21,822	
Communications fee (3% of Labor)		0.03	percent	$218	$655	
Miscellaneous Materials	$30	1	lump	$30	$120	
				$7,522	$22,597	
- Fourth Quarter and Annual 2006 Monitoring Report						
JC Isham (geology manager, peer review)	$148	16	hour	$2,368		
Project chemist, quality control, GeoTracker	$100	20	hour	$2,000		
Janine Asmus (data entry, analysis)	$72	20	hour	$1,440		
Charles Metzinger (write report, project management)	$139	8	hour	$1,112		
Staff Geologist (contour maps, velocity calculations)	$82	8	hour	$656		
CADD (design engineering)	$15	8	hour	$120		
prepare CADD drwgs. and figures	$75	6	hour	$450		
Word Processing	$55	5	hour	$275		
Clerical	$45	3	hour	$135		
Total Labor				$8,556		
Communications fee (3% of Labor)		0.03	percent	$257		
Miscellaneous Materials	$40	1	lump	$40		
				$8,853		
						$31,449

Table 4
Proposed Cost Estimate for Fiscal Year 2006-2007
American Canyon Landfill

Staff	Rate	Amount	Unit	Per Qtr	Per Year	Task Total
Task 4 - Quarterly Leachate Report for VSFCD						
JC Isham (geology manager, peer review)	$148	8	hour	$1,184	$4,736	
Charles Metzinger (write report, project management)	$139	1	hour	$139	$556	
Project chemist, quality control, write report	$100	10	hour	$1,000	$4,000	
Janine Asmus (data entry, analysis)	$72	10	hour	$720	$2,880	
Word Processing	$55	3	hour	$165	$660	
Clerical	$45	3	hour	$135	$540	
Total Labor				$3,343	$13,372	
Communications fee (3% of Labor)		0.03	percent	$100	$401	
				$3,443	$13,773	**$13,773**
Task 5 - Special Leachate Monitoring Events for VSFCD						
Field Personnel (samplers)	$50	200	hour	$10,000		
Quarterly sampling of 33 leachate wells and 100 additional leachate tank sampling events						
Sampling Coordinator (organizes events)	$65	50	hour	$3,250		
JC Isham (geology manager, peer review)	$148	20	hour	$2,960		
Total Labor				$16,210		
Markup of field labor		0.15	percent of labor	$2,432		
Equipment	$250	8	lump	$2,000		
Mileage	$0.58	180	miles	$104		
(This item is above the normal costs due to the individual tank testing)				$20,746		**$20,746**
Task 6 - Monitor well repairs (will be conducted only if authorized by the Authority)						
Field Personnel (samplers)	$50	16	hour	$800		
Sampling Coordinator (organizes event)	$65	2	hour	$130		
Total Labor				$930		
Markup of field labor		0.15	percent of labor	$140		
Equipment	$500	1	lump	$500		
Repair Materials	$500	1	lump	$500		
Mileage	$0.58	120	miles	$70		
				$2,139		**$2,139**
Task 7 - Retest Event (will be conducted only if authorized by the Authority)						
Charles Metzinger (write report, project management)	$139	2	hour	$278		
JC Isham (geology manager, peer review)	$148	2	hour	$296		
Project chemist, quality control, write report	$100	4	hour	$400		
Janine Asmus (data entry, analysis)	$72	2	hour	$144		
Field Personnel (samplers)	$50	8	hour	$400		
Sampling Coordinator (organizes event)	$65	2	hour	$130		
Total Labor				$1,648		
Markup of field labor		0.15	percent of labor	$247		
Equipment	$500	1	lump	$500		
Mileage	$1	120	miles	$70		
Analytical (only analyses tested will be billed)	$1,000	1	lump	$1,000		
				$3,465		**$3,465**
				TOTAL COST TASK 1-4		**$147,268**
				TOTAL COST TASK 1-7		**$152,872**