PROFESSIONAL CONSULTANT SERVICES AGREEMENT

GEO-LOGIC ASSOCIATES, INC.

[Water Quality Monitoring and Reporting Services for the Inactive Tequesquite Landfill RFP No. 1695]

THIS PROFESSIONAL CONSULTANT SERVICES AGREEMENT ("Agreement") is made and entered into this _____ day of _____, 2017 ("Effective Date"), by and between the CITY OF RIVERSIDE ("City"), a California charter city and municipal corporation and GEO-LOGIC ASSOCIATES, INC., a California corporation ("Consultant").

1. **Scope of Services**. City agrees to retain and does hereby retain Consultant and Consultant agrees to provide the services more particularly described in Exhibit "A," "Scope of Services" ("Services"), attached hereto and incorporated herein by reference, in conjunction with Water Quality Monitoring and Reporting Services for the Inactive Tequesquite Landfill, RFP No. 1695 ("Project").

2. **Term**. This Agreement shall be effective on the date first written above and shall remain in effect until June 30, 2020, unless otherwise terminated pursuant to the provisions herein.

3. **Compensation/Payment**. Consultant shall perform the Services under this Agreement for the total sum not to exceed One Hundred Twenty-Seven Thousand Seven Hundred Ninety-Seven Dollars ($127,797.00), payable in accordance with the terms set forth in Exhibit "B." Said payment shall be made in accordance with City's usual accounting procedures upon receipt and approval of an itemized invoice setting forth the services performed. The invoices shall be delivered to City at the address set forth in Section 4 hereof.

4. **Notices**. Any notices required to be given, hereunder shall be in writing and shall be personally served or given by mail. Any notice given by mail shall be deemed given when deposited in the United States Mail, certified and postage prepaid, addressed to the party to be served as follows:

To City

Public Works - Wastewater
City of Riverside
Attn: Robert Eland
5950 Acorn Street
Riverside, CA 92504

To Consultant

Geo-Logic Associates, Inc.
Attn: Jason Sapp
2777 East Guasti Road, Suite 1
Ontario, CA 91761

5. **Prevailing Wage**. If applicable, Consultant and all subcontractors are required to pay the general prevailing wage rates of per diem wages and overtime and holiday wages determined by the Director of the Department of Industrial Relations under Section 1720 et seq. of the California Labor Code and implemented by Resolution No. 13346 of the City Council of the City of Riverside. The Director's determination is available on-line at www.dir.ca.gov/dlsr/DPreWageDetermination.htm and is referred to and made a part hereof; the wage rates therein ascertained, determined, and specified are referred to and made a part hereof as though fully set forth herein.

6. **Contract Administration**. A designee of the City will be appointed in writing by the City Manager or Department Director to administer this Agreement on behalf of City and shall be referred to herein as Contract Administrator.

7. **Standard of Performance**. While performing the Services, Consultant shall exercise the reasonable professional care and skill customarily exercised by reputable members of Consultant's profession practicing in the Metropolitan Southern California Area, and shall use reasonable diligence and best judgment while exercising its professional skill and expertise.

8. **Personnel**. Consultant shall furnish all personnel necessary to perform the Services and shall be responsible for their performance and compensation. Consultant recognizes that the qualifications and experience of the personnel to be used are vital to professional and timely completion of the Services. The key personnel listed in Exhibit "C" attached hereto and incorporated herein by this reference and assigned to perform portions of the Services shall remain assigned through completion of the Services, unless otherwise mutually agreed by the parties in writing, or caused by hardship or resignation in which case substitutes shall be subject to City approval.

9. **Assignment and Subcontracting**. Neither party shall assign any right, interest, or obligation in or under this Agreement to any other entity without prior written consent of the other party. In any event, no assignment shall be made unless the assignee expressly assumes the obligations of assignor under this Agreement, in a writing satisfactory to the parties. Consultant acknowledges that any assignment may, at the City's sole discretion, require City Manager and/or City Council approval. Consultant shall not subcontract any portion of the work required by this Agreement without prior written approval by the responsible City Contract Administrator. Subcontracts, if any, shall contain a provision making them subject to all provisions stipulated in this Agreement, including without limitation, the insurance obligations set forth in Section 12. The Consultant acknowledges and agrees that the City is an intended beneficiary of any work performed by any subcontractor for purposes of establishing a duty of care between any subcontractor and the City.

10. **Independent Contractor**. In the performance of this Agreement, Consultant, and Consultant's employees, subcontractors and agents, shall act in an independent capacity as independent contractors, and not as officers or employees of the City of Riverside. Consultant acknowledges and agrees that the City has no obligation to pay or withhold state or federal taxes or to provide workers' compensation or unemployment insurance to Consultant, or to Consultant's employees, subcontractors and agents. Consultant, as an independent contractor, shall be responsible for any and all taxes that apply to Consultant as an employer.

11. **Indemnification.**

11.1 **Design Professional Defined**. For purposes of this Agreement, "Design Professional" includes the following:

A. An individual licensed as an architect pursuant to Chapter 3 (commencing with Section 5500) of Division 3 of the Business and Professions Code, and a business entity offering architectural services in accordance with that chapter.

B. An individual licensed as a landscape architect pursuant to Chapter 3.5 (commencing with Section 5615) of Division 3 of the Business and Professions Code, and a business entity offering landscape architectural services in accordance with that chapter.

C. An individual registered as a professional engineer pursuant to Chapter 7 (commencing with Section 6700) of Division 3 of the Business and Professions Code, and a business entity offering professional engineering services in accordance with that chapter.

D. An individual licensed as a professional land surveyor pursuant to Chapter 15 (commencing with Section 8700) of Division 3 of the Business and Professions Code, and a business entity offering professional land surveying services in accordance with that chapter.

11.2 **Defense Obligation For Design Professional Liability**. Consultant agrees, at its cost and expense, to promptly defend the City, and the City's employees, officers, managers, agents and council members (collectively the "Parties to be Defended") from and against any and all claims, allegations, lawsuits, arbitration proceedings, administrative proceedings, regulatory proceedings, or other legal proceedings to the extent the same arise out of, pertain to, or relate to the negligence, recklessness or willful misconduct of Consultant, or anyone employed by or working under the Consultant or for services rendered to the Consultant in the performance of the Agreement, notwithstanding that the City may have benefited from its work or services and whether or not caused in part by the negligence of an Indemnified Party. Consultant agrees to provide this defense immediately upon written notice from the City, and with well qualified, adequately insured and experienced legal counsel acceptable to City. This obligation to defend as set forth herein is binding on the successors, assigns and heirs of Consultant and shall survive the termination of Consultant's Services under this Agreement.

11.3 **Indemnity For Design Professional Liability**. When the law establishes a professional standard of care for Consultant's services, to the fullest extent permitted by law, Consultant shall indemnify, protect and hold harmless the City and the City's employees, officers, managers, agents, and Council Members ("Indemnified Parties") from and against any and all claim for damage, charge, lawsuit, action, judicial, administrative, regulatory or arbitration proceeding, damage, cost, expense (including counsel and expert fees), judgment, civil fines and penalties, liabilities or losses of any kind or nature whatsoever to the extent the same arise out of, pertain to, or

relate to the negligence, recklessness or willful misconduct of Consultant, or anyone employed by or working under the Consultant or for services rendered to the Consultant in the performance of the Agreement, notwithstanding that the City may have benefited from its work or services and whether or not caused in part by the negligence of an Indemnified Party.

11.4 **Defense Obligation For Other Than Design Professional Liability.** Consultant agrees, at its cost and expense, to promptly defend the City, and the City's employees, officers, managers, agents and council members (collectively the "Parties to be Defended") from and against any and all claims, allegations, lawsuits, arbitration proceedings, administrative proceedings, regulatory proceedings, or other legal proceedings which arise out of, or relate to, or are in any way connected with: 1) the Services, work, activities, operations, or duties of the Consultant, or of anyone employed by or working under the Consultant, or 2) any breach of the Agreement by the Consultant. This duty to defend shall apply whether or not such claims, allegations, lawsuits or proceedings have merit or are meritless, or which involve claims or allegations that any or all of the Parties to be Defended were actively, passively, or concurrently negligent, or which otherwise assert that the Parties to be Defended are responsible, in whole or in part, for any loss, damage or injury. Consultant agrees to provide this defense immediately upon written notice from the City, and with well qualified, adequately insured and experienced legal counsel acceptable to City. This obligation to defend as set forth herein is binding on the successors, assigns and heirs of Consultant and shall survive the termination of Consultant's Services under this Agreement.

11.5 **Indemnity For Other Than Design Professional Liability**. Except as to the sole negligence or willful misconduct of the City, Consultant agrees to indemnify, protect and hold harmless the Indemnified Parties from and against any claim for damage, charge, lawsuit, action, judicial, administrative, regulatory or arbitration proceeding, damage, cost, expense (including counsel and expert fees), judgment, civil fine and penalties, liabilities or losses of any kind or nature whatsoever whether actual, threatened or alleged, which arise out of, pertain to, or relate to, or are a consequence of, or are attributable to, or are in any manner connected with the performance of the Services, work, activities, operations or duties of the Consultant, or anyone employed by or working under the Consultant or for services rendered to Consultant in the performance of this Agreement, notwithstanding that the City may have benefited from its work or services. This indemnification provision shall apply to any acts, omissions, negligence, recklessness, or willful misconduct, whether active or passive, on the part of the Consultant or anyone employed or working under the Consultant.

12. **Insurance.**

12.1 **General Provisions**. Prior to the City's execution of this Agreement, Consultant shall provide satisfactory evidence of, and shall thereafter maintain during the term of this Agreement, such insurance policies and coverages in the types, limits, forms and ratings required herein. The rating and required insurance policies and coverages may be modified in writing by the City's Risk Manager or City Attorney, or a designee, unless such modification is prohibited by law.

12.1.1 **Limitations**. These minimum amounts of coverage shall not constitute any limitation or cap on Consultant's indemnification obligations under Section 11 hereof.

12.1.2 **Ratings.** Any insurance policy or coverage provided by Consultant or subcontractors as required by this Agreement shall be deemed inadequate and a material breach of this Agreement, unless such policy or coverage is issued by insurance companies authorized to transact insurance business in the State of California with a policy holder's rating of A or higher and a Financial Class of VII or higher.

12.1.3 **Cancellation.** The policies shall not be canceled unless thirty (30) days prior written notification of intended cancellation has been given to City by certified or registered mail, postage prepaid.

12.1.4 **Adequacy.** The City, its officers, employees and agents make no representation that the types or limits of insurance specified to be carried by Consultant pursuant to this Agreement are adequate to protect Consultant. If Consultant believes that any required insurance coverage is inadequate, Consultant will obtain such additional insurance coverage as Consultant deems adequate, at Consultant's sole expense.

12.2 **Workers' Compensation Insurance.** By executing this Agreement, Consultant certifies that Consultant is aware of and will comply with Section 3700 of the Labor Code of the State of California requiring every employer to be insured against liability for workers' compensation, or to undertake self-insurance before commencing any of the work. Consultant shall carry the insurance or provide for self-insurance required by California law to protect said Consultant from claims under the Workers' Compensation Act. Prior to City's execution of this Agreement, Consultant shall file with City either 1) a certificate of insurance showing that such insurance is in effect, or that Consultant is self-insured for such coverage, or 2) a certified statement that Consultant has no employees, and acknowledging that if Consultant does employ any person, the necessary certificate of insurance will immediately be filed with City. Any certificate filed with City shall provide that City will be given ten (10) days prior written notice before modification or cancellation thereof.

12.3 **Commercial General Liability and Automobile Insurance.** Prior to City's execution of this Agreement, Consultant shall obtain, and shall thereafter maintain during the term of this Agreement, commercial general liability insurance and automobile liability insurance as required to insure Consultant against damages for personal injury, including accidental death, as well as from claims for property damage, which may arise from or which may concern operations by anyone directly or indirectly employed by, connected with, or acting for or on behalf of Consultant. The City, and its officers, employees and agents, shall be named as additional insureds under the Consultant's insurance policies.

12.3.1 Consultant's commercial general liability insurance policy shall cover both bodily injury (including death) and property damage (including, but not limited to, premises operations liability, products-completed operations liability, independent contractor's liability, personal injury liability, and contractual liability) in an amount not less than $1,000,000 per occurrence and a general aggregate limit in the amount of not less than $2,000,000.

12.3.2 Consultant's automobile liability policy shall cover both bodily injury and property damage in an amount not less than $1,000,000 per occurrence and an aggregate limit of

not less than $1,000,000. All of Consultant's automobile and/or commercial general liability insurance policies shall cover all vehicles used in connection with Consultant's performance of this Agreement, which vehicles shall include, but are not limited to, Consultant owned vehicles, Consultant leased vehicles, Consultant's employee vehicles, non-Consultant owned vehicles and hired vehicles.

12.3.3 Prior to City's execution of this Agreement, copies of insurance policies or original certificates along with additional insured endorsements acceptable to the City evidencing the coverage required by this Agreement, for both commercial general and automobile liability insurance, shall be filed with City and shall include the City and its officers, employees and agents, as additional insureds. Said policies shall be in the usual form of commercial general and automobile liability insurance policies, but shall include the following provisions:

> It is agreed that the City of Riverside, and its officers, employees and agents, are added as additional insureds under this policy, solely for work done by and on behalf of the named insured for the City of Riverside.

12.3.4 The insurance policy or policies shall also comply with the following provisions:

a. The policy shall be endorsed to waive any right of subrogation against the City and its sub-consultants, employees, officers and agents for services performed under this Agreement.

b. If the policy is written on a claims made basis, the certificate should so specify and the policy must continue in force for one year after completion of the services. The retroactive date of coverage must also be listed.

c. The policy shall specify that the insurance provided by Consultant will be considered primary and not contributory to any other insurance available to the City and Endorsement No. CG 20010413 shall be provided to the City.

12.4 **Errors and Omissions Insurance.** Prior to City's execution of this Agreement, Consultant shall obtain, and shall thereafter maintain during the term of this Agreement, errors and omissions professional liability insurance in the minimum amount of $1,000,000 to protect the City from claims resulting from the Consultant's activities.

12.5 **Subcontractors' Insurance.** Consultant shall require all of its subcontractors to carry insurance, in an amount sufficient to cover the risk of injury, damage or loss that may be caused by the subcontractors' scope of work and activities provided in furtherance of this Agreement, including, but without limitation, the following coverages: Workers Compensation, Commercial General Liability, Errors and Omissions, and Automobile liability. Upon City's request, Consultant shall provide City with satisfactory evidence that Subcontractors have obtained insurance policies and coverages required by this section.

13. **Business Tax**. Consultant understands that the Services performed under this Agreement constitutes doing business in the City of Riverside, and Consultant agrees that Consultant will register for and pay a business tax pursuant to Chapter 5.04 of the Riverside Municipal Code and keep such tax certificate current during the term of this Agreement.

14. **Time of Essence**. Time is of the essence for each and every provision of this Agreement.

15. **City's Right to Employ Other Consultants**. City reserves the right to employ other Consultants in connection with the Project. If the City is required to employ another consultant to complete Consultant's work, due to the failure of the Consultant to perform, or due to the breach of any of the provisions of this Agreement, the City reserves the right to seek reimbursement from Consultant.

16. **Accounting Records**. Consultant shall maintain complete and accurate records with respect to costs incurred under this Agreement. All such records shall be clearly identifiable. Consultant shall allow a representative of City during normal business hours to examine, audit, and make transcripts or copies of such records and any other documents created pursuant to this Agreement. Consultant shall allow inspection of all work, data, documents, proceedings, and activities related to the Agreement for a period of three (3) years from the date of final payment under this Agreement.

17. **Confidentiality**. All ideas, memoranda, specifications, plans, procedures, drawings, descriptions, computer program data, input record data, written information, and other materials either created by or provided to Consultant in connection with the performance of this Agreement shall be held confidential by Consultant, except as otherwise directed by City's Contract Administrator. Nothing furnished to Consultant which is otherwise known to the Consultant or is generally known, or has become known, to the related industry shall be deemed confidential. Consultant shall not use City's name or insignia, photographs of the Project, or any publicity pertaining to the Services or the Project in any magazine, trade paper, newspaper, television or radio production, website, or other similar medium without the prior written consent of the City.

18. **Ownership of Documents**. All reports, maps, drawings and other contract deliverables prepared under this Agreement by Consultant shall be and remain the property of City. Consultant shall not release to others information furnished by City without prior express written approval of City.

19. **Copyrights.** Consultant agrees that any work prepared for City which is eligible for copyright protection in the United States or elsewhere shall be a work made for hire. If any such work is deemed for any reason not to be a work made for hire, Consultant assigns all right, title and interest in the copyright in such work, and all extensions and renewals thereof, to City, and agrees to provide all assistance reasonably requested by City in the establishment, preservation and enforcement of its copyright in such work, such assistance to be provided at City's expense but without any additional compensation to Consultant. Consultant agrees to waive all moral rights relating to the work developed or produced, including without limitation any and all rights of

identification of authorship and any and all rights of approval, restriction or limitation on use or subsequent modifications.

20. **Conflict of Interest**. Consultant, for itself and on behalf of the individuals listed in Exhibit "C", represents and warrants that by the execution of this Agreement, they have no interest, present or contemplated, in the Project affected by the above-described Services. Consultant further warrants that neither Consultant, nor the individuals listed in Exhibit "C" have any real property, business interests or income interests that will be affected by this project or, alternatively, that Consultant will file with the City an affidavit disclosing any such interest.

21. **Solicitation**. Consultant warrants that Consultant has not employed or retained any person or agency to solicit or secure this Agreement, nor has it entered into any agreement or understanding for a commission, percentage, brokerage, or contingent fee to be paid to secure this Agreement. For breach of this warranty, City shall have the right to terminate this Agreement without liability and pay Consultant only for the value of work Consultant has actually performed, or, in its sole discretion, to deduct from the Agreement price or otherwise recover from Consultant the full amount of such commission, percentage, brokerage or commission fee. The remedies specified in this section shall be in addition to and not in lieu of those remedies otherwise specified in this Agreement.

22. **General Compliance With Laws**. Consultant shall keep fully informed of federal, state and local laws and ordinances and regulations which in any manner affect those employed by Consultant, or in any way affect the performance of services by Consultant pursuant to this Agreement. Consultant shall at all times observe and comply with all such laws, ordinances and regulations, and shall be solely responsible for any failure to comply with all applicable laws, ordinances and regulations. Consultant represents and warrants that Consultant has obtained all necessary licenses to perform the Scope of Services and that such licenses are in good standing. Consultant further represents and warrants that the services provided herein shall conform to all ordinances, policies and practices of the City of Riverside.

23. **Waiver**. No action or failure to act by the City shall constitute a waiver of any right or duty afforded City under this Agreement, nor shall any such action or failure to act constitute approval of or acquiescence in any breach thereunder, except as may be specifically, provided in this Agreement or as may be otherwise agreed in writing.

24. **Amendments**. This Agreement may be modified or amended only by a written agreement and/or change order executed by the Consultant and City.

25. **Termination**. City, by notifying Consultant in writing, shall have the right to terminate any or all of Consultant's services and work covered by this Agreement at any time. In the event of such termination, Consultant may submit Consultant's final written statement of the amount of Consultant's services as of the date of such termination based upon the ratio that the work completed bears to the total work required to make the report complete, subject to the City's rights under Sections 15 and 26 hereof. In ascertaining the work actually rendered through the termination date, City shall consider completed work, work in progress and complete and incomplete reports and other documents only after delivered to City.

25.1 Other than as stated below, City shall give Consultant thirty (30) days' prior written notice prior to termination.

25.2 City may terminate this Agreement upon fifteen (15) days' written notice to Consultant, in the event:

25.2.1 Consultant substantially fails to perform or materially breaches the Agreement; or

25.2.2 City decides to abandon or postpone the Project.

26. **Offsets**. Consultant acknowledges and agrees that with respect to any business tax or penalties thereon, utility charges, invoiced fee or other debt which Consultant owes or may owe to the City, City reserves the right to withhold and offset said amounts from payments or refunds or reimbursements owed by City to Consultant. Notice of such withholding and offset, shall promptly be given to Consultant by City in writing. In the event of a dispute as to the amount owed or whether such amount is owed to the City, City will hold such disputed amount until either the appropriate appeal process has been completed or until the dispute has been resolved.

27. **Successors and Assigns**. This Agreement shall be binding upon City and its successors and assigns, and upon Consultant and its permitted successors and assigns, and shall not be assigned by Consultant, either in whole or in part, except as otherwise provided in paragraph 9 of this Agreement.

28. **Venue.** Any action at law or in equity brought by either of the parties hereto for the purpose of enforcing a right or rights provided for by this Agreement shall be tried in a court of competent jurisdiction in the County of Riverside, State of California, and the parties hereby waive all provisions of law providing for a change of venue in such proceedings to any other county. In the event either party hereto shall bring suit to enforce any term of this Agreement or to recover any damages for and on account of the breach of any term or condition of this Agreement, it is mutually agreed that each party will bear their own attorney's fees and costs.

29. **Nondiscrimination**. During Consultant's performance of this Agreement, Consultant shall not discriminate on the grounds of race, religious creed, color, national origin, ancestry, age, physical disability, mental disability, medical condition, including the medical condition of Acquired Immune Deficiency Syndrome (AIDS) or any condition related thereto, marital status, sex, genetic information, gender, gender identity, gender expression, or sexual orientation, in the selection and retention of employees and subcontractors and the procurement of materials and equipment, except as provided in Section 12940 of the California Government Code. Further, Consultant agrees to conform to the requirements of the Americans with Disabilities Act in the performance of this Agreement.

30. **Severability**. Each provision, term, condition, covenant and/or restriction, in whole and in part, of this Agreement shall be considered severable. In the event any provision, term, condition, covenant and/or restriction, in whole and/or in part, of this Agreement is declared invalid, unconstitutional, or void for any reason, such provision or part thereof shall be severed from this

Agreement and shall not affect any other provision, term, condition, covenant and/or restriction of this Agreement, and the remainder of the Agreement shall continue in full force and effect.

31. **Authority**. The individuals executing this Agreement and the instruments referenced herein on behalf of Consultant each represent and warrant that they have the legal power, right and actual authority to bind Consultant to the terms and conditions hereof and thereof.

32. **Entire Agreement**. This Agreement constitutes the final, complete, and exclusive statement of the terms of the agreement between the parties pertaining to the subject matter of this Agreement, and supersedes all prior and contemporaneous understandings or agreements of the parties. Neither party has been induced to enter into this Agreement by and neither party is relying on, any representation or warranty outside those expressly set forth in this Agreement.

33. **Interpretation**. City and Consultant acknowledge and agree that this Agreement is the product of mutual arms-length negotiations and accordingly, the rule of construction, which provides that the ambiguities in a document shall be construed against the drafter of that document, shall have no application to the interpretation and enforcement of this Agreement.

33.1 Titles and captions are for convenience of reference only and do not define, describe or limit the scope or the intent of the Agreement or any of its terms. Reference to section numbers, are to sections in the Agreement unless expressly stated otherwise.

33.2 This Agreement shall be governed by and construed in accordance with the laws of the State of California in effect at the time of the execution of this Agreement.

33.3 In the event of a conflict between the body of this Agreement and Exhibit "A" - Scope of Services hereto, the terms contained in Exhibit "A" shall be controlling.

34. **Exhibits**. The following exhibits attached hereto are incorporated herein to this Agreement by this reference:

Exhibit "A" - Scope of Services
Exhibit "B" - Compensation
Exhibit "C" - Key Personnel

IN WITNESS WHEREOF, City and Consultant have caused this Agreement to be duly executed the day and year first above written.

CITY OF RIVERSIDE, a California charter city and municipal corporation a California corporation

By: _____
City Manager

Attest: _____
City Clerk

Certified as to Availability of Funds:

By: _____
Finance Director

Approved as to Form:

By: _____
Assistant City Attorney

GEO-LOGIC ASSOCIATES, INC., a California corporation

By: _____

Gary L. Lass
[Printed Name]

Chief Executive Officer, Chairman of the Board
[Title]

By: _____

John M. Hower
[Printed Name]

Secretary
[Title]

EXHIBIT "A"

SCOPE OF SERVICES

6. Scope of Services

Proposers must have the capability of providing the full range of services outlined in the following Scope of Services and shall describe their capacity to provide the following services:

A. Groundwater, Surface Water, and October Leachate Sampling

Sample collection, handling, and storage shall be performed in accordance with the most recent version of the Standards USEPA Methods (USEPA Publication "SW-846"). Consultant shall provide all bottles, vials, containers, etc. necessary for sample collection and analysis. Sample containers shall be properly labeled including but not limited to, a unique well or surface sampling point identification, collection time and date, initials of the person collecting the samples, and analyses required for each sample.

Monitoring parameters and frequency for the required water quality, surface water, and landfill gas condensate monitoring are found in Monitoring and Reporting Program 98-99-06 and the Monitoring and Reporting Program 98-99-06 Modification Approval letter from July 2009.

B. Laboratory Analyses

The Consultant will ensure that the samples are analyzed within the EPA-prescribed holding times and are completed in accordance with the most recent version of the Standards USEPA Methods. If the Consultant wishes to contract a laboratory to do the analyses, the Consultant shall ensure the laboratory is accredited by ELAP or NELAP.

The Consultant will review reports from the laboratory to ensure that all required analyses have been performed, and to compare the results with historical data to pre-screen for anomalous or

suspect results. Data anomalies will be identified and resolved with field and laboratory personnel and shared with City staff.

