

SUBMITTAL TO THE BOARD OF SUPERVISORS
COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

604



FROM: Waste Management Department

SUBMITTAL DATE:
December 22, 2009

SUBJECT: Construction of two replacement offsite downgradient groundwater monitoring wells adjacent to the Closed Highgrove Sanitary Landfill for Fiscal Year 2009/2010.

RECOMMENDED MOTION: That the Board:

1. Approve the Contract Documents for Completion of Groundwater Monitoring Well Construction near the Highgrove Sanitary Landfill for Fiscal Year 2009/2010; and
2. Authorize the General Manager-Chief Engineer to advertise for bids.

BACKGROUND: The Riverside County Waste Management Department (Department) is required by the California Regional Water Quality Control Board – Santa Ana Region (CRWQCB) to regularly monitor groundwater at and adjacent to the Closed Highgrove Sanitary Landfill. The Department previously monitored three offsite groundwater monitoring wells (HGMW-1, HGMW-2 and HGMW-3) west of the Closed Highgrove Sanitary Landfill. The offsite property owner abandoned the subject groundwater monitoring wells in December 2006. The Department recently finalized an agreement with the offsite property owner, which allows the Department access to replace the groundwater monitoring wells and resume offsite groundwater monitoring activities. The Department has received approval from the CRWQCB to install two of the three wells. The Engineer's estimate for this project is \$38,000. The third well will be installed under a separate contract if it is determined that the well is needed in the future.

Joseph R. McCann, Assistant Chief Engineer for
Hans Kernkamp, General Manager-Chief Engineer

FINANCIAL
DATA

Current F.Y. Total Cost:	\$38,000	In Current Year Budget:	Yes
Current F.Y. Net County Cost:	\$0	Budget Adjustment:	No
Annual Net County Cost:	\$NA	For Fiscal Year:	FY 2009/2010

SOURCE OF FUNDS: Waste Management Department Enterprise Funds

Positions To Be Deleted Per A-30	<input type="checkbox"/>
Requires 4/5 Vote	<input type="checkbox"/>

C.E.O. RECOMMENDATION:

APPROVE

BY:
Michael R. Shetler

County Executive Office Signature

MINUTES OF THE BOARD OF SUPERVISORS

On motion of Supervisor Ashley, seconded by Supervisor Buster and duly carried by unanimous vote, IT WAS ORDERED that the above matter is approved as recommended.

Ayes: Buster, Tavaglione, Stone, Benoit and Ashley
Nays: None
Absent: None
Date: January 12, 2010
xc: Waste

Kecia Harper-Ihem
Clerk of the Board
By:
Deputy

Prev. Agn. Ref.:

District: 5

Agenda Number:

ATTACHMENTS FILED
WITH THE CLERK OF THE BOARD

12.1



Riverside County
Waste Management Department

CONTRACT DOCUMENTS

**COMPLETION OF GROUNDWATER
MONITORING WELL CONSTRUCTION**

AT THE

CLOSED HIGHGROVE SANITARY LANDFILL

December 2009

FORM APPROVED COUNTY COUNCIL

BY: Neal R. Kipnis DATE

1-12-10 12.1

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GENERAL PROVISIONS

SPECIAL PROVISIONS

APPENDIX A – PROJECT DRAWINGS

Drawing No. 1 – Site Vicinity Map

Drawing No. 2 – Proposed Groundwater Well Locations and Storage Area Map

Drawing No. 3 – HG-31 Groundwater Well Schematic

Drawing No. 4 – HG-32 Groundwater Well Schematic

APPENDIX B – BACKGROUND SUBSURFACE INFORMATION

NOTICE TO CONTRACTORS

The Riverside County Waste Management Department, hereinafter called "County," invites sealed bids for the

Completion of Monitoring Well Construction at the Closed Highgrove Sanitary Landfill

Contract Documents may be examined at the County's office at 14310 Frederick Street, Moreno Valley, California, and may be obtained upon payment to the County of \$25 per set, received at the County's office and \$35 per set if mailed by U.S. mail (\$10 mailing cost does not apply when using recipient's mailing account number). No refund will be made.

Each proposal must be accompanied by a certified or cashier's check or bid bond equal to ten percent (10%) of the amount bid, payable to the County of Riverside as a guarantee that the Contractor will, if awarded the contract, execute a satisfactory contract and furnish the required bonds and provide the required certificates of insurance.

Proposals must be in accordance with these Contract Documents. Proposals must be submitted to the County by 11:00 am on February 17, 2010 at 14310 Frederick Street in Moreno Valley which time and place are fixed for the public opening of bids.

The project site is the closed Highgrove Sanitary Landfill, located at 1420 Highgrove Pass Road, two miles east of the community of Highgrove and on the eastern flank of the Box Springs Mountains, in unincorporated Riverside County. A mandatory pre-bid meeting will be conducted in at the project site on January 27, 2010 at 10:00 am. The meeting location for the pre-bid meeting will be on the east side of Mt. Vernon Avenue, south of the intersection Spring Street and Mt. Vernon Avenue, as shown on Drawing No. 1 of Appendix A – Project Drawings.

General prevailing rate of per diem wages and general prevailing rate of per diem wages for holiday and overtime work, including employer payments for health and welfare, pension, vacation, apprentices and similar purposes for each craft, classification or type of workman needed for execution of contracts under the jurisdiction of the County have been obtained by the County from the Director of Industrial Relations of the State of California for the area where the work is to be done. These are on file at the County's office, and will be made available to any interested person upon request.

Contractors submitting proposals for this project shall have a C57 Contractor's license from the State of California and be registered as a well driller with the Riverside County Department of Environmental Health in order to be considered eligible for the contract award.

Dated: 12/22/09

RIVERSIDE COUNTY
WASTE MANAGEMENT DEPARTMENT


Hans W. Kernkamp, General Manager - Chief Engineer

INSTRUCTIONS TO BIDDERS

QUANTITIES: The amount of work to be done or materials to be furnished under the Contract as noted in the proposal are but estimates and are not to be taken as an expressed or implied statement that the actual amount of work or materials will correspond to the estimate. The County reserves the right to increase or decrease or to entirely eliminate certain items from the work or materials if found desirable or expedient. The Contractor will be allowed no claims for anticipated profits, loss of profits or for any damages of any sort because of any difference between the estimated and the actual amounts of work done, or materials furnished or used in the completed project. The Contractor is cautioned against unbalancing of his bid by including his overhead into one or two items only when there are a number of items on the schedule. The overhead and indirect charges should be prorated on all items in the schedule.

DISCREPANCIES AND OMISSIONS: Discrepancies, omissions, ambiguities, or requirements likely to cause disputes shall be immediately brought to the attention of the County. When appropriate, Addenda will be issued by the County. No communication by anyone as to such matters except by an Addendum affects the meaning or requirements of the Contract Documents. If at any time (before or after submittal of its bid) the Contractor is of the opinion that there is or may be a discrepancy or inconsistency in the plans, drawings, specifications or other Contract Documents, it shall immediately report this in writing to the County and shall not proceed with any related work until ordered so to do.

WITHDRAWAL OF PROPOSALS: Any proposal may be withdrawn at any time prior to the hour fixed in the Notice to Contractors for the opening of proposals, provided that a request in writing, executed by the bidder or his duly authorized representative, for the withdrawal of such proposal, is filed with the County. The withdrawal of a proposal shall not prejudice the right of a bidder to file a new proposal.

AGREEMENT OF FIGURES: If the unit prices and the total amounts named by the bidder in the proposal do not agree, the unit prices alone will be considered as representing the bidder's intention.

INVALID PROPOSALS: Proposals submitted by fax or telegraph and those which fail to reach the place fixed for opening of proposals prior to the date and hour set for opening will not be considered.

INSPECTION OF SITE AND UNDERSTANDING OF CONTRACT PROVISIONS: Prior to submission of a bid, bidders must have examined the site and fully acquainted themselves with all conditions affecting the work. Information derived from maps, plans or specifications, or from the County, will not relieve the successful bidder from properly carrying out all the terms of the written contract. By the submittal of a proposal, the bidder will be held to have personally examined the site and the drawings, to have carefully read all of the specifications and other Contract Documents, and to have satisfied himself as to his ability to meet all the difficulties attending the execution of the work. The bidder agrees that if he is awarded the contract he will make no claim against the County based on ignorance or misunderstanding of the contract provisions; and that the bidder fully understands the payment method for the work.

QUALIFICATIONS OF BIDDERS: No proposal will be accepted from a Contractor who is not licensed under laws of California, as evidenced by the submittal of the Statement of Licensure. No award will be made to any bidder who cannot give satisfactory assurance to the County as to his ability to carry out the contract, both from his financial standing and by reason of his previous experience as a Contractor on work of the nature contemplated in the contract.

The bidders shall include a listing of three references attached to the Contractor's Proposal that document prior work, similar to this contract, within the last five years. Each reference shall have an associated project name, work description, contact person, and contact phone number. The County may disqualify a bidder that does not provide references or whose references cannot substantiate the bidder's qualifications. By submission of a bid, the bidders agree to be bound by the County's determination as to whether a bidder is qualified to do the work.

VENDOR REGISTRATION: Contractors must be registered with the County in order to be considered eligible for the Contract award. To register, Contractors may utilize "Vendor Self-Registration" on the Internet by choosing Vendor Registration/Bidding Opportunities at <http://www.co.riverside.ca.us/>.

PROPOSAL FORMS: Attention of all bidders is called to the proposal affidavit forms attached hereto and bidders are cautioned that all proposals submitted must be accompanied by the proper affidavit, properly executed. Proposals must be made on the form furnished by the County.

REJECTION OF PROPOSALS CONTAINING ALTERATIONS, ERASURES OR IRREGULARITIES: Proposals may be rejected if they show any alterations of form, additions not called for, conditional proposals, incomplete proposals, erasures, or irregularities of any kind. Erasures or interlineations in the proposal must be explained or noted over the signature of the bidder.

PUBLIC OPENING OF PROPOSALS: Proposals will be opened and read publicly at the time and place indicated in the Notice to Contractors. Bidders or their authorized agents are invited to be present.

DISQUALIFICATION OF BIDDERS: More than one proposal from an individual, a firm or partnership, a corporation or an association under the same or different names will not be considered. Reasonable ground for believing that any bidder is interested in more than one proposal for the work contemplated will cause the rejection of all proposals in which such bidder is interested. If there is any reason for believing that collusion exists among the bidders, none of the participants in such collusion will be considered in awarding the contract. Proposals in which the prices appear to be unbalanced may be rejected.

ADDENDA: County reserves the right to issue Addenda to the Contract Documents at any time prior to the time set to open bids. Each potential bidder shall leave with the County its name, mailing address and email address for the purpose of receiving Addenda. To be considered, a Contractor's proposal must list and take into account all issued Addenda.

AWARD OF CONTRACT: The County reserves the right to reject any and all proposals or to waive technical defects as the best interests of the County may require. Prior to award of the contract, and if requested by County, the Contractor agrees to meet with the County to review the details and calculations of the Contractor's proposal and the Contractor's understanding of any aspect of the work. The award of the Contract, if it be awarded, will be to the lowest responsible and qualified bidder. The award, if made, will be made within approximately two (2) to four (4) weeks after the opening of the proposals.

BIDDER'S CHECK OR BOND: Each proposal must be accompanied by a certified or cashier's check, or by a bid bond only on the form supplied by the County, drawn in favor of the County in an amount not less than ten percent (10%) of the total bid. This check or bond shall be given as a guarantee that the bidder, if awarded the contract, will execute and deliver the Contract, the required Payment and Performance Bonds, and the required certificates of insurance in accordance with his bid accepted by the County. In default of execution of the Contract upon award and/or delivery of said Payment and Performance Bonds and certificates of insurance, such Bid Bond or check shall be held subject to payment to the County for the difference in money between the amount of the contract with another party to perform the work, together with the cost to the County of redrafting, redrawing and publishing documents and papers necessary to obtain new bids on said work. The check or bond shall, in addition, be held subject to all other actual damages suffered by the County. The check or bond will be returned upon the close of the period mentioned in these Instructions below and to the successful bidder upon execution of the Contract. NO BONDS WILL BE ACCEPTED UNLESS SUBMITTED ON THE FORM SUPPLIED BY THE COUNTY.

FORFEITURE FOR FAILURE TO POST SECURITY AND EXECUTE CONTRACT: In the event the bidder, to whom an award is made, fails or refuses to post the required bonds and provide the required certificates of insurance and fails to return executed copies of the Agreement within five (5) calendar days after the prescribed forms are presented to him for signature, the County may declare the bidder's bid deposit or bond forfeited as damages caused by the failure of the bidder to post such security and execute such copies of the Contract and may award the work to the next lowest responsible bidder, or may call for new bids.

RETURN OF PROPOSAL GUARANTEES: Within ten (10) business days after the award of the contract, the County will return the proposal guarantees (bidder's check or bond) accompanying those proposals that are not considered in making the award. All other proposal guarantees will be held until the contract has been fully executed and the required bonds and certificates of insurance have been provided, after which they will be returned to the respective bidders whose proposal they accompany.

CONTRACT BONDS: The Contractor shall furnish two (2) surety bonds in duplicate, one as a security for the faithful performance of the contract in the amount equal to one hundred percent (100%) of the contract price, and one as security for the payment of all persons performing labor and furnishing materials in connection with the contract in an amount equal to one hundred percent (100%) of the contract price. All bonds must be submitted on forms provided by the County. Bonds submitted in any other form will not be accepted. Should any surety on the Payment Bond or Performance Bond be deemed unsatisfactory by the County, Contractor shall upon notice promptly substitute new bonds satisfactory to the County. All bonds must be issued by sureties which are licensed by the State of California to issue such bonds.

SUBLETTING AND SUBCONTRACTING: Bidders are required, pursuant to the Subletting and Subcontracting Fair Practices Act (commencing with Section 4100 of the Public Contract Code), to list in their proposal the name and location of place of business of each subcontractor who will perform work or labor or render services in or about the construction of the work or improvement or a subcontractor who specially fabricates and installs a portion of the work or improvement, in excess of one-half of one percent (0.5%) of the prime Contractor's total bid. Failure to list a subcontractor for a portion of the work means that the prime contractor will do that portion of the work.

"OR EQUAL": Pursuant to Division 2, Chapter 3, Article 5, commencing at Section 3400 of the Public Contract Code, all specifications shall be deemed to include the words "or equal," provided, however, that permissible exceptions shall be specifically noted in the specifications. Any "equal" proposed by the Contractor must be described in the Contractor's Proposal.

ANTI-DISCRIMINATION: It is the policy of the County, that in connection with all work performed under this Contract, there be no discrimination against any prospective or active employee engaged in the work because of race, color, ancestry, national origin, religious creed, sex, age, marital status, or sexual preference. The Contractor agrees to comply with applicable Federal and California laws including, but not limited to, the California Fair Employment Practice Act, beginning with Labor Code Section 1410, and Labor Code Section 1735. In addition, the Contractor agrees to require like compliance by any subcontractors employed on the work.

CONTRACTOR'S PROPOSAL

TO THE BOARD OF SUPERVISORS OF THE COUNTY OF RIVERSIDE:

The undersigned hereby declares:

- (a) That the only persons or parties interested in this proposal as principals are the following:

(If the Contractor is a corporation, give the name of the corporation and the name of its president, secretary, treasurer, and manager. If a co-partnership, give the name under which the co-partnership does business, and the names and addresses of all copartners. If an individual, state the name and address under which the contract is to be drawn.)

- (b) That this proposal is made without collusion with any other person, firm or corporation.
- (c) That he has carefully examined the location of the proposed work, and has familiarized himself with all of the physical, climatic or other conditions related to the work.
- (d) That he has carefully examined the attached specifications, plans, and other Contract Documents, and makes this proposal in accordance therewith.
- (e) That, if this proposal is accepted, he will enter into a written contract with the County of Riverside.
- (f) That he proposes to enter into such contract and to accept in full payment for the work actually done the prices shown in the attached schedule. It is understood that the quantities listed (except for those shown as "Final" or "Lump Sum") are but estimates only and final payment will be based on actual quantities whatever they may be, subject to such adjustments and alterations as elsewhere provided for in the Contract Documents.

Accompanying this proposal is a certified or cashier's check or bid bond payable to the order of the County of Riverside in the sum of _____ Dollars (\$_____)

THE REQUIRED REFERENCES ARE ATTACHED TO THIS PROPOSAL

Contractor bids as follows for Completion of Monitoring Well Construction at the Closed Highgrove Sanitary Landfill, located in the Highgrove area of unincorporated Riverside County, California:

<i>Item No.</i>	<i>Description</i>	<i>Units</i>	<i>Quantity</i>	<i>Unit Cost</i>	<i>Item Cost</i>
1	Mobilization	1	LS		
HG-31					
2a	Drill and sample HG-31	88	LF		
3a	Install well screen	25	LF		
4a	Install well casing	66	LF		
5a	Install filter pack	35	LF		
6a	Install transition sand	5	LF		
7a	Install pellet annual seal	8	LF		
8a	Install sanitary seal	40	LF		
9a	Well development	8	HR		
10a	Install well head protection	1	EA		
HG-32					
2b	Drill and sample HG-32	101	LF		
3b	Install well screen	25	LF		
4b	Install well casing	76	LF		
5b	Install filter pack	35	LF		
6b	Install transition sand	5	LF		
7b	Install pellet annual seal	11	LF		
8b	Install sanitary seal	50	LF		
9b	Well development	8	HR		
10b	Install well head protection	1	EA		
12	Drill rig standby	9	HR		
13	Rock clause drilling	4	HR		
14	Demobilization	1	LS		
TOTAL COST					\$

Contractor acknowledges receipt of Addenda No(s) _____.

Name of Contractor: _____

Address: _____

Telephone: _____

Contractor's License No. and Classification: _____

Signature: _____

Name: _____

Title: _____

Dated: _____

LIST OF SUBCONTRACTORS

The name and the location of the place of business of each subcontractor who will perform work or labor or render service to the Prime Contractor in or about the construction of the work or improvement, or a subcontractor who specially fabricates and installs a portion of the work or improvement, in an amount in excess of one-half of one percent (0.5%) of the Prime Contractor's total bid and the portion of the work which will be done by each such subcontractor is as follows:

Item No. (s): _____

Name of Subcontractor: _____

Address: _____

Item No. (s): _____

Name of Subcontractor: _____

Address: _____

Item No. (s): _____

Name of Subcontractor: _____

Address: _____

Item No. (s): _____

Name of Subcontractor: _____

Address: _____

Item No. (s): _____

Name of Subcontractor: _____

Address: _____

Item No. (s): _____

Name of Subcontractor: _____

Address: _____

STATEMENT OF LICENSURE

Pursuant to California Public Contract Code (commencing with Section 3300), the undersigned does certify as follows:

1. That the pocket license/certificate of licensure I have presented to County as of this date is my own license, being State of California Contractors License No. _____;
2. That said Contractors License is current and valid; and
3. That said Contractors License is of a classification appropriate to the work to be undertaken for County, a Class _____ license.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Dated: _____

Signature: _____

Name: _____

Title: _____

AFFIDAVIT FOR INDIVIDUAL CONTRACTORS

STATE OF CALIFORNIA)

SS

COUNTY OF RIVERSIDE)

_____, being first duly sworn, deposes and says:

That he or she is the party making the foregoing proposal or bid; that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the Riverside County Waste Management Department or anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Subscribed and sworn to before me

this ____ day of _____ 20____.

Signature of officer administering oath

STATE OF CALIFORNIA)
COUNTY OF RIVERSIDE)

SS

That he or she is a member of the joint venture or co-partnership firm designated as _____

That he has been and is duly vested with authority to make and sign instruments for the joint venture or co-partnership by _____

this day of 20 .

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AFFIDAVIT FOR CORPORATE CONTRACTOR

STATE OF CALIFORNIA)

SS

COUNTY OF RIVERSIDE)

_____, being first duly sworn, deposes and says:

That he or she is _____

of _____

a corporation which is the party making the foregoing proposal or bid; that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the Riverside County Waste Management Department or anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Subscribe and sworn to before me

this ____ day of _____ 20 ____.

Signature of officer administering oath

BID BOND

Recitals:

1. _____ (Contractor) has submitted its Contractor's Proposal to the County of Riverside, by and for the Waste Management Department, for the construction of the public work known as Completion of Monitoring Well Construction at the Closed Highgrove Sanitary Landfill, in accordance with a Notice to Contractors, dated December 22, 2009.
2. _____ a _____ corporation, hereafter called Surety, is the surety on this Bond.

Agreement: We, Contractor as principal and Surety as surety, jointly and severally agree and state as follows:

1. The amount of the obligation of this Bond is 10% of the amount of the Contractor's Proposal and inures to the benefit of County.
2. This Bond is exonerated by (1) County rejecting said Proposal or, in the alternate, (2) if said Proposal is accepted, Contractor executes the Agreement and furnishes the Bonds and certificates of insurance as agreed to in its Proposal, otherwise it remains in full force and effect for the recovery of loss, damage and expense of County resulting from failure of Contractor to act as agreed to in its Proposal.
3. Surety, for value received, stipulates and agrees that its obligations hereunder shall in no way be impaired or affected by any extension of time within which County may accept the Proposal and waives notice of any such extension.
4. This Bond is binding on our heirs, executors, administrators, successors and assigns.

Dated: _____

By: _____

By: _____

Title: _____
(Surety)

Title: _____
(Contractor)

NOTE: This Bond must be executed by both parties with corporate seal affixed. All signatures must be acknowledge by a notary (attach acknowledgments).

AGREEMENT

THIS AGREEMENT is made as of _____ and is
between the COUNTY OF RIVERSIDE (County) and _____

(Contractor).

IT IS AGREED BY THE PARTIES AS FOLLOWS:

1. The Work. Contractor shall furnish all tools, equipment, apparatus, facilities, labor and material necessary to perform the work for the project, Completion of Monitoring Well Construction at the Closed Highgrove Sanitary Landfill, in exact conformity with the Contract Documents, subject to such inspection as County deems appropriate.
2. Contract Documents. The Contract Documents for the project are: (a) Notice to Contractors; (b) Instructions To Bidders; (c) Contractor's Proposal; (d) Agreement; (e) Bid Bond; (f) Performance Bond; (g) Payment Bond; (h) General Provisions; (i) Special Provisions; (j) Appendixes; (k) Standard Specifications for Public Works Construction, 2003 Edition, with Amendments; (l) any other documents included in or incorporated into the Contract Documents; (m) Addenda Nos. _____; (n) orders, instructions, drawings and plans issued by County during the course of the work in accordance with the provisions of the Contract Documents.
3. Each of the above-mentioned documents presently in existence are by this reference incorporated into this Agreement and each of these documents not now in existence are incorporated herein as of the time of their issuance.
4. Contract Price - Payment. Exhibit A is attached to and incorporated into this Agreement and states the basis for full payment to Contractor. Contractor represents that it fully understands the payment method for the work.

RIVERSIDE COUNTY WASTE
MANAGEMENT DEPARTMENT
14310 Frederick St.
Moreno Valley, CA 92553

Contractor

By: _____
Hans W. Kernkamp
General Manager - Chief Engineer

By: _____

Name: _____

Title: _____

COUNTY OF RIVERSIDE

By: _____
Chairman, Board of Supervisors

ATTEST:

Kecia Ihem-Harper, Clerk of the Board

By: _____
Deputy
(Seal)

EXHIBIT A

To Agreement for the Riverside County Waste Management Department Project, Completion of Monitoring Well Construction at the Closed Highgrove Sanitary, located in the Highgrove area of unincorporated Riverside County, California.

It is understood that the quantities listed (except for those shown as "Final" or "Lump Sum") are but estimates only and final payment will be based on actual quantities whatever they may be, subject to such adjustments and alterations as elsewhere provided for in the Contract Documents.

<i>Item No.</i>	<i>Description</i>	<i>Units</i>	<i>Quantity</i>	<i>Unit Cost</i>	<i>Item Cost</i>
1	Mobilization	1	LS		
HG-31					
2a	Drill and sample HG-31	88	LF		
3a	Install well screen	25	LF		
4a	Install well casing	66	LF		
5a	Install filter pack	35	LF		
6a	Install transition sand	5	LF		
7a	Install pellet annual seal	8	LF		
8a	Install sanitary seal	40	LF		
9a	Well development	8	HR		
10a	Install well head protection	1	EA		
HG-32					
2b	Drill and sample HG-32	101	LF		
3b	Install well screen	25	LF		
4b	Install well casing	76	LF		
5b	Install filter pack	35	LF		
6b	Install transition sand	5	LF		
7b	Install pellet annual seal	11	LF		
8b	Install sanitary seal	50	LF		
9b	Well development	8	HR		
10b	Install well head protection	1	EA		
12	Drill rig standby	9	HR		
13	Rock clause drilling	4	HR		
14	Demobilization	1	LS		
					TOTAL COST \$

PERFORMANCE BOND

Recitals:

1. _____ (Contractor) has entered into an Agreement dated _____ with the COUNTY OF RIVERSIDE (County) for construction of the public work known as Completion of Monitoring Well Construction Drilling at the Closed Highgrove Sanitary Landfill (Project).
2. _____, a corporation (Surety), is the surety under this Bond.

Agreement: We, Contractor as principal, and Surety as surety, jointly and severally agree, state, and are bound unto County, as obligee, as follows:

1. The amount of the obligation of this Bond is 100 percent (100%) of the estimated contract price for the Project of \$ _____ and inures to the benefit of County.
2. This Bond is exonerated by Contractor doing all things to be kept and performed by it in strict conformance with the Contract Documents for the Project, otherwise it remains in full force and effect for the recovery of loss, damage and expense of County resulting from failure of Contractor to so act. All of said Contract Documents are incorporated herein.
3. This obligation is binding on our successors and assigns.
4. For value received, Surety stipulates and agrees that no change, time extension, prepayment to Contractor, alteration or addition to the terms and requirements of the Contract Documents or the work to be performed there under shall affect its obligations hereunder and waives notice as to such matters, except the total contract price cannot be increased by more than 25% without approval of Surety. (If the total contract price is inadvertently increased by more than 25% without approval of Surety, this performance bond will remain in effect for that portion of the contract existent prior to the 25% exceedance).

THIS BOND is executed as of _____.

Dated: _____

By: _____

By: _____

Title: _____

(Surety)

Title: _____

(Contractor)

NOTE: This Bond must be executed by both parties with corporate seal affixed. All signatures must be acknowledge by a notary (attach acknowledgments).

PAYMENT BOND

(Public Work - Civil Code, Section 3247 et seq.)

The makers of this Bond are _____ as Principal and Original Contractor and _____ a corporation, authorized to issue surety bonds in California, as Surety, and this bond is issued in conjunction with that certain public works contract dated _____, between Principal and the COUNTY OF RIVERSIDE (County), a public entity, for \$ _____, the total amount payable. THE AMOUNT OF THIS BOND IS 100 PERCENT OF SAID SUM. Said contract is for the public work known as Completion of Monitoring Well Construction at the Closed Highgrove Sanitary Landfill (Project). The beneficiaries of this Bond are as is stated in Section 3248 of the Civil Code and Sections 3248, 3249, 3250 and 3252 of said Code. Without notice, Surety consents to extension of time for performance, change in requirements, amount of compensation, or prepayment under said contract.

Dated: _____

By: _____

By: _____

Title: _____

(Surety)

Title: _____

(Contractor)

NOTE: This Bond must be executed by both parties with corporate seal affixed. All signatures must be acknowledge by a notary (attach acknowledgments).

GENERAL PROVISIONS

FOR

**COMPLETION OF GROUNDWATER
MONITORING WELL CONSTRUCTION**

AT THE

CLOSED HIGHGROVE SANITARY LANDFILL

Prepared By:

**RIVERSIDE COUNTY
WASTE MANAGEMENT DEPARTMENT**

14310 Frederick Street
Moreno Valley CA 92553

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SECTION 1 - DEFINITION OF TERMS

1.1 TERMS

Whenever in these specifications, or in any documents or instruments where these specifications govern, the following terms or pronouns in place of them are used, the intent and meaning shall be interpreted as follows:

- a) **AGENCY:** Whenever used in the Standard Specifications shall refer to County.
- b) **BOARD OF SUPERVISORS:** The Board of Supervisors of the County, also sometimes referred to as the Board.
- c) **DEPARTMENT, COUNTY, OR OWNER:** The County of Riverside, by and for the Waste Management Department.
- d) **ENGINEER:** The General Manager - Chief Engineer of the Riverside County Waste Management Department, acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.
- e) **LABORATORY:** The laboratories authorized by the County to test materials and work involved in the contract.
- f) **BIDDER:** Any individual, firm or corporation submitting a proposal for the work contemplated, acting directly or through a duly authorized representative.
- g) **CONTRACTOR:** The person or persons, co-partnership or corporation, private or municipal, who have entered into the Agreement with the County, or his or their legal representatives.
- h) **SUPERINTENDENT:** The executive representative of the Contractor, present on the work at all times during progress, authorized to receive and execute instruction from the County.
- i) **PLANS or PROJECT DRAWINGS:** The official plans, profiles, typical cross sections, general cross sections, working drawings, and supplemental drawings, or exact reproductions thereof, approved by the County, which show the location, character, dimension and details of the work to be done, and which are to be considered a part of the Contract Documents.
- j) **SPECIFICATIONS:** The directions, provisions, and requirements contained in the Contract Documents as to the method and manner of performing the work or to the quantities and qualities of materials to be furnished under the contract.
- k) **CONTRACT:** The written Agreement covering the work.

- l) **CONTRACT PRICE:** Shall mean either the lump sum, unit price, or unit prices named in the Agreement, or the total of all payments under the contract at the lump sum, unit price, or unit prices, as the case may be.
- m) **SURETY OR SURETIES:** The bondsmen or party or parties, approved by the County, who may guarantee the fulfillment of the contract by bond, and whose signatures are attached to said bond.
- n) **RIGHT OF WAY:** The whole right of way which is reserved for and secured for use in constructing the improvement.
- o) **THE WORK:** All the work specified in the Contract Documents.

1.2 SIMILARITY OF WORDS

Wherever in the specifications or upon the plans the words directed, required, permitted, ordered, designated, prescribed, or words of like import are used, it will be understood that the direction, requirements, permission, order, designation, or prescription of the County is intended, and similarly the words approved, acceptable, satisfactory, or works of like import, shall mean approved by, or acceptable to, or satisfactory to, the County, unless otherwise expressly stated.

SECTION 2 - SCOPE OF WORK

2.1 WORK TO BE DONE

The Contractor shall provide all labor, power, light, water, materials, equipment, tools, scaffolding, machinery, transportation, insurance, permits, bonds, temporary protection, watchmen, and superintendence necessary to construct and complete all work, and to furnish all materials included in the contract, except those furnished by the County as specifically stated in the Contract Documents.

The Contract Documents are complementary, and the work called for by any one shall be as binding as if called for by all.

2.2 CONSTRUCTION SCHEDULE

The Contractor shall submit to the County at least monthly, or at such times as may be requested by the County, a schedule which shall show the order and dates in which the Contractor proposes to carry on the various parts of the work, including estimated completion dates. The County's receipt of such schedule(s) shall not indicate any concurrence by the County in the items or dates described in the schedule(s).

2.3 DRAWINGS AND SPECIFICATIONS ON THE WORK

The Contractor shall keep one copy of all drawings and specifications on the work, in good order, available to the County and its representatives.

2.4 ESTIMATE OF QUANTITIES

It is understood that the quantities listed (except for those shown as "Final" or "Lump Sum") are but estimates only and final payment will be based on actual quantities for the work whatever they may be, subject to such adjustments and alterations as elsewhere provided for in the Contract Documents. The County is not to be held responsible for the accuracy of the estimate of quantities. The Contractor shall judge for himself, after considering all circumstances and conditions, the costs and quantities of materials involved in the work.

The Contractor shall not at any time assert that there was any misunderstanding in regard to the nature of the work or the kind or amount of materials to be furnished for the work. The Contractor shall not ask, demand, sue for, or seek to recover compensation in excess of the costs or charges for the work as stated in the Agreement.

2.5 PROTESTS

If the Contractor considers any work demanded of it to be outside of the requirements of the contract, the Contractor shall immediately and before the start of such work

state this in writing to the County. In such writing, the Contractor shall clearly and in detail state the basis of its protest. Except for such protests as are made of record in the manner herein specified, the records, rulings, instruction, or decisions of the County shall be final and conclusive. Written protest by the Contractor shall not in any way relieve the Contractor from proceeding with the work as directed by the County.

2.6 ALTERATIONS

The Contractor agrees that reasonable alterations and modifications may be made by the County and that this may be done without notice to the sureties on the Contractor's bonds. If such changes result in increased or decreased quantities under the items specified in the Agreement, the Contractor will be paid on the basis of actual quantities as measured by the County; and such changes shall not affect the unit prices bid by the Contractor.

