

AGREEMENT TO FURNISH
ECONOMIC ANALYSIS UPDATE
AND EVALUATION MONITORING PLAN
FOR THE CALIFORNIA STREET LANDFILL

This Agreement is made and entered into this 20th day of April, 1999, by and between the City of Redlands, a municipal corporation (hereinafter "City") and 3D GeoServices, Inc., (hereinafter "Consultant").

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

ARTICLE 1 - ENGAGEMENT OF CONSULTANT

- 1.1 City hereby engages Consultant, and Consultant hereby accepts the engagement, to perform professional and technical services related to the groundwater monitoring program and proposed horizontal expansion analysis ("Services") for the City's California Street Landfill (the "Project").
- 1.2 The Services shall be performed by Consultant in a professional manner, and Consultant 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 Consultant shall perform are more particularly described in Attachment "A," entitled "Scope of Work," which is attached hereto and incorporated herein by this reference.

ARTICLE 3 - RESPONSIBILITIES OF CITY

- 3.1 City shall make available to Consultant information in its possession that is pertinent to the performance of Consultant's Services.
- 3.2 City will provide access to and make provisions for Consultant to enter upon City-owned property as required by Consultant 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 Consultant shall perform the Services in a diligent manner and in accordance with the Project Schedule set forth in Attachment B.

ARTICLE 5 - PAYMENTS TO THE CONSULTANT

- 5.1 The total compensation for Consultant's performance of the Services shall not exceed \$68,520.00, in accordance with Attachment C - Project Fee. City shall pay Consultant on a time and materials basis at the hourly rates shown in Attachment D - Rate Schedule.
- 5.2 Consultant 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 Consultant shall be made within 30 days after receipt and approval of Consultant's invoice, by warrant payable to Consultant.
- 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

Consultant
Mercedes Murillo, President
3D GeoServices, Inc.
26042 Mirage Court
Moreno Valley, CA 92555

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 Consultant 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

Economic Analysis Update and
Evaluation Monitoring Plan
for the California Street Landfill
3D GeoServices, Inc.

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. Consultant 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. Consultant shall provide City with certificates of insurance evidencing such insurance coverage prior to commencing the Services.

- 6.2 Consultant 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 Consultant, its contractors, its suppliers, anyone directly or indirectly employed by any of them or anyone for whose acts or omissions any of them maybe 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 Consultant 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 Consultant's key personnel for the Project are,
- | | |
|--------------------|--------------------------------|
| Project Manager: | Mercedes Murillo, R.G., C.E.G. |
| Economic Analysis: | David R. Bachtel, P.E. |
| CAD/GIS: | Ernesto Rodriguez |
| Data Analysis: | Mercedes Murillo, R.G., C.E.G. |
| Aquifer Testing: | Alan Janechek. P.E. |

Consultant 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

Economic Analysis Update and
Evaluation Monitoring Plan
for the California Street Landfill
3D GeoServices, Inc.

databases and other Project documents developed by the Consultant 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 Consultant is for all purposes an independent contractor. All personnel employed by Consultant are for its account only, and in no event shall Consultant 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 Consultant's compensation shall be made, but (1) no amount shall be allowed for anticipated profit or unperformed services, and (2) any payment due Consultant at the time of termination may be adjusted to the extent of any additional costs to City occasioned by any default by Consultant.
- 7.9 Upon receipt of a termination notice, Consultant 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 Consultant in performing the Services required by this Agreement.
- 7.10 Consultant 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 Consultant.
- 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 Consultant.
- 7.12 This Agreement shall be governed by and construed in accordance with the laws of the State of California.

Economic Analysis Update and
Evaluation Monitoring Plan
for the California Street Landfill
3D GeoServices, Inc.

