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March 3, 2011

VIA HAND DELIVERY

Jack Miller, Director
San Diego Local Enforcement Agency
5500 Overland Drive, Suite 110
San Diego, CA 92123

Re: Request For a Hearing on the Solid Waste Facility Permit Application for the Proposed Gregory Canyon Landfill

Dear Mr. Miller:

Pursuant to Public Resources Code sections 44307 and 44310(a)(1)(B), on behalf of our client, the Pala Band of Mission Indians, we hereby request that the Solid Waste Hearing Panel for the San Diego County Local Enforcement Agency hold a hearing to review the LEA's decision of February 1, 2011, that the solid waste facility permit application submitted by Gregory Canyon Ltd. ("GCL") for the proposed Gregory Canyon landfill was complete and correct. Enclosed with this request for a hearing is a Statement of Issues which identifies the deficiencies in that permit application.

As required by state law, within 15 days of this request please provide us with written notice of the date, time, and place of the hearing. Because state law requires that the hearing be held within 30 days of this request, your prompt attention to this matter is required.

Sincerely,

Walter E. Rusinek

Enclosure

cc: List of CCs on next page

cc: Robert H. Smith, Chairman, Pala Band of Mission Indians
Ms. Shasta Gaughen, Director, Pala Environmental Services
San Diego County Board of Supervisors
Mr. Jim Wood, Mayor, City of Oceanside
Mr. Spencer MacNeil, U.S. Army Corps of Engineers
Mr. Jared Blumenfeld, USEPA, Region IX
Ms. Michelle Moreno, U.S. Fish & Wildlife Service
Mr. Mark Leary, CalRecycle
Mr. David Gibson, Regional Water Quality Control Board
Mr. Stephen Moore, San Diego County Air Pollution Control District
Ms. Maureen Stapelton, San Diego County Water Authority
Damon Nagami, Esq., NRDC
Pamela Epstein, Esq., Sierra Club
Ms. Laura Hunter, Environmental Health Coalition
Johnny Pappas, Surfrider Foundation
Everett L. DeLano III, Esq.

STATEMENT OF THE ISSUES

Pursuant to Public Resources Code Section 44310(a)(1), the Pala Band of Mission Indians hereby provides the following Statement of Issues identifying why the LEA has failed to act as required by law or regulation and why this panel should direct the LEA to rescind its determination that the solid waste facility permit application ("SWFPA") for the proposed Gregory Canyon landfill was not complete and correct as required by law..

I. The LEA's Past Actions on the Solid Waste Facility Permit

This is yet another example of the failure of the LEA to act in accordance with the law. Briefly, in 2004, the LEA issued a solid waste facility permit for the proposed landfill. That action was rescinded by the LEA in February of 2006 in response to a writ of mandate issued by the San Diego Superior Court. The Court issued that order after finding that the Final Environmental Impact Report ("FEIR") prepared by the LEA was inadequate.

Even though the Court ordered the LEA to rescind the permit, the LEA continued to treat the permit as if it was still in existence and accepted an application from Gregory Canyon Ltd. ("GCL") to modify the permit. The LEA's action triggered yet another lawsuit, and in June of 2010, the Superior Court confirmed that there was no existing permit. The Court rejected the LEA's reliance on a "hypertechnical , and out-of-context, reading of a portion of the writ of mandate" to support its claim that the permit still existed.

In response, on June 24, 2010, GCL submitted a new permit application. Although the application was inadequate on its face, the LEA concluded it was complete and correct on July 23, 2010. But, in response to comments provided by the Pala Band dated July 29, 2010, pointing out the clear inadequacies of the application, GCL requested that the LEA rescind its "completeness" determination, which it did on August 5, 2011. Again, the LEA did not make that decision on its own but merely responded to GCL's request. That same day, GCL filed a new permit application designated as "incomplete." The allegedly complete application at issue here was submitted on January 26, 2011.

II. Legal Standards for a Complete and Correct SWFPA

The CalRecycle rules specify what information must be included in an SWFPA for it to be deemed "complete and correct." (27 C.C.R. § 21570(e) (attached as Exhibit A).) The rules list the specific, but *minimum*, information that must be contained in the SWFPA. In relevant part, an SWFPA must include

(1) a determination by the LEA, the Regional Water Quality Control Board ("RWQCB"), and CalRecycle that the preliminary closure and post-closure plan for the facility is complete;

(2) evidence of compliance with the California Environmental Quality Act ("CEQA"); and

(3) a "complete and correct" Report of Disposal Site Information in the form of a Joint Technical Document ("JTD").

The CalRecycle rules define the term "complete" as meaning that "all requirements placed upon the operation of the solid waste facility by statute, regulation, and other agencies with jurisdiction have been addressed in the application package." (27 C.C.R. § 21563(d)(1) (emphasis added).) The rules define the term "correct" as requiring that "all information provided by the applicant regarding the solid waste facility must be accurate, exact, and must fully describe the parameters of the solid waste facility." (27 C.C.R. § 21563(d)(2).)

The rules also require that information in a SWFPA must be "supplied in adequate detail to permit thorough evaluation of the environmental effects of the facility and to permit estimation of the likelihood that the facility will be able to conform to the standards over the useful economic life of the facility." (27 C.C.R. §§ 21570(d).) Finally, the rules are clear that a complete and correct application "shall include, but not necessarily be limited to" the information listed in the rule. (*Id.* § 21570(f).)

These definitions demand that a "complete and correct" permit application contain a rigorous level of detail that this SWFPA sorely lacks. Because the rules state that the minimum required information may not be sufficient, a determination as to whether a SWFPA is "complete and correct" must be based on site-specific factors. In this case, significant detail is necessary because, the landfill is proposed to be located in a steep canyon that flows into the San Luis Rey River, and would be above fractured bedrock that the San Diego Regional Water Quality Control Board admits makes it "difficult to detect, delineate, and remediate" contamination leaking from the proposed site and that is interconnected with down-gradient alluvial aquifers which provide drinking water for individuals and municipalities, including the City of Oceanside.

Because the Gregory Canyon site is a uniquely complex project site, the lack of detail in the SWFPA and the JTD is another reason why the SWFPA is not complete and correct.

III. The SWFPA Was Not Complete and Correct

A. The SWFPA Did Not Provide Evidence That the Preliminary Closure/Post-Closure Maintenance Plan ("PCPCMP") Has Been Approved by the Regional Board and CalRecycle.

As noted above, the CalRecycle rules require that a complete and correct application include a determination by the LEA, the Regional Water Quality Control Board ("RWQCB"), and CalRecycle that the PCPCMP for a facility is complete. GCL addressed this issue in a cover letter from Bryan Stirrat dated January 13, 2011, by stating that the "PCPCMP is submitted as an integral part of the JTD and this SWFP application for your review and approval in accordance with 27 CCR, Section 21860." (*See* Exhibit B at pg. 3).

But that claim is not sufficient to comply with the CalRecycle rules governing the application process. Those rules explicitly state that for a disposal site such as the proposed landfill, a complete and correct application shall include a:

> *. . . completeness determination of Preliminary or Final Closure/Postclosure Maintenance Plan as specified in §§ 21780, 21865, and 21890 (Subchapter 4 of this Chapter); and [Note: The operator has the option of submitting the*

preliminary closure plan with the JTD, in which case the EA, RWQCB, and CalRecycle would review it at the same time. If deemed complete by the reviewing agencies, the permit application package could then be accepted for filing if all the other information in the JTD is accepted by the EA. . . .

(27 C.C.R. § 21570(f)(6) (italics in original, underline added).)

While this rule requires that the PCPCMP be approved by the Regional Board and by CalRecycle before the LEA can accept the application, GCL's statement quoted above does not indicate that such approval has occurred. GCL merely refers to Section 21860, which applies to final closure plans.

Given this clear violation of CalRecycle rules, the LEA should not have accepted the permit application package for filing, and the SWFPA was not complete and correct. The approval of the SWFPA as being complete and correct must be rescinded and the application not processed until this requirement is satisfied.

B. The Permit Application Erroneously Claims That There Has Been Compliance with the California Environmental Quality Act ("CEQA").

The claim in the application that there has been compliance with CEQA also is wrong. The discretionary action before the LEA is the consideration of a new solid waste facility permit, or in CEQA terms, consideration of an application for a new "project." Although this is a new project, the last public-comment period for most portions of the FEIR ended in 2001, nearly 10 years ago, and the public-comment period for the Revised FEIR closed in the summer of 2006, nearly five years ago.

In the interim, the County issued three Addendums, which it did not circulate for public comment. We provided comments on the December 2009 Addendum to the LEA identifying the inadequacies in that Addendum, and requesting the opportunity for wider public comment, which was denied. The failure of the LEA to circulate the Addendum for public comment violated CEQA.

In addition, as pointed out in our comments on the Addendum, the LEA has violated CEQA by refusing to analyze the significant impacts that the proposed landfill would have on the environment due to the emission of greenhouse gases ("GHGs"). Data generated by GCL for show that GHG emissions after the first year of operations would be approximately 50,000 tons CO_2 equivalent ("CO_2e")[1] and that by the end of the assumed disposal period, those emissions would rise to 893,709 tons. (*See* Exhibit C).[2]

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[1] The United States Environmental Protection Agency ("EPA") has identified methane as being 21 times more potent GHG than carbon dioxide, methane emissions and it must be multiplied by that factor to calculate the CO_2e.

[2] The data are from Appendix J of the "Updated Air Quality Impact Analysis and Health Risk Assessment for the Proposed Gregory Canyon Landfill" dated September 14, 2010. That report is incorporated here by reference and a copy of the entire report can be provided upon request.

Critically, the data show that, even 66 years after the assumed end of operations in 2100, annual emissions of GHGs would still be 238,741 tons of CO_2e. Those GHG emissions would continue indefinitely long after any emissions controls are still operating.

These facts show that the LEA must analyze the direct and cumulative impacts of these emissions under CEQA. In 2010, the CEQA Guidelines were revised by the California Natural Resources Agency to confirm the need to analyze GHG-related impacts under CEQA. CEQA Guidelines Section 15064.4 identifies requirements for determining whether a project would cause significant impacts due to GHG emissions, new CEQA Guidelines Section 15126.4(c) addresses mitigation measures for GHG emissions, and Section 15130 discusses how the cumulative impacts of a project's GHG emissions must be assessed.

Given these significant emissions and the changes to the CEQA Guidelines, a subsequent or supplemental EIR must be prepared. (*Napa Citizens for Honest Government v. Napa County Board of Supervisors* (2001) 91 Cal.App.4th 342, 384-84.) The fact that the original FEIR was certified nine years ago makes the need for review of the impacts of GHG emissions even more critical. (*Save Tara v. City of West Hollywood* (2008) 45 Cal.4th 116, 143 (two-year delay after certification raised issue of need for subsequent or supplemental EIR).) Until this analysis is completed, there has no been compliance with CEQA.

C. GCL Has Not Shown That it Has Properly Protected the First San Diego Aqueduct to the Satisfaction of the San Diego County Water Authority.

One of the critical problems with the site for the proposed landfill is that the First San Diego Aqueduct pipelines, which supply critical imported water to San Diego County, run under the San Luis Rey River and through the site along the eastern edge of the proposed landfill footprint and through proposed Borrow Area B. (Exhibit D.) One of the critical problems with the SWFPA is that is does not address the protection of these pipelines as required by Proposition C.

Section D.5.5 of the JTD entitled "Aqueduct Relocation Option" (which is included with all other cited sections of the JTD as Exhibit E) previously stated that the First San Diego Aqueduct was "planned to be relocated" to the west away from the landfill footprint. But that section of the JTD now states that it is "possible" that the aqueduct "may be relocated further west of the landfill footprint." The issue is important because, in its current location, the pipelines could be impacted by the construction of the bridge, which could increase scour and impact the pipeline buried under the river, by the fact that all trucks entering and leaving the facility or accessing the borrow areas for dirt would have to drive over the pipelines, and by the blasting would be required to remove bedrock during construction.

Proposition C explicitly stated that the "Project will include work required to protect any San Diego Aqueduct pipelines to the extent and in the manner required by the San Diego County Water Authority." Proposition C defined the term "Project" as being the proposed landfill described in the initiative and any modifications included in a site plan submitted to the LEA "as part of the solid waste facilities permit." Based on that language, the issue of how the aqueduct would be protected to the satisfaction of the County Water Authority must be resolved before the SWFP can be issued by the LEA and sent to CalRecycle.

But as the attached letters from the County Water Authority show, it repeatedly has raised concerns regarding impacts of the proposed project on the aqueduct, and GCL has failed to address those concerns. (Exhibit E.) Consequently, the County Water Authority's August 12, 2010, letter stated that the LEA should not issue the permit and forward it to CalRecycle "until there is an executed agreement between the Water Authority and Gregory Canyon Ltd. (or their successors in interest) regarding the protection of the San Diego Aqueduct pipelines and facilities." Given this situation, this panel should direct the LEA to rescind its determination that the SWFPA was complete and correct and require resolution of this issue before the permit can be sent to CalRecycle.

D. The JTD Does Not Provide Sufficient Information to Be Considered Complete and Correct.

The SWFPA also was not complete and correct because other section of the JTD did not include information in sufficient detail for a project of this complexity and sensitivity. Some of the deficient sections are discussed below. The relevant sections of the JTD are attached as Exhibit F.

Section B.4.4.4 – Inclement Weather Operations

The JTD fails to discuss contingencies if access to the landfill is precluded by high water in the San Luis Rey River for a period of time or if the bridge is damaged by a 100-year flood or greater, given that JTD acknowledges that a 100-year flood would only a 18 inches below the bridge. Even assuming that those calculations are correct (and that the level of the water will not actually be higher), the JTD should provide contingency measures describing when the access road and bridge would be closed for safety purposes, and describing what would occur if a larger storm event damaged the bridge. The JTD fails to address the risks created by building a landfill that can only be accessed by a bridge over the San Luis Rey River.

Section B.5.1.3.1 (pg. B.5-12) – Groundwater Monitoring Well Locations

The JTD claims that "additional groundwater monitoring wells have been proposed to reflect Dr. Huntley's recommendations (Appendix C-2), and the revised workplan is included in Appendix G-2." Dr. Huntley's June 24, 2009, Technical Memorandum identified a number of inadequacies in the groundwater monitoring system and described the additional work he believed was necessary to address those inadequacies, including the installation of two additional groundwater monitoring wells and the completion of additional studies to identify locations for more wells at the mouth of the canyon. (Exhibit G.)

In response, GCL prepared a 19-page workplan, which was included as Appendix G-2 of the JTD. The workplan states that, following its approval, five additional groundwater wells would be drilled, borehole logging and aquifer testing would be conducted, the wells would be developed and sampled, and a final report would be prepared. But the JTD does not state whether the workplan was approved (or by what agency), or if it was implemented, and the JTD does not include a copy of the report that was to be prepared.

County Consolidated Fire Code, which describes specific permitting and inspection requirements for such major blasting.

The only source of water to fight fires would be groundwater wells and any remaining water stored in the 20,000-gallon water tank. But that is a small amount of water and the JTD does not describe how the water would be used to fight a fire, including what equipment would be available for fire-fighting purposes. The fact is that a fire on the site could severely damage the facility, including the liner, the bridge, the hazardous waste storage area, and all the structures in the facilities area. In addition, a fire at the proposed landfill could increase the risk to neighboring properties given that tires and hazardous waste would be stored on the site and there may be fuel storage for dispensing to trucks at the site. Without a better discussion of these risks and of the operator's fire-fighting capabilities, the SWFPA is not complete and correct.

Section C.2.1 (pg. C.2-1) – Design Features

The JTD admits that the engineering drawings and designs supporting the SWFPA are "conceptual" in nature. That is not the level of detail required by law for this proposed project because the detail is not adequate enough "to permit thorough evaluation of the environmental effects of the facility and to permit estimation of the likelihood that the facility will be able to conform to the standards over the useful economic life of the facility." (27 C.C.R. §§ 21570(d).) While final drawings may not be required, conceptual designs are not sufficient. Construction designs must be provided in greater detail to ensure that the true costs of the project and the problems that may be encountered in the field are assessed so that unforeseen economics of the project do not become the driving force in its final design and construction. Even a permit to remodel a private residence would require more than "conceptual" designs.

For example, the JTD states that storm water falling on the steep sides of Gregory Canyon would be controlled by the construction of perimeter storm drain ("PSD") channels. The only design for these PSD channels are shown on Figure 19 of the JTD (identified as "PCC"), which simply show that the channels will be three or four foot wide trapezoidal channels. (Exhibit H). Although the eastern PSD channel would be located on the slopes of Gregory Mountain high above the bottom of the canyon, the JTD contains no discussion or figures showing how this PSD channel would be constructed on the side of the mountain or how it would be anchored to ensure that it would be able to properly perform its water-collection functions. More construction details of these PSD channels and other landfill features are needed before the LEA can approve the SWFPA as complete.