2.7 EXTRA WORK

2.7.1 General

The County reserves and shall have the right to revise the details of the contemplated work, or to add work of a different character or function, and have the Contractor perform such revised or added work as "Extra Work", when such extra work is considered by the County to be appurtenant to the satisfactory completion of the project. "Extra Work" is defined as added work of a different character or function and for which no basis for payment is prescribed; or that work which is indeterminate at the time of advertising and is specifically designated as extra work. The signing of the contract by the Contractor will be deemed to be an agreement on his part to perform extra work, as and when ordered by the County. If required extra work results in delay to the work, the Contractor will be given an appropriate extension of time.

The General Manager – Chief Engineer shall have the authority to approve changes or additions in the work in accordance with Public Contract Code 20142 without Board of Supervisors approval.

2.7.2 Procedure for Extra Work

Extra work may not be done by the Contractor without prior request and proper written approval by the County. Upon decision of the County to have extra work performed, the County will so inform the Contractor, acquainting it with the details of the new work. The Contractor shall thereupon present in writing a price for said work to the County, whose written approval shall be secured before work is started; except that the County may order the Contractor to proceed with extra work in advance of the submission of such prices provided that preliminary estimates show that the cost will not exceed \$1,000.

Prices for extra work shall be prepared by the Contractor on one or both of the following methods, as requested by the County, and submitted to the County for approval:

For a stated unit price or lump sum amount based upon current prevailing fair prices for materials, labor, plant, overhead and profit.

On a cost plus 15 percent basis (force account by the Contractor). The cost of all work done by the Contractor on a cost plus 15 percent basis will be computed in the manner described in Section 7, and the compensation thus provided shall be full payment to the Contractor related to the extra work.

Upon receipt of the Contractor's price, the County will make an analysis thereof and in its discretion adopt one of the following procedures:

Accept the Contractor's price for lump sum or unit price amount in the original or amended form and direct it to proceed with the work; or direct it to perform the work on a cost plus 15 percent basis.

Have the work performed by County's forces or by separate contract.

Direct the Contractor to proceed with the work and accept payment therefore in the amount as adjudicated later in a court of law.

The price agreed to by the Contractor for the extra work shall be full compensation to the Contractor for all labor, materials, equipment or other costs related to the extra work.

2.8 PAYMENT FOR EXTRA WORK

At the end of each month the Contractor shall make and deliver to the County a statement of the cost of the extra work completed during the current month, itemized and in a form satisfactory to the County. Payment for extra work shall be added to the monthly partial payment made in accordance with Section 7.5 of the General Provisions.

2.9 RIGHTS OF WAY

The County shall provide the rights of way as specifically described in the Contract Documents upon which the work under this contract is to be done, except that the Contractor shall provide land required for the erection of temporary construction facilities and storage of his material, together with right of access to same.

2.10 CLEANING UP

The Contractor shall, as directed by the County, remove from the County's right of way and from all public and private property, at its own expense, all temporary structures, rubbish and waste materials resulting from its operations.

SECTION 3 - CONTROL OF THE WORK

3.1 AUTHORITY OF THE COUNTY

The County shall have general supervision of the contract under authority of the Board of Supervisors. The County has the authority to stop the work whenever such stoppage may be necessary to ensure the proper execution of the contract. The County shall decide all questions which may arise as to the quality or acceptability of materials furnished, work performed, and rate or progress of the work; all questions which may arise as to the interpretation of the plans and specifications; all questions as to the acceptable fulfillment of the contract on the part of the Contractor; and all questions as to compensation. The County's determination and decision thereon shall be final and conclusive.

3.2 DETAIL DRAWINGS

The approved plans shall be supplemented by such working drawings as are necessary to control the work adequately. All authorized alterations affecting the requirement and information given on the approved plans shall be in writing. No changes shall be made to any plan or drawing after the same has been approved by the County, except by its written direction.

Approval by the County of the Contractor's working drawings (or other documents) does not relieve the Contractor of responsibility for accuracy of dimensions, details or other requirements of the Contract Documents. It is mutually agreed that the Contractor shall be responsible for agreement and conformity of his working drawings with the approved plans and specifications. Full compensation for furnishing all working drawings shall be considered as included in the prices paid for the various contract items of work, and no additional allowance will be made therefore.

3.3 CONFORMITY WITH PLANS AND ALL ALLOWABLE DEVIATIONS

Except as otherwise specifically stated in the Contract Documents, finished surfaces in all cases shall conform exactly with the elevations, lines, grades, cross-sections, and dimensions shown or described in the Contract Documents. Any deviations must be authorized in advance in writing by the County.

3.4 INTERPRETATION OF PLANS AND SPECIFICATIONS

Should it appear that the work to be done is not sufficiently detailed or explained in the Contract Documents, the Contractor must bring this to the County's attention in writing prior to submittal of the Contractor's Proposal.

In the event of any discrepancy between any drawings and the figures written thereon, the figures shall be taken as correct. The Contractor will not be allowed to take

advantage of errors and omissions in the drawings and specifications. When errors or omissions are found, they shall immediately be brought to the attention of the other party in writing.

3.5 SUPERINTENDENCE

The Contractor shall keep on his work, continually during its progress, a competent Superintendent responsible for the construction of the work, as well as any necessary assistants. All such persons shall be acceptable to the County continuously throughout the duration of the project. The Superintendent shall represent the Contractor in his absence and all directions given to him shall be as binding as if given to the Contractor.

3.6 LINES AND GRADES

The Contractor shall provide opportunities and facilities for setting points and making measurements as requested by the County or otherwise as reasonably required. The Contractor shall not proceed until it has made timely demand upon the County for, and has received from the County, such lines and grades as may be necessary as the work progresses. The work shall be done in strict conformity with such lines and grades.

The Contractor shall carefully preserve benchmarks, reference points and stakes, and in case of willful or careless destruction, the Contractor shall be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their loss or disturbance.

3.7 INSPECTION OF WORK

The County and its representatives shall at all times have access to the work and shall be furnished with every reasonable opportunity for ascertaining that the materials and workmanship are in accordance with the requirements of the Contract Documents. All work done and all materials furnished shall be subject to the County's inspection and approval.

The inspection of the work by any County representatives shall not relieve the Contractor of any of its obligations to fulfill the requirements of the Contract Documents. Defective work or unsuitable materials may be rejected, notwithstanding that such work or materials may have been previously overlooked by County representatives, accepted, or estimated for payment.

3.8 REMOVAL OF DEFECTIVE AND UNAUTHORIZED WORK

All work which has been rejected shall be remedied or removed and replaced by the Contractor in an acceptable manner; and no compensation will be allowed for such removal or replacement. Any work done beyond the lines and grades as described by the Contract Documents, or any extra work done without proper written authority,

will be considered as unauthorized and will not be paid for. Work so done may be ordered removed at the Contractor's expense. Upon failure on the part of the Contractor to comply, the County shall have authority to cause defective or unauthorized work to be remedied, or removed and replaced, and to deduct the costs for this work from any monies due or to become due the Contractor.

3.9 EQUIPMENT AND PLANT

Equipment not suitable to produce the quality of work required will not be permitted to operate on the project. Plants shall be designed and constructed in accordance with general practice for such equipment and shall be of sufficient material to carry the work to completion within the time limit. The Contractor shall provide adequate and suitable equipment and plant to meet these requirements and, when ordered by the County, shall immediately remove unsuitable equipment from the work and discontinue the operation of unsatisfactory plants. No worn or obsolete equipment shall be used, and in no case shall the maker's rating of the capacity for any equipment be exceeded. All vehicles used to haul materials over existing highways shall be equipped with pneumatic tires.

3.10 FINAL INSPECTION

The County will not make the final inspection until all the work provided for and contemplated by the contract has been fully completed and the final clean up has been performed.

SECTION 4 - CONTROL OF MATERIAL

4.1 COUNTY FURNISHED MATERIALS

The Contractor shall furnish all materials required to complete the work, except those specified in the Contract Documents to be furnished by the County. Any materials furnished by the County will be delivered to the Contractor at the points specified in the Contract Documents. The Contractor will be held responsible for all materials so delivered to him, and deductions will be made from any monies due Contractor to make good any shortages and deficiencies, from any cause whatsoever, which may occur after such delivery, or for any demurrage charges due to delinquency in unloading.

4.2 SOURCE OF SUPPLY AND QUALITY OF MATERIALS

At the option of the County the source of supply of any materials shall be approved by the County before the delivery is started. Only materials conforming to the exact requirements of the Contract Documents and approved by the County shall be used in the work. All materials proposed for use may be inspected or tested by the County at any time during their preparation and use. If it is found that sources of supply which have been approved do not furnish a uniform product, or if the product from any source proves unacceptable at any time, the Contractor shall furnish approved material from other approved sources. No material which, after approval, subsequently becomes unfit for use shall be used in the work.

Wherever the name, or brand, or manufacturer of an item is specified, it is used as a measure of quality and utility or a standard. Except in those instances where the product is designated to match others presently in use, or as otherwise stated in the Contract Documents, specifications calling for a designated material, product, thing or service by specific brand or trade name shall be deemed to be followed by the words "or equal" so that the Contractor may propose in the Contractor's bid any equal material, product, thing or service. If the Contractor desires to use any other brand or manufacturer of equal quality or utility to that specified, he shall list definite particulars of that which it considers equivalent to the specified item in its bid. The County will then determine whether or not the proposed name brand or article is equal in quality and utility to that specified, and the County's determination in that regard shall be final and binding upon the Contractor.

4.3 SAMPLES AND TESTS

All tests of materials furnished by the Contractor shall be made by the County in accordance with commonly recognized standards of national organizations for this type of landfill project, and such special methods and tests as are in use at the County's approved laboratory or otherwise determined by the County to be needed. The County shall determine what testing is needed.

Field tests of materials will be made by the County or its representative when deemed necessary as determined by the County; and these tests shall be made in accordance with standard practices of the County or as otherwise needed.

The Contractor shall furnish samples of all materials as requested by the County without charge. No material shall be used until it has been approved by the County. Samples will be secured and tested whenever necessary as determined by the County to determine the quality of the material.

Promptly after the approval of the contract, the Contractor shall notify the County of the proposed sources of supply of all materials to be furnished by it, using a form which will be supplied by the County upon request.

Whenever reference is made to standard tests or requirements of the County, the American Society for Testing Materials, the American Railway Engineering Association or the American Association of State Highway Officials, the reference shall be construed to mean the standards that are in effect at the date the Agreement is signed with subsequent amendments, changes, or additions as thereafter adopted and published by the organization referred to.

None of the provisions stated in this section shall relieve the Contractor of its obligations as stated elsewhere in the Contract Documents.

4.4 STORAGE OF MATERIALS

Materials shall be so stored as to ensure the preservation of their quality and fitness for the work. When considered necessary by the County, they shall be placed on wooden platforms or other hard, clean surfaces and not on the ground. They shall be placed under cover when so directed by the County. Stored materials shall be so located as to facilitate prompt inspection.

4.5 DEFECTIVE MATERIALS

All materials not conforming to the exact requirements of the Contract Documents shall be considered as defective; and all such materials, whether in place or not, shall be rejected and shall be removed immediately from the site of the work. No rejected materials, the defects of which have been subsequently corrected, shall be used until approval in writing has been given by the County. Upon failure on the part of the Contractor to comply forthwith with any order of the County made under the provisions of this article, the County shall have authority to remove and replace defective material and to deduct the cost of removal and replacement from any monies due or to become due the Contractor.

4.6 ASSIGNMENT OF CLAIMS

In submitting a bid on this public works project, or any subcontractor agreeing to supply goods, services, or materials, and entering a contract pursuant thereto, the

Contractor and/or subcontractors do offer and agree to assign to the County all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Section 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the Contractor, without further acknowledgment by the parties.

SECTION 5 - LEGAL RELATIONS AND RESPONSIBILITY

5.1 LAWS TO BE OBSERVED

5.1.1 Compliance with Applicable Law

Reference to and/or incorporation into the Contract Documents of a particular law, statute, ordinance, rule or regulation is not, nor is it intended to be, a definitive statement of the law applicable to the Contract Documents and the accomplishment of the work. Contractor must keep informed as to all such applicable laws - Federal, State, County, Municipal - as they affect the conduct of the work and comply with such law, including, but not limited to, having requisite licenses, obtaining necessary permits, paying necessary fees and taxes, posting notices and installing, operating and maintaining safety precautions and facilities. It is likewise Contractor's responsibility to see to it that its subcontractors also fully comply with such applicable laws. Contractor shall protect and defend County, its officers, agents, employees and contractors against any claim or liability arising from or based upon any alleged violation of such applicable law.

5.1.2 Labor Code

The Contractor shall comply with all applicable requirements of the California Labor Code including but not limited to Labor Code, Chapter 2, Subchapter 1, Article 10, Required Apprentices on Public Works Contracts. Reference is made to Chapter 1, Part 7, Division 2 of the California Labor Code (commencing with Section 1720). By this reference said Chapter 1 is incorporated herein with like effect as if it were here set forth in full. The parties recognize that said Chapter 1 deals with, among other things, discrimination, penalties and forfeitures, their disposition and enforcement, wages, working hours and securing workers' compensation insurance and directly affect the method of prosecution of the work by Contractor and subject it under certain conditions to penalties and forfeitures. Execution of the Agreement by the parties constitutes their agreement to abide by said Chapter 1. Their stipulation as to all matters which they are required to stipulate to by the provisions of said Chapter 1, constitutes Contractor's certification that he is aware of the provisions of said Chapter 1 and will comply with them and further constitutes Contractor's certification as follows: "I am aware of the provisions of Section 3700 of the California Labor Code which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that Code, and I will comply with such provisions before commencing the performance of the work of this contract." Contractor and his subcontractors shall comply with the provisions of the Labor Code regarding apprentices. Contractor shall post at each job site during the course of the work a copy of County's "Determination of Prevailing Wage Rate". Copies of this Determination are available from County for this purpose.

5.1.3 Equal Employment Opportunity

The Contractor shall comply with all applicable non-discrimination and equal employment laws. The Contractor shall not discriminate in his recruiting, hiring, promotion, demotion or termination practices on the basis of race, religious creed, color, national origin, ancestry, sex, age or physical handicap in the performance of this contract and shall comply with the provisions of the California Fair Employment Practice Act (commencing with S1410 of the Labor Code), the Federal Civil Rights Act of 1964 (P.L. 88-352) and all amendments thereto, Executive Order No. 11246 (30 Federal Register 12319), as amended, and all administrative rules and regulations issued pursuant to said Acts and Order. See particularly 41 Code of Federal Regulation (CFR) Chapter 60.

Contractor shall require each of its subcontractors to comply with the preceding paragraph and shall include in each subcontract language similar to the preceding paragraph.

Contractor shall permit access to its records of employment, employment advertisement, application forms and other pertinent data and records (including but not limited to certified payroll information) by County and any state or federal agency having jurisdiction for the purpose of investigation to ascertain compliance with this Section. Notwithstanding, Contractor shall submit certified payroll to the County every 14 calendar days.

County may assign an affirmative action representative to monitor Contractor and his subcontractor(s) conduct required by this section, including the right of entry to the construction site for the purpose of obtaining information from persons performing work on the project providing such inspection does not interfere with the progress of the work.

Elsewhere in the Contract Documents more specific requirements may be contained covering the same subject matter of this Section. If so, such more specific requirements prevail over this section in case of conflict.

Transactions of \$10,000 or under - Contracts and subcontracts not exceeding \$10,000 are exempt from the requirements of this section. No Contractor or subcontractor shall procure supplies and/or services in less than usual quantities to avoid applicability of this section. With respect to contract and subcontracts for indefinite quantities, this section applies unless the amount required in any one year under such contract will reasonably be expected not to exceed \$10,000.

Transactions in Excess of \$10,000, but less than \$50,000 - At County's request, Contractor shall certify that he has in effect an affirmative action plan and agrees to comply with all state and federal laws and regulations regarding Fair Employment Practices. Contractor shall maintain a written copy of his affirmative action plan and furnish County a copy of the Plan upon request. County may require Contractor to complete an Affirmative Action Compliance Report, on a form furnished by County, setting forth definite goals during the term of this contract.

Transactions of \$50,000 or more - If Contractor has 50 or more employees and a contract for \$50,000 or more, he shall develop and submit to County within 30 days after award, a written affirmative action compliance program providing in detail specific steps to guarantee equal employment opportunity. Contractor shall include in his affirmative action program a table of job classifications, which table shall include but need not be limited to job titles, duties and rates of pay.

Contractor shall in each subcontract let to do a portion of the work covered hereunder, where the subcontractor involved has 50 or more employees and the subcontract is for \$50,000 or more, impose in the subcontract the above requirements.

For the purpose of determining the number of employees, the average of the Contractor's or his subcontractor's employees from the 12 month period immediately prior to award, or the total number of employees contractor or its subcontractor will have when performing this contract, whichever is higher, shall be used.

Federally Assisted Construction - If this project is a federally assisted construction project, then the contract provisions contained 41 CFR S60-1.4(b) are incorporated herein and Contractor shall likewise incorporate said provisions in each subcontract entered into by Contractor to perform the work. Federally assisted construction is identified as such in the Notice Inviting Bids.

5.1.4 Registration of Contractors

In order to be considered, a prospective bidder must be licensed in accordance with Division 3, Chapter 9 (commencing with Section 7000) of the Business and Professions Code.

5.1.5 Accident Prevention

Particular attention shall be given to relevant Division of Industrial Safety Construction and Electrical Safety Orders. Said Orders are contained in Title 8 of the California Code of Regulations, Chapter 4, Subchapters 4 and 5. Specific attention shall be taken of the California Occupational Safety and Health Act of 1973 (commencing with Section 6300 of the Labor Code) and the Federal Occupational Safety and Health Act of 1970 (P.L. 91-596) and rules and regulations issued pursuant to said Acts. Specific reference is made to Article 6 of said Construction Safety Orders. Contractor shall submit to County, in advance of excavation a detailed plan showing the design of shoring, bracing, sloping of the sides of trenches, or other provisions to be made for protection of personnel during earthwork operations. In event the Contractor's plan does not conform to the shoring system requirement of Article 6, the contractor's proposed shoring design shall be prepared and signed by a civil or structural engineer registered in the State of California. The Contractor shall also impose these requirements on all subcontractors involved and enforce compliance therewith. The duties here set forth are nondelegable by Contractor.

5.2 CONTRACTOR'S RESPONSIBILITY

Contractor is under the absolute duty in fulfilling his contractual obligations hereunder to proceed, and cause his subcontractors to proceed, in a safe, workmanlike manner, with adequate safeguards for the protection of the public, the workmen and persons from time to time inspecting the work. If at any time Contractor finds any of his subcontractors are allowing work to proceed in an unsafe manner or contrary to the terms of the Contract Documents, Contractor shall immediately cause such action to stop and immediately take all action necessary to protect workmen, inspectors and the general public and cause the work to proceed in a safe manner or in accordance with the terms of the Contract Documents.

5.3 CONTRACTOR'S RESPONSIBILITY FOR WORK

Until the formal final acceptance of the completed work by the County, the Contractor shall have the charge and care of the work and shall bear the risk of injury or damage to any part of the work by the action of the weather or from any other cause, whether or not arising from the execution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work.

5.4 PROPERTY RIGHTS IN MATERIALS

Nothing in the contract shall be construed as vesting in the Contractor any right of property in the materials used after they have been attached or affixed to the work or the soil. All such materials shall become the property of the County upon being so attached or affixed.

5.5 PERMITS AND LICENSES

The Contractor shall procure all permits and licenses (including but not limited to: National Pollution Discharge Elimination System (NPDES) and South Coast Air Quality Management District (AQMD) permit requirements), pay all charges and fees, and give all notices necessary and incident to prosecution of the work.

5.6 ROYALTIES AND PATENTS

The Contractor shall assume all costs arising from the use of patented materials, equipment, devices, or processes used on or incorporated in the work, and agrees to indemnify and save harmless the County and its duly authorized representatives, from all suits at law, or actions of every nature for, or on account of, the use of any patented materials, equipment, devices, or processes.

5.7 SANITARY PROVISIONS

Necessary conveniences, properly secluded from public observation, shall be provided by the Contractor where needed for the use of laborers on the work. Their

location, construction and maintenance shall be subject to the approval of the County. The Contractor shall obey and enforce such sanitary regulations as may be prescribed by the State Department of Health or other authorities having jurisdiction.

5.8 PUBLIC SAFETY

The Contractor at its own expense shall furnish, erect, and maintain such fences, barriers, lights, and signs as are necessary to give adequate warning to the public at all times that the work is under construction; and the Contractor shall erect such warning and directional signs and employ such flagmen as are required and shall maintain same throughout the construction period. Full compensation for the work involved in carrying out the precautionary measures above specified shall be considered as included in the prices paid for the various contract items of work and no additional payment will be made therefore.

5.9 USE OF EXPLOSIVES

When the use of explosives is necessary for the prosecution of the work, the Contractor shall use the utmost care not to endanger life or property. All explosives shall be stored in accordance with the provisions of Division II Part I, Chapter 3, of the Health and Safety Code of the State of California and other applicable laws or regulations.

5.10 PROVISIONS FOR EMERGENCIES

Unusual conditions may arise on the work which will require that immediate and unusual provisions be made to protect the public from danger or loss or damage to life or property, and it is part of the service required of the Contractor to make such provisions and to furnish such protection.

The Contractor shall use such foresight and shall take such steps and precautions as its operations make necessary to protect the public from danger or damage, or loss of life or property.

Whenever work is undertaken pursuant to this Section, Contractor shall promptly file with County a verified report setting forth the nature of the emergency and the action taken by the Contractor by reason of the emergency.

Whenever, in the opinion of the County, an emergency exists against which the Contractor has not taken sufficient precaution for the safety of the public or the protection of utilities or of adjacent structures or property which may be injured or damaged because of the Contractor's work; and, in the opinion of the County, immediate action shall be considered necessary in order to protect public or private, personal or real property interests, or prevent likely loss of human life or damage; then the County may provide suitable protection to said interests by causing such work to be done and material to be furnished as, in the opinion of the County, may seem reasonable and necessary. The cost and expense of all such emergency work

shall be borne by the Contractor, and if he shall not pay said cost and expense upon presentation of the bills therefore, duly certified by the County, then said cost and expense will be paid by the County and shall thereafter be deducted from any amounts due or which may become due said Contractor. Failure of the County, however, to take such precautionary measures, shall not relieve the Contractor of its full responsibility for public safety.

5.11 UNFORESEEN DIFFICULTIES

The risk of all loss or damage, except as noted in Section 8.4, arising out of the work, or from any unforeseen obstructions or difficulties which may be encountered during the progress of the work, or from the action of the weather, or from encumbrances in the line of work, shall be the responsibility of the Contractor.

5.12 ACCESS TO THE WORK

Unless provided for in the Special Provisions, access to the work from existing roads shall be provided by the Contractor at its expense and maintained in a manner so as not to create a public nuisance. The County assumes no responsibility for the condition or maintenance of any existing road or structure thereon that may be used by the Contractor for performing the work or for traveling to and from the site of the work. No additional payment will be made to the Contractor for constructing any temporary road used for construction operations or for improving, repairing, or maintaining any existing road or structure thereon that may be used by the Contractor for performance of the work under these specifications. The cost of all work described in this paragraph shall be included in the prices bid in the schedule for other items of construction work.

5.13 GUARANTEE OF WORK

All work shall be guaranteed by Contractor for a period of two (2) years from the recordation of the Notice of Completion against any defects, including but not limited to those resulting from the use of inferior materials, equipment, or workmanship. Upon notice from County, Contractor shall promptly remedy such defects at its expense, including payment to County of its expenses in connection with such defects; otherwise County shall proceed to remedy such defects and Contractor shall reimburse County for its expenses.

This guarantee is in addition to any specific guarantee(s) provided for elsewhere in the Contract Documents or provided by manufacturers or suppliers.

5.14 SURETY OF GUARANTEE

The performance of guarantee and conditions specified in Section 5.13., shall be secured by a surety bond which shall be delivered by the Contractor to the County prior to the date on which final payment is made to the Contractor. Said bond shall be in an approved form and executed by a surety company or companies satisfactory

to the County, in the amount of 10 percent of the final contract price. Said bond shall remain in force for the duration of the guarantee period specified in Section 5.13. Instead of providing such a bond as described above, the Contractor may, at its option, provide for the performance bond furnished under the contract to remain in force for said amount until the expiration of said guarantee period; and the amount of said performance bond may be reduced to 10 percent of the final contract price beginning at the time of recordation of the Notice of Completion.

5.15 DAMAGES BY ACT OF GOD

If the construction of the project herein is damaged, which damage is determined to have been proximately caused by an act of God, in excess of 5% of the contract amount, provided that the work damaged is built in accordance with applicable building standards and the plans and specifications, then the County may, without prejudice to any other right or remedy, terminate the contract.

SECTION 6 - PROSECUTION AND PROGRESS

6.1 PROGRESS OF THE WORK

The Contractor shall begin the work within ten (10) calendar days after the date of receipt by Contractor of notice to proceed from the County and shall diligently and continuously prosecute the same to completion within the time limit provided in the Special Provisions.

6.2 OVERTIME WORK AND WORK AT NIGHT

The Contractor shall conduct the work on a five (5) day, forty (40) hour work week with no work on legal holidays (as further described in the Special Provisions). If the Contractor feels it is necessary to work more than the normal 40 hour work week, he will make a written request for permission from the County, outlining the reasons for such request. The decision of granting permission for overtime work shall be in the sole discretion of the County; and the decision of the County shall be final. If granted, a condition will be imposed requiring the Contractor to pay the County the cost incurred at overtime rates for additional inspection and engineering time required in connection with the overtime work.

When any work is performed at night, only such classes of work shall be done as can be properly inspected. Adequate light must be provided for the safety of the workers and for proper inspection.

6.3 SUBCONTRACTING

Reference is made to the Subletting and Subcontracting Fair Practice Act contained in the California Public Contract Code (commencing with Section 4100). By this reference, said Act is incorporated herein with like effect as if it were here set forth in full and the parties shall abide by its terms and substitution shall be only as allowed by that Act. County reserves the right to approve all subcontractors whether or not they are required to be listed in the Contractor's Proposal.

Contractor shall be responsible for the acts and omissions of its subcontractors and shall make certain that at all times its subcontractors comply with the terms of the Contract Documents and applicable law. Where a portion of the work which has been subcontracted by the Contractor is not being prosecuted in a manner satisfactory to the County, the subcontractor shall be removed immediately on the request of the County and shall not again be employed on the work.

The Contractor shall give its personal attention to the fulfillment of the contract and shall keep the work under its control. The Contractor shall perform with its own organization work of a value amounting to not less than 50 percent of the remainder obtained by subtracting from the total original contract value the sum of any item designated herein or in the Special Provisions as Specialty Items. The furnishing and

placing of reinforcing steel, when placing is performed by the supplier, will be considered as a Specialty Item for this purpose; however, he shall be designated in the list of subcontractors. The value of the work subcontracted will be based on the contract item bid price, if any subdivision of a contract unit is subcontracted, the entire unit shall be considered as subcontracted.

6.4 CHARACTER OF WORKMEN

If any subcontractor or person employed by the Contractor shall fail or refuse to carry out the directions of the County or shall appear to the County to be incompetent or to act in a disorderly or improper manner, he/she shall be discharged immediately upon the request of the County and such person shall not again be employed on this work.

6.5 TEMPORARY SUSPENSION OF THE WORK

The County shall have the authority to suspend the work wholly or in part, for such period as the County may deem necessary, due to unsuitable weather, or to such other conditions as are considered unfavorable for the suitable prosecution of the work, or for such time as the County may deem necessary due to the failure on the part of the Contractor to properly perform the work. The Contractor shall immediately comply with the order of the County to suspend the work wholly or in part. The work shall be resumed when conditions are favorable or methods are corrected, as ordered or approved by the County.

6.6 TIME FOR COMPLETION AND LIQUIDATED DAMAGES

The Contractor shall complete the work called for under the contract in all parts and requirements within the number of working days specified in the Special Provisions. Liquidated damages shall apply as stated in the Special Provisions.

A working day is hereby defined as any day (except Saturdays, Sundays, legal holidays, and days on which the Contractor is specifically required by the Special Provisions to suspend construction operations) on which the Contractor is not prevented by inclement weather or resulting conditions from proceeding with at least 60 percent of the normal labor and equipment force engaged in the controlling operation or operations for at least five hours.

The County will furnish the Contractor a weekly statement showing the number of working days charged to the contract for the preceding week, the number of working days specified for completion of the contract, and the number of working days remaining to complete the contract. The Contractor will be allowed one week in which to file a written protest setting forth in what respects the weekly statement is incorrect, otherwise the statement shall be deemed to have been accepted by the Contractor as correct.

The following holidays will be considered as legal holidays: New Year's Day; Martin Luther King Jr. Birthday, Lincoln's Birthday; Washington's Birthday (observed);

Memorial Day; Independence Day; Labor Day; Columbus Day; Veteran's Day; Thanksgiving Day; Christmas; and such other days as are declared County holidays by ordinance passed by the Board of Supervisors. Please refer to specific holiday dates listed in the Special Provisions.

Contractor acknowledges that failure to perform in strict accordance with the Contract Documents and within the time limits specified in the Special Provisions will cause County to suffer special damages in addition to cost of completion of the work in accordance with the provisions of the Contract Documents. Such special damage could include, but is not limited to, lease and rental cost, additional salaries and overhead, interest during construction, attorney expense, additional engineering, inspection expense, cost of maintaining or constructing alternate facilities, and injury to the property of the County or others. Such special damage could also include penalties assessed against the County by other governmental agencies for failure to have the project completed in a timely manner or as required by law. The County may withhold from any money due or that may become due the Contractor under the contract such amount as the County may elect to offset the damages incurred. Any withholding or failure to withhold shall not in any way limit recovery for damages actually incurred.

It is further agreed that in case the work called for under the contract is not finished and completed in all parts and requirements within the time specified, the County (in its sole discretion) shall have the right to extend the time for completion or not. If the County decides to extend the time limit for the completion of the contract, the County shall further have the right to charge to the Contractor and to deduct from the Contractor's payment all or any part of the actual cost of engineering, inspection, superintendence, and other related expenses caused by the Contractor's failure to complete the project as required. Liquidated damages shall apply as stated in the Special Provisions.

6.7 DELAYS AND EXTENSION OF TIME

If delays are caused by unforeseen causes beyond the control of either the Contractor or the County, such as war, strikes, fire, floods, or other action of the elements, such delays will entitle the Contractor to an equivalent extension of time for the completion of the contract but not damages or additional payments over the contract price. Furthermore, if the Contractor suffers any delay caused by the failure of the County to furnish the necessary right of way or materials agreed to be furnished by it, or by failure to supply necessary plans or instructions concerning the work to be done after written request therefore has been made, the Contractor shall be entitled to an extension of time equivalent to the time lost for any of the above-mentioned reasons but shall not be entitled to any damages for such delay.

6.8 ASSIGNMENT

The contract may be assigned only upon prior written consent of the County. Such written consent to sublet, assign or otherwise dispose of any portion of the contract,

shall not be construed to relieve the Contractor of any responsibility for the fulfillment of the contract.

6.9 TERMINATION OF CONTRACT

If the Contractor fails to begin delivery of material and equipment or to commence work within the time specified herein, or to maintain the rates of delivery of materials, or to execute the work in the proper manner, written notice by the County may be served upon the Contractor demanding compliance with the contract. If the Contractor refuses or neglects to comply with such notice within five (5) working days after receipt of the notice, then the County may take possession of the work, together with all material and equipment thereon, and may complete the work itself in the manner the County determines to be appropriate. The cost of the completion of the work shall be charged against the Contractor and its surety and may be deducted from any money due to the Contractor; and if the sums due under the contract are insufficient, the Contractor and/or its surety shall pay to the County within five (5) working days after the completion of the work all of such cost in excess of the contract price.

SECTION 7 - PAYMENT

7.1 SCOPE OF PAYMENTS

The compensation described in the Agreement shall be complete and full payment to the Contractor for furnishing all materials, labor, tools, equipment and related items necessary to complete the work; and for all obligations imposed upon the Contractor pursuant to the Contract Documents. Neither the payment of any estimate nor of any retained percentage shall relieve the Contractor of any obligation to make good any defective work or material.

7.1.1 Measurement and Computation of Quantities

Unless otherwise stated, all items of the work to be paid for at a contract price per unit of measurement will be measured by the County in accordance with United States Standard Measures. A ton shall mean 2,000 pounds, avoirdupois. Except as otherwise expressly provided in the specifications, the methods of measurement and computation of quantities will be determined by the County.

