

AGREEMENT TO FURNISH
LANDFILL GAS ENGINEERING AND MONITORING SERVICES
FOR CALIFORNIA STREET LANDFILL

This Agreement is made and entered into this 16th day of July, 1996 by and between the City of Redlands, a municipal corporation (hereinafter "City") and Gas Control Engineering, Inc., (hereinafter "Engineer").

In consideration of the mutual promises, covenants and conditions hereinafter set forth, City and Engineer hereby agree as follows:

ARTICLE 1 - ENGAGEMENT OF ENGINEER

- 1.1 City hereby engages Engineer, and Engineer hereby accepts the engagement, to perform landfill gas engineering and monitoring services (the "Services") for the City's California Street Landfill (the "Project").
- 1.2 The Services shall be performed by Engineer in a professional manner, and Engineer represents that it has the skill and the professional expertise necessary to provide high quality Services for the Project at the level of competency presently maintained by other practicing professional consultants in the industry providing similar types of services.

ARTICLE 2 - SERVICES OF CONSULTANT

- 2.1 The specific Services which Engineer shall perform are more particularly described in Attachment "A," entitled "Scope of Work and Schedule," which is attached hereto and incorporated herein by this reference.

ARTICLE 3 - RESPONSIBILITIES OF CITY

- 3.1 City shall make available to Engineer information in its possession that is pertinent to the performance of Engineer's Services.
- 3.2 City will provide access to and make provisions for Engineer to enter upon City-owned property as required by Engineer to perform the Services.
- 3.3 City designates Valorie Shatynski, Solid Waste Manager, to act as its representative with respect to the Services to be performed under this Agreement.

ARTICLE 4 - PERIOD OF SERVICE

- 4.1 Engineer shall perform the Services in a diligent manner and in accordance with the schedule set forth in Attachment A.

ARTICLE 5 - PAYMENTS TO THE CONSULTANT

- 5.1 The total compensation for Engineer's performance of the Services shall not exceed \$65,124. City shall pay Engineer on a time and materials basis at the hourly rates shown in Attachment B - Fee Proposal and Fee Schedule.
- 5.2 Engineer shall bill City within ten days following the close of each month by submitting an invoice indicating the Services performed, who performed the Services, indirect costs, and the detailed cost of all Services including backup documentation. Payments by City to Engineer shall be made within 30 days after receipt and approval of Engineer's invoice, by warrant payable to Engineer.
- 5.3 All contractual notices, bills and payments shall be made in writing and may be given by personal delivery or by mail. Notices, bills and payments sent by mail shall be addressed as follows:

City
Valorie Shatynski
Municipal Utilities Department
35 Cajon Street
P. O. Box 3005
Redlands, CA 92373

Engineer
Alan Janecheck, P.E.
1205 North Red Gum Street
Suite B
Anaheim, CA 92806

When so addressed, such notices shall be deemed given upon deposit in the United States Mail. In all other instances, notices, bill and payments shall be deemed given at the time of actual delivery. Changes may be made in the names and addresses of the person to whom notices, bills, and payments are to be given by giving notice pursuant to this paragraph.

ARTICLE 6 - INSURANCE AND INDEMNIFICATION

- 6.1 Engineer shall maintain worker's compensation insurance and, in addition, shall maintain insurance to protect City from claims for damage due to bodily injury, personal injury and death, and claims for injury to or destruction of tangible property while performing the Services required by this Agreement. Said public liability and property damage insurance shall be in a minimum combined single limit of \$1,000,000, and in the aggregate. Engineer shall maintain comprehensive automobile liability insurance with a combined single limit of \$1,000,000 for bodily injury and property damage. Engineer shall maintain professional liability insurance in the aggregate amount of \$1,000,000 with a minimum of \$500,000 per occurrence. City shall be named as an additional insured under all policies for public liability, property damage and comprehensive automobile liability and professional liability insurance, and such insurance shall be primary with respect to City and non-contributing to any insurance or self-insurance maintained by the City. Engineer shall provide City with certificates of insurance evidencing such insurance coverage prior to commencing the

Services.