Section C.2.5.4 (pg. C.2-12) – Leachate Control and Recovery System ("LCRS")

Federal and state regulations require that the entire waste unit be underlain by an LCRS, but the JTD admits there would not be an LCRS on the landfill slopes. (27 C.C.R. § 20340.) The JTD does not identity the regulatory exemption from those requirements or to discuss in detail how the proposed system would be protective of human health and the environment or describe in detail how leachate collected in slope areas would be managed. A proper analysis of this alternative design is critical given that approximately 90% of the leachate generated by the proposed landfill would be generated on the side-slope areas. (Exhibit I, FEIR at pg. 4.3-21-22).

Section C.2.8.3.4 - Storm Water Desilting Basin

The JTD fails to provide a rationale for using a 10-year, six-hour rainfall event to size the desilting basins, given that the JTD claims that the perimeter piping which will discharge into those basins will be sized to carry water from a 100-year, 24-hour storm event. There is no discussion of what will happen to those desilting basins when larger events occur.

The JTD states that the desilting basins were designed to the 10-year storm event based on the 2003 California Stormwater Best Management Practices Handbook published by the California Stormwater Quality Association ("CASQA"). But the CASQA website states that it no longer supports the 2003 Handbook because of the new general stormwater permit. The JTD should be updated to reflect current regulatory standards. In addition, given the amount of sediment that would be collected in the perimeter drainage channels, any water in those channels should be directed to the desilting basins and not discharged to "infiltration" areas as proposed. The desilting basins should be resized to handle those additional flows.

In addition, as shown in the letter report prepared by Dr. Richard Horner and attached as Exhibit J, the modeling which formed the basis for designing all of these stormwater control systems is flawed and needs to be reevaluated. As his report shows, the claim that infiltration or percolation areas could be used to control runoff from the perimeter storm drain channels is not supported by sufficient analysis of infiltration rates and other critical factors.

Section D.2.3 – Floodplain

The JTD fails to mention that the eastern desilting basin, infiltration area and potentially part of the facilities area, including the proposed flare station, are within the 100-year floodplain shown on Figure 30B attached as Exhibit K. That figure shows the where the floodplain area is located and Figure 9 shows that same area on the left along the property line. Because no analysis of the impacts of this construction on the floodplain has been conducted and no approvals from FEMA have been obtained, the SWFPA is not complete and correct.

Section D.4.7 - Geologic Hazards Due to Surface and Near-Surface Processes

The JTD concludes that "there is clear evidence that rock falls have occurred at the site" and that "construction of a 'catching' wall or other diversion structure near the edge of the landfill is recommended to effectively mitigate the risk of rock fragments rolling onto the landfill." But, there is no further discussion regarding the specifications or location of this "catching" wall. The JTD also does not consider the impact of falling boulders on the integrity of the eastern PSD channel, and does not identify where this "catching wall" would be located in relation to the PSD channel. Construction in these open space areas is not allowed and the need for these structures should be determined now and the impacts analyzed.

IV. **Conclusion**

For all these reasons, the SWFPA was not complete and correct and the LEA should be directed to rescind that determination and not to accept any subsequent document until these deficiencies are remedied and the application complies with the law.

Instead, the JTD admits that the groundwater wells described in the workplan and in the Technical Memorandum have not been installed, even though it is 20 months since the Technical Memorandum was prepared. Also, there is no evidence that the proposed locations for the wells satisfy the requirements in the Technical Memorandum. This is clear evidence that the JTD and the SWFPA are not "complete and correct." This panel should direct the LEA to require that the workplan be implemented before it accepts the SWFPA for processing.

Section B.5.1.7 (pg. B.5-24) - Estimated Cost for Mitigating a Reasonably Foreseeable Release

CalRecycle rules require that an applicant demonstrate financial responsibility for initiating and completing all "known or reasonably foreseeable corrective action" at a facility. (27 C.C.R. § 22221(a).) But in calculating the cost for addressing the "known or reasonably foreseeable corrective action" at the facility, the JTD states that corrective action financial assurance analysis is based on the costs associated "with a release to the underlying bedrock as described in Section B.5.1.6.4 above."

The failure to estimate the costs of mitigating contamination to the alluvial aquifer means that the JTD and the financial assurance calculations are inadequate. There is no dispute that groundwater in the fractured bedrock system flows into the alluvial aquifer, so it is reasonably foreseeable that corrective action in the alluvial aquifer also would be needed. Without an analysis of how that remediation would occur and its costs, the JTD is incomplete. For example, a pump and treat system designed for the fractured bedrock might not be sufficient to handle the greater amount of water in the alluvial aquifer.

Section B.5.3.5 (pg. B.5-40) - Fire Control

The JTD does not adequately explain how fires that begin on the site or threaten the site from outside would be handled. The on-site fire-fighting capabilities of the operator are not described, and thus the claim that "additional fire suppression forces are available from the California Department of Forestry (CDF) station" begs the question as to what on-site "forces" those CDF capabilities would supplement. The JTD should identify the location of the CDF station and provide written confirmation that the CDF will provide fire-protection services. The statement that the "San Diego County Fire Authority operates a fire station in the general vicinity of the landfill property, and it is expected that the Authority will be constructing a fire station at a location close to the landfill property" is not sufficient and speculative at best.

This issue of fire protection is critical given that the proposed facility would be located in an area designated as a very high fire hazard severity zone by the California Department of Forestry. That designation applies in part because the site is susceptible to Santa-Ana-wind-driven fires such as the Rice Canyon fire which burned thousands of acres nearby.

The JTD also does not discuss the fact that nearly 800,000 tons of material would need to be blasted to construct the proposed landfill, requiring up to 88 blasts a year and that a single blast could consist of up to eight tons of a mixture of ammonium nitrate and fuel oil ("ANFO"). Given this significant blasting, the lack of any discussion of blasting in the context of fire safety is inexcusable. There also should have been some discussion of Section 96.1.3301.2 of the 2009

EXHIBIT A

public health, public safety, ensure compliance with State minimum standards or to protect the environment. The definition is only for purposes of determining when a permit needs to be revised and should not be utilized for any other purpose.

NOTE: Authority cited: Sections 40502 and 43020, Public Resources Code. Reference: Sections 43020, 43021 and 43000–45802, Public Resources Code.

HISTORY

1. New subchapter 3, article 1 (sections 21563–21565.5) and section filed 6–18–97; operative 7–18–97 (Register 97, No. 25).
2. Amendment filed 3–14–2007; operative 4–13–2007 (Register 2007, No. 11).
3. Change without regulatory effect amending subsection (d)(4) filed 10–17–2007 pursuant to section 100, title 1, California Code of Regulations (Register 2007, No. 42).

§ 21565. CIWMB—Exemptions from Requirement of a Permit or Other Regulatory Tier Requirements. (T14:§18215)

(a) After a public hearing the EA may grant an exemption from the requirement that the operator of a facility or operation obtain a permit or comply with other Regulatory Tier Requirements established in Title 14, California Code of Regulations, section 18100 et seq. Such an exemption may be granted if the facility falls within one of the classifications in subsection (b) and all of the following findings are made:

(1) The exemption is not against the public interest.

(2) The quantity of solid wastes is insignificant.

(3) The nature of the solid wastes poses no significant threat to health, safety, or the environment.

(b) Classifications of solid waste facilities that may be exempted are:

(1) Facilities or portions thereof doing research funded primarily by government grants;

(2) Drilling mud disposal sumps for short–term use (less than one year) if significant quantities of hazardous or toxic materials are not present in the mud, fluids and cuttings from drilling and associated operations; [*Note: currently, on–site sumps are exempted under T23 §2511(g) & in §20090(g) of this subdivision*]

(3) Unclassified waste management units as defined by the State Water Resources Control Board (SWRCB), except as otherwise provided in CCR, Title 14, Division 7, Chapter 3.0, Article 5.95.

(4) Farm or ranch disposal sites for one– or two–family use;

(5) Resource Recovery facilities intended only for demonstration purposes and not for profit;

(6) Disposal sites to be used exclusively for one of the following: for spreading of either cannery wastes or oily wastes, mine tailings, ashes and residues, agricultural wastes, street sweepings, dirt from excavations, slag if disposed of on site, or waste water treatment sludge if disposed of on site or to specified agricultural lands; and

(7) Evaporation ponds for disposing of salts from oil and geothermal drilling operations.

(c) The EA may inspect any exempted facility in accordance with CCR, Title 14, Division 7, Chapter 5, Article 2.2, section 18083. Where the EA has reason to believe that circumstances have changed and the findings made pursuant to subsection (a) can no longer be supported, the EA may, after holding a public hearing, rescind the exemption.

(d) All exemptions and rescissions of exemptions shall be forwarded to the CIWMB within seven days after the decision is issued.

[*Comment: In exempting facilities, the EA should recognize that only facilities which are solid waste facilities or operations, as defined in Public Resources Code section 40194, must obtain either a permit or an exemption. The following are examples of facilities that need not apply for an exemption or a permit:*

1. A facility solely engaged in purchase or sale of salvaged separated materials.

2. Scrap metal, glass, cardboard and fiber brokers and manufacturing firms, which utilize salvaged materials.

3. Recycling centers that only handle salvaged separated materials for reuse.

4. Salvaged separated material collection, storage, or processing activities.]

NOTE: Authority cited: Section 40502, Public Resources Code. Reference: Sections 43020, 43021 and 43103, Public Resources Code.

HISTORY

1. New section filed 6–18–97; operative 7–18–97 (Register 97, No. 25).
2. Amendment of section heading and section filed 7–10–2003; operative 8–9–2003 (Register 2003, No. 28).
3. Amendment of subsection (b)(3) filed 12–26–2003; operative 2–24–2004 (Register 2003, No. 52).
4. Editorial correction of HISTORY 3 (Register 2004, No. 2).
5. Editorial correction of section heading (Register 2004, No. 22).

§ 21565.5. CIWMB—Filing Requirements for Exemptions from Solid Waste Facility Permit (SWFP). (T14:§17616)

An applicant must file with the EA information containing applicable sections of a Report of Facility Information/Joint Technical Document (RFI/JTD) to establish that an exemption should be granted.

NOTE: Authority cited: Sections 40502, 43020 and 43021, Public Resources Code. Reference: Sections 43020, 43021 and 43103, Public Resources Code.

HISTORY

1. New section filed 6–18–97; operative 7–18–97 (Register 97, No. 25).

Article 2. CalRecycle—Applicant Requirements.

§ 21570. CalRecycle—Filing Requirements.

(a) Any operator of a disposal site who is required to have a full solid waste facilities permit and waste discharge requirements pursuant to Public Resources Code, Division 31 and §20080(f) shall submit an application package for a solid waste facilities permit in duplicate to the EA pursuant to ¶(f). The applicant shall also simultaneously submit one copy of the application form and the Joint Technical Document (JTD) to the Regional Water Quality Control Board (RWQCB) and one copy of the application form to the director of the local agency that oversees local land use planning for the jurisdiction in which the site is located. The applicant shall ensure demonstration of financial assurances to CalRecycle pursuant to Chapter 6 of this Subdivision.

(b) All other applicants who are required to have a full solid waste facilities permit shall submit an application package for a solid waste facilities permit in duplicate to the EA pursuant to ¶(f) and one copy of the application form to the director of the local agency that oversees local land use planning for the jurisdiction in which the site is located. The applicant shall also simultaneously submit one copy of the application form to the RWQCB.

(c) Any application package submitted to the EA shall be accompanied by the fee specified by the EA pursuant to Public Resources Code §44006(c).

(d) The application package shall require that information be supplied in adequate detail to permit thorough evaluation of the environmental effects of the facility and to permit estimation of the likelihood that the facility will be able to conform to the standards over the useful economic life of the facility. The application package shall require, among other things, that the applicant and the owner give the address at which process may be served upon them.

(e) All information in the application package shall be certified by the applicant and the owner of the site as being true and accurate to the best knowledge and belief of each. The applicant, owner of the facility, or both, shall supply additional information as deemed necessary by the EA.

(f) A complete and correct application package shall include, but not necessarily be limited to, the following items:

(1) Application For Solid Waste Facilities Permit/Waste Discharge Requirements Form CIWMB E–1–77 (Version 8–04) (Appendix 1); and

(2) Complete and correct Report of Facility Information. In the case of disposal sites, this will be a Report of Disposal Site Information (RDSI) in the format of a JTD or an Disposal Facility Plan or Disposal Facility Report in the format of a JTD; and

(3) California Environmental Quality Act (CEQA) compliance information as follows:

(A) Evidence that there has been compliance with the CEQA, Division 13 (commencing with §21000) of the Public Resources Code, regarding the facility; or

(B) Information on the status of the application's compliance with the CEQA regarding the facility, including the proposed project description. Once there has been compliance with the CEQA regarding the facility, evidence of compliance shall be submitted to the EA; and

(4) Any CEQA Mitigation Monitoring Implementation Schedule; and

(5) Conformance finding information, including one of the following:

(A) Until a countywide or regional agency integrated waste management plan has been approved by CalRecycle, the application shall include statements that: the facility is identified and described in or conforms with the County Solid Waste Management Plan, or otherwise complies with Public Resources Code §50000; and that the facility is consistent with the city or county General Plan and compatible with surrounding land use, in accordance with Public Resources Code §50000.5; or

(B) After a countywide or regional agency integrated waste management plan has been approved by CalRecycle, the application shall include a statement that: the facility is identified in either the countywide siting element, the nondisposal facility element, or in the Source Reduction and Recycling Element for the jurisdiction in which it is located; or, that the facility is not required to be identified in any of these elements pursuant to Public Resources Code §50001; and

(6) For disposal sites, completeness determination of Preliminary or Final Closure/Postclosure Maintenance Plan as specified in §§21780, 21865, and 21890 (Subchapter 4 of this Chapter); and

[Note: The operator has the option of submitting the preliminary closure plan with the JTD, in which case the EA, RWQCB, and CalRecycle would review it at the same time. If deemed complete by the reviewing agencies, the solid waste facilities permit application package could then be accepted for filing if all other information in the JTD is accepted by the EA. Or the operator can submit a stand alone preliminary closure plan to be deemed complete by reviewing agencies before the application package is submitted to the EA. For CalRecycle purposes, all final closure/postclosure plans are stand alone documents but can be processed jointly with a proposed solid waste facilities permit revision as long as the final plan is determined complete prior to approval of the proposed solid waste facilities permit. The JTD Index prepared for the EA should show where each closure requirement is addressed in the closure/post–closure plan.]