The weights of metalwork, and other metal parts to be paid for by weight will be determined by the County on the basis of handbook weights, scale weights, or manufacturer's catalog weights, or in the absence of any of the foregoing, on the basis of estimated weights; provided, that weights of nonmetallic coatings will be excluded.

7.1.2 Payment at Contract Prices

The contract price for an item of the work shall include full compensation for all costs of that item, including the costs of any work, materials and equipment incidental to the item but not specifically shown or described in the Contract Documents.

The contract prices shall include full compensation for all costs of any work, materials, and equipment required by the Contract Documents, but not covered by a contract price or otherwise expressly made the subject of direct payment.

7.2 PAYMENT AND COMPENSATION FOR ALTERED QUANTITIES

When alterations in plans or quantities of work are ordered and performed, the Contractor agrees to accept payment in full at the contract unit price for the actual quantities of work done; and no additional payment will be made for anticipated profits.

7.3 FORCE ACCOUNT PAYMENT

When extra work is to be paid for on a force account basis, compensation will be determined as follows:

7.3.1 Work Performed by Contractor

The Contractor will be paid for labor, materials, and equipment rental as hereinafter provided, except where agreement has been reached to pay in accordance with Section 7.3.2. Only materials incorporated in the work will be paid for.

To the total computed as provided in Section 7.3.1.1, 7.3.1.2 and 7.3.1.3 will be added the following percentages:

Labor -- 24 percent
Materials -- 15 percent
Equipment Rental -- 15 percent

It is understood labor, materials, and equipment may be furnished by the Contractor or by the subcontractor or by others on behalf of the Contractor.

When extra work paid for on a force account basis is performed by forces other than the Contractor's organization, the Contractor shall reach agreement with such other forces as to the distribution of the payment made by the County for such work and no additional payment therefore will be made by the County.

7.3.1.1 Labor

The Contractor will be paid the cost of labor for the workmen (including foremen when authorized by the County), used in the actual and direct performance of the work. The cost of labor, whether the employer is the Contractor, subcontractor, or other forces, will be the sum of the following:

7.3.1.1.1 Actual Wages

The actual wages paid shall include any employer payments to or on behalf of the workmen for health and welfare, pension, vacation, and similar purposes.

7.3.1.1.2 Labor Surcharge

To the actual wages as defined in Section 7.3.1.1.1, will be added a labor surcharge set forth in the Special Provisions, which labor surcharge shall constitute full compensation for all payments imposed by State and Federal laws and for all other payments made to, or on behalf of, the workmen, other than actual wages as defined in Section 7.3.1.1.1 and subsistence and travel allowance as specified in Section 7.3.1.1.3.

7.3.1.1.3 Subsistence and Travel Allowance

Subsistence and travel allowance paid to such workmen as required by collective bargaining agreements.

7.3.1.2 Materials

The cost of materials incorporated in the work will be the cost to the purchaser, whether Contractor, subcontractor or other forces, from the supplier thereof, except as the following are applicable:

- (a) If a cash or trade discount by the actual supplier is offered or available to the purchaser, it shall be credited to the County notwithstanding the fact that such discount may not have been taken.
- (b) If the materials are procured by the purchaser by any method which is not a direct purchase from and a direct billing by the actual supplier to such purchaser, the cost of such materials shall be deemed to be the price paid to the actual supplier as determined by the County. No markup except for actual costs incurred in the handling of such materials will be permitted.
- (c) If the materials are obtained from a supply or source owned wholly or in part by the purchaser, payment therefore will not exceed the price paid by the purchaser for similar materials furnished from said source on contract items or on the current wholesale price for such materials delivered to the job site whichever price is lower.
- (d) If the cost of such materials is, in the opinion of the County, excessive, then the cost of such materials shall be deemed to be the lowest current wholesale price at which such materials are available in the quantities concerned delivered to the job site, less any discounts as provided in Section 7.3.1.2(a).
- (e) If the Contractor does not furnish satisfactory evidence of the cost of such materials from the actual supplier thereof, the cost shall then be determined in accordance with Section 7.3.1.2(d).

The County reserves the right to furnish such materials as it deems advisable, and the Contractor shall have no claims for costs and profit on such materials.

7.3.1.3 Equipment Rental

The Contractor will be paid for the use of equipment at the rental rates listed for such equipment in the Special Provisions regardless of ownership and any rental or other agreement, if such may exist, for the use of such equipment entered into by the Contractor. If it is deemed necessary by the County to use equipment not listed in the Special Provisions, a suitable rental rate for such equipment will be established by the County. The Contractor may furnish any cost data which might assist the County in the establishment of such rental rate.

The rental rates paid as above provided shall include the cost of fuel, oil, lubrication, supplies, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals.

Operators of rented equipment will be paid for as provided under Section 7.3.1.1

All equipment shall, in the opinion of the County, be in good working condition and suitable for the purpose for which the equipment is to be used.

Unless otherwise specified, manufacturer's ratings and manufacturer approved modifications shall be used to classify equipment for the determination of applicable rental rates. Equipment which has no direct power unit shall be powered by a unit of at least the minimum rating recommended by the manufacturer.

Individual pieces of equipment or tools having a replacement value of \$25.00 or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made therefore.

Rental time will not be allowed while equipment is inoperative due to breakdowns.

In computing the rental time of equipment, less than 30 minutes shall be considered ½ hour.

7.3.1.3.4 Equipment on the Work

The rental time to be paid for equipment on the work shall be the time the equipment is in operation on the extra work being performed, and in addition, shall include the time required to move the equipment to location of the extra work and return it to the original location or to another location requiring no more time than that required to return it to its original location, except that moving time will not be paid for if the equipment is used at the site of the extra work on other than such extra work. Loading and transporting costs will be allowed, in lieu of moving time, when the equipment is moved by means other than its own power, except that no payment will be made if the equipment is used at the site of the extra work on other than such extra work.

7.3.1.3.5 Equipment not on the Work

For the use of equipment moved in on the work and used exclusively for extra work paid for on a force account basis, the Contractor will be paid the rental rates listed in the Special Provisions or as agreed to as provided in Section 7.3.1.3 and for the cost of transporting the equipment to the location of the work and its return to its original locations, all in accordance with the following provisions:

- (i) The original location of the equipment to be hauled to the location of the work shall be agreed to by the County in advance.
- (ii) The County will pay the costs of loading and unloading such equipment.
- (iii) The cost of transporting equipment on low bed trailers shall not exceed the hourly rates charged by established haulers.
- (iv) The cost of transporting equipment shall not exceed the applicable minimum established rates of the Public Utilities Commission.

- (v) The rental period shall begin at the time the equipment is unloaded at the site of the extra work, shall include each day that the equipment is at the site of the extra work, excluding Saturdays, Sundays, and legal holidays unless the extra work is performed on such days, and shall terminate at the end of the day on which the County directs the Contractor to discontinue the use of such equipment. The rental time to be paid per day will be in accordance with the following:

Hours In	Hours to be Paid
0	4
0.5	4.25
1	4.5
1.5	4.75
2	5
2.5	5.25
3	5.5
3.5	5.75
4	6
4.5	6.25
5	6.5
5.5	6.75
6	7
6.5	7.25
7	7.75
8	8
Over 8	Hours in operation

When hourly rates are listed, less than 30 minutes of operation shall be considered to be ½ hour of operation.

When daily rates are listed, payment for ½ day will be made if the equipment is not used. If the equipment is used, payment will be made for one day.

The minimum rental time to be paid for the entire rental period on an hourly basis shall not be less than 8 hours or if on a daily basis shall not be less than one day.

- (i) Should the Contractor desire the return of the equipment to a location other than its original location, the County will pay the cost of transportation in accordance with the above provisions, provided such payment shall not exceed the cost of moving the equipment to the work.
- (ii) Payment for transporting, loading and unloading equipment, as above provided, will not be made if the equipment is used on the work in any other way than upon extra work paid for on a force account basis.

7.3.2 Work Performed by Special Forces or Other Special Services

When the County and the Contractor, by advance agreement, determine that a special service or an item of extra work cannot be performed by the forces of the Contractor or those of any of his subcontractors, such service or extra work item may be performed by a specialist. Invoices for such service or item of extra work on the basis of the current market price thereof may be accepted without complete itemization of labor, material, and equipment rental costs when it is impracticable and not in accordance with the established practice of the special service industry to provide such complete itemization. In those instances wherein a Contractor is required to perform extra work necessitating a fabrication or machining process in a fabrication or machine shop facility away from the job site, the charges for that portion of the extra work performed in such facility may, by agreement, be accepted as a specialist billing.

To the specialist invoice price, less a credit to the County for any cash or trade discount offered or available, whether or not such discount may have been taken, will be added 15 percent in lieu of the percentages provided in Section 7.3.1.

7.3.3 Records

The Contractor shall maintain his records in such manner as to provide a clear distinction between the direct costs of extra work paid for on a force account basis and the costs of other operations.

The Contractor shall furnish the County (on a form provided by the County) report sheets in duplicate of each day's extra work paid for on a force account basis no later than the working day following the performance of said work. The daily report sheets shall itemize the materials used, and shall cover the direct costs of labor and the charges for equipment rental, whether furnished by the Contractor, subcontractor, or other forces, except for charges described in Section 7.3.2. The daily report sheets shall provide names or identifications and classifications of workmen, the hourly rate of pay and hours worked, and also the size, type and identification number of equipment, and hours operated.

Materials charges shall be substantiated by valid copies of vendor's invoices. Such invoices shall be submitted with the daily report sheets, or if not available, they shall be submitted with subsequent daily report sheets. Should said vendor's invoices not be submitted within 15 days after acceptance of the work, the County reserves the right to establish the cost of such materials at the lowest current wholesale prices at which said materials are available in the quantities concerned delivered to the location or the work, less any discounts provided in Section 7.3.1.2 (a).

Daily report sheets shall be signed by the Contractor or its authorized agent.

The County will compare its records with the daily report sheets furnished by the Contractor, make any necessary adjustments, and compile the costs of work paid for on a force account basis on daily extra work report forms furnished by the County. When these daily extra work reports are agreed upon and signed by both parties, they shall

become the basis of payment for the work performed, but shall not preclude subsequent adjustment based on a later audit.

The Contractor's cost records pertaining to work paid for on a force account basis shall be open to inspection or audit by representatives of the County, during the life of the contract and for a period of not less than 18 months after the date of acceptance thereof, and the Contractor shall retain such records for that period. Where payment for materials or labor is based on the cost thereof to forces other than the Contractor, the Contractor expressly guarantees that the cost records of such other forces shall be open to inspection and audit by representatives of the County on the same terms and conditions as the cost records of the Contractor. If an audit is to be commenced more than 60 days after the acceptance date of the contract, the Contractor will be given a reasonable notice of the time when such audit is to begin.

7.3.4 Payment

Payment as provided above in Sections 7.3.1 and 7.3.2 shall constitute full compensation to the Contractor for performance of work paid for on a force account basis and no additional compensation will be allowed therefore.

7.4 ACCEPTANCE

The work shall be inspected for final acceptance by the County promptly upon receipt of notice in writing from the Contractor that the completed work is ready for such inspection.

7.5 PARTIAL PAYMENTS

On or about the last day of each month, the County shall make an estimate in writing of the total amount of work done by the Contractor to the time of such estimate and the value thereof. The County shall retain 10 percent (10%) of such estimated value of the work or partial payment for the fulfillment of the contract by the Contractor. The County may reduce the retention from 10% to 5% if, the project is more than 50% completed, no stop notices have been received, the project is proceeding as scheduled, and the County has accepted the work.

After deducting all previous payments and all sums to be kept or retained under the provisions of the contract or applicable law, the County shall make monthly progress payments to the Contractor. No such estimate or payment shall be required to be made when, in the judgment of the County, the work is not proceeding properly. No payment shall be required to be made by the County unless and until all required submittals have been delivered to the County, including but not limited to the following: certified payroll information at a frequency specified in the Section 5.1.3, Construction schedule updates as listed in Section 2.2, and National Pollution Discharge and Elimination System permit requirements and frequencies as stated in the Special Provisions.

In accordance with Public Contract Code Section 22300 and other applicable law, the Contractor may substitute securities for any monies withheld to ensure performance under the contract. Such substitution shall be made only upon a separate agreement between the County Board of Supervisors and the Contractor which contains terms and conditions in compliance with all laws applicable to monies withheld under the contract.

7.6 DELAYED PAYMENTS

All the monies due the Contractor under the contract will be paid by the Treasurer of the County of Riverside, prepared and approved as required by law; and it is understood that any delay in the preparation, approval and payment of these demands will not constitute a breach of the County's obligations.

7.7 FINAL PAYMENT

The County, after completion of the work, and submittal of any final documents or reports required by the Special Provisions, shall make a final estimate in writing to the County Board of Supervisors of the amount of work done and the value of such work; and pursuant to order of the Board of Supervisors the County shall pay the sum found to be due after deducting therefrom all previous payments and all amounts to be kept and retained under the provisions of the contract or applicable law. All prior partial estimates and payments shall be subject to correction in the final estimate and payment. The withheld retention funds shall not be due and payable to the Contractor until the expiration of thirty-five (35) days after the date of approval by the Board of Supervisors and recordation of the notice of completion.

The Contractor agrees that no certificate given or payments made under the contract except the final payment and approval by the Board of Supervisors shall be conclusive evidence of the performance of the contract. No payment shall be construed to be an acceptance of any defective work or improper materials.

The Contractor agrees that payment of the final amount due under the contract will be withheld until the guarantee of work as required in Section 5.14 herein is accepted by the County in approved form.

The Contractor's agreement to the final payment shall release the County, including its officers, employees, agents and contractors, from any and all claims from the Contractor for further or additional compensation related to the work.

7.8 CLAIMS RESOLUTION

In accordance with Public Contract Code Section 20104 - 20104.8 and other applicable law, public works claims of \$375,000 or less which arise between the Contractor and the County shall be resolved following the statutory procedure unless the County has elected to resolve the dispute pursuant to Public Contract Code 10240 et seq.

7.8.1 Submission of Claims

All claims shall be submitted in writing and accompanied by substantiating documentation. Claims must be filed before processing of the final payment unless other notice requirements are provided in the contract. "Claim" means a separate demand by the claimant for (1) a time extension, (2) payment of money or damages arising from work done by or on behalf of the claimant and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled, or (3) an amount the payment of which is disputed by the County.

7.8.1.1 Claims Under \$50,000.00

The County shall respond in writing to the claim within 45 days of receipt of the claim, or, the County may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses or claims the County may have. If additional information is needed thereafter, it shall be provided upon mutual agreement of the County and the claimant. The County's written response shall be submitted 15 days after receiving the additional documentation, or within the same period of time taken by the claimant to produce the additional information, whichever is greater.

7.8.1.2 Claims over \$50,000.00 but less than or equal to \$375,000.00

The County shall respond in writing within 60 days of receipt, or, may request in writing within 30 days of receipt of the claim, any additional documents supporting the claim or relating to defenses or claims the County may have against the claimant. If additional information is needed thereafter, it shall be provided pursuant to mutual agreement between the County and the claimant. The County's response shall be submitted within 30 days after receipt of the further documents, or within the same period of time taken by the claimant to produce the additional information or documents, whichever is greater.

7.8.2 Meet and Confer

If the claimant disputes the County's response, or if the County fails to respond within the statutory time period, the claimant may so notify the County within 15 days of the receipt of the response or the failure to respond, and demand an informal conference to meet and confer for settlement. Upon such demand, the County shall schedule a meet and confer conference within 30 days.

7.8.3 Filing of Claims

If following the meet and confer conference, the claim or any portion thereof remains in dispute, the claimant may file a claim pursuant to Government Code 900 et seq. and Government Code 910 et seq.

7.8.4 Mediation and Judicial Arbitration

If a civil action is filed to resolve any claim, the provisions of Public Contract Code 20104.4 shall be followed providing for nonbinding mediation and judicial arbitration.

7.8.5 Location for Filing of Claims, Jurisdiction

Any legal action related to the performance of the work or the terms of the Contract Documents shall be filed only in the Superior Court of the State of California located in Riverside, California.

SECTION 8 - GENERAL

8.1 COOPERATION BETWEEN CONTRACTORS

The Contractor shall fully cooperate and coordinate its work with all utility and public agency representatives engaged in construction, relocation, altering or otherwise rearranging any facilities interfering with the progress of the work, and with any other contractors working at or near the project site. Full compensation for any delay or inconvenience to the Contractor's operation due to such operations shall be considered included in the prices for the other items of work and no additional allowance will be made therefore.

8.2 HOLD HARMLESS / INDEMNIFICATION

Contractor shall indemnify and hold harmless the County of Riverside, its Agencies, Districts, Special Districts and Departments, their respective directors, officers, Board of Supervisors, elected and appointed officials, employees, agents and representatives from any liability claim, action, or damages whatsoever, based or asserted upon any services of Contractor, its officers, employees, subcontractors, agents or representatives arising out of or in any way relating to this Agreement, including but not limited to property damage, bodily injury, or death or any other element of any kind or nature whatsoever arising from the performance of Contractor, its officers, agents, employees, subcontractors, agents or representatives relating to this Agreement. Contractor shall defend, at its sole expense and pay all costs and fees including, but not limited to attorney fees cost of investigation, defense and settlements or awards, the County of Riverside, its Agencies, Districts, Special Districts and Departments, their respective directors, officers, Board of Supervisors, elected and appointed officials, employees, agents and representatives in any claim or action to which this indemnification and hold harmless obligation applies.

With respect to any action or claim subject to indemnification herein by Contractor, Contractor shall, at their sole cost, have the right to use counsel of their own choice and shall have the right to adjust, settle, or compromise any such action or claim without the prior consent of County; provided, however, that any such adjustment, settlement or compromise in no manner whatsoever limits or circumscribes Contractor's indemnification to County as set forth herein.

Contractor's obligation hereunder shall be satisfied when Contractor has provided to County the appropriate form of dismissal relieving County from any liability for the action or claim involved.

The specified insurance limits required in this Agreement shall in no way limit or circumscribe Contractor's obligations to indemnify and hold harmless the County herein from third party claims.

In the event there is conflict between this clause and California Civil Code Section 2782, this clause shall be interpreted to comply with Civil Code 2782. Such interpretation shall not relieve the Contractor from indemnifying the County to the fullest extent allowed by law.

8.3 INSURANCE

Without limiting or diminishing the Contractor's obligation to indemnify or hold the County harmless, Contractor shall procure and maintain or cause to be maintained, at its sole cost and expense, the following insurance coverage's during the term of this Agreement.

8.3.1 Workers' Compensation:

If the Contractor has employees as defined by the State of California, the Contractor shall maintain statutory Workers' Compensation Insurance (Coverage A) as prescribed by the laws of the State of California. Policy shall include Employers' Liability (Coverage B) including Occupational Disease with limits not less than \$1,000,000 per person per accident. The policy shall be endorsed to waive subrogation in favor of The County of Riverside, and, if applicable, to provide a Borrowed Servant/Alternate Employer Endorsement.

8.3.2 Commercial General Liability:

Commercial General Liability insurance coverage, including but not limited to, premises liability, contractual liability, products and completed operations liability, personal and advertising injury, cross liability coverage and employment practices liability, covering claims which may arise from or out of Contractor's performance of its obligations hereunder. Policy shall name the County of Riverside, its Agencies, Districts, Special Districts, and Departments, their respective directors, officers, Board of Supervisors, employees, elected or appointed officials, agents or representatives as Additional Insureds. Policy's limit of liability shall not be less than \$1,000,000 per occurrence combined single limit and \$2,000,000 annual aggregate. If such insurance contains a general aggregate limit, it shall apply separately to this agreement or be no less than two (2) times the occurrence limit.

8.3.3 Vehicle Liability:

If Contractor's vehicles or mobile equipment are used in the performance of the obligations under this Agreement, then Contractor shall maintain liability insurance for all owned, non-owned or hired vehicles so used in an amount not less than \$1,000,000 per occurrence combined single limit. If such insurance contains a general aggregate limit, it shall apply separately to this agreement or be no less than two (2) times the occurrence limit. Policy shall name the County of Riverside, its Agencies, Districts, Special Districts, and Departments, their respective directors, officers, Board of Supervisors, employees, elected or appointed officials, agents or representatives as Additional Insureds.

8.3.4 Environmental Impairment Insurance:

Contractor shall maintain Environmental Impairment Insurance providing coverage for the Contractor's performance of work included within this Agreement, with a limit of liability of not less than \$1,000,000 per occurrence and \$1,000,000 annual aggregate.

8.3.5 General Insurance Provisions - All lines:

Any insurance carrier providing insurance coverage hereunder shall be admitted to the State of California and have an A M BEST rating of not less than A: VIII (A:8) unless such requirements are waived, in writing, by the County Risk Manager. If the County's Risk Manager waives a requirement for a particular insurer such waiver is only valid for that specific insurer and only for one policy term.

The Contractor's insurance carrier(s) must declare its insurance deductibles or self-insured retentions. If such deductibles or self-insured retentions exceed \$500,000 per occurrence such deductibles and/or retentions shall have the prior written consent of the County Risk Manager before the commencement of operations under this Agreement. Upon notification of deductibles or self insured retention's unacceptable to the County, and at the election of the County's Risk Manager, Contractor's carriers shall either; 1) reduce or eliminate such deductibles or self-insured retention's as respects this Agreement with the County, or 2) procure a bond which guarantees payment of losses and related investigations, claims administration, and defense costs and expenses.

Contractor shall cause Contractor's insurance carrier(s) to furnish the County of Riverside with either 1) a properly executed original Certificate(s) of Insurance and certified original copies of Endorsements effecting coverage as required herein, and 2) if requested to do so orally or in writing by the County Risk Manager, provide original Certified copies of policies including all Endorsements and all attachments thereto, showing such insurance is in full force and effect. Further, said Certificate(s) and policies of insurance shall contain the covenant of the insurance carrier(s) that thirty (30) days written notice shall be given to the County of Riverside prior to any material modification, cancellation, expiration or reduction in coverage of such insurance. In the event of a material modification, cancellation, expiration, or reduction in coverage, this Agreement shall terminate forthwith, unless the County of Riverside receives, prior to such effective date, another properly executed original Certificate of Insurance and original copies of endorsements or certified original policies, including all endorsements and attachments thereto evidencing coverage's set forth herein and the insurance required herein is in full force and effect. ***Contractor shall not commence operations until the County has been furnished original Certificate (s) of Insurance and certified original copies of endorsements and if requested, certified original policies of insurance including all endorsements and any and all other attachments as required in this Section. An individual authorized by the insurance carrier to do so on its behalf shall sign the original endorsements for each policy and the Certificate of Insurance.***

It is understood and agreed to by the parties hereto and the insurance company(s), that the Certificate(s) of Insurance and policies shall so covenant and shall be construed as

primary insurance, and the County's insurance and/or deductibles and/or self-insured retention's or self-insured programs shall not be construed as contributory.

The County's Reserved Rights--Insurance. If, during the term of this Agreement or any extension thereof, there is a material change in the scope of services; or, there is a material change in the equipment to be used in the performance of the scope of work which will add to additional exposures (such as the use of aircraft, watercraft, cranes, etc.); or, the term of this Agreement including any extensions thereof exceeds five (5) years the County reserves the right to adjust the types of insurance required under this Agreement and the monetary limits of liability for the insurance coverage's currently required herein, if; in the County Risk Manager's reasonable judgment, the amount or type of insurance carried by the Contractor has become inadequate.

Contractor shall pass down the insurance obligations contained herein to all tiers of subcontractors working under this Agreement.

The insurance requirements contained in this Agreement may be met with a program(s) of self-insurance acceptable to the County.

Contractor agrees to notify County of any claim by a third party or any incident or event that may give rise to a claim arising from the performance of this Agreement.

8.4 PUBLIC UTILITIES

The locations of all pipelines, power lines, communication lines and other utility components known to County to exist within the limits of the work, are indicated on the drawings and may be the subject of a specific section in the Special Provisions. Size, location and characteristics of such utilities are based upon information made available to County, generally from the owner of the utility in question. The exactness of such information is not guaranteed but may be assumed to have been accomplished with reasonable accuracy.

In addition to the drawings and any such provision regarding utilities, Contractor is under a duty to take into account the location of service laterals or other appurtenances which can be inferred from the presence of facilities such as buildings, meter, junction boxes or similar items in or about the limits of the work.

Unless otherwise directed by the Contract Documents, all existing utilities, whether shown or described or not, shall be left in place and Contractor must conduct its operations so that such utilities are protected from damage at all times during the course of the work; and the work must be accomplished so as to give such utilities proper protection and support upon completion of the work by Contractor.

If during the course of the work, Contractor discovers underground utility components not indicated in the drawings or elsewhere in the Contract Documents, Contractor must immediately notify, in writing, the County and the utility company (public or private) involved, stating with exactness the condition found.

If Contractor encounters a utility not shown or described in the Contract Documents, Contractor shall cease all work which would disturb such utility and its support until given specific instructions as to how to proceed regarding such utility by County.

All work needed to protect existing utilities shown or described in the Contract Documents, or which can be reasonably inferred from the presence of other visible facilities, is to be done at Contractor's expense.

Contractor's cost of locating and repairing damage not due to the failure of Contractor to exercise reasonable care, and removing or relocating utility components and facilities not indicated in the drawings or elsewhere in the Contract Documents, and for equipment on the project necessarily idled during such work shall be paid Contractor as Extra Work.

County may direct the Contractor to do such repair or relocation work as required. When such repair or relocation work is not elsewhere provided for in these Contract Documents, or reasonably inferred therefrom, Contractor shall be compensated for such work as Extra Work.

8.5 PROTECTION OF EXISTING STREET FACILITIES

The Contractor shall be responsible for the protection of existing signs, fences, concrete curbs, gutters and other facilities or structures. The Contractor shall be responsible to repair or replace any such items which are damaged.

Excavation within the street right of way shall be conducted in a manner to cause the least interruption to traffic. Where traffic must cross open trenches, the Contractor shall provide suitable bridges at street intersections and driveways. Hydrants under pressure, valve pipe covers, valve boxes, curb stop boxes, fire or police call boxes, or other utility controls shall be left unobstructed and accessible during construction.

8.6 DIVERSION AND CONTROL OF WATER

Unless otherwise provided in the Agreement, no separate or additional payment will be made for diversion or control of surface or groundwater. All costs incidental to maintaining dry working areas shall be the responsibility of the Contractor and shall be included in the unit prices paid for other items of work.

8.7 DUST ABATEMENT

During the performance of all work, the Contractor shall take the necessary precautions to avoid any loss or damage resulting from its operations that raise or produce dust. The Contractor will be required to have a positive and continuous method of dust control which is satisfactory to the County. The methods to be used for controlling dust in the construction area and along haul roads shall be approved by the County prior to starting any of the work. All costs incidental to dust control shall be included in the unit prices paid for other items of work.

8.8 PROJECT SIGNS

The Contractor shall erect a maximum of two project signs at the locations designated by the County. The signs will be furnished by the County. The signs shall be erected as soon as possible and within 15 days after date of Notice to Proceed. The signs are 4 feet by 8 feet in size, with two 4" x 4" x 12' posts. The sign posts shall be set 5.0 feet in good solid ground and the backfill carefully tamped into place.

8.9 EXAMINATION OF PLANS, SPECIFICATIONS, CONTRACT, AND SITE OF WORK

The Contractor shall examine fully and carefully the site of the work, the plans, the specifications, and any other Contract Documents prior to submitting its bid. The submission of a bid shall be conclusive evidence that the Contractor has investigated the site and is satisfied as to the conditions and requirements of the work to be performed.

Where the County has made investigations of subsurface conditions in areas where work is to be performed, or in other areas, such investigations are made only for the purpose of study and design. Where such investigations have been made, bidders may, upon request, inspect the records of the County as to such investigations. The records of such investigations are not a part of the contract and are solely for the convenience of the bidders. It is expressly understood and agreed that the County assumes no responsibility whatsoever in respect to the sufficiency or accuracy of the investigations thus made, the records thereof; or of the interpretations set forth therein or made by the County in its use thereof and there is no warranty or guarantee, either express or implied, that the conditions indicated by such investigations or records thereof are representative of those existing throughout such areas, or any part thereof, or that unlooked-for developments may not occur, or that materials other than, or in proportions different from those indicated, may not be encountered. No information derived from inspection of such records will in any way relieve the Contractor from its obligations under the Contract Documents.

SECTION 9 - WATERING

9.1 DESCRIPTION

This work shall include providing a water supply for all water required for the work. The application of the water shall be subject to the approval of the County at all times and shall be applied in the necessary amounts and at the necessary locations subject to the approval of the County.

SECTION 10 - PUBLIC CONVENIENCE, TRAFFIC CONTROL AND DETOURS

10.1 GENERAL

The Contractor shall so conduct its operations as to offer the least possible obstruction and inconvenience to the public and it shall have under construction no greater length or amount of work than it can prosecute properly with due regard to the rights of the public.

Unless otherwise provided in the Special Provisions, all public traffic shall be permitted to pass through or near the work with as little inconvenience and delay as possible.

Spillage resulting from hauling operations along or across any public traveled way shall be removed immediately at the Contractor's expense.

Construction operations shall be conducted in such a manner as to cause as little inconvenience and annoyance as possible to abutting and nearby property owners.

Convenient access to driveways, houses and buildings along or near the work shall be maintained and temporary approaches to crossings or intersecting highways shall be provided and kept in good condition.

10.2 SIGNS

It shall be the responsibility of the Contractor to provide and maintain all traffic control, lights, barricades and signs, both on and off the site of work, subject to approval of the County; and all such devices shall be of a type approved by the County.

If, in any case, the County finds it necessary to replace, add to or erect said barricades, signs, or lights when the Contractor fails to do so, the Contractor shall be billed for all costs thereof.

10.3 MATERIALS STORAGE

Storing or stockpiling of excavated material, imported backfill material or construction materials on any street or highway will not be permitted except as approved in advance in writing by the County.

SPECIAL PROVISIONS

**COMPLETION OF GROUNDWATER
MONITORING WELL CONSTRUCTION**

AT THE

CLOSED HIGHGROVE SANITARY LANDFILL

Prepared By:

**RIVERSIDE COUNTY
WASTE MANAGEMENT DEPARTMENT**

14310 Frederick Street
Moreno Valley CA 92553

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APPENDIX A – PROJECT DRAWINGS

DRAWING NO. 1 – SITE VICINITY MAP

DRAWING NO. 2 – PROPOSED GROUNDWATER WELL LOCATIONS AND STAGING
AREA MAP

DRAWING NO. 3 – HG-31 GROUNDWATER WELL SCHEMATIC

DRAWING NO. 4 – HG-32 GROUNDWATER WELL SCHEMATIC

APPENDIX B – BACKGROUND SUBSURFACE INFORMATION

SECTION 1 - SCOPE OF WORK SUMMARY

PART 1 - GENERAL

The work to be performed under the provisions of these Special Provisions shall consist of furnishing all materials, equipment and tools, the performance of all necessary labor, for the subject public works construction project. The construction project is known as the Completion of Groundwater Monitoring Well Construction at the Closed Highgrove Sanitary Landfill (hereinafter referred to as the "Project").

A. Site Information and Conditions

The closed Highgrove Sanitary Landfill is owned by the Riverside County Waste Management Department (County).

The landfill is located at 1420 Highgrove Pass Road, two miles east of the community of Highgrove and on the eastern flank of the Box Springs Mountains, in unincorporated Riverside County. A location and vicinity map can be seen in the attached Appendix A - Project Drawings.

The landfill can experience weather conditions, ranging from near freezing conditions to high temperatures in excess of 100°F. The average wind speed is from 10 to 12 miles per hour (mph), with winds exceeding 25 mph less than two (2) percent of the time. The CONTRACTOR shall be aware of these weather conditions and be prepared to work in these conditions.

B. Background Subsurface Information

The wells will be drilled and completed in such a manner as to enable the Owner to monitor groundwater south of the Highgrove Sanitary Landfill. The wells are designed for this purpose. A summary of background subsurface information is provided in Appendix B for the CONTRACTOR's reference. The information includes a written summary of the geologic and hydrogeologic conditions at the site and site vicinity. Also included with this information are copies of the well logs completed in the vicinity of the proposed well locations.

PART 2 - EXECUTION

The work to be performed under these Special Provisions shall be conducted in a manner consistent with standard industry practices for such projects. No portion of this Contract shall relieve the CONTRACTOR from all applicable Federal, State, and local regulations pertaining to construction of this Project.

PART 3 - GENERAL SCOPE OF WORK

The Work to be performed and bid complete herein, shall be as shown and specified in the Contract Documents and is generally described as supplying all labor, equipment, materials and forces necessary to construct monitoring wells HG-31 and HG-32.

The wells borehole shall be drilled by a method chosen by the CONTRACTOR. Limitations and/or conditions for different drilling methods are specified in SECTION 6 -BOREHOLE DRILLING AND SAMPLING.