C. Data Analysis and Reporting

The Consultant will prepare semi-annual and annual water quality monitoring reports addressing all requirements in the M&RP. The report will contain the following sections:

- Executive Summary
- List of Acronyms and Abbreviations
- List of Definitions
  - Introduction
  - Sampling and Analysis Plan
  - Laboratory Analysis and QA/QC Results
  - Data Analysis
    - Statistical Methods
    - ARARs (Applicable or Relevant and Appropriate Requirements)
  - Water Quality Monitoring Results
    - Water and Surface Water Monitoring Activities
    - Groundwater Potentiometric Surface Elevations
      - Groundwater Elevation Data (for the quarter covered)
      - Groundwater Elevation Data (for the other quarter covered)
  - Monitoring Analytical Results
    - Groundwater
      - New Historical Intrawell Maximum Concentrations
      - Statistical Analysis of Water Quality Data
      - Comparisons with ARARs
      - Concentration Limit Comparison (if applicable)
    - Surface Water
      - New Historical Intrawell Maximum Concentrations
      - Comparisons with ARARs
      - Concentration Limit Comparison (if applicable)
    - Annual Summary (if applicable)
      - Groundwater Data Trends
      - Surface Water Data Trends
    - Conclusions and Recommendations
  - Correction Action Program Comparisons (if applicable)
  - Closure
  - References
- Tables
- Figures
- Appendices
  - Field Sample Collection Log
  - Chain of Custody Records and Certificates of Analysis
  - Facility Standard and Observation Monitoring

The Consultant will report chemistry data analysis in a tabular form; comparing them to historical data. Laboratory reports and field notes will be compiled into appendices. If new releases of volatile compounds or any pollutants are identified, the Consultant will notify the City immediately via email and/or telephone call and advise the City on verification procedures and regulatory notifications. Consultant will provide support to retest as needed and counsel on regulatory negotiations.

The Consultant will prepare semi-annual and annual water quality monitoring reports in time to meet the regulatory deadlines. The City expects to, and the consultant shall allocate sufficient time for, review and comment of draft reports. The consultant will be expected to review City comments, facilitate and support discussion and resolution of any comments and issues raised, and revise reports accordingly.

For the semi-annual reports, drafts will be submitted to the City for review by the 15th of the month of submittal (April and October). The annual summary reports (monitoring period April 1 of previous year to March 31), both in hard copy and electronic version, will be submitted to the RWQCB on or before the submittal due date of April 30 as outlined in Table A of the M&RP. All reports must bear the signature, stamp, and contact information of the preparer or their project manager.

D. Regulatory Liaison Support

The Consultant will provide the City with regulatory liaison support should the RWQCB, or any other agency having jurisdiction over the landfill, have any questions regarding reports, groundwater chemistry data, or conclusions derived from the data.

E. Non-Routine Well and Pump Maintenance

Historically, one or two dedicated sampling pumps become inoperable in a given year. The Consultant will be required to repair or replace up to two pumps during the term of the Agreement at their cost. The cost of replacing two pumps shall be included in the proposal price. The Consultants' proposals should also include labor rates and material mark-ups for additional pump repair should it be necessary to continue compliance. **Consultant understands and acknowledges that pump repair and replacement is a "public work" for purposes of the California Labor and therefore requires the payment at prevailing wage.**

F. Other Non-routine Work

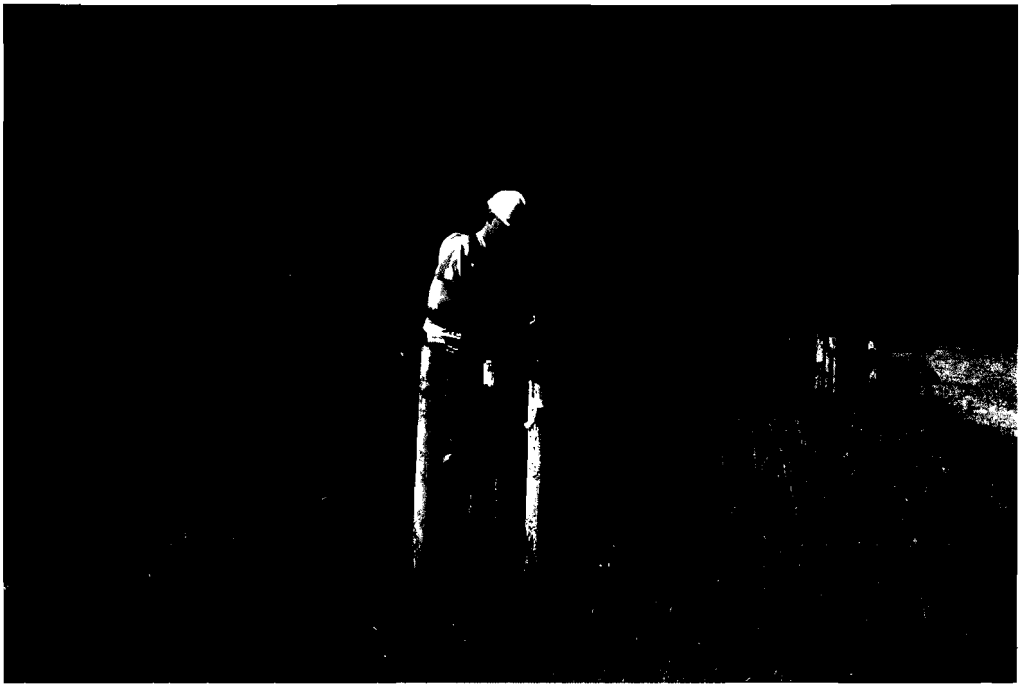
The Proposer shall include a salary schedule to be used for any other non-routine work requested and authorized by the City and on an as needed basis. The salary schedule shall clearly identify the title and hourly rate for any personnel which may be utilized. Proposals should not include an estimated cost for the "other non-routine work" component described here in Section F.

PROPOSAL FOR SERVICES
IN RESPONSE TO RFP NO. 1695

WATER QUALITY MONITORING AND REPORTING SERVICES FOR THE INACTIVE TEQUESQUITE LANDFILL

CITY OF RIVERSIDE, CALIFORNIA

APRIL 26, 2017



PREPARED FOR:

City of Riverside
Department of Public Works
3900 Main Street
Riverside, California 92522

PREPARED BY:

Geo-Logic Associates, Inc.
2777 East Guasti Road, Suite 1
Ontario, California 91761

Geo-Logic ASSOCIATES

Geo-Logic
ASSOCIATES

Part A

Cover Letter

Geo-Logic
ASSOCIATES

April 26, 2017

City of Riverside
Regional Water Quality Control Plant
5950 Acorn Street
Riverside, CA 92504

Attention: Robert Eland

RE: Submittal for RFP 1695 Water Quality Monitoring and Reporting Services for the Inactive Tequesquite Landfill, Riverside, California

Geo-Logic Associates (GLA) is pleased to present this Proposal to the City of Riverside to provide groundwater monitoring and reporting services for the inactive Tequesquite Landfill. GLA has read and understands all elements of the City's Request For Proposal (RFP) 1695 and our project team is prepared to perform the tasks and services as outlined in the document. GLA has been the City's groundwater consultant since 1997, having conducted routine monitoring and reporting program activities specifically for the Tequesquite Landfill since 2006. GLA is prepared to continue our relationship with the City per the terms and conditions of RFP 1695.

GLA understands that the City wishes to retain the services of a qualified environmental consulting firm to provide quarterly water quality monitoring and semi-annual reporting services for the TL. Our proposal identifies all necessary and required routine groundwater, surface water, and landfill gas condensate sampling activities, laboratory analyses, and report preparation tasks for this project. All field, laboratory, and reporting services will be conducted in accordance with Title 27 of the California Code of Regulations, and Monitoring and Reporting Program (MRP) 98-99-06 which was issued specifically for the TL by the Regional Water Quality Control Board – Santa Ana Region.

In addition to the routine monitoring and reporting services that GLA has been providing the City of Riverside, since 1997 our involvement at the Tequesquite Landfill includes:

- Providing earthworks construction quality assurance monitoring and testing during closure construction of the landfill;
- Gaining regulatory approval of landfill closure;
- Performing statistical analysis of historical landfill groundwater chemistry data;
- Conducting an Evaluation Monitoring Program (EMP) in 2007 that demonstrated VOC concentrations were significantly higher in samples from upgradient wells and are a significant source of groundwater impacts near and downgradient of the landfill.
- Gaining regulatory agreement with the EMP conclusion; and

- Successfully negotiating with the Santa Ana RWQCB in 2009 to reduce the City's monitoring and reporting burden. The City now samples nearly 50% fewer monitoring wells and is required to submit monitoring reports semi-annually rather than quarterly.

GLA was established in 1991 to serve the needs of the waste management community. For 23 years GLA has participated in the design and development of landfill groundwater monitoring systems, evaluated the nature and extent of landfill-related releases to groundwater, prepared Engineering Feasibility Studies to compare and contrast the benefits and effectiveness of groundwater remedial technologies, and has designed, constructed, and monitored a wide variety of corrective action systems. Through this experience, GLA has worked with members of all of California's Regional Water Quality Control Boards (RWQCBs), and we currently work with staff at the Santa Ana RWQCB who oversee the TL groundwater monitoring program.

In submitting this Proposal to the Department, I certify that all statements contained herein are true and correct. I understand that this Proposal constitutes a warranty, and if statements herein are found to be false, the City of Riverside will be entitled to pursue remedies as allowed by law, which shall include the right, at the option of the City, to declare any contract made as a result to be void.

GLA appreciates the opportunity to submit this Proposal. Should you have any questions regarding this submittal on our qualifications, please do not hesitate to call me or Mr. Jason Sapp at your convenience.

Geo-Logic Associates, Inc.

Gary L. Lass, PG, CEG, CHG
Chief Executive Officer

Geo-Logic
ASSOCIATES

Parts B through E

Company Information

Qualifications and Experience

Personnel

Cost of Services

Geo-Logic
ASSOCIATES

Part B – Company Information

Geo-Logic Associates (GLA) is a privately held multi-disciplinary consulting firm established in 1991. GLA has grown to employ over 250 highly qualified and experienced professionals located in 26 US offices and an office in Lima, Peru. Principal areas of expertise include civil and geotechnical engineering; geologic and hydrogeologic services; environmental compliance; facility planning and permitting; specialized water resources engineering; construction quality assurance; and geotechnical laboratory services.

GLA has provided a variety of engineering and environmental consulting services to the City of Riverside at the Tequesquite Landfill (TL) since 1993. This work has included:

- Design- and CQA services for closure.
- Routine groundwater monitoring, statistical analysis and reporting;
- Developing and implementing an Evaluation Monitoring Program (EMP) at the site.

Since 1992, GLA has been providing groundwater monitoring and reporting as well as groundwater remediation services for public and private entities at more than 100 California industrial sites regulated by all nine California Regional Water Quality Control Boards (RWQCBs) and/or the California Department of Toxic Substances Control (DTSC) and has earned a reputation for technical excellence with both our clients and the regulatory community. Figure 1 on the following page includes a map of these sites.

GLA succeeded in negotiating significant reductions in the TL routine monitoring program that saved the City substantial costs during the post-closure maintenance period; and preparing the site closure certification document that was accepted by the regulatory agencies. As a result of this experience, staff are very familiar with TL groundwater and surface water monitoring points, the City staff, and perhaps most importantly, with the staff at the Santa Ana Regional Water Quality Control Board who oversee the site's groundwater monitoring and reporting program. The proposed project team, including Jason Sapp, PG, CHG, is the same team that has partnered with the City for their groundwater monitoring and reporting.

Addresses for the two offices from which this contract will be serviced are provided below:

Main (San Bernardino County) Office	**San Bernardino Office**
2777 East Guasti Road	1831 Commercenter East
Ontario, California 91761	San Bernardino, California 92408
Phone: 909-626-2282	Phone: 909-383-8728
Fax: 909-626-1233	Fax: 909-383-8732

The project will continue to be managed utilizing staff from our Ontario office. These staff members will analyze data and prepare reports. Field services, including environmental

sampling, pump maintenance, replacement, and installation, will be provided by our environmental technicians based in our San Bernardino office.

The City's RFP lists several prerequisites that consultants are required to meet:

- ✓ GLA has 26 years of experience, and has completed hundreds of projects of a similar size/scope and dollar value under our current name and business filing. Of note, **GLA is currently providing groundwater monitoring and reporting at 85 sites in California alone.**
- ✓ Since GLA is the incumbent on this project with the same proposed project team, GLA has a thorough understanding of the requirements of this project. In fact, GLA has been involved in the site's groundwater monitoring program for 20 years.
- ✓ GLA's proposed (and current) project manager is Jason Sapp, PG, CHG.
- ✓ GLA is registered on the City's Electronic Bidders List.

We believe GLA has several key benefits to the City and are listed below.

Knowledge of the site. GLA currently provides groundwater monitoring and reporting services to the City for the TL. There is no learning curve – we can "hit the ground running."

Continuity of Staff: GLA will utilize the same staff that have been providing field sampling, data evaluation, and reporting services for this site for the last eight years. This continuity of staff ensures that the City will not pay for training of new staff to become familiar with the site monitoring and reporting program.

Responsiveness: GLA will staff this project with professionals from our Ontario and San Bernardino offices, both of which are within a few minutes of the TL and City offices, allowing rapid response for routine and non-routine services.

Familiarity with RWQCB Staff: GLA performs groundwater monitoring and reporting services at more than 20 landfills and industrial sites under jurisdiction of the Santa Ana Regional Water Quality Control Board. As a result, GLA personnel are very familiar with RWQCB staff and their specific requirements, not only for the TL, but also for other sites within their Region. As a result, GLA can use our regional experience to keep the City apprised of upcoming changes in regional regulations and use precedents established at other Santa Ana Region landfills to help the City achieve further reductions in routine monitoring requirements. The following is a list of landfills and other facilities within the Santa Ana Region for which GLA provides similar groundwater monitoring and reporting services:

Client	Landfill Site/Facility	
San Bernardino County Solid Waste Management Division 222 W. Hospitality Lane, 2nd Floor San Bernardino, CA 92415 David Doublet 909.386.8775	Cajon Disposal Site Colton Sanitary Landfill Cooley Ranch Disposal Site Crestmore Disposal Site Devore Sanitary Landfill	Mid-Valley Sanitary Landfill Milliken Sanitary Landfill Plunge Creek Disposal Site San Timoteo Sanitary Landfill Yucaipa Disposal Site
City of Redlands 35 Cajon Street Redlands, CA 92373 Mr. Chris Boatman 909.798.7655 Mr. Timothy Sullivan 909.798.7655	California Street Landfill	
CEMEX Construction Materials 3990 East Concours St., Suite 200 Ontario, CA 91764 Christine Jones 909.974.5400	Lytle Creek Quarry	
San Bernardino County Solid Waste Management Division 222 W. Hospitality Lane, 2nd Floor San Bernardino, CA 92415 David Doublet 909.386.8775	Rialto-Colton Basin Perchlorate Investigation	
Department of Toxic Substances Control 8800 Cal Center Drive Sacramento, CA 95826 William Rowe 916.255.6555	Stringfellow Hazardous Waste Site	

Company Resources: Because groundwater monitoring and reporting services for landfills and other facilities constitutes a large portion of GLA's business, the firm maintains impressive personnel and equipment resources to provide these services to our clients. GLA's staff includes ten (10) State of California Certified Hydrogeologists and all of our staff have received in-field environmental sampling training. Our senior field technicians have more than 10 years of direct experience in groundwater sampling at landfill sites. In addition, GLA maintains the following software and equipment to support our groundwater monitoring and reporting programs.

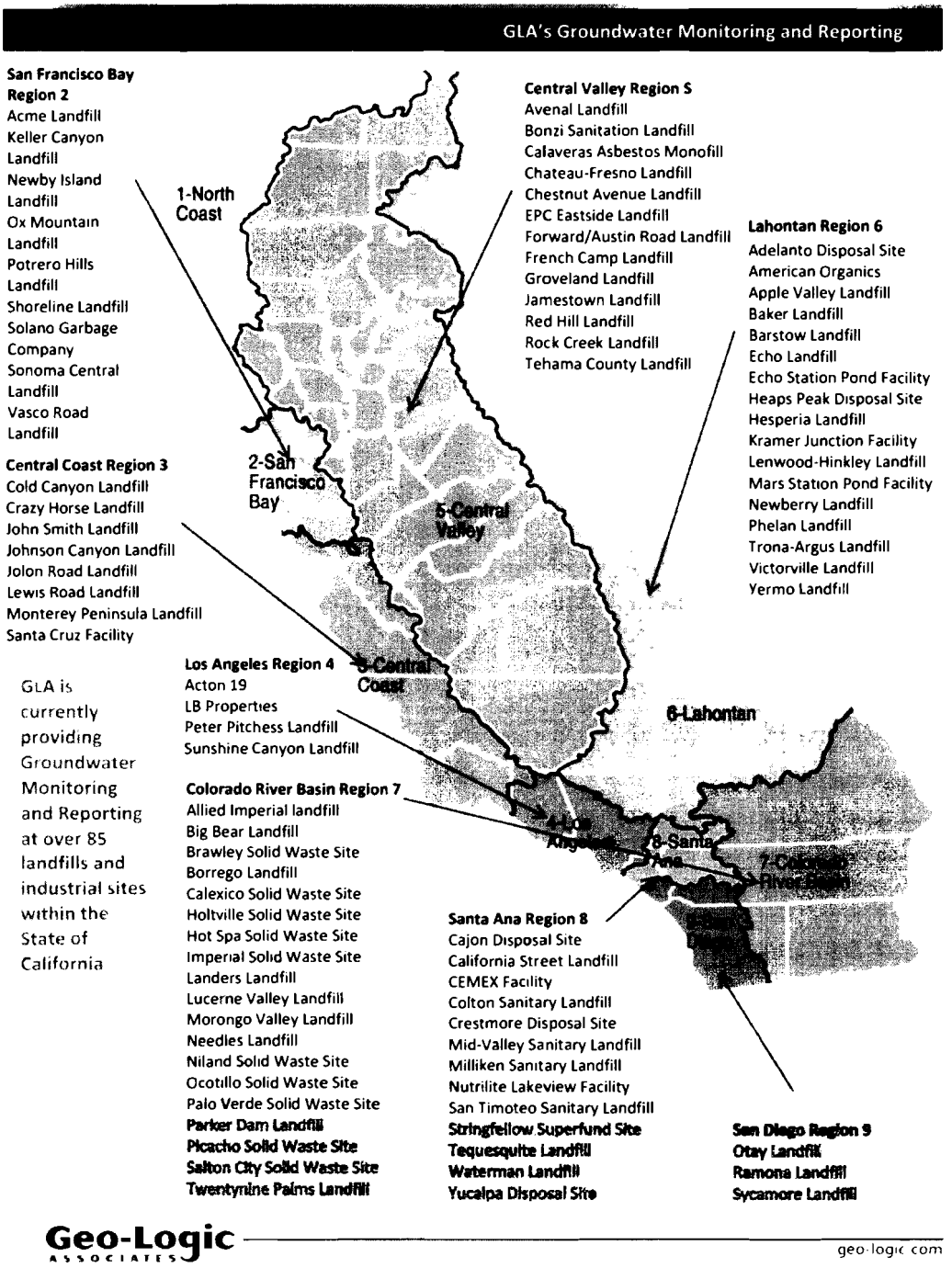
Groundwater Modeling/Statistical Software	
• Rockware Chempoint	• Aquifer Test
• ChemStat	• Flowpath
• Sanitas	• Visual Modflow
• SAC_APP	• Visual GW
• Aquachem	• Seep/W

Groundwater Sampling Equipment	
• 7 Water Level Meters	• Geotech Bladder Pump Controller
• 9 Water Level Loggers	• Grundfos RediFlow2 Controller
• 4 Multi-parameter Horiba Meters	• QED Well Wizard Controller
• Turbidity Meter	• EZ Reel Bailer Winch
• 2 Flow meters	• Non-dedicated Bladder Pump
• Generators	• Non-dedicated RediFlow2 Pump

Part C – Qualifications and Experience

Over the last two decades, GLA has provided groundwater monitoring and reporting at more than 100 California landfills and industrial sites, and we currently provide these services at 85 sites (Figure 1).

Figure 1. GLA's Groundwater Monitoring and Reporting



The City's RFP requests that we provide at least three references of projects that have been completed within the past five years (or are ongoing). The City also requests that all proposals shall include a completed Consultant's Qualifications Statement form (Exhibit 3), which is provided in Appendix A – Forms. In accordance with Section 3.1 of Exhibit 3, the following table summarizes groundwater monitoring and reporting projects that GLA has completed during the last five years.

Project	Client	Contract Amount/ Percent Completed by GLA Staff	Completion Date
Groundwater Monitoring and Reporting Services for 6 City of San Diego Landfills GLA Project Manager: Sarah Battelle, PG, CHG	City of San Diego, Environmental Services Department 9601 Ridgehaven Court, Suite 310 San Diego, CA 92123 Contact: Mr. Mark zu Hone (858) 492-5032	$850,000/80%	December 31, 2016
Groundwater Monitoring and Reporting Services for the Lakeview Facility	Access Business Group, LLC 5600 Beach Boulevard Buena Park, CA 90622 Contact: Ms. Kathryn Hubbard (714) 562-1829	$102,612	December 31, 2014

As required on Item 3.2 of Exhibit 3, the following table summarizes GLA's current, ongoing groundwater monitoring and reporting contracts.

Project	Client	Current Contract Amount	Current Contract (Past Contracts)
Groundwater Monitoring and Reporting Services for 26 Landfills	County of San Bernardino Solid Waste Management Division 222 W. Hospitality Lane, 2nd Floor San Bernardino, CA 92415 Contact: Mr. David Doublet (909) 386-8775	$16,234,936	July 1, 2013 to June 30, 2018 (continuous since 1995)
Groundwater Monitoring and Reporting Services for 23 Landfill Sites	Republic Services, Inc. Various Locations Contacts: Mr. Jesus Torres (623) 340-2520 Mr. Don Litchfield (209) 982-5845, Mr. Lochlin Caffey (925) 458-9800	$1,965,000	January 1, 2013 to December 31, 2018
Groundwater Monitoring and Reporting Services for Nine Solid Waste Sites	Imperial County Public Works Department 155 South 11th Street El Centro, CA 92243 Contact: Mr. William Brunet (760) 482-4462	$49,000	January to December 2017 (Continuous service since 2003)
Groundwater Monitoring and Reporting Services for the California Street Landfill	City of Redlands 35 Cajon Street Redlands, CA 92373 Contact: Mr. Chris Boatman (909) 798-7655 Mr. Timothy Sullivan (909) 798-7655	$38,100	January to December 2017 (Continuous service since 2009)
Groundwater Monitoring and Reporting Services for the Stringfellow Hazardous Waste Site	State of California Department of Toxic Substances Control 8800 Cal Center Drive Sacramento, CA 95826 Contact: Mr. William Lowe (916) 255-6552	$18,600,000	January 1, 2001 to December 31, 2017
Groundwater Monitoring and Reporting Services for the Tequesquite Landfill	City of Riverside 3900 Main Street Riverside, CA 92522 Contact: Mr. Kevin Street (951) 351-6007	$38,770	July 1, 2016 to June 30, 2017 (continuous service since 1993)

Groundwater Monitoring and Reporting Services for the Echo Landfill and Mars Ponds	ITT Corporation 1400 South Shamrock Avenue Monrovia, CA 91016 Contact: Mr. Mark Solheid (760) 255-8225	$22,600	January to December 2014 (Continuous service since 1998)
Groundwater Monitoring and Reporting Services for the Crazy Horse, Jolon Road, Johnson Canyon, and Lewis Road Sanitary Landfills	Salinas Valley Solid Waste Authority 128 Sun Street Salinas, CA Contact: Mr. Brian Kennedy (831) 775-3013	$510,000	July 2011 to July 2017 (Continuous service since 2005)
Groundwater Monitoring and Reporting Services for the South Hilo Sanitary Landfill	County of Hawaii, Dept. of Environmental Management 345 Kekuanao'a Street, Suite 41 Hilo, HI 96720 Contact: Greg Goodale (808) 961-8515	$45,000	January to December 2016 (Continuous service since 2006)
Groundwater Monitoring and Reporting Services for the Santa Cruz Resource Recovery Facility	City of Santa Cruz, Department of Public Works 809 Center Street, Room 201 Santa Cruz, CA 95060 Contact: Ms. Chris Chang (831) 420-5427	$45,000	July 1, 2016 through June 30, 2017 (Continuous service since 1994)
Groundwater Monitoring and Reporting Services for the Salton City Solid Waste Site	Burrtec Waste Industries 9890 Cherry Avenue Fontana, CA 92335 Contact: Ms. Debbie Hansen (909) 386-8782	$14,549	January through December 2017
Groundwater Monitoring and Reporting Services for the Shoreline Landfill	City of Mountain View 231 North Whisman Road Mountain View, CA 94043 Contact: Ms. Kathi Sturla (650) 903-6078	$42,188	July 2016 to June 2017 (Continuous service since 1994)
Groundwater Monitoring and Reporting Services for the Peter Pitchess Detention Center Landfill	Los Angeles County Sheriff's Department 1000 South Fremont Avenue, Building A-9 East 5th Floor, Unit 47 Alhambra, CA 91030 Contact: Mr. Tom Bellizia (626) 300-3006	$16,000	January to December 2017 (Continuous service since 2002)

Provided below are several reference projects that were managed or had significant participation by member of our proposed project team.