(7) For disposal sites, a copy of the most recently submitted detailed written estimate or latest approved estimate, whichever identifies the greatest cost, to cover the cost of known or reasonably foreseeable corrective action activities, pursuant to §22101;

(8) For disposal sites, current documentation of acceptable funding levels for required closure, postclosure maintenance, and corrective action Financial Assurance Mechanism (in accordance with Chapter 6, Division 2); and

(9) For disposal sites, current documentation of compliance with operating liability requirements in accordance with Chapter 6;

(10) For disposal sites permitted for more than 20 tons–per–day, a ground or aerial survey to be completed at least once every five years or more frequently as determined by the EA. For disposal sites permitted for 20 tons–per–day or less, a ground or aerial survey must be completed at least once every ten years. Survey results must be submitted as a CADD or vector graphics data file including at least two strata, i.e., 1) a stratum showing the base and finished ground surfaces, and 2) a stratum showing the existing and finished ground surfaces. For disposal sites where a change in permitted volume is proposed, a third stratum showing the base and proposed finished ground surfaces must be included. For each stratum the following information shall be included: site name, stratum name, surface1 name, surface2 name, volume calculation method (grid, composite, section), expansion (cut) factor, compaction (fill) factor, cut volume, fill volume and net volume. All volumes shall be reported in cubic yards. If the base ground surface is uncertain, the operator is allowed to provide the best available information as a substitute for the actual as–built contours. If selecting this substitute method, the operator must provide an explanation of the basis for using the substitute base ground surface. For the purposes of this section the following definitions apply:

(A) "base ground surface" — the best available excavation plan surface that existed prior to the placement of any waste;

(B) "CADD" — computer aided design and drafting;

(C) "compaction (fill) factor" — the factor used to correct for expected compaction of fill material; this factor should normally be unity (one); if the factor is not unity (one), an explanation must be provided for the basis of the volumetric correction;

(D) "cut volume" — for any stratum, the volume removed by a cut of a lower surface to achieve the upper surface;

(E) "existing ground surface" — the topography that exists at the time of the subject survey;

(F) "expansion (cut) factor" — the factor used to correct for expected expansion of a cut surface; this factor should normally be unity (one); if the factor is not unity (one), an explanation must be provided for the basis of the volumetric correction;

(G) "fill volume" — for any stratum, the volume bound between the upper and lower surfaces;

(H) "finished ground surface" — the final fill plan surface as shown in the approved closure plan for the disposal site;

(I) "net volume" — the fill volume less the cut volume;

(J) "site name" — the name of the disposal site for which the survey information is being submitted;

(K) "stratum (plural: strata)" — a particular volume of a solid waste landfill bound by specified upper and lower surfaces;

(L) "stratum name" — a descriptive name for the stratum for which volumetric information is being submitted, e.g., total volume including proposed expansion;

(M) "surface names" — names for the pair of surfaces that define a named stratum, e.g., base ground surface and proposed finished ground surface;

(N) "survey" — a comprehensive examination of the disposal site under the direction of registered civil engineer or licensed land surveyor for purposes of determining the topography of the base, existing and finished ground surfaces, and the volumes bound by those surfaces;

(O) "vector graphics" — computer generated images comprised of lines and shapes of given origin, direction, thickness, color and other attributes;

(P) "volume calculation method" — grid, composite, section or other method approved by the enforcement agency;

(11) For disposal sites, one of the following:

(A)(i) In–place waste density (pounds of waste per cubic yard of waste). The in–place waste density is the estimated or measured density of in–place waste material achieved by mechanical or other means in the development of the current lift of the current operating waste cell, and

(ii) Waste–to–cover ratio, estimated, (volume:volume). The waste–to–cover ratio estimate is a unit–less expression of the proportion of the volumes of waste and cover that comprise a volume of compacted fill material, e.g. 4:1. The cover portion of the waste–to–cover ratio estimate should include only soil or approved daily or intermediate alternative cover that is not considered a waste material, i.e., payment of fees to CalRecycle is not required. The waste portion of the waste–to–cover ratio estimate should include only waste material for which payment of fees to CalRecycle is reported, or

(B) Airspace utilization factor (tons of waste per cubic yard of landfill airspace). The airspace utilization factor (AUF) is the effective density of waste material in the landfill. The AUF is recorded as the total weight of waste material passing over the landfill scales that is placed in a known volume of landfill airspace in a given period of time. The waste portion of the AUF should include only waste material for which payment of fees to CalRecycle is reported.

(12) List of all public hearings and other meetings open to the public that have been held or copies of notices distributed that are applicable to the proposed solid waste facilities permit action.

NOTE: Authority cited: Sections 40002, 40502 and 43020, Public Resources Code. Reference: Sections 43103, 44001–44017, 44100–44101, 44300–44301, 44500–44503 and 44813–44816, Public Resources Code.

EXHIBIT B

BRYAN A. STIRRAT & ASSOCIATES
CIVIL AND ENVIRONMENTAL ENGINEERS

January 13, 2011 JN: 1997-0139

Ms. Rebecca Lafreniere
County of San Diego
Department of Environmental Health Services
5500 Overland Avenue, Suite 110 MS O560
San Diego, CA 92123

**RE: GREGORY CANYON LANDFILL PROJECT
SOLID WASTE FACILITIES PERMIT APPLICATION PACKAGE
(DATED SEPTEMBER 2010, UPDATED JANUARY 2011)**

Dear Ms. Lafreniere:

Bryan A. Stirrat & Associates (BAS) is pleased to submit this Solid Waste Facility Permit (SWFP) Application Package for the Gregory Canyon Landfill (GCLF) project on behalf of Gregory Canyon Limited (GCL). Please find attached three (3) hard copies and two PDF copies on CD of the SWFP Application Package (dated September 2010, Updated January 2011) prepared for the GCLF project in accordance with the California Code of Regulations Title 27 (27 CCR) requirements. It is our understanding that the following information is required by 27 CCR, Section 21570(f) to complete the SWFP application submittal to your agency:

1. **Joint Application Form**

   An application form (E-1-77) has been completed for the purpose of the permitting process. Please note that additional explanations and/or documentation were needed to further describe information indicated on the SWFP application form. These explanations and/or documentation are in the form of Attachments SWFP-A, SWFP-B, SWFP-C and SWFP-D. The cover sheets for these attachments indicate which part(s) of the SWFP application form that requires further explanation and/or documentation.

2. **Joint Technical Document – Attachment 1**

   Three (3) copies of the Joint Technical Document (JTD) (dated September2010, Revised January 2011) are considered Attachment 1 to this application package and are submitted under separate cover.

3. California Environmental Quality Act (CEQA) Compliance – Attachment 2

The EIR for the project was initially certified on February 6, 2003, SCH#1995061007. Litigation challenging the EIR was filed, and on January 20, 2006, the Superior Court decertified the EIR and ordered additional analysis in the areas of traffic, mitigation for impacts to biology and water supply. The January 20, 2006 order was upheld by the Court of Appeal on June 12, 2009. A Revised Final EIR (RFEIR) was prepared in response to the court order, and was certified on May 31, 2007. In June 2007, a motion was filed to discharge the writ of mandate issued on January 20, 2006, which was granted in part and denied in part on February 11, 2008. The court ordered additional analysis in the area of water supply. An Addendum to the RFEIR was prepared in response to the court order, and adopted on August 8, 2008. In August 2008 a second motion to discharge the January 20, 2006 writ of mandate was filed, which was granted on November 20, 2008. The November 20, 2008 order was upheld by the Court of Appeal on March 30, 2010. Based on a Court of Appeal decision overturning a 2006 recycled water supply contract entered into by the operator, an Addendum to the RFEIR was prepared to identify other sources of water supply, and was adopted on January 7, 2010. Based on a new Jurisdictional Determination by the U.S. Army Corps of Engineers, an Addendum to the RFEIR was prepared to update the waters on the landfill site subject to federal and state jurisdiction, and was adopted on May 7, 2010.

4. CEQA Mitigation Monitoring Implementation Schedule – Attachment 3

A *User's Guide to the Gregory Canyon Landfill Mitigation Monitoring and Reporting Program* (MMRP) was developed based on the LEA's comment letter dated December 23, 2003 and has been revised in April 2007 to reflect changes in the MMRP contained in the March 2007 Revised FEIR. The *User's Guide to the Gregory Canyon Landfill Mitigation Monitoring and Reporting Program* is included as Attachment 3.

In addition, the measures presented in Table 10-1 in the Revised FEIR are to reduce specific project impacts, the measures contained in Tables 10-2 and 10-3 of the FEIR are those measures contained in Proposition C and Table 10-3 are measures related to the potential relocation of the First San Diego Aqueduct pipelines. The CEQA MMRP schedule (Table 10-1) from the Revised Final EIR (dated March 2007) and Table 10-2 from the FEIR are presented in Attachment 3. Implementation of the measures in the MMRP is indicated in the document. Also, please note that the CEQA MMRP schedule is included in the JTD as Appendix D-2.

5. San Diego County Integrated Waste Management Plan (CIWMP) Conformance Finding – Attachment 4

A revised Siting Element was prepared and approved by the County of San Diego on January 5, 2005 and approved by the California Integrated Waste Management Board (now CalRecycle) on September 20-21, 2005. The GCLF was included as a proposed new landfill (see Attachment 4).

6. Completeness Determination of Preliminary Closure/Post-Closure Maintenance Plan (PCPCMP)

The PCPMP is submitted as an integral part of the JTD and this SWFP application for your review and approval in accordance with 27 CCR, Section 21860. The PCPCMP is submitted as part of the JTD as Parts E and F.

7. Closure and Post-Closure Maintenance Financial Assurance Documentation – Attachment 5

A Trust Agreement (Form 100) demonstrating coverage for closure and post-closure maintenance costs for GCLF is included as Attachment 5 of this application package.

8. Compliance with Operating Liability Requirements - Attachment 6

A Certificate of Liability Insurance (Form 107) is included as part of this application package to document the type(s) of insurance for the GCLF. Gregory Canyon Limited has been and will continue to update the certificate. A copy of Form 107 is included as part of Attachment 6.

9. Conditional Use Permits

Typically, the local land use authority will require the project proponent to obtain a land use entitlement. In the case of the GCLF, the approval would normally be obtained from the San Diego County Department of Planning and Land Use (DPLU). However, in 1994, Proposition C was written to provide for the siting of a new Class III landfill to allow the residents and businesses of northern San Diego County a place to dispose of their solid waste. Proposition C amended the General Plan, Zoning Ordinances and other ordinances and policies to allow the construction of a Class III landfill. The Zoning Ordinance was amended to create a new zoning classification designator (Solid Waste Facility) applied only to the Gregory Canyon site. The approval of Proposition C by the voters in November

> 1994 allowed the project to go forward without the need for any permits from the County of San Diego except for the Water Course Alteration Permit, Bridge Permit, SWFP, Grading Permit and Building Permit. A copy of Proposition C is included in Appendix B of the JTD.

In accordance with 27 CCR, Section 21570, Gregory Canyon Limited, LLC, operator of the GCLF, certifies that all information contained in this SWFP Application Package for the site is accurate and true, to the best of our knowledge and belief. Information contained in this application package was generated by Gregory Canyon Limited, LLC as well as duly authorized parties.

If you should have any questions regarding this information and/or submittal, please advise.

Respectfully submitted,

Jeffrey M. Williams
Project Manager

c: Jim Simmons, Gregory Canyon Limited (without attachments)
Bryan Stirrat, Bryan A. Stirrat & Associates, Inc. (without attachments)
Sarah Battelle, GeoLogic Associates (without attachments)
Julie Chan, Regional Water Quality Control Board, San Diego Region (9) - Land Discharge Unit (with attachments)
Bill Hutton, Esq., Law Offices of E. William Hutton (with attachments)
San Diego County Planning Department (SWFP application only)

EXHIBIT C

KLEINFELDER

VOLUME VII: UPDATED AIR QUALITY IMPACT ANALYSIS AND HEALTH RISK ASSESSMENT FOR THE PROPOSED GREGORY CANYON LANDFILL

Kleinfelder
4815 List Drive, Suite 115
Colorado Springs, CO 80919

September 14, 2010

RESULTS

Landfill Name or Identifier: Gregory Canyon Landfill

Closure Year (with 80-year limit) = 2033

Methane = 44 % by volume

Please choose a third unit of measure to represent all of the emission rates below.