Drilling shall be conducted south the County's Highgrove Sanitary Landfill. The proposed well depths for HG-31 and HG-32 are 88 and 101 feet below the existing ground surface (bgs). The proposed boring depths and well construction details are shown graphically on Drawing No. 3 and Drawing No. 4. The final depths and well screen intervals are subject to change based upon the subsurface conditions encountered during construction. The Engineer will provide the CONTRACTOR with final drilling depths during drilling, as subsurface field conditions are revealed, and well construction details upon completion of drilling.

The wells shall be constructed in compliance with the latest edition or supplement of State of California Water Well Standards, Bulletin No. 74-81 dated December 1981 and Bulletin No. 74-90 dated June 1991, local modifications to these Standards and Sections 13800 through 13806 of the California Water Code.

All construction materials shall be new prior to delivery onsite. Construction and equipment substitutions require written notification at the time of bid and shall not be accepted anytime thereafter, unless by written authorization from the Engineer. The CONTRACTOR's scope of work for this project will generally include, but not be limited to, the following:

1. Meet all applicable air, water and waste discharge requirements.
2. Drill boreholes to the approximate depth specified in Drawing No. 3 and Drawing No. 4.
3. Transport and stockpile drilling cuttings at the Highgrove Sanitary Landfill (Drawing No. 2).
4. Provide means and assist the Engineer in collecting representative subsurface samples at a minimum of 5-foot depth intervals and at lithologic changes during drilling.
5. Construct wells as shown on Drawing No. 3 and Drawing No. 4 provide a graphical summary of the proposed well construction. Final well design will be provided by the Engineer to the CONTRACTOR based on the subsurface field conditions encountered.
6. Furnish and install 4-inch diameter, Schedule 80, PVC casing and screen.
7. Furnish and install filter pack material and annular grout seals via a flush-threaded tremie (herein referred to as "tremie").
8. Furnish and install cement sanitary seal via tremie.
9. Develop well casings by flushing, bailing, and airlifting/pumping.

10. Transport and temporarily store well development fluids (Drawing No. 2). The Engineer will direct the CONTRACTOR to discharge the development water or the Engineer will dispose of the development fluids.
11. Provide well head protection for all wells.
12. Maintain sites during construction and perform final site cleanup and restoration to original condition.
13. Provide all records, as required herein.

END OF SECTION

SECTION 2 - CONDITIONS

PART 1 - GENERAL

A. Standard Specifications

The term Standard Specifications is a direct reference to the publication entitled "A Standard Specifications for Public Works Construction" (2003 edition) written and promulgated by the Joint Cooperative Committee of the Southern California Chapter American Public Works Association and Southern California Districts Associated General Contractors of California and all subsequent amendments, supplements, and additions. This publication is also known as the "Greenbook". The U.S. Standard Measures, also called the U.S. Customary System is the method of measurement to be used at all times.

B. Order of Precedence

In case of conflict between the Contract Documents, the following order of governing documents shall be followed:

1. Special Provisions
2. General Provisions
3. Project Drawings
4. Standard Specifications

C. Errors and Omissions in the Project Drawings

The written dimensions on the Project Drawings are presumed to be correct, but the CONTRACTOR shall be required to check carefully all dimensions before beginning work. If errors or omissions are discovered, the County immediately shall be so advised in writing and will make the proper corrections. No extra work shall be performed on this contract on account of errors and omissions without the express and written authorization by the County.

D. Material Substitutions

Reference is made to Section 4.2 of the General Provisions.

E. Abbreviations

AISC	American Institute of Steel Construction
ANSI	American National Standards Institute
AQMD	Air Quality Management District
ASTM	American Society for Testing and Materials
AWS	American Welding Society
BOP	Bottom Of Pipe
CL	Center Line

CMP	Corrugated Metal Pipe
COND	Condensate
CS	Carbon Steel
DIA	Diameter
ELEV	Elevation
GB	Grade Break
LEL	Lower Explosive Limit
LFG	Landfill Gas
NFPA	National Fire Protection Association
NIC	Not in Contract
NMHC	Non-Methane Hydrocarbons
NMOC	Non-Methane Organic Compounds
NPT	National Pipe Thread
NTS	Not to Scale
O&M	Operation and Maintenance
OSHA	Occupational Safety and Health Administration
PPM	Parts per Million
PVC	Polyvinyl Chloride
RWQCB	Regional Water Quality Control Board
SCAQMD	South Coast Air Quality Management District
SCH	Schedule
STL	Steel
SWANA	Solid Waste Association of North America
TYP	Typical

F. Definitions

Whenever the following terms are used in these Special Provisions, the intent and meaning shall be interpreted as follows:

Calendar Days: Each day of the year.

Night Hours: Thirty minutes after sunset to 30 minutes prior to sunrise.

G. Contact

For information or technical questions, please contact the following. This contact, or his designated person, shall serve as the Engineer for the Project.

Todd D. Shibata, P.E., Senior Civil Engineer
Riverside County Waste Management Department
14310 Frederick Street
Moreno Valley, California 92553
(951) 237-2550
tshibata@co.riverside.ca.us

H. Contractor Qualifications

The CONTRACTOR shall be, at the time of bidding, and throughout the period of the Contract, licensed by the State of California to do the type of work required under terms of these Contract Documents. The CONTRACTOR, or the CONTRACTOR's personnel, shall hold appropriate certificates, licenses, and permits necessary to perform the work.

I. Allowances

The CONTRACTOR shall provide allowances for unforeseen circumstances which may arise from conditions unknown at the time of bidding. These allowances shall be for the purpose of providing necessary time and expense involved in completing the work within the time and budget given in the Contract Documents.

J. Time of Completion

The CONTRACTOR shall diligently and continuously work to complete the entire project before the expiration of 28 calendar days. The first calendar day shall be considered the first calendar day following the CONTRACTOR's receipt of the BOS approved and executed contract. The working day shall be as set forth in section 6.6 of the General Provisions. The length of each working day shall be from 7:00 AM to 4:00 PM, including one hour for lunch break, unless otherwise approved in writing by the County. The CONTRACTOR shall not be permitted to work on the following days designated by the County as holidays:

December 25, 2009	Christmas Day
January 1, 2010	New Years Day
January 19, 2010	Martin Luther King Jr. Day
February 12, 2010	Abraham Lincoln's Birthday
February 15, 2010	George Washington's Birthday
May 31, 2010	Memorial Day

In case all the work called for and all the conditions and requirements of the project are not completed within the number of calendar days specified above, liquidated damages of five hundred dollars (\$500.00) for each additional calendar day required to properly complete the project in excess of the allowed number of calendar days shall be paid by the CONTRACTOR to the County.

K. Payment Terms

Payment includes full compensation for all required labor, products, materials, tools, equipment, plant, transportation, sale taxes, services and incidentals, erection, application or installation of an item of the work, overhead and profit. This includes costs for preparation and delivery of all required submittals including, but not limited to, the following items: construction schedule, supplemental and required inspection reporting forms, health and safety plan, and certified payroll. Costs for these items are considered incidental and are to be included in the various items of work. Full compensation for all expenses shall be considered as included in the unit prices paid for the line items of work specified in Exhibit A of the Contract Documents and no additional compensation will be allowed therefore.

The method of measurement and payment is for each line item of work that appears in the CONTRACTOR's Proposal. Payments for unit price items shall be made on the basis of measured quantity in place/constructed as determined by the County. Payment for lump-sum items shall be paid as a pro rata portion of the entire lump sum based upon an estimated percent completion of the item, as approved by the County.

The County will make monthly progress payments as the work progresses, in accordance with the General Provisions, and upon final completion of construction. The CONTRACTOR's invoice shall be similar in form to Exhibit A of the Contract Documents, shall specify the amount of units claimed completed (quantity) for each line item of Exhibit A for the period invoiced and for the total amount of units claimed completed for each line item of Exhibit A for all invoices. The CONTRACTOR may be requested by the County to prepare supporting documentation certifying work completed by the CONTRACTOR. Monthly progress payments shall be paid by the County, less 10 percent retention, which shall be calculated by the CONTRACTOR and shown on the monthly invoice. Final payment for retention shall be made by the County in accordance with the General Provisions.

Upon receipt of an invoice (payment request), the County shall review the request as soon as practicable after receipt for the purpose of determining that the payment request is a proper payment request and any payment request determined not to be a proper request suitable for payment shall be returned to the CONTRACTOR as soon as practicable, but not later than seven calendar days after receipt. The returned request for payment shall be accompanied by a document setting forth in writing the reasons why the payment request is not proper. Any progress payment which is undisputed and properly submitted and remains unpaid for thirty (30) calendar days after receipt by County shall accrue interest to the CONTRACTOR equivalent to the legal rate set forth in subdivision (a) of Section 685.010 of the California Code of Civil Procedure. The number of days available to the County to make a payment without incurring interest pursuant to this section shall be reduced by the number of days by which the County exceeds the seven day return requirement set forth above.

Failure or lack of cooperation by the CONTRACTOR to prepare or to submit reports, progress schedules, or plans for changes contemplated in the CONTRACTOR's operations, or to participate in preparation of same, promptly as required, shall be cause for withholding all or parts of the progress payment then pending until such time as the CONTRACTOR has met all requirements to the satisfaction of the County.

If any of the work is performed on a cost-reimbursable, unit price or hourly rate basis, the CONTRACTOR shall maintain, and require all Subcontractors and vendors to maintain, full and detailed accounts of actual quantities and hours on a form acceptable to the County. The CONTRACTOR's field representative shall obtain signature of approval by the County on the submitted form within one work day of performance of the work. Work paid for on a reimbursable or chargeable basis, the County will include, as part of the Contract, special terms and conditions setting forth all chargeable and non-chargeable cost items and procedures for the payment of costs and CONTRACTOR's fees related thereto.

All records of quantity computations or labor hours expended to perform the work against estimated (or non-estimated) material quantities or time shall be subject to audit by the County at

any time during the Contract. The CONTRACTOR shall at all times cooperate with the County to amend or change any accounting procedure for cost plus work found to be unsatisfactory.

The CONTRACTOR shall agree to accept the Contract Price as full compensation for all work embraced in the Contract and for all losses or damages arising out of the nature of the work, the action of the elements, or from any unforeseen or unknown difficulties or obstructions which may arise or be encountered in the prosecution of the work until its acceptance, and for all risks of every description connected with the work.

L. Regulatory Requirements

The CONTRACTOR shall be familiar with and comply with all regulatory requirements associated with the work including, but not limited to, Cal OSHA, South Coast Air Quality Management District (SCAQMD), California State Water Resources Contract Board, Regional Water Quality Control Board, Santa Ana Region (RWQCB-SAR), California Integrated Waste Management Board (CIWMB), Riverside County Department of Environmental Health and the Riverside County Waste Management Department. All expenses incurred as a result of non-compliance with regulations shall be borne by the CONTRACTOR.

All work is subject to inspection by the governmental agencies that have jurisdiction over the work. The CONTRACTOR and all SUB-CONTRACTOR(s) shall be responsible for complying with all of the requirements of the governmental agencies' permit(s).

M. Existing Conditions

The Project Drawings cover existing conditions in an approximate manner only. The CONTRACTOR shall be responsible for determining the existing site conditions prior to bid submission and at all times during execution of the work; and this shall be reflected in the CONTRACTOR's proposal.

N. Site Security

The work area used for material storage and drilling operations, including areas occupied by the construction equipment, engines and motors, shall be secured at the CONTRACTOR's discretion. The Engineer shall not be responsible for loss or damage of the CONTRACTOR's materials or equipment.

Damage to construction machinery and installation equipment by accident, vandalism, or acts of nature shall be borne by the CONTRACTOR. The CONTRACTOR shall be able to store the drill rig, support vehicle or equipment within the landfill site at night and on weekends during the duration of this Project. However, the County takes no responsibility for any damage, vandalism or theft that may occur to the CONTRACTOR's vehicles or equipment while parked at the closed Highgrove Sanitary landfill.

Damage or loss of materials, parts and components of the construction work, which occur before final acceptance by the County, shall be borne by the CONTRACTOR.

CONTRACTOR shall close access to the work area prior to performing other work and shall maintain the closure until construction in that area is complete. In order to ensure the effectiveness of the closure, CONTRACTOR shall provide at the CONTRACTOR's expense such means as are necessary, including but not limited to fences, barricades, posting of signs, or any other means deemed prudent by the CONTRACTOR. The area where work is performed shall be protected daily to prevent access by unauthorized personnel.

O. Construction Site Maintenance

The CONTRACTOR shall keep all areas clear of debris, refuse or construction materials that render the construction area an eye-sore or odor source.

Throughout the period of construction, the CONTRACTOR shall keep the work site clean of all rubbish and debris, and shall promptly remove from any portion of the site, or from property adjacent to the site of the work, all unused materials, and debris.

Upon completion of the work, and prior to final acceptance, the CONTRACTOR shall remove from the vicinity of the work all surplus material and equipment belonging to the CONTRACTOR or used under the CONTRACTOR's direction during construction, shall clean the site, and remove rubbish and debris to an appropriate permitted disposal facility.

P. Water

The County does not have water available at the landfill site to use for construction. During past construction projects at the landfill, CONTRACTORS have utilized a fire hydrant located at the corner of Highgrove Road and Carlin Lane, approximately 2 miles from the landfill. The CONTRACTOR will need to obtain authorization and set up water service with the City of Riverside – Public Utilities for use of the above specified fire hydrant. For any additional information the City of Riverside – Public Utilities - should be contacted at (951) 782 - 0330. Any water source used by the CONTRACTOR has to be from a potable public utility company.

END OF SECTION

SECTION 3 - WARRANTY OF WORK

PART 1 - GENERAL

A. Summary

The CONTRACTOR shall warrant and guarantee the performance of all work. The CONTRACTOR shall be responsible for the correction of all deficiencies of work, including detailed design and fabrication performed by the CONTRACTOR, all SUB-CONTRACTORS, vendors, and suppliers.

The CONTRACTOR's warranty period shall be a minimum of two years from the date of final project acceptance by the County, except where longer warranty periods are specifically stated by the manufacturer of individual components or required in the Special Provisions.

The CONTRACTOR shall assign all warranties and guarantees of equipment vendors which extend the minimum warranty to the County. Point of sale/purchase and date of purchase of equipment items shall be submitted.

The CONTRACTOR shall guarantee all materials and workmanship suitable for the service intended and that said materials shall be free from all inherent defects in design and workmanship. All costs to correct defects shall be at the CONTRACTOR's expense.

The performance of guarantee and conditions specified in this section shall be secured by a surety bond per Section 5.14 of the General Provisions.

PART 2 - EXECUTION

All work which has been rejected or defects discovered after project close-out shall be remedied, or removed and replaced, by the CONTRACTOR at the CONTRACTOR's own expense, with work conforming to the Project Drawings and Special Provisions. Latent defects which become apparent after lapse of the warranty period shall be corrected by CONTRACTOR at its sole cost and expense provided County notifies CONTRACTOR of such defect within two (2) months after discovery thereof by County. Failure to inspect work at any stage shall not relieve the CONTRACTOR from an obligation to perform sound and reliable work as herein described.

The County will endeavor to locate errors or defective materials of workmanship and call them to the attention of the CONTRACTOR prior to subsequent work being performed. However, the County is under no obligation to do so, and neither the County shall be held liable because errors or defective material or workmanship by the CONTRACTOR are not discovered by the County prior to subsequent work. Any omission or failure on the part of the County to discover, or notify the CONTRACTOR of, or to condemn defective work or material at the time of construction shall not be deemed an acceptance, and the CONTRACTOR will be required to correct defective work or material.

During the warranty period, should the CONTRACTOR fail to remedy defective material or workmanship, or to make replacements within five (5) working days after written notice by the County, it is agreed that the County may (but is not bound to) make such repairs and

replacements and the actual cost of the required labor and materials shall be chargeable to and payable by the CONTRACTOR.

In the event that immediate repairs are required by a regulatory agency due to system failure caused by or due to defective material or workmanship, repairs and/or replacements may be made by County if CONTRACTOR does not respond upon notification or cannot be contacted. The actual cost of the required labor and materials shall be chargeable to and payable by the CONTRACTOR.

The warranty provided herein shall not be in lieu of, but shall be in addition to any warranties or other obligations otherwise imposed by law. The remedies provided herein shall not be exclusive and the County shall be entitled to any and all remedies provided by law.

END OF SECTION

SECTION 4 - SAFETY

PART 1 - GENERAL

A. Summary

The CONTRACTOR shall comply with Provisions of Occupational Safety and Health Administration Regulations for Construction, 29 CFR, 1926/1910 and CFR 1910.120, the California Department of Industrial Relations, Division of Industrial Safety (Safety Orders), with the additional Safety Provisions in the CONTRACTOR's Safety Plan, and all other applicable Federal, State, County and local laws, ordinances, codes, the requirements set forth herein, and any regulations that may be specified in other parts of this Contract. If any of these requirements are in conflict, the more stringent requirement shall apply. The CONTRACTOR's failure to be thoroughly familiarized with the aforementioned safety and health provisions shall not relieve the CONTRACTOR of responsibility for full compliance with the obligations and requirements set forth herein.

The CONTRACTOR shall have sole responsibility for the safety, efficiency, and adequacy of the CONTRACTOR's equipment and methods, and for any damage or injury resulting from their failure, or improper maintenance, use, or operation. The CONTRACTOR shall be solely and completely responsible for the conditions at the work area arising from the CONTRACTOR's execution of the work, including safety and health of all authorized persons and property involved in the performance of the work. This requirement shall apply continuously and not be limited to normal working hours. The County's review of the CONTRACTOR's performance does not relieve the CONTRACTOR of responsibility for compliance with applicable laws, regulations and requirements.

The CONTRACTOR shall observe and comply with all applicable laws, regulations for hazardous waste operations, employee safety and health requirements set forth in these Special Provisions or otherwise applicable to the work. Such information, interpretation, or representation of laws, regulations or ordinances referenced in the Contract Document shall not take precedence over the laws, regulation or ordinance itself.

PART 2 - MATERIALS

Not Used.

PART 3 - EXECUTION

A. Health and Safety Plan (HASP)

The CONTRACTOR shall develop and maintain for the duration of work activities at the site, a written, site specific Health and Safety Plan (HASP) for operations that will effectively incorporate and implement all applicable requirements, including the known hazardous posed by the closed landfill. The HASP shall be prepared under the direction of an industrial hygienist or equivalent and shall be submitted by the CONTRACTOR to the County within 7 calendar days after receiving the Award of the Contract. The HASP shall assess all known and potential

hazards and specify appropriate health and safety actions and measures to mitigate those hazards, including risk of occupational injuries and illnesses.

The County shall review the HASP and shall have the right to require the CONTRACTOR to amend it if necessary. The CONTRACTOR shall make the recommended corrections and resubmit to the County for review and final acceptance. The CONTRACTOR shall under no circumstances commence work prior to the County's final acceptance of the HASP. Acceptance of the HASP by the County does not release the CONTRACTOR of liability in the event of an accident or injury, nor does it place any liability on the County. The CONTRACTOR is solely responsible for the HASP and its implementation. The CONTRACTOR shall assume full responsibility to ensure that all employees and Subcontractors adhere to the HASP.

Should the County or an applicable regulatory agency determine that the HASP has not been implemented properly, or that deficiencies in the HASP exist during performance of the work, the CONTRACTOR shall immediately correct the identified issue(s). In the event the CONTRACTOR fails or refuses to promptly correct the identified issue(s), the County may issue an order to stop all or any part of the work. When compliance with the directive issue is accomplished, an order to resume work will be issued. The CONTRACTOR shall not be entitled to any extension of the time or any claim for damage to or any compensation for either the directive or the work suspension order. Failure of the County to order discontinuance of any or all of the CONTRACTOR's operations shall not relieve the CONTRACTOR of his sole responsibility for safety.

At a minimum, the HASP shall address the following items:

- The CONTRACTOR shall provide appropriate gas detection monitoring equipment (e.g. flammable and/or explosive gas meters) during invasive construction activities. The use of the gas detection equipment (e.g. permissible threshold concentrations) shall be specified in the site specific Health and Safety Plan.
- No smoking is permitted within 100 feet of the corehole.
- The CONTRACTOR shall require of all personnel on the site to wear the appropriate field gear, which may include but is not limited to, steel toe boots, hard hats and orange safety vests.
- The CONTRACTOR shall secure all work areas and close any open holes or excavations when not working by marking with ribbons and cones, and posting of signs indicating to the public to stay away due to the existence of a deep open excavation.
- The CONTRACTOR shall close access to the work area prior to performing other work and shall maintain the closure until construction in that area is complete. The CONTRACTOR shall provide such means as are necessary to ensure the effectiveness of the closure, including but not limited to: fences, barricades, posting of signs.
- The HASP shall have provisions for all aspects of protection against bodily injury from heavy construction equipment, tools and equipment required for the work.

SECTION 5 - MOBILIZATION, DEMOBILIZATION AND SITE CLEAN-UP

PART 1 - GENERAL

A. Description

This section includes the mobilization and demobilization of equipment, material and personnel to the well sites.

B. Related Work Specified Elsewhere

SECTION 2 -PART 1 -N Site Security

SECTION 4 - SAFETY

C. Submittals

1. Evidence of Insurance
2. Contract Bonds
3. Site Specific Health and Safety Plan
4. Construction Calendar

D. Measurement and Payment

1. Payment for mobilization shall be made at the lump sum bid price.
2. Payment for demobilization and site clean up shall be made at the lump sum bid price. Payment will not be made until the Engineer has approved site restoration.

PART 2 - EXECUTION

A. Mobilization

CONTRACTOR shall submit the required evidence of insurance, Contract bonds, a site-specific health and safety plan and a construction schedule to the County within 7 calendar days following receipt of the BOS approved and executed contract. Work will not be allowed to start until the County receives, reviews and accepts the required submittals. The County shall issue the CONTRACTOR a Notice to Proceed following receipt, review and approval of the required submittals.

Mobilization shall also include the transportation of personnel, equipment, and operating supplies to and from the site; establishment of portable sanitary facilities, drinking water, and other necessary facilities at the site; and other preparatory work at the site, as well as all work at the site necessary to conduct drilling, construction and development operations.

The mobilization phase will be deemed complete when all items necessary to conduct field operations are onsite and operable. The CONTRACTOR will notify the Engineer when the mobilization phase, in his terms, is complete. The Engineer, upon site inspection and approval, will then allow drilling to commence the following morning at 7:00 AM. If the Engineer does not approve the well site mobilization, drilling will not commence the following day and the CONTRACTOR will re-notify the Engineer for additional site inspections. No stand-by time will be allowed during the mobilization phase of the Contract.

The Engineer shall obtain a well construction permit from the Riverside County Department of Environmental Health for the subject project. The CONTRACTOR shall sign the well construction permit prepared by the Engineer and abide by the permit conditions. The CONTRACTOR shall keep a copy of well construction permit onsite at all times during the project.

B. Initial Site Report

The CONTRACTOR will prepare an initial site report which will include a written account of all alterations and preparations that must be made to the site to make the site accessible and suitable for drilling, and to restore the site to its previous condition. The initial site report shall specifically include out-of-ordinary costs.

The well site-specific access and restoration bid items should take into account ordinary site restoration costs for a site, as it is described under SECTION 3 -PART 2.

Out-of-ordinary costs are those restoration items that are not to be recognized in the site description, that could not be reasonably foreseen during the pre-bid meeting at site, and may be unforeseen prior to the commencement of mobilization. Out-of-ordinary items should be identified by the CONTRACTOR and brought to the attention of the Engineer.

The County shall pay a reasonable fee for out-of-ordinary costs. Where the CONTRACTOR utilizes a SUB-CONTRACTOR, the items invoiced for site restoration will be paid at an invoiced cost plus an additional 15 percent. The County will not be responsible for payment of charges not specified in the initial site report and subsequently approved in writing by the County.

PART 3 - PROTECTION AND RESTORATION OF EXISTING FACILITIES

The CONTRACTOR will be responsible for the protection of public and private properties adjacent to the Work and will exercise due caution to avoid damage to such properties. The CONTRACTOR will repair or replace all existing improvements that are damaged or removed as a result of his operations. Such improvements include curbs, gutters, sidewalks, pavements, utility installations, structures, lawns, *etc.* Repair and replacements will be at least equal to existing improvements and will match them in finish and dimension.

A. Project Demobilization

Demobilization shall include removal of all equipment, materials, and temporary facilities installed during mobilization, well drilling, completion, and development phases of the Work.

Demobilization will also include restoration of the sites to their original condition and will include those items specified in the initial site report.

B. Site Clean-up

The CONTRACTOR shall provide all equipment and personnel to restore the site as required by the individual site conditions. Demobilization and site restoration will include, but not be limited to, grading, pavement restoration, re-fencing, etc. All restoration and resurfacing work will be deemed acceptable upon approval of the Engineer. Payment for site clean-up will not be made until the site restoration has been approved by the Engineer and the wellhead has been completely installed. If the site is not accepted, the CONTRACTOR will make the necessary adjustments to make the site acceptable.

The CONTRACTOR will be responsible for the protection of public and private properties adjacent to the work and will exercise due caution to avoid damage to such properties. The CONTRACTOR will repair or replace all existing improvements that are damaged or removed as a result of his operations. Such improvements include curbs, gutters, sidewalks, pavements, utility installations, structures, lawns, etc. Repair and replacements will be at least equal to existing improvements and will match them in finish and dimension. All cuts in asphalt and concrete shall be repaired by saw cutting around the damaged area and replacing it with the appropriate patching material. Repair or replacement of asphalt, concrete, or other existing features damaged due to CONTRACTOR's shall be the sole responsibility of the CONTRACTOR. Damaged asphalt will be properly repaired as required by governing city or county agency.

1. Non-hazardous Materials

Cleanup of the site will include complete removal and disposal of all solids, liquids and substances either used or generated during mobilization, demobilization, drilling, completion, and development operations, with the exception of drilling cutting and well development water. All materials will be properly disposed by the CONTRACTOR.

2. Hazardous Materials

Any materials suspected by the Engineer of being contaminated due to ambient and/or existing conditions, which did not result from the CONTRACTOR's actions, will be analyzed by the Engineer for potential contaminants. Materials that contains levels of contaminants in excess of Federal and/or State disposal standards shall be properly disposed of by the Engineer.

CONTRACTOR shall perform necessary work to contain/control leaking equipment. Generation of hazardous materials by the CONTRACTOR during the course of work caused by his normal operational procedures or negligence (e.g., oil, and/or hydraulic spills or leaks) shall be cleaned, removed, and properly disposed of at the sole cost of the CONTRACTOR. Any materials suspected of contamination due to CONTRACTOR negligence will be submitted by the CONTRACTOR to a State-certified laboratory for analysis at the CONTRACTOR's sole expense. The sample

shall be analyzed by approved Federal and/or State methods to determine if the sample contains hazardous materials. The Owner reserves the right to request additional testing if the methods requested by the CONTRACTOR are insufficient to determine the types of potentially hazardous materials. Tests must be run within 24 working hours of suspected contamination and must be requested at expedited turn-around times, as quick as possible considering the analytical method. The test results shall be provided to the Engineer as soon as available by the CONTRACTOR. The CONTRACTOR, in accordance with applicable Federal and State laws, shall properly dispose of any material that contains levels of contaminants in excess of Federal or State disposal standards within 48 working hours of receiving test results. This will include preparation of a hazardous materials disposal manifest by the CONTRACTOR, and the CONTRACTOR, not the County shall be listed as the generator of the hazardous waste on all manifests. The CONTRACTOR shall provide the OWNER with a copy of the initial manifest and the final manifest, which indicates waste receipt by the disposal site.

C. Final Inspection

The Engineer shall make an inspection of the site following completion of all site cleanup and restoration work by the CONTRACTOR, including setting of the above-ground well head. The CONTRACTOR shall also be present to acknowledge any items that require additional work to make the site acceptable to the Engineer.

Final payment for the Work shall not be granted until the site and contract work has been determined acceptable to the Engineer. A Notice of Completion will be filed and retention released to the CONTRACTOR.

END OF SECTION

SECTION 6 - BOREHOLE DRILLING AND SAMPLING

PART 1 - GENERAL

A. Description

This section includes the drilling of a borehole. The purpose of the well borehole is to determine the thickness and nature of all formations penetrated, the location of water bearing strata, other hydrological and geological information, and for well construction.

The CONTRACTOR shall drill the well borehole with one pass to a depth of not greater than the approximate depths of the respective wells. The proposed well depths are specified in Exhibit A.

B. Related Work Specified Elsewhere

None.

C. Submittals

The CONTRACTOR shall prepare a daily shift record of construction activities for the Engineer.

D. Measurement and Payment

Payment for drilling and sampling of the well borehole shall be based on vertical feet drilled (first pass) measured from the ground surface. It shall include all materials, labor, tools, and equipment required to drill the borehole, collect formation samples, maintain circulation (depending on drilling method chosen) and protect the borehole from caving. No payment will be made for temporary surface casings installed at the CONTRACTOR's option.

Payment for the borehole corrections will be included in the unit price for drilling the borehole.

Payment will only be made for the CONTRACTOR's first pass successful drilling method. If the CONTRACTOR chooses drilling method(s) that are unsuccessful, the County will not make additional payment for vertical feet drilled for second, third or any subsequent passes by the CONTRACTOR to obtain the required borehole depth.

PART 2 - MATERIALS

A. General

All equipment supplied by the CONTRACTOR shall be available for inspection by the Engineer prior to the beginning of drilling operations. If, in the opinion of the Engineer, any of the equipment is not suitable for drilling operations, either because of mechanical problems, excessive noise, deviation from the specifications, or the build-up of substances which could cause borehole contamination (i.e., from oil, diesel, hydraulic leaks or exhaust residue, etc.), the CONTRACTOR shall adjust, replace or decontaminate it with suitable equipment at CONTRACTOR's expense.

B. Drill Rig

The CONTRACTOR shall provide all tools, accessories, air compressor, power, fuel, materials, supplies, lighting, water, and other equipment, and experienced personnel necessary to conduct safe and efficient drilling operations. A drilling superintendent (tool pusher) shall be available at all times at the request of the Engineer.

The drilling unit, drilling type/method at the CONTRACTOR's discretion and approved by the County, and the associated equipment shall be in good condition and have sufficient capacity to drill to the depth specified in these specifications (Drawing No. 3 and Drawing No. 4). The mast and all running gear (hoists, cables, etc.) of the drill rig shall have a proven, sufficient and demonstrated capacity to lift three times the buoyant weight of either the drill string.

C. Drill Pipe/Auger

The drilling pipe/auger shall be in good condition and shall be connected by standard tool joints. CONTRACTOR shall not use drilling pipe equipped with external air lines. The drill pipe/auger shall be steam-cleaned prior to its arrival at the well site. Drill pipe/auger suspected of being contaminated shall be removed and steam-cleaned at the CONTRACTOR's expense prior to its use at the site. Pipe dope or other lubricating material such as "Gimmie the Green Stuff" or other environmentally safe material, as pre-approved by the Engineer, can be used on the threads of the drill pipe/auger and tremie.

D. Air Rotary Drilling Equipment

If the CONTRACTOR chooses to use the air rotary drilling method, the CONTRACTOR shall utilize an oil-less, filtered air compressor with the capability of properly drilling a minimum depth of 200 feet below ground surface (bgs). The CONTRACTOR shall use an air cyclone or other acceptable method, pre-approved by the Engineer, for the collection of drill cuttings at the point where air is returned to the surface (i.e., flow directed out of the discharge pipe). The air cyclone shall function to allow the Engineer to collect representative samples of the subsurface. If samples cannot be adequately collected, drilling will cease until the problem can be corrected to the satisfaction of the Engineer.

E. Conductor Casing

If the CONTRACTOR chooses to use a conductor casing with the air rotary drilling method, the drilling conductor casing shall be in good condition and shall be connected by standard tool joints. The conductor casing shall be decontaminated prior to its arrival at the well site. Conductor casing suspected of being contaminated shall be decontaminated at the CONTRACTOR's expense prior to its use at the site. Pipe dope or other lubricating material such as "Gimmie the Green Stuff" or other environmentally safe material, as pre-approved by the Engineer, can be used on the threads of the conductor casing if necessary.