Groundwater Monitoring and Reporting for 26 Landfills | 1993 - present

Client County of San Bernardino Public Works
Solid Waste Management Division
222 West Hospitality Lane #2
San Bernardino, California 92415

Contact David Doublet - 909.386.8775

Team Gary Lass-PIC, Jason Sapp (PM on several projects), John Hower, Kyle Welchans, Terri Satterfield, Bert Salinas, Michael Campbell, Adam Shaw, BC Laboratories

This project currently includes quarterly, semi-annual, and annual monitoring for approximately 400 monitoring stations located at 26 of the SWMD's 39 Class III landfills. Work includes groundwater, surface water, soil-pore gas, lysimeter, landfill gas condensate, leachate, and septic pond sampling; laboratory analyses; data validation; QA/QC review of field and laboratory data; statistical and non-statistical analysis of laboratory data; data review to detect initial indications of waste release;

preparation of quarterly, semi-annual, and annual summary reports; maintenance of the groundwater monitoring systems; liquids management at the Heaps Peak Disposal Site; a wide variety of non-routine services; and regulatory liaison in support of SWMD's overall water quality monitoring programs. GLA has also provided professional support to SWMD at several of its smaller disposal sites, where water quality monitoring is not required but regulatory agency or County coordination is necessary.

In addition to sampling, the team's Field Services group has been responsible for periodic pump repairs and new pump installations, wellhead repairs, and well development and repairs to maintain the existing monitoring points and often avoid the expense of pump or well replacement.

As part of this contract, it has been GLA's practice to routinely re-evaluate the groundwater monitoring program at each site to reduce redundancies, and provide a more cost-effective and technically superior monitoring program. Through this effort, the GLA Team in partnership with SWMD has been effective at eliminating groundwater monitoring at the Cooley Ranch, Devore, and Plunge Creek sites, and most recently at the Cajon Disposal Site.

At nearly all other landfills in the program, GLA and the County have effectively reduced the number of sampling points and analytes monitored, as well as the frequency of monitoring. These efforts have led to a substantial reduction in total monitoring costs over the years, and SWMD's annual cost per monitoring point is also significantly lower. **System improvements have resulted in SWMD cost savings estimated to be more than $13 million dollars over the last 15 years.**

Groundwater Monitoring and Reporting for the Stringfellow Superfund Site | 2001 - present

Client	California Department of Toxic Substances Control 8800 Cal Center Drive Sacramento, California 95826 Site location: Riverside County, California
Contact	William Lowe – 916.255.6555
Team	Gary Lass – PIC; Jason Sapp (PM for Hydrogeologic Evaluation), John Hower, Terri Satterfield, Bert Salinas, Michael Campbell, Adam Shaw

The Stringfellow Superfund Site is a former Class I industrial waste disposal facility located in the headwaters for Pyrite Creek that included as many as 20 surface impoundments to contain and evaporate liquid chemical wastes. During its operating life from 1956 to 1972, about 36 million gallons of liquid industrial process wastes containing spent acids and caustics, solvents, pesticide by-products, metals, and other inorganic and organic constituents were discharged to the ponds. The groundwater monitoring network at this site

includes more than 500 on-site and off-site monitoring and extraction wells. At the present time, an active groundwater pump-and-treat system is in place to collect impacted groundwater.

Working on behalf of DTSC, GLA has provided groundwater monitoring and reporting, drilling, well installation, and aquifer testing services at the site since 2001. During each annual groundwater monitoring period, as many as 450 wells are monitored and tested for a variety of constituents. Following receipt of analytical results, GLA prepares monitoring reports that include statistical analyses, trend analyses, and maps showing contaminant concentrations. The groundwater monitoring program also includes non-routine sampling and analyses of DTSC-owned and privately owned wells in the communities downgradient of the site.

The non-routine work for this project includes monitoring well and piezometer installation both on-site and within the approximate five-mile-long plume, decommissioning of select wells, and down-hole video surveys. The drilling portion of the project performed by GLA included continuous coring in alluvial sediments, and oriented coring in bedrock. Following well installation, aquifer pumping tests were performed to better characterize aquifer characteristics downgradient of the contaminant source areas. Non-routine work also included:

- Unexploded ordnance (UXO) surveys to clear properties located adjacent to the Stringfellow site that were historically used for explosives manufacturing and/or testing.
- Soil testing and analyses to better characterize geologic and environmental conditions at properties located adjacent to the Stringfellow site, and in the Pyrite Creek stream channel downgradient of the site.
- Reaming and reconstruction of eight small-diameter extraction wells, including two wells that were installed at angles of 30° and 45° from vertical.
- Surface water run-off monitoring at locations along Pyrite Creek and its tributaries to document water-quality conditions during and shortly after significant rainfall events.
- Determination of potential regional sources of perchlorate impacts.

After identifying perchlorate in community monitoring wells, DTSC expanded GLA's work to include:

- Completion of a Phase I investigation to identify potential sources of perchlorate contamination within the communities downgradient of the site.
- Cone penetrometer testing and in situ groundwater sampling at 46 community locations to better characterize the extent of groundwater impacts.
- Drilling of 33 exploratory borings in alluvial materials and installation of 75 monitoring wells on-site and within the communities downgradient of the site.

The project was also amended to include development of a 3-dimensional, numerical groundwater flow and contaminant transport models of the area downgradient of the site. Groundwater flow modeling was conducted using Groundwater Vista, and the contaminant transport model was constructed using MT3D. These models incorporate over 100 wells from

the site and downgradient areas. DTSC has subsequently used the groundwater flow model to evaluate perchlorate impacts originating at the site and to identify risks to municipal production and private residential wells in the area.

GLA also assisted DTSC with a pilot study to determine the effectiveness of passive sampling devices at the site. The study determined that the analytical results for volatile organic compounds and perchlorate are similar in the HydrasleeveTM samples when compared to samples collected using traditional purge and sample techniques.

The project team provided DTSC with bilingual staff to assist with coordination of gaining access to privately owned wells within the largely Hispanic community of Jurupa Valley. Analytical data from these wells was integral for development of perchlorate contamination plume maps. In addition, bilingual staff recently assisted DTSC with a community outreach project and "open house" to educate the public about this legacy superfund site.

Groundwater Monitoring and Reporting for San Diego Landfill Systems' Landfills | 2001 - present

Client	Republic Services – San Diego Landfill Systems 8514 Mast Boulevard Santee, California 92071
Contact	Jesus Torres - 623.340.2520
Team	Gary Lass-PIC, Kyle Welchans, Bert Salinas, Michael Campbell, Adam Shaw

GLA provided water quality monitoring and reporting services for four active landfills (Borrego, Imperial, Otay, and Sycamore) and the closed Ramona Landfill in San Diego and Imperial Counties. Work included quarterly or semiannual groundwater quality sampling, statistical analyses or trend analyses to evaluate the water quality data, and preparation of semiannual reports for each site. In addition, GLA collected annual leachate samples from the facilities with an LCRS system.

Non-routine environmental consultation services were also provided on an as needed basis in support of the solid waste water quality monitoring program. For example, in response to a State Water Resources Control Board directive, GLA took the lead in performing radiological sampling of groundwater and leachate at three of the five facilities and prepared summary reports of that water quality data. In addition, GLA assisted the client in providing maintenance support for their dedicated pump systems, identified improvements to the groundwater monitoring program to maintain their facilities in compliance with current regulatory standards, and recommended a reduction in the sampling frequency and or sampling points to assist in reducing overall project costs.

The complete scope of services provided to San Diego Landfill Systems includes groundwater and leachate sampling, statistical analysis and non-statistical data evaluation, semiannual and annual report preparation, monitoring well design and construction, pump installation and

maintenance, groundwater extraction and treatment system monitoring, regulatory liaison and permitting assistance.

Groundwater Monitoring and Reporting Services for the California Street Landfill | 2008 - present

Client	City of Redlands Quality of Life Department 35 Cajon Street, Suite 222 Redlands, California 92373
Contact	Chris Boatman - 909.798.7655; Timothy Sullivan 909.798.7655
Team	Gary Lass-PIC, Terri Satterfield, Bert Salinas, Michael Campbell, Adam Shaw, BC Laboratories

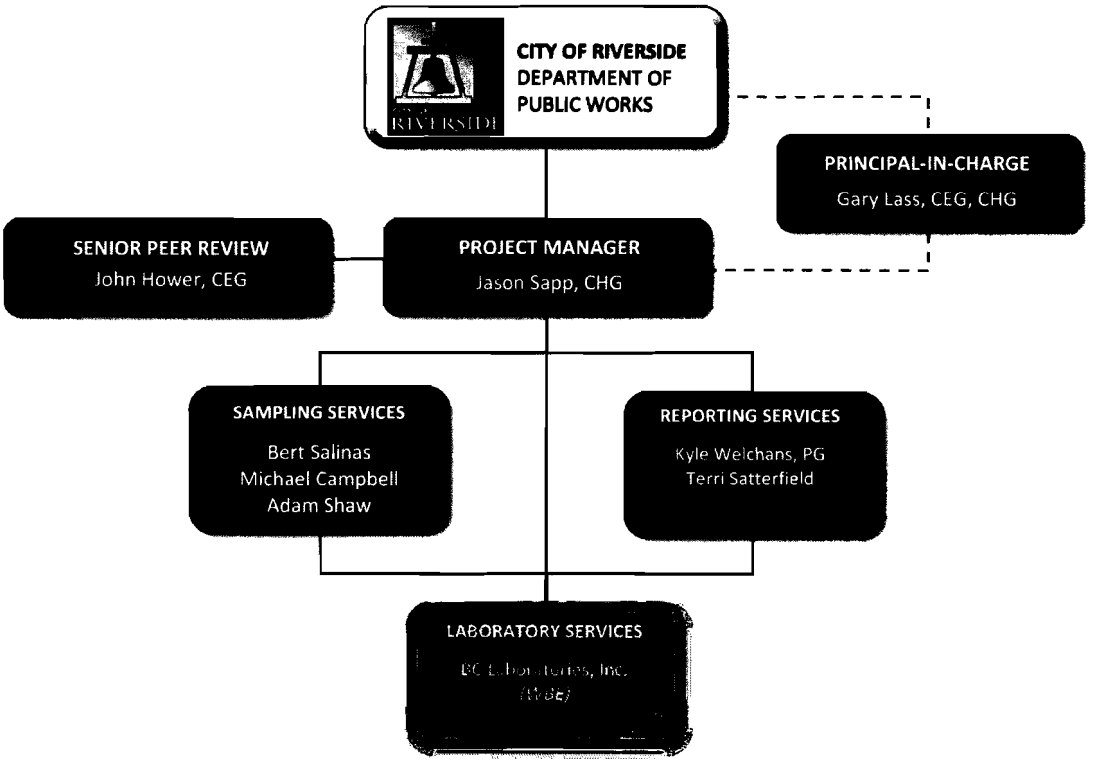
GLA began providing groundwater M&RP services for the City of Redlands California Street Landfill in 2008. The California Street Landfill is positioned adjacent to the Santa Ana River and includes both an unlined landfill and newer lined cells where waste is currently being placed. GLA's work at the site includes groundwater, surface water, lysimeter and leachate sampling; laboratory analyses; data validation; QA/QC review of field and laboratory data; statistical and non-statistical analysis of laboratory data; data review to detect waste release; preparation of quarterly and annual summary reports; and maintenance of the groundwater monitoring systems. Leachate samples are collected twice each year (April and October) from the lined portion of the landfill and the analytical results are included with the appropriate monitoring report. Analytical results from the leachate samples are used to compile a list of constituents of concern for the lined landfill cells.

When the dedicated sampling systems were not working properly, GLA performed troubleshooting and made the necessary repairs during the sampling event to avoid the need for another mobilization and to avoid delays in the sampling and reporting schedule. GLA has also provided regulatory liaison between the Santa Ana RWQCB and the City by routinely evaluating the monitoring system as well as the environmental conditions of proposed incoming waste (such as filter cake from nearby groundwater treatment systems).

The GLA team has also provided permitting, design, geotechnical engineering, and CQA services for Phases 1-3 of the landfill as well as the East Side Closure. Other work has included preparation of a Joint Technical Document and EIR assistance.

Part D – Project Personnel

For the TL Groundwater Monitoring and Reporting Project, GLA has assembled a highly qualified and integrated technical staff with extensive experience in providing the same types requested in the City's RFP. In fact, all of our proposed project personnel have provided these same services for the City at the TL, and as a result, there is no learning curve or training required to begin this project. The following Organizational Chart outlines our proposed project team, including our subcontractors.



By utilizing the same group of professionals who have provided these services to the City during the most recent contract term, GLA can assure the City that our team members understand the site, the site-specific regulations governing groundwater monitoring and reporting, the regulatory personnel who review the reports and their concerns regarding the TL and the required technical monitoring reports, and the City's personnel and their concerns for this program. Qualifications of our proposed Team members are summarized in the following table, and resumes of key personnel are attached.

Team Member	Role	Years of Experience	Education	Certification
Gary Lass	Principal-in-Charge	40	MS, Geochemisty BS, Geology	PG, CEG, CHG
Jason Sapp	Project Manager	21	BS, Geology	PG, CHG
John Hower	Peer Review	28	BS, Geology	PG, CEG
Kyle Welchans	Reporting	10	BS, Geology	PG
Terri Satterfield	Reporting	9	BS, Geology	
Bert Salinas	Sampling	26		Nielsen School
Michael Campbell	Sampling	33	BS, Civil Engineering	Nielsen School
Adam Shaw	Sampling	15	BS, Environmental Science	Nielsen School

Subcontractors

GLA will employ BC Laboratories, Inc. (BC) of Bakersfield, California to provide analytical services during the term of the contract. BC is a Woman-Owned Business, and is certified by the State of California in all of the analytical methods that are required for this project (ELAP Certification No. 1186). GLA and BC have been working together for more than 20 years on landfill environmental monitoring and reporting projects, including the groundwater monitoring and reporting program for the TL. As a result, GLA is confident that BC can continue to provide high-quality and timely analytical testing services for the City. As an added benefit, GLA is considered one of BC's preferred clients, and as a result, we are offered competitive pricing on all laboratory testing that we pass on to our clients. GLA has included the completed Designation of Subcontractors form (Exhibit 4) in Appendix A.

Part E – Cost for Services

As indicated on Table 1 (attached), GLA's estimated costs to conduct routine elements of the project as detailed in RFP 1695 total $41,280 per fiscal year. This amount is based on our current fee schedule and is an increase of approximately 2% per year over the previous annual budget for the project (which GLA had been conducting under our 2014 fee schedule). Our proposed scope of work, which addresses the specific tasks outlined in the RFP as well as the work that will be required based on our site-specific knowledge, is outlined below and will include semiannual sampling of 12 groundwater monitoring wells and 7 surface water monitoring points, and annual sampling of landfill gas condensate. Costs for services are based on the following work scope, as well as the information provided in the RFP.

GLA understands that the City will retain the services of a qualified environmental consultant to provide routine sampling and reporting services to support regulatory compliance with the site-specific groundwater monitoring and reporting program developed by the Santa Ana RWQCB. This work will include quarterly water level gauging, and semiannual sampling, analyses, and reporting. Each monitoring event will include a variety of tasks as outlined below:

Preparation of a Health and Safety Plan: Prior to initiating field work, the GLA Team will prepare a site-specific Health and Safety Plan (HASP) for the Tequesquite Landfill. The HASP will detail methods and procedures to protect workers from existing and potential hazards during field operations. The HASP will take into account site-specific conditions and will follow CAL-OSHA regulations and U.S. EPA Standard Operating Safety Guides. At a minimum, the HASP will address:

- Site locations and anticipated conditions
  Location of nearby hospitals and emergency control agencies
- Site and office support contacts
- Brief descriptions of anticipated field activities
- Anticipated chemical, biological, and physical hazards
- Brief description of safe field procedures
- Description of relevant mitigation measures
- Personnel and equipment monitoring procedures
- Description of personnel protective equipment
- Description of additional safety equipment
- Contingency plans
- Emergency procedures and protocols

Environmental Sampling: Approximately one to two weeks prior to mobilization for each sampling event, GLA will order sample containers from BC Laboratories, Inc., the contract laboratory. The laboratory will be notified of the number of monitoring points and the appropriate analytical parameters to be analyzed for each sample matrix, and the laboratory will be directed to provide extra containers for collection of appropriate field and equipment blanks. GLA's sampling personnel will ensure that all sample bottles are "clean-certified" from the laboratory or supplier. Sample containers that appear dirty, used, or otherwise compromised will not be used. Sample bottles containing preservatives will be appropriately marked. Sample shipping containers, coolers, ice packs, and any other materials that may contact sample bottles will be regularly inspected for cleanliness, durability, and functionality. Damaged coolers will not be used, as they may compromise sample integrity.

Groundwater Sampling: Single samples will be collected from each monitoring point that is required to be sampled, and these samples will be analyzed for the monitoring parameters specified in the site M&RPs. Groundwater samples will be collected following the procedures outlined in the *Practical Guide for Groundwater Sampling* (Barcelona, et al., 1985), *RCRA Groundwater Monitoring Technical Enforcement Guidance Document* (U.S. EPA, 1986). All sampling will be completed within a maximum 30-day time period. GLA understand that wells are equipped with electronic and bladder pumps, and some wells do not have pumps. Wells equipped with bladder pumps are sampled using low-flow methods, while wells equipped with electronic submersible pumps are sampled using standard purge methods. For wells that are not equipped with dedicated sampling pumps or if the pump is inoperable, the wells will be sampled with portable equipment, (e.g., decontaminated bailers or pumps) and the actual sampling method though variable will comply with the standard protocols outlined below.

Upon arrival at each wellhead, the well will be inspected and any well-head problems will be noted on the field log. Significant problems with the well-head, such as those that prevent sampling or compromise the integrity of the well, will be reported to the City (verbally and in writing) within 24 hours of observation. Prior to sampling a well, the depth to groundwater will be measured to the nearest 0.01 foot from an established well datum (e.g., top of casing) using a decontaminated electric sounding device. The depth to water will then be used to calculate the water surface elevations in the wells, and to calculate appropriate purge volumes. To evaluate groundwater flow conditions beneath the landfill, during each sampling event, groundwater depths will be measured on the same day, if possible, in all accessible site wells and piezometers.

Well purging will be accomplished using existing dedicated pumps or decontaminated pumps or bailers if dedicated systems are not available or operational. Samples of purged water will be collected and monitored, and purging rates will be low enough so as not to induce turbulent flow within the well. As a well is purged, indicator parameters (pH, temperature, specific conductance, dissolved oxygen, and turbidity) will be monitored and recorded until they have stabilized to within 10 percent of the preceding measurements and show no discernible upward or downward trend. Flow-through cells will be used to measure field parameters at wells that are purged with pumps. For sampling locations where pumps are not used (e.g., wells without pumps and surface water sampling locations), a sample will be collected in a clean container, the field instrument probe will be placed in the container, and appropriate field measurements will be recorded on a sample collection log.

GLA recognizes that many of the field parameters (such as pH and dissolved oxygen) have a very short holding time, and therefore careful calibration of the field instruments must be maintained so that accurate results can be obtained in the field. GLA will accomplish this calibration by working closely with our analytical laboratory to establish instrument calibration in a fixed laboratory setting on a regular basis. In the field, the instruments will be calibrated before work begins at each sampling location.

Sampling in wells with dedicated sampling apparatus will be conducted by slowing the pumping rate, as appropriate, and allowing the discharge water to flow gently into appropriate sample containers. Should bailing be required, the bailer will be slowly lowered into the water column

to minimize disturbance to the collected sample, and a bottom emptying device will be inserted into the bottom of the bailer to release the sample. For wells that have very slow recharge rates (i.e., more than two hours to recover to 80 percent of its original water level), the well will be purged dry and a sample will be collected after the water level has recovered to within approximately 80 percent of its original level.

Water that is purged from each well will be collected in 55-gallon steel drums. GLA will regularly inspect each drum to ensure that it is in good repair, and will notify the City of any drum found to be leaking or without an adequate seal.

Sample containers will be provided by BC and will be stored in an area that is free from dust and exposure to organic chemicals. All groundwater samples will be poured from the pump discharge or bailer directly into the sample containers by pouring the sample down the sides of the container with as little turbulence as possible. Sampling containers will be filled in order of volatility (volatile organic compounds first, then semi-volatile organic compounds, pesticides, herbicides, general chemistry, and metals). Vials for volatile organic analyses will be filled completely to fill all the air space, capped, turned upside down, and tapped to check for air bubbles.

Trip blanks will accompany sample containers from the laboratory, through the field operations, and return to the laboratory as a QC check to determine if contamination has been introduced from the sample containers or laboratory water. Trip blanks will constitute at least ten percent of the total number of groundwater samples. If non-dedicated sampling equipment is used, equipment blanks will also be collected and will consist of distilled, deionized, reagent-grade laboratory water passed through representative sampling equipment (e.g., bailers, bottom emptying devices) as a test of equipment decontamination. One equipment blank will be collected per groundwater monitoring event. Field blanks will be collected at a frequency of one per day by pouring laboratory provided reagent-grade water directly into a set of sample vials as a test of site-specific environmental conditions.

After a sample has been collected, it will be stored in a field ice chest where ice cubes or "blue ice" packs will be used to cool and maintain the samples at a temperature of approximately 4°C. To prevent breakage, bubble wrap or an alternative material will be placed around the samples so they do not touch each other or the side of the shipping container. Each sample will be catalogued on appropriate Chain-of-Custody documentation after it has been collected, and these Chain-of-Custody records, and other appropriate paperwork, will be sealed in a plastic bag taped to the lid of the shipping container and will accompany each sample to the analytical laboratory. It is anticipated that samples will be provided to the laboratory courier at the end of each sampling day, and the field sampler will be responsible for the care and custody of the samples until they are shipped or otherwise delivered to the laboratory custodian.

As discussed in the following sections, GLA will review analytical data promptly upon receipt of certificates of analysis, and will identify any VOCs or other anthropogenic compounds that might indicate landfill release or problematic groundwater treatment system chemistry. During this review, GLA will develop a listing of wells (and thereby the purge water drums) that contain VOCs, the VOC concentrations measured and the approximate purge volumes. The GLA Team

will dispose of purge waters in accordance with established protocols. Purge water that does not contain VOCs will be disposed of at the site in a manner that does not impact the monitoring well, other landfill structures, or landfill cover soils.

Surface Water Sampling: Surface water samples will be collected from the designated sampling points when there is sufficient water available for sampling. Samples will be collected without disturbing the channel bottom or otherwise changing the observed flow conditions and sediment load of the channel or pond. Sample bottles will be filled to minimize air space in the sample containers. After the samples are collected, they will be sealed, labeled, and placed in the cooler for transport to the laboratory.

Miscellaneous Liquids Grab Sampling: Annual grab samples will be collected from the landfill gas condensate sampling points during the fourth quarter monitoring event. Grab samples are generally collected by filling laboratory supplied sample containers directly at the designated sampling ports or spigots. For tank samples that do not have a sampling port, a decontaminated or disposable dipper will be lowered in the tank to collect the sample. The GLA Team will collect grab samples by carefully allowing the liquid to stream down the side of the sample container. Stringent health and safety protocols will be followed during leachate sampling to minimize dermal and respiratory exposure. As each sample bottle is filled, the bottle will be capped, sealed, and labeled, and then placed in a chilled cooler for transport. The sampling process will follow the protocols described above until all bottles are filled. All liquid grab samples will be catalogued on appropriate Chain-of-Custody documentation that will accompany the samples to the analytical laboratory.

Landfill Groundwater Data Review and Validation: The data validation process will include QA/QC review of all field and laboratory data. The field data validation will include periodic unannounced field audits of the sampling activities by the Project Manager to assess the protocols being employed by field personnel at the site for equipment calibration, log book entries, sampling and sample handling, and chain-of-custody procedures. A field audit checklist will be completed to document field investigation compliance with the established protocols. The audit checklist and comments will be reviewed with the Project Manager and field personnel, as needed, to ensure proper fulfillment of the field program objectives. In addition, the Team's QA Manager will be responsible for reviewing the field sampling sheets and Chain-of-Custody documentation at the end of each day/week to assess completeness, documentation of equipment calibration, sample handling, chain-of-custody protocols, and consistency of field measurements with historical data. By this frequent review procedure, any deviations in procedures or protocols can be corrected immediately.

Following receipt of the laboratory report, the QA Manager will review the analytical data for validity, accuracy, and to determine whether verification retesting is required. All laboratory analytical results will be validated by reviewing sample holding times, the results of field blank samples, and the laboratory's internal QC documentation, which includes: laboratory method blanks, matrix spike and matrix spike duplicate comparisons, laboratory control samples and LCS duplicate comparisons, surrogate spikes, and data qualifiers. In this way, the QA Manager can assess the precision of the data. Accuracy will be evaluated from information obtained on the spiked samples by evaluating the percent recovery compared with the known spike

amount. Surrogates (compounds that act and react similarly to the compounds of interest but which do not interfere with the constituent being analyzed) may also be spiked into the sample and used to evaluate the accuracy of certain organics methods. Data evaluation will represent the most significant aspect of the monitoring and reporting program since all of the analytical data must be validated. Once validated, the data will be used to provide a basis for interpretation of site conditions at a level that satisfies all of the requirements of the individual site M&RPs and/or RWQCB orders and/or directives.