User-specified Unit: av ft^3/min

Year	Waste Accepted (Mg/year)	Waste Accepted (short tons/year)	Waste-In-Place (Mg)	Waste-In-Place (short tons)	Total landfill gas (Mg/year)	Total landfill gas (m^3/year)	Total landfill gas (av ft^3/min)	Methane (Mg/year)	Methane (m^3/year)	Methane (av ft^3/min)	Carbon dioxide (Mg/year)	Carbon dioxide (m^3/year)	Carbon dioxide (av ft^3/min)	NMOC (Mg/year)	NMOC (m^3/year)	NMOC (av ft^3/min)
2012	1,395,455	1,535,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	1,395,455	1,535,000	1,395,455	1,535,000	8.359E+03	6.915E+06	4.640E+02	2.030E+03	3.043E+06	2.044E+02	7.088E+03	3.872E+06	2.602E+02	9.914E+01	2.766E+04	1.858E+00
2014	1,395,455	1,535,000	2,790,909	3,070,000	1.655E+04	1.369E+07	9.200E+02	4.019E+03	6.025E+06	4.048E+02	1.404E+04	7.668E+06	5.152E+02	1.963E+02	5.477E+04	3.680E+00
2015	1,395,455	1,535,000	4,186,364	4,605,000	2.458E+04	2.034E+07	1.368E+03	5.970E+03	8.948E+06	6.012E+02	2.085E+04	1.139E+07	7.652E+02	2.916E+02	8.135E+04	5.466E+00
2016	1,395,455	1,535,000	5,581,818	6,140,000	3.245E+04	2.685E+07	1.804E+03	7.881E+03	1.181E+07	7.937E+02	2.752E+04	1.504E+07	1.010E+03	3.850E+02	1.074E+05	7.216E+00
2017	1,395,455	1,535,000	6,977,273	7,675,000	4.017E+04	3.323E+07	2.233E+03	9.755E+03	1.462E+07	9.825E+02	3.407E+04	1.861E+07	1.250E+03	4.765E+02	1.329E+05	8.931E+00
2018	1,395,455	1,535,000	8,372,727	9,210,000	4.773E+04	3.949E+07	2.653E+03	1.159E+04	1.738E+07	1.167E+03	4.048E+04	2.211E+07	1.486E+03	5.662E+02	1.580E+05	1.061E+01
2019	1,395,455	1,535,000	9,768,182	10,745,000	5.515E+04	4.562E+07	3.065E+03	1.339E+04	2.007E+07	1.349E+03	4.677E+04	2.555E+07	1.717E+03	6.541E+02	1.825E+05	1.226E+01
2020	1,395,455	1,535,000	11,163,636	12,280,000	6.241E+04	5.163E+07	3.469E+03	1.516E+04	2.272E+07	1.526E+03	5.293E+04	2.891E+07	1.943E+03	7.403E+02	2.065E+05	1.388E+01
2021	1,395,455	1,535,000	12,559,091	13,815,000	6.954E+04	5.753E+07	3.865E+03	1.689E+04	2.531E+07	1.701E+03	5.897E+04	3.221E+07	2.164E+03	8.248E+02	2.301E+05	1.546E+01
2022	1,395,455	1,535,000	13,954,545	15,350,000	7.652E+04	6.330E+07	4.253E+03	1.858E+04	2.785E+07	1.871E+03	6.489E+04	3.545E+07	2.382E+03	9.076E+02	2.532E+05	1.701E+01
2023	1,395,455	1,535,000	15,350,000	16,885,000	8.336E+04	6.896E+07	4.634E+03	2.024E+04	3.034E+07	2.039E+03	7.069E+04	3.862E+07	2.595E+03	9.888E+02	2.759E+05	1.853E+01
2024	1,395,455	1,535,000	16,745,455	18,420,000	9.007E+04	7.451E+07	5.006E+03	2.187E+04	3.279E+07	2.203E+03	7.638E+04	4.173E+07	2.804E+03	1.068E+03	2.980E+05	2.003E+01
2025	1,395,455	1,535,000	18,140,909	19,955,000	9.665E+04	7.995E+07	5.372E+03	2.347E+04	3.518E+07	2.364E+03	8.196E+04	4.477E+07	3.008E+03	1.146E+03	3.198E+05	2.149E+01
2026	1,395,455	1,535,000	19,536,364	21,490,000	1.031E+05	8.528E+07	5.730E+03	2.503E+04	3.752E+07	2.521E+03	8.742E+04	4.776E+07	3.209E+03	1.223E+03	3.411E+05	2.292E+01
2027	1,395,455	1,535,000	20,931,818	23,025,000	1.094E+05	9.051E+07	6.081E+03	2.657E+04	3.982E+07	2.676E+03	9.278E+04	5.068E+07	3.406E+03	1.298E+03	3.620E+05	2.433E+01
2028	1,395,455	1,535,000	22,327,273	24,560,000	1.150E+05	9.563E+07	6.426E+03	2.807E+04	4.208E+07	2.827E+03	9.803E+04	5.355E+07	3.598E+03	1.371E+03	3.825E+05	2.570E+01
2029	1,395,455	1,535,000	23,722,727	26,095,000	1.217E+05	1.007E+08	6.763E+03	2.955E+04	4.429E+07	2.976E+03	1.032E+05	5.637E+07	3.787E+03	1.443E+03	4.026E+05	2.705E+01
2030	1,395,455	1,535,000	25,118,182	27,630,000	1.276E+05	1.056E+08	7.094E+03	3.099E+04	4.645E+07	3.121E+03	1.082E+05	5.912E+07	3.972E+03	1.514E+03	4.223E+05	2.837E+01
2031	1,395,455	1,535,000	26,513,636	29,165,000	1.335E+05	1.104E+08	7.418E+03	3.241E+04	4.858E+07	3.264E+03	1.132E+05	6.182E+07	4.154E+03	1.583E+03	4.416E+05	2.967E+01
2032	1,395,455	1,535,000	27,909,091	30,700,000	1.392E+05	1.151E+08	7.735E+03	3.380E+04	5.066E+07	3.404E+03	1.180E+05	6.447E+07	4.332E+03	1.651E+03	4.605E+05	3.094E+01
2033	1,395,455	1,535,000	29,304,545	32,235,000	1.448E+05	1.198E+08	8.047E+03	3.516E+04	5.270E+07	3.541E+03	1.228E+05	6.707E+07	4.506E+03	1.717E+03	4.791E+05	3.219E+01
2034	0	0	30,700,000	33,770,000	1.503E+05	1.243E+08	8.352E+03	3.649E+04	5.470E+07	3.675E+03	1.274E+05	6.961E+07	4.677E+03	1.782E+03	4.972E+05	3.341E+01
2035	0	0	30,700,000	33,770,000	1.473E+05	1.218E+08	8.187E+03	3.577E+04	5.361E+07	3.602E+03	1.249E+05	6.823E+07	4.585E+03	1.747E+03	4.874E+05	3.275E+01
2036	0	0	30,700,000	33,770,000	1.444E+05	1.194E+08	8.025E+03	3.506E+04	5.255E+07	3.531E+03	1.224E+05	6.688E+07	4.494E+03	1.712E+03	4.777E+05	3.210E+01
2037	0	0	30,700,000	33,770,000	1.415E+05	1.171E+08	7.866E+03	3.436E+04	5.151E+07	3.461E+03	1.200E+05	6.556E+07	4.405E+03	1.679E+03	4.683E+05	3.146E+01
2038	0	0	30,700,000	33,770,000	1.387E+05	1.147E+08	7.710E+03	3.368E+04	5.049E+07	3.392E+03	1.176E+05	6.426E+07	4.318E+03	1.645E+03	4.590E+05	3.084E+01
2039	0	0	30,700,000	33,770,000	1.360E+05	1.125E+08	7.557E+03	3.302E+04	4.949E+07	3.325E+03	1.153E+05	6.299E+07	4.232E+03	1.613E+03	4.499E+05	3.023E+01
2040	0	0	30,700,000	33,770,000	1.333E+05	1.103E+08	7.408E+03	3.236E+04	4.851E+07	3.259E+03	1.130E+05	6.174E+07	4.148E+03	1.581E+03	4.410E+05	2.963E+01
2041	0	0	30,700,000	33,770,000	1.306E+05	1.081E+08	7.261E+03	3.172E+04	4.755E+07	3.195E+03	1.108E+05	6.052E+07	4.066E+03	1.549E+03	4.323E+05	2.904E+01
2042	0	0	30,700,000	33,770,000	1.280E+05	1.059E+08	7.117E+03	3.109E+04	4.661E+07	3.132E+03	1.086E+05	5.932E+07	3.986E+03	1.519E+03	4.237E+05	2.847E+01
2043	0	0	30,700,000	33,770,000	1.255E+05	1.038E+08	6.976E+03	3.048E+04	4.569E+07	3.070E+03	1.064E+05	5.814E+07	3.907E+03	1.489E+03	4.153E+05	2.791E+01
2044	0	0	30,700,000	33,770,000	1.230E+05	1.018E+08	6.838E+03	2.988E+04	4.478E+07	3.009E+03	1.043E+05	5.699E+07	3.829E+03	1.459E+03	4.071E+05	2.735E+01
2045	0	0	30,700,000	33,770,000	1.206E+05	9.976E+07	6.703E+03	2.928E+04	4.389E+07	2.949E+03	1.023E+05	5.586E+07	3.754E+03	1.430E+03	3.990E+05	2.681E+01
2046	0	0	30,700,000	33,770,000	1.182E+05	9.778E+07	6.570E+03	2.870E+04	4.302E+07	2.891E+03	1.002E+05	5.476E+07	3.679E+03	1.402E+03	3.911E+05	2.628E+01
2047	0	0	30,700,000	33,770,000	1.159E+05	9.585E+07	6.440E+03	2.814E+04	4.217E+07	2.834E+03	9.825E+04	5.367E+07	3.606E+03	1.374E+03	3.834E+05	2.576E+01
2048	0	0	30,700,000	33,770,000	1.136E+05	9.395E+07	6.312E+03	2.758E+04	4.134E+07	2.777E+03	9.631E+04	5.261E+07	3.535E+03	1.347E+03	3.758E+05	2.525E+01
2049	0	0	30,700,000	33,770,000	1.113E+05	9.209E+07	6.187E+03	2.703E+04	4.052E+07	2.722E+03	9.440E+04	5.157E+07	3.465E+03	1.320E+03	3.684E+05	2.475E+01
2050	0	0	30,700,000	33,770,000	1.091E+05	9.027E+07	6.065E+03	2.650E+04	3.972E+07	2.669E+03	9.253E+04	5.055E+07	3.396E+03	1.294E+03	3.611E+05	2.426E+01
2051	0	0	30,700,000	33,770,000	1.070E+05	8.848E+07	5.945E+03	2.597E+04	3.893E+07	2.616E+03	9.070E+04	4.955E+07	3.329E+03	1.269E+03	3.539E+05	2.378E+01
2052	0	0	30,700,000	33,770,000	1.048E+05	8.673E+07	5.827E+03	2.546E+04	3.816E+07	2.564E+03	8.890E+04	4.857E+07	3.263E+03	1.243E+03	3.469E+05	2.331E+01
2053	0	0	30,700,000	33,770,000	1.028E+05	8.501E+07	5.712E+03	2.495E+04	3.740E+07	2.513E+03	8.714E+04	4.760E+07	3.199E+03	1.219E+03	3.400E+05	2.285E+01
2054	0	0	30,700,000	33,770,000	1.007E+05	8.333E+07	5.599E+03	2.446E+04	3.666E+07	2.463E+03	8.542E+04	4.666E+07	3.135E+03	1.195E+03	3.333E+05	2.239E+01
2055	0	0	30,700,000	33,770,000	9.873E+04	8.168E+07	5.488E+03	2.398E+04	3.594E+07	2.415E+03	8.372E+04	4.574E+07	3.073E+03	1.171E+03	3.267E+05	2.195E+01
2056	0	0	30,700,000	33,770,000	9.677E+04	8.006E+07	5.379E+03	2.350E+04	3.523E+07	2.367E+03	8.207E+04	4.483E+07	3.012E+03	1.148E+03	3.202E+05	2.152E+01
2057	0	0	30,700,000	33,770,000	9.486E+04	7.847E+07	5.273E+03	2.304E+04	3.453E+07	2.320E+03	8.044E+04	4.394E+07	2.953E+03	1.125E+03	3.139E+05	2.109E+01
2058	0	0	30,700,000	33,770,000	9.298E+04	7.692E+07	5.168E+03	2.258E+04	3.384E+07	2.274E+03	7.885E+04	4.307E+07	2.894E+03	1.103E+03	3.077E+05	2.067E+01
2059	0	0	30,700,000	33,770,000	9.114E+04	7.540E+07	5.066E+03	2.213E+04	3.317E+07	2.229E+03	7.729E+04	4.222E+07	2.837E+03	1.081E+03	3.016E+05	2.026E+01
2060	0	0	30,700,000	33,770,000	8.933E+04	7.390E+07	4.966E+03	2.169E+04	3.252E+07	2.185E+03	7.576E+04	4.139E+07	2.781E+03	1.060E+03	2.956E+05	1.986E+01
2061	0	0	30,700,000	33,770,000	8.756E+04	7.244E+07	4.867E+03	2.126E+04	3.187E+07	2.142E+03	7.426E+04	4.057E+07	2.726E+03	1.039E+03	2.898E+05	1.947E+01
2062	0	0	30,700,000	33,770,000	8.583E+04	7.101E+07	4.771E+03	2.084E+04	3.124E+07	2.099E+03	7.279E+04	3.976E+07	2.672E+03	1.018E+03	2.840E+05	1.908E+01
2063	0	0	30,700,000	33,770,000	8.413E+04	6.960E+07	4.676E+03	2.043E+04	3.062E+07	2.058E+03	7.134E+04	3.898E+07	2.619E+03	9.979E+02	2.784E+05	1.871E+01
2064	0	0	30,700,000	33,770,000	8.247E+04	6.822E+07	4.584E+03	2.003E+04	3.002E+07	2.017E+03	6.993E+04	3.820E+07	2.567E+03	9.781E+02	2.729E+05	1.834E+01
2065	0	0	30,700,000	33,770,000	8.083E+04	6.687E+07	4.493E+03	1.963E+04	2.942E+07	1.977E+03	6.855E+04	3.745E+07	2.516E+03	9.588E+02	2.675E+05	1.797E+01
2066	0	0	30,700,000	33,770,000	7.923E+04	6.555E+07	4.404E+03	1.924E+04	2.884E+07	1.938E+03	6.719E+04	3.671E+07	2.466E+03	9.398E+02	2.622E+05	1.762E+01
2067	0	0	30,700,000	33,770,000	7.766E+04	6.425E+07	4.317E+03	1.886E+04	2.827E+07	1.899E+03	6.586E+04	3.598E+07	2.417E+03	9.212E+02	2.570E+05	1.727E+01
2068	0	0	30,700,000	33,770,000	7.613E+04	6.298E+07	4.231E+03	1.849E+04	2.771E+07	1.862E+03	6.456E+04	3.527E+07	2.370E+03	9.029E+02	2.519E+05	1.693E+01
2069	0	0	30,700,000	33,770,000	7.462E+04	6.173E+07	4.148E+03	1.812E+04	2.716E+07	1.825E+03	6.328E+04	3.457E+07	2.323E+03	8.851E+02	2.469E+05	1.659E+01
2070	0	0	30,700,000	33,770,000	7.314E+04	6.051E+07	4.065E+03	1.776E+04	2.662E+07	1.789E+03	6.202E+04	3.388E+07	2.277E+03	8.675E+02	2.420E+05	1.626E+01
2071	0	0	30,700,000	33,770,000	7.169E+04	5.931E+07	3.985E+03	1.741E+04	2.610E+07	1.753E+03	6.080E+04	3.321E+07	2.232E+03	8.504E+02	2.372E+05	1.594E+01
2072	0	0	30,700,000	33,770,000	7.027E+04	5.813E+07	3.906E+03	1.707E+04	2.558E+07	1.719E+03	5.959E+04	3.256E+07	2.187E+03	8.335E+02	2.325E+05	1.562E+01
2073	0	0	30,700,000	33,770,000	6.888E+04	5.698E+07	3.829E+03	1.673E+04	2.507E+07	1.685E+03	5.841E+04	3.191E+07	2.144E+03	8.170E+02	2.279E+05	1.531E+01
2074	0	0	30,700,000	33,770,000	6.752E+04	5.585E+07	3.753E+03	1.640E+04	2.458E+07	1.651E+03	5.726E+04	3.128E+07	2.102E+03	8.008E+02	2.234E+05	1.501E+01
2075	0	0	30,700,000	33,770,000	6.618E+04	5.475E+07	3.679E+03	1.607E+04	2.409E+07	1.619E+03	5.612E+04	3.066E+07	2.060E+03	7.850E+02	2.190E+05	1.471E+01
2076	0	0	30,700,000	33,770,000	6.487E+04	5.366E+07	3.606E+03	1.575E+04	2.361E+07	1.587E+03	5.501E+04	3.005E+07	2.019E+03	7.694E+02	2.147E+05	1.442E+01
2077	0	0	30,700,000	33,770,000	6.359E+04	5.260E+07	3.534E+03	1.544E+04	2.314E+07	1.555E+03	5.392E+04	2.946E+07	1.979E+03	7.542E+02	2.104E+05	1.414E+01
2078	0	0	30,700,000	33,770,000	6.233E+04	5.156E+07	3.464E+03	1.514E+04	2.269E+07	1.524E+03	5.285E+04	2.887E+07	1.940E+03	7.393E+02	2.062E+05	1.386E+01
2079	0	0	30,700,000	33,770,000	6.109E+04	5.054E+07	3.396E+03	1.484E+04	2.224E+07	1.494E+03	5.181E+04	2.830E+07	1.902E+03	7.246E+02	2.022E+05	1.358E+01
2080	0	0	30,700,000	33,770,000	5.988E+04	4.954E+07	3.328E+03	1.454E+04	2.180E+07	1.465E+03	5.078E+04	2.774E+07	1.864E+03	7.103E+02	1.982E+05	1.331E+01
2081	0	0	30,700,000	33,770,000	5.870E+04	4.856E+07	3.263E+03	1.425E+04	2.137E+07	1.436E+03	4.978E+04	2.719E+07	1.827E+03	6.962E+02	1.942E+05	1.305E+01
2082	0	0	30,700,000	33,770,000	5.753E+04	4.760E+07	3.198E+03	1.397E+04	2.094E+07	1.407E+03	4.879E+04	2.665E+07	1.791E+03	6.824E+02	1.904E+05	1.279E+01
2083	0	0	30,700,000	33,770,000	5.639E+04	4.665E+07	3.135E+03	1.369E+04	2.053E+07	1.379E+03	4.782E+04	2.613E+07	1.755E+03	6.689E+02	1.866E+05	1.254E+01
2084	0	0	30,700,000	33,770,000	5.528E+04	4.573E+07	3.073E+03	1.342E+04	2.012E+07	1.352E+03	4.688E+04	2.561E+07	1.721E+03	6.557E+02	1.829E+05	1.229E+01
2085	0	0	30,700,000	33,770,000	5.418E+04	4.482E+07	3.012E+03	1.316E+04	1.972E+07	1.325E+03	4.595E+04	2.510E+07	1.687E+03	6.427E+02	1.793E+05	1.205E+01
2086	0	0	30,700,000	33,770,000	5.311E+04	4.394E+07	2.952E+03	1.290E+04	1.933E+07	1.299E+03	4.504E+04	2.460E+07	1.653E+03	6.300E+02	1.757E+05	1.181E+01
2087	0	0	30,700,000	33,770,000	5.206E+04	4.307E+07	2.894E+03	1.264E+04	1.895E+07	1.273E+03	4.415E+04	2.412E+07	1.620E+03	6.175E+02	1.723E+05	1.157E+01
2088	0	0	30,700,000	33,770,000	5.103E+04	4.221E+07	2.836E+03	1.239E+04	1.857E+07	1.248E+03	4.327E+04	2.364E+07	1.588E+03	6.053E+02	1.689E+05	1.135E+01
2089	0	0	30,700,000	33,770,000	5.002E+04	4.138E+07	2.780E+03	1.215E+04	1.821E+07	1.223E+03	4.242E+04	2.317E+07	1.557E+03	5.933E+02	1.655E+05	1.112E+01
2090	0	0	30,700,000	33,770,000	4.903E+04	4.056E+07	2.725E+03	1.191E+04	1.785E+07	1.199E+03	4.158E+04	2.271E+07	1.526E+03	5.815E+02	1.622E+05	1.090E+01

RESULTS

Landfill Name or Identifier: Gregory Canyon Landfill

Closure Year (with 80-year limit) = 2033

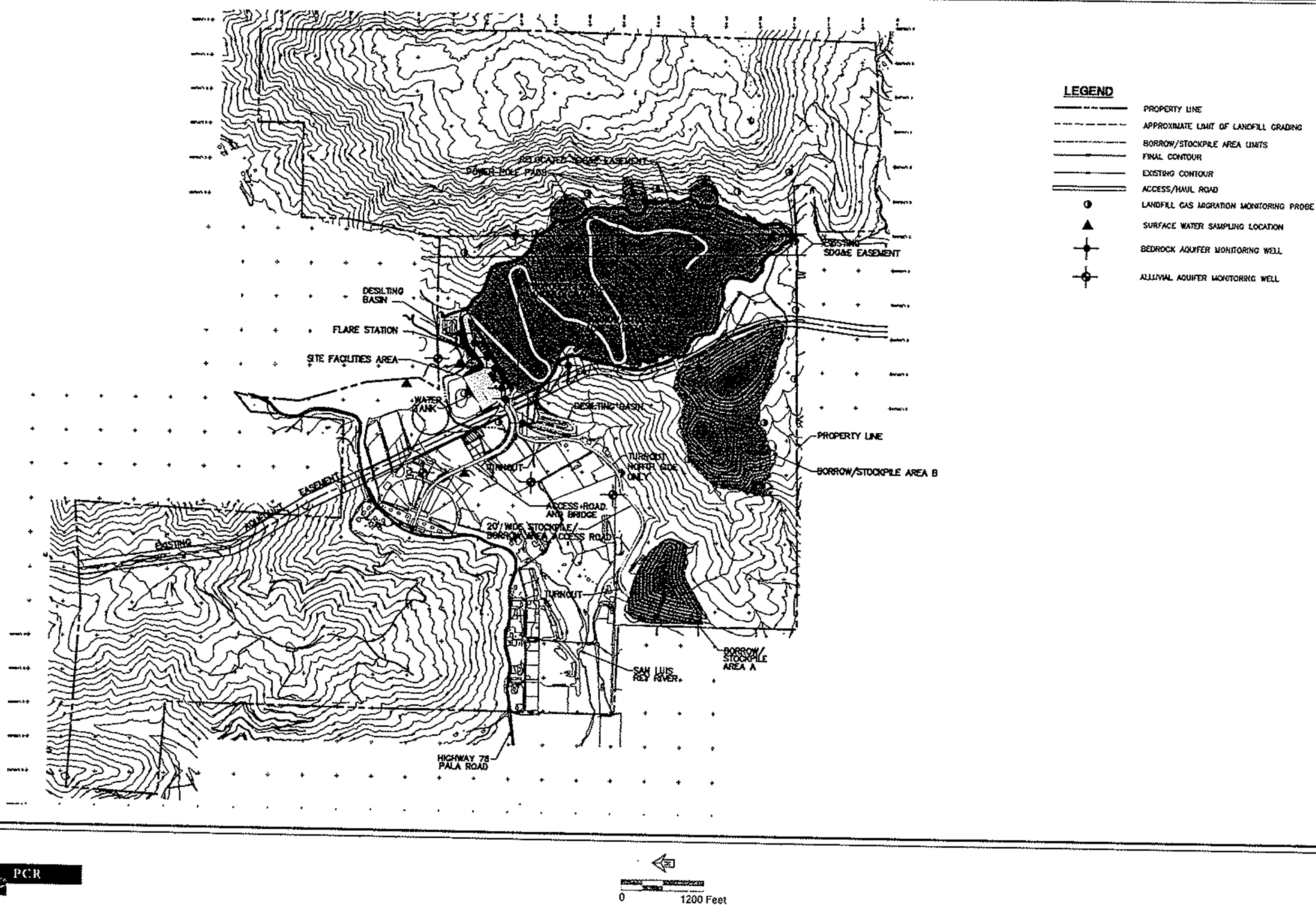
Methane = 44 % by volume

Please choose a third unit of measure to represent all of the emission rates below.