PART 3 - EXECUTION

A. Borehole Drilling

1. The CONTRACTOR shall not start drilling without the Engineer onsite to confirm the location of the borehole.
2. The CONTRACTOR shall utilize his chosen drilling method, which will be approved by the County, to drill the borehole.
3. The CONTRACTOR shall plan to drill each borehole to the total depth specified in Drawing No. 3 and Drawing No. 4 or as specified by the Engineer. The borehole diameter shall be a minimum of 10-inches. The Engineer will be onsite during the drilling process to specify the exact depth of the borehole to be drilled based on drill cuttings, the geologic log and the depth to groundwater encountered during drilling. The exact depth specified by the Engineer may be more or less than the total depth specified in Drawing No. 3 and Drawing No. 4.
4. The CONTRACTOR shall take all measures necessary to protect the borehole from caving or raveling during drilling operations.
5. When drilling is completed, as determined by the Engineer, the CONTRACTOR shall take all measures necessary to protect the borehole from caving or raveling.
6. Upon completion of drilling a specific borehole, the Engineer will provide, within one (1) working day, the CONTRACTOR with well construction details or request that the CONTRACTOR drill deeper.
7. The CONTRACTOR may move and begin drilling at the second well location while the CONTRACTOR waits for direction from the Engineer. The CONTRACTOR shall be responsible for the integrity of the borehole during the one (1) working day assessment period if the CONTRACTOR elects to move. All costs for additional drilling or other work required by the CONTRACTOR due to compromised borehole integrity, or to restore the borehole integrity, shall be borne by the CONTRACTOR.
8. The CONTRACTOR shall be paid for stand-by time for each working hour beyond the one (1) working day assessment period that the Engineer does not provide the CONTRACTOR with well construction details or the request to drill deeper. The CONTRACTOR shall not be eligible for stand-by time payment if the CONTRACTOR elects to move and drill at the second well location during the one (1) working day assessment period.

B. Rock Clause

The Rock Clause shall go into effect ONLY after notification of the Engineer by the CONTRACTOR that the drilling advancement rate is less than 5 feet per hour. A recording device such as a "geolograph" shall be required to document Rock Clause time. The decrease in the drilling rate shall be due to natural causes such as hard formations caused by gravel and boulders. Borehole caving problems and decreased penetration rates due to improper air flow rates or choice of drilling bits are not acceptable causes to invoke the Rock Clause. The CONTRACTOR is cautioned to practice proper drilling techniques for gravel alluvium drilling environments. Reduction in drilling rate due to worn bits will not be grounds for invoking the Rock Clause.

C. Subsurface Formation Sampling

The CONTRACTOR shall, at each change of formation, at five (5)-foot intervals between changes in formation, and at intervals requested by the Engineer, collect a representative sample of the interval or new formation. Each sample shall be given to the Engineer for proper logging and storage.

1. If the CONTRACTOR chooses to drill with hollow stem auger, the CONTRACTOR shall collect relatively undisturbed soil samples with a California Modified or Standard Penetration Test split spoon sampler.
2. If the CONTRACTOR chooses to drill with a form of air rotary, the CONTRACTOR shall provide an acceptable means to the Engineer whereby the CONTRACTOR can safely obtain representative samples of formation cuttings can be collected from the air stream. The ground surface around the sampling area shall be kept graded and free from stockpiled drilling cuttings and shall be kept free of trash, equipment and other debris. If samples cannot be adequately collected, drilling will cease until problem is corrected to the satisfaction of the Engineer.

D. Cleanup

The CONTRACTOR shall stockpile soil cuttings generated from drilling at the Highgrove Sanitary Landfill. At the completion of each day of drilling, the CONTRACTOR shall transport the soil cuttings to Highgrove Sanitary Landfill. The soil cuttings shall be transported to the location shown on Drawing No. 2, Appendix A – Project Drawings.

E. Daily Construction Progress Report

The driller shall prepare a daily record of drilling activities completed each working day that drilling is completed. The Daily Construction Progress Report shall identify the first pass vertical footage drilled, approved Rock Clause hours, and approved stand-by time hours. The Report shall be provided to the Engineer for review and approval at the conclusion of each working day.

END OF SECTION

SECTION 7 - WELL CASING AND SCREEN

PART 1 - GENERAL

A. Description

This section covers the supply and installation of the blank well casing and screen. All materials installed under this Contract, unless specified, shall be furnished by the CONTRACTOR. These materials shall be new and conform to these Specifications, except as specified otherwise.

The CONTRACTOR shall use good practice during installation, backfilling and well development to ensure the integrity of the screen and casing is maintained.

The proposed well casing and screen lengths are specified in Drawing No. 3 and Drawing No. 4. These lengths are subject to change based on the subsurface conditions encountered during drilling.

B. Related Work Specified Elsewhere

None.

C. Submittals

The Daily Construction Progress Report shall be submitted for the Engineer's review and signature at the conclusion of every working day that drilling occurs.

D. Measurement and Payment

1. Payment for well screen installation shall be based on measurement of vertical feet of well screen installed, exclusive of well casing, complete and in place.
2. Payment for blank casing installation shall be based on measurement of vertical feet of blank well casing installed, complete and in place, which includes furnishing and installing centralizers.

PART 2 - MATERIALS

A. General

The well casings shall be nominal 4-inch diameter, schedule 80, ASTM D1785 (latest edition) PVC. Well screens shall be nominal 4-inch diameter, schedule 80, ASTM D1785 (latest edition) PVC with a machined 0.020-inch slot (20-slot).

A typical well design will consist of a 20 to 30-foot long interval of well screen with approximately five (5) feet of blank casing below (silt trap) and the remainder of the blank casing located above the screen and extending to the ground surface. The lengths and intervals of each casing type shall be determined by the Engineer at the completion drilling and are generally estimated as shown in Drawing No. 3 and Drawing No. 4.

B. Blank Casing

1. The blank casing shall be nominal 4-inch inner diameter, schedule 80, PVC as specified in ASTM D1785 (latest edition), equipped with threaded joints at the ends of the blank casing section. The blank casings shall be factory-assembled.
2. Threaded joints shall be machined with beveled/interference compression fit shoulder seals to increase compressional strength.
3. O-ring seals shall be provided within the threaded joints to mitigate leakage and contaminants from entering at the threaded joint.
4. In all cases, the blank casing used in conjunction with the screen shall have the same inner diameter as the screen to ensure that the inside diameter of the blank casing matches the inside diameter of the screen.
5. The bottom of the well casing (silt trap) shall be fitted with a threaded end cap. The end cap shall be of the same chemical and physical properties as the PVC screen.
6. All casing material shall be new.

C. Slotted Well Screen

1. Slotted well screens shall be nominal 4-inch diameter, schedule 80, PVC as specified in ASTM D1785 (latest edition), equipped with threaded joints at the ends of the slotted well screen section. The screen shall be factory-assembled.
2. The slotted well screen shall be machined 0.020-inch slot (20-slot).
3. Threaded joints shall be machined with beveled/interference compression fit shoulder seals to increase compressional strength.
4. O-ring seals shall be provided within the threaded joints to mitigate leakage and contaminants from entering at the threaded joint.
5. In all cases, the blank casing used in conjunction with the screen shall have the same inner diameter as the screen to ensure that the inside diameter of the blank casing matches the inside diameter of the screen.
6. All screen casing material shall be new.

PART 3 - EXECUTION

A. General

The Engineer will submit the final well design depths/lengths to the CONTRACTOR within one (1) working day after the Engineer directs the CONTRACTOR to terminate drilling at a specific

well location. While the well design is being completed, no additional payment for stand-by time shall be made, except where specified in SECTION 6 -BOREHOLE DRILLING AND SAMPLING. The final well design will specify where the casing and screen intervals, filter pack intervals, seal intervals and sanitary seal will be placed in the borehole.

The CONTRACTOR is cautioned to properly secure/stabilize the borehole during all phases of construction. Improper or poor security/stabilization of the borehole may lead to borehole collapse and delays prior to or during backfilling. Such collapse or delays will be the responsibility of the CONTRACTOR and the Engineer shall not pay any costs associated with such. During casing installation the CONTRACTOR shall measure and record the lengths of the casing and screen as it is being installed into the borehole.

B. Joints

All field joints, where blank casings and/or screen casing are joined together, shall be connected via the machine threaded ends.

C. Installation of Casing and Screen

3. The CONTRACTOR shall ensure that the tremie and well casing are sufficiently aligned to prevent binding while raising the tremie during annular fill material installation.
4. The well casing string shall be suspended at all times in tension from the surface by means of a clamp, landing plate, or equivalent method. The bottom of the casing string shall be at a sufficient distance above the bottom of the borehole to ensure that it is not supported by the bottom of the borehole.
5. The CONTRACTOR will measure and record the lengths of the casing as it is being installed into the borehole. The casing lengths will be such that the screens are placed per their design interval and the total installed length of the casing is as specified in the design.
6. Centralizers shall be installed around the screen section, approximately three (3) feet above and three (3) feet below, and at approximate mid-height in the blank casing.
7. Prior to backfilling the annular space around the casing string, the CONTRACTOR shall measure the bottom of each casing to verify its total depth. If for any reason the casing cannot be placed in the correct position, or at a depth acceptable to the Engineer, the CONTRACTOR shall take whatever measures are necessary to properly construct the well at his own expense, including abandoning the borehole.
8. If any of the casings should collapse or break prior to well completion, they shall be withdrawn and replaced at the CONTRACTOR's expense.

9. All work required to be repeated because of the CONTRACTOR, and all additional materials, labor, and equipment required, shall be furnished at the expense of the CONTRACTOR and no claim for additional compensation shall be made or be allowed therefore, except as specifically provided herein.
10. The well casing shall be completed at ground surface. Extra casing length should be added to allow for landing of the casing at the depth/heights specified in SECTION 12 - WELL HEAD COMPLETION. Following completion of backfilling and development, the casing stick-up will be modified as specified in SECTION 12 - WELL HEAD COMPLETION.

D. Well Capping

Upon completion of all work in connection with well construction and development, the well shall be capped by placing a lockable J-plug on the top of the casing.

END OF SECTION

SECTION 8 - FILTER PACK

PART 1 - GENERAL

A. Description

This section covers the supply and installation of the filter pack to the depths and intervals specified by the Engineer.

B. Submittal

A description and recent certified sieve analysis of filter pack to be used must be submitted and approved by the Engineer prior to the anticipated date of shipment from the supplier.

C. Measurement and Payment

1. The payment for filter pack will be based on measurement of vertical feet of filter pack installed from the bottom to the top of each specified interval.
2. The payment for filter pack will be based on measurement of vertical feet of transition sand installed from the bottom to the top of each specified interval.

D. Related Work Specified Elsewhere

None.

PART 2 - MATERIALS

A. Filter Pack

All sand/gravel for packing shall be hard, water or air worn gravels, washed clean of silt, sand, dirt and foreign matter, crushed gravel will not be accepted. It shall be well rounded, graded, and shall have a coefficient of uniformity less than 2.5. All gravel is subject to approval by the Engineer prior to use in the packing process. Gravel shall be of the type provided by Oglebay Norton Industrial Sands, Inc. (formerly known as Colorado Silica Sand, Inc.), or approved equal. For bidding purposes, a non-mixed (i.e., pure silica) #3 gradation blend of Oglebay Norton Industrial Sands, Inc. is proposed at this time. The #3 gradation blend shall meet the sieve analyses parameters specified below.

Sieve #	Sieve Opening (mm)	Cumulative Percent Passing
1/2-Inch	12.5	100
4	4.75	100
6	3.35	100
8	2.36	100-98
12	1.7	89-55
16	1.18	46-10
20	0.85	13-1
30	0.60	5-0

B. Transition Sand

All sand for packing shall be hard, water or air worn gravels, washed clean of silt, dirt and foreign matter, crushed gravel will not be accepted. All sand is subject to approval by the Engineer prior to use in the packing process. Sand shall be a non-mixed (i.e., pure silica) #60 gradation blend. The transition sand shall be of the type provided by Oglebay Norton Industrial Sands, Inc. or approved equal. The #60 gradation blend shall meet the sieve analyses parameters specified below.

Sieve #	Sieve Opening (mm)	Cumulative Percent Passing
20	0.85	100
30	0.60	100
40	0.425	100-94
50	0.30	60-25
70	0.212	15-5
100	0.15	4-0

PART 3 - EXECUTION

1. The gravel, if stockpiled onsite, shall be kept free of all foreign matter. Gravel suspected of being contaminated with dust, oil or other contaminants will not be accepted and shall be removed at the CONTRACTOR's expense prior to the arrival of new gravel onsite.
2. Each gravel envelope shall be pumped into the annulus of the well through a tremie. The gravel shall not be allowed to freefall more than 20 feet from the bottom of the tremie to the top of the gravel. The gravel envelope shall be installed from the bottom of the borehole to approximately five (5) feet above the top of screen.
3. A device approved by the Engineer shall be used to measure the level of the gravel throughout the backfilling process. Backfilling shall not begin until the

measurement method is proved to be accurate by an acceptable method. Upon completion of installation of each gravel envelope, or portion thereof, no additional work will be performed until the depth to the top of that gravel has been determined by use of proven, accurate equipment.

4. Throughout the backfilling process, the CONTRACTOR shall complete calculations to determine the amount of gravel necessary to backfill the specified interval. The CONTRACTOR shall record all calculations and volumes of material used to backfill the specified interval, as well as soundings obtained after each gravel placement and verify those calculations with the Engineer.
5. Prior to installing the overlying annular seal materials, the CONTRACTOR shall consolidate the gravel envelope by gently surging the well screen with a tight-fitting surge block. CONTRACTOR shall then re-measure the top of the gravel envelope and install additional gravel envelope material to design depth as determined by the Engineer.
6. Following the installation of the gravel envelope, CONTRACTOR shall install an approximate 5-foot layer of transition sand.

END OF SECTION

SECTION 9 - ANNULAR SEAL

PART 1 - GENERAL

A. Description

This section includes the installation of the annular seal, which seal the annular space between the borehole wall and the well casing. One seal composed of medium-sized coated bentonite pellets shall be installed in the annulus of the well to hydraulically separate the aquifer penetrated by the well casings.

B. Measurement and Payment

Payment for annular seal materials, bentonite pellets, will be based on measurement of vertical feet of seal installed from the bottom to top of the specified interval.

C. Related Work Specified Elsewhere

None.

PART 2 - MATERIALS

A. Annular Seals

The type of seal shall be used during well construction, described as follows:

1. Annular Seal Type 1 - An approximate five-foot seal consisting of dry non-coated medium-sized bentonite chips or tablets shall be installed above the screened interval, or as otherwise specified. Coated bentonite pellets, chips or tablets shall not be used to construct these seals. The bentonite chips or tablets shall be certified NSF/ANSI Standard 60, Drinking Water Treatment Chemicals - Health Effects.

PART 3 - EXECUTION

1. After placement of the casing and screen at intervals determined by the Engineer, the annular seal shall be installed over gravel envelopes. A general schematic diagram of the well construction, including location of the annual seal, is provided in Drawing No. 3 and Drawing No. 4.
2. An approximate eight (8) to 11 -foot thick seal, consisting of bentonite chips or tablets, shall be installed by gravity via a tremie above the transition sand. The seals above the gravel envelopes shall be installed on top of the fine-grained transition sand to prevent seepage of the annular seal into the underlying gravel envelope.
3. Seal materials shall be allowed to freefall more than 20 feet from the bottom of the tremie to the depth established from previous measurement. The seal or

portion thereof shall be placed from the bottom of each interval to the top, in a continuous operation.

4. The CONTRACTOR shall measure the seal to verify the location of the top of the seal after each load of seal mixture has been installed. Upon complete installation of the annular seal, or portion thereof, no additional work will be performed until the depth to the top of that seal has been accurately measured.
5. The CONTRACTOR shall calculate the amount of seal material necessary to backfill a specified interval. The CONTRACTOR shall record all calculations and volumes of seal mixture used, and the measurements obtained after the seal placement and verify those calculations with the Engineer.

END OF SECTION

SECTION 10 - SANITARY SEAL

PART 1 - GENERAL

A. Description

This section includes the completion of the sanitary seal, sealing the annular space between the borehole and the well casing in the upper 50 feet of the borehole.

B. Submittals

Delivery receipts and certified cement mix design receipts for cement placed for sanitary seal.

C. Measurement and Payment

Payment for the sanitary seal will be based on measurement of vertical feet of sanitary seal installed. No stand-by time will be paid for any down-time between the placement of the final annular seal and the installation of the sanitary seal, or during the 24 hours the sanitary seal is curing.

D. Related Work Specified Elsewhere

None.

PART 2 - MATERIALS

A. Sanitary Seal

1. Cement used for the sanitary seal shall be a Type II Portland cement conforming to ASTM C150 (latest edition).
2. The cement mix used for the sanitary seal shall be a 10.5-sack sand-cement grout. There shall be not more than two parts by weight of sand to one part by weight of cement. The water-cement ratio shall be 7 gallons per sack of cement (94 pounds). All on-site water additions shall be metered.
3. Water used for the cement mix shall be clean and of potable quality.
4. Materials used as additives for Portland cement mixtures in the field shall meet the requirements of ASTM C494 (latest edition), "Standard Specifications for Chemical Admixtures for Concrete."
5. Special quick-setting cement, retardants to setting, and other additives, including hydrated lime to make the mix fluid (up to 10 percent of the volume of cement) may be used.

PART 3 - EXECUTION

1. After placement of the casings, screens, gravel envelopes and the final lift of the annular seal, the sanitary seal shall be installed. The annular space between the well casing and the borehole shall be grouted by tremie with sanitary seal material from the top of the annular seal to the ground surface. A general schematic diagram of the well construction, including location of annual seals, is provided in Drawing No. 3 and Drawing No. 4.
2. The grout pipe shall extend from the ground surface to the bottom of the zone to be grouted. Grout shall be placed from bottom to top, in a continuous operation. The grout pipe shall be slowly raised as the grout is placed, but the discharge end of the grout pipe must be submerged in the emplaced grout at all times until grouting is completed.
3. No activity shall occur at the well site, nor will stand-by time be granted, during a minimum 24-hour period immediately following the placement of the sanitary seal. The casings shall be adequately secured such that no damage or contamination will occur during this period.
4. The CONTRACTOR shall take whatever precautions are necessary to prevent casing collapse during placement of the sanitary seal. In the event any casing collapses prior to completion of the sanitary seal, the CONTRACTOR shall take whatever steps are necessary to reopen the well casings and place the seal as specified. Any such remedial action shall be conducted at the CONTRACTOR's expense.
5. The CONTRACTOR shall calculate the amount of grout necessary to complete the sanitary seal. The volume placed shall not be less than the calculated volume of the annular space between the borehole and the well casing. The CONTRACTOR shall record all calculations and volumes used, and measurements obtained after each interval is pumped. The CONTRACTOR shall provide the calculations and volumes to the Engineer for his review and approval.

END OF SECTION

SECTION 11 - WELL DEVELOPMENT

PART 1 - GENERAL

A. Description

This section covers the initial development of the well by employing flushing, bailing, airlifting and pumping. The actual well development procedure may vary from casing to casing, dependent upon actual characteristics of the formations encountered during drilling. The following is a basic procedure recommended for developing these wells.

B. Measurement and Payment

1. Payment for well development will be made at the unit price bid per hour.
2. The time required for well development will be recorded by the hour with 15-minute intervals as the smallest unit of recorded time. The time recorded for payment shall commence when the equipment installed in the well is placed in operation and shall end when development has stopped at the direction of the Engineer.
3. No payment will be made for delays resulting from (1) equipment stuck in the well casing; (2) equipment breakdown; (3) arranging major drilling, pumping or testing apparatus; (4) failure to conduct the operations in a diligent and workmanlike manner by which the desired results could ordinarily be expected; or (5) additional development that is required as a result of damaged well casing or screen, voids in the gravel envelope, or any construction related defect resulting in additional well development.

C. Submittals

1. Laboratory test results of the holding tank rinsate shall be provided to the Engineer, prior to the delivery of the subject holding tank to the site. The tank rinsate shall be tested for EPA Test Method 8260B compounds (volatile organic compounds) by a California Department of Public Health, Environmental Laboratory Accreditation Program certified laboratory. None of the subject compounds shall be detected above the method detection limit.
2. Daily well development reports recording time and procedures completed during each shift, as well as total chargeable hours for each day and total gallons generated, shall be submitted to the Engineer on a daily basis.
3. Daily well development records recording flow rates, EC, TDS, nephelometric turbidity units (NTU), pH, airline length, and all other information as required by the Engineer for the period of well development shall be submitted on a daily basis.

D. Related Work Specified Elsewhere

None.

PART 2 - MATERIALS

A. Bailer

A suction bailer shall be provided with the appropriate fittings, etc., to allow for the removal of debris, which might accumulate in the bottom of each well casing.

B. Air Compressor, Airline, and Eductor Pipe

An air compressor with airline, eductor pipe and appropriate fittings shall be onsite during the initial airlifting phase of the well development. The air compressor shall be of ample size for maximum airlifting capabilities. The air compressor shall have an effective external air-oil separator. Eductor pipe used in the development of the monitoring wells shall be a maximum 4-inch pipe size (i.e., well casing diameter). The size of the airline shall be a maximum 3/4-inch inner diameter to ensure good flow rates through the eductor pipe (i.e., well casing), and shall be fitted with a dump valve capable of discharging "downhole" air to the atmosphere.

Additional materials necessary to complete secondary development shall include a flow meter, pH and EC/TDS meters, and a water level tape. The flow meter shall be capable of measuring a maximum of 20 cfm of air, such as Dwyer Instruments Inc., Series RM Rate-Master Flow meter Model No. RMC-10-inch scale, or approved equal. The flow meter shall be mounted on the airline leading from the air compressor to the well in conjunction with a pressure gauge capable of measuring maximum air pressure on the airline, and fittings for a dump valve to discharge air to the atmosphere.

C. Submersible Pump

A submersible pump compatible with the well casing size shall be used to pump each well as a final step in the well development process.

D. Holding Tanks

The CONTRACTOR shall use tank(s) and/or roll-off bin(s) to store discharged water generated during well development activities. It is anticipated that flow rates shall be five (5) gallons per minute (gpm) while performing well development. The CONTRACTOR shall anticipate/provide adequate containment volume (e.g., number of tanks) to maintain efficient operations. At the completion of each day of development, the CONTRACTOR shall transport the purged water to the Highgrove Sanitary Landfill. Purged water shall be transported to the location shown on Drawing No. 2, Appendix A – Project Drawings. All discharge fluids shall be contained at the Highgrove Sanitary Landfill until disposed by the Engineer.

E. Discharge Piping

The CONTRACTOR shall provide the temporary discharge piping required to convey well development water to the appropriate holding and/or disposal tanks.

F. Screen Brush

The CONTRACTOR shall provide a nylon brush to remove fine grained materials from the screened interval of the wells.

PART 3 - EXECUTION

A. Development Procedures

1. The CONTRACTOR shall commence initial development no sooner than 24 hours after completion of the sanitary seal.
2. The CONTRACTOR will run a tremie down to the bottom of each casing open-ended, flush the well casing with at least two casing volumes of fresh water, at the discretion of the Engineer, and then airlift until clean. Once airlifting is complete the CONTRACTOR shall remove the tremie, unless bailing is necessary, as directed by the Engineer.
3. Each casing shall be bailed of sediment, as required to clean casing to bottom. If the sediment thickness is greater than five feet, then the CONTRACTOR may be asked to utilize eductor pipe to airlift the sediment.
4. Following bailing, the CONTRACTOR shall measure and record the static water level in the casing and prepare for airlifting. The CONTRACTOR will be required to fabricate an airlift discharge head to accommodate return flow and airline. An airline submergence of at least 60 percent and 80 percent maximum is recommended. The CONTRACTOR shall airlift and surge each well casing and record water quality parameters and purging data. Data shall be recorded at 15-minute intervals until development of a well casing is deemed complete and/or as directed by the Engineer. The well casing shall be surged at 15-minute intervals or as directed by the Engineer. During development the CONTRACTOR shall keep development records. This procedure will be repeated for each of the well casings.
5. Should airlifting not be feasible due to the depth to groundwater or low specific capacity, a submersible pump may be used in-lieu of airlifting. The submersible pump inlet shall be set as close to the screened interval as possible.
6. Once all well casings have been developed by airlifting, the CONTRACTOR shall sound the bottom of each well. If the level of sediment is within or above the perforation interval then the CONTRACTOR shall bail the well until the perforations are clear of sediment.

7. Well development shall continue until the turbidity is similar to existing groundwater wells at the site. The target turbidity for well development is less than 20 NTU.
8. The CONTRACTOR shall continue well development activities until the Engineer directs the CONTRACTOR to stop.

B. Well Development Water

1. All fluids generated during well development shall be temporarily contained by the CONTRACTOR in holding tanks secured by the CONTRACTOR.
2. The well development water shall be temporarily stored at the Highgrove Sanitary landfill. At the completion of each day of well development work, the CONTRACTOR shall transport the holding tanks to Highgrove Sanitary Landfill. The holding tanks shall be transported to the location shown on Drawing No. 2, Appendix A – Project Drawings.
3. Development water shall be tested for pollutants by the Engineer. Upon the Engineer's receipt of the test results, the Engineer will provide direction to the CONTRACTOR regarding the final disposal of development water. It could take the Engineer, up to 5 working days to provide such direction to the CONTRACTOR. The CONTRACTOR shall be required to perform one of the following actions.
 - Provided the development water does not contain significant quantities of pollutants, the CONTRACTOR shall dispose of the spent drilling fluid in the storm water retention basin at the Highgrove Sanitary Landfill.
 - If the development water contains pollutants, the development water shall temporarily remain, up to 10 working days, in the CONTRACTOR's secure storage container at the Highgrove Sanitary Landfill. The Engineer shall be responsible for the final disposal of the development water from the Highgrove Sanitary Landfill.

END OF SECTION

SECTION 12 - WELL HEAD COMPLETION

PART 1 - GENERAL

A. Description

The CONTRACTOR shall provide well head completion by installing either a vault at ground level, or a monument above-ground surrounded by cement-filled bollards. Well HG-31 shall be completed with a monument above-ground. Well HG-32 shall be completed with a ground level vault.

B. Measurement and Payment

Payment of the well completion shall be made at the lump sum price bid per type.

C. Related Work Specified Elsewhere

SECTION 7 -WELL CASING AND SCREEN

D. Submittals

1. The CONTRACTOR shall submit a schematic drawing of the surface vault assembly and documentation from the manufacturer that the surface vault meets the requirements of this Section.
2. Prior to, or at the time of delivery to the site, the CONTRACTOR shall submit to the Engineer a copy of the purchase order placed with the vault manufacturer for the vault to be supplied for the project.
3. Prior to, or at the time of delivery to the site, a Bill of Lading (or invoice) shall be submitted to the Engineer certifying that the vault being delivered to the CONTRACTOR and hence to the well site, is the vault ordered by the CONTRACTOR per the Specifications in this section.

PART 2 - MATERIALS

A. HG-32: Vault Installation

1. The vault used in the well completion shall be a pre-cast, H-20 traffic rated, concrete utility vault measuring 4 feet (interior length) by 4 feet (interior width) by 2 feet (depth). Utility vaults shall have tongue-and-groove double sealed joints on mating edges of pre-cast components. The joints shall firmly interlock adjoining components and provide waterproof junctions and adequate shear transfer. Joints shall be sealed with approved watertight joint sealant as prescribed in the manufacturer's installation specifications and conforming to AASHTO M198, Type B. Sealing material shall be installed in strict accordance with manufacturer's printed instructions.

2. Vault doors shall be composed of steel, of size to fit within the vault. The vault doors shall be Bilco Company JD-2 H20, or approved equivalent. The vault doors shall be manufactured for direct traffic loading, which includes a minimum of four bolt locations at the corner of each door, to secure the vault doors to the frame.
3. A clean, crushed rock material shall be used for the rock base that will support the vault.

B. HG-31: Above-Ground Installation

1. The above-ground monument installed to protect the wellhead shall be an EMCO Wheaton A0728-006, or approved equal.
2. Four (4) protective bollards comprised of mild steel piping measuring 4 inches in diameter and 7 feet in length, shall be used surrounding the well site.
3. Structural concrete to backfill the holes that will hold the bollards in place and fill the interiors of the bollards to their upper ends.
4. Yellow reflecting paint and taping to increase the visibility of the bollards.

PART 3 - EXECUTION

A. HG-32: Vault Installation

1. Upon completion of well development, the CONTRACTOR shall excavate around the conductor casing to a minimum of six inches below the base of the proposed vault. The CONTRACTOR shall also be excavated a sufficient width to facilitate the installation of the vault.
2. The top of the conductor casing shall be 12 inches below the bottom of the vault lid. The top of the conductor casing shall be smooth and free of burs, sharp edges/corners and protrusions.
3. The CONTRACTOR shall equip each conductor casing with a lockable, fitted J-plug.
4. The CONTRACTOR shall install an approximate 6-inch thick layer of crushed rock base in the bottom area between the well casing and the excavation walls to support the vault. The rock base shall be compacted and leveled to provide a supportive surface.
5. The CONTRACTOR shall install the vault on top of the crushed rock base such that the elevation of the top of the vault is equal to the elevation of the surrounding ground surface. The vault will be oriented with the opening directions of the doors perpendicular to the typical traffic flow.

6. The CONTRACTOR shall attach the vault doors to the vault as specified by the vault door manufacturer instructions. The vault doors shall be bolted to the vault door frame with steel bolts.
7. The CONTRACTOR shall install an additional approximate six-inch thick layer of crushed rock base in the space between the vault and the casing. Therefore the top of the casing will be six-inches above the top of the crushed rock base. The rock base shall be compacted and leveled within the vault to provide a supportive surface free of trip hazards.
8. The CONTRACTOR shall install and compact base material between the vault and the excavation walls, from the top of the rock base to the top of the vault. Alternatively, in lieu of compacted base material, the CONTRACTOR may use concrete to backfill this space.

B. HG-31: Above-Ground Installation

1. Upon completion of well development, the CONTRACTOR shall excavate around the well casing to approximately 2.5 feet bgs to a sufficient width to facilitate the installation of the monument and an approximate 12-inch layer of crushed rock base.
2. CONTRACTOR shall cut off the well casing such that the casing extends approximately 24 inches above the top of surrounding ground surface. The cut edges shall be regular in appearance and CONTRACTOR shall file the edges to remove all burrs and sharp corners from the edge. CONTRACTOR shall equip each cut well casing with a fitted J-plug.
3. CONTRACTOR shall install an approximate six (6)-inch thick layer of crushed rock base in the basal area between the well casing and the excavation walls to support the monument. The rock base shall be compacted and leveled to provide a supportive surface.
4. CONTRACTOR shall install the monument on top of the crushed rock base such that the elevation of the top of the monument is approximately three (3) feet above the surrounding ground surface.
5. CONTRACTOR shall install an additional approximate six (6)-inch layer of crushed rock base in the space between the monument and the well casing, and in the space between the monument and the surrounding excavation walls, to provide lateral stability to the vault. The rock base shall be compacted and leveled within the vault to provide a supportive surface free of trip hazards.
6. CONTRACTOR shall install concrete between the monument and the excavation walls, from the top of the rock base to surrounding grade.
7. CONTRACTOR shall install a concrete pad measuring four (4) feet to each side and four (4) inches in thickness, centered on the monument. The

concrete pad shall consist of structural concrete installed in a single pour at the same time the concrete is placed surrounding the monument.

8. CONTRACTOR shall install four (4) bollards around the conductor casing to protect the well casing from vehicular traffic, such that they are positioned no more than six (6) inches from the corners of the concrete pad and spaced no more than five (5) feet along the concrete pad sides, as determined by the Engineer. Each bollard shall be free of burrs and sharp corners. Each bollard shall be installed within 12-inch diameter holes excavated to a sufficient depth to set the bollard such that it extends approximately three (3) feet below grade and four (4) feet above grade. CONTRACTOR shall set each bollard within structural concrete and completely fill its interior such that it has a rounded top.
9. CONTRACTOR shall paint the monument and each bollard with yellow reflecting paint and affix a circumferential band of reflecting tape along the upper portion of each.