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

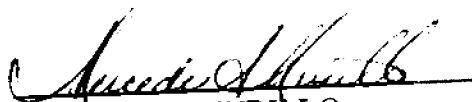
City of Redlands
("City")

3D GeoServices, Inc.
("Consultant")

By:


WILLIAM E. CUNNINGHAM
Mayor

By:


MERCEDES MURILLO
President

ATTEST:


City Clerk, City of Redlands

**ECONOMIC ANALYSIS UPDATE AND
EVALUATION MONITORING PLAN
FOR THE CALIFORNIA STREET LANDFILL**

ATTACHMENT A

SCOPE OF WORK

Attachment A - Scope of Work

3D GeoServices understands that this agreement is for the period April 1, 1999 through August 1, 1999, to commence upon authorization from the City of Redlands (City). The agreement will require submittal of an Evaluation Monitoring Plan (EMP) reporting and economic analysis update services for submittal to the SARWQCB and the lead enforcement agency (LEA) for the California Integrated Waste Management Board (CIWMB). This attachment describes the agreement scope of work for the EMP and economic review services.

Task 1 - Landfill Economic Analysis Update - Task 1 consists of updating the draft 1996 Landfill Resource Evaluation, which evaluated the costs and benefits of landfill operation and expansion, versus closure. This update will reflect current regulatory impacts, operations and maintenance costs, reporting costs, and expansion needs. This evaluation will incorporate the City's revised closure and post-closure cost estimates. The costs and benefits evaluation will be projected throughout the active life of the landfill (which includes the post-closure maintenance period) and will be given in present-value terms on an annualized basis, with the base case presentation given at the City's current tipping fee rate schedule. This task will consist of updating the database and spreadsheet numbers with current budget information, and two expansion evaluations. Each evaluation will each contain three potential scenarios, for a total of six revisions.

Task 2 - Economic Analysis Interface - Task 2 consists of preparing the analysis update from Task 1 for transfer to a third party consulting firm for continuing analysis and use in the Solid Waste Master Plan. This task will specifically consist of familiarizing the firm with the budget considerations in the current model. It will also include converting the current spreadsheet program to a new format, such that the assumptions, background information, and economic data and factors, are transferred compatibly from the current analysis.

Task 3 - Aquifer Testing and Analysis - Task 3 consists of four sub-tasks related to landfill field work in the form of data collection, calculations, and analysis. These tasks are described separately below.

Task 3a - SARWQCB Work Plan - Task 3a consists of preparing and submitting a work plan to the SARWQCB, in accordance with their regulatory requirements, describing the proposed aquifer test methods, field quality assurance / quality control, and data analysis methodology to be subscribed to in Task 4. Record keeping and reporting procedures will also be included in the work plan. This plan must be approved prior to proceeding with Task 4.

Task 3b - Aquifer Testing & Data Analysis - Task 3b consists of determining the hydraulic conductivity of the aquifer below the landfill by analyzing data obtained from a 24-hour single well aquifer test performed in monitoring well B-4B.

Attachment A - Scope of Work

A single well pump test will be performed on one of the site wells. A single well pump test was selected because of the limited number of wells on site and the large distances between wells. Although a single well pump test cannot be used to determine aquifer storativity, the results can be used to calculate the hydraulic conductivity that will be used in the contaminant transport modeling.

The pump test will be performed by lowering a submersible electric pump into the well along with a transducer connected to a data logger. Groundwater will be pumped at a rate high enough to demonstrate drawdown in the well but not so high that the water level will drop below the pump (the pump rate is identified to be about 5 to 10 gallons per minute). The pump test is expected to run continuously for 24 hours and during the test, a geologist will periodically observe the data stored on the data logger to ensure that the pump test data is useable and consistent.

Purged groundwater generated during the pump test will be placed in a 30,000 gallon Baker Tank for storage pending chemical analysis to determine whether or not the purged water be disposed of at the wastewater treatment plant. It is proposed that the City retrieve a grab sample and have it analyzed by their contract laboratory, Lee & Ro, for Appendix I VOCs (EPA Method 8260), and that the City be responsible for the disposal of the purged groundwater. Based on the extremely low levels of VOC contamination which might occur, it is proposed that the City remove the tank contents using the City's Vactor truck, and discharge the purged water into the wastewater treatment plant's influent stream in accordance with the plant's permit conditions.

The pump test data will be downloaded and calculations will be performed to determine the hydraulic conductivity of the aquifer materials. The results obtained will be used in the Fate and Transport Modeling effort.