User-specified Unit: av ft^3/min

Year	Waste Accepted		Waste-In-Place		Total landfill gas			Methane			Carbon dioxide			NMOC		
	(Mg/year)	(short tons/year)	(Mg)	(short tons)	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2091	0	0	30,700,000	33,770,000	4.806E+04	3.976E+07	2.671E+03	1.187E+04	1.749E+07	1.175E+03	4.075E+04	2.226E+07	1.496E+03	5.700E+02	1.590E+05	1.068E+01
2092	0	0	30,700,000	33,770,000	4.710E+04	3.897E+07	2.618E+03	1.144E+04	1.715E+07	1.152E+03	3.995E+04	2.182E+07	1.466E+03	5.587E+02	1.559E+05	1.047E+01
2093	0	0	30,700,000	33,770,000	4.617E+04	3.820E+07	2.566E+03	1.121E+04	1.681E+07	1.129E+03	3.915E+04	2.139E+07	1.437E+03	5.477E+02	1.528E+05	1.027E+01
2094	0	0	30,700,000	33,770,000	4.526E+04	3.744E+07	2.516E+03	1.099E+04	1.647E+07	1.107E+03	3.838E+04	2.097E+07	1.409E+03	5.368E+02	1.498E+05	1.006E+01
2095	0	0	30,700,000	33,770,000	4.436E+04	3.670E+07	2.466E+03	1.077E+04	1.615E+07	1.085E+03	3.762E+04	2.055E+07	1.381E+03	5.262E+02	1.468E+05	9.863E+00
2096	0	0	30,700,000	33,770,000	4.348E+04	3.597E+07	2.417E+03	1.056E+04	1.583E+07	1.063E+03	3.687E+04	2.014E+07	1.354E+03	5.158E+02	1.439E+05	9.668E+00
2097	0	0	30,700,000	33,770,000	4.262E+04	3.526E+07	2.369E+03	1.035E+04	1.551E+07	1.042E+03	3.614E+04	1.975E+07	1.327E+03	5.056E+02	1.410E+05	9.477E+00
2098	0	0	30,700,000	33,770,000	4.178E+04	3.456E+07	2.322E+03	1.015E+04	1.521E+07	1.022E+03	3.543E+04	1.935E+07	1.300E+03	4.955E+02	1.382E+05	9.289E+00
2099	0	0	30,700,000	33,770,000	4.095E+04	3.388E+07	2.276E+03	9.945E+03	1.491E+07	1.002E+03	3.473E+04	1.897E+07	1.275E+03	4.857E+02	1.355E+05	9.105E+00
2100	0	0	30,700,000	33,770,000	4.014E+04	3.321E+07	2.231E+03	9.748E+03	1.461E+07	9.817E+02	3.404E+04	1.860E+07	1.249E+03	4.761E+02	1.328E+05	8.925E+00
2101	0	0	30,700,000	33,770,000	3.935E+04	3.255E+07	2.187E+03	9.555E+03	1.432E+07	9.623E+02	3.337E+04	1.823E+07	1.225E+03	4.667E+02	1.302E+05	8.748E+00
2102	0	0	30,700,000	33,770,000	3.857E+04	3.190E+07	2.144E+03	9.365E+03	1.404E+07	9.432E+02	3.270E+04	1.787E+07	1.200E+03	4.574E+02	1.276E+05	8.575E+00
2103	0	0	30,700,000	33,770,000	3.780E+04	3.127E+07	2.101E+03	9.180E+03	1.376E+07	9.245E+02	3.206E+04	1.751E+07	1.177E+03	4.484E+02	1.251E+05	8.405E+00
2104	0	0	30,700,000	33,770,000	3.705E+04	3.065E+07	2.060E+03	8.998E+03	1.349E+07	9.062E+02	3.142E+04	1.717E+07	1.153E+03	4.395E+02	1.226E+05	8.238E+00
2105	0	0	30,700,000	33,770,000	3.632E+04	3.005E+07	2.019E+03	8.820E+03	1.322E+07	8.883E+02	3.080E+04	1.683E+07	1.131E+03	4.308E+02	1.202E+05	8.075E+00
2106	0	0	30,700,000	33,770,000	3.560E+04	2.945E+07	1.979E+03	8.645E+03	1.296E+07	8.707E+02	3.019E+04	1.649E+07	1.108E+03	4.223E+02	1.178E+05	7.915E+00
2107	0	0	30,700,000	33,770,000	3.490E+04	2.887E+07	1.940E+03	8.474E+03	1.270E+07	8.535E+02	2.959E+04	1.617E+07	1.086E+03	4.139E+02	1.155E+05	7.759E+00
2108	0	0	30,700,000	33,770,000	3.421E+04	2.830E+07	1.901E+03	8.306E+03	1.245E+07	8.366E+02	2.901E+04	1.585E+07	1.065E+03	4.057E+02	1.132E+05	7.605E+00
2109	0	0	30,700,000	33,770,000	3.353E+04	2.774E+07	1.864E+03	8.142E+03	1.220E+07	8.200E+02	2.843E+04	1.553E+07	1.044E+03	3.977E+02	1.109E+05	7.454E+00
2110	0	0	30,700,000	33,770,000	3.286E+04	2.719E+07	1.827E+03	7.981E+03	1.196E+07	8.038E+02	2.787E+04	1.522E+07	1.023E+03	3.898E+02	1.087E+05	7.307E+00
2111	0	0	30,700,000	33,770,000	3.221E+04	2.665E+07	1.791E+03	7.823E+03	1.173E+07	7.878E+02	2.732E+04	1.492E+07	1.003E+03	3.821E+02	1.066E+05	7.162E+00
2112	0	0	30,700,000	33,770,000	3.158E+04	2.612E+07	1.755E+03	7.668E+03	1.149E+07	7.722E+02	2.678E+04	1.463E+07	9.829E+02	3.745E+02	1.045E+05	7.020E+00
2113	0	0	30,700,000	33,770,000	3.095E+04	2.560E+07	1.720E+03	7.516E+03	1.127E+07	7.569E+02	2.625E+04	1.434E+07	9.634E+02	3.671E+02	1.024E+05	6.881E+00
2114	0	0	30,700,000	33,770,000	3.034E+04	2.510E+07	1.686E+03	7.367E+03	1.104E+07	7.420E+02	2.573E+04	1.405E+07	9.443E+02	3.598E+02	1.004E+05	6.745E+00
2115	0	0	30,700,000	33,770,000	2.974E+04	2.460E+07	1.653E+03	7.221E+03	1.082E+07	7.273E+02	2.522E+04	1.378E+07	9.256E+02	3.527E+02	9.840E+04	6.612E+00
2116	0	0	30,700,000	33,770,000	2.915E+04	2.411E+07	1.620E+03	7.078E+03	1.061E+07	7.129E+02	2.472E+04	1.350E+07	9.073E+02	3.457E+02	9.645E+04	6.481E+00
2117	0	0	30,700,000	33,770,000	2.857E+04	2.364E+07	1.588E+03	6.938E+03	1.040E+07	6.988E+02	2.423E+04	1.324E+07	8.893E+02	3.389E+02	9.454E+04	6.352E+00
2118	0	0	30,700,000	33,770,000	2.800E+04	2.317E+07	1.557E+03	6.801E+03	1.019E+07	6.849E+02	2.375E+04	1.297E+07	8.717E+02	3.322E+02	9.267E+04	6.227E+00
2119	0	0	30,700,000	33,770,000	2.745E+04	2.271E+07	1.526E+03	6.666E+03	9.992E+06	6.714E+02	2.328E+04	1.272E+07	8.545E+02	3.256E+02	9.084E+04	6.103E+00
2120	0	0	30,700,000	33,770,000	2.691E+04	2.226E+07	1.496E+03	6.534E+03	9.794E+06	6.581E+02	2.282E+04	1.247E+07	8.375E+02	3.191E+02	8.904E+04	5.982E+00
2121	0	0	30,700,000	33,770,000	2.637E+04	2.182E+07	1.466E+03	6.405E+03	9.600E+06	6.450E+02	2.237E+04	1.222E+07	8.209E+02	3.128E+02	8.727E+04	5.864E+00
2122	0	0	30,700,000	33,770,000	2.585E+04	2.139E+07	1.437E+03	6.278E+03	9.410E+06	6.323E+02	2.192E+04	1.198E+07	8.047E+02	3.066E+02	8.555E+04	5.748E+00
2123	0	0	30,700,000	33,770,000	2.534E+04	2.096E+07	1.408E+03	6.154E+03	9.224E+06	6.197E+02	2.149E+04	1.174E+07	7.888E+02	3.006E+02	8.385E+04	5.634E+00
2124	0	0	30,700,000	33,770,000	2.484E+04	2.055E+07	1.381E+03	6.032E+03	9.041E+06	6.075E+02	2.106E+04	1.151E+07	7.731E+02	2.946E+02	8.219E+04	5.522E+00
2125	0	0	30,700,000	33,770,000	2.435E+04	2.014E+07	1.353E+03	5.912E+03	8.862E+06	5.954E+02	2.065E+04	1.128E+07	7.578E+02	2.888E+02	8.056E+04	5.413E+00
2126	0	0	30,700,000	33,770,000	2.386E+04	1.974E+07	1.326E+03	5.795E+03	8.687E+06	5.836E+02	2.024E+04	1.106E+07	7.428E+02	2.831E+02	7.897E+04	5.306E+00
2127	0	0	30,700,000	33,770,000	2.339E+04	1.935E+07	1.300E+03	5.680E+03	8.515E+06	5.721E+02	1.984E+04	1.084E+07	7.281E+02	2.775E+02	7.740E+04	5.201E+00
2128	0	0	30,700,000	33,770,000	2.293E+04	1.897E+07	1.274E+03	5.568E+03	8.346E+06	5.608E+02	1.944E+04	1.062E+07	7.137E+02	2.720E+02	7.587E+04	5.098E+00
2129	0	0	30,700,000	33,770,000	2.247E+04	1.859E+07	1.249E+03	5.458E+03	8.181E+06	5.497E+02	1.906E+04	1.041E+07	6.996E+02	2.666E+02	7.437E+04	4.997E+00
2130	0	0	30,700,000	33,770,000	2.203E+04	1.822E+07	1.224E+03	5.350E+03	8.019E+06	5.388E+02	1.868E+04	1.021E+07	6.857E+02	2.613E+02	7.290E+04	4.898E+00
2131	0	0	30,700,000	33,770,000	2.159E+04	1.786E+07	1.200E+03	5.244E+03	7.860E+06	5.281E+02	1.831E+04	1.000E+07	6.721E+02	2.561E+02	7.145E+04	4.801E+00
2132	0	0	30,700,000	33,770,000	2.117E+04	1.751E+07	1.176E+03	5.140E+03	7.704E+06	5.178E+02	1.795E+04	9.805E+06	6.588E+02	2.511E+02	7.004E+04	4.706E+00
2133	0	0	30,700,000	33,770,000	2.075E+04	1.716E+07	1.153E+03	5.038E+03	7.552E+06	5.074E+02	1.759E+04	9.611E+06	6.458E+02	2.461E+02	6.865E+04	4.613E+00
2134	0	0	30,700,000	33,770,000	2.034E+04	1.682E+07	1.130E+03	4.938E+03	7.402E+06	4.974E+02	1.725E+04	9.421E+06	6.330E+02	2.412E+02	6.729E+04	4.521E+00
2135	0	0	30,700,000	33,770,000	1.993E+04	1.649E+07	1.108E+03	4.841E+03	7.256E+06	4.875E+02	1.690E+04	9.234E+06	6.205E+02	2.364E+02	6.596E+04	4.432E+00
2136	0	0	30,700,000	33,770,000	1.954E+04	1.616E+07	1.086E+03	4.745E+03	7.112E+06	4.778E+02	1.657E+04	9.052E+06	6.082E+02	2.317E+02	6.465E+04	4.344E+00
2137	0	0	30,700,000	33,770,000	1.915E+04	1.584E+07	1.065E+03	4.651E+03	6.971E+06	4.684E+02	1.624E+04	8.872E+06	5.961E+02	2.272E+02	6.337E+04	4.258E+00
2138	0	0	30,700,000	33,770,000	1.877E+04	1.553E+07	1.043E+03	4.559E+03	6.833E+06	4.591E+02	1.592E+04	8.697E+06	5.843E+02	2.227E+02	6.212E+04	4.174E+00
2139	0	0	30,700,000	33,770,000	1.840E+04	1.522E+07	1.023E+03	4.468E+03	6.698E+06	4.500E+02	1.560E+04	8.524E+06	5.728E+02	2.183E+02	6.089E+04	4.091E+00
2140	0	0	30,700,000	33,770,000	1.804E+04	1.492E+07	1.003E+03	4.380E+03	6.565E+06	4.411E+02	1.529E+04	8.356E+06	5.614E+02	2.139E+02	5.968E+04	4.010E+00
2141	0	0	30,700,000	33,770,000	1.768E+04	1.463E+07	9.827E+02	4.293E+03	6.435E+06	4.324E+02	1.499E+04	8.190E+06	5.503E+02	2.097E+02	5.850E+04	3.931E+00
2142	0	0	30,700,000	33,770,000	1.733E+04	1.434E+07	9.632E+02	4.208E+03	6.308E+06	4.238E+02	1.470E+04	8.028E+06	5.394E+02	2.055E+02	5.734E+04	3.853E+00
2143	0	0	30,700,000	33,770,000	1.699E+04	1.405E+07	9.441E+02	4.125E+03	6.183E+06	4.154E+02	1.440E+04	7.869E+06	5.287E+02	2.015E+02	5.621E+04	3.777E+00
2144	0	0	30,700,000	33,770,000	1.665E+04	1.377E+07	9.254E+02	4.043E+03	6.060E+06	4.072E+02	1.412E+04	7.713E+06	5.183E+02	1.975E+02	5.509E+04	3.702E+00
2145	0	0	30,700,000	33,770,000	1.632E+04	1.350E+07	9.071E+02	3.963E+03	5.940E+06	3.991E+02	1.384E+04	7.560E+06	5.080E+02	1.936E+02	5.400E+04	3.628E+00
2146	0	0	30,700,000	33,770,000	1.600E+04	1.323E+07	8.892E+02	3.885E+03	5.823E+06	3.912E+02	1.357E+04	7.411E+06	4.979E+02	1.897E+02	5.293E+04	3.557E+00
2147	0	0	30,700,000	33,770,000	1.568E+04	1.297E+07	8.716E+02	3.808E+03	5.707E+06	3.835E+02	1.330E+04	7.264E+06	4.881E+02	1.860E+02	5.189E+04	3.486E+00
2148	0	0	30,700,000	33,770,000	1.537E+04	1.271E+07	8.543E+02	3.732E+03	5.594E+06	3.759E+02	1.303E+04	7.120E+06	4.784E+02	1.823E+02	5.086E+04	3.417E+00
2149	0	0	30,700,000	33,770,000	1.507E+04	1.246E+07	8.374E+02	3.658E+03	5.484E+06	3.684E+02	1.278E+04	6.979E+06	4.689E+02	1.787E+02	4.985E+04	3.350E+00
2150	0	0	30,700,000	33,770,000	1.477E+04	1.222E+07	8.208E+02	3.586E+03	5.375E+06	3.612E+02	1.252E+04	6.841E+06	4.596E+02	1.752E+02	4.886E+04	3.283E+00
2151	0	0	30,700,000	33,770,000	1.447E+04	1.197E+07	8.045E+02	3.515E+03	5.269E+06	3.540E+02	1.227E+04	6.706E+06	4.505E+02	1.717E+02	4.790E+04	3.218E+00
2152	0	0	30,700,000	33,770,000	1.418E+04	1.174E+07	7.886E+02	3.445E+03	5.164E+06	3.470E+02	1.203E+04	6.573E+06	4.416E+02	1.683E+02	4.695E+04	3.154E+00

EXHIBIT D



PCR

Source: Bryan A. Stirrat & Associates, 2002

Exhibit 3-3
Site Plan

EXHIBIT E

effort between proponents of GCLF and the SLRMWD to develop protocols for collection, handling and analysis of groundwater samples, with the SLRMWD selecting the contractors to perform those services, Gregory Canyon Ltd. will be required to make the arrangements with the selected contractors to perform these services at its expense. A copy of the 2004 supplemental SLRMWD Agreement is included in Appendix Q.