- 6.2 Engineer shall indemnify, hold harmless and defend City and its elected officials, officers, agents and employees from and against all claims, loss, damage, charges or expense, to which it or any of them may be put or subjected to the extent that they arise out of or result from any willful or negligent act or actions, omission or failure to act on the part of the Engineer, its contractors, its suppliers, anyone directly or indirectly employed by any of them or anyone for whose acts or omissions any of them may be liable in the performance of the Services required by this Agreement.

ARTICLE 7 - GENERAL CONSIDERATIONS


- 7.1 In the event any action is commenced to enforce or interpret any of the terms or conditions of this Agreement the prevailing party shall, in addition to any costs and other relief, be entitled to the recovery of its reasonable attorneys' fees.
- 7.2 Engineer shall not assign any of the Services required by this Agreement, except with the prior written approval of City and in strict compliance with the terms, provisions and conditions of this Agreement.
- 7.3 Engineer's key personnel for the Project are: Alan Janecheck - Project Manager, Kenneth Holman, Jannette Napoles - Field Technicians. Engineer agrees that the key personnel shall be made available and assigned to the Project, and that they shall not be replaced without concurrence from City.
- 7.4 All documents, records, drawings, designs, costs estimates, electronic data files and databases and other Project documents developed by the Engineer pursuant to this Agreement shall become the property of City and shall be delivered to City upon completion of the Services or upon the request of City. Any reuse of such documents for other projects and any use of incomplete documents will be at City's sole risk.
- 7.5 Engineer is for all purposes an independent contractor. All personnel employed by Engineer are for its account only, and in no event shall Engineer or any personnel retained by it be deemed to have been employed by City or engaged by City for the account of or on behalf of City.
- 7.6 Unless earlier terminated, as provided for below, this Agreement shall terminate upon completion and acceptance by City of the Services.
- 7.7 This Agreement may be terminated by either party, without cause, by providing thirty (30) days prior written notice to the other (delivered by certified mail, return receipt requested) of intent to terminate.

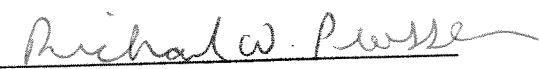
- 7.8 If this Agreement is terminated by City, an adjustment to Engineer's compensation shall be made, but (1) no amount shall be allowed for anticipated profit or unperformed services, and (2) any payment due Engineer at the time of termination may be adjusted to the extent of any additional costs to City occasioned by any default by Engineer.
- 7.9 Upon receipt of a termination notice, Engineer shall (1) promptly discontinue all services affected, and (2) deliver or otherwise make available to City, copies (in both hard copy and electronic form, where applicable), of any data, design calculations, drawings, specifications, reports, estimates, summaries and such other information and materials as may have been accumulated by Engineer in performing the Services required by this Agreement.
- 7.10 Engineer shall maintain books and accounts of all Project related payroll costs and all expenses. Such books shall be available at all reasonable times for examination by the City at the office of Engineer.
- 7.11 This Agreement, including the attachments incorporated herein by reference, represents the entire agreement and understanding between the parties and any prior negotiations, proposals or oral agreements are superseded by this Agreement. Any amendment to this Agreement shall be in writing, approved by the City Council of City and signed by City and Engineer; provided, however, further City Council approval shall not be required for any amendment to this Agreement which increases the scope of Services for a cost not to exceed \$5,000.
- 7.12 This Agreement shall be governed by and construed in accordance with the laws of the State of California.

IN WITNESS WHEREOF, duly authorized representatives of the City and Engineer have signed in confirmation of this Agreement.

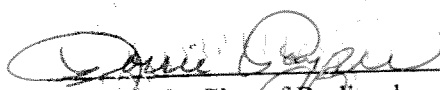
City of Redlands
("City")

Gas Control Engineering, Inc.
("Engineer")

By: 
SWEN LARSON
Mayor

By: 
RICHARD W. PROSSER, P.E.
President

ATTEST:


City Clerk, City of Redlands

ATTACHMENT A

SCOPE OF WORK AND SCHEDULE

SCOPE OF WORK

1.0 PROJECT APPROACH

The purpose of this section is to describe GCE's approach to this project and a project management style that will benefit the City of Redlands in the following ways:

1. Reduction of monitoring costs and frequency through negotiation with SCAQMD for a common-sense approach to compliance with the intent of Rule 1150.1
2. Operations procedures targeted towards reduction of vadose zone and groundwater contamination by LFG.
3. Utilize a rigorous QA/QC program to provide accurate and competent data.
4. Responsive project management and coordination according to the City's needs.