The validation will be used to determine the adequacy and accuracy of the data, the presence of field or laboratory contamination, and the need for conducting verification retesting as described above.

Response Plan for Sampling/Laboratory Contamination: While GLA strives to collect samples that are representative of field conditions, "false positive" indications of release are an expected (and in fact, required) artifact of mandatory statistical evaluations. In addition, identification of anomalous constituents as a result of environmental conditions, lapses in sampling protocols, or other field conditions can happen with any program of this size. When analytical results indicate that samples have been impacted, the results of the accompanying QA/QC samples will be evaluated to determine if the samples could have been contaminated during the sample collection or analytical processes. When field contamination is suspected, the sampling procedures will be reviewed with the sampling crew and/or analytical laboratory to minimize the potential for a repeat of the error. [For example, if BTEX components are detected in the field blank, it is possible that the samples were collected downwind of a gasoline-powered engine, and correction may include verification that samples are collected upwind of a potential contaminant source.]

In the case of suspected laboratory contamination, GLA will review the data to identify possible contaminant sources, and will meet with the analytical laboratory to discuss the historical data and potential false positive results. The laboratory will be required to take appropriate measures to identify the cause of laboratory-related sample contamination, and will be required to implement a program to reduce the possibility of future contamination. In any event, if the "false positive" cannot be readily dismissed, as a result of analytical or field QA/QC procedures, GLA will perform a retest of that monitoring point as required. Since the State mandated statistical protocols require a false positive rate of no less than 1%, the GLA Team has assumed that 1 or 2 discrete retests will be required during each sampling event.

Verification Sampling: If statistical or non-statistical analyses of the analytical results indicate a new release from the TL has occurred, recommendations for verification and immediate RWQCB notification will be submitted pursuant to 27 CCR § 20420(j)(1-3). For purposes of verification, two discrete retest samples will be collected from each monitoring point where contamination is suspected using the same sampling and analytical protocols employed in obtaining the primary sample. Retest samples will be collected within 30 days of the initial indication of the release, and will be analyzed only for those constituents that were identified at concentrations above background in the initial sample. If the compound is not detected in either of the retest samples, then a false positive detection will be concluded for the primary

sample. If the compound is detected in one or both of the retest samples, then the primary detection will have been verified.

Should retesting verify a release, a single sample from each DMP monitoring point at that site will then be analyzed for the full list of Constituents of Concern (COCs). While up to 2 retests are anticipated per monitoring event and this cost is included in the enclosed fee estimate, the need for and extent of release-induced COC monitoring cannot be reasonably estimated and this work will be completed as a non-routine work item.

Landfill Release Notification: When laboratory analytical reports are received, they will be date stamped and reviewed by the QA Manager for completeness and conformance with holding time requirements. In addition, for DMP protocols, wells monitored under the non-statistical VOC/COC Special analysis will be carried out to evaluate whether there is evidence for tentative identification of a release from the landfill. If a VOC/COC Special "hit" is identified, this information is then transmitted verbally to the County's Project Manager with a recommendation for retesting, if appropriate. [It should be noted that in some cases (e.g., detection of constituents such as methylene chloride and toluene, which are common laboratory or field-introduced contaminants), retesting may not be necessary. This conclusion will be reviewed with the City and, if appropriate, negotiated with the RWQCB.] Similarly, after the statistical analyses are completed, the City will be notified if the statistical conclusions suggest evidence of a new release. If the data suggest evidence of release at any DMP well, this information will be reported to the City's Project Manager immediately so that appropriate responses (i.e., RWQCB notifications and retesting) can be implemented. A follow-up letter to provide written documentation and notification of a tentatively identified release to the RWQCB will then be prepared and submitted to City. This notice will include a summary of the laboratory findings, and a copy of the relevant laboratory analytical report(s). The City can then use the letter and laboratory analytical report(s) as a basis for providing the 7-day tentative release notification to the RWQCB required by regulation.

Data Entry: Rather than utilizing a simple digital transfer of data from the laboratory to prepare our tables, GLA proposes to enter all laboratory data manually. We have found this practice to provide the best opportunity for critical review the laboratory data, enabling our staff to identify and resolve potential data anomalies quickly. Laboratory reports will be provided digitally in EDF and PDF format for upload into Geotracker.

Statistical/Non-Statistical Analysis of Groundwater Quality Data: GLA proposes to utilize our in-house SAC-APP computer programs to perform the statistical analyses required for the TL. GLA has been using this statistical program for the TL since 1996, and the Santa Ana RWQCB is very familiar with the analytical approach and output from this program. In addition, the non-statistical VOC and COC Special Analysis, as outlined in SWRCB Resolution 93-62, will be performed for those analytes detected less than 10 percent of the time in samples from background wells.

Trend Analyses: Analysis of landfill groundwater and surface water quality data trends is an annual reporting requirement for the TL. Trend analyses will be performed by plotting the concentrations of an analyte over the history of monitoring for each well. GLA proposes to use

Microsoft™ Excel® to prepare the time-series plots. These charts will be prepared using black and white graphics with distinctive data markers and line patterns for each well or analyte so that the charts can be photocopied with acceptable quality.

GLA proposes the following strategy to prepare time-series plots. For each analyte, GLA will prepare time-series plots comparing background and compliance well data (Interwell charts). In general, no more than five data sets will be presented on one chart to maximize presentation clarity. The historical sample data from each well will be plotted with a unique symbol marking the data point, and the trend lines connecting background well data will be dashed to distinguish it from compliance well data. On these charts, the historical data will also be compared with Federal maximum contaminant levels (MCLs). Non-detectable data points will be plotted at one-half of the MDL reported specifically during each monitoring period. Data that are not available will be shown by a break in the trend line. In some circumstances it may be beneficial to prepare multiple-parameter time-series charts for VOCs to illustrate reductive dechlorination processes. On these charts, GLA will display the historical concentrations of related VOCs, from samples collected from a single well to show any relationship or increasing or decreasing trends that may be the result of the breakdown of "parent compounds" and the formation of "daughter products."

In analyzing time-series charts, it is important not to describe a trend simply according to the slope of a mathematically calculated data trendline. Rather, it is important to review historical seasonal fluctuations in data, changes in MDLs, and concentration changes that may be the result of a change in laboratory analytical methods or field sampling protocols. As a result, our approach to trend analysis is somewhat qualitative, and provides a better opportunity to evaluate changes in groundwater by accounting for factors that are not typically accounted for in pure mathematical approaches. Significant increasing or decreasing trends will be described in detail following the summary table, with the level of discussion enhanced when changes in historical trends appear to be developing. Data trends will be summarized in tables within the annual summary reports, as required by the site-specific WDRs or other RWQCB orders or directives.

Groundwater Monitoring Report Preparation: Water quality monitoring data will be compiled in semiannual and annual reports. Each semiannual and annual report will contain the information required by Order 98-99-03, as well as information subsequently requested by the Santa Ana RWQCB. At a minimum these reports will include:

- Executive summary
- Table of contents
- Site introduction
- Sampling and analysis plan
- Laboratory analyses and QA/QC results
- Descriptions of sampling and analytical methods and parameters
- Discussion of statistical and/or non-statistical data evaluation
- Historical groundwater elevation data
- A groundwater elevation contour map
- Historical tables of laboratory test results for each monitoring point
- Summary tables of analytical results for the reporting period(s)

As required, monitoring reports will also integrate data collected by GLA's sampling crew including visual observations and photographs of site conditions, copies of the regulatory agency inspections, and copies of the diversion and drainage facilities inspection and evaluation logs. Discussions will be more detailed when chemical and/or elevation variations are noted from earlier reporting periods, and recommendations for verification and/or initiation of additional studies will be presented if appropriate.

The second semiannual landfill report will include the data trend plots and an annual summary for each respective site. In addition to the elements required in a routine semiannual reporting event, these annual reports will also include an evaluation of trends interpreted from the time-series plots; descriptions of any apparent increasing and/or decreasing trends; and reporting of any monitoring changes made or observed since the last annual report.

Prior to submittal of any work product to the City, GLA will provide comprehensive senior peer review of all deliverable technical documents. One draft copy of each report will be submitted to the City 15 calendar days prior to the RWQCB submittal dates. Following incorporation of City comments, GLA will prepare copies of the final report for distribution. Reports for all landfill sites are due to the RWQCB by October 31st and April 30th (annual summary report) of each year. The final reports will be signed and stamped by our Project Manager, a State of California Registered Professional Geologist.

GLA will upload the landfill data into the Geotracker database concurrent with submittal of the groundwater monitoring reports. For this task, electronic data files will be prepared by the laboratory and delivered to GLA by email. GLA will then review the files and upload the electronic data to the State's database. A full copy of the report will also be uploaded in portable document format (PDF).

Regulatory Liaison Support: Throughout the course of the project, GLA's Project Manager and Principal-in-Charge will be available to address issues and comments raised by the Santa Ana RWQCB concerning the environmental monitoring and reporting for the TL. Costs for our services include basic interaction with the RWQCB to answer questions about the semiannual monitoring reports, sampling methodologies, data evaluation and other routine questions. Should more complex issues arise that require a higher level of effort to address, GLA will prepare a work scope and cost estimate to address these issues. Costs will be based on the fee schedule provided with our project cost estimate.

Non-Routine Well and Pump Maintenance: As requested in the City's RFP, GLA has provided costs to replace or repair groundwater sampling pumps. For this task, GLA has assumed that pumps will be replaced with QED P1101HM bladder pumps. Pumps maintenance and replacement services will be provided by GLA's environmental sampling technicians who have abundant experience in diagnosing and repairing pump problems, and replacing inoperable pumps. The cost for this service includes purchase of two bladder pumps, new tubing, well caps, flexible discharge hose, and prevailing wage labor to remove the old pumps and install the new pumps.

Other Non-Routine Services: As a full-service environmental and geotechnical consulting firm, GLA has the resources and technical capabilities to respond to nearly all landfill-related non-routine service requests. Should the City require our services for work outside of the scope of work identified above, GLA will prepare a detailed scope of work and cost estimate based on the fee schedule provided in this proposal.

TABLE 1
ESTIMATED PROJECT COSTS - RFP 1695
GROUNDWATER, SURFACE WATER & CONDENSATE MONITORING AND REPORTING SERVICES
TEQUESQUITE LANDFILL, RIVERSIDE COUNTY, CALIFORNIA

Work Tasks	Senior Pro. II $200	Senior Pro. I $187	Project Pro. II $155	Staff Pro. II $105	CADD Design. $120	Admin. Asst. II $87	Field Crew ($)	Tech. IV $130	Sr. Fld. Tech $95	Sampl. Equip. $15	Vehicle $14	Pump Cost $857	GLA Sub Total ($)	Labor Expenses 3%	GLA Total ($)	Outside Lab/Pump ($)	Task Totals ($)
FY 17/18																	
Task 317 - Third Quarter 2016 Monitoring & Reporting	1	6		20	3	8		12	24	40	40		$9,478	$284.34	$9,762		$9,762
Task 417 - Fourth Quarter 2016 Monitoring		1		8		1		8	8	12	12		$4,197	$126	$4,323	$5,438	$9,761
Task 118 - First Quarter 2017 Monitoring & Reporting	1	8		24	3	12		12	24	40	40		$10,246	$307	$10,553		$10,553
Task 218 - Second Quarter 2017 Monitoring		1		8		1		8	8	12	12		$4,197	$126	$4,323	$6,880	$11,203
FY 18/19																	
Task 318 - Third Quarter 2018 Monitoring & Reporting	1	6		20	3	8		12	24	40	40		$9,478	$284	$9,762		$9,762
Task 418 - Fourth Quarter 2018 Monitoring		1		8		1		8	8	12	12		$4,197	$126	$4,323	$5,438	$9,761
Task 119 - First Quarter 2019 Monitoring & Reporting	1	8		24	3	12		12	24	40	40		$10,246	$307	$10,553		$10,553
Task 219 - Second Quarter 2019 Monitoring		1		8		1		8	8	12	12		$4,197	$126	$4,323	$6,880	$11,203
FY 19/20																	
Task 319 - Third Quarter 2019 Monitoring & Reporting	1	6		20	3	8		12	24	40	40		$9,478	$284	$9,762		$9,762
Task 419 - Fourth Quarter 2019 Monitoring		1		8		1		8	8	12	12		$4,197	$126	$4,323	$5,438	$9,761
Task 120 - First Quarter 2020 Monitoring & Reporting	1	8		24	3	12		12	24	40	40		$10,246	$307	$10,553		$10,553
Task 220 - Second Quarter 2020 Monitoring		1		8		1		8	8	12	12		$4,197	$126	$4,323	$6,880	$11,203
Non-Routine Replacement of 2 Pumps								6	2		6	2	$2,176	$65	$2,241	$1,715	$3,956
rter	6	48	0	180	18	66	0	126	194	312	318	$2					
Total Cost:	$1,200	$8,976	$0	$18,900	$2,160	$5,742		$16,380	$18,430	$4,680	$4,452	$1,715	$28,118	$2,596	**$89,126**	**$38,671**	**$127,797**

Notes:
1) Project costs include sampling and analyses of 13 groundwater samples and 8 surface water samples per semiannual monitoring event, and 1 landfill gas condensate sample collected per year.
2) Project costs include replacement of two (2) dedicated monitoring well pumps.

Geo-Logic Associates, Inc. has reviewed City of Riverside RFP No. 1695 and the estimated project costs included in Table 1 are approved for submission.

John M. Hower

John M. Hower, PG, CEG
Senior Vice President

Geo-Logic
ASSOCIATES

Appendix A

Exhibit 3 – Contractor's Qualifications Statement

Exhibit 4 – Designation of Subcontractors

EXHIBIT 3
Contractor's Qualifications Statement

CONSULTANT'S QUALIFICATIONS STATEMENT

CONSULTANT NAME: GeoLogic Associates, Inc.

1. ORGANIZATION

1.1 How many years has your organization been in business as a Consultant? 26 years

1.2 How many years has your organization been in business under its present name? 26 years

1.2.1 Under what other names has your organization operated? Geo-Logic Associates

1.3 If your organization is a corporation, answer the following:

1.3.1 Date of incorporation: January 15, 1991

1.3.2 State of incorporation: California

1.3.3 Corporate ID number: C1572000 (Ca)

1.3.4 President's name: Nicole Sweetland

1.3.5 Agent for Service of Process: Gary L. Lass (Chief Executive Officer)

1.4 If your organization is a partnership, answer the following: Not Applicable

1.4.1 Date of organization: _____

1.4.2 Type of partnership (if applicable): _____

1.4.3 Name(s) of general partner(s): _____

1.5 If your organization is individually owned, answer the following: Not Applicable

1.5.1 Date of organization: _____

1.5.2 Name of owner: _____

1.6 If the form of your organization is other than those listed above, describe it and name the principals:
Not Applicable

EXHIBIT 3
Contractor's Qualifications Statement

2. LICENSING

2.1 List jurisdictions and trade categories in which your organization is legally qualified to do business and indicate registration or license numbers, if applicable.

Geo-Logic Associates is legally qualified to conduct business in all 50 United States and its territories. We have business licenses in all jurisdictions in which we currently provide services. Geo-Logic Associates' City of Riverside Business License is BL00065632.

2.2 List any other certifications held by your organization, and the name under which they are held.

Many of our geologists and engineers hold individual professional licenses and certifications Our State of California registered professionals include: 23 Registered Civil Engineers, 8 Registered Geotechnical Engineers, 25 Registered Professional Geologists, 10 Certified Engineering Geologists, and 10 Certified Hydrogeologists

3. EXPERIENCE

3.1 List the categories of work that your organization normally performs with its own forces.

Civil, geotechnical, environmental, and water resources engineering; environmental monitoring and remediation; geologic and hydrogeologic investigation services; landfill siting, design, permitting; construction management and construction quality assurance

3.2 List all contracts for Water Quality Monitoring and Reporting Services your organization has completed in the past five years, giving the name of project, owner, owner's phone number, project manager, Contract amount, date of completion and percentage of the cost of the work performed with your own forces.

Please see Part C of the Proposal.

3.4 List all the Water Quality Monitoring and Reporting Services contracts and/or projects your organization has in progress, giving the name of the project, owner/contact, contract amount and scheduled completion.

Please see Part C of the Proposal

3.5 Has your organization, under its current name or any previous names, ever failed to complete any work/contract awarded to it? (If Yes, please explain)

No.

4. CLAIMS AND LAWSUITS

4.1 Are there any judgments, claims, arbitration proceedings or suits pending or outstanding against your organization or any its officers? (If Yes, please describe)

Geo-Logic Associates, along with approximately 100 other parties, was brought into a lawsuit

concerning a claim of poor construction of a residential property. The original lawsuit was ruled in favor of the defendants (including Geo-Logic Associates), though that ruling is under appeal.

4.2 Has your organization filed any law suits or requested arbitration with regard to any of its contracts within the last five (5) years? (If Yes, please explain)

No

4.3 During the past five years, have any claims been made against any performance or payment bond maintained in connection with a services contract? (If Yes, please describe)

No

EXHIBIT 4
Designation of Subcontractors

DESIGNATION OF SUBCONTRACTORS

PROPOSER NAME: Geo-Logic Associates, Inc.

Each Proposer shall set forth below:

1. The name and location of the place of business of each subcontractor who will perform work or labor or render service to the Proposer/Contractor in connection with the services to be provided pursuant to this RFP.

2. The portion and estimated dollar amount of the work that will be done by each subcontractor.

3. If the Proposer/Contractor fails to specify a subcontractor, or if more than one subcontractor is listed for the same portion for work to be performed under the Contract, Proposer agrees that it is fully qualified to perform that portion of work, and shall perform said work. If after award of Contract, the Contractor subcontracts any such portion of the work, the Contractor shall be subject to the statutory penalties.

4. The Contractor shall not substitute any subcontractor in place of the subcontractor listed in below without prior written approval from the City.

5. Any violation of the above provisions may be considered to be a breach of the Contract and the City may exercise the option, in its own discretion, of (1) terminating the Contract, or (2) assessing the Contractor a penalty in an amount not more than ten percent of the amount of the subcontract involved.

Please type or legibly print (attach additional sheets as necessary).

Name of Subcontractor	City	Service/License #	Estimated $ Amount
BC Laboratories, Inc.	Bakersfield, CA	California ELAP Certification No. 1186 Exp. May 31, 2018	$36,956
No other subcontractors are proposed.			

Geo-Logic
ASSOCIATES

Appendix B

Project Team Resumés

Michael Campbell

Senior Field Technician

Geo-Logic ASSOCIATES

Mr. Campbell serves as Senior Field Technician. He has over 30 years of experience performing a wide variety of geotechnical and environmental tasks including construction observation and testing of composite liner systems, landfill final cover systems, and engineered fills, as well as sampling of groundwater, surface water, soil-pore gas, soil-pore liquid, landfill effluent, and soils for environmental assessment. Mr. Campbell's experience also includes working in our geotechnical laboratory, observation and testing of fills related to grading operations, and subsurface investigations for structural distress of residential and commercial facilities.

EDUCATION

Bachelor of Science, Environmental Studies, 1984
California Polytechnic University, San Luis Obispo

PROFESSIONAL TRAINING

Nuclear Density Gauge Training Certification

OSHA 40-hour Hazardous Waste Operations and Emergency Response Training

Complete Groundwater Sampling Field Course (Nielsen Environmental Field School)

Certified CQA Geosynthetic Material and Compacted Clay Liner Inspector-GCI

Composite Liner System CQA, American Avenue Landfill, Fresno County, California
Lead CQA Monitor during construction of the Phase 3, Module 1 and 2 expansion projects. Provided daily observation, testing, and documentation during construction of more than 2.1 million square feet each of 60-mil HDPE geomembrane, geotextiles, and GCL.

Composite Liner System CQA, Phases A, A1, B and C1, Prima Deshecha Landfill, Orange County, California
Lead CQA Monitor responsible for documenting daily field operations, soil testing, geosynthetics evaluation, and interacting with contractor for each composite liner system totaling over 132,000 cubic yards of low-permeability soil liner and LCRS sand and gravel and over 3.9 million square feet of each geosynthetic component.

Composite Liner System CQA, Modules 2/3, A, B, C, D, and E, West Miramar Landfill, City of San Diego, California
Lead CQA Monitor for five (5) composite liner system modules including A, B, C, D and 2/3. CQA services included daily observation and testing of borrow soils review of geosynthetics certification data, observing field shear and peel tests, observing geomembrane panel seaming and seam testing, documenting daily construction activities, preparing daily reports, and compiling CQA test data for final reports. Total CQA service included observation and testing of over 580,000 cubic yards of low-permeability soil and nearly 8 million square feet of geosynthetic liners have been placed on both floor and slope areas at this solid waste facility.

Double Composite Liner Systems CQA, Phases 1, 2, 3, 4 and 5A, Mid-Valley Landfill, San Bernardino County, California
Lead CQA Monitor/CQA Monitor during construction of the first lined cell and four subsequent phases of liner construction at this landfill including the most recently constructed Phase 5A, constructed in 2005. Performed all CQA activities related to construction of these double composite liner systems. Liner system elements included approximately 253,000 cubic yards of low-

permeability soils on floor and side-slope areas, over 3.5 million square feet of GCL, and about 7.2 million square feet each of 60-mil FML and geotextiles.

Composite Liner System CQA, Lamb Canyon Landfill, Riverside County, California
Lead CQA Monitor during construction of the composite liner system for Phase 2, Stage 2 constructed in 2005. The liner system included placement of approximately 1.3 million square feet geomembrane liner components, nearly one million square feet of GCL and 11,000 cyds of low-permeability soil.

Composite Liner System CQA, Crazy Horse Landfill, Salinas, California
As Lead CQA Monitor, provided geotechnical observation and testing during construction of the composite liner system for the Phase I expansion. Performed field CQA monitoring and testing during installation of low-permeability soil and geosynthetics liner components.

Composite Liner System CQA, Toland Road Landfill, Ventura County, California
Lead CQA Monitor during construction of the Phase III-A composite liner system. Work included observation, testing, and documentation during construction of 900,000 square feet of 60-mil HDPE geomembrane and 67,000 cubic yards of low-permeability soils.

Composite Liner System CQA, Tajiguas Sanitary Landfill, Santa Barbara County, California
CQA Monitor/Lead CQA Monitor during construction of the Phase I and Phase IA Composite Liner Systems. The Phase I side-slope composite liner system included placement of over 340,000 square feet of GCL and geomembrane components and 3,500 cubic yards of low-permeability soil. The Phase IA composite liner system included placement of 220,000 square feet of GCL and geomembrane components. In addition, 3,300 cubic yards of low-permeability soil was placed as part of this phase of liner construction.

Composite Liner System CQA, Santa Cruz Landfill, Santa Cruz County, California
Lead CQA Monitor during the Phase I and Phase II composite liner system construction. CQA included monitoring during construction of 20,000 cubic yards of low-permeability soil liner, and 275,000 square feet of geomembrane, in addition to placement of the LCRS, operations layer and various geotextiles.

Double Composite Liner System CQA, Phase 1B, Stage 1, Victorville Landfill, San Bernardino County, California
Lead CQA Monitor during construction of the first lined cell at this Lahontan Region site. Performed all CQA activities related to construction of the double composite liner systems. Liner system elements included approximately 6,500 cubic yards each of prepared subgrade and LCRS sand/gravel, 784,000 square feet each of 60-mil HDPE and various geotextiles, and 610,000 square feet of GCL.

Composite Liner System CQA, Caja Del Rio Landfill, Santa Fe, New Mexico
Lead CQA Monitor during construction of the Phase 4B expansion, which included CQA for 666,500 square feet each of 60-mil HDPE geomembrane, GCL, and geotextiles.

Badlands Landfill Composite Liner CQA, Riverside County, California
Lead CQA Monitor during two phases of liner system construction. Responsible for observation and documentation during excavation and buttress construction, engineered fill placement, placement and compaction of 13,000 cubic yards of low-permeability liner soils, installation of 610,000 square feet of

geomembrane, and 300,000 square feet of geocomposite liner materials, in addition to the LCRS piping and drainage materials, and protective soil operations layer.

Composite Liner System CQA, Fairmead Landfill, Madera County, California
Lead CQA Monitor during construction of the four-acre Unit 3, Cell 4B Composite Liner System that included 170,000 square feet of 40- and 60-mil HDPE geomembranes, and similar quantities of GCL and geotextiles.

Composite Liner System CQA, Frank R. Bowerman Landfill, Orange County, California
As the Lead CQA Monitor, provided daily observation testing during construction of Phase 5D Liner System that includes 15,000 cubic yards of low-permeability soil liner and 724,000 square feet of GCL and nearly 1.3 million square feet of geosynthetic liner components.

Composite Liner System CQA, Flathead County Landfill, Montana
Lead CQA Monitor during construction of the Phase IIA Composite Liner System. Responsible for daily observation and testing during construction of the composite liner system that included 402,000 square feet of FML and 385,000 square feet of GCL.

Composite Liner System CQA, Sunshine Canyon Landfill, Los Angeles County, California
Lead CQA Monitor during construction of 11,000 cubic yards of low-permeability soil liner and 567,000 square feet of geosynthetic liner, and 511,000 square feet of GCL for the Phase IIIA Composite Liner System.

Alternative Final Cover CQA, Milliken Sanitary Landfill, San Bernardino County, California
Provided daily construction quality assurance services during construction of the East Mound and North Slope monolithic final cover systems. Daily activities included borrow source testing, verification of fill thickness, fill placement coordination with Contractor, compiling field notes, and performing compaction and permeability tests on the completed final cover. Total volume of fill was 450,000 cubic yards.