D.5.5 AQUEDUCT RELOCATION OPTION

It is possible that a portion of the existing First San Diego Aqueduct (also known as Pipelines No. 1 and 2) may be relocated further west of the landfill footprint on the western side of the canyon ridge. A new pipeline (Pipeline No. 6) is also proposed at this westerly location. Whether or not the pipelines are relocated, groundwater monitoring will be conducted to ensure that there are no impacts to groundwater or surface water adjacent to these pipelines. A determination as to whether to relocate the pipelines will be made in conjunction with the San Diego County Water Authority. Among the factors to be considered are impacts to the pipelines from earthquakes and blasting. The potential impact from earthquakes is discussed in Section C.2.2.2. The potential impact from blasting was analyzed in Section 4.6.3.4 of the EIR.

D.5.6 WATER USAGE

Existing beneficial uses and water quality objectives have been established by the RWQCB (1975 and 1994) for surface and groundwater in the vicinity of Gregory Canyon. The GCLF is located in the San Diego Hydrologic Basin. A Basin Plan was initially approved by the SWRCB in March 1975 and an update to the Plan was drafted in 1994 (RWQCB 1994). Beneficial uses of surface water in the Pala Hydrologic Subarea include municipal or domestic, agricultural, and industrial service supply. However, because surface water is generally seasonal and the supply is unreliable, beneficial uses for municipal and industrial service supply are restricted. In addition, surface waters provide beneficial uses for water- and non-water-contact recreation. Despite the unreliability of surface water, it provides a water supply to vegetation and maintains wildlife habitats. Surface water in the Pala Hydrologic Subarea provides warm-water habitat to sustain aquatic organisms.

Traditionally the Pala Basin groundwater has been used for agricultural and

San Diego County Water Authority
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February 23, 2011

Mr. Jim Henderson
Solid Waste Local Enforcement Agency
Department of Environmental Health
County of San Diego
5500 Overland Drive, Ste. 110
San Diego, CA 92123

Re: Solid Waste Facility Permit for the Proposed Gregory Canyon Landfill

Dear Mr. Henderson:

The San Diego County Water Authority (Water Authority) received the February 11, 2011 public notice for the above referenced permit. The Water Authority is the public agency responsible for providing the supplemental water supply to support over three million San Diego County residents and a $171 billion economy. The proposed Gregory Canyon landfill has the potential to directly affect the Water Authority's ability to safely and reliably provide necessary regional water supplies.

Because Gregory Canyon landfill construction and operation will affect several nearby major water distribution pipelines, the Water Authority reiterates concerns presented in an August 12, 2010 letter to Ms. Rebecca Lafrenier, which is attached hereto as formal comments on the current permit application. The Water Authority requests that those comments and recommendations be included in any Solid Waste Facility Permit issued for this project. Further, the Water Authority requests that all conditions related to protection of Water Authority facilities that were included in SWFP No. 37-AA-0032 (since withdrawn) be incorporated in any new permit for Gregory Canyon landfill.

Ensuring the continued safety and reliability of San Diego's water supply is of paramount importance to the Water Authority. Please transmit the proposed SWFP to the undersigned when it is drafted. If you have any questions or wish to discuss these comments in greater detail, please contact me at (858) 522-6752.

Sincerely,

Larry Purcell
Water Resources Manager

Attachment

San Diego County Water Authority

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August 12, 2010

Ms. Rebecca Lafrenier
Solid Waste Local Enforcement Agency
Department of Environmental Health
San Diego County
9325 Hazard Way
San Diego, CA 92123

Re: Gregory Canyon Landfill Project Solid Waste Facility Permit Application Package, dated June 24, 2010

Dear Ms. Lafrenier:

The San Diego County Water Authority (Water Authority) was notified that the County of San Diego, Department of Environmental Health, Solid Waste Local Enforcement Agency (LEA) received a solid waste permit application package for a new permit for the proposed Gregory Canyon Landfill project. On August 2, Department of Environmental Health provided the Water Authority a copy of the project's current solid waste facility permit application package, dated June 24, 2010.

The Water Authority has a real-property interest in the Gregory Canyon Landfill project site consisting of the pipeline right-of-way commonly known as the First San Diego Aqueduct. Within this right-of-way, the Water Authority owns and operates two large diameter water pipelines (Pipelines 1 and 2) and a pipeline maintenance road patrolled by Water Authority staff weekly. A third large diameter pipeline (Pipeline 6) has been approved for this same alignment, but has not yet been constructed. The continued operation of Pipelines 1 and 2 (and future operation of Pipeline 6) are essential to meet regional water demands, and the routine patrol of the right-of-way is necessary to provide a safe and reliable water supply to the Water Authority's 24-member agencies.

The voter approved Proposition C contemplated that there could be a conflict between the Water Authority's facilities and landfill operations on the Gregory Canyon Ltd. property and, as appropriate, identified the Water Authority as the entity to determine the extent and manner for protecting its water conveyance facilities. Proposition C - Gregory Canyon Landfill and Recycling Collection Center Ordinance; Section 3 - Description of the Project, subsection G - Protection of San Diego Aqueduct states: "<u>The project will include work</u>

required to protect any San Diego Aqueduct pipelines to the extent and in the manner required by the San Diego County Water Authority" [emphasis added]. To date, the Water Authority has not entered into, and is not currently discussing terms for, an agreement with the project proponent that sets forth the extent or the manner for protecting San Diego Aqueduct pipelines as required by Proposition C.

In 2007 and 2008, representatives of Gregory Canyon Ltd. met with Water Authority staff and expressed their interest to not relocate the Water Authority's facilities, but protect them in place. In order to consider the request, the Water Authority requested Gregory Canyon Ltd. to provide an engineering study with specific scope-of-analysis. This study has not been provided. With only the existing technical studies and engineering plans to rely on, Water Authority staff cannot recommend to the Water Authority's Board of Directors that pipeline protection in place is prudent.

Therefore, LEA's issuance of the project's solid waste facility permit should be done with the expectation that San Diego Aqueduct pipeline relocation is a project component. The expired draft Gregory Canyon Landfill Solid Waste Facility Permit (Solid Waste Facility Permit #37-AA-0032, text dated 10/1/2004) included permit conditions that addressed some pipeline relocation matters; the permit conditions also referenced the corresponding mitigation measure numbers from the project's CEQA Mitigation Monitoring and Reporting Plan (MMRP).

The Water Authority conducted a cursory comparison between the expired draft Gregory Canyon Landfill solid waste facility permit conditions and the information included in the current Gregory Canyon Landfill solid waste facility permit application package, and is concerned with the changes and omissions in the current application package. Specifically, Table 10-1 (MMRP for Project Impacts) included in the new application package omits the project's CEQA mitigation measures MM 4.4-1, MM 4.9-19g, MM4.9-19a, MM 4.7-3, and MM 4.13-12b associated with relocating and protecting the Water Authority's existing pipelines and easement. The corresponding expired Solid Waste Facility Permit #37-AA-0032, (text dated 10/1/2004) condition numbers are B.1.j(4); B.1.b(32); B.2.b(12); B.2.e(7), and B.2.e(11). These mitigation measures should remain in the project's MMRP and be included in any new solid waste facility permit issued for the project.

Table 10-1 does include CEQA mitigation measure MM 4.1-3 (expired permit condition number B.1.j(1)) that states: "Prior to commencing any construction work, the owner/operator shall provide the County Department of Environmental Health a copy of the executed agreement between Gregory Canyon, Ltd. and the San Diego County Water

Authority providing for relocation and protection of the San Diego Aqueduct pipelines." This must remain a condition of any solid waste facility permit to assure compliance with Proposition C.

The permit application package attachment SWFP-E purports to include the status of applicable permit applications and associated documentation. Attachment SWFP-E includes information that implies that a Water Authority right-of-way encroachment permit application is being processed by the Water Authority and includes a copy of correspondence from the Water Authority dated May 2, 2006. The application package does not include follow-up correspondence from the Water Authority dated May 16, 2006 (Enclosure 1), stating the Water Authority will not process plan reviews until a comprehensive agreement is reached addressing relocation and protection of all Water Authority facilities. Also, the application does not include additional correspondence between the Water Authority and Gregory Canyon Ltd., dated May 14, 2009 (Enclosure 2) that explicitly states there is no memorandum of understanding between the Water Authority and Gregory Canyon Ltd., that the Water Authority will not take an incremental approach to approval of the encroachment permit, and that the encroachment permit requires Water Authority Board of Directors' approval.

The Water Authority considers the relocated right-of-way and pipelines shown in the project's Environmental Impact Report as conceptual. The right of way as shown in Volume III of the permit package is also subject to change pending the outcome of an agreement between the Water Authority and project proponent. An alternative alignment other than that shown in the project's final EIR may require additional CEQA compliance.

The Water Authority agrees with LEA's rescission (email notice dated August 6, 2010) of the application completion determination because the actual physical scope of the project, and all applicable permit conditions, cannot be developed without the required Water Authority agreement under Proposition C. In addition, information contained in the permit application package attachment SWFP-E factually misrepresents the status of the Water Authority encroachment permit.

The Water Authority further recommends that the LEA consider the application package not ready for forwarding to the California Department of Resources Recycling and Recovery (CalRecycle) until there is an executed agreement between the Water Authority and Gregory Canyon Ltd. (or their successors interest) regarding the protection of the San Diego Aqueduct pipelines and facilities.

If you have questions or would like to discuss the Water Authority's concerns in more detail, please contact Larry Purcell at (858) 522-6752.

Sincerely,

FOR Ken Weinberg
Director of Water Resources

DC:tp
Enclosures (2)

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Enclosure 1

San Diego County Water Authority
4677 Overland Avenue • San Diego, California 92123-1233
(858) 522-6600 FAX (858) 522-6568 www.sdcwa.org

May 16, 2006

Mr. Jason Simmons
Consultants Collaborative, Inc.
160 Industrial Street, Suite 200
San Marcos, CA 92078

RE: Application to construct an access road for the Gregory Canyon Landfill Project across a San Diego County Water Authority Easement

Dear Mr. Simmons:

This letter is in response to your request for review of plans for an access road that will cross the Water Authority's easement within the Gregory Canyon Landfill Project. The Water Authority requires an appropriate agreement for the relocation and protection of its pipelines from all landfill activities to fulfill the conditions in the project's Solid Waste Facilities Permit. This requirement is contained in the Solid Waste Facility Permit approved by the California Integrated Waste Management Board in December 2004, and referenced in previous correspondence from the Water Authority to Gregory Canyon Ltd. (copy attached). The access road plans address only one aspect of the landfill project and do not address potential impacts to the Water Authority's pipelines at other locations. The Water Authority's plan review process will not begin until an agreement is executed that addresses relocation and protection of all Water Authority facilities.

Please contact Tad Brierton, Right of Way Supervisor, at 858-522-6915 to discuss the necessary agreements.

Sincerely,

William J. Rose

William J. Rose
Director of Right of Way

WJR/RS/tr
Enclosure

cc: Tad Brierton

A public agency providing a safe and reliable water supply to the San Diego region
R:\ROW\Projects\Gregory_Canyon_Landfill\WJR_JasonSimmons051606.doc
PRINTED ON RECYCLED PAPER

Mr. Jason Simmons
Consultants Collaborative, Inc.
May 16, 2006

Re: Application to build access road for the Gregory Landfill Project

bcc: Paul A. Lanspery

EXHIBIT F

monitor capable of detecting gamma radiation. An audible alarm will sound if radiation is detected. The alarm point will be set at least twice the average local background levels as recommended in *Detection and Prevention of Radioactive Contamination in Solid Waste Facilities* (Conference on Radiation Control Program Directors, Inc.). Vehicles hauling materials which contain detectable levels of radioactive waste will be segregated and denied entry to the landfill.

To insure that radiation detectors are properly calibrated, each existing, new, or repaired monitor will be tested monthly with a check-source supplied by the radiation monitor manufacturer.

B.4.4.3 SPREADING AND COMPACTION

Once customers have disposed of their refuse at the designated unloading areas, a compactor or dozer will spread the waste over the working face in approximately two-foot thick layers. A compactor or dozer will then make repeated passes over the working face to thoroughly compact the refuse. The working face is typically sloped to a gradient of approximately 5:1 (horizontal to vertical) or less to maximize refuse compaction. Refuse is spread and compacted in this manner to minimize voids in the daily refuse cells, to inhibit vector propagation, to reduce windblown litter, and to maximize site capacity.

Large, bulky wastes may be separated to prevent bridging of the surrounding refuse, or may be placed in the lower portion of the advancing lift to be thoroughly crushed by the landfill compactor.

B.4.4.4 INCLEMENT WEATHER OPERATIONS

Rain and/or high winds are the predominant inclement weather conditions which may cause the operator to adjust on-site waste handling and disposal procedures. Landfill operations are typically not hampered by mild wet weather conditions; however, when heavy rains cause the unloading areas (commercial and private vehicles) to become muddy and unusable, operations will be moved to a designated wet weather area, generally near an improved internal road, to provide continuous operation during inclement weather. Traffic and vehicle access to the unloading areas will be provided by paved roads and/or tightly compacted dirt or base rock roads. The unloading area may also be improved by tightly compacting the dirt and/or placement of rock base material.

Stockpiles of soil material will be maintained near the designated alternative unloading area to ensure that an adequate supply of soil material will be available to cover all wastes. An approved ADC material may also be utilized minimizing the need to stockpile near the wet weather unloading area.

The landfill access road bridge has been designed to prevent overtopping of the road deck in a 100 year, 24-hour storm event. As a result, it is not expected that access to the landfill by waste collectors or other vehicle traffic would be impaired except in a very extreme storm event. If monitoring of weather conditions suggests such an extreme event is possible, the operator will monitor rainfall totals and current and projected river flows. In the event there is a reasonable potential that waters could overtop the bridge deck, landfill operations will be temporarily halted. Waste collectors will be notified and collection vehicles will be redirected using the same early warning system procedures as provided in Section B.5.5.

When high wind conditions occur, the unloading areas (commercial and private vehicles) will typically be reduced in size and, whenever possible, placed in a portion of the facility that affords protection from the wind. Additional equipment may be utilized to expedite the spreading and compacting of the refuse as soon as it unloaded. Cover operations may also be implemented earlier in the day to reduce the area of exposed waste on the working face. In addition, portable litter fencing may also be utilized downwind around the working face. Litter control procedures are discussed in Section B.5.3.3.

B.4.4.5 DAILY COVER PLACEMENT

The purpose of daily cover soil or an equivalent ADC approved by the EA, is to provide a suitable barrier to the emergence of flies, prevent windblown trash and debris, minimize the escape of odors, prevent excess infiltration of surface water, and hinder the progress of potential combustion within the landfill. Daily cover in the form of soil material compacted to a minimum thickness of six inches or an ADC, such as a geosynthetic blanket or PGM, will be placed over all exposed refuse at the end of each working day. Cover material will be transported by scrapers to the working face where it will be spread and compacted by either the scrapers or a dozer.

reported in 1995. The fifth phase was the hydrogeologic study completed by GLA in 1997 and the sixth phase, also completed by GLA (1998), addressed geotechnical issues. GLA has also completed supplemental reports to address specific concerns relating to the hydrogeology of the site. Specifically, these studies include a report entitled "Phase 5 Supplemental Investigation Results of Pumping Tests" by GLA (2001) conducted to better characterize the hydraulic properties of the bedrock aquifer beneath the site, and a report summarizing a two dimensional groundwater flow model (GLA, 1995) to assess impacts of a release from the landfill to the Pala Basin. Each of these reports has been incorporated into one "master" Geologic, Hydrogeologic, and Geotechnical Investigations Report (GLA, 2003) and included as Appendix C.