1.1 Regulatory Negotiation

GCE, at the direction of the City, will serve as the primary negotiator on behalf of the City and act as liaison with the SCAQMD. GCE staff have extensive experience in negotiating reductions in Rule 1150.1 monitoring requirements. These reductions have been achieved by presenting common sense alternatives which support the intent of 1150.1. Alan Janecek, as Manager of Riverside County's Environmental Division, negotiated with SCAQMD for reduced monitoring requirements at 11 landfills. Several Site specific negotiation references are shown in Table 1.1. This table includes negotiated 1150.1 requirements and approximate cost saving to the landfill owner/operators either through reduced O&M costs or reduced monitoring costs. The best way that reductions can be achieved are by demonstrating a proactive response to problems and a history of compliance. In other words, demonstrate to SCAQMD through historical data summary, demonstration of procedures, and communication that the City will act to prevent compliance violations.

Table 1.1

SITE SPECIFIC NEGOTIATION TABLE
SCAQMD RULE 1150.1

Project Name	Negotiated SCAQMD 1150.1 Requirement	Approximated cost savings (Monitoring/O&M)
West Riverside Landfill City of Riverside	ISS and Ambient over areas > 50 ppm from ISM only instead of entire landfill. Reduced ISM and gas sampling requirements.	\$37,000/year
Elsinore Landfill City of Elsinore	Number of required probes reduced and probe monitoring frequency reduced from monthly to quarterly.	\$11,000/year
Corona Landfill City of Corona	ISS and Ambient over areas > 50 ppm from ISM only instead of entire landfill. Reduced ISM and gas sampling requirements.	\$45,000/year

1.2 Groundwater Protection

GCE has been an industry leader in the design and operation of landfill gas collection systems to control VOC contamination of groundwater. Richard Prosser, proposed Project Principal and Alan Janecek, proposed Project Manager, have authored two published papers on the effects of LFG and groundwater contamination.

The approach to reducing the amount of contamination reaching groundwater and the vadose zone is to limit the causes of LFG migration, which are convection (differences in pressure) and diffusion (differences in concentration). Most LFG collection systems are designed and operated to control convection, but not diffusion. The effects of the diffusion mechanism can be reduced through changes in both the design and the operation of the collection system.

Changes to the design of the collection system would normally consist of increasing the collection area to include the entire bottom of the landfill, and the vadoze zone below and surrounding the landfill. The California Street landfill, because of the site location, has limited opportunities to expand the coverage of the collection system. It is possible that sweep air wells could be installed at portions of the landfill's perimeter to enhance diffusion control. The cost/benefit of this option would be presented to the City as part of the operations report.

Changes to the operation of the system can also be used to reduce the potential for groundwater contamination. GCE uses two well adjustment procedures to improve the efficiency of the collection system, thereby reducing migration potential and the effects of diffusion. The two adjustment procedures are both based on flow rate. The first method, methane targeting, is used on interior wells. The second method, residual nitrogen targeting, is used on perimeter wells. The residual nitrogen, or RN_2 , targeting allows the operator to increase the flow rate of wells located in limited or no refuse, while reducing the risk of refuse fires. The method uses a calculation to estimate the amount of air infiltration into the well and uses this estimate as a basis for well adjustment instead of methane concentration alone. GCE has used these methods effectively at other sites. Proper well adjustment and aggressive collection of LFG are essential to controlling migration to groundwater and the vadose zone.

GCE has extensive experience working with the Santa Ana Regional Water Quality Control Board (SARWQCB). Alan Janecek, as former manager of Riverside County Waste Management's Environmental Division, negotiated with SARWQCB to use LFG collection as a means to control groundwater contamination. Through this negotiation, SARWQCB agreed to abandon requirements for a pump-and-treat system at the Mead Valley Landfill in Perris, California. Instead a LFG collection system was designed to target VOC contamination of groundwater.