Alternative Final Cover CQA, Needles Landfill, San Bernardino County, California
Provided daily construction oversight and soil testing during borrow source screening and construction of a 600,000 cubic yard monolithic final cover system.

Alternative Final Cover CQA, Baker Landfill, San Bernardino County, California
As Lead CQA Monitor, provided construction observation and quality assurance testing during construction of a 100,000 cubic yard monolithic final cover system.

Alternative Final Cover CQA, Tequesquite Landfill, Riverside County, California
As Lead CQA Monitor, performed daily observation of fill placement and CQA testing of the 750,000 cubic yard monolithic cover system. Lending of on-site and off-site soils was required to produce a material of the appropriate grain-size distribution to validate infiltration modeling results. As a result, careful testing of the blended soil product was required to ensure that these soils met the project specifications.

Alternative Final Cover CQA, Coachella Landfill, Riverside County, California
As Lead CQA Monitor, supervised monolithic final cover placement, borrow source testing, and conformance testing for this 1.1 million cubic yard construction project. Supervised installation of moisture monitoring equipment following construction completion.

Kern Valley Landfill Closure, Kern County, California
Lead CQA Monitor during construction of the final cover system over this approximately 30-acre site. CQA services included observation and testing of foundation layer soils, geosynthetic barrier layer and drainage media materials, and the two-foot thick vegetative soil layer, including placement of about 200,000 cubic yards of engineered fill, and about 1.3 million square feet of LLDPE geomembrane and geotextile.

Santiago Canyon Landfill AFC Construction, Orange County, California
CQA Monitor during construction of a five-foot thick monolithic alternative final cover for this approximately 130-acre site. Closure construction includes placement of about one million cubic yards engineered fill with about one-half being imported. In addition, construction included substantial drainage improvements and specific vegetation requirements.

Alternative Final Cover CQA, Yermo Disposal Site, San Bernardino County, California
As Lead CQA Monitor, provided daily observation and testing during construction of a 72,000 cubic yard monolithic final cover system. Testing included Boutwell field permeability testing, nuclear density and drive-ring compaction testing, and sampling for grain size distribution, moisture-density relationships, laboratory permeability, and soils classification.

BKK Class I and Class III Landfills, Construction Observation, West Covina, California
Project included closure of a Class I disposal site, and expansion and closure of a Class III disposal site. As CQA Monitor, responsible for special field testing including compaction, moisture, gradation, and permeability were required during the construction, as well as extensive record keeping for various regulatory agencies. In addition, canyon cleanouts and soil removal were performed that included approvals of storm drain backfills.

Huntington Beach Landfill AFC Construction, Orange County, California
Lead CQA Monitor for construction of an engineered final cover for a section of the Sports Complex that overlies an old landfill with hazardous waste disposal areas. In addition, conducted CQA services for unclassified fill placement on non-waste areas of the site.

Phelan Landfill AFC Observation and Testing, San Bernardino County, California
As Lead CQA Monitor supervised construction of a 35,000 cubic yard monolithic cover and provided CQA testing services during construction.

Newberry Landfill AFCCQA, San Bernardino County, California
As Lead CQA Monitor, provided construction observation and quality assurance testing during construction of a 20,000 cubic yard monolithic final cover system.

Colton Landfill AFC Observation and Testing, San Bernardino County, California
Lead CQA Monitor providing daily observation and testing during construction of this 75,000 cubic yard monolithic final cover system.

Crittenden Canyon, Engineered Fill CQA, Mountain View, California
As CQA Monitor, provided construction quality assurance (CQA) services during processing and placement of low-permeability material and placement of geotextiles in accordance with project specifications. Construction included installation of a sub-drain and landfill gas recovery system.

Elsinore Landfill Low Permeability Cover Test Pad CQA, Riverside County, California
Project included preparation of test pads to assess low-permeability materials along with construction observation and testing of a prescriptive final cover.

Sealed Double Ring Infiltrometer (SDRI) Testing, Various California Landfill Sites
Performed construction and testing of SDRIs for the Bena Landfill, Kern County; Coyote Canyon Landfill, Orange County; Elsinore Landfill, Riverside County; Mid-Valley Landfill, San Bernardino County; and BKK Landfill, Los Angeles County. Reviewed and trained personnel involved in Quality Control and Quality Assurance. This included field in-place (BAT) micro permeability tests.

John Hower, PG, CEG

Principal Geologist

Geo-Logic ASSOCIATES

Mr. Hower is a Certified Engineering Geologist with 28 years of experience in geology, engineering geology, landfill design, water quality data analysis, and construction quality assurance. Mr. Hower's range of experience has provided strong leadership to oversee complex geologic and hydrogeologic investigations, corrective action design and construction, and regular evaluation of water quality data associated with solid waste facility monitoring and reporting programs. Mr. Hower has been managing quarterly, semiannual and annual groundwater monitoring and evaluation for solid waste landfills at numerous landfills throughout California. Mr. Hower has managed liner and cover projects, groundwater corrective action programs and the full range of solid waste programs from siting to closure. Mr. Hower also has been integrally involved in the California Integrated Waste Management Board's Solid Waste Cleanup Program, completing hazardous waste characterization and remediation work at dozens of illegal or abandoned disposal sites throughout California. His strong knowledge of state and federal solid waste regulations serves to assist his clients to comply with current regulations.

EDUCATION

Bachelor of Science, Geology, 1990
California State University, Long Beach

Graduate courses in engineering geology and hydrogeology
California State University, Los Angeles

PROFESSIONAL REGISTRATIONS

Professional Geologist, California, No. 6524

Certified Engineering Geologist, California, No. 2142

Hydrogeologic Investigation, Stringfellow Acid Pits, Riverside County, California
Field geologist responsible for overseeing drilling and construction of groundwater monitoring and extraction wells as part of the ongoing remediation of this Superfund site. Worked closely with DTSC personnel to ensure that well designs met with project goal. Logged cuttings, and cores, interpreted downhole geophysical surveys, and revised well designs based on field data.

Environmental Services, Salinas Valley Solid Waste Authority Landfills, Monterey County, California
Project Manager (2005 to present) responsible for water quality monitoring and reporting for four Class III landfill sites including the active Crazy Horse and Johnson Canyon Landfills and closed Jolon Road and Lewis Road Landfills. Work includes oversight of sampling of more than 130 monitoring points, data evaluation, statistical analyses, and report preparation. Coordinates work with Authority program manager, and conducts meetings with Central Coast RWQCB staff. Provides additional, as-needed environmental services at the Authority's request, including well and soil-pore gas probe drilling, well development, aquifer testing, special environmental sampling, permitting, and construction oversight.

Hydrogeologic Assessment, Engineering Feasibility Study, and CAP Pilot Study, Crazy Horse Class III Landfill, Monterey County, California
Project Manager responsible for preparation of a detailed hydrogeologic assessment of a release along the eastern area of the Crazy Horse Landfill and incorporating the findings into a site-wide Engineering Feasibility Study to

remediate groundwater in three release areas at this Class III site. Based on the EFS results, implemented a pilot scale bioaugmentation CAP. Work included preparation of a work plan to drill multiple injection points for an emulsion capable of providing a food source to in-situ micro-organisms to stimulate biodegradation activity and remediate contaminants in the surrounding groundwater. The results of the pilot study suggest its broader applications at the site.

Environmental Monitoring and Reporting Services, Rock Creek and Red Hill Solid Waste Facilities, Calaveras County, California.
Project Manager (2014 to present) responsible for supervising all aspects of quarterly, semianannual and annual groundwater, leachate, landfill gas, and stormwater monitoring and reporting activities. Coordinates work with the County, subcontractors, and in-house staff. Responsible for budget management and regulatory liaison.

Environmental Monitoring and Reporting Services, Sunshine Canyon Landfill, Los Angeles County, California.
Project Manager (2013 to Present) responsible for coordinating quarterly groundwater and leachate sampling, report preparation, and client-regulator liaison. Successfully petitioned the Los Angeles RWQCB to modify the groundwater monitoring program to eliminate redundant monitoring parameters and reduce monitoring frequency.

Environmental and Geotechnical Services, City of Santa Cruz Landfill, Santa Cruz County, California
Project Manager (2003 to present) responsible for implementing groundwater monitoring and reporting services and providing a variety of environmental consultation services for the City of Santa Cruz Class III landfill. Providing liaison services to the City and the Central Coast RWQCB to ensure compliance with Title 27 regulations. Currently negotiating with the State for a waiver of installation of an additional off-site soil-pore gas monitoring probe to comply with recent greenhouse gas regulations. Currently working with the City to provide geotechnical support and liner design for expansion of the landfill.

Geotechnical Investigation and M&RP Development, Prima Deshecha, Orange County, California
Lead Geologist responsible for overseeing geotechnical investigations in support of an extensive site expansion for this landfill. Performed geologic mapping of cut slopes and downhole logging of over 20 large diameter boreholes to assess landslide activity in the two development areas. Drilled, logged, installed, developed and sampled 12 bedrock groundwater monitoring wells across the site. Assisted with slope stability analyses and landslide evaluations. Provided geotechnical support for the revised Master Plan design negotiations with various Resource Agencies. Prepared a site-wide M&RP to monitor the deeper bedrock aquifer.

Groundwater Monitoring Services, Santa Ana and Lahontan Region Landfill Sites, San Bernardino County, California
Task Manager responsible for assimilating quarterly groundwater and soil-pore gas chemistry data from nearly 300 sample points at 21 sanitary landfills in San Bernardino County. Work included data review, coordination with analytical laboratory and groundwater sampling crew, statistical analysis using in-house SAC-APP® computer program, trend analysis, report preparation, and regulatory compliance.

Groundwater Monitoring Services, 10 Landfill Sites, Imperial County, California
Task Manager responsible for coordinating semi-annual groundwater sampling and assimilating groundwater chemistry data from 45 sample points at 10 landfills in Imperial County. Work included data review,

coordination with analytical laboratory and groundwater sampling crew, statistical analysis using in-house SAC-APP® computer program, trend analysis, report preparation, and regulatory compliance.

South Hilo Landfill Master Planning and Water Quality Monitoring and Reporting Program, County of Hawaii, Hawaii
Project Manager (2004 to Present) responsible for review of landfill groundwater and perimeter gas monitoring systems, and preparing quarterly water quality monitoring reports in accordance with federal and state regulations. Worked with County of Hawai'i Solid Waste Management Department to assess adequacy of the monitoring system and developed recommendations for additional wells and soil-pore gas probes for site expansion. Responsible for evaluation of numerous design alternatives to extend the active life of the landfill and develop cost effective and viable alternatives to the prescriptive final cover system. Most recently provided oversight during construction of additional monitoring wells and probes.

Geotechnical Investigation and M&RP Development, Savage Canyon Landfill, Los Angeles, California
Project Manager responsible for geotechnical/hydrogeologic investigation for proposed landfill expansion. Work included field mapping, down whole logging of borings, an investigation of the Whittier fault, and preparation of geotechnical investigation report. Subsequently developed a Title 27 compliant DMP and M&RP for the expansion area. Provided agency liaisons with RWQCB for approval of the DMP and M&RP on behalf of client.

Groundwater Monitoring and CAP System Enhancement, Palos Verdes Landfill, Rolling Hills Estates, California
Project Manager responsible for installation of groundwater extraction and monitoring wells to refine the existing groundwater treatment system for this Class I landfill. Supervised well development and collected aquifer recovery data to estimate hydraulic properties of the water-bearing zone.

Hydrogeologic Investigation for Slurry Wall Corrective Action Program (CAP) Design, Calabasas Landfill, Agoura, California
Project Manager responsible for developing, commissioning, and managing a hydrogeologic investigation for the design of a cement-bentonite slurry wall, upgradient extraction wells and downgradient monitoring wells. Work included geologic mapping, drilling, seismic refraction surveying, and packer testing.

Geotechnical/Hydrogeologic Siting Studies, Proposed Santa Maria Landfill Master Plan, City of Santa Maria, California
Project Manager responsible for developing a comprehensive scope to assess the geology, hydrogeology and geotechnical characteristics to support siting and design of a proposed 300-acre disposal site in the Solomon Hills near Santa Maria. Work included exploratory drilling and trenching, geophysical surveys, and field mapping to characterize old fills, alluvium, landslide deposits, and the Paso Robles Formation bedrock. Monitoring wells were constructed to depths of up to 760 feet and sampled to establish baseline water quality. Coordinated stability and seismic hazard analyses and liner design. Prepared a report summarizing the field activities, soil and groundwater test results, and geotechnical analyses. Prepared geologic, hydrogeologic, and geotechnical engineering aspects of the EIR for landfill permitting.

Site Characterization and Design, Frank R. Bowerman Landfill, Orange County, California
Project Geologist for geotechnical investigation and site characterization. Work included field geologic mapping, downhole logging of borings, construction of monitoring wells, and slope stability analysis for various phases of landfill expansion.

Gregory Canyon Landfill Site Development, San Diego County, California
Field geologist assisting with preparation of EIR documents for review by the San Diego RWQCB. Conducted 24 and 72-hour constant rate pumping tests to evaluate aquifer properties, and modeled groundwater flow conditions of various landfill configuration scenarios using USGS' Visual MODFLOW to evaluate potential release scenarios.

Fault Investigation, Barstow Sanitary Landfill, San Bernardino County, California
As a Field Geologist logged soil profiles and bedrock exposed in trenches excavated across surface traces of the Lenwood fault.

Palos Verdes Landfill RI/FS, Los Angeles County, California
Project geologist for the RI/FS program. Used the Mapping Contouring System (MCS) software to create a three-dimensional geologic model of the 15.3 square mile area surrounding the Palos Verdes. The geologic model served as a digital framework for subsequent groundwater flow and contaminant transport model.

Environmental Support Services for Cleanup of the Glass Beach Burn Dump, Mendocino County, California
Assistant Program Manager and Lead Field Geologist during characterization and cleanup of an oceanside burn dump. Wastes included RCRA and non-RCRA hazardous levels of heavy metals. Responsible for waste characterization and segregation, coordinating cleanup work with CalRecycle and its contractors, North Coast RWQCB, and city officials, conducting cleanup confirmation sampling, and preparing the construction completion report.

Environmental Support Services for Cleanup of the City of Sonoma Burn Dump, Sonoma County, California
Assistant Program Manager and Lead Field Geologist during cleanup of a burn dump. Wastes included RCRA and non-RCRA hazardous levels of heavy metals and radioactive materials. Responsible for environmental sampling, waste segregation, coordinating cleanup work with US EPA Region IX, CalRecycle and its contractors, and city and county agencies, conducting cleanup confirmation sampling, and preparing the construction completion report.

Environmental Support Services for Cleanup of the Archie Crippen Illegal Disposal Site, Fresno County, California
Assistant Program Manager and Lead Field Geologist during cleanup of this illegal recycling, composting, and dump site that caught fire. Wastes included non-RCRA hazardous and nonhazardous wastes. Responsible for environmental sampling, waste segregation, coordinating cleanup work with US EPA Region IX, CalRecycle and their contractors, Central Valley RWQCB, and city and county officials. Also conducted cleanup confirmation sampling and prepared the construction completion report.

Environmental Support Services, Westley Tire Fire Site, Stanislaus County, California
Project Manager and Lead Geologist responsible for documenting contractor and subcontractor costs during the $13 million remediation of this site. Also responsible for coordinating geotechnical investigations to determine stability of oversteepened slopes, developed and implemented a groundwater monitoring program for the site, and collected soil samples documenting the waste tire and contaminated soil removal effort. Worked closely with Cal Recycle, the Central Valley RWQCB, and DTSC during this nine-month project.

Environmental Support Services for Cleanup of the Sonoma Developmental Center Upper Disposal Area, Sonoma County, California
Assistant Program Manager and Lead Field Geologist during cleanup of this pre-regulation disposal area. Wastes included RCRA and non-RCRA hazardous levels of heavy metals and medical wastes. Responsible for waste characterization and segregation, geotechnical assessment and review of slope stabilization designs, coordinating cleanup work with CalRecycle and its contractors, county officials, and property representatives. Conducted cleanup confirmation sampling and prepared the construction completion report.

Environmental Support Services for City of San Diego Wildfire Cleanup, California
Project Manager and lead field geologist responsible for post-fire surveys and documentation of 75 home sites in the City of San Diego that were destroyed during the October 2007 wildfires. Prepared and implemented a site sampling and analysis plan. Following survey and site cleanup, collected random samples from each property. Prepared data reports and provided them to the Contractor and City of San Diego. Attended daily status meeting with the City, Contractor, and FEMA.

Environmental Support Services for County of San Bernardino Wildfire Cleanup, California
Project Manager responsible cleanup confirmation sampling of more than 200 properties destroyed in the October 2007 wildfires that affected the Lake Arrowhead area of San Bernardino County. Assessed site background condition, sampled each property, and prepared reports documenting the results. Work in concert with the County and its contractors, FEMA, Cal/OSHA, and other regulatory agencies overseeing cleanup work.

Pesante Triangle Litigation, Monterey County, California
Retained as site expert to review workplans and oversee third-party investigative drilling operations at the Crazy Horse Landfill associated with a lawsuit filed by residents near the site. Represented SVSWA and City of Salinas legal counsel at the site, observed and recorded drilling operations, provided expert comment on workplan, field operations, and groundwater sampling procedures. Prepared daily field reports for distribution to the defendants' legal counsel.

Butte Wildfire Cleanup Project, Calaveras County, California
Project Manager during cleanup of more than 850 residential properties in Calaveras County that were destroyed by the Butte Fire. Managed a crew of up to 30 crewmembers including up to six Division Supervisors and 24 Task Force Leaders during the six-month cleanup. Provided safety training for all crewmembers. Worked alongside CalRecycle, California Office of Emergency Services, the general contractor, and FEMA's contractor to manage field operations. Assisted with re-characterization of background arsenic concentrations, and developed a waste acceptance plan to allow local landfills to accept fire-related debris and wastes.

Round Wildfire Cleanup Project, Mono County, California
Project Manager responsible for providing incident training and supervising hazard assessment surveys, daily debris removal operations, cleanup confirmation sampling, and debris removal reporting following the February 2015 wildfires that destroyed more than 40 homesites in Mono County. Coordinated and managed subcontractors responsible for air monitoring, hazard tree assessment and removal, and asbestos characterization and abatement. Worked with the California Office of Emergency Services and California Department of Resources Recycling and Recovery to ensure the debris removal met the State's standards.

Additional Professional Training

OSHA Hazardous Waste Operations and Emergency Response Training (40-Hour)
Nuclear Gauge Safety Training

Publications and Presentations

Hower, John M. 2011. Bioremediation Pilot Study at the Crazy Horse Sanitary Landfill, presented at the SWANA Western Regional Symposium, May 2011.

Hower, John M. and H. Ferriz. 1994. "MCS Geologic Models Help Solve Three Environmental Problems," Proceedings of the 1994 Annual Meeting of the Geological Society of America, October 24-27, 1994.

Gary L. Lass, PG, CEG, CHG

Chief Executive Officer

Geo-Logic ASSOCIATES

EDUCATION

Master of Science,
Geochemistry, 1978
California State University, Los Angeles

Bachelor of Science, Geology, 1974
California State University, Los Angeles

PROFESSIONAL REGISTRATIONS

Registered Geologist,
California, No. 3653

Certified Engineering Geologist,
California, No. 1093

Certified Hydrogeologist,
California, No. 18

Certified Engineering Geologist,
Oregon, No. E1577

Registered Geologist,
Arizona, No. 28820

Mr. Lass has 40 years of experience providing successful geological, environmental, geotechnical, and hydrogeologic services throughout the Western United States and Mexico. He has acted as Principal-in-Charge, and/or Project Manager for geologic and hydrogeologic characterizations for Remedial Investigations (RIs), Feasibility Studies (FSs), Remedial Action Plans (RAPs), Evaluation Monitoring Programs (EMPs), Engineering Feasibility Studies (EFS), Corrective Action Programs (CAPs), groundwater monitoring and reporting programs and site closures. Mr. Lass has extensive experience with all aspects of landfill siting, expansion, design, permitting, construction, operations, monitoring and closure and is a specialist in CCR Title 27 compliance, having acted as Principal-in-Charge, and/or Project Manager for geotechnical, geologic and/or hydrogeologic characterizations projects at hundreds of landfill sites throughout the western United States. Mr. Lass has also been the manager and/or principal-in-charge for hundreds of geotechnical projects including the investigation, evaluation, design, and/or construction inspection of dams, bridges, reservoirs, pipelines, roadways, hillside and flatland commercial/industrial/residential developments, structure distress forensics, natural hazard mitigation, and seismic studies. Finally, Mr. Lass has been involved in a number of mine reclamation projects completed in accordance with the California Surface Mining and Reclamation Act (SMARA).

Environmental Monitoring and Reporting Program, 26 Landfill Sites, San Bernardino County, California
For the last 20 years, served as Principal-in-Charge overseeing routine monitoring and reporting for 26 landfills, as well as non-routine services required to maintain regulatory compliance. Provided regulatory liaison services between County and the Santa Ana, Lahontan, and Colorado River Basin RWQCB to ensure compliance with site permits.

RI/FS/RAP, Former Bunker Area, City of Rialto, California
Principal-in-Charge of hydrogeologic studies to characterize the nature and extent of perchlorate impacts to groundwater on this former military bunker facility. Project included a groundwater contaminant plume evaluation (including a 3-dimensional groundwater flow model), preparation of an RI, an FS and RAP, and design, permitting, construction and operation of a 2,000 to 4,000 gpm groundwater treatment system.

EMP, EFS and CAP, Mid-Valley Sanitary Landfill, San Bernardino County, California
Principal-in-Charge of hydrogeologic studies to characterize the nature and extent of VOC impacts to groundwater adjacent to this Class III facility. Project included a groundwater contaminant plume evaluation (including a 3-dimensional groundwater flow model), preparation of an engineering feasibility study (EFS) and development of a Corrective Action Program (CAP)

design. Also provided regulatory liaisons for CAP pilot study, and subsequent full-scale CAP system construction and O&M.

EMP, EFS and CAP, Milliken Sanitary Landfill, San Bernardino, California
Principal-in-Charge of an EMP for VOC contaminant migration from this Class III landfill. This project also included preparation of an EFS, development of a CAP system design and implementation of the full corrective action system. Recently negotiation for an Monitored Natural Attenuation CAP to reflect improvements in water quality compared with modeled predictions.

EMP, EFS and CAP Design, Colton Landfill, San Bernardino County, California
Principal-in-Charge for hydrogeologic characterization and design of groundwater CAP system to support re-permitting of this 100-acre facility. Recently assisted with regulatory negotiation to revise the statistical approach to evaluating groundwater chemistry to reflect regional groundwater changes.

EMP, EFS, and Pilot Study Bioremediation CAP, Yucaipa Landfill, San Bernardino County, California
Principal-in Charge for hydrogeologic studies associated with a VOC release from this closed landfill located adjacent to a regional park. Work included a geologic and hydrogeologic characterization by traditional and geophysical methods. The STING resistivity geophysical method was used to identify a complex of faults in bedrock beneath a thick alluvial section, which affect groundwater and contaminant flow. Results of the field program (including quarterly groundwater quality data and aquifer pumping tests) were used to assess the aquifer characteristics and the VOC plume geometry and develop a first phase EMP and EFS. 3-dimensional groundwater modeling was used to simulate groundwater flow and attenuation of contaminants with distance from the site. Provided oversight during construction and implementation of a bioremediation pilot study to evaluate the effectiveness of commercially available VOC treatment product.

EMP and Water Quality Reporting, Santa Cruz Class III Landfill, Santa Cruz, California
Principal-in-Charge for geotechnical/ hydrogeologic studies for landfill expansion and characterization of landfill impacts to groundwater. Project work included geologic and hydrogeologic characterization, monitoring system design and construction, liner design and construction, and City and RWQCB liaison assistance. Work also included development and implementation of an EMP that defined the nature and extent of VOC contamination at the site.

Groundwater M&RP, Stringfellow Hazardous Waste Site, Riverside County, California
Principal-in Charge for this high-visibility Superfund project and former Class I industrial waste disposal facility, for the California Department of Toxic Substances Control (DTSC). Work has included geologic and hydrogeologic investigations, development of a 3-dimensional groundwater flow model, semi-annual groundwater monitoring and reporting, and additional services as required in support of the site characterization, contaminant plume definition, and site remediation.

Environmental Monitoring Services, Salinas Valley Solid Waste Authority Landfills, Monterey County, California
Principal-in-Charge (2005 to present) responsible for water quality monitoring and reporting for four Class III landfill sites. Work includes oversight of sampling of more than 130 monitoring points, data evaluation, statistical analyses, and report preparation.

Environmental Monitoring and Reporting Services, Republic Southwest Region Landfill Sites
Principal-in-Charge (2013 to present) responsible for water quality monitoring and reporting for 25 landfills in California, Arizona, and Colorado.

Geologic/Hydrogeologic Investigations, Central Landfill, Sonoma County, California
Principal-in Charge for a geotechnical and hydrogeologic investigation, landfill engineering and a fault study in support of landfill expansion. The project included drilling of eight borings to 100 to 300 feet, which were initially cored with HQ-wireline coring equipment and the reamed for borehole geophysical logging (caliper, electrical resistivity, acoustic televiewer and heat-pulse flow) and subsequently completed as groundwater monitoring wells. Step-drawdown and 24-hour aquifer pumping tests were performed within the fractured crystalline bedrock. The pumping test data, geophysical logs and water quality data were used to develop the characteristics of the bedrock aquifer and develop a groundwater monitoring network. A fault study was also performed and included extensive trenching to evaluate the age of faulting. All of this information was incorporated into a summary report in support of the landfill expansion design.