Task 3c - Landfill Gas and Groundwater Data Analysis - Task 3c consists of accessing and analyzing trends of landfill gas constituents which may be related to groundwater chemistry trends. This analysis will determine if there is any real-time correlation between groundwater chemistry and landfill gas migration, and support a conclusion for landfill gas impacts to the groundwater rather than a liquid release. This approach and analysis has been performed in the past and successfully demonstrated as such to the SARWQCB. The analysis will result in a combined landfill gas and groundwater chemistry database, with supporting graphical representation of the data in Excel format. These materials will be presented during Task 4, and will included as support documentation in the Evaluation Monitoring Plan (Task 5).

Task 3d - Contaminant Transport Analysis - Task 3d consists of estimating the potential longitudinal dispersion of contaminants released from the landfill. This will be done by performing a two-stage fate and transport analysis. First, leakage from the landfill will be utilized from the previous United States Army Corps of Engineers HELP3 (Hydrologic Evaluation of Landfill Performance) computer analysis of the landfill, conducted in April of 1998. HELP3 uses

Attachment A - Scope of Work

representative rainfall and evapo-transpiration data to determine the quantity of leachate and rate of leakage that might be anticipated from a municipal solid waste landfill. Second, relevant source and hydraulic parameters will be used as input for the program MULTIMED, to estimate the concentration of chemical contaminants at progressively larger distances from the landfill.

The Environmental Protection Agency's Multimedia Exposure Assessment Model (MULTIMED) for exposure assessment simulates the movement of contaminants leaching from a landfill in both the unsaturated and saturated zones. A steady-state, one-dimensional, semi-analytical module simulates flow in the unsaturated zone. The output from this module, water saturation as a function of depth, is used as input to the unsaturated zone transport module. The latter simulates transient, one-dimensional (vertical) transport in the unsaturated zone and includes the effects of longitudinal dispersion, linear adsorption, and first-order decay. The unsaturated zone transport module calculates steady-state contaminant concentrations. Output from both unsaturated zone modules is used to couple the unsaturated zone transport module with the steady-state saturated zone transport module. The latter includes one-dimensional uniform flow, three-dimensional dispersion, linear adsorption, first-order decay, and dilution due to direct infiltration into groundwater.

Task 4 - SARWQCB Presentation - Task 4 consists of providing one informal presentation of the infiltration model report to the SARWQCB and, as a contingency, some hours for other meetings and technical support as requested by the City for the duration of this project. The presentation will consist of preparation, presentation, and discussion of the infiltration modeling and results with the SARWQCB, in order to gain advice on the manner in which to proceed with approval of the revised Final Grading Plan.

Task 5 - Evaluation Monitoring (EMP) Plan - Task 5 consists of the preparation of an EMP for the CSL. The reporting services will include technical writing and drafting as necessary to present the findings of Tasks 1-4 into a responsible plan for an EMP for the CSL. This task will also provide the City with responses to comments on the EMP on an as-needed basis during the regulatory review and approval process.

Deliverables - Deliverables will consist of memorandums, text, and faxed information to be provided to City staff on a time and materials basis upon request. Five tabularized printouts of the economic analyses results will be provided to the City, along with a short narrative in memo form, summarizing the updated information used in the evaluations.

A work plan detailing the proposed pump test procedures and a description of the modeling to be conducted, will be prepared and submitted to the RWQCB for approval prior to proceeding with field activities. One copy of the draft work plan and five copies of the final work plan will be provided to the City.

Attachment A - Scope of Work

Presentation materials will consist of a presentation agenda, and all text and graphical representations of the data analyzed in the form of hand-outs, which will be discussed during the presentation. As many copies of these materials will be provided as necessary and/or requested by the City and the SARWQCB.

One complete draft copy of the EMP will be submitted to the City for review. After incorporation of the City's comments, eight bound copies, one unbound reproducible copy, and one copy of the final EMP in electronic format will be submitted to the City. The EMP will contain all pump test data, pump test hydraulic conductivity calculations, test results, and calculations. The report will also include the results of the MULTIMED Fate and Transport modeling with figures showing contaminant concentration gradients, flow directions, and chemical attenuation. In addition, we are prepared to meet with the Regional Board to explain the results of the modeling effort and to discuss further measures that may be implemented at the facility to minimize degradation of the groundwater

**EVALUATION MONITORING PLAN AND REPORTING SERVICES AND
ECONOMIC ANALYSIS UPDATE SERVICES
FOR THE CALIFORNIA STREET LANDFILL**