Finally, following RWQCB review of the May 2004 JTD, the RWQCB requested that the groundwater monitoring network be installed and tested to demonstrate that the proposed monitoring network will be able to provide the earliest detection of a release of waste constituents from the proposed solid waste management unit at Gregory Canyon. In response to this request, GLA drilled, logged, constructed, and tested seven bedrock groundwater monitoring wells across the mouth of Gregory Canyon (at the downgradient limit of the proposed landfill); modified two wells (GLA-2 and GLA-10) to grout up the lower open hole sections of these wells; and drilled, logged and constructed two replacement alluvial wells for the groundwater monitoring network. Results of this drilling and aquifer testing program are summarized in a supplemental report to the Geologic, Hydrogeologic and Geotechnical Investigations Report (GLA, 2003) and are included in Appendix C-1.

B.5.1.3.1 GROUNDWATER MONITORING WELL LOCATIONS

Based on hydrogeologic investigations, the alluvial and shallow bedrock systems are interconnected and groundwater freely communicates between them, although the quantity of water transmitted to the alluvial aquifer from the fractures in the bedrock is minor relative to the volume of water transmitted through the alluvium. Though the alluvial system represents the zone with the highest overall hydraulic conductivity, these materials will be removed within the landfill footprint (i.e., the landfill will be underlain by bedrock and engineered fill), and a release from the landfill would be detectable in the fractured bedrock flow system first. As a result, a dual detection monitoring system, which includes dedicated wells in both the alluvial and the bedrock fracture flow systems was installed. The DMP will include downgradient wells to collect representative samples of groundwater at the downgradient limit of the landfill, or "point of compliance", and upgradient wells to collect samples of groundwater that are representative of "background" conditions. In addition, cross-hole testing has been performed following well construction to verify that there is hydraulic connectivity between wells and that the monitoring wells, as currently constructed, would be capable of detecting a contaminant because all fractures are recharged from the same source. Further discussion of the cross-hole pumping tests performed along the point of compliance is provided in Appendix C-1.

The groundwater monitoring system at the GCLF was initially designed to include a total of 20 wells, 16 of which monitor the weathered and unweathered bedrock fractured flow system. Additional groundwater monitoring wells have been proposed to reflect Dr. Huntley's recommendations (Appendix C-2), and the revised workplan is included in Appendix G-2. As shown in the following table, the proposed groundwater monitoring network will include 14 fractured bedrock wells, six weathered bedrock wells, and three alluvial wells. In addition, the groundwater monitoring network includes two alluvial "sentry" wells, downgradient of the point of compliance, and designated to intercept groundwater flows as predicted by computer modeling that simulates a release from the landfill to the Pala Basin (Section B.5.1.1.4, and Appendix C). Groundwater level measuring stations have been established in three fractured bedrock wells, and five weathered bedrock wells. The proposed groundwater monitoring network is presented on Figure 10C.

Groundwater Detection Monitoring Network

Monitored Zone	Well Name	Designation	Well Position
Fractured (Unweathered) Bedrock	GLA-4, GLA-5, GLA-11, and GLA-18*	Monitoring Well	Upgradient (Background)/ Cross-gradient
	GLA-1D*, GLA-2, GLA-12, GLA-13, GLA-A GLA-BD*, GLA-CD*, GLA-D, GLA-E and GLA-F		Downgradient (Compliance)
	GMW-4, GLA-1 and GLA-8	Water Level Measuring Station	Not Applicable
Weathered Bedrock	GMW-1, GLA-B, GLA-C, GLA-G, GLA-14 and GLA-19*	Monitoring Well	Downgradient (Compliance)
	GLA-3, GLA-7, GLA-10, GMW-2 and GMP-2	Water Level Measuring Station	Not Applicable
Alluvium	Lucio #2R	Monitoring Well	Background
	GMW-3 and GLA-2A*		Downgradient (Compliance)
	GLA-16, SLRMWD #34R		Downgradient/Sentry

* Proposed well; not currently constructed.

B.5.1.6.6 AFFECTS OF GROUNDWATER

Generally, no impacts are expected from groundwater on the waste management unit since the landfill is situated above the highest anticipated groundwater elevation. However, in the unanticipated event that groundwater was to rise significantly, the landfill design also includes a subdrain system in the floor areas of the landfill to convey any groundwater away from the landfill by gravity. A discussion of the subdrain system is included in Section B.5.1.2 - Subdrain System.

B.5.1.6.7 AFFECTS OF SURFACE WATER

Surface water run-on and storm water discharges affects on the landfill unit could include:

- Erosion of daily, intermediate, and final cover.
- Exposure of wastes thus increasing vectors and nuisances and potential offsite surface water impacts.
- Infiltration of water which increases the potential for the production of leachate and potential for groundwater impairment.

Elimination or reduction of the amount of surface water that enters the landfill unit is important in the design and operation of the unit because surface water is the major contributor to the total volume of leachate. Storm water run-on from the surrounding areas will not be allowed to enter the unit and storm water discharges will not be allowed to accumulate on the surface of the landfill. Section B.5.4 - Drainage and Erosion Control discusses control methods which aid in the minimization of run-on/run-off and surface water intrusion and Section C.2.8 - Drainage Control System discusses the drainage control measures which aid in removal of surface water run-off and prevention of surface water run-on.

B.5.1.7 <u>ESTIMATED COST FOR REASONABLY FORESEEABLE RELEASE MITIGATION</u>

In accordance with 27 CCR, §20380(b), the GCLF will establish and maintain assurance of financial responsibility for initiating, and completing corrective action for all reasonably foreseeable releases from the GCLF. As shown in Table 8, costs have been estimated to implement a Correction Action Program associated with a release to the underlying bedrock as described in Section B.5.1.6.4 above. The cost estimate is intended to provide a basis for the compliance with 27 CCR, Article 1 financial assurance requirements.

TABLE 8
GREGORY CANYON LANDFILL
ESTIMATED MITIGATION COSTS

ITEM	UNIT COST	UNITS	TOTAL COST
Construction Costs			
Corrective Action Well Construction (1)	$10,700	8	$85,600
Extraction Pumps	$4,000	8	$32,000
Electrical Conduit	$15	4200	$63,000
Conveyance Piping	$40	4200	$168,000
Water Treatment System	$800,000	1	$800,000
R/O System (3) (5) (5A)	$540,000	1	$540,000
Surface Water Impact Mitigation (6)	$500,000	LS	$500,000
Regulatory Liaison/Project Management (7)	$125,000	LS	$125,000
Engineering/CQA	$60,000	LS	$60,000
Construction Management (2)	$30,000	LS	$30,000
		Sub-Total	**$2,403,600**
	Contingency	10%	$240,360
		Construction Sub-Total	**$2,643,960**
Operational Costs	**COST/YEAR**	**YEARS**	**TOTAL COST**
Extraction Well Maintenance (8)	$10,700	3	$32,100
Laboratory Analyses (4)	$21,400	30	$642,000
Groundwater Monitoring and Reporting	$40,000	30	$1,200,000
Regulatory Liaison/Project Management	$20,000	30	$600,000
Granular Activated Carbon Treatment System Annual Maintenance	$50,000	30	$1,500,000
Surface Water Mitigation (9)	$1,000,000	LS	$1,000,000
		Operation Cost Sub-Total	**$4,974,100**
		Total Cost	**$7,618,060**

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Assumptions:

1. Corrective action wells will be permitted by the San Diego County Dept. of Environmental Health ($150/well), and are assumed to be five-inch diameter wells to 100 feet, with stainless steel screens (~$100/ft.). Each well will be developed following construction (~4 hours @ $130/hour).
2. Construction management will include logging of borings, observation of well construction, well development, and documentation.
3. A R.O. system for water treatment will be installed at the onset of the project development. Therefore, the cost for the R.O. system is not necessary as part of the cost estimate for reasonably foreseeable release mitigation. Costs include only those associated with addition of GAC to treat volatile organic compounds in groundwater.
4. Laboratory analyses include monthly influent and effluent analyses (~$250/month), and quarterly (~$1500) and semiannual (~$2050) analyses for NPDES monitoring. Analyses also include staff time for sample collection (~1 hour/month @ $50/hour).

5. The R.O. system will be installed during initial construction per an agreement with the San Luis Rey Water District and be available for impacted groundwater treatment along with the water treatment system described in Section B.5. Therefore, the capital cost of $540,000 for the R.O. system is not included in the reasonably foreseeable release cost estimate.
5A. The R.O. system may be used for surface water clean-up. The surface water impact mitigation cost includes evaluation and determination of corrective action, and implementation of surface water clean-up as well as determination if operational cost for the R.O. system should be utilized for surface water clean-up.
6. Surface water impact mitigation is for unanticipated releases from the waste management unit to the natural drainage ways including the San Luis Rey River during the active operation and post-closure maintenance period. Any release occurring during active operations will be mitigated with operational revenues generated from tipping fees.
7. Includes preparation of an ROWD, EMP/AMP, EFS/ACM, SOR and CAP documents in response to identification of release and coordination with RWQCB during CAP construction.
8. Operational cost estimate assumes replacement of one extraction well every 10 years.
9. The operation and maintenance of the R.O. system is included in the line item for "Surface Water Mitigation" cost.

B.5.1.8 GROUNDWATER TREATMENT SYSTEMS

Reverse Osmosis

The Agreement between the San Luis Rey Municipal Water District and the applicant requires the installation of a RO system. The RO system will be installed in the southwestern portion of the ancillary facilities area. The RO equipment and interconnecting piping will be constructed above ground inside a concrete containment area, which will be secured with a slatted chain link fence.

The purpose of the RO system is to provide a groundwater treatment facility that is in place in the event that groundwater impacts are identified. As currently configured, the primary constituent that the RO system would remove is total dissolved solids (TDS) and has the capability to treat 50 gpm. The system can be modified to handle organic compounds or other contaminants, as necessary.

Based on a typical release, VOCs are generally the constituents that are associated with landfills which need removal and treatment. Due to the high cost of operations for an R/O system, a granular activated carbon system was included as the impacted groundwater treatment system for purposes of 27CCR reasonably foreseeable release. The GAC is discussed in the following section and O&M costs associated with this treatment option are included in Table 8.

The RO treatment involves the separation of TDS from water by applying pressure to a feed stream passing over a semi-permeable membrane, thereby has blown off-site in objectionable quantities. Project-related litter will not be allowed to accumulate along roads, fences, or in vegetation.

B.5.3.4 NOISE CONTROL

Site operations will be conducted in compliance with Cal-OSHA regulations and the County Noise Ordinance. Noise levels of on-site equipment will be controlled by installation and proper maintenance of mufflers on all motorized vehicles. In the event that excavation operations necessitate additional measures beyond use of traditional heavy equipment, controlled blasting may be employed. Written notice will be provided to residents within a one-mile radius of the blast site at least 24 hours in advance of any on-site blasting. Site personnel will be provided with hearing protection (e.g., ear plugs or muffs) to reduce exposure from continued on-site noise levels. Rock crushing and tire shredding will occur at least 1,500 feet from the nearest residences unless other forms of noise attenuation, such as berms or acoustical curtains, are used to reduce combined landfill noise levels to below the County Noise Ordinance limit.

B.5.3.5 FIRE CONTROL

The GCLF is located in a somewhat remote area, therefore, fire prevention and control measures are of great importance and will be diligently pursued by the operator. Burning of refuse will not be allowed at the landfill facility, which minimizes the chance of above ground fires. Fire protection services are expected to be provided by the San Diego County Fire Authority. The landfill property is within the boundaries and jurisdiction of the Authority. As an alternative fire protection may be provided by the North County Fire Protection District through contract or annexation into the District. The entity providing fire protection services would also enforce the requirements of the 2009 Consolidated Fire Code, as applicable.

The primary fire prevention measure will be a firebreak between the refuse and the undisturbed natural areas surrounding the landfill. In compliance with the requirement to maintain a minimum clearance of 150 feet from the periphery of any exposed flammable solid waste (California Public Resources Code Section 4373), refuse placed within 150 feet of the landfill perimeter will be placed using the following procedures:

- Clearance of brush and vegetative debris from around the active disposal area.
- As operations move into the 150-foot zone, the operator will place soil cover regularly throughout the day.
- At no time during operational hours will refuse be exposed for more than four hours.

The potential of subsurface fires is reduced through the application of daily and intermediate soil cover placement, which will limit the amount of oxygen available for combustion. The primary measures for fire control include load checking for smoldering or burning wastes and separation of these wastes if spotted by a dozer and the covering of the fire with soil. While water could be sprayed over burning wastes, this is generally not done to avoid the introduction of liquids into the waste prism.

Additional fire prevention measures will occur on site. The landfill gas control system will be operated so as not to introduce excessive amounts of oxygen into the refuse prism. The extraction wells will be monitored for temperature and oxygen content to determine if a subsurface fire is present. All equipment with internal combustion engines will be equipped with approved spark arrestors and any flammable debris will be removed from the under carriages and engine compartments of heavy equipment on a regular basis. Fire extinguishers will be available at the entrance facilities, in the administration and operations trailers, and in landfill equipment and vehicles. Hazardous materials, collected as part of the HWEP, will be stored in fire proof containers located in the ancillary facilities area.

Site personnel will also be observant of wildfires that may occur along the perimeter of the site and will help in suppression efforts. Additional wildfire suppression forces are available from the San Diego County Fire Authority, California Department of Forestry (CDF) station, the North County Fire Protection District, and the Pala Reservation fire station, among others. Fire prevention measures, which will be adhered at the GCLF, meet current local fire code standards. The GCLF site is located within a state responsibility area. The San Diego County Fire Authority operates a fire station in the general vicinity of the landfill property, and it is expected that the Authority will be constructing a fire station at a location close to the landfill property. In addition, the North County Fire Protection District operates a station five miles from the landfill site and is a party to a reciprocal aid agreement with other fire protection agencies, including the San Diego County Fire Authority.

Tire storage can result in fires. To reduce the risk of fires from tire storage, tires will be stored within the landfill footprint in compliance with the State and local fire codes, as well as 14 CCR, Section 17354. Tires will be shredded a minimum of every six months. Section B.1.5.2.3 provides additional detail on tire acceptance, storage, processing, and disposal.

The risk of fire from blasting operations will be reduced through the use of a screening material placed above the blasting area that will prevent the escape of rock fragments, dust or other solid debris. The screening is designed so that only gases can escape through the screen.

B.5.3.6 ODOR CONTROL

The primary means of controlling odor from refuse at the site is the landfill gas control system and the placement of daily, ADC (i.e., geosynthetic blankets) or intermediate soil cover over all exposed refuse at the end of each operating day. The active working face will be confined to as small an area as practicable to help control odors. In addition, a landfill gas control system will be installed to further control odors.

B.5.4 DRAINAGE AND EROSION CONTROL

The primary function of the surface water drainage and erosion control system is to minimize erosion, to divert and convey stormwater flows in a controlled manner, and to inhibit the potential infiltration of surface water run-on or precipitation into the refuse disposal areas and to minimize hydromodification of the San Luis Rey River. The goal of hydromodification prevention is to mimic both the frequency of volume of storm water flows to the river to those occurring under the pre-existing natural condition. The surface water drainage control system for the GCLF is designed to accommodate a 100-year, 24-hour storm event run-off volumes and the volume of water caused by a simultaneous rupture of the existing Pipeline 1 and 2 and the future Pipeline 6. Section C.2.8 contains information on the interim and final drainage control features.

The drainage control system for the GCLF will consist of a variety of treatment BMP's, which may include perimeter drainage systems for the open channels (for

C.2 PROPOSED DISPOSAL SITE DESIGN FEATURES

C.2.1 INTRODUCTION

A description of the GCLF's disposal site design features is included in the following sections. The long-term development of the GCLF includes construction of a 183-acre refuse footprint. The three relocated SDG&E transmission lines are located along the eastern edge of the refuse footprint. The groundwater protection system for the GCLF refuse footprint will include a subdrain system, a composite liner system, an LCRS, and a protective layer. The GCLF will also be constructed with an interim and final surface water control system, as well as environmental control/monitoring systems. The GCLF will also be capped with a final cover system designed in accordance with applicable regulatory requirements. The proposed final closure design features and post-closure maintenance activities were developed in accordance with 27 CCR and are included in Parts E and F of this JTD.

All of the engineering plans reflecting the landfill are conceptual in nature and subject to change. The composite liner system design, which is a component of the overall waste containment system, exceeds the prescriptive standard design criteria specified in 40 CFR, 258.40. As required by 27 CCR, Section 21760, detailed as-built plans and quality assurance reports of the containment system will be prepared and submitted to the RWQCB, upon completion of containment system construction for each area of development.