Groundwater Investigation and Fault Study, Barstow Sanitary Landfill, San Bernardino County, California
Principal-in-Charge for geologic investigation and fault study in support of landfill expansion. The drilling program included construction of three groundwater monitoring wells to depths of 800 to 1000 feet. The fault study included extensive trenching and isotopic dating of formational materials to evaluate the age of faulting in the vicinity of the expansion area.

Hydrogeologic Investigations, East Otay Mesa Landfill Siting Study, San Diego County, CA
Principal-in-Charge overseeing a project involving hydrogeologic characterization of alluvial and fractured bedrock aquifers to support the siting of a new landfill in San Diego County. Studies to include drilling of borings and construction of groundwater monitoring wells; and geophysical testing of bedrock wells to assess productive zones within fractures. Results of the field investigation will be used to develop a site conceptual model in support of the landfill design and subsequent monitoring and reporting program for the proposed landfill. Also providing regulatory liaisons on groundwater issues

RAP Alternatives Evaluation, Acme Landfill, Contra Costa County, California
Technical Lead responsible for review, hydrogeologic characterization, and agency negotiation to support potential PRPs defense against corrective action costs.

RI/FS and RAP, EPC Landfill, Bakersfield, California
Principal-in-Charge for geologic and hydrogeologic evaluation, fate and transport modeling to assess contaminant impacts to regional groundwater for this hazardous waste site. Regulatory liaison for proposed limited RAP. Project included a groundwater contaminant plume evaluation (including fate and transport analysis), preparation of an RI/FS and RAP, and design and permitting of final site closure.

Hydrogeologic Characterization, Puente Hills Sanitary Landfill, Los Angeles County, California
Technical Lead for hydrogeologic characterization and well installation to support design of the groundwater monitoring system at this 500+ acre facility.

Hydrogeologic Evaluation, Elsmere Canyon Landfill, Los Angeles County, California
Technical Lead for geologic and hydrogeologic evaluation and preliminary design of this proposed 1,600-acre regional facility.

Hydrogeologic Characterization, EMP and Design, Santiago Canyon Landfill, Orange County, California
Principal-in-Charge of hydrogeologic characterization of potential contaminant migration from this 180-acre landfill, including borrow evaluation and earthwork design to facilitate closure.

Geologic/Hydrogeologic Investigations, Prima Deshecha Landfill Expansion, Orange County, California
Principal-in-Charge for geotechnical investigations in support of an extensive site expansion of this landfill. The investigation included downhole logging of over 20 large-diameter boreholes to evaluate landslide slip planes and cut slopes in the Capistrano Formation in two development areas. A hydrogeologic investigation was also performed and included drilling, logging, installation, developing and sampling of 12 bedrock groundwater monitoring wells across the site, and preparation of a site-wide M&RP to monitor the deeper bedrock aquifer. Also provided design of a biomitigation system in the realigned Prima Deshecha drainage.

EMP and CAP System Evaluation, Mountain View Landfill, Santa Clara County, California
Principal-in-Charge for geologic and hydrogeologic characterization to facilitate closure and CAP system performance on this 1,000+ acre regional park facility. Project included a groundwater contaminant plume evaluation, including 3-dimensional groundwater modeling to support corrective action.

Geologic/Geotechnical Investigation, Tequesquite Sanitary Landfill, Riverside County, California
Principal in Charge for geologic/geotechnical investigation of proposed borrow site for Alternative Final Cover construction. Work included seismic refraction surveys, subsurface investigations and laboratory analyses of various borrow and soil mix designs.

Geologic/Geotechnical Investigation, Olinda-Alpha Sanitary Landfill, Orange County, California
Technical Lead for geologic mapping, subsurface investigation, slope stability analyses, and evaluation of potential on-site borrow resources for site expansion and Master Plan development.

CIWMB (CalRecycle) Statewide Solid Waste Cleanup Program Contract, California
Principal in Charge of California Integrated Waste Management Board contract to develop and implement closure and environmental monitoring at various closed, illegal, and abandoned landfill sites throughout the state. Project work includes site characterization, geotechnical studies, site remediation and restoration/closure.

Tule Wind Groundwater Investigation, East San Diego County, California
Principal-in-Charge responsible for a water supply project involving well testing and evaluation of groundwater resources available to support construction and operation of a wind farm near Boulevard, California. Work included long term (72-hour) aquifer pumping tests, an evaluation of well interference, cumulative impacts and conclusions as to the availability of groundwater to support the project. Work was performed under the guidance of the County of San Diego Department of Planning and Land Use. Following approval of the final groundwater investigation report, professional consultation and support was provided to obtain project approval from the County.

Rough Acres Ranch Campground Groundwater Investigation, East San Diego County, California
Principal-in-Charge responsible for evaluation of groundwater resources available to support construction and operation of a campground and conference center near Boulevard, California. Work included an evaluation of long term (72-hour) aquifer pumping test data to assist with evaluations of well interference, estimated percent reduction in groundwater in storage, groundwater-dependent habitat, and cumulative impacts associated with multiple planned and approved projected using the same water supply sources, as well as for the stand-alone project. Conclusions were developed and mitigation measured identified to support the project. Work was performed under the guidance of County Planning and Development Services Department.

Geologic/Hydrogeologic Investigations, Gregory Canyon Landfill, San Diego County, California
Principal-in-Charge for hydrogeologic and geologic characterization of a fractured crystalline bedrock aquifer in support of an EIR and water permits to site a new landfill in northern San Diego County. Studies have included field mapping, borehole geophysical surveys, and construction and aquifer pumping tests to assess the hydraulic properties of the fractured crystalline bedrock aquifer and develop a groundwater flow model, and monitoring and reporting program for the site. Served as regulatory liaison and made technical presentations as part of public participation for landfill siting.

Professional Training

OSHA Hazardous Waste Operations and Emergency Response Training (40-Hour)

Publications and Presentations

Lass, G.L., R. Keenan, E. Casas, A. Rivera, L.A. Mariscal. 2000. Performance Results of the Coyote Canyon, Milliken and Phelan Landfill Alternative Monofill Demonstrations: Proceedings of the 5th Annual Landfill Symposium of the Solid Waste Association of North America. April 12-14, 2000. Albuquerque, New Mexico.

Lass, G.L., Ferriz, H.G., Eisenberg, L.C., Niederman, C.S. 1996. Alternative Final Covers for Landfills in Arid and Semi-arid Regions – A Case Study: Proceedings of the 1st Annual Landfill Symposium of the Solid Waste Association of North America. November 4-6, 1996. Wilmington, Delaware.

Bert Salinas

Field Technician

Geo-Logic ASSOCIATES

Mr. Salinas has 26 years experience providing environmental field support for landfill gas and groundwater monitoring programs at landfill facilities throughout California. Mr. Salinas has performed environmental monitoring services at over 40 landfills sites including over 900 monitoring points. As part of this work, Mr. Salinas has been responsible for monitoring point maintenance, pump installation and servicing, and a variety of other support tasks. Mr. Salinas has been responsible for routine monitoring of wells, gas probes and flare stations, and making routine repairs to the monitoring systems. His field experience has also included performing operation and maintenance of landfill gas extraction and treatment systems, conducting associated field repairs, and performing a variety of monitoring tasks as a part of an SCAQMD Rule 1150.1 monitoring programs.

PROFESSIONAL TRAINING

OSHA 40-Hour HAZWOPER Training

MSHA Training

Westbay Sampling Equipment Training

Elixir Industries Groundwater Remediation System Monitoring, Gardena, California.
Field Technician responsible for quarterly monitoring of granular activated carbon treatment system at site, which is used for remediation of alcohol-contaminated groundwater. Collect monthly PID readings and monitor system for compliance with SCAQMD permit.

Peyton Cramer Treatment System Monitoring, Torrance, California.
Field Technician for weekly monitoring of vapor extraction system, including of collection of PID readings, monitoring five wells and four monitoring probes, measuring system temperature and differential pressure, and fine-tuning system as required.

Groundwater Monitoring Program, Azusa Landfill, Los Angeles County, California
Senior Water Quality Technician for groundwater monitoring program at this landfill, which includes quarterly monitoring of 8 wells by standard purge methods using dedicated electronic submersible pumps and the Westbay system on one well.

Heaps Peak Transfer Station, Gas System Monitoring, San Bernardino County, California.
Senior Field Technician responsible for monitoring of landfill gas extraction and treatment system. This included monitoring of buildings and gas wells, gas well adjustment, and routine monitoring of carbon canisters, detonation arrestors, gas wells, gas condensate storage tanks, monitoring gas probes, and Gastech LEL monitors.

Plaza Alicante, Treatment System Operations and Maintenance, Garden Grove, California.
Field Technician for routine operations, maintenance, and monitoring of gas extraction system at a major hotel/restaurant complex. The system prevents

migration of landfill gas into the complex from a closed landfill site. Newport Terrace, Treatment System Monitoring and O&M Newport Beach, CA. Perform routine operation, maintenance, and monitoring of gas collection and treatment system. This involves collecting monitoring data for all the gas probes and the blower facility.

Operating Industries, Inc. Superfund Site, Monitoring and O&M, Monterey Park, California.
Field Technician responsible for gas monitoring and maintenance of existing landfill gas recovery and migration systems. Quarterly sampling of landfill gas chromatography analysis.

Santiago Canyon Landfill, Treatment System Monitoring and O&M, Orange County, California.
Water Quality Technician for routine operation, maintenance, and monitoring of groundwater treatment system.

Colton, Mid-Valley, San Timoteo, and Milliken Landfills, Gas System Monitoring and O&M, San Bernardino County, California.
Senior Field Technician responsible for operation, maintenance, and monitoring activities of landfill gas extraction and treatment systems

Groundwater Monitoring Services, Stringfellow Hazardous Waste Site, Riverside County, California.
Responsible for routine monitoring and sampling of groundwater wells at this Superfund Site. Duties include collection of groundwater samples from as many as 400 wells on a semi-annual basis, collection of stormwater samples when sufficient run-off is present, preparing samples for shipment, coordination with laboratory personnel for delivery of sample containers and pickup of samples, and preparation of chains of custody using DTSC's electronic chain of custody software. Wells are sampled using dedicated electronic submersible pumps, bladder pumps, and Hydrasleeve® devices.

Water Quality Monitoring and System Maintenance, Salinas Valley Solid Waste Authority Landfills, Monterey County, California.
Senior Environmental Technician responsible for field monitoring and maintenance services as part of groundwater sampling and analysis program at the Lewis Road, Johnson Canyon, Jolon Road, and Crazy Horse Class III Landfill facilities. Includes sampling of more than 150 points, including wells, piezometers, lysimeters, surface water points, sediment points, leachate, condensate, and groundwater treatment system influent and effluent sampling points. Periodically required to evaluate problems with monitoring systems and replace old or malfunctioning pumps. Required to coordinate with client and local residents.

Groundwater Monitoring Program, Northern Rialto-Colton Groundwater Basin, San Bernardino, California.
Senior Environmental Technician responsible for semi-annual sampling of 60 to 70 groundwater monitoring wells using a variety of sampling protocols and devices. Samples are collected using standard purge, Westbay, micropurge, and grab techniques. Dedicated electric submersible pumps, bladder pumps, bailers, and Hydrasleeve devices are used for sampling.

Groundwater Monitoring Program, French Camp, Forward, and Newby Island Landfills, Northern California.
Senior Environmental Technician responsible for groundwater, surface water, leachate and soil-pore gas sampling at the French Camp and Forward Landfills in San Joaquin County, and Newby Island Landfill in Santa Clara County. Work includes monthly quarterly and semi-annual sampling events.

Groundwater Monitoring Services, Miramar Landfills, San Diego, California.
Senior Environmental Technician for routine monitoring and sampling of groundwater wells, surface water and soil-pore gas liquid at the active West Miramar Landfill and inactive South and North Miramar Landfills. Also assisted with the installation of dedicated electrical submersible and bladder pump systems at these sites.

Groundwater Monitoring Services, Arizona Street, Paradise Hills Park, Mission Bay, and South Chollas Landfills, San Diego, California.
Senior Environmental Technician for routine monitoring and sampling of more than 40 wells, lysimeters, and surface water sampling points at these inactive landfills. Also assisted with the installation of dedicated bladder pump systems at these sites.

Groundwater Monitoring Services, Borrego, Sycamore, Ramona and Otay Landfill Sites, San Diego County, California.
Senior Environmental Technician for groundwater and leachate monitoring and maintenance program at four active landfills operated by San Diego Landfill Systems. This work included the installation, operation and maintenance of pneumatic bladders pumps, and electric submersible pumps.

Groundwater Monitoring Services, 26 San Bernardino County Landfill Sites, San Bernardino County, California.
Senior Environmental Technician for groundwater monitoring and maintenance program at 26 sites operated by the County of San Bernardino. This work included the installation, operation and maintenance of various types of groundwater sampling and monitoring systems including, automated bailers, pneumatic bladders pumps, electric submersible pumps, electronic water level meters, pressure transducers, bubblers, and pneumatic packers.

Groundwater Monitoring Services, Avenal Landfill Site, Kings County, California.
Senior Environmental Technician for the routine monitoring and sampling of groundwater wells and lysimeters at a landfill site in Avenal, California. Activities also included the monitoring of enclosed areas for the accumulation of landfill gas.

Groundwater Monitoring Program, Imperial County Landfill Sites, Imperial County, California.
Senior Water Quality Technician for groundwater monitoring program at 10 active landfills. Project includes semi-annual sampling of 40 monitoring wells using dedicated bailers.

Groundwater Monitoring Services, Integrated Waste Management Facility at Santa Maria, Santa Barbara County, California.
Responsible for installation of bladder pumps in new monitoring wells at this proposed landfill site. After pumps were installed, collected groundwater samples and water levels to establish baseline water quality information.

Groundwater Monitoring Services, Tequesquite Landfill, Riverside County, California.
Responsible for the quarterly monitoring and sampling of 21 groundwater wells, numerous piezometers, and 6 surface water sampling locations. Wells were samples using dedicated electronic submersible pumps.

Groundwater Monitoring Services, California Street Landfill, Redlands, California.
Senior Water Quality Technician for the routine monitoring and sampling of 7 monitoring wells, 4 lysimeters, and 1 soil-pore gas at this municipal landfill.

Groundwater Monitoring Services, Echo Landfill, Fort Irwin, California.
Senior Water Quality Technician for routine monitoring and sampling of groundwater wells at this remote desert site. Activities also included installation of dedicated pump systems.

Groundwater Monitoring Program, Waterman Landfill, San Bernardino, California.
Senior Water Quality Technician for groundwater monitoring program at this landfill, which includes quarterly monitoring of 3 wells and 4 piezometers.

Groundwater Monitoring Services, Nutrilite Lakeview Facility, Riverside County, California.
Senior Water Quality Technician for quarterly sampling of 3 wells and a pond using Hydrasleeve® and standard purge techniques.

Groundwater Monitoring Program, Proposed Gregory Canyon Landfill Site, San Diego, California.
Senior Water Quality Technician for quarterly baseline groundwater and surface water monitoring program at this proposed landfill site.

Colton, Mid-Valley, San Timoteo, and Milliken Landfills, Air Monitoring, San Bernardino County, California.
Senior Field Technician responsible for field monitoring activities for South Coast Air Quality Management District Rule 1150.1 monitoring project. Responsibilities included integrated surface sampling, instantaneous surface monitoring, probe sampling and monitoring, routine well monitoring and adjustment.

Environmental Sampling, Sunshine Canyon Landfill, Los Angeles County, California.
Senior Water Quality Technician for groundwater monitoring program at this landfill, which includes quarterly monitoring of 19 wells, 3 leachate monitoring points, 4 vadose zone monitoring points, and 15 piezometers. Wells are sampled using low-flow purge methods.

Environmental Sampling, LB Properties, Los Angeles County, California.
Water Quality Technician responsible for sampling groundwater monitoring wells installed to monitor impacts from residential septic systems. Wells are equipped with non-dedicated bladder pumps, and are purged using low flow techniques. Responsible for decontamination of equipment between sampling, collection of samples and blanks, and documentation.

Groundwater Monitoring Services, Pitchess Detention Center Landfills, Los Angeles County, California.
Field Water Quality Technician for routine quarterly monitoring and sampling of groundwater wells at two landfills within this Los Angeles County Detention Facility.

Groundwater Monitoring Services, Mesquite Regional Landfill Site, Imperial County, California.
Senior Environmental Technician for the groundwater sampling of this facility to establish baseline water quality data prior to commencement of disposal operations. Twenty-three wells were sampled using dedicated bladder pumps and low-flow purging techniques.

Jason Sapp, PG, CHG, CEM

Senior Geologist

Geo-Logic ASSOCIATES

Mr. Sapp is a California Professional Geologist and Certified Hydrogeologist with 21 years of experience. He has participated in a variety of hydrogeologic and geologic investigations, including: exploratory boring and well drilling, geologic field mapping, soil and water sample collection, drilling log preparation, aquifer testing and hydrogeologic characterizations, data analyses, water quality assessments, statistical analyses, and report preparation. Mr. Sapp also has assisted in geologic hazards analyses and construction quality assurance projects. In addition to his professional experience, he has participated in neotectonic and geologic reconnaissance studies in southern California.

EDUCATION

Bachelor of Science, Geology, 1995
California State University, San Bernardino

Graduate Courses, Hydrogeology
California State University, Long Beach

PROFESSIONAL REGISTRATIONS

Professional Geologist, California, No. 7582

Certified Hydrogeologist, California, No. 801

Certified Environmental Manager, Nevada, No. 2427

PROFESSIONAL TRAINING

OSHA 40-Hour HAZWOPER Training

Nuclear Gauge Safety Training

Desert Tortoise Awareness Training

Regional Perchlorate and VOC Groundwater Investigation, Rialto, California
Project Hydrogeologist providing field oversight during completion of a focused Remedial Investigation/ Feasibility Study (RI/FS) to mitigate perchlorate and VOC impacts to groundwater that have been identified in the northern portion of the Rialto-Colton groundwater basin. Project work included the drilling of and construction of 18 wells, including Westbay multiport wells in excess of 500 feet through coarse, conglomeratic alluvial materials to evaluate soils and groundwater impacts; aquifer pumping tests to define aquifer hydraulic properties; and development of a three-dimensional model of regional groundwater conditions to evaluate existing plume migration pathways and to design a plume containment and treatment system. Owing to the great depth to groundwater in the area and the need to establish a quick, regulatory-approvable solution, the feasibility study concluded that the plume should be contained by an array of groundwater extraction wells and that treatment should be performed using conventional ion-exchange and granular activated-carbon systems.

Hydrogeologic Evaluation and EMP Implementation, Tequesquite Landfill, Riverside County, California
Project Manager responsible for developing and implementing an EMP to evaluate groundwater impacts at this closed landfill. Work included CPT and traditional drilling and well construction. During the EMP, discovered high levels of PCE upgradient of the site, indicating the impacts to groundwater were not from the landfill. The RWQCB concurred with GLA's conclusions, allowing reduced monitoring at the site.

Hydrogeologic Evaluation, Stringfellow Acid Pits, Riverside County, California
As Field Geologist/Hydrogeologist for this high-visibility Superfund project and former Class I industrial waste disposal facility, supervised and logged the borings, observed coring, collected soil samples, supervised well construction and development and performed the aquifer pumping tests and analysis of the data in support of a hydrogeologic investigation. Field activities included drilling 33 borings, downhole video surveys, and recovery of about 2,800 feet of continuous core in both alluvium and bedrock, and 1,345 feet of oriented

core in bedrock. At total of 22 aquifer-pumping tests have been performed and evaluated along with data from over 400 on-site and off-site wells to support the 3-D groundwater flow model. Also assisted with the aquifer pump test data evaluation.

EMP, EFS and CAP, Milliken Sanitary Landfill, San Bernardino County, California
Staff Geologist and Hydrogeologist conducting geologic and hydrogeologic studies to characterize the nature and extent of contamination in multiple aquifers adjacent to this Class III landfill. Project scope included numerical modeling to predict VOC fate and transport with the uppermost aquifer, and preparation of an Engineering Feasibility Study (EFS) to determine the most cost-effective remedial alternative, followed by CAP system construction and O&M.

Hydrogeologic Evaluation and CAP System Construction, Mid-Valley Sanitary Landfill, San Bernardino County, California
As Staff Geologist/Hydrogeologist, observed the construction, installation, and development of groundwater monitoring wells as part of an Evaluation Monitoring Program. This project utilized Air Rotary Casing Hammer drilling methods to identify multiple hydrostratigraphic units to depths of up to 500 feet below ground surface and "temporary wells" constructed in discrete groundwater intervals for sampling and quality analysis. Work also included conducting step- and constant-rate aquifer tests and performing analyses of data obtained from tests.

Hydrogeologic Investigation and Groundwater Modeling, Yucaipa Landfill, San Bernardino County, California
Staff Geologist and Hydrogeologist for hydrogeologic studies associated with a VOC release from this closed landfill located adjacent to a regional park. Field activities included a geologic and hydrogeologic characterization by traditional and geophysical methods. The STING resistivity geophysical method was used to identify a complex of faults in bedrock beneath a thick alluvial section, which affect groundwater and contaminant flow. The STING data was used to guide the location of exploratory boring, temporary wells, and eight permanent groundwater monitoring wells. Performed logging of borings, observation during well construction and development, and conducted aquifer pumping tests. Results of the field program (including quarterly groundwater quality data and aquifer pumping tests) were used to assess the aquifer characteristics and the VOC plume geometry.

Geotechnical/Hydrogeologic Investigation, Barstow Landfill Expansion, San Bernardino County, California
As Staff Geologist, logged borings for a geologic and hydrogeologic investigation in support of landfill expansion. The drilling program included construction of three groundwater monitoring wells to depths of 800 to 1000 feet. Following well construction, each well was equipped with a bladder pump for quarterly sampling. Also assisted with the geotechnical investigation was also completed including extensive trenching of suspected on-site faulting, an on-site materials evaluation, and slope stability analysis. All field work was coordinated and approved by the BLM and a biologist specializing in desert tortoise habitat to ensure that sensitive habitat was not affected.

Hydrogeologic and Geotechnical Investigation, Gregory Canyon, San Diego County, California
Field Geologist responsible for mapping fractures as part of the preliminary site evaluation and groundwater modeling project to support permit applications for a new landfill in northern San Diego County. Field data was collated and integrated into a graphical stereo-net presentation to support hydrogeologic characterization of the

site. Subsequent field activities included assistance with aquifer pumping tests to characterize the fractured crystalline bedrock aquifer.

Hydrogeologic and Geotechnical Investigation, Proposed Santa Maria Integrated Waste Management Facility, Santa Barbara County, California
Field Geologist responsible for supervising drilling, logging, borehole geophysics, final design, construction, and development of monitoring wells for a proposed landfill site near the City of Santa Maria. Well depths ranged from 550 to 800 feet deep, and required detailed geologic and geophysical logging to determine appropriate screen intervals. Conducted single-well aquifer tests after well construction was completed to evaluate hydraulic properties of the aquifer.

Geotechnical/Hydrogeologic Investigation, Prima Deshecha Landfill, Orange County, California
Field Geologist responsible for borehole logging, installation and development of groundwater monitoring wells in support of a geotechnical and hydrogeologic investigation. Also performed downhole logging of bucket auger boreholes in support of landslide evaluation.

Monitoring Well Replacement, San Timoteo Sanitary Landfill, San Bernardino County, California
Staff Geologist/ Hydrogeologist responsible for supervising and logging boring, collecting soil and groundwater samples, and supervising well construction and well development for a replacement well at this San Bernardino County Landfill.

Geotechnical Investigation, Olinda Alpha Landfill, Orange County, California
Mapped fractures, bedding, and other structures as part of slope stability study during the construction of a sediment detention basin in response to a potentially failing cut slope. Field data were then converted into both graphical stereo-net and analytical orthographic projections and integrated into a report of the findings.

Environmental Monitoring Services, Waterman Landfill, San Bernardino, California
Staff Hydrogeologist assisting with water quality monitoring and reporting at the Waterman Class III Landfill in San Bernardino, California. Duties included logistical preparation for sampling, data review, statistical analyses, and preparation of quarterly monitoring reports.

Environmental Monitoring Services, Echo Class III Landfill, San Bernardino County, California
Staff Hydrogeologist for hydrogeologic investigation for this Class III landfill located within the Lahontan Region RWQCB. Work included sampling and analysis of groundwater and soil-pore gas to identify landfill impacts. Following installation of the final cover, the project included evaluation of moisture conditions in the cover for a five-year period.

Terri Satterfield

Project Geologist

Geo-Logic ASSOCIATES

Ms. Satterfield has nine years of experience performing a variety of geologic and hydrogeologic field work and solid waste facility groundwater monitoring and reporting programs. Most recently, Ms. Satterfield has been onsite to oversee drilling and well construction, logged borings, and conducted aquifer pumping tests in support of a hydrogeologic investigation of a perchlorate contaminant plume in Rialto, California. In addition, she has supported several projects by preparing a range of geotechnical and water quality monitoring reports.