1.3 Project Coordination

Project coordination is an extremely important aspect of this project. It is essential that our activities on the landfill not interfere with landfill operations and that a schedule be prepared and updated so that City staff are aware of our planned activities.

GCE will not proceed with maintenance or engineering work outside the scope of the contract until we receive input and approval from the City. We have successfully coordinated out of

scope work on other projects by using work approval forms. These forms, which list the work to be performed, materials to be used and labor requirements, are used to follow up on phone conversations of recommended repair or maintenance work and formally request approval of the work before proceeding. This type of format allows us to quickly respond to the City's needs while still assuring proper communication.

Coordination between our Project Manager and field technicians will also be important. Alan Janecek, Project Manager for this project, has extensive hands-on experience operating LFG collection systems. He will be in daily communication with the field technician staff and provide direction on adjustments, troubleshooting and repairs.

1.4 Maintaining Compliance

The primary objective of this project is to maintain regulatory compliance within SCAQMD and SARWQCB. The best way to do this is to take a proactive approach to operation of the LFG collection system. We will not wait until a violation or near violation occurs before taking action. For the perimeter monitoring probes we will target all ISM readings to be less than 10 ppm measured as methane. Maintaining ISM readings below 10 ppm (through additional cover or well adjustments) will be the best way to eliminate or reduce requirements for ISS. For monitoring probes, we will target all probes to be less than 0.5% methane. We will also target adjustments to reduce vadose zone concentrations of VOCs using the procedures described previously.

Monitoring data will also be collected under worst case conditions, normally in the afternoon during rising barometric pressure, if wind speeds allow. This will allow for system adjustments based on the worst case conditions and also help to avoid incidences of regulatory staff measuring levels higher than the operators.

1.5 Recommendations

Our recommendation is to reduce the frequency of monitoring to a level that makes sense for a landfill of this size. Specific recommendations for each task reduction are based on our past experience in negotiating common sense requirements with SCAQMD. The best approach for this is to propose a performance based compliance plan. The performance based plan would set a minimum baseline monitoring schedule. Additional monitoring tasks and monitoring frequency would be added in the event that certain limits are exceeded. The proposed baseline schedule would rely primarily on routine perimeter probe and ISM monitoring. Additional tasks and frequency would be added if any probe exceeded 5% methane or any ISM reading exceeded 50 ppm. This would provide incentive to operate the system below these limits in order to avoid further monitoring requirements and provide a means for the City to assess the performance of GCE. The following compliance plan is the plan we would recommend be proposed to SCAQMD. The plan structure is similar to plans approved previously by SCAQMD.

Recommended Compliance Plan

1. **ISM** - To be conducted monthly over the entire landfill surface
2. **ISS** - To be conducted only over any single point ISM reading exceeding 500 ppm (SCAQMD may not accept this limit at which time a 50 ppm trigger would be

proposed). ISS would be conducted over the entire landfill surface only in the event any of the previously collected ISS samples exceeds 50 ppm (a remote possibility, as ISS samples tend to be much less than the ISM reading over that area. For example, our experience is that an area of the landfill with an ISM reading of 500 ppm will likely have an ISS sample much less than 50 ppm).

3. **ISM Over Active Fill Area** - To be conducted monthly.
4. **Ambient Air Sampling** - To be conducted only when ISS is performed.
5. **Landfill Gas Sampling** - To be conducted quarterly (SCAQMD historically will not reduce this to less than quarterly).
6. **Perimeter Probe Monitoring** - To be monitored monthly for percent methane, percent carbon dioxide, percent LFL, percent oxygen, and in. w.c. pressure (this is more frequent than stated in the RFP, but is recommended to aid in well adjustment procedures). Samples will be collected for lab analysis quarterly at any probes exceeding 5% methane. A minimum of one probe sample will be collected quarterly if no probes exceed 5% methane. Samples collected will be analyzed for 1150.1 core group compounds, TOC/NMHC, and major gases.