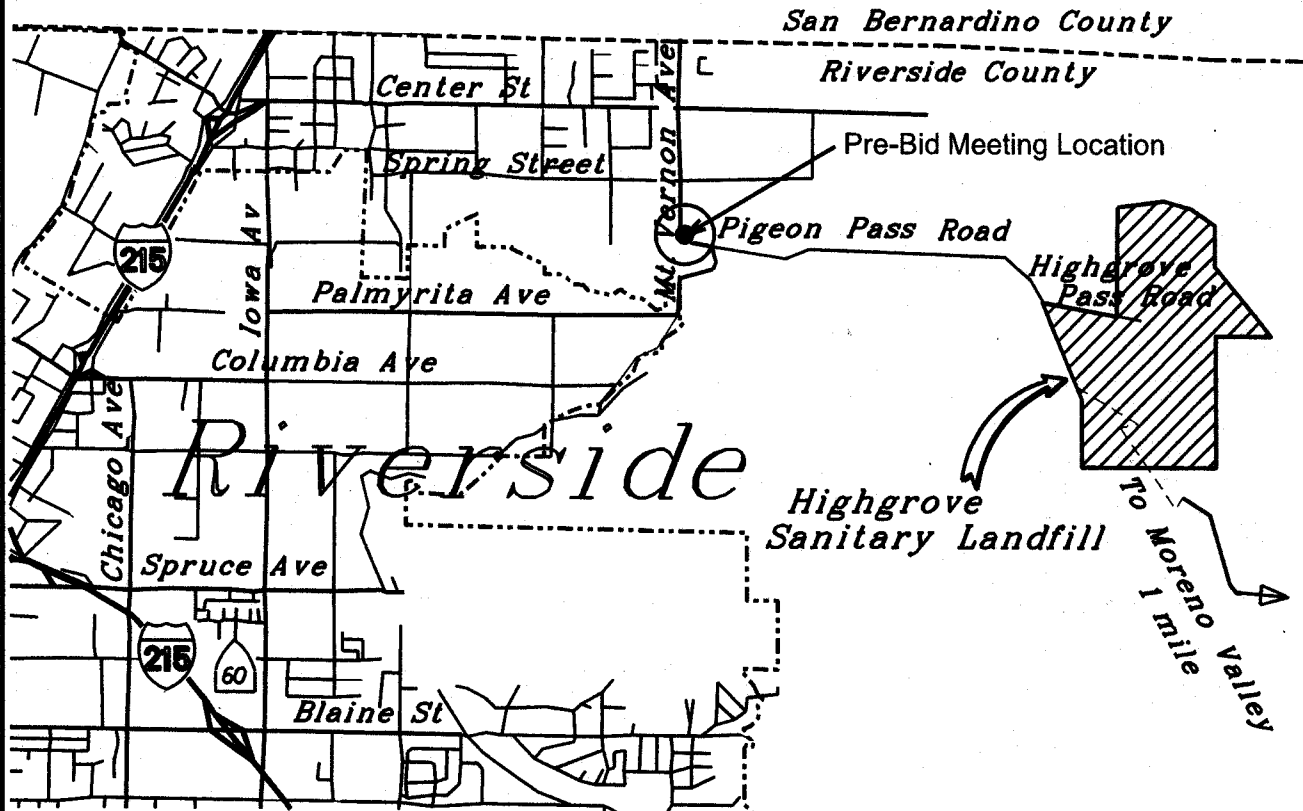
END OF SECTION

APPENDIX A – PROJECT DRAWINGS


DRAWING NO. 1 – SITE VICINITY MAP

Highgrove Closed Sanitary Landfill Site Location Map

Por. Secs. 10, 11 & 15 T2S R4W S.B.B.M.



Legend

- Paved Access Roads
- Freeways (I-215, 60)
- - - - - Dirt Road
- Other Roads
- · - · - City Boundary
-  Sanitary Landfill

0 3500' 7000'
Scale in Feet



Riverside County
Waste Management Department

Highgrove Sanitary Landfill Vicinity Map

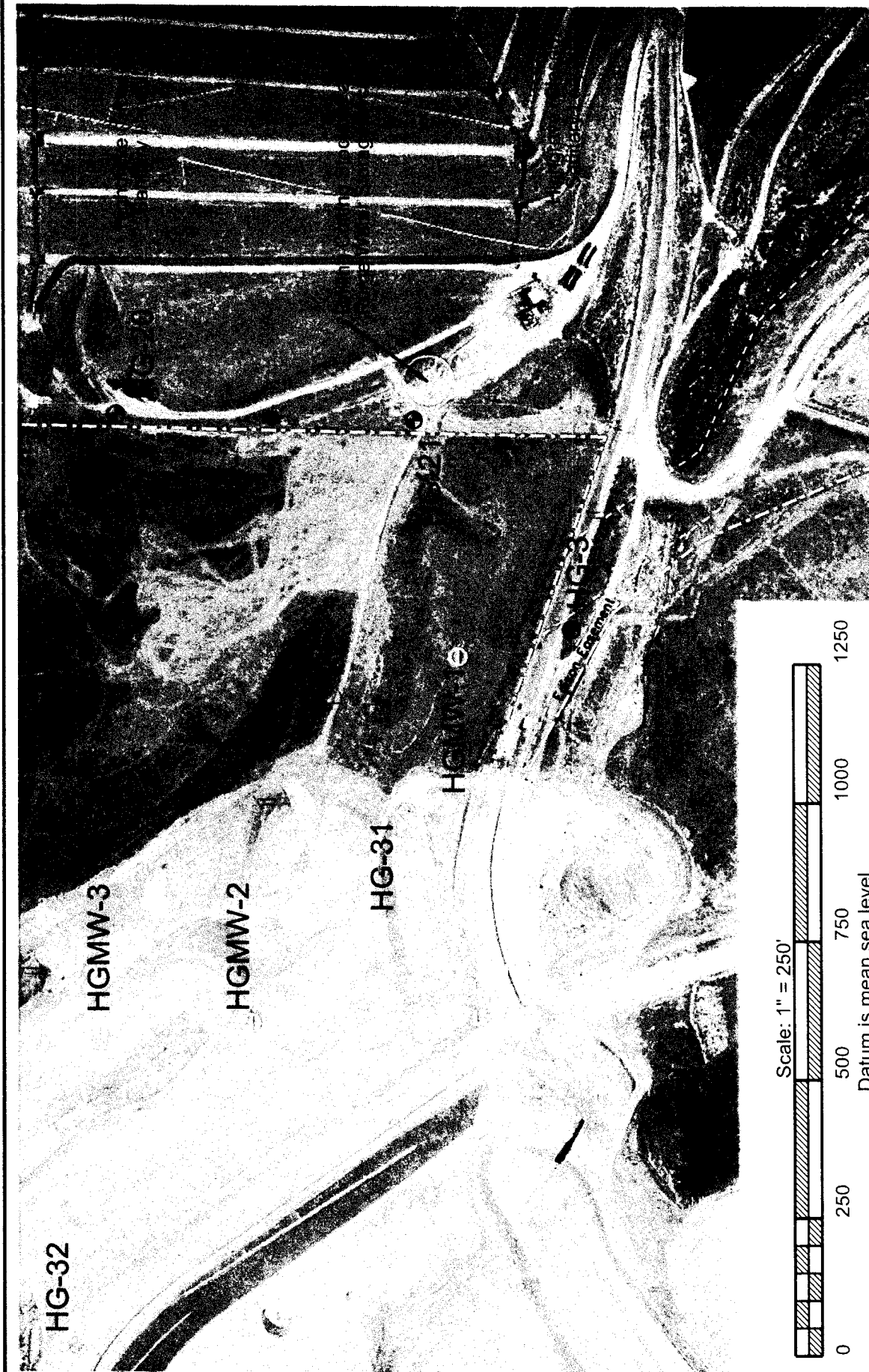
Drawing No. 1

File Directory: /wmis2_d/sites/vicinity_maps/hvicinity.dgn

Date: Dec. 8, 1997

Scale : 1" = 3500'

**DRAWING NO. 2 – PROPOSED GROUNDWATER WELL LOCATIONS
AND STAGING AREA MAP**



- Groundwater Well Location
- SMR Groundwater Well Location (abandoned Jan 2007)
- Proposed Groundwater Well Location
- Property Line



Riverside County
Waste Management Department

Highgrove (Closed) Sanitary Landfill Proposed Groundwater Well Locations and Storage Area Map

Drawing No. 2

File Directory: I:\waste\highgrove\highgrove\water\drawing no. 2 - offsite well proposed location detailed (PW contract) dgn

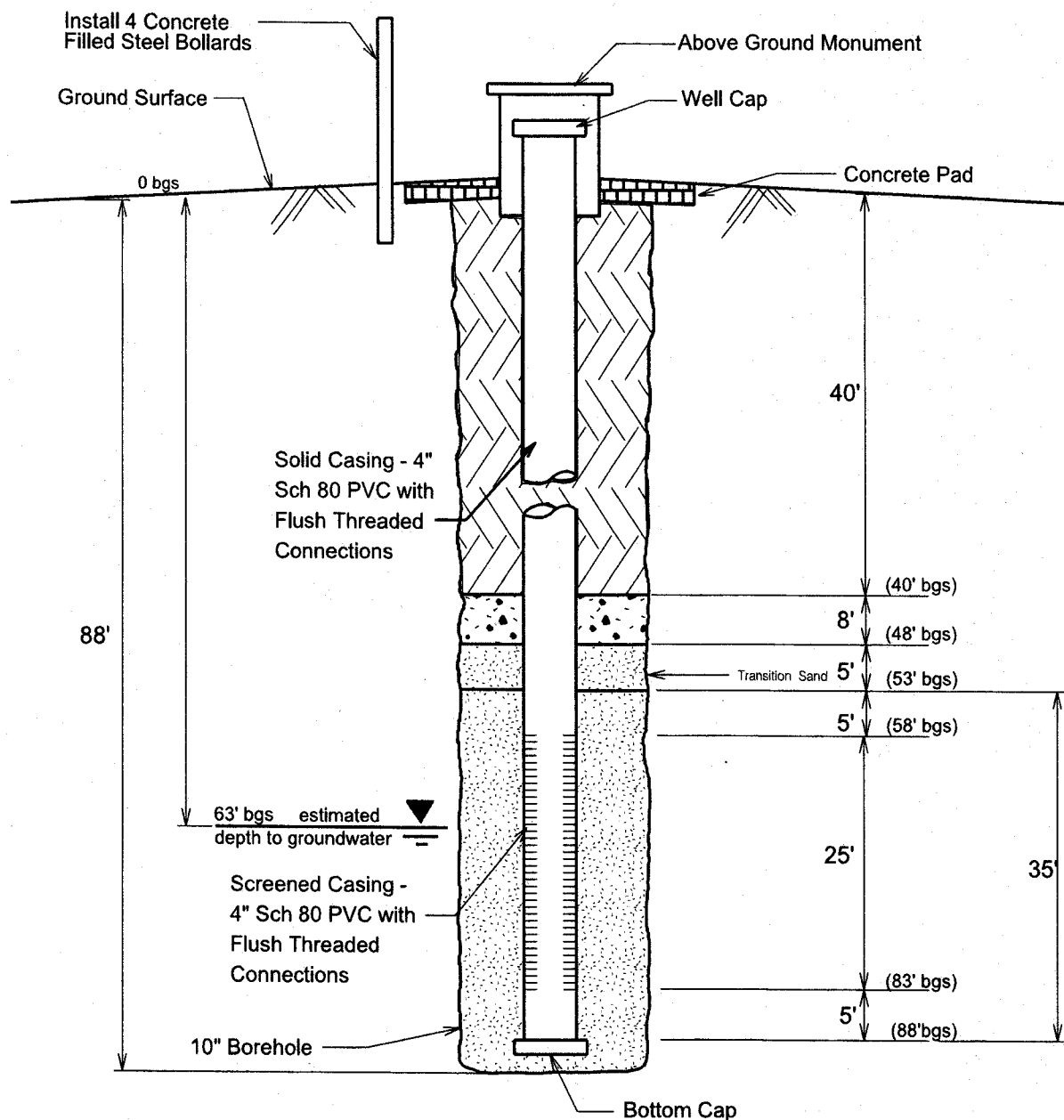
Date: November 30, 2009

Photo: 2007




Scale: 1"=200'

Drawn By: PW

DRAWING NO. 3 – HG-31 GROUNDWATER WELL SCHEMATIC

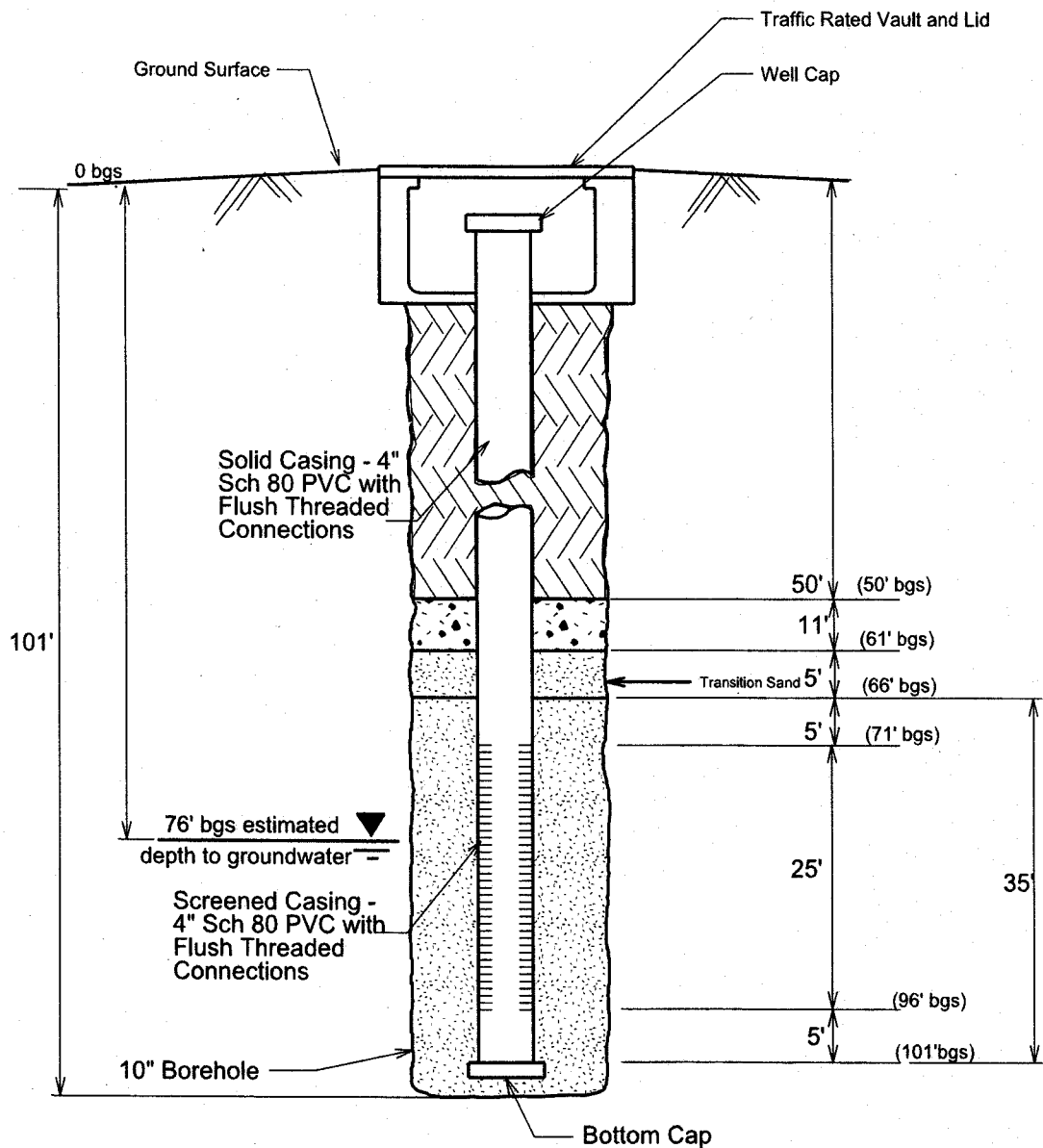


LEGEND

-  Cement
-  Bentonite
-  Filter Pack

bgs: Below Ground Surface

DRAWING NO. 4 – HG-32 GROUNDWATER WELL SCHEMATIC



LEGEND

	Cement
	Bentonite
	Filter Pack
bgs: Below Ground Surface	

APPENDIX B – BACKGROUND SUBSURFACE INFORMATION

Highgrove Sanitary Landfill

Background Subsurface Information for the Installation of Groundwater Monitoring Wells HG-31 and HG-32

December 2009

Prepared By

**County of Riverside
Waste Management Department**

**Todd D. Shibata, P.E.
Senior Civil Engineer**

Highgrove Sanitary Landfill
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1. General

The proposed monitoring wells are located at the Closed Highgrove Sanitary Landfill property, which is owned by the Riverside County Waste Management Department (Department). The location of the Closed Highgrove Sanitary Landfill is shown on Drawing No 1, of the Special Provisions. The location of the monitoring wells is shown on Drawing No. 2, of Special Provisions.

2. Geologic Stratigraphic Setting

The OWNER does not represent that the information described in the following Section depicts the conditions that will be encountered in performing the Work described herein. The OWNER represents only that such information has been documented in past drilling completed at the site and local area. Likewise, the CONTRACTOR is responsible for any conclusions, assumptions or decisions made based on this data.

2.1 Geomorphology

The landfill is located at the base of the northern end of the Box Spring Mountains. Blue Mountain is located at approximately one mile northwest of the site. An unnamed ridge directly east-northeast of the site is the topographic feature that separates the site from Reche Canyon. The site area is also identified as the northwest terminus of Pigeon Pass. Pigeon Pass Valley is located approximately 1.8 miles southeast of the site, on the southeastern side of the Box Spring Mountains.

The terrain surrounding the site is generally composed of westerly sloping terrace to the west and south, and steep mountains to the north and east. Less than 2 miles west northwest of the site, the terrain changes uniformly to a broad alluvial fan, sloping towards the Santa Ana River. The Santa Ana River is located approximately 5 miles west of the site.

Prior to landfill activities, historic topographic maps indicate that surface water from the Box Spring Mountains to the east used to drain through the site in natural incised drainage courses. The surface expressions of the past natural drainage courses are no longer visible, except for a perennial stream directly north of the site.

3. Geology

The OWNER does not represent that the information described in the following Section depicts the conditions that will be encountered in performing the Work described herein. The OWNER represents only that such information has been documented in past drilling completed at the site and local area. Likewise, the CONTRACTOR is responsible for any conclusions, assumptions or decisions made based on this data.

3.1 Regional Geology

The site is located within the eastern portion of the Peninsular Ranges geomorphic province. The Peninsular Ranges geomorphic province is a series of ranges separated by northwest trending valleys, subparallel to faults branching from the San Andreas Fault. The trend of topography is similar to California's Coast Ranges geomorphic province, but the geology is more like California's Sierra Nevada geomorphic province, with granitic rock intruding the older metamorphic rocks. The Peninsular Ranges extend into lower California and are bound on the east by the Colorado Desert (CGS, 2002).

The surrounding Box Spring Mountains are composed of a geologic formation referred to as the Box Springs plutonic complex, whose origin dates to the Cretaceous period. The Box Springs plutonic complex is an elliptical, horizontally-floored basin-shaped granitic complex centered on the Box Springs Mountains. Layering and foliation in the granitic rocks is primary. The complex consists of essentially massive to indistinctly primary layered biotite tonalite in the core, surrounded by layers of foliated biotite granodiorite to tonalite. Further outward in the complex are discontinuous layers of foliated, heterogeneous, porphyritic granodiorites, succeeded by uniform porphyritic granodiorites. Other compositionally and texturally diverse granitic rocks also occur within complex, but in relatively small amounts (Morton and Cox, 2001).

The complex is composed of several different units. Units surrounding the site include the biotite tonalite, biotite granodiorite and tonalite, biotite-hornblende tonalite, and heterogeneous granodiorite and tonalite.

3.2 Local Geology and Site Stratigraphy

The site and immediate vicinity is generally composed of five (5) local geologic units. The units are described below in sequential order, from the core outward for rock units and from oldest to most recent for soil units.

3.2.1 Biotite Granodiorite and Tonalite

The rock mass is a relatively homogeneous, light gray, medium to coarse grained, foliated biotite granodiorite and tonalite. It contains 25 to 35 percent quartz, 8 to 15 percent biotite, and minor amounts of hornblende. Potassium feldspar occurs as small interstitial grains and sparse, subhedral phenocrysts up to 1.5 cm in diameter. Potassium feldspar content appears to decrease progressively inward and tonalite is most abundant in the inner part of the unit. Mesocratic discoidal inclusions, described as "pancake" shaped and oriented parallel to foliation, are common, but not abundant (Morton and Cox, 2001 and Morton, 1978).

3.2.2 Biotite-Hornblende Tonalite

The rock mass is generally light to medium gray, medium to coarse grained, foliated tonalite. The biotite-hornblende tonalite forms discontinuous, pod-shaped masses surrounding, but not in contact with, biotite tonalite. The matrix contains 20 to 25 percent quartz and about 25 percent biotite and hornblende in subequal amounts. Hornblende and biotite occur as ragged crystals. Potassium feldspar is also present, but in little amounts. Anhedral, interstitial sphene is a conspicuous accessory mineral. The unit contains abundant, fine grained, mesocratic, ellipsoidal-to discoidal-shaped mafic inclusions aligned parallel to foliation (Morton and Cox, 2001 and Morton, 1978).

Where the bedrock unit is buried, generally the upper 10 to 15 feet of the surface is decomposed, wherein the bedrock is fractured, deeply weathered and unconsolidated (Smith, 1995). The upper few feet of the decomposed bedrock is finer grained. At depth, the decomposed bedrock is less extensively weathered (Converse, 1988).

3.2.3 Terrace Deposits

The terrace deposits are composed of non-marine, Quaternary age older alluvium. The deposits are indurated, well dissected, tan to red-brown to brown, sandy to cobbly, and include some amounts of clay development. Commonly contains duripans and locally silcretes (Morton and Cox, 2001 and Morton, 1978).

The terrace deposits overlie the bedrock units described above. The thickness of the terrace deposits increase with increasing distance from the Box Spring Mountains. Bedrock outcroppings exist at the site and the terrace deposits thickness is obviously negligible adjacent to the outcroppings. The maximum thickness of the terrace deposits investigated directly adjacent to the site is 110.5 feet (Converse, 1981).

3.2.4 Channel Deposits

The channel deposits are composed of non-marine, Quaternary age younger alluvium. The deposits are unconsolidated, gray, coarse to fine grained sand with minor amounts of silt (Morton and Cox, 2001 and Morton, 1978).

The channel deposits are limited to existing and former natural drainage channels. These natural drainages exist adjacent to the site, but have since been removed or buried where they were formally located on the site. The channel deposits overlie the terrace deposits described above. The thickness of the deposits on the site has been investigated to be up to 6 feet (Converse, 1988).

3.2.5 Artificial Fill

Artificial fill has been placed throughout the site, in the form of municipal solid waste and compacted soil fill to support landfill operations. The Department began maintaining topographic maps of the site beginning in 1959. The 1959 topographic mapping showed ground surface elevations prior to placement of refuse, which began in 1947. Therefore, the "pre-landfill" elevation is based on the 1959 mapping, since this is the earliest topographic information available to the Department. Based on the 1959 topographic map, the approximate "pre-landfill" elevation is 1,350 feet mean sea level (MSL) (EMCON, 1999). Based on the aerial survey dated June 29, 2001, the average final landfill deck elevation is 1,630 feet MSL (Department, 2003). Therefore, the estimated maximum thickness of municipal solid waste placed at the site is 280 feet.

3.3 Geologic Structure

The northwesterly trending San Jacinto fault zone is located approximately 2.2 miles northeast of the site, northeast of Reche Canyon. The San Jacinto fault zone is considered an active fault (i.e. surface displacement within Holocene time period) and is also classified by the California Geological Survey as an Alquist-Priolo Earthquake Fault Zone (CGS, 2007). Past geologic studies completed at the site have not revealed the presence of faults on the site (Converse, 1991).

Regionally, the bedrock unit foliation strikes generally in a northwest-southeast direction and dips vertically or are inclined steeply to the southwest (Morton and Cox, 2001 and Morton, 1978). Subsurface investigation completed adjacent to site has indicated that bedrock unit joints strike generally parallel to the orientation of foliation, that is a northwest-southeast direction. However, a secondary set of joints exist in a perpendicular direction, that is northeast to southwest. Joints observed in subsurface trench logging dipped vertical or were steeply inclined. Larger joints were observed to be filled with clay and/or carbonate (Converse, 1991).

4. Hydrogeology

The OWNER does not represent that the information described in the following Section depicts the conditions that will be encountered in performing the Work described herein. The OWNER represents only that such information has been documented in past drilling completed at the site and local area. Likewise, the CONTRACTOR is responsible for any conclusions, assumptions or decisions made based on this data.

4.1 Regional Hydrogeology

The site is located within the Riverside-Arlington subbasin, of the Upper Santa Ana Valley groundwater basin. The subbasin underlies part of the Santa Ana River Valley in northwest Riverside County and southwest San Bernardino

County. This subbasin is bound by impermeable rocks of Box Springs Mountains on the southeast, Arlington Mountain on the south, La Sierra Heights and Mount Rubidoux on the northwest, and the Jurupa Mountains on the north. The northeast boundary is formed by the Rialto-Colton fault, and a portion of the northern boundary is a groundwater divide beneath the Bloomington area of unincorporated San Bernardino County. The Rialto-Colton fault is a barrier to groundwater flow along of its length, especially in its northern reaches. A groundwater divide in the alluvium separates the Riverside portion from the Arlington portion of the subbasin (DWR, 2004).

Groundwater in the subbasin is found chiefly in alluvial deposits. Quaternary age alluvial deposits in the subbasin consist of sand, gravel, silt, and clay deposited by the Santa Ana River and its tributaries. Near the City of Riverside, the upper 50 feet of deposits are principally clay; however, deposits near the Arlington area of Riverside County have considerable sand and little clay. At the northern end of the subbasin, coarser gravels with cobbles 4 to 6 inches in diameter are common (DWR, 2004).

The predominant recharge to the subbasin occurs because of percolation of direct precipitation and infiltration of stream flow within tributaries exiting the surrounding mountains and hills and within the Santa Ana River. In general, groundwater flow mimics surface drainage patterns; it moves from the areas of high elevation towards areas of discharge near the Santa Ana River (Kennedy/Jenks, 2008). Therefore, groundwater generally flows from the east to the west and from the northeast to the southwest.

4.2 Local Hydrogeology

The RWQCB has further divided the Arlington-Riverside subbasin into smaller hydrogeologic units, referred to as Groundwater Management Zones. The Groundwater Management Zones are defined principally by the groundwater flow. The site is located within the Riverside F Groundwater Management Zone, which is bounded by the Box Spring Mountains to the east, the Riverside A Groundwater Management Zone to the north and west, and the Riverside E Groundwater Management Zone to the south. The Riverside F Groundwater Management Zone is designated for municipal, agricultural, industrial and process beneficial uses (RWQCB, 2008).

Groundwater occurs most abundantly in the terrace deposits located along the western portion of the site. As the terrace deposits thin toward the east, groundwater also exists within the decomposed bedrock and fractures of the bedrock units. Past investigations (Converse, 1986 and Converse, 1991) and a review of historic groundwater data appears to indicate that there is hydraulic communication between terrace deposits, decomposed bedrock and bedrock fractures.

The depth to groundwater underlying the site varies based on the ground surface elevation. Historically across the site, groundwater occurs as shallow as 4 feet and as deep as 156 feet below the ground surface. With very little seasonal or historic variation, groundwater flows generally toward the west, away from the Box Spring Mountains (Department, 2009). The groundwater depth and flow direction are influenced in a highly localized area surrounding the north-south oriented row of groundwater extraction wells utilized for corrective action at site.

The groundwater flow direction underlying the site is believed to be influenced by the bedrock surface undulations. Buried bedrock surface elevation highs and lows may cause some localized groundwater flow variations (e.g. low-flow impediments or high-flow conduits) from the general westerly groundwater flow direction (Converse, 1991).

Groundwater underlying the site is believed to be recharged by infiltration in the natural drainage channels north and south of the site and by infiltration in bedrock fractures of the adjacent Box Spring Mountains. During past landfill operations and previous investigations in the vicinity of the site, seeps/springs were observed from fractures in the bedrock of the adjacent Box Spring Mountains (Converse, 1991).

5. Drilling Activities

The OWNER does not represent that the information described in the following Section depicts the conditions that will be encountered in performing the Work described herein. The OWNER represents only that such information has been documented in past drilling completed at the site and local area. Likewise, the CONTRACTOR is responsible for any conclusions, assumptions or decisions made based on this data.

5.1 Drilling

All proposed work specified herein will be completed under the supervision of a California professional civil engineer and/or California professional geologist, experienced in subsurface investigations and groundwater monitoring well installation.

The boring will be drilled by a licensed C-57 contractor, who is registered with the County Department of Environmental Health, selected through the Department's RFP process. The table below specifies the anticipated subsurface conditions and boring parameters at the proposed well locations.

Well Location	Depth to Groundwater	Total Boring Depth	Depth to Decomposed Bedrock
HG-31	63	88	71
HG-32	76	101	75

Hollow stem auger drilling previously completed at the site will be unable to reach the depths anticipated to reach to install groundwater monitoring wells HG-31 and HG-32. Therefore, the boring shall be drilled by means and methods determined appropriate by the contractor and approved by the Department. The contractor shall not be allowed to introduce fluids into the subsurface to aid drilling, unless all other drilling methods have been exhausted.

6. References

California Department of Conservation, California Geological Survey (CGS), 2002, California Geomorphic Provinces, Note 36.

CGS, Interim Revision 2007, Fault-Rupture Hazard Zones in California, Special Publication 42.

California Department of Water Resources (DWR), February 27, 2004, California's Groundwater, Bulletin 118, Hydrologic Region South Coast, Upper Santa Ana Valley Groundwater Basin, Riverside-Arlington Subbasin.

California Regional Water Quality Control Board, Santa Ana Region (RWQCB), Updated February 2008, Water Quality Control Plan, Santa Ana River Basin (8).

Converse Environmental Consultants, January 26, 1988, Final SWAT Report, Highgrove Landfill, Riverside County, California.

Converse Environmental West, January 25, 1991, Report - Hydrogeological Investigation and Design Concepts, Highgrove Sanitary Landfill Expansion.

EMCON, April 19, 1999, Final Postclosure Maintenance Plan Highgrove Sanitary Landfill.

Kennedy/Jenks Consultants, May 2008, Updated Integrated Regional Water Management Plan Report, Prepared for Western Municipal Water District.

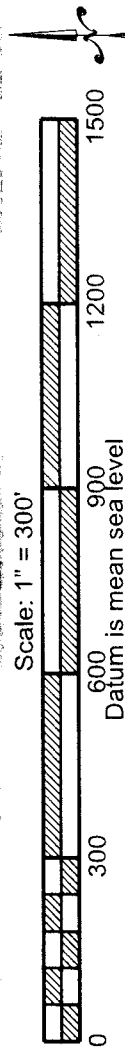
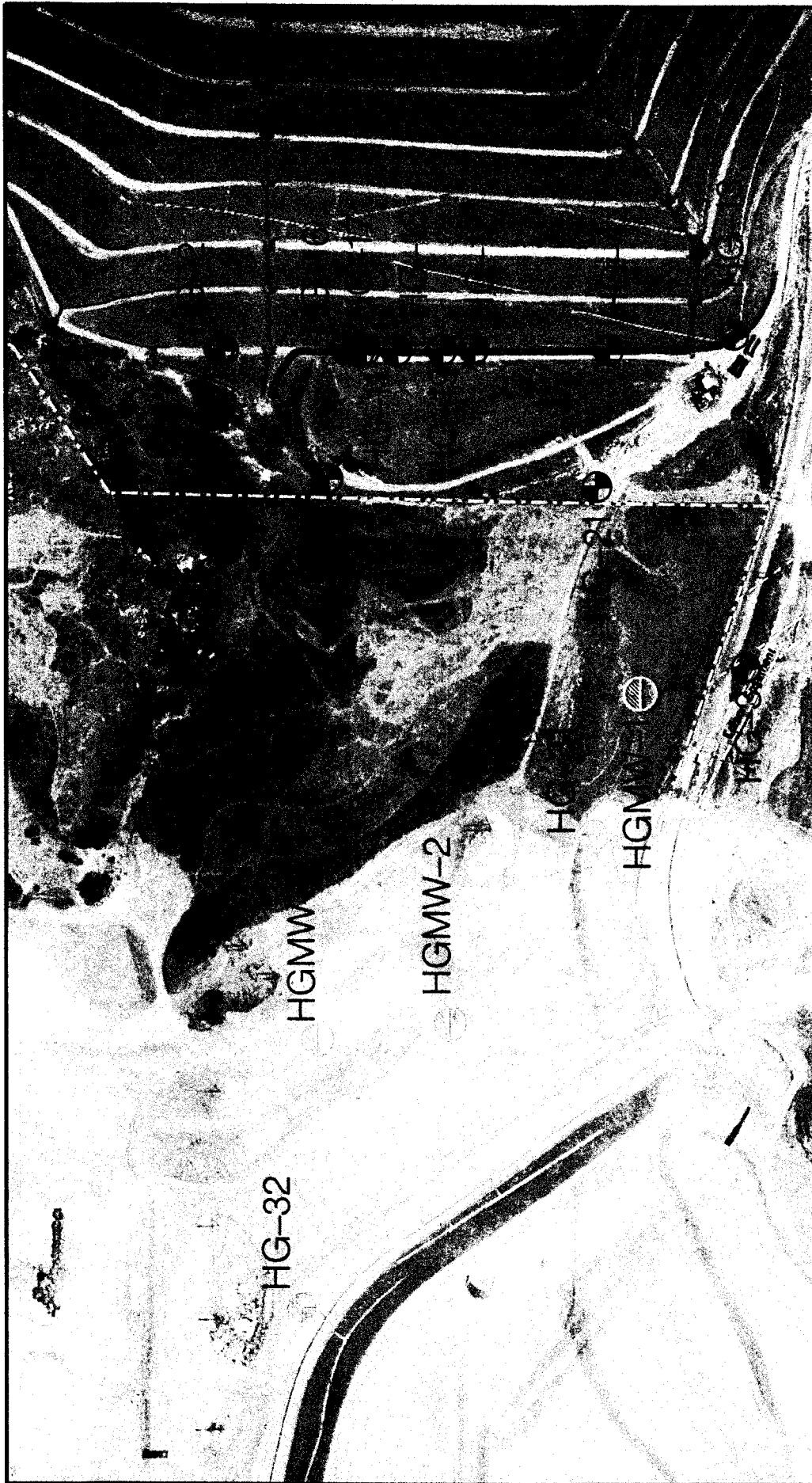
Morton, Douglas M., 1978, Geologic Map of the San Bernardino South Quadrangle, San Bernardino and Riverside Counties, California, United States Geological Survey, Open File Report 78-20.