EDUCATION

Bachelor of Science, Geology, 2006
California Polytechnic State University, Pomona

PROFESSIONAL TRAINING

OSHA 40-Hour HAZWOPER Training

Applied Groundwater Statistics – Sanitas

Desert Tortoise Awareness Training

Groundwater Monitoring and Reporting Program (M&RP), 12 Landfill Sites, San Bernardino County, California
Reporting Task Manager responsible for preparation of monitoring reports for 12 San Bernardino County landfills within the jurisdiction of the Lahontan Regional Water Quality Control Board, assimilating groundwater chemistry data from groundwater, vadose zone, leachate, and surface water sample points. Work includes coordination with groundwater sampling crew, assimilation of groundwater, leachate, and surface water, analytical laboratory, data review, statistical analysis using Sanitas® and in-house SAC-APP® computer programs, trend analysis, quarterly, semi-annual, and annual summary report preparation, and regulatory compliance. Peer reviewer responsible for overseeing preparation of monitoring reports and regulatory compliance for six landfills in the Santa Ana Region and six landfills in the Colorado River Basin Region.

Groundwater M&RP, California Street Landfill, City of Redlands, California
Staff/Project Geologist responsible for overseeing quarterly water quality monitoring at this landfill. The site includes seven groundwater monitoring wells in addition to leachate, surface water, and soil-pore gas sampling points. Duties include coordination with field samplers and analytical laboratory, data review, SANITAS® statistical analyses, and preparation of quarterly groundwater monitoring reports.

Groundwater M&RP, Jolon Road and Johnson Canyon Class III Sanitary Landfills, Monterey County, California
Staff Geologist responsible for preparation of semi-annual water quality reports for the active Johnson Canyon and inactive Jolon Road Landfills. Duties include semi-annual coordination with field samplers and analytical laboratory, data review, concentration limit comparisons, trend analyses, and preparation of groundwater monitoring reports.

Investigation and Closure Plan Support, Former Broco TSDF at Mid-Valley Sanitary Landfill, Rialto, California
Participated in an investigation of potentially impacted soils and groundwater underlying the location of a thermal destruction pit at the former Broco facility at the Mid-Valley Sanitary Landfill. Logged test pits and trenches,

collected soil samples for analytical and geotechnical testing, logged cuttings, and oversaw well construction and development activities.

Groundwater M&RPs, Three Landfill Sites, Mendocino County, California
Task Manager responsible for coordinating data evaluation and quarterly site monitoring report preparation from over 45 sampling locations at three landfills in Mendocino County. Work included data review, coordination with analytical laboratory and groundwater sampling crew, statistical analysis using SANITAS® computer program, trend analysis, report preparation, and regulatory compliance.

Groundwater M&RP, Inactive Waterman Landfill, City of San Bernardino, California
Staff Geologist responsible for preparation of semi-annual water quality monitoring reports for this inactive Class III landfill. Duties include quarterly coordination with field samplers and analytical laboratory, data review, statistical analyses, and preparation of groundwater monitoring reports.

Groundwater M&RP, CEMEX Lytle Creek Quarry, City of Rialto, California
Staff/Project Geologist responsible for overseeing quarterly water quality monitoring at this landfill. Duties include coordination with field samplers and analytical laboratory, data review, statistical analyses, and preparation of quarterly groundwater monitoring reports.

Evaluation Monitoring Program (EMP) at the Landers Sanitary Landfill, San Bernardino County, California
Staff Geologist assisting with field investigation that included installation of two deep downgradient groundwater monitoring well and conducting ReMi shear wave velocity surveys to identify the location of the Nason-Dixon fault within the proposed expansion area.

EMP, Lenwood-Hinkley Sanitary Landfill, San Bernardino County, California
Field Geologist responsible for installation of downgradient monitoring well, well development, and slug-and-bail testing. Also participated in ReMi geophysical surveys to determine the location of the new well.

EMP, Yucaipa Sanitary Landfill, San Bernardino County, California
Field Geologist assisting with ReMi shear wave velocity surveys to identify preferential flow paths in the fault blocks adjacent to the landfill. Also responsible for the installation of six injection wells and two monitoring wells to support a bioremediation corrective action pilot study designed to remediation chlorinated aliphatic compounds.

Bioenhancement Pilot Study, Los Osos Class III Landfill, San Luis Obispo County, California
As Staff Geologist, provided field oversight during drilling of multiple injection points and the mixing and injection of an emulsion capable of providing a food source to in-situ microorganisms to stimulate biodegradation activity and remediate volatile organic contaminants in the surrounding groundwater. The results of the pilot study were used to evaluate methods for broader applications of this remedial technique.

Monitoring Well Installation, Barstow Sanitary Landfill, San Bernardino County, California
Field Geologist responsible for supervising drilling contractor, logging borehole geology, and well construction information during installation of a new 805-foot groundwater monitoring well.

Regional Perchlorate and VOC Groundwater Investigation, City of Rialto, California

Staff Geologist responsible for field support to complete a focused RI/FS to mitigate perchlorate and VOC impacts to groundwater that have been identified in the northern portion of the Rialto-Colton groundwater basin. Project work included the preparation of geologic logs for over 5,000 feet of drilling through coarse, conglomeratic alluvial materials, and supervision for construction of six groundwater monitoring wells (including four nested wells and two Westbay multiport wells) and two extraction wells. Mud rotary and reverse circulation drilling techniques were employed to excavate the exploratory borings. The project also included downhole geophysics to identify subsurface conditions and support well design. Duties also included supervising 24-hour aquifer testing to determine hydraulic properties of the aquifer.

Adam Shaw

Environmental Technician

Geo-Logic ASSOCIATES

EDUCATION

B.A., Environmental Science, 2001
California State University, San Bernardino

TRAINING

OSHA HAZWOPER 1st Responder Training

OSHA 40-Hour HAZWOPER Training Course

Nuclear Gauge Safety Training

Complete Groundwater Sampling Field Course (Nielsen Environmental field School)

Certified CQA Geosynthetics Material and Compacted Clay Liner Inspector – GCI

Construction QA/QC for Compacted Clay & Geosynthetic Clay Liners – TRI

QA/QC for Geosynthetic Installation - TRI

AREAS OF EXPERTISE

Environmental Sampling

Well Maintenance

Construction Quality Assurance

Mr. Shaw serves as an Environmental Field Technician for Geo-Logic Associates. He has 15 years of experience performing groundwater, surface water, leachate, condensate, and soil-pore gas sampling at more than 40 landfills throughout California. He is experienced in the use of all types of dedicated and non-dedicated sampling devices and protocols, equipment calibration, and field documentation. In addition, Mr. Shaw has abundant experience in a variety of geotechnical tasks including construction quality assurance observation and testing of landfill liner and final cover soil projects; building foundation pads, trench excavations and footings for foundations. Mr. Shaw has also participated in geotechnical investigations including geophysical surveys, moisture monitoring probe data collection, and aquifer testing.

Environmental Sampling, 26 Landfills, San Bernardino County, California
Water Quality Technician responsible for quarterly and semi-annual sampling of 26 landfills with more than 400 monitoring points within the Santa Ana, Lahontan, and Colorado River Basin Regions. Includes sampling of monitoring wells, piezometers, soil-pore gas probes, surface water stations, leachate points, condensate points, and corrective action system influent and effluent points. Well sampling is conducted using dedicated pumps and bailers using standard purge, slow recovery purge, and low-flow purging techniques.

Environmental Sampling, Lytle Creek Quarry, San Bernardino County, California
Water Quality Technician for groundwater monitoring program at this landfill. Project includes quarterly sampling of seven wells and two surface water points. Wells are sampled using dedicated submersible pumps and standard purging techniques. Site is within the Santa Ana Region.

Environmental Sampling, Waterman Landfill, San Bernardino County, California
Water Quality Technician for groundwater monitoring program at this landfill. Five wells are sampled using disposable bailers and standard purging techniques. Site is within the Santa Ana Region.

Environmental Sampling and System Maintenance, Salinas Valley Solid Waste Authority Landfills, Monterey County, California
Water Quality Technician for field monitoring and maintenance services as part of groundwater sampling and analysis program at the Lewis Road, Johnson Canyon and Crazy Horse Class III Landfill facilities. Sites include over 100 monitoring wells, in addition to residential supply wells, groundwater treatment systems, lysimeters, surface water, leachate, and condensate sampling points.

Environmental Sampling, Tequesquite Landfill, Riverside County, California
Water Quality Technician for quarterly groundwater and surface water sampling of 22 monitoring points. Wells are sampled using both low flow and standard purge techniques. The site is located in the Santa Ana Region.

Environmental Sampling, Stringfellow Hazardous Waste Site, Riverside County, California
Water Quality Technician responsible for routine sampling of groundwater wells at this Superfund Site. Duties include collection of groundwater samples from as many as 400 wells on a semi-annual basis, collection of stormwater samples when sufficient run-off is present, preparing samples for shipment, coordination with laboratory personnel for delivery of sample containers and pickup of samples, and preparation of chains-of-custody using DTSC's electronic chain-of-custody software. Also collected soil samples at various locations along Pyrite Creek for testing in support of a risk assessment for this Class I Waste Disposal Facility. Activities included preparing and preserving samples for the lab, labeling sample containers, and completion of chain-of-custody forms.

Environmental Sampling, North Rialto-Colton Basin Perchlorate Plume Investigation, San Bernardino County, California
Water Quality Technician responsible for monthly sampling of two wells and quarterly sampling of 60 to 70 monitoring wells to assess the spread of a perchlorate plume near the City of Rialto. Sampling is conducted using a combination of dedicated bladder pumps, disposable bailers, Hydrasleeve® devices, and Westbay multiport sampling pumps. Standard purge, low-flow purge, and grab samples are collected, as appropriate for specific well conditions.

Groundwater Sampling, Azusa Landfill, Los Angeles County, California
Field Sampling Technician responsible for collecting groundwater samples from 8 monitoring wells using high-volume electrical submersible pumps. Approximately 500 to 1200 gallons of water are purged from each well prior to sampling. Water is then transported to an on-site treatment plant for disposal following sampling of each well.

Environmental Sampling, LB Properties, Los Angeles County, California
Water Quality Technician responsible for sampling groundwater monitoring wells installed to monitor impacts from residential septic systems. Wells are equipped with non-dedicated bladder pumps, and are purged using low flow techniques. Responsible for decontamination of equipment between sampling, collection of samples and blanks, and documentation.

Environmental Sampling, California Street Landfill, San Bernardino County, California
Water Quality Technician responsible for quarterly sampling of 7 groundwater monitoring wells, 4 lysimeters, 2 surface water points, one leachate sump, and one soil-pore gas probe. Wells are sampled with dedicated bladder pumps using low-flow purging techniques. Site is within the Santa Ana Region.

Environmental Sampling, San Diego Landfill Systems Landfills, San Diego County, California
Provided groundwater sampling at the Ramona, Otay, Sycamore, and Borrego Landfills, which include over 50 monitoring points. Duties included sample collection using dedicated and non-dedicated pumps and bailers, preparation of chain-of-custody documentation, and trouble-shooting and maintenance of sampling systems. The Borrego Landfill is in the Colorado River Region.

Groundwater Monitoring Services, City of San Diego Landfills, San Diego County, California
Senior Field Technician and Water Quality Technician for routine monitoring and sampling of groundwater wells, surface water and soil-pore gas liquid at the North, South, and West Miramar Landfills, Mission Bay Landfill, South Chollas Landfill, Arizona Street Landfill, and Paradise Hills Park Landfill. Also assisted with the installation of dedicated electrical submersible and bladder pump systems at these sites.

Groundwater Sampling, Imperial County Landfills, Imperial County, California
Groundwater sampling technician for the 10 landfills operated by Imperial County Department of Public Works. The landfills include 40 monitoring points. All wells are bailed using dedicated bailers. Due to slow recharge

conditions, sampling activities are optimized to allow slow wells to recover while sampling occurs at other wells and at nearby site.

Environmental Sampling, Kramer Junction Site, San Bernardino County, California
Water Quality Technician responsible for quarterly sampling of 3 groundwater monitoring wells at this remote site. Wells are sampled using dedicated bailers and standard purge methods. Site is within the Lahontan Region.

Aquifer Pumping Test Field Technician
Performed field-testing and data gathering for step-down pump tests.

Well Installation and Development
Provided supervision and observations during well installation and development. Moisture Monitoring Beneath Septage Ponds, Barstow and Landers Sanitary Landfills, San Bernardino County, California
Responsibilities included obtaining moisture readings in neutron probe access tubes installed at locations surrounding septage ponds at these two landfills, photographing conditions of the ponds, and documenting observations.

J. Kyle Welchans, PG

Project Geologist

Geo-Logic ASSOCIATES

Mr. Welchans is a Professional Geologist registered in the State of California and currently serves as a Project Geologist for Geo-Logic Associates. In this capacity, his duties have included project management, data analyses and report preparation, soil, groundwater and surface water sample collection; logging of exploratory borings and well drilling; geologic log preparation; and grading and foundation construction quality assurance testing. Most recently Mr. Welchans has been responsible for managing and preparing quarterly and semi-annual water quality monitoring reports for landfills and composting facilities throughout the state.

EDUCATION

Bachelor of Science, Geology, 2007
San Diego State University

PROFESSIONAL REGISTRATIONS

Professional Geologist, California, No. 9255

Qualified Industrial Stormwater Practicioner

PROFESSIONAL TRAINING

OSHA 40-Hour HAZWOPER Training

Nuclear Gauge Safety Training Course

Sunshine Canyon Landfill M&RP, Los Angeles County, California
Project manager for routine semiannual groundwater monitoring and reporting at Sunshine Canyon Landfill, located within the Los Angeles RWQCB. Project duties include coordination of field staff and client-contracted laboratory to collect and analyze samples from groundwater wells, underdrains, lysimeters, and leachate, and analyses and report preparation of this data. Reporting also includes analyses and compilation of client-supplied data related to soil-pore gas chemistry, waste intake, liquid generation and management, and waste acceptance.

Allied Imperial Landfill M&RP and Well Construction, Imperial County, California
Project manager for routine semiannual groundwater monitoring and reporting at Allied Imperial Landfill, located within the Colorado River RWQCB. Project duties include coordination of field staff and client-contracted laboratory to collect and analyze samples from groundwater wells and leachate, and analyses and report preparation of this data. Reporting also includes analyses and compilation of client-supplied data related to soil-pore gas chemistry, waste intake, and standard observations. Previously as a staff Geologist, was responsible for logging and construction of seven groundwater monitoring wells and seven soil-pore gas probes, as well as groundwater sampling.

Newby Island Sanitary Landfill, Milpitas, California
Project Geologist responsible for data review, statistical analyses and preparation of semi-annual water quality monitoring reports for this active landfill located in the San Francisco Bay RWQCB. Project has included drilling and installation of 17 leachate extraction wells.

French Camp Landfill, Stockton, California
Project Geologist responsible for data review, statistical analyses and preparation of semi-annual water quality monitoring reports for this active landfill located in the Central Valley RWQCB.

Bonzi Sanitation Landfill, Modesto, California
Geologist responsible for data review, analyses, and preparation of semi-annual water quality monitoring reports for this inactive landfill located in the Central Valley RWQCB. Project has included drilling and installation of two soil-pore gas probes.

Santa Cruz Resource Recovery Facility M&RP, Santa Cruz, California
Geologist responsible for data review, statistical analyses and preparation of semi-annual water quality monitoring reports for this active landfill. Project has included abandonment and replacement of multi-depth soil-pore gas probes.

Various Landfills, Recycling/Composting, and Trucking Facilities, Northern California (Bay Area)
Project Manager and QISP responsible for preparation of Level 1 Exceedance Response Action (ERA) reports and SWPPP revisions for four active Bay Area landfills (Newby Island, Ox Mountain, Keller Canyon, and Vasco Road Sanitary Landfills), two Bay Area recycling/composting facilities (Contra Costa Transfer Recycling Station and Solano Garbage Company), and two trucking facilities (Allied Waste Services-Rancho Cordova and -Alameda). Work also includes storm water data entry into SMARTS for the aforementioned sites as well as Forward Landfill (Manteca, CA), and Allied Waste Services-Elder Creek (Sacramento, CA)

San Diego Landfill Systems, Borrego, Otay Ramona, and Sycamore Landfill M&RPs, San Diego County, California
Project manager for routine semiannual groundwater monitoring and reporting at these closed (1) and active (3) landfills located within the San Diego RWQCB and Colorado River RWQCB. Also responsible for maintaining corrective action pump and treat systems at three of the four landfills. Project has included well abandonment and replacement at Borrego Landfill and piezometer abandonments at Sycamore and Otay Landfills. Previously, as a staff Geologist duties included groundwater sampling, including both standard and low-flow purging and sampling methods.

American Organics Composting Facility, San Bernardino County, California
Project manager for routine quarterly water quality monitoring and reporting at American Organics Composting Facility located in the Lahontan RWQCB. Duties include coordinating with field staff and subcontracted laboratories to provide sampling and analysis of groundwater and impoundment pond samples and preparation of reports using the collected data.

Salton City Solid Waste Site, Imperial County, California
Project manager for routine semiannual groundwater monitoring and reporting and quarterly landfill gas and off-site spring monitoring and reporting. Previously as a Staff Geologist responsible for logging and constructing five groundwater monitoring wells and 16 multi-depth soil-pore gas probes and groundwater sampling using standard purging and sampling methods and perimeter landfill gas probe monitoring. Work at the site has also included drawdown and slug tests and repairs to damaged wells.

Vasco Road, Keller Canyon, and Solano Landfills, Northern California (Bay Area)
Project manager for routine semiannual groundwater monitoring and reporting at these active (2) and closed (1) landfills located within the San Francisco Bay RWQCB.

Cocopah Landfill, Yuma County, Arizona
Project manager for routine semiannual groundwater monitoring and reporting at this closed landfill located on an Indian Reservation in Arizona.

San Bernardino County Landfill M&RP, Santa Ana Region Landfills, California
As a Project Geologist, prepared waste acceptance plans for two active landfills located within the Santa Ana RWQCB. Previously as a Staff Geologist responsible for quarterly groundwater monitoring and reporting preparation for three active landfills and four inactive landfills within the Santa Ana Region RWQCB of San Bernardino County.

Tequesquite Landfill M&RP, Riverside, California
Staff Geologist responsible for coordinating field staff, conducting data review, statistical analyses and preparation of quarterly groundwater quality reports.

Nutrilite Lakeview Facility M&RP, Riverside County, California
Staff Geologist responsible for coordinating with field staff, conducting data review, statistical analyses and preparation of quarterly groundwater quality reports.

Arizona Street, Mission Bay, and Paradise Hills Landfill M&RPs, San Diego, California
Staff Geologist responsible for semi-annual water quality sampling at these landfills. Sampling includes low-flow purging methods in compliance with San Diego standard operating procedures. Also responsible for preparation of semi-annual groundwater quality reporting for these landfills.

West, North and South Miramar Landfill M&RPs, San Diego, California
Staff Geologist responsible for evaluation of groundwater geochemical trends, statistical analysis of water quality data and preparation of semi-annual groundwater quality reporting for the active West Miramar Landfill and inactive South and North Miramar Landfills.

Imperial County Landfill M&RPs, Imperial County, California
Staff Geologist responsible for data review, statistical analysis and preparati

Temecula Valley Gun Club Site Investigation, Riverside County, California
Lead Field Geologist responsible for implementing a sampling and analysis plan to characterize lead impacts from a historical shooting range. Established the sampling grid and collected more than 100 soil characterization samples. After results were received, researched viable site remediation alternatives including clean closure, asphalt encapsulation, chemical stabilization, and liner encapsulation.

Tule Wind Groundwater Investigation, East San Diego County, California
Field Geologist responsible for piezometer construction and well abandonment, groundwater pumping tests and collection of groundwater elevation data to support evaluation of groundwater resources for construction and operation of a wind farm near Boulevard, California. Work included long term (72-hour) aquifer pumping tests.

Waste Water Treatment Facilities, Placer County, California
Geologist responsible for data review, statistical analyses and preparation of quarterly and semi-annual water quality monitoring reports for current (2) and former (1) waste water treatment facilities located within the

Central Valley-RWQCB. Project also included training of field staff in groundwater sampling techniques and preparation of a Request to Cease Monitoring Report for the former waste water treatment facility.

Yucaipa Disposal Site, EMP Support, San Bernardino County, California
Staff geologist responsible for running surface geophysics and long-term and step-drawdown aquifer pumping tests in support of an Engineering Feasibility Study.

Rialto Groundwater Treatment System Perchlorate and VOC Removal Well Construction, San Bernardino County, California
Staff Geologist responsible for logging and drilling operations for three triple nested and two seven-port West Bay monitoring wells using mud rotary drilling methods, and two extraction wells using reverse circulation drilling methods.

Mid-Valley Sanitary Landfill Well Construction, San Bernardino County, California
Staff Geologist responsible for logging and drilling operations for two dual nested monitoring wells using mud rotary drilling methods.
on of semi-annual groundwater quality reporting for nine landfills in Imperial County.

West Miramar Landfill Soil-Pore Gas Probe and Well Construction, San Diego, California
Staff Geologist responsible for drilling, logging, and construction of numerous tri-nested perimeter soil-pore gas probes and replacement groundwater wells.

Azusa Land Reclamation Groundwater Sampling, Los Angeles County, California
Staff geologist responsible for groundwater sampling and treatment using a three-phase generator and water truck. Experience also includes logging and construction of a replacement well and directing subcontractors for construction of a well discharge extension line.

Ocotillo Solid Waste Site, Closure CQA, Imperial County, California
Staff Geologist responsible for construction quality assurance during placement of monolithic cover material and rock armor for closure of the Ocotillo Solid Waste Site.

Picacho Solid Waste Site, Limits of Waste Investigation, Imperial County, California
As Staff Geologist worked with backhoe operator to trench perimeter of landfill and complete a limits of refuse investigation for the closure of this landfill.

EXHIBIT "B"

COMPENSATION

Part E – Cost for Services

As indicated on Table 1 (attached), GLA's estimated costs to conduct routine elements of the project as detailed in RFP 1695 total $41,280 per fiscal year. This amount is based on our current fee schedule and is an increase of approximately 2% per year over the previous annual budget for the project (which GLA had been conducting under our 2014 fee schedule). Our proposed scope of work, which addresses the specific tasks outlined in the RFP as well as the work that will be required based on our site-specific knowledge, is outlined below and will include semiannual sampling of 12 groundwater monitoring wells and 7 surface water monitoring points, and annual sampling of landfill gas condensate. Costs for services are based on the following work scope, as well as the information provided in the RFP.

GLA understands that the City will retain the services of a qualified environmental consultant to provide routine sampling and reporting services to support regulatory compliance with the site-specific groundwater monitoring and reporting program developed by the Santa Ana RWQCB. This work will include quarterly water level gauging, and semiannual sampling, analyses, and reporting. Each monitoring event will include a variety of tasks as outlined below:

Preparation of a Health and Safety Plan: Prior to initiating field work, the GLA Team will prepare a site-specific Health and Safety Plan (HASP) for the Tequesquite Landfill. The HASP will detail methods and procedures to protect workers from existing and potential hazards during field operations. The HASP will take into account site-specific conditions and will follow CAL-OSHA regulations and U.S. EPA Standard Operating Safety Guides. At a minimum, the HASP will address:

- Site locations and anticipated conditions
  Location of nearby hospitals and emergency control agencies
- Site and office support contacts
- Brief descriptions of anticipated field activities
- Anticipated chemical, biological, and physical hazards
- Brief description of safe field procedures
- Description of relevant mitigation measures
- Personnel and equipment monitoring procedures
- Description of personnel protective equipment
- Description of additional safety equipment
- Contingency plans
- Emergency procedures and protocols

Environmental Sampling: Approximately one to two weeks prior to mobilization for each sampling event, GLA will order sample containers from BC Laboratories, Inc., the contract laboratory. The laboratory will be notified of the number of monitoring points and the appropriate analytical parameters to be analyzed for each sample matrix, and the laboratory will be directed to provide extra containers for collection of appropriate field and equipment blanks. GLA's sampling personnel will ensure that all sample bottles are "clean-certified" from the laboratory or supplier. Sample containers that appear dirty, used, or otherwise compromised will not be used. Sample bottles containing preservatives will be appropriately marked. Sample shipping containers, coolers, ice packs, and any other materials that may contact sample bottles will be regularly inspected for cleanliness, durability, and functionality. Damaged coolers will not be used, as they may compromise sample integrity.

Groundwater Sampling: Single samples will be collected from each monitoring point that is required to be sampled, and these samples will be analyzed for the monitoring parameters specified in the site M&RPs. Groundwater samples will be collected following the procedures outlined in the *Practical Guide for Groundwater Sampling* (Barcelona, et al., 1985), *RCRA Groundwater Monitoring Technical Enforcement Guidance Document* (U.S. EPA, 1986). All sampling will be completed within a maximum 30-day time period. GLA understand that wells are equipped with electronic and bladder pumps, and some wells do not have pumps. Wells equipped with bladder pumps are sampled using low-flow methods, while wells equipped with electronic submersible pumps are sampled using standard purge methods. For wells that are not equipped with dedicated sampling pumps or if the pump is inoperable, the wells will be sampled with portable equipment, (e.g., decontaminated bailers or pumps) and the actual sampling method though variable will comply with the standard protocols outlined below.