1.6 Quality Assurance/Quality Control

An important capability offered by GCE is its rigorous QA/QC program to maintain data integrity. The City, and the gas collection system operators must have confidence that the compliance monitoring data is valid and accurately reflects landfill conditions.

Quality management is maintained from data collection through data input into the database. The procedures include:

- Technician training to verify that they are qualified and knowledgeable for the job.
- Implementation of approved sampling plans.
- Pre and post instrument calibration on a daily basis
- Periodic management review of procedures used for collected data.
- 10% cross checking data in the database with field values.
- Evaluation to flag erroneous data
- Resampling and monitoring to verify erroneous data.

By using these simple procedures, the value of the data is enhanced by making it reliable.

2.0 PROPOSAL INFORMATION

2.1 Proposed Scope of Work

This section provides a breakdown of each task by labor hours and labor type. The breakdown is based on our recommended monitoring plan described in Section 1.5. This recommended plan includes probe monitoring to be conducted monthly instead of quarterly, which is reflected in this labor breakdown.

The recommended plan proposes to eliminate the requirements for routine ISS. The labor breakdown for each of the ISS scenarios described in the RFP is included for reference.

Billing Rate		Senior Prof. 89	Staff Prof. 78	Tech. 40	Clerical 39	Totals Hours
MONITORING SERVICES						
1.0	Instantaneous Surface Monitoring	0	0	5.0	0	5.0
2a	ISS - Entire Landfill Surface	.5	0	36.0	0	36.5
2b	ISS - 1/4 of Grid Areas	.5	0	10.0	0	10.5
2c	ISS - 6 Grids	.5	0	5.0	0	5.5
3.0	ISM in Active Area	0	0	2.0	0	2.0
4.0	Ambient Air Sampling	0	0	2.0	0	2.0
5.0	Landfill Gas Sampling	0	0	1.0	0	1.0
6.0	Perimeter Probe Monitoring	.5	0	3.0	0	3.5
7.0	Well Monitoring	1.0	0	12.0	0	13.0
8.0	Flare Testing	0	0	0	0	0
9.0	Assistance with Agency Negotiations	2.0	0	0	0	2.0
10.0	Quarterly Reporting	1.0	3.0	0	2.0	6.0

Schedule

Proposed Schedule

(Assumed startup date of July 1, 1996 per RFP)

	MONTH 1*				MONTH 2*				MONTH 3*			
	1	2	3	4	1	2	3	4	1	2	3	4
1150.1 Monitoring	X				X				X			
Collection System Adjustments		X		X		X		X		X		X
Monthly Memo					X				X			
SCAQMD Quarterly Report Draft to City			X									
Lab Analysis Results to GCE			X				X				X	
SCAQMD Report Final to SCAQMD, City					X				X			
Source Test Conducted									X			
Source Test Submittal to SCAQMD												X

*Months 4 through 12 will repeat the routine shown in months 1 through 3 except for source test.

ATTACHMENT B
FEE PROPOSAL AND FEE SCHEDULE

COST SUMMARY

TOTAL COST FOR EACH TASK W/O ISS

	MONTHLY	YEARLY
INSTANTANEOUS SURFACE MONITORING	\$300	\$3,600
ISM IN ACTIVE AREA	\$80	\$960
AMBIENT AIR SAMPLING	N/A	N/A
LANDFILL GAS SAMPLING	\$210	\$2,519
PERIMETER PROBE MONITORING	\$388	\$4,653
WELL MONITORING	\$639	\$7,668
FLARE TESTING	NA	\$8,190
ASSISTANCE WITH AGENCY NEGOTIATIONS	\$178	\$3,560
QUARTERLY REPORTING	\$401	\$4,812

MONTHLY COST

\$2,196

YEARLY COST

\$35,962 ✓

INTEGRATED SURFACE SAMPLING

	YEARLY	INC AMBIENT AIR SAMPLING
2A -1 ISS ENTIRE LANDFILL MONTHLY	\$26,904	\$29,162 ✓
2A-2 ISS ENTIRE LANDFILL QUARTERLY	\$8,968	\$11,226
2B-1 ISS 1/4 GRIDS MONTHLY	\$12,744	\$15,002
2B-2 ISS 1/4 GRIDS QUARTERLY	\$4,248	\$6,506
2C-1 ISS 6 GRIDS MONTHLY	\$8,904	\$11,162
2C-2 ISS 6 GRIDS QUARTERLY	\$2,968	\$5,226