ATTACHMENT B

PROJECT SCHEDULE

The California Street Landfill

The California Street Landfill, City of Project: EMP/Economic Analysis Services Project

1999

Apr

May

Jun

Jul

Aug

- Task 1 - Economic Analysis
- Task 2 - Economic Interface
- Task 3 - Work Plan
- Task 3 - Approval
- Task 4 - AQ Testing
- Task 5 - LFG/GW Data Anal
- Task 6 - Transport Modeling
- Task 7 - Presentation Prep
- Task 7 - Presentation
- Task 8 - EMP/CAP prep
- Task 8 - EMP/CAP Draft Rev
- Task 8 - EMP/CAP Final Subm
- Task 8 - EMP/CAP Approval
- Task 9 - JTD Amendment #2

Actual
 Planned
 Milestone
 Plot Increment: Months

**EVALUATION MONITORING PLAN AND REPORTING SERVICES AND
ECONOMIC ANALYSIS UPDATE SERVICES
FOR THE CALIFORNIA STREET LANDFILL**

ATTACHMENT C

PROJECT FEE

Attachment C												
Joint Technical Document & Revised Preliminary Closure Plan Reporting Services Fee Schedule												
California Street Landfill Vertical Expansion												
Task Description	Mercedes Murillo-CEG (\$80/hour)		David R. Bachtel-PE (\$80/hour)		Anne Saffell (\$80/hour)		Alan Janechek-CAD (\$95/hour)		Other Direct Costs	Hours Per Task	Costs Per Task	Remaining Budget
	Hours	Costs	Hours	Costs	Hours	Costs	Hours	Costs				
	25.0	\$ 2,000.00	100.0	\$ 8,000.00	0.0	\$ -	0.0	\$ -	\$ -	125.0	\$ 10,000.00	\$ 10,000.00
Task 1 - Economic Analysis Update	100.0	\$ 8,000.00	150.0	\$ 12,000.00	0.0	\$ -	0.0	\$ -	\$ -	250.0	\$ 20,000.00	\$ 20,000.00
Task 2 - Economic Analysis Interface												
Task 3 - Aquifer Testing and Analysis	25.0	\$ 2,000.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	\$ -	25.0	\$ 2,000.00	\$ 2,000.00
Task 3a - RWQCB Work Plan	40.0	\$ 3,200.00	0.0	\$ -	0.0	\$ -	32.0	\$ 3,040.00	\$ 7,400.00	72.0	\$ 13,640.00	\$ 13,640.00
Task 3b - Aquifer Testing & Data Analysis	8.0	\$ 640.00	0.0	\$ -	0.0	\$ -	8.0	\$ 760.00	\$ -	16.0	\$ 1,400.00	\$ 1,400.00
Task 3c - Landfill Gas - Groundwater Data Analysis	40.0	\$ 3,200.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	\$ -	40.0	\$ 3,200.00	\$ 3,200.00
Task 3d - Contaminant Transport Analysis	16.0	\$ 1,280.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	\$ -	16.0	\$ 1,280.00	\$ 1,280.00
Task 4 - SARWQCB Presentation	212.5	\$ 17,000.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	\$ -	212.5	\$ 17,000.00	\$ 17,000.00
Task 5 - Evaluation Monitoring Plan												
Total	466.5	\$ 37,320.00	250.0	\$ 20,000.00	0.0	\$ -	40.0	\$ 3,800.00	\$ 7,400.00	756.5	\$ 68,520.00	\$ 68,520.00

**EVALUATION MONITORING PLAN AND REPORTING SERVICES AND
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ATTACHMENT D

RATE SCHEDULE

Attachment D
Evaluation Monitoring Plan and Reporting Services and
Economic Analysis Update Services
Rate Schedule

Item	Rate
Professional Personnel (P.E., C.E.G., C.H.G., includes Computer Charges)	\$80.00 per hour
Alan Janecek	\$95.00 per hour
Subcontracted Professional Services, Supplies	Cost plus 15%
Miscellaneous Out of Pocket Expenses (Long distance telephone charges, special order office supplies, slide preparation, report and other presentation media, other direct costs)	Cost