Upon arrival at each wellhead, the well will be inspected and any well-head problems will be noted on the field log. Significant problems with the well-head, such as those that prevent sampling or compromise the integrity of the well, will be reported to the City (verbally and in writing) within 24 hours of observation. Prior to sampling a well, the depth to groundwater will be measured to the nearest 0.01 foot from an established well datum (e.g., top of casing) using a decontaminated electric sounding device. The depth to water will then be used to calculate the water surface elevations in the wells, and to calculate appropriate purge volumes. To evaluate groundwater flow conditions beneath the landfill, during each sampling event, groundwater depths will be measured on the same day, if possible, in all accessible site wells and piezometers.

Well purging will be accomplished using existing dedicated pumps or decontaminated pumps or bailers if dedicated systems are not available or operational. Samples of purged water will be collected and monitored, and purging rates will be low enough so as not to induce turbulent flow within the well. As a well is purged, indicator parameters (pH, temperature, specific conductance, dissolved oxygen, and turbidity) will be monitored and recorded until they have stabilized to within 10 percent of the preceding measurements and show no discernible upward or downward trend. Flow-through cells will be used to measure field parameters at wells that are purged with pumps. For sampling locations where pumps are not used (e.g., wells without pumps and surface water sampling locations), a sample will be collected in a clean container, the field instrument probe will be placed in the container, and appropriate field measurements will be recorded on a sample collection log.

GLA recognizes that many of the field parameters (such as pH and dissolved oxygen) have a very short holding time, and therefore careful calibration of the field instruments must be maintained so that accurate results can be obtained in the field. GLA will accomplish this calibration by working closely with our analytical laboratory to establish instrument calibration in a fixed laboratory setting on a regular basis. In the field, the instruments will be calibrated before work begins at each sampling location.

Sampling in wells with dedicated sampling apparatus will be conducted by slowing the pumping rate, as appropriate, and allowing the discharge water to flow gently into appropriate sample containers. Should bailing be required, the bailer will be slowly lowered into the water column

to minimize disturbance to the collected sample, and a bottom emptying device will be inserted into the bottom of the bailer to release the sample. For wells that have very slow recharge rates (i.e., more than two hours to recover to 80 percent of its original water level), the well will be purged dry and a sample will be collected after the water level has recovered to within approximately 80 percent of its original level.

Water that is purged from each well will be collected in 55-gallon steel drums. GLA will regularly inspect each drum to ensure that it is in good repair, and will notify the City of any drum found to be leaking or without an adequate seal.

Sample containers will be provided by BC and will be stored in an area that is free from dust and exposure to organic chemicals. All groundwater samples will be poured from the pump discharge or bailer directly into the sample containers by pouring the sample down the sides of the container with as little turbulence as possible. Sampling containers will be filled in order of volatility (volatile organic compounds first, then semi-volatile organic compounds, pesticides, herbicides, general chemistry, and metals). Vials for volatile organic analyses will be filled completely to fill all the air space, capped, turned upside down, and tapped to check for air bubbles.

Trip blanks will accompany sample containers from the laboratory, through the field operations, and return to the laboratory as a QC check to determine if contamination has been introduced from the sample containers or laboratory water. Trip blanks will constitute at least ten percent of the total number of groundwater samples. If non-dedicated sampling equipment is used, equipment blanks will also be collected and will consist of distilled, deionized, reagent-grade laboratory water passed through representative sampling equipment (e.g., bailers, bottom emptying devices) as a test of equipment decontamination. One equipment blank will be collected per groundwater monitoring event. Field blanks will be collected at a frequency of one per day by pouring laboratory provided reagent-grade water directly into a set of sample vials as a test of site-specific environmental conditions.

After a sample has been collected, it will be stored in a field ice chest where ice cubes or "blue ice" packs will be used to cool and maintain the samples at a temperature of approximately 4°C. To prevent breakage, bubble wrap or an alternative material will be placed around the samples so they do not touch each other or the side of the shipping container. Each sample will be catalogued on appropriate Chain-of-Custody documentation after it has been collected, and these Chain-of-Custody records, and other appropriate paperwork, will be sealed in a plastic bag taped to the lid of the shipping container and will accompany each sample to the analytical laboratory. It is anticipated that samples will be provided to the laboratory courier at the end of each sampling day, and the field sampler will be responsible for the care and custody of the samples until they are shipped or otherwise delivered to the laboratory custodian.

As discussed in the following sections, GLA will review analytical data promptly upon receipt of certificates of analysis, and will identify any VOCs or other anthropogenic compounds that might indicate landfill release or problematic groundwater treatment system chemistry. During this review, GLA will develop a listing of wells (and thereby the purge water drums) that contain VOCs, the VOC concentrations measured and the approximate purge volumes. The GLA Team

will dispose of purge waters in accordance with established protocols. Purge water that does not contain VOCs will be disposed of at the site in a manner that does not impact the monitoring well, other landfill structures, or landfill cover soils.

Surface Water Sampling: Surface water samples will be collected from the designated sampling points when there is sufficient water available for sampling. Samples will be collected without disturbing the channel bottom or otherwise changing the observed flow conditions and sediment load of the channel or pond. Sample bottles will be filled to minimize air space in the sample containers. After the samples are collected, they will be sealed, labeled, and placed in the cooler for transport to the laboratory.

Miscellaneous Liquids Grab Sampling: Annual grab samples will be collected from the landfill gas condensate sampling points during the fourth quarter monitoring event. Grab samples are generally collected by filling laboratory supplied sample containers directly at the designated sampling ports or spigots. For tank samples that do not have a sampling port, a decontaminated or disposable dipper will be lowered in the tank to collect the sample. The GLA Team will collect grab samples by carefully allowing the liquid to stream down the side of the sample container. Stringent health and safety protocols will be followed during leachate sampling to minimize dermal and respiratory exposure. As each sample bottle is filled, the bottle will be capped, sealed, and labeled, and then placed in a chilled cooler for transport. The sampling process will follow the protocols described above until all bottles are filled. All liquid grab samples will be catalogued on appropriate Chain-of-Custody documentation that will accompany the samples to the analytical laboratory.

Landfill Groundwater Data Review and Validation: The data validation process will include QA/QC review of all field and laboratory data. The field data validation will include periodic unannounced field audits of the sampling activities by the Project Manager to assess the protocols being employed by field personnel at the site for equipment calibration, log book entries, sampling and sample handling, and chain-of-custody procedures. A field audit checklist will be completed to document field investigation compliance with the established protocols. The audit checklist and comments will be reviewed with the Project Manager and field personnel, as needed, to ensure proper fulfillment of the field program objectives. In addition, the Team's QA Manager will be responsible for reviewing the field sampling sheets and Chain-of-Custody documentation at the end of each day/week to assess completeness, documentation of equipment calibration, sample handling, chain-of-custody protocols, and consistency of field measurements with historical data. By this frequent review procedure, any deviations in procedures or protocols can be corrected immediately.

Following receipt of the laboratory report, the QA Manager will review the analytical data for validity, accuracy, and to determine whether verification retesting is required. All laboratory analytical results will be validated by reviewing sample holding times, the results of field blank samples, and the laboratory's internal QC documentation, which includes:. laboratory method blanks, matrix spike and matrix spike duplicate comparisons, laboratory control samples and LCS duplicate comparisons, surrogate spikes, and data qualifiers. In this way, the QA Manager can assess the precision of the data. Accuracy will be evaluated from information obtained on the spiked samples by evaluating the percent recovery compared with the known spike

amount. Surrogates (compounds that act and react similarly to the compounds of interest but which do not interfere with the constituent being analyzed) may also be spiked into the sample and used to evaluate the accuracy of certain organics methods. Data evaluation will represent the most significant aspect of the monitoring and reporting program since all of the analytical data must be validated. Once validated, the data will be used to provide a basis for interpretation of site conditions at a level that satisfies all of the requirements of the individual site M&RPs and/or RWQCB orders and/or directives.

The validation will be used to determine the adequacy and accuracy of the data, the presence of field or laboratory contamination, and the need for conducting verification retesting as described above.

Response Plan for Sampling/Laboratory Contamination: While GLA strives to collect samples that are representative of field conditions, "false positive" indications of release are an expected (and in fact, required) artifact of mandatory statistical evaluations. In addition, identification of anomalous constituents as a result of environmental conditions, lapses in sampling protocols, or other field conditions can happen with any program of this size. When analytical results indicate that samples have been impacted, the results of the accompanying QA/QC samples will be evaluated to determine if the samples could have been contaminated during the sample collection or analytical processes. When field contamination is suspected, the sampling procedures will be reviewed with the sampling crew and/or analytical laboratory to minimize the potential for a repeat of the error. [For example, if BTEX components are detected in the field blank, it is possible that the samples were collected downwind of a gasoline-powered engine, and correction may include verification that samples are collected upwind of a potential contaminant source.]

In the case of suspected laboratory contamination, GLA will review the data to identify possible contaminant sources, and will meet with the analytical laboratory to discuss the historical data and potential false positive results. The laboratory will be required to take appropriate measures to identify the cause of laboratory-related sample contamination, and will be required to implement a program to reduce the possibility of future contamination. In any event, if the "false positive" cannot be readily dismissed, as a result of analytical or field QA/QC procedures, GLA will perform a retest of that monitoring point as required. Since the State mandated statistical protocols require a false positive rate of no less than 1%, the GLA Team has assumed that 1 or 2 discrete retests will be required during each sampling event.

Verification Sampling: If statistical or non-statistical analyses of the analytical results indicate a new release from the TL has occurred, recommendations for verification and immediate RWQCB notification will be submitted pursuant to 27 CCR § 20420(j)(1-3). For purposes of verification, two discrete retest samples will be collected from each monitoring point where contamination is suspected using the same sampling and analytical protocols employed in obtaining the primary sample. Retest samples will be collected within 30 days of the initial indication of the release, and will be analyzed only for those constituents that were identified at concentrations above background in the initial sample. If the compound is not detected in either of the retest samples, then a false positive detection will be concluded for the primary

sample. If the compound is detected in one or both of the retest samples, then the primary detection will have been verified.

Should retesting verify a release, a single sample from each DMP monitoring point at that site will then be analyzed for the full list of Constituents of Concern (COCs). While up to 2 retests are anticipated per monitoring event and this cost is included in the enclosed fee estimate, the need for and extent of release-induced COC monitoring cannot be reasonably estimated and this work will be completed as a non-routine work item.

Landfill Release Notification: When laboratory analytical reports are received, they will be date stamped and reviewed by the QA Manager for completeness and conformance with holding time requirements. In addition, for DMP protocols, wells monitored under the non-statistical VOC/COC Special analysis will be carried out to evaluate whether there is evidence for tentative identification of a release from the landfill. If a VOC/COC Special "hit" is identified, this information is then transmitted verbally to the County's Project Manager with a recommendation for retesting, if appropriate. [It should be noted that in some cases (e.g., detection of constituents such as methylene chloride and toluene, which are common laboratory or field-introduced contaminants), retesting may not be necessary. This conclusion will be reviewed with the City and, if appropriate, negotiated with the RWQCB.] Similarly, after the statistical analyses are completed, the City will be notified if the statistical conclusions suggest evidence of a new release. If the data suggest evidence of release at any DMP well, this information will be reported to the City's Project Manager immediately so that appropriate responses (i.e., RWQCB notifications and retesting) can be implemented. A follow-up letter to provide written documentation and notification of a tentatively identified release to the RWQCB will then be prepared and submitted to City. This notice will include a summary of the laboratory findings, and a copy of the relevant laboratory analytical report(s). The City can then use the letter and laboratory analytical report(s) as a basis for providing the 7-day tentative release notification to the RWQCB required by regulation.

Data Entry: Rather than utilizing a simple digital transfer of data from the laboratory to prepare our tables, GLA proposes to enter all laboratory data manually. We have found this practice to provide the best opportunity for critical review the laboratory data, enabling our staff to identify and resolve potential data anomalies quickly. Laboratory reports will be provided digitally in EDF and PDF format for upload into Geotracker.

Statistical/Non-Statistical Analysis of Groundwater Quality Data: GLA proposes to utilize our in-house SAC-APP computer programs to perform the statistical analyses required for the TL. GLA has been using this statistical program for the TL since 1996, and the Santa Ana RWQCB is very familiar with the analytical approach and output from this program. In addition, the non-statistical VOC and COC Special Analysis, as outlined in SWRCB Resolution 93-62, will be performed for those analytes detected less than 10 percent of the time in samples from background wells.

Trend Analyses: Analysis of landfill groundwater and surface water quality data trends is an annual reporting requirement for the TL. Trend analyses will be performed by plotting the concentrations of an analyte over the history of monitoring for each well. GLA proposes to use

Microsoft™ Excel® to prepare the time-series plots. These charts will be prepared using black and white graphics with distinctive data markers and line patterns for each well or analyte so that the charts can be photocopied with acceptable quality.

GLA proposes the following strategy to prepare time-series plots. For each analyte, GLA will prepare time-series plots comparing background and compliance well data (interwell charts). In general, no more than five data sets will be presented on one chart to maximize presentation clarity. The historical sample data from each well will be plotted with a unique symbol marking the data point, and the trend lines connecting background well data will be dashed to distinguish it from compliance well data. On these charts, the historical data will also be compared with Federal maximum contaminant levels (MCLs). Non-detectable data points will be plotted at one-half of the MDL reported specifically during each monitoring period. Data that are not available will be shown by a break in the trend line. In some circumstances it may be beneficial to prepare multiple-parameter time-series charts for VOCs to illustrate reductive dechlorination processes. On these charts, GLA will display the historical concentrations of related VOCs, from samples collected from a single well to show any relationship or increasing or decreasing trends that may be the result of the breakdown of "parent compounds" and the formation of "daughter products."

In analyzing time-series charts, it is important not to describe a trend simply according to the slope of a mathematically calculated data trendline. Rather, it is important to review historical seasonal fluctuations in data, changes in MDLs, and concentration changes that may be the result of a change in laboratory analytical methods or field sampling protocols. As a result, our approach to trend analysis is somewhat qualitative, and provides a better opportunity to evaluate changes in groundwater by accounting for factors that are not typically accounted for in pure mathematical approaches. Significant increasing or decreasing trends will be described in detail following the summary table, with the level of discussion enhanced when changes in historical trends appear to be developing. Data trends will be summarized in tables within the annual summary reports, as required by the site-specific WDRs or other RWQCB orders or directives.

Groundwater Monitoring Report Preparation: Water quality monitoring data will be compiled in semiannual and annual reports. Each semiannual and annual report will contain the information required by Order 98-99-03, as well as information subsequently requested by the Santa Ana RWQCB. At a minimum these reports will include:

- Executive summary
- Table of contents
- Site introduction
- Sampling and analysis plan
- Laboratory analyses and QA/QC results
- Descriptions of sampling and analytical methods and parameters
- Discussion of statistical and/or non-statistical data evaluation
- Historical groundwater elevation data
- A groundwater elevation contour map
- Historical tables of laboratory test results for each monitoring point
- Summary tables of analytical results for the reporting period(s)

As required, monitoring reports will also integrate data collected by GLA's sampling crew including visual observations and photographs of site conditions, copies of the regulatory agency inspections, and copies of the diversion and drainage facilities inspection and evaluation logs. Discussions will be more detailed when chemical and/or elevation variations are noted from earlier reporting periods, and recommendations for verification and/or initiation of additional studies will be presented if appropriate.

The second semiannual landfill report will include the data trend plots and an annual summary for each respective site. In addition to the elements required in a routine semiannual reporting event, these annual reports will also include an evaluation of trends interpreted from the time-series plots; descriptions of any apparent increasing and/or decreasing trends; and reporting of any monitoring changes made or observed since the last annual report.

Prior to submittal of any work product to the City, GLA will provide comprehensive senior peer review of all deliverable technical documents. One draft copy of each report will be submitted to the City 15 calendar days prior to the RWQCB submittal dates. Following incorporation of City comments, GLA will prepare copies of the final report for distribution. Reports for all landfill sites are due to the RWQCB by October 31st and April 30th (annual summary report) of each year. The final reports will be signed and stamped by our Project Manager, a State of California Registered Professional Geologist.

GLA will upload the landfill data into the Geotracker database concurrent with submittal of the groundwater monitoring reports. For this task, electronic data files will be prepared by the laboratory and delivered to GLA by email. GLA will then review the files and upload the electronic data to the State's database. A full copy of the report will also be uploaded in portable document format (PDF).

Regulatory Liaison Support: Throughout the course of the project, GLA's Project Manager and Principal-in-Charge will be available to address issues and comments raised by the Santa Ana RWQCB concerning the environmental monitoring and reporting for the TL. Costs for our services include basic interaction with the RWQCB to answer questions about the semiannual monitoring reports, sampling methodologies, data evaluation and other routine questions. Should more complex issues arise that require a higher level of effort to address, GLA will prepare a work scope and cost estimate to address these issues. Costs will be based on the fee schedule provided with our project cost estimate.

Non-Routine Well and Pump Maintenance: As requested in the City's RFP, GLA has provided costs to replace or repair groundwater sampling pumps. For this task, GLA has assumed that pumps will be replaced with QED P1101HM bladder pumps. Pumps maintenance and replacement services will be provided by GLA's environmental sampling technicians who have abundant experience in diagnosing and repairing pump problems, and replacing inoperable pumps. The cost for this service includes purchase of two bladder pumps, new tubing, well caps, flexible discharge hose, and prevailing wage labor to remove the old pumps and install the new pumps.

Other Non-Routine Services: As a full-service environmental and geotechnical consulting firm, GLA has the resources and technical capabilities to respond to nearly all landfill-related non-routine service requests. Should the City require our services for work outside of the scope of work identified above, GLA will prepare a detailed scope of work and cost estimate based on the fee schedule provided in this proposal.

TABLE 1
ESTIMATED PROJECT COSTS - RFP 1695
GROUNDWATER, SURFACE WATER & CONDENSATE MONITORING AND REPORTING SERVICES
TEQUESQUITE LANDFILL, RIVERSIDE COUNTY, CALIFORNIA

Work Tasks	Senior Pro. II $200	Senior Pro. I $187	Project Pro. II $155	Staff Pro. II $105	CADD Design. $120	Admin. Asst. II $87	Field Crew ($)	Tech. IV $130	Sr. Fld. Tech $95	Sampl. Equip. $15	Vehicle $14	Pump Cost $857	GLA Sub Total ($)	Labor Expenses 3%	GLA Total ($)	Outside Lab/Pump ($)	Task Totals ($)
FY 17/18																	
Task 317 - Third Quarter 2016 Monitoring & Reporting	1	6		20	3	8		12	24	40	40		$9,478	$284.34	$9,762		$9,762
Task 417 - Fourth Quarter 2016 Monitoring		1		8		1		8	8	12	12		$4,197	$126	$4,323	$5,438	$9,761
Task 118 - First Quarter 2017 Monitoring & Reporting	1	8		24	3	12		12	24	40	40		$10,246	$307	$10,553		$10,553
Task 218 - Second Quarter 2017 Monitoring		1		8		1		8	8	12	12		$4,197	$126	$4,323	$6,880	$11,203
FY 18/19																	
Task 318 - Third Quarter 2018 Monitoring & Reporting	1	6		20	3	8		12	24	40	40		$9,478	$284	$9,762		$9,762
Task 418 - Fourth Quarter 2018 Monitoring		1		8		1		8	8	12	12		$4,197	$126	$4,323	$5,438	$9,761
Task 119 - First Quarter 2019 Monitoring & Reporting	1	8		24	3	12		12	24	40	40		$10,246	$307	$10,553		$10,553
Task 219 - Second Quarter 2019 Monitoring		1		8		1		8	8	12	12		$4,197	$126	$4,323	$6,880	$11,203
FY 19/20																	
Task 319 - Third Quarter 2019 Monitoring & Reporting	1	6		20	3	8		12	24	40	40		$9,478	$284	$9,762		$9,762
Task 419 - Fourth Quarter 2019 Monitoring		1		8		1		8	8	12	12		$4,197	$126	$4,323	$5,438	$9,761
Task 120 - First Quarter 2020 Monitoring & Reporting	1	8		24	3	12		12	24	40	40		$10,246	$307	$10,553		$10,553
Task 220 - Second Quarter 2020 Monitoring		1		8		1		8	8	12	12		$4,197	$126	$4,323	$6,880	$11,203
Non-Routine Replacement of 2 Pumps								6	2		6	2	$2,176	$65	$2,241	$1,715	$3,956
Hour	5	48	0	180	18	66	0	126	194	312	318	$2					
Total Cost:	$1,100	$8,976	$0	$18,900	$2,160	$5,742		$16,380	$18,430	$4,680	$4,452	$1,715	$58,138	$2,996	$89,126	$38,671	$127,797

Notes:
1) Project costs include sampling and analyses of 13 groundwater samples and 8 surface water samples per semiannual monitoring event, and 1 landfill gas condensate sample collected per year.
2) Project costs include replacement of two (2) dedicated monitoring well pumps.

Geo-Logic Associates, Inc. has reviewed City of Riverside RFP No. 1695 and the estimated project costs included in Table 1 are approved for submission.

John M. Hower, PG, CEG
Senior Vice President

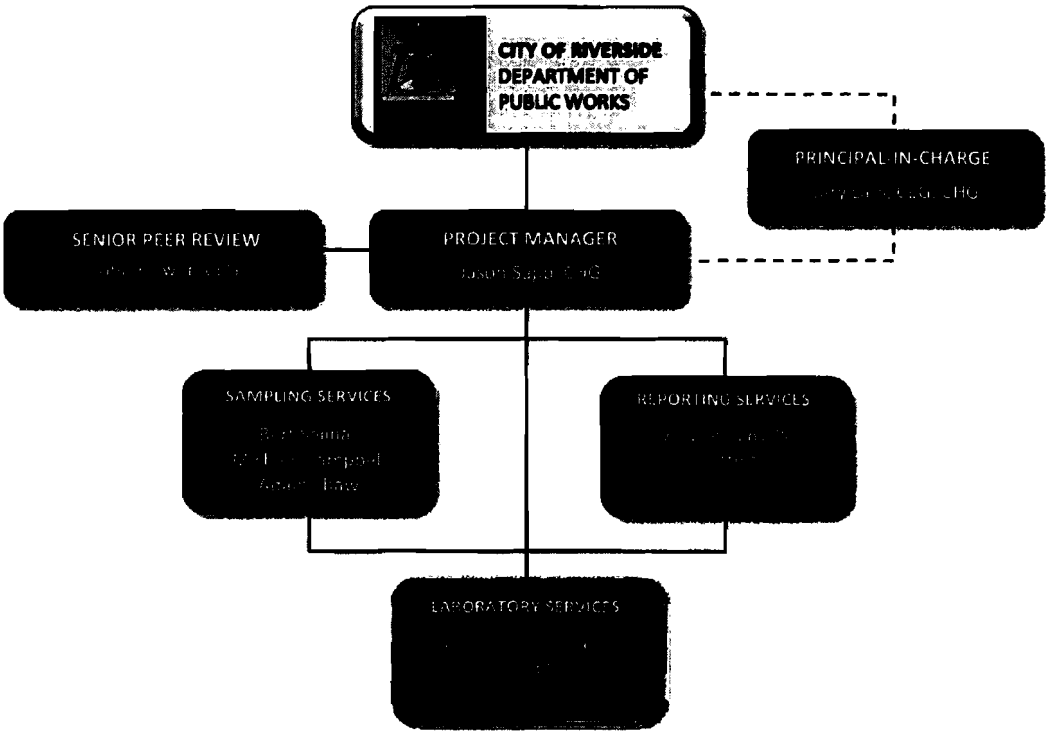
EXHIBIT "C"

KEY PERSONNEL

Geo-Logic
ASSOCIATES

Part D – Project Personnel

For the TL Groundwater Monitoring and Reporting Project, GLA has assembled a highly qualified and integrated technical staff with extensive experience in providing the same types requested in the City's RFP. In fact, all of our proposed project personnel have provided these same services for the City at the TL, and as a result, there is no learning curve or training required to begin this project. The following Organizational Chart outlines our proposed project team, including our subcontractors.



By utilizing the same group of professionals who have provided these services to the City during the most recent contract term, GLA can assure the City that our team members understand the site, the site-specific regulations governing groundwater monitoring and reporting, the regulatory personnel who review the reports and their concerns regarding the TL and the required technical monitoring reports, and the City's personnel and their concerns for this program. Qualifications of our proposed Team members are summarized in the following table, and resumes of key personnel are attached.

Gary Lass	Principal-in-Charge	40	MS, Geochemisty BS, Geology	PG, CEG, CHG
Jason Sapp	Project Manager	21	BS, Geology	PG, CHG
John Hower	Peer Review	28	BS, Geology	PG, CEG
Kyle Welchans	Reporting	10	BS, Geology	PG
Terri Satterfield	Reporting	9	BS, Geology	
Bert Salinas	Sampling	26		Nielsen School
Michael Campbell	Sampling	33	BS, Civil Engineering	Nielsen School
Adam Shaw	Sampling	15	BS, Environmental Science	Nielsen School

Subcontractors

GLA will employ BC Laboratories, Inc. (BC) of Bakersfield, California to provide analytical services during the term of the contract. BC is a Woman-Owned Business, and is certified by the State of California in all of the analytical methods that are required for this project (ELAP Certification No. 1186). GLA and BC have been working together for more than 20 years on landfill environmental monitoring and reporting projects, including the groundwater monitoring and reporting program for the TL. As a result, GLA is confident that BC can continue to provide high-quality and timely analytical testing services for the City. As an added benefit, GLA is considered one of BC's preferred clients, and as a result, we are offered competitive pricing on all laboratory testing that we pass on to our clients. GLA has included the completed Designation of Subcontractors form (Exhibit 4) in Appendix A.