ASSUMPTIONS

- 1 ISS is not included in the total monthly or yearly cost. Yearly cost for six different ISS scenarios are shown separately.
- 2 Cost assumes one perimeter probe and one landfill gas sample per quarter.
- 3 Cost assumes one ISS lab sample per ISS monitoring event
- 4 Cost assumes ambient air sampling will be conducted only in the event of ISS, max quarterly.
- 5 Unit costs are shown for each sample and can be used if additional samples are required.
- 6 The proposed method of compensation is on a time and materials basis not to exceed the total monthly amount.
- 7 Subcontract consists of lab and source test only and costs will be provided upon request.
- 8 Yearly agency negotiation task includes 16 hours for compliance plan negotiations

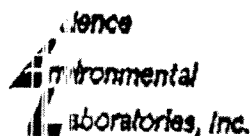
\$65,124

**City of Redlands
BASIS OF CHARGES
Effective January 1, 1996**

FEE SCHEDULE

Principal Engineer	\$111
Senior Professional	89
Staff Professional	78
Assistant Professional	57
Designer	50
Technician	40
Word Processing/Clerical	39
Engineering Assistant	37
Mileage	\$0.35/mi.
Copies	\$0.10 each
Drawing Copies	\$2.50 each

1. For hourly workers, time worked in excess of eight hours per day and weekend work will be charged at 1.5 times the hourly rate.
2. Outside services will include a 15% markup unless otherwise noted.
3. All environmental samples may be returned to clients at Gas Control Engineering, Inc.'s discretion 30 days after submission of final report, unless prior arrangements are made.
4. Proper disposal or handling of soil boring cuttings, well development and purge waters, decontamination solutions, and other contaminated/potentially contaminated materials is the responsibility of the client. Gas Control Engineering, Inc. can provide containers for on-site containment and can advise the client regarding proper handling procedures.



CALSCIENCE STANDARD TELEPHONE QUOTE

Quote Number 941795

<u>Name</u>	Alan Janachek	<u>Project Number</u>	Redlands 1150.1 Monitoring
<u>Company Name</u>	Gas Control Engineering, Inc.	<u>Expected Start Date</u>	July, 1996
<u>Phone</u>	714-632-9969	<u>Quote Valid Through</u>	project term
<u>Fax</u>	714-632-9968	<u>Individual Quoting</u>	Bob Stearns <i>Bob</i>

Analytical Fees Include

Courier Services	Sample Disposal
Analytical Consultation	Standard Quality Control Measures

<u>Matrix</u>	<u>Test</u>	<u>Method</u>	<u>Quantity</u>	<u>TAT</u>	<u>Unit Costs</u>	<u>Subtotal 1</u>	<u>Rush Surcharge</u>	<u>Subtotal 2</u>
ir	SCAQMD 25.2 TGNMO and CH4	SCAQMD 25.1 Non-condensables	1	5	\$60.00	\$60.00	\$0.00	\$60.00
r	Hydrogen Sulfide	CARB 15	1	5	\$75.00	\$75.00	\$0.00	\$75.00
r	Fixed Gases by GC/TCD	MASA 133	1	5	\$50.00	\$50.00	\$0.00	\$50.00
r	TC-14 SCAQMD Rule 1150.1 compounds	EPA TO-14 (1150.1 Compounds)	1	5	\$165.00	\$165.00	\$0.00	\$165.00

15% markup to be added to each lab cost

Notes: Source testing will be subcontracted to Gas Control Engineering. Their fee is \$4760. Adding the analytical cost, the total source testing fee is \$8300.

All analytical work conducted by CalScience is subject to its standard terms and conditions, a copy of which is available upon request. Requested analyses which are not covered by this quotation will be invoiced at CalScience's book price. The discount price structure, if any, contained herein is contingent upon CalScience receiving no less than 75% of the number of samples quoted at the discounted price.