Morton, Douglas M., Cox, Brett, 2001, Geologic Map of the Riverside East 7.5' Quadrangle, Riverside County, California, Version 1.0, United States Geological Survey, Open File Report 01-452.

Riverside County Waste Management Department (Department), April 2009, Semi-Annual Groundwater and General Site Monitoring Report (October 1, 2008 – March 31, 2009) And Annual Summary for the Highgrove Sanitary Landfill.


Riverside County Waste Management Department (Department), May 2003, Highgrove Sanitary Landfill Joint Technical Document Addendum No. 1, Final Closure Construction Certification Report.

Smith, March 1995, Report, Basis of Design, Groundwater Remediation Program, Highgrove Landfill.



- Groundwater Well Location
- SMR Groundwater Well Location (abandoned Jan 2007)
- Proposed Groundwater Well Location
- Property Line

Highgrove (Closed) Sanitary Landfill Groundwater Well Location Map

 **Riverside County**
Waste Management Department

LOG OF BORING

TOP OF CASING ELEVATION (ft)		NA		DATE DRILLED February 24, 1994		SHEET 1 of 3	
WELL SCREEN ELEVATION - TOP (ft)		NA		SURFACE ELEVATION		DATUM MSL	
WELL SCREEN ELEVATION - BOTTOM (ft)		NA					

ELEVATION (feet)	DEPTH (feet)	LAB TESTS	FIELD TESTS	WELL COMPLETION		SAMPLE TYPE	BLOW COUNTS/FT	SAMPLE NUMBER	GRAPHIC LOG	U.S.C.S. CLASSIFICATION	SOIL DESCRIPTION	TYPE and/or REMARKS
		TPH (mg/Kg)	HEADSPACE (ppmv)	GRAPHIC	DETAILS							
0				Concrete						SP	Brown sand, dry, loose, micaceous	No odor
5			<1	Hydrated bentonite chips		49	1-1			SW	Brown sand, medium to coarse-grained, well graded, micaceous, dense	
10			<1	2" dia SCH 40 PVC casing		63	2-1				- coarse-grained	Possible decomposed granite
15			<1			100	3-1				- silty	
20			<1			63	4-1				- medium to coarse-grained	
25			<1			100	5-1					
30				#2/12 sand								

CLIENT BANK	1ST INTERSTATE	RAC	WELL NUMBER	FIGURE NO.
PROJECT NUMBER 0125-001		REMEDIAL ACTION CORPORATION	MW-1	

H3mw-1

LOG OF BORING (CONTINUED)





SHEET 2 of 3

ELEVATION (feet)	DEPTH (feet)	LAB TESTS	FIELD TESTS	WELL COMPLETION		SAMPLE TYPE	BLOW COUNTS/FT	SAMPLE NUMBER	GRAPHIC LOG	U.S.C.S. CLASSIFICATION	SOIL DESCRIPTION	TYPE and/or REMARKS
		TPH (mg/Kg)	HEADSPACE (ppmv)	GRAPHIC	DETAILS							
	30		<1			▲	100	6-1				
	35		<1			▲	100	7-1			- orange-brown, dry	
	40		<1			▲		8-1			- gray-brown, moist	
	45		<1			▲	420	9-1				
	50		<1			▲	420	10-1/2				
	55		<1			▲	420	11-1				
	60					▲						
CLIENT 1ST INTERSTATE BANK PROJECT NUMBER 0125-001						RAC REMEDIAL ACTION CORPORATION				WELL NUMBER MW-1		FIGURE NO.

46mw-1

LOG OF BORING (CONTINUED)

SHEET 3 of 3

ELEVATION (feet)	DEPTH (feet)	LAB TESTS	FIELD TESTS	WELL COMPLETION		SAMPLE TYPE	BLOW COUNTS/FT	SAMPLE NUMBER	GRAPHIC LOG	U.S.C.S. CLASSIFICATION	SOIL DESCRIPTION	TYPE and/or REMARKS
		TPH (mg/Kg)	HEADSPACE (ppmv)	GRAPHIC	DETAILS							
	60		<1				420	12-1				
	65		<1				420	13-1			T.D. = 65 feet	

CLIENT 1ST INTERSTATE
BANK
PROJECT NUMBER 0125-001

RAC
REMEDIAL ACTION CORPORATION

WELL NUMBER
MW-1

FIGURE NO.

HGMW-1

WELL INFORMATION

LOG OF BORING

TOP OF CASING ELEVATION (ft)

WELL SCREEN ELEVATION - TOP (ft)

WELL SCREEN ELEVATION - BOTTOM (ft)

DATE DRILLED May 31, 1994

SHEET 1 of 3

SURFACE ELEVATION

DATUM MSL

ELEVATION (feet)	DEPTH (feet)	LAB TESTS	FIELD TESTS	WELL COMPLETION		SAMPLE TYPE	BLOW COUNTS/FT	SAMPLE NUMBER	GRAPHIC LOG	U.S.C.S. CLASSIFICATION	SOIL DESCRIPTION	TYPE and/or REMARKS
		TPH (mg/Kg)	HEADSPACE (ppmv)	GRAPHIC	DETAILS							
	0				Bentonite grout					SP	Dark brown medium sand with some silt, loose, dry, micaceous, poorly graded	
	5		0		2" dia SCH 40 PVC blank casing		7	2-1			- brown, trace silt	
	10		0				11	2-2				
	15		0				12	2-3				
	20		0				28	2-4				
	25				Bentonite pellets							
		CLIENT 1ST INTERSTATE BANK PROJECT NUMBER 0125-001				RAC REMEDIAL ACTION CORPORATION				WELL NUMBER MW-2		FIGURE NO.

HGMW-2

LOG OF BORING (CONTINUED)

SHEET 2 of 3

ELEVATION (feet)	DEPTH (feet)	LAB TESTS	FIELD TESTS	WELL COMPLETION		SAMPLE TYPE	BLOW COUNTS/FT	SAMPLE NUMBER	GRAPHIC LOG	U.S.C.S. CLASSIFICATION	SOIL DESCRIPTION	TYPE and/or REMARKS
		TPH (mg/Kg)	HEADSPACE (ppmv)	GRAPHIC	DETAILS							
25			0				75	2-6			- yellow brown, dense	Top of screen at 30'
30			0				67	2-6				
35			0				150	2-7			- very dense, little gravel poorly graded	
40			0				200	2-8			- tan	
45			0				200	2-9				
50										SM	Tan silty fine sand, moist,	

CLIENT 1ST INTERSTATE
BANK
PROJECT NUMBER 0125-001

RAC
REMEDIAL ACTION CORPORATION

WELL NUMBER
MW-2

FIGURE NO.

HGMW-2

LOG OF BORING (CONTINUED)

SHEET 3 of 3

ELEVATION (feet)	DEPTH (feet)	LAB TESTS	FIELD TESTS	WELL COMPLETION		SAMPLE TYPE	BLOW COUNTS/FT	SAMPLE NUMBER	GRAPHIC LOG	U.S.C.S. CLASSIFICATION	SOIL DESCRIPTION	TYPE and/or REMARKS
		TPH (mg/Kg)	HEADSPACE (ppmv)	GRAPHIC	DETAILS							
	50		.2				160	2-10			dense, poorly graded	Water detected at 53'
	55		0.2				100	2-11		SP	Tan fine sand, moist, dense, poorly graded	
	60		0				100	2-12			- wet	
	65		0				100	2-13		SP	Yellow brown medium sand, wet, dense, poorly graded	
	70		0		Slough		100	2-14		SM	Dark brown silty fine sand, wet, dense, poorly graded	
											Total depth 71.5 ft.	
		CLIENT 1ST INTERSTATE BANK PROJECT NUMBER 0125-001						RAC REMEDIAL ACTION CORPORATION		WELL NUMBER MW-2		FIGURE NO.

HGMW-2

WELL INFORMATION

LOG OF BORING

TOP OF CASING ELEVATION (ft)

WELL SCREEN ELEVATION - TOP (ft)

WELL SCREEN ELEVATION - BOTTOM (ft)

DATE DRILLED June 1, 1994

SHEET 1 of 6

SURFACE ELEVATION

DATUM MSL

ELEVATION (feet)	DEPTH (feet)	LAB TESTS	FIELD TESTS	WELL COMPLETION		SAMPLE TYPE	BLOW COUNTS/FT	SAMPLE NUMBER	GRAPHIC LOG	U.S.C.S. CLASSIFICATION	SOIL DESCRIPTION	TYPE and/or REMARKS
		TPH (mg/kg)	HEADSPACE (ppmv)	GRAPHIC	DETAILS							
	0				Bentonite grout					SM	Red-brown silty fine sand with few medium sand, dry, loose, poorly graded	No odor
	5		0				15	3-1		SP	Red-brown fine sand, loose, dry, poorly graded	
	10		0				100	3-2			- dense	
	15		0					3-3		SM	Red-brown silty fine sand, medium dense, dry, poorly graded	
	20		0				72	3-4		SP	Red-brown fine sand, dense, dry, poorly graded	
25		CLIENT 1ST INTERSTATE BANK PROJECT NUMBER 0125-001				RAC REMEDIAL ACTION CORPORATION				WELL NUMBER MW-3		FIGURE NO.

HGMW-3

LOG OF BORING (CONTINUED)

SHEET 2 of 6

ELEVATION (feet)	DEPTH (feet)	LAB TESTS	FIELD TESTS	WELL COMPLETION		SAMPLE TYPE	BLOW COUNTS/FT	SAMPLE NUMBER	GRAPHIC LOG	U.S.C.S. CLASSIFICATION	SOIL DESCRIPTION	TYPE and/or REMARKS
		TPH (mg/kg)	HEADSPACE (ppmv)	GRAPHIC	DETAILS							
25			0		2" dia SCH 40 PVC blank casing		92	3-6				
30			0				58	3-6				
35			0				47	3-7		SM	Red-brown silty fine sand, medium dense, dry, poorly graded	
40			0				52	3-8		SP	Tan fine sand, medium dense, dry, poorly graded, micaceous	
45			0				52	3-9		SM	Red-brown silty fine sand, medium dense, dry, poorly graded, micaceous	
50												

CLIENT 1ST INTERSTATE
BANK

PROJECT NUMBER 0125-001

RAC

REMEDIAL ACTION CORPORATION

WELL NUMBER

MW-3

FIGURE NO.

HGMW-3

LOG OF BORING (CONTINUED)













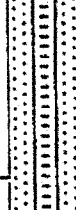


SHEET 3 of 6

ELEVATION (feet)	DEPTH (feet)	LAB TESTS	FIELD TESTS	WELL COMPLETION		SAMPLE TYPE	BLOW COUNTS/FT	SAMPLE NUMBER	GRAPHIC LOG	U.S.C.S. CLASSIFICATION	SOIL DESCRIPTION	TYPE and/or REMARKS
		TPH (mg/Kg)	HEADSPACE (ppmv)	GRAPHIC	DETAILS							
	50		0				58	3-10				
	55		0				87	3-11		SW	Light brown sand, well graded, dense, dry.	
	60		0				87	3-12		SM	Red-brown silty fine sand, dense, dry, poorly graded	
	65		0				89	3-13				
	70		0				100	3-14		SP	Tan fine sand, dense, dry, poorly graded	
	75	CLIENT 1ST INTERSTATE BANK PROJECT NUMBER 0125-001				RAC REMEDIAL ACTION CORPORATION				WELL NUMBER MW-3		FIGURE NO.

H6mw-3

LOG OF BORING (CONTINUED)

SHEET 4 of 6

ELEVATION (feet)	DEPTH (feet)	LAB TESTS	FIELD TESTS	WELL COMPLETION		SAMPLE TYPE	BLOW COUNTS/FT	SAMPLE NUMBER	GRAPHIC LOG	U.S.C.S. CLASSIFICATION	SOIL DESCRIPTION	TYPE and/or REMARKS
		TPH (mg/Kg)	HEADSPACE (ppmv)	GRAPHIC	DETAILS							
	75		0				89	3-15			- red-brown, little medium sand	Top of screen at 85'
	80		0		Bentonite pellets		100	3-16				
	85		0		#2/16 sand		100	3-17				
	90		0				100	3-18				
	95		0				100	3-19				
	00	CLIENT 1ST INTERSTATE BANK PROJECT NUMBER 0125-001		RAC REMEDIAL ACTION CORPORATION				WELL NUMBER MW-3		FIGURE NO.		

116mw-3

LOG OF BORING (CONTINUED)

SHEET 5 of 6

ELEVATION (feet)	DEPTH (feet)	LAB TESTS	FIELD TESTS	WELL COMPLETION		SAMPLE TYPE	BLOW COUNTS/FT	SAMPLE NUMBER	GRAPHIC LOG	U.S.C.S. CLASSIFICATION	SOIL DESCRIPTION	TYPE and/or REMARKS
		TPH (mg/Kg)	HEADSPACE (ppmv)	GRAPHIC	DETAILS							
	00		0				100	3-20			- trace coarse sand	
	05		0				100	3-21				
	10		0				100	3-22			- brown, no coarse sand	
	15		0					3-23			- red-brown, some silt	
	20		0		2" dia SCH 40 PVC 0.020 slotted screen			3-24			- few gravel	
	25	CLIENT 1ST INTERSTATE BANK PROJECT NUMBER 0125-001					RAC REMEDIAL ACTION CORPORATION			WELL NUMBER MW-3	FIGURE NO.	

H6mw-3

LOG OF BORING (CONTINUED)

SHEET 6 of 6

ELEVATION (feet)	DEPTH (feet)	LAB TESTS	FIELD TESTS	WELL COMPLETION		SAMPLE TYPE	BLOW COUNTS/FT	SAMPLE NUMBER	GRAPHIC LOG	U.S.C.S. CLASSIFICATION	SOIL DESCRIPTION	TYPE and/or REMARKS
		TPH (mg/Kg)	HEADSPACE (ppmv)	GRAPHIC	DETAILS							
	25		0					3-25			- no gravel	
	30											
	35				Slough							
											Total depth 135 ft.	
		CLIENT 1ST INTERSTATE BANK PROJECT NUMBER 0125-001					RAC REMEDIAL ACTION CORPORATION			WELL NUMBER MW-3	FIGURE NO.	

HGMW-3

PROJECT: HG-20

Highgrove Sanitary Landfill HG-20

Page 1 OF 2

LOCATION: Highgrove Landfill

BORING DATE: 10/4/00

DATUM: GROUND SURFACE

DIP:

LOGGED: Anna Perez

DEPTH SCALE		BORING METHOD	SOIL PROFILE		Sample				Concentration				HG-20
METRES	FEET		DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (ft)	Color	Moisture %	Consistency	Time	LEL %	O2	H2S	
0	0	West Hazmat Drilling: Air Rotary with Percussion Hammering with a tri-cone rotary bit	GROUND SURFACE		0								
1	2												
1	4		(Began w/ steel conductor) Sandstone-fine to med grained, minor silts and v. cns sands; moderately sorted color: brown 5/4 7.5 yr, moisture % slightly moist; consistency mod. density Remark: Erosion from run-off might be a problem in a wet winter			brwn	s.m.	m.d.	0858	■	●		
2	6												
2	8												
3	10				10								
4	12												
4	14		Sandstone - fine grained; minor cns/crs grains (sub-angular to angular), moderately sorted Color: brown 5/4 7.5 yr, moisture %: slightly moist; Consistency: mod. density Open hole at 20 feet			brwn	s.m.	m.d.	0909	■	●		
5	16												
6	18												
6	20				20								
7	22												
7	24		Same as @ 20 but with color change Color: 2.54Yr light olive brown 5/4			brwn	s.m.	m.d.	0916	■	●		
8	26												
8	28												
9	30												
10	32	@ 33 feet - driller brought a sample of fine to gravelly sand. Color: Olive yellow 6/8 (possibly decomposing granite) 2.54Yr Slightly more moist		30	obwn	s.m.	m.d.						
10	34			33									
11	36	Sandstone - finer to medium grained (looked like a beach sand - almost salt and pepper); brown d.g. (~up to 1 cm); moderately sorted. Color: 6/3 light yellowish brown 2.54			lyb	s.m.	m.d.	0936	■	●			
12	38												
12	40			40									
13	42	Sandstone - finer to medium grained (looked like a beach sand - almost salt and pepper); minor d.g. (~up to 1 cm); moderately sorted. Color: 6/3 light yellowish brown 2.54			lyb	s.m.	m.d.	0936	■	●			
13	44												
14	46	45 feet hit bedrock or large boulder. Stopped drilling @ 47 feet - began again		45									
14	48			47									
15	50	Bedrock - granodiorite											

STICKUP 0ft to 3.00ft

GROUT 6.00ft to 33.00ft

BENTONITE 33.00ft to 38.00ft

SAND 38.00ft to 40.00ft

SZ 44.40ft, 10/4/00

SAND 40.00ft to 55.00ft
SCREEN 40.00ft to 55.00ft

Continued on next page

DRAWN: Panda Workman

Riverside County Waste Management Department

CHECKED:

PROJECT: HG-20

Highgrove Sanitary Landfill HG-20

Page 2 of 2

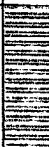
LOCATION: Highgrove Landfill

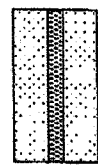
BORING DATE: 10/4/00

DATUM: GROUND SURFACE


BIP:

LOGGED: Anne Perez

DEPTH SCALE		BORING METHOD	SOIL PROFILE		Samples			Concentration		HG-20		
METRES	FEET		DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (ft)	Cellar	Moisture %	Consistency	Time		LEL %	O ₂
16	52	West Hazmat Drilling: Air Rotary with Percussion Hammering with a tri-cone rotary bit	Wet Zone (52 ft) - alluvium (dg) Stopped at 55 ft (Can hear water dripping in borehole @ 10.15 am, but water would not register on Solinst)		50							
17	54											
	56		END OF EXPLORATION @ 55.00 ft		55.00							
18	58											
	60											
19	62											
	64											
20	66											
	68											
21	70											
22	72											
	74											
23	76											
	78											
24	80											
	82											
25	84											
	86											
26	88											
	90											
27	92											
	94											
28	96											
	98											
29	100											



END OF EXPLORATION



DRAWN: Panda Workman

Riverside County Waste Management Department

CHECKED:

PROJECT: HG-21

LOCATION: Highgrove Landfill

Page 1 OF 3

BORING DATE: October 3, 2000

DATUM: GROUND SURFACE

DIP:

LOGGED: Anne Perez

DEPTH SCALE		BORING METHOD	SOIL PROFILE		Samples			Concentration		HG-21	
METRES	FEET		DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (ft)	Color	Moisture %	Consistency	Time		LEL %
										02	
										H2S	
										0 20 40 60 80 100	
0		West Hazmat Air Rotary with Percussion Hammering with a tri-cone rotary bit	GROUND SURFACE		0						
2			(Began w/ steel conductor casing) Sandstone-medium to coarse sand, minor fines/silt, poorly sorted, minor gravel (~1 cm avg). Color: 7.5 yr Brown 5/4 Moisture % slightly moist Consistency: mod density		0	brwn	s.m.	m.d.	0847	■	●
4											
6											
8											
10			Gravelly Sandstone - v. coarse to coarse sand to gravelly, minor, poorly sorted; gravels are ~1 cm avg. (Gravel is possible decomposed granite). Color: 7.5 yr Brown 5/4, Moisture % slightly moist Consistency: mod density		10	brwn	s.m.	m.d.	0800	■	●
12											
14											
16											
18			Sandstone - same as @ 10 feet. Color 10 yr 5/8 yellowish brown, Moisture % slightly moist Consistency: mod density		20	ybrn	s.m.	m.d.	0912	■	●
22											
24											
26											
28			Sandstone - fine to med gr, moderately sorted; minor v. coarse to gravels. Color 7.5 yr 5/4 Brown, Moisture % slightly moist Consistency: mod density		30	brwn	s.m.	m.d.	0927	■	●
32											
34											
36											
38		Gravelly Sandstone - same as @ 20 feet. Color: Brown 5/8; Moisture % slightly moist Consistency: mod density		40	brwn	s.m.	m.d.	0942	■	●	
42											
44											
46											
48											
50											

Continued on next page

STICKUP Off to 3,00ft

GROUT 0.00ft TO 82.00ft

DRAWN: Panda Workman

Riverside County Waste Management Department

CHECKED:

PROJECT: HG-21

LOCATION: Highgrove Landfill

Page 2 of 3

BORING DATE: October 3, 2000

DATUM: GROUND SURFACE

DIP:

LOGGED: Anne Perez

DEPTH SCALE		BORING METHOD	SOIL PROFILE		Samples				Concentration				HG-21
METRES	FEET		DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (ft)	Color	Moisture %	Consistency	Time	LEL %	O2	H2S	
50		West Hazmet Air Rotary with Percussion Hammering with a tri-cone rotary bit											
52													
54													
56			Sandstone - fine to medium, minor v. crs ~1/2 cm gravels, moderately sorted. Color brown 5/8, Moisture % slightly moist, Consistency mod density		50	brwn	s.m	m.d.	1004	■	●		
58													
60													
62													
64													
66													
68													
70													
72													
74													
76			Sandstone - fine to med; moderately sorted, minor v. crs grains. Color: brown 5/8, Moisture % slightly moist, Consistency mod density		70	brwn	s.m.	m.d.	1035	■	●		
78													
80													
82													
84													
86			Sandstone - fine to v. crs grained poorly sorted Color Brown 5/8, Moisture %: moist At 80 feet the driller switched to open hole drilling		80	brwn	mois		1047	◆	●		
88													
90													
92													
94													
96			Sandstone - crs to v. crs to gravelly; very minor fines; moderately sorted Moisture % moist to wet.		80		m.w.		1052	◆	●		
98													
100													

Continued on next page

BENTONITE 82.00ft TO 87.00ft
 SAND PACK 87.00ft TO 90.00ft
 SAND PACK 90.00ft TO 105.00ft
 SCREEN 90.00ft TO 105.00ft
 SZ 95.90ft, 10/3/00

PROJECT: NG-21

LOCATION: Highgrove Landfill

Page 3 OF 3


BORING DATE: October 3, 2000

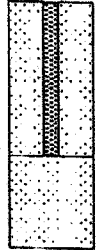
DATUM: GROUND SURFACE

DIP:

LOGGED: Anne Perez

DEPTH SCALE		BORING METHOD	SOIL PROFILE		Samples				Concentration		HG-21
METRES	FEET		DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (ft)	Color	Moisture %	Consistency	Time	LEL % O2 H2S	
	100	West Hazmat Air Rotary with Percussion Hammering with a tri-cone relay bit									
31	102				100						
32	104	Decomposing Granite. Hit groundwater at 104 feet. Bottom of well 108 feet			wet			1100	◆	●	
33	106										
	108	END OF EXPLORATION @ 108.00ft		108.00							
34	110										
35	112										
36	114										
37	116										
38	118										
39	120										
40	122										
41	124										
42	126										
43	128										
44	130										
45	132										
	134										
	136										
	138										
	140										
	142										
	144										
	146										
	148										
	150										





SAND PACK 105.00ft TO 108.00ft

END OF EXPLORATION

DRAWN: Panda Workman

Riverside County Waste Management Department

CHECKED:

FIELD LOG OF BORING NO. HG-1SHEET NO. 1 of 5

PROJECT NO. 86-41-418-01-04 DATE(S) 9/22/87 ELEVATION _____
PROJECT NAME Riverside County SWAT - Highgrove REFERENCE _____
FIELD ENGINEER Scott Heule LOCATION _____
ASSISTANT _____ WATER LEVEL _____ AFTER _____ MIN/HOURS
DRILLING CO Datum Exploration TIME 0845 1915
DRILLING METHOD & DIAM SS-16 w/10" Casing hammer SETUP START STOP
DRIVING WEIGHT _____ AVERAGE DROP _____

INCH VALUE (8-P-11)	SAMPLE NO. BULL AND RANGE	DEPTH	BLOWS PER LENGTH - IN.	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	GROUP SYMBOL	PERCENT GRAY SAND-FINES	REMARKS
0										
2										Adding water to air injection
4										
6	HG-1 5'					Brn.	Sand, silty w/ some landfill debris.	SM		
8										Oaf
10	HG-1 10'					Gry. Grn.	Sand, silty, fine to v. crs. grained decomposed granitics			Decomposed Granitics
12										
14										
16	HG-1 15'					Gry. Grn.	Decomposed granitics, micaceous			
18										
20	HG-1 20'					Gry. Grn.	Decomposed granitics, med. to fine grained, micaceous.			Begin drill open hole @ 20'.
22										
24										
26										
28										
30						Gry. Grn.	Decomposed granitics, fine to med. grained, micaceous.			
32										
34							@ 34', becomes denser, less weathered cuttings begin to be mostly lithic fragments.			
36										
38										
40										

FIELD LOG OF BORING NO. HG-1SHEET NO. 2 of 5

PROJECT NO. 86-41-418-01-04 DATE(B) 9/22/87 ELEVATION _____
PROJECT NAME Riverside County SWAT - Highgrove REFERENCE _____
FIELD ENGINEER Scott Heule LOCATION _____
ASSISTANT _____ WATER LEVEL _____ AFTER _____ MIN/HOURS
DRILLING CD Datum Exploration TIME _____ SETUP _____ START _____ STOP _____
DRILLING METHOD & DIAM SS-16, 10" to 55', 55' to TD 6" DRIVING WEIGHT _____ AVERAGE DROP _____

"N" VALUE (P.F.)	SAMPLE NO. BULK AND RANGE	DEPTH	BLOWS PER LENGTH, IN.	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	GROUP SYMBOL	PERCENT GRAY SAND/FINES	REMARKS
40	HG-1 40'					Blk., Wht., Org.	Weathered bedrock, granitics, dense			
42							V. Dense			
44							Bedrock, granitics, poorly to un- weathered.			
46										
48							@ 49' easier drilling			
50	HG-1 50'					Blk. & Wht.	granitics			
52							Harder drilling			
54							Easier drilling			
56							@ 55' harder, end 10" hole. Start 6" hole, 6" casing driven to 56'			
58										
60	HG-1 60'					Blk. & Wht.	Granitics, v. occ. Fe stained, med. grained.			
62										
64										
66										
68										
70	HG-1 70'									
72										
74										
76										
78										
80	HG-1 80'						No apparent fracs. this joint.			

FIELD LOG OF BORING NO. HG-1SHEET NO. 3 of 5

PROJECT NO. 86-41-418-01-04 DATE(S) 9/24/87 ELEVATION _____
PROJECT NAME Riverside County SWAT - Highgrove REFERENCE _____
FIELD ENGINEER Scott Heule LOCATION _____
ASSISTANT _____ WATER LEVEL _____ AFTER _____ MIN/HOURS
DRILLING CO. Datum Exploration TIME _____ SETUP _____ START _____ STOP _____
DRILLING METHOD & DIAM SS-16, downhole hammer 6" DRIVING WEIGHT _____ AVERAGE DROP _____

IN. VALUE (6.71) SAMPLE NO. BULK AND RANGE CONE	DEPTH	BLOWS PER LENGTH IN.	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	GROUP SYMBOL	PERCENT GRAY SAND-FINES	REMARKS
	80								
	82								6" hole dry to at least 60', 10" hole SWL = 21.5' 9/24/87 0815 hrs. hole dry @ 0842.
	84								
	86								
	88								
	90				Blk. & Wht.	Granitics, v. minor Fe stains			
	92								
	94								
	96								
	98					@ 97.5-99' may have been slightly fractured.			
	100				Blk. & Wht.	Granitics, some Fe stained fragments.			Start of this rod, hole was not making water.
	102								
	104								
	106								
	108								
	110				Blk. Wht., Org.	Granitics, some fractures above this depth, Fe stained fragments.			
	112								
	114								
	116								
	118					@ 117.5' small fracture.			
	120				Blk./Wht. Yel/Org.	@ 119' small fracture, granitics w/ Fe stained fragments.			



WELL COMPLETION LOG OF BORING NO. HG-1

SHEET NO. 4 OF 5

PROJECT NO. 86-41-418-01-04 DATE(S) 9/24/87 ELEVATION _____
PROJECT NAME Riverside County SWAT - Highgrove REFERENCE _____
FIELD ENGINEER Scott Heule LOCATION _____
ASSISTANT _____ WATER LEVEL _____ AFTER _____ MIN/HOURS
DRILLING CO. Datum Exploration TIME _____ SETUP _____ START _____ STOP _____
DRILLING METHOD & DIAM. SS-16 6" down hole hammer DRIVING WEIGHT _____ AVERAGE DROP _____

DEPTH	LOG VALUE (SPT) BULK AND RANGE	SAMPLE NO. CORE	BLOWS PER LENGTH IN.	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	GROUP SYMBOL	PERCENT GRAV. SAND FINES	REMARKS
120										Hole not making measurable water.
122										
124							Fractured, fragments, Fe stained.			
126										
128										
130						Blk., Wht., Org.	Granitics, fractured, fragments Fe stained.			
132										
134										
136										
138										
140						Blk., Wht., Org.	Granitics, fractured, Fe stained.			
142										
144										
146										
148										
150						Blk., Wht., Org.	Granitics, broken, fractured, Fe stained.			
152										
154										
156										
158						Blk., Wht., Org.	Granitics, broken, fractured Fe stained.			
160										

PROJECT NO 86-41-418-01-04 DATE(S) 9/24/87 ELEVATION _____

PROJECT NAME Riverside County SWAT - Highgrove REFERENCE _____

FIELD ENGINEER Scott Heule LOCATION _____

ASSISTANT _____ WATER LEVEL _____ AFTER _____ MIN/HOURS _____

DRILLING CO. Datum Exploration TIME _____ SETUP _____ START _____ STOP _____

DRILLING METHOD & DIAM SS-16 6" downhole hammer DRIVING WEIGHT _____ AVERAGE DROP _____

[illegible]

FIELD LOG OF BORING NO. HG-2

SHEET NO. 1 of 1

PROJECT NO. 86-41-418-01-04

DATE(S) 8/10/87

ELEVATION 1300

PROJECT NAME Riverside County SWAT - Highgrove

REFERENCE W. side of landfill

FIELD ENGINEER Scott Heule

LOCATION

ASSISTANT

WATER LEVEL

AFTER

MIN./HOURS

DRILLING CO Datum Exploration

TIME 1000

1027

STOP

DRILLING METHOD & DIAM 8" HSA

DRYING WEIGHT

AVERAGE DROP

[illegible]

FIELD LOG OF BORING NO. HG-3SHEET NO. 1 of 3

PROJECT NO. 86-41-418-01-04 DATE(S) 9/28/87 ELEVATION _____
PROJECT NAME Riverside County SWAT - Highgrove REFERENCE _____
FIELD ENGINEER Scott Heule LOCATION near scales
ASSISTANT _____ WATER LEVEL _____ AFTER _____ MIN/HOURS
DRILLING CO Datum Exploration TIME 1024 1231
DRILLING METHOD & DIAM SS-16 w/10" casing hammer SETUP START STOP
DRIVING WEIGHT _____ AVERAGE DROP _____

DEPTH	W. VALUE (SPT) BOLT AND RANGE	CONC.	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	GROUP SYMBOL	PERCENT GRAY. SAND FINES	REMARKS
0									
2									
4									
6					Orng. Red Brn.	Sand, silty, well graded, micaceous	SM		
8									
10					Brn.	Sand, silty, micaceous, well graded	SM		
12									
14					Brn.	Sand, silty, micaceous, well graded.	SM		
16									
18									
20					Brn.	Sand, silty w/ gravel to 1/4" dia. micaceous	SM		
22									
24					Brn.	As above.			
26									
28									
30					Yel. Brn.	Sand, silty, some clay.	SM		
32									
34					Yel. Brn.	Sand, silty w/ granules	SM		
36									
38						@ 38', sand & gravel, little to no silt.	SP		
40									

FIELD LOG OF BORING NO. HG-3SHEET NO. 2 of 3

PROJECT NO. 86-41-418-01-04 DATE(S) 9/28/87 ELEVATION _____
PROJECT NAME Riverside County SWAT - Highgrove REFERENCE _____
FIELD ENGINEER Scott Heule LOCATION _____
ASSISTANT _____ WATER LEVEL _____ AFTER _____ MIN/HOURS
DRILLING CO. Datum Exploration TIME _____ SETUP _____ START _____ STOP _____
DRILLING METHOD & DIAM SS-16 10" Tricone Openhole DRIVING WEIGHT _____ AVERAGE DROP _____

IN" VALUE 5-1/2" SAMPLE NO BULK AND RANGE CORE	DEPTH	BLOWS PER LENGTH IN.	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	GROUP SYMBOL	PERCENT GRAY SAND-FINES	REMARKS
HG-3 40'					Tan	Sand, fine to med. grained.	SP		Begin adding injection wtr. & drilling open hole.
						@ 46.5' harder drilling, probably D.G. contact.			Non-Marine Terrace Deposits
									Bonsall Tonalite
HG-3 50'					Tan	Decomposed granitics, med. to crs. grained, micaceous.			
						slower drilling.			
					Tan	Decomposed granitics, micaceous.			1030 has SWL 40' below GS (TD = 60')
					Tan	Cuttings are granitics, w/ Fe staining v. hard, slow drilling, probably abundant small fractures.			@ 1128 drilling rate = 12'/hr. Hole is making water.
HG-3 70'					Tan	Granitics, Fe stained, fine to med. grained, probably abundant small fractures.			Rate = 12'/hr.
									Q=4-5 gpm as measured w/pail & stop watch @ 1200 hrs. SWL @ 0900 10/1/87 = 45'
HG-3 80'					Tan	Granitic, slt. Fe stain, med. to crs. grnd., probably abundant small fractur.			Casing @ 79'

FIELD LOG OF BORING NO. HG-3SHEET NO. 3 of 3

PROJECT NO. 86-41-418-01-04 DATE(S) 10/1/87 ELEVATION _____
PROJECT NAME Riverside County SWAT - Highgrove REFERENCE _____
FIELD ENGINEER Scott Heule, Greg Moss LOCATION _____
ASSISTANT _____ WATER LEVEL _____ AFTER _____ MIN/HOURS
DRILLING CO. Datum Exploration TIME 0900 1345
DRILLING METHOD & DIAM. SS-16 6" Air Hammer - Openhole SETUP START STOP
below 6" casing DRIVING WEIGHT _____ AVERAGE DROP _____

"N" VALUE (S.P.T.)	SAMPLE NO. BULK AND RANGE	DEPTH	BLOWS PER LENGTH, IN.	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	GROUP SYMBOL	PERCENT CLAY SAND-FINES	REMARKS
80										
82										begin drilling 6" down hole hammer, open hole
84										
86										
88										
90										
92										
94										
96										
98										
100										
102										
104										
106										
108										
110										
112										
114										
116										
118										
120										

FIELD LOG OF BORING NO. HL-1SHEET NO. 1 of 1

PROJECT NO. 86-41-418-01-04 DATE(S) 8/10/87 ELEVATION _____
PROJECT NAME Riverside County SWAT - Highgrove REFERENCE _____
FIELD ENGINEER Scott Heule LOCATION _____
ASSISTANT _____ WATER LEVEL _____ AFTER _____ MIN/HOURS
DRILLING CO. Datum Exploration TIME 1600 1619
SETUP START STOP
DRILLING METHOD & DIAM. 8" HSA DRIVING WEIGHT _____ AVERAGE DROP _____

DEPTH	W-T VALUE (S.F.)	SAMPLE NO. BULK AND RANGE	BLows PER LENGTH IN.	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	GROUP SYMBOL	$\frac{hNu}{E/O_2/H_2O}$	REMARKS
0										
2										
4										
5										
6										
8										
10										
12										
13										
14										
16										
18										
20										
22										
24										
26										
30										
32										
34										
36										
38										
40										

Canonie

Boring Log

PROJECT No. 93-289

BORING No. HG-11

LOGGED BY Kevin Betke

PROJECT NAME: Highgrove Landfill

BORING LOCATION: _____

SURFACE ELEV: _____

DRILLER: Garv. Layne Env.

DATE STARTED: 06/04/94

DATE FINISHED: 06/04/94

DEPTH (ft)	SAMPLE				BLOW COUNT			REC (in)	USCS CLASS	GRAPHIC LOG	WC (%)	Q _u (tsf)	LAYER DEPTH	SOIL DESCRIPTION AND REMARKS	PIEZO
	No.	TYPE	INTERVAL		0'	6'	12'								
			FROM	TO	6"	12"	18"								
45	5	Core	40	50				1					40	Decomposed granite, loose, chunks crumble easily between fingers. Musty odor, dry.	
50	6	Core	50	60				10						Decomposed granite. No fractures evident. Crumbles with moderate pressure, wet. Water encountered during 50-60 run, rose to 34 feet.	
55									DG						
60	7	Core	60	70				6						Decomposed granite, same as above.	
65															
70	8	Core	70	75				5					70	Harder penetration at 69 feet. Cracks with hammer, wet. Granite bedrock, cracks only with hammer, no fractures evident, interbedded mica flakes.	
75									GR						
80													75	Boring reamed to 75 feet bgs using 12-inch bit.	

Monitoring Well Detail

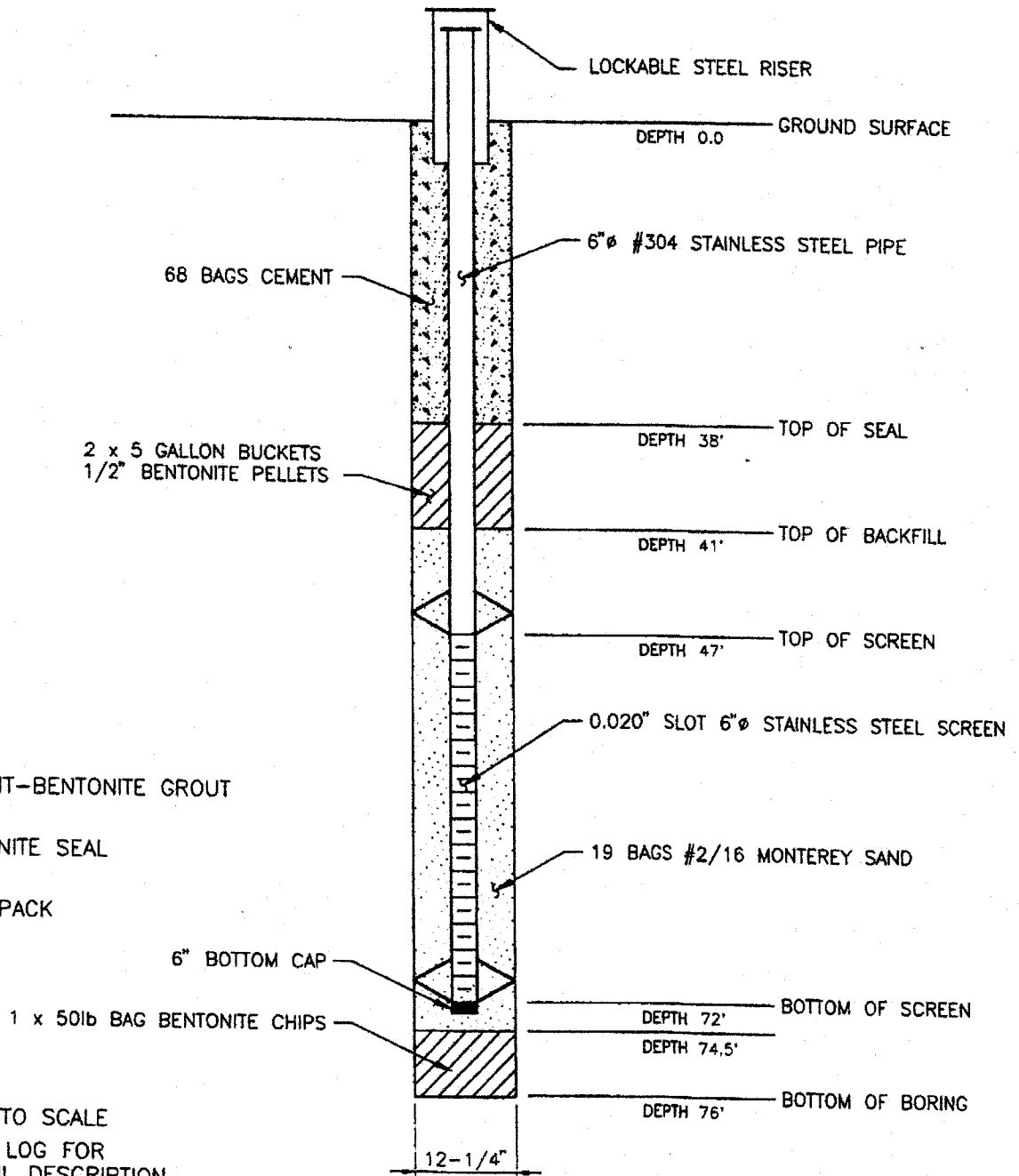
PROJECT No. 93-289

WELL No. HG-11

PROJECT NAME HIGHGROVE LANDFILL

WELL LOCATION

DATE 6-4-94 BY KJB



Boring Log

Canonie

PROJECT No. 93-289

BORING No. HG-12

LOGGED BY Kevin Betke

PROJECT NAME: Highgrove Landfill

BORING LOCATION:

SURFACE ELEV:

DRILLER: Gary Layne Env.

DATE STARTED: 06/02/94

DATE FINISHED: 06/03/94

DEPTH (ft)	SAMPLE				BLOW COUNT			REC (in)	USCS CLASS	GRAPHIC LOG	WC (%)	q _u (tsf)	LAYER DEPTH	SOIL DESCRIPTION AND REMARKS	PIEZO
	No.	TYPE	INTERVAL		0'	6'	12'								
			FROM	TO	6'	12'	18'								
5	1	Core	0	10				NR						Cuttings show light to medium brown silty sand, dry.	
10	2	Core	10	20				2						Reddish brown silty sand, trace gravel. Cementation evident, dry.	
20	3	Core	20	30				NR	SM					As Above	
30	4	Core	30	40				NR						Same as above. Darker brown with depth, unconsolidated.	
40	5	Core	40	50				3							

Boring Log

Canonie

PROJECT No. 93-289

BORING No. HG-12

LOGGED BY Kevin Betke

PROJECT NAME: Highgrove Landfill

BORING LOCATION: _____

SURFACE ELEV: _____

DRILLER: Gary Layne Env.

DATE STARTED: 06/02/94

DATE FINISHED: 06/03/94

DEPTH (ft)	SAMPLE				BLOW COUNT			REC (in)	USCS CLASS	GRAPHIC LOG	WC (%)	Q _v (tsf)	LAYER DEPTH	SOIL DESCRIPTION AND REMARKS	PIEZO
	No.	TYPE	INTERVAL		0'	6'	12'								
			FROM	TO	6"	12"	18"								
45	5	Core	40	50				3						Same as above. Moisture increasing with depth.	
50	6	Core	50	60				NR						Same as above.	
60	7	Core	60	70				NR	SM					Darker brown with depth, some gravel.	
70	8	Core	70	80				1						Medium brown silty sand, dry, unconsolidated.	
80	9	Core	80	90				8	SW				80		

Canonie

PROJECT No. 93-289
 BORING No. HG-12
 LOGGED BY Kevin Betke

PROJECT NAME: Highbrook Landfill

SURFACE ELEV: _____

BORING LOCATION: _____

DATE STARTED: 06/02/94

DATE FINISHED: 06/03/94

DRILLER: Gary Layne Env.

DEPTH (ft)	SAMPLE		BLOW COUNT			REC (in)	USCS CLASS	GRAPHIC LOG	WC (%)	Q _u (tsf)	LAYER DEPTH	SOIL DESCRIPTION AND REMARKS	PIEZO
	No.	TYPE	INTERVAL		0'	6'	12'						
			FROM	TO	6"	12"	18"						
80	9	Core	80	80				8				Gravelly sand, wet. Quartz, mica, granite evident.	
82								SW				Decomposed granite, crumbles easily, moist to wet. Water encountered during drilling at around 90 feet, rose in hole to 68'.	
85													
90	10	Core	90	100				1				As Above	
95								OG					
100	11	Core	100	110				10				Badly decomposed granite, wet. Driller indicates penetration very rapid 99-100 feet.	
102												Harder penetration, decomposed granite, fractures evident. Brown clay in fissures.	
105								GR				Granite bedrock, no fractures evident.	
110												Boring reamed to 110 feet with 12-inch bit.	
115													
120													

Canonie

Boring Log

PROJECT No. 93-289

BORING No. HG-13

LOGGED BY Kevin Betke

PROJECT NAME: Highgrove Landfill

BORING LOCATION: _____

SURFACE ELEV: _____

DRILLER: Gary Layne Env.

DATE STARTED: 05/31/94

DATE FINISHED: 06/01/94

DEPTH (ft)	SAMPLE		BLOW COUNT			REC (in)	USCS CLASS	GRAPHIC LOG	WC (%)	Q _u (tsf)	LAYER DEPTH	SOIL DESCRIPTION AND REMARKS	PIEZO
	No.	TYPE	INTERVAL	0"	6"	12"							
			FROM TO	6"	12"	18"							
1	1	Core	0 10				6	SW				Reddish brown sand, some gravel, dry.	
5													
10	2	Core	10 20				NR				8	Light brown fine to medium sand, dry.	
15													
20	3	Core	20 30				NR					As above, trace silt.	
25								SP					
30	4	Core	30 40				NR					As Above	
35													
40	5	Core	40 50				NR	SW			40		

Canonie

BORING LOG

PROJECT No. 93-289

BORING No. HG-13

LOGGED BY Kevin Betke

PROJECT NAME: Highgrove Landfill

BORING LOCATION: _____

SURFACE ELEV: _____

DRILLER: Gary Layne Env.

DATE STARTED: 05/31/94

DATE FINISHED: 06/01/94

DEPTH (ft)	SAMPLE				BLOW COUNT			REC (in)	USCS CLASS	GRAPHIC LOG	WC (%)	Q _u (tsf)	LAYER DEPTH	SOIL DESCRIPTION AND REMARKS	PIEZO
	No.	TYPE	INTERVAL		0'	6'	12'								
			FROM	TO	6'	12'	18'								
40	5	Core	40	50				NR					40	Medium brown sand and gravel. Granite evident, dry.	
50	6	Core	50	60				NR						As Above	
60	7	Core	60	70				NR						As Above	
70	8	Core	70	80				NR							
75													75	Brown silty sand, unconsolidated. Decomposed granite, angular. Quartz and mica evident, dry.	
80	9	Core	80	90				2							

Canonie

Boring Log

PROJECT No. 93-289

BORING No. HG-13

LOGGED BY Kevin Betke

PROJECT NAME: Highgrove Landfill

BORING LOCATION: _____

SURFACE ELEV: _____

DRILLER: Gary Layne Env.

DATE STARTED: 05/31/94

DATE FINISHED: 06/01/94

DEPTH (ft)	SAMPLE				BLOW COUNT			REC (in)	USCS CLASS	GRAPHIC LOG	WC (%)	Q _u (tsf)	LAYER DEPTH	SOIL DESCRIPTION AND REMARKS	PIEZO
	No.	TYPE	INTERVAL		0'	6'	12'								
			FROM	TO	6'	12'	18'								
85	9	Core	80	90				2						As Above	
90	10	Core	90	100				1	SM					Grey sand and gravel, some silt. Quartz and mica evident.	
95															
100	11	Core	100	110				5	ML					99 100 Grey silt, some sand, trace gravel, wet. Water encountered during drilling at 99 feet, rose in hole to 87 feet.	
105									SW					Grey sand and gravel. Quartz and mica evident, wet.	
110	12	Core	110	120				10						105 Decomposed granite, solid sections show fractures with brown clay in fissures. Crumbles easily between fingers.	
115														As above. Biotite and Tonolite.	
120	13	Core	120	130				4	DG						

Canonie

BORING LOG

PROJECT No. 93-289

BORING No. HG-13

LOGGED BY Kevin Betke

PROJECT NAME: Highgrove Landfill

BORING LOCATION:

SURFACE ELEV:

DRILLER: Gary Layne Env.

DATE STARTED: 05/31/94

DATE FINISHED: 06/01/94

DEPTH (ft)	SAMPLE			BLOW COUNT			REC (in)	USCS CLASS	GRAPHIC LOG	WC (%)	Q _u (tsf)	LAYER DEPTH	SOIL DESCRIPTION AND REMARKS	PIEZO
	No.	TYPE	INTERVAL		0'	6'	12'							
			FROM	TO	6'	12'	18'							
125	13	Core	120	130				4					As above	
130	14	Core	130	140				10					Fractured granite, more solid, still shows fracturing.	
135													Granite bedrock; no fractures evident. Cracks with hammer only.	
140														
145													Boring cored with 5-inch bit to 140 feet, and reamed with a 12-inch bit to 144 feet.	
150														
155														
160														

Canonie

Boring Log

PROJECT No. 93-289

BORING No. HG-14

LOGGED BY Kevin Betke

PROJECT NAME: Highgrove Landfill

BORING LOCATION: _____

SURFACE ELEV: _____

DRILLER: Gary Layne Env.

DATE STARTED: 06/05/94

DATE FINISHED: 06/05/94

DEPTH (ft)	SAMPLE				BLOW COUNT			REC (in)	USCS CLASS	GRAPHIC LOG	WC (%)	Q _u (tsf)	LAYER DEPTH	SOIL DESCRIPTION AND REMARKS	PIEZO
	No.	TYPE	INTERVAL		0'	6'	12'								
			FROM	TO	6"	12"	18"								
1	1	Core	0	10				NR						Reddish brown silty sand, unconsolidated, dry.	
5															
10	2	Core	10	20				NR	SM					As above, trace gravel, color changes from brown to grey at 20 feet.	
15															
20	3	Core	20	30				NR					20	Medium brown sand, trace silt, dry to damp.	
25									SW						
30	4	Core	30	40				4	SP				30	Light grey fine to medium sand, trace silt, dry.	
35									SW				34	Reddish brown sand, trace silt, dry.	
40	5	Core	40	50				4	DG				36	Decomposed granite, quartz evident. Water encountered during drilling at 39.5 feet, rose to 30 feet.	

Canonie

Boring Log

PROJECT No. 93-289

BORING No. HG-14

LOGGED BY Kevin Belke

PROJECT NAME: Highgrove Landfill


BORING LOCATION: _____

SURFACE ELEV: _____

DRILLER: Gary Layne Env.

DATE STARTED: 06/05/94

DATE FINISHED: 06/05/94

DEPTH (ft)	SAMPLE			BLOW COUNT			REC (in)	USCS CLASS	GRAPHIC LOG	WC (%)	q _u (tsf)	LAYER DEPTH	SOIL DESCRIPTION AND REMARKS	
	No.	TYPE	INTERVAL		0'	6'								12'
			FROM	TO	6'	12'								18'
45	5	Core	40	50				4					As Above	
50	6	Core	50	55				4					Badly decomposed granite, no solid core.	
55	7	Core	55	58				2					Harder granite, fractures with brown clay in fissures.	
60	8	Core	58	62				3					As above, solid core in 4-inch sections, fractures evident.	
65	9	Core	62	72				8					As above. Cores break with moderate pressure.	
70														
75	10	Core	72	80				8						Fractured granite as above. Relatively solid, breaks with moderate pressure.
80														
85	11	Core	80	85				4						

Canonie

Boring Log

PROJECT No. 93-289

BORING No. HG-14

LOGGED BY Kevin Betke

PROJECT NAME: Highgrove Landfill

BORING LOCATION: _____

SURFACE ELEV: _____

DRILLER: Gary Layne Env.

DATE STARTED: 06/05/94

DATE FINISHED: 06/05/94

DEPTH (ft)	SAMPLE				BLOW COUNT			REC (in)	USCS CLASS	GRAPHIC LOG	WC (%)	Q _u (tsf)	LAYER DEPTH	SOIL DESCRIPTION AND REMARKS	PIEZO
	No.	TYPE	INTERVAL		0'	6'	12'								
			FROM	TO	8'	12'	18'								
85	11	Core	80	85				4						Grey and white fractured granite, rust coloring in fissures.	
90	12	Core	85	95				7						Decomposed layer, core is not solid, pieces crumble easily.	
95	13	Core	95	105				4						Harder layer, grey in color, fractures with rust coloring evident.	
100															
105	14	Core	105	110				4						Mildly decomposed granite. Core in 12-inch sections, light fracturing evident, brown clay in fissures. Grey in color.	
110														As above.	
115															
120														Boring cored to 110 feet with 5-inch bit, reamed to 80 feet with 12-inch bit.	

LOCATION OF BORING						SMITH Environmental Technologies Corporation				BORING NUMBER <u>HG-16</u>			
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> </div> <div> <p>● HG-16</p> <p>● HG-17</p> <p>● HG-11</p> <p>● HG-18</p> <p>● HG-19</p> </div> </div>						PROJECT NAME <u>CANONIE HIGHGROVE</u>				PROJECT NUMBER <u>4616-3009 (93-289)</u>			
						SITE ADDRESS <u>Highgrove Landfill</u>				DATE DRILLED <u>5/25/95</u>			
						CITY <u>Riverside, County</u>				DRILLING COMPANY <u>Layne Environmental</u>			
						SURFACE ELEVATION _____				DRILLING METHOD <u>Air Rotary</u>			
						WATER DEPTH <u>72 Feet</u>				LOGGED BY <u>J. Hwang</u>			
TOTAL DEPTH <u>102 Feet</u>				CHECKED BY <u>J. Kosztowny</u>									
CHEMICALS (ppm)					PID (ppm)	DEPTH (feet)	SAMPLES	SAMPLE NO.	BLOWS/FT.	GRAPHIC LOG	SOIL CLASS	DESCRIPTION AND REMARKS	WELL DIAGRAM
TPH	B	T	E	X									
											SM	Surface Material, Silty SAND, olive brown, damp, fine grained sand.	
						5						Decomposed soil, dark gray, debris, wood, brick, trash odors, artificial fill.	
						10					AF	Rubber tire (pieces), wood, trash odors.	
						15							
						20							
						25						Solvent odors.	
						30						Silty SAND, olive brown, damp, fine to medium grained sand, no debris.	
						35					SM	Silty SAND, medium to coarse grained sand, damp.	
						40							
						45							
						50					SW	SAND, olive gray, moist, coarse grained sand, some gravel, well graded.	

DB NUMBER: 4616-3009

This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

CHEMICALS (ppm)					PID (ppm)	DEPTH (feet)	SAMPLES	SAMPLE NO.	BLOWS/FT.	GRAPHIC LOG	SOIL CLASS	DESCRIPTION AND REMARKS	WELL DIAGRAM
TPH	B	T	E	X									
						55					SW	Fine to medium grained sand.	
						60					SP	SAND, light olive gray, damp, fine grained, poorly graded.	
						65						SAND, light gray, dry, fine to medium grained.	
						70					SW	SAND, olive gray, damp, fine to coarse grained, well graded.	
						75					SP	SAND, light brownish gray, damp, fine grained, poorly graded. Wet, water at 72 feet.	
						80						Becomes gravelly at 73-75 feet, decomposed granite grains, light gray, dry, fine to coarse grained sand, biotite.	
						85					R	Decomposed granitic rock, light gray, wet, fractured, broken pieces, appears weathered, biotite.	
						90							
						95						Biotite granite.	
						100							
						105						Total depth = 102'. Will ream out to 12 inch hole before installing casing.	

LOCATION OF BORING						Environmental Technologies Corporation		BORING NUMBER <u>HG-17</u>	
<ul style="list-style-type: none"> • HG-16 ● HG-17 • HG-11 • HG-18 • HG-19 		PROJECT NAME <u>CANONIE HIGHGROVE</u>		PROJECT NUMBER <u>4616-3009 (93-289)</u>		SITE ADDRESS <u>Highgrove Landfill</u>		DATE DRILLED <u>5/23/95</u>	
CITY <u>Riverside, County</u>		SURFACE ELEVATION _____		DRILLING COMPANY <u>Layne Environmental</u>		DRILLING METHOD <u>Air Rotary</u>		WATER DEPTH <u>78 Feet</u>	
LOGGED BY <u>J. Hwang</u>		TOTAL DEPTH <u>100 Feet</u>		CHECKED BY <u>J. Kosztowny</u>					

CHEMICALS (ppm)					PID (ppm)	DEPTH (feet)	SAMPLES	SAMPLE NO.	BLOWS/FT.	GRAPHIC LOG	SOIL CLASS	DESCRIPTION AND REMARKS	WELL DIAGRAM
TPH	B	T	E	X									
						0					SM	Surface Material, Silty SAND, olive brown, damp, fine grained sand.	
						5						Gravels debris, wood, cloth, brick, odors, artificial fill.	
						10					AF	Decomposed soil, dark gray, debris, wood, brick, cloth, odor.	
						15						Decomposed soil, dark gray, debris, wood, cloth, rubber (tire), few metal pieces, odor.	
						20						Silty SAND, yellowish brown, damp, fine grained sand.	
						25							
						30					SM		
						35						Silty SAND, dark yellowish brown, damp, fine to medium grained sand, some coarse grained sand.	
						40							
						45							
						50					SW	SAND, light olive brown, damp, fine to medium grained, trace coarse grained sand.	

NUMBER: 4616-3009

This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

CHEMICALS (ppm)					PID (ppm)	DEPTH (feet)	SAMPLES	SAMPLE NO.	BLOWS/FT.	GRAPHIC LOG	SOIL CLASS	DESCRIPTION AND REMARKS	WELL DIAGRAM
TPH	B	T	E	X									
						55					SW	SAND, olive, damp, fine to coarse grained.	
						60					SP	SAND, olive, damp, fine grained.	
						65							
						70					SW	SAND, olive gray, damp, fine to coarse grained.	
						75					SP	SAND, olive gray, damp, fine grained, trace coarse grained sand.	
						80						Encountered decomposed granitic rock, olive gray, biotite, granular granite.	
						85						Wet, water at 80 feet. Decomposed granitic rock, light color, wet, fractured rock, weatherized, biotite.	
						90					R		
						95							
						100						Encountered biotite, granitic rock, hard.	
						105						Total depth = 100'. Will ream out to 12 inch hole before installing casing.	

LOCATION OF BORING					<div style="display: flex; align-items: center; justify-content: center;"> <div> <h1 style="margin: 0;">SMITH</h1> <p style="margin: 0;">Environmental Technologies Corporation</p> </div> </div>					BORING NUMBER			
<ul style="list-style-type: none"> • HG-16 • HG-17 • HG-11 ● HG-18 • HG-19 					PROJECT NAME <u>CANONIE HIGHGROVE</u> PROJECT NUMBER <u>4616-3009 (93-289)</u> SITE ADDRESS <u>Highgrove Landfill</u> DATE DRILLED <u>5/25/95</u> CITY <u>Riverside, County</u> DRILLING COMPANY <u>Layne Environmental</u> SURFACE ELEVATION _____ DRILLING METHOD <u>Air Rotary</u> WATER DEPTH <u>78 Feet</u> LOGGED BY <u>J. Hwong</u> TOTAL DEPTH <u>100 Feet</u> CHECKED BY <u>J. Kosztowny</u>					<u>HG-18</u>			
CHEMICALS (ppm)					PID (ppm)	DEPTH (feet)	SAMPLES	SAMPLE NO.	BLOWS/FT.	GRAPHIC LOG	SOIL CLASS	DESCRIPTION AND REMARKS	WELL DIAGRAM
TPH	B	T	E	X									
						0				SM	Surface Material, Silty SAND, olive brown, damp, fine grained sand.		
						5				AF	Decomposed soil, dark gray, debris, wood, brick, plastics, trash odors, artificial fill.		
						10					Wood, rubber (tire), brick, metal, odor.		
						15							
						20							
						25				SM	Silty SAND, light olive brown, damp, fine grained sand.		
						30					Silty SAND, yellowish brown, damp, fine to medium grained sand.		
						35					Silty SAND, dark yellowish brown, damp, fine sand, few medium grained sand.		
						40					Silty SAND, light olive brown, damp, fine to medium grained sand,		
						45				SW			
						50					SAND, grayish brown, damp, fine to coarse grained, poorly sorted.		

DB NUMBER: 4616-3009

This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.



Environmental Technologies Corporation

BORING NUMBER

HG-18

CHEMICALS (ppm)					PID (ppm)	DEPTH (feet)	SAMPLES	SAMPLE NO.	BLOWS/FT.	GRAPHIC LOG	SOIL CLASS	DESCRIPTION AND REMARKS	WELL DIAGRAM
TPH	B	T	E	X									
						55					SW		
						60					SP	SAND, light olive brown, damp, medium grained, well sorted.	
						65							
						70					SW	SAND, light gray, dry, fine to medium grained.	
						75						SAND, grayish brown, damp, fine to coarse grained, well graded.	
						80					SP	SAND, light brownish gray, damp, fine grained, poorly graded. Becomes gravelly at 73-75 feet, decomposed granite grains, light gray, dry, fine to coarse grained sand, biotite.	
						85					R	Wet, water at 78 feet.	
						90						Decomposed granitic rock, light gray, wet, fractured, broken pieces, weatherized rock, biotite.	
						95							
						100						Biotite granite.	
						105						Total depth = 100'. Will ream out to 12 inch hole before installing casing.	

NUMBER: 4616-3009

This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Page 2 of 2

CHEMICALS (ppm)					PID (ppm)	DEPTH (feet)	SAMPLES	SAMPLE NO.	BLOWS/FT.	GRAPHIC LOG	SOIL CLASS	DESCRIPTION AND REMARKS	WELL DIAGRAM
TPH	B	T	E	X									
						55					SM		
						60							
						65					SW	SAND, light brownish gray, dry, well graded, fine to coarse grained, micaceous (lots of dust).	
						70						Dusts indicates getting into rotten granite grus.	
						75						Becomes gravelly at 73-75 feet, decomposed granite grains.	
						80						Slightly slower drilling, still dusting at 80 feet, switch over to core barrel. Water coming in cyclone at 80 feet, moisture on pipe may indicate water depth at approximately 60 feet.	
						85					R	Biotope granite, minor mafics (hornblende)	
						90						No core recovery 90-95 feet. Switch core bits.	
						95							
						100							
						105						Total depth = 100'. Will ream out to 12 inch hole before installing casing. Boulders caving in from 15-20 feet. Could not set casing. Attempt drilling out boulders with 14 1/2 inch bit ended up sidetracking hole. (Boulders and wood kicked out drillstring) Need to abandon hole and drill twin.	

LOCATION OF BORING						SMITH Environmental Technologies Corporation				BORING NUMBER <u>HG-19</u>		
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> </div> <div> <ul style="list-style-type: none"> • HG-16 • HG-17 • HG-11 • HG-18 ● HG-19 </div> </div>						PROJECT NAME <u>CANONIE HIGHGROVE</u>				PROJECT NUMBER <u>4616-3009 (93-289)</u>		
						SITE ADDRESS <u>Highgrove Landfill</u>				DATE DRILLED <u>5/30/95</u>		
CITY <u>Riverside, County</u>				DRILLING COMPANY <u>Layne Environmental</u>								
SURFACE ELEVATION _____				DRILLING METHOD <u>Air Rotary</u>								
WATER DEPTH _____				LOGGED BY <u>J. Kosztowny</u>								
TOTAL DEPTH <u>100 Feet</u>				CHECKED BY <u>J. Kosztowny</u>								
CHEMICALS (ppm)					DEPTH (feet)	SAMPLES	SAMPLE NO.	BLOWS/FT.	GRAPHIC LOG	SOIL CLASS	DESCRIPTION AND REMARKS	WELL DIAGRAM
TPH	B	T	E	X								
					5				SM	Surface Material, Silty SAND, dark grayish brown, dry, sand is fine to coarse grained, wood and organic debris, no odors.		
					10					Some concrete debris.		
					15					Boulders and wood from 15'-20'.		
					20				SW	SAND with gravel, light gray, fine to coarse grained, subangular to subrounded, dry, occasional concrete debris.		
					25							
					30				SM	Silty SAND, very dark grayish brown, fine grained sand, no odors.		
					35					Color changes to olive brown at 35 feet.		
					40				SP	SAND, dark brown, dry, fine to medium grained.		
					45				SM	Silty SAND, dark yellowish brown, fine grained sand, dry to damp.		
					50					SAND is very fine to fine grained, micaceous at 50 to 55 feet.		

NUMBER: 4616-3009

This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.