C.2.2 EXCAVATION PLANS

C.2.2.1 GENERAL DESCRIPTION

In order to maximize site capacity, development of the GCLF refuse disposal area will include the mass excavation of a substantial volume of native materials. The excavation plan shown on Figure 12 presents final subgrade contours and limits of excavation. The overall interior slope gradient will be 2:1 and the flatter bottom areas will have a minimum gradient of 5 percent. As discussed in the following sections, once the excavation is complete, a subdrain system, composite liner system and LCRS will be installed. As noted earlier, the landfill

C.2.5.4 LCRS DESIGN

Due to the relatively flat grade along the base liner system, a minimum one foot thick gravel layer will be installed over the majority of the bottom liner areas. In addition, the bottom base gravel blanket will host perforated LCRS lateral collectors and mainline pipes that will lead to the leachate outfall. The outfall pipe will discharge to two 10,000-gallon leachate collection storage tanks located in the southwest corner of the ancillary facilities. The LCRS pipes will be placed in V-shaped gravel trenches constructed within the top of the liner system. To minimize the potential for clogging, bio-fouling and piping, 85 percent of the gravel will be larger than the diameter of the perforations in the pipe. The bottom area LCRS gravel pack will be overlain by geotextile fabric to prevent clogging of gravel from the operations layer soil material.

Details of the pipe designs will be prepared prior to construction of the individual landfill phases. Based on preliminary analysis, it is anticipated that an HDPE pipe with a six-inch inside diameter and a sidewall to diameter ratio (SDR) of 11 will be adequate to carry the anticipated liquid volume and resist crushing under the anticipated refuse loads.

Regulations require that the LCRS layer extend up the side slopes of the excavation. However, a 12-inch thick gravel layer will not be constructed on slope because it could not be kept stable. Rather, the LCRS design for those areas with a slope gradient of 5:1 or steeper will consist of a permeable drainage gravel pack surrounded or wrapped with a geotextile fabric placed over the liner at the toe of the interior cut slope benches. Any leachate contacting the slopes will flow along the operations layer/refuse-interface to the bench collectors. Slotted HDPE pipe will be placed in the gravel pack to allow for liquid collection and distribution to the LCRS mainlines (see Figure 15).

Annual testing methods and procedures for the performance of the LCRS are discussed in Section B.5.1.1.2.

C.2.8.3.2 PERIMETER STORM DRAIN (PSD) SYSTEM

The PSD system will consist of a reinforced concrete trapezoidal drainage channels placed around (outside) the refuse footprint. A portion of the eastern channel will be constructed during the initial construction phase (Phase I) to accommodate flows from the upper eastern slopes of the canyon. Earthen berms will also be used to divert run-on from adjacent slopes and the up-canyon areas of the undisturbed footprint into the perimeter storm drains. Construction of a portion of the western perimeter channel along the lower portion of the canyon will be installed concurrent with the initial construction phase (Phase I) to divert run-on from the east facing slopes, west of the footprint.. The PSD channels will be completed moving up canyon as the landfill is developed. The PSD is intended to control run-on (from adjacent areas to the landfill) that might otherwise flow onto the landfill. The stormwaters conveyed by the PSD system will discharge into percolation areas at approximately the same discharge point as the eastern and western desilting basins, located near the ancillary facilities. Energy dissipaters will be utilized to match pre-development flow velocities. A PSD detail is shown on Figure 19.

The western perimeter trapezoidal channel crosses the existing First San Diego Aqueduct easement as it flows to its discharge point. At this location, the perimeter channel will have a cut-off wall on the upstream and downstream side of the crossing to prevent water from undermining the aqueduct. The crossing will be reinforced with extra concrete and steel.

C.2.8.3.3 OTHER STORM DRAIN FACILITIES

Intermediate deck drains and downdrains will be required, extended and upgraded as waste filling progresses, or as required, to satisfy the ultimate design presented in the final drainage plan.

Drainage from the facilities area will be directed into a bio-swale located to the west of the facilities area with structural media filtration at the end of the bio-swale prior to discharge, as shown in Attachment B, Figure 1 of the SWPPP in Appendix D and in Figures 3 and 4 of the Evaluation of Hydrogeomorphology and Potential Beneficial Uses at Gregory Canyon in Appendix I-1. Drainage from the main landfill access road and landfill access road bridge will be to bio-swales located on the east and west sides of the road and bridge, with structural media filtration. The location of these facilities is shown in Attachment B, Figure 1 of the SWPPP in Appendix D and in Figures 3 and 4 of the Evaluation of Hydrogeomorphology and Potential Beneficial Uses at Gregory Canyon in Appendix I-1.

C.2.8.3.4 STORMWATER DESILTING BASIN

The primary function of a desilting basin is to collect and store sediment before it can be transported offsite. However, desilting basins are passive systems that rely on settling soil particles out of the water in a finite time period, and are not 100 percent efficient in entrapping sediment. Therefore, desilting basins are typically only designed to function as a secondary system to help minimize transport of sediment offsite. The primary erosion control measures are BMPs which are designed to control sediment transport at the source. The use of BMPs and their use throughout disposal operations are discussed in Section C.2.8.3.5, below.

When designing desilting basins, the capacity is based on the potential volume of silt generated from the contributing watershed area which is determined based on the Universal Soil Loss Equation (USLE). One of the coefficients in the USLE is an empirical value that is a summation of individual storm products of the kinetic energy of rainfall, in hundreds of foot-tons per acre, and the maximum rainfall intensity, in inches per hour of all significant storms on an average annual basis. As discussed above, the GCLF is designed to include two separate drainage control systems, one to handle storm water flows from surrounding areas and undisturbed areas within the refuse footprint, and the second to handle run-off from the disturbed areas within the refuse footprint. Therefore, only flows from the disturbed areas within the refuse footprint would be directed to the desilting basins, dramatically reducing silt potential.

The 10-year, 6-hour rainfall data along with a 0.02mm particle size was used to calculate the efficiency of the desilting basins pursuant to the California Storm Water Best Management Practice Handbook (2009). As presented in Appendix I, the post-development flows for the GCLF are less than the pre-development flows for the 100-year, 24-hour storm. No attenuation of the peak flows are required, thus, the basins are sized to reduce the downstream sediment loading. The 0.02mm entrapment particle size was based on site conditions. These factors were considered acceptable by the RWQCB as the project design basis. Utilizing this particle size, the calculated efficiency of the basins would be approximately 75 acres of disturbed landfill area at any given time over the life of the project. The results of the basin efficiency calculations are included in Appendix J. The following design criteria/parameters were utilized:

- maximum disturbed acreage for three particle sizes of 0.01, 0.02, and 0.05 mm;
- the Rational Method Hydrology Computer Model run for the 10-year, 6-hour storm event;
- Table 8.1 of the Erosion and Sediment Control Handbook showing settling velocities for various grain sizes; and
- ACOE information.

The 0.02mm grain size and resulting calculations are considered to be conservative because the excavated side slope areas will consist primarily of hard rock and will contribute very little if any sediment to the basins.

The desilting basins will be located just east and west of the ancillary facilities (see Figure 17). The grading plans for the eastern and western desilting basins are shown on Figure 20. The desilting basins are intended to control the amount of silt ultimately discharged from the landfill as well as the rate of discharge. The basins are designed to settle out material in the coarse silt range and will not retain water. Table 9B presents some of the characteristics of the desilting basins.

The eastern desilting basin and western desilting basin will outlet to percolation areas shown in Attachment B, Figure 1 of the SWPPP in Appendix D and in Figures 3 and 4 of the Evaluation of Hydrogeomorphology and Potential Beneficial Uses at Gregory Canyon in Appendix I-1. However, if the aqueduct easement is relocated further west and pipelines are moved west, then the western desilting basin will discharge to a pipe located at the access road crossing to reduce the number of structures crossing the aqueduct easement. The desilting basins will be constructed during initial refuse liner construction with Phase I. Also as part of Phase I, a temporary desilting basin will be constructed as shown on Figure 21.

C.2.9.2.5 DRAINAGE CONTROL DEVELOPMENT

Interim drainage control facilities will be constructed as required to control storm flows and prevent the inundation of the active face. Drainage control facilities will be placed along the interior benches above the lined slopes and direct flow into one of the perimeter channels and ultimately to the basins located at the north end the landfill. Two desiltation basins and a portion of the perimeter storm drain channels will be constructed during the Phase I development. The surface water falling directly within the Phase I footprint will be directed, via grading and downdrains, to the buried perimeter drainage pipes. All drainage control facilities will be sized to carry the water from a 24-hour, 100-year storm event and a simultaneous rupture of the existing Pipeline Nos. 1 and 2 and the future Pipeline No. 6. Hydroseeding of final fill contours will be conducted to establish native vegetation. Once an area reaches 70 percent coverage (based on pre-development conditions) then storm water flows will be diverted to the perimeter channels. Section C.2.8.3.5 presents additional detail on stormwater management.

C.2.9.2.6 LANDFILL ACCESS ROAD/MAIN HAUL ROAD/BRIDGE

The GCLF project includes construction of an access road and bridge as well as widening of SR 76 near the access road entrance. The main access road from SR 76 will be a two or three lane paved road, approximately 32 to 36 feet wide. The road will extend through the abandoned Lucio dairy to the ancillary facilities area. The access road from SR 76 to the bridge will be wide and 910 linear feet with two 12-foot travel lanes and a four-foot shoulder on each side. The access road from the bridge into the ancillary facilities will be about 985 linear feet and will be 36 feet wide, with three lanes (two travel lanes and a center lane) with a four-foot shoulder on each side. The access road will be paved with asphalt curbs.

As the access road enters the ancillary facilities area, the access road will cross over the existing First San Diego Aqueduct. Two reinforced concrete slabs will be placed at grade, one centered over each pipeline. Each slab will be approximately 28 feet wide and 64 feet in length placed on top of a layer of polystyrene. The three to four foot deep soldier beams at each end of the slab

D.2 SITE TOPOGRAPHY

D.2.1 INTRODUCTION

Topographic information is provided in the following sections as required under 27 CCR. Topographic information was obtained from an aerial survey flown in 1991 (Figure 27A). The proposed final grading plan for the landfill was prepared in accordance with 27 CCR, Sections 21090(b) and 21142(a) and is shown on Figure 9.

D.2.2 TOPOGRAPHIC SETTING

The GCLF occupies a portion of the San Luis Rey River valley and surrounding canyon, ridge, and mountain systems. Natural surface elevations on the property range from approximately 1,200 feet above mean sea level (amsl) at the head of the canyon at the south, to 300 feet amsl at the mouth of the canyon in the San Luis Rey River drainage. Much of the canyon is steep, rugged terrain containing numerous boulder outcrops on the eastern side with only a few isolated boulders on the west canyon wall. The canyon flattens somewhat at the mouth where it meets the alluvial deposits of the San Luis Rey River drainage. A prominent knoll extends into the drainage channel on the west side of the canyon mouth.

The existing slopes on the lower area of Gregory Canyon are approximately 5:1 (horizontal:vertical), becoming 2:1 at the east edge of the landfill footprint, and are 1:1 and steeper on the upper part of the eastern slope. The western flank of the canyon is defined by a rounded ridgeline, with rather uniform slopes at inclinations of 2:1 to 3:1. Topography within one mile of the site is presented on Figure 30A. Additional topographic information can be found in the Geologic, Hydrogeologic and Geotechnical Investigation Report included in Appendix C.

D.2.3 FLOODPLAIN

As required by 27 CCR, Section 21750, an operator must determine whether the facility is located within a 100-year floodplain. The proposed landfill footprint and borrow/stockpile areas are not located within the designated boundaries of a 100-year floodplain (Reference: FEMA Flood Insurance Rate Maps, June 1997) (Figure 30B). The access road/bridge would be located within the designated boundaries of the 100-year and 500-year floodplains. However, the lowest elevation of the access road/bridge would be 312.0 while the 100-year floodplain at the upstream face is 310.7 feet. Therefore, the access road/bridge is designed to be above the highest record elevation of the 100-year floodplain so that no significant flooding impacts would occur during operations. The landfill perimeter drainage network would collect all surface drainage entering onto the site. Surface water run-on would then be directed to the on-site desilting basins which will discharge to the natural drainage course and into the San Luis Rey River.

D.3 SITE CLIMATOLOGY

D.3.1 GENERAL

The climate of San Diego County can be best characterized by warm, dry weather during the summer months and cool, seasonal wet weather during the winter months. A semi-permanent, high-pressure cell located over the Pacific Ocean dominates the area. This high-pressure cell maintains clear skies for much of the year. Seasonally, summer temperatures typically average between the low 60s° and low 80s° F. Winter temperatures range between the low 40s° and low 60s° F.

D.3.2 PRECIPITATION

There are no long-term precipitation gauging stations in the vicinity of the GCLF site. Therefore, precipitation information for the site must be extrapolated from weather data available within the region with sufficient precipitation histories, generally 10 to 20 miles from the site, including gauging stations in Escondido to the south, Fallbrook to the west and Lake Henshaw to the east. The rainy season at the GCLF extends from October through April with the most significant rain events occurring December through March. A variety of factors affect the extrapolation of this data, including the distance of the station from the ocean and GCLF, elevation of the station, and local climactic and rainfall patterns. Moreover, rainfall amounts within Gregory Canyon are expected to vary, given the increase in elevation from the north to the south. Average annual rainfall within Gregory Canyon is expected to be in the range of 17.5 to 25.27 inches. Figure 28A shows the isohyetal contours for the proposed project and surrounding area in accordance with 27 CCR, Section 21750 (e)(1). Available evapotranspiration data for Escondido indicate the mean is 4.84 inches, while the minimum (2.52 inches) occurs in December and the maximum (7.33 inches) occurs in July.

A hydrologic evaluation was performed (November 2003 and October 2004) for the site to provide sizing and location information for the site's storm drain facilities. The hydrologic analysis was conducted using the Rational Method

Computer program (in accordance with the San Diego Manual Criteria) to determine the peak flows discharged from the Gregory Canyon watershed under pre-developed conditions. For computer modeling, the watershed (i.e., tributary area) was divided into six sub-basins. The model simulated a 100-year recurrence, 24-hour storm to obtain a peak discharge rate. A run-off coefficient of 0.4 was used for the pre-development analysis since the landfill and surrounding areas are currently in a natural state. The resulting peak flow rate for the pre-developed condition is approximately 765 cubic feet per second (cfs). The program also determined that the post-development peak flows from the site would be approximately 807 cfs, which is a minimal increase of 42 cfs or less than six percent over the flow rate for pre-development conditions.

The run-on and run-off control systems at the GCLF are designed to intercept and convey the calculated 24-hour, 100-year storm event water volumes to desilting basins prior to discharge into off-site natural drainage courses. For more information regarding surface water control, refer to Section C.2.8.

Additional modeling was conducted in 2008 to review and update the storm water management plan for the facility using the Unit Hydrograph Method Analysis (HEC-1). Storm water control facilities were updated to meet newer standards set forth in the RWQCB's MS-4 permit, and to prevent hydromodification impacts to the San Luis Rey River, as provided in the Storm Water Management Report (Appendix I-1) and the SWPPP (Appendix D).

D.3.3 WIND

Figure 28 shows the annual wind speed and directions as recorded at the nearest meteorological station. As indicated, predominant winds are from the west quadrant with an annual mean speed of 6.60 miles per hour (see Figure 28). Winds from the southwest and west-northwest are also common. Weather data is recorded at the McClellan-Palomar Airport.

Locally, the airflow within Gregory Canyon results from a combination of regional wind patterns, subregional land/sea breezes and local up-canyon/down-canyon flows. The land/sea breeze is primarily easterly/westerly while the canyon topography is oriented north/south. Winds within the canyon are above, the analysis indicated a static factor of safety of 1.53 if the tensile strength of the geomembrane is ignored, and 1.69 when considering the tensile strength of the LLDPE.

The seismic induced permanent displacement due to the postulated seismic exposure of the site was then calculated using the procedure described by Makdisi and Seed (1978). The procedure first requires calculation of yield acceleration (k_y), the acceleration value for which a pseudo-static analysis yields a factor of safety of 1.0. K_y was evaluated and found to be equal to 0.185g. The ratio k_y/k_{max}, where k_{max} is the maximum ground acceleration at the site (0.40g), was then calculated. The value of the estimated permanent displacement was then read from a chart developed by Makdisi and Seed normalized for the period of the waste and related to the magnitude of the earthquake event. Using this procedure, the calculated seismic-induced permanent displacement for the final cover during the postulated maximum credible earthquake at the landfill ranges from 1.7 to 5.1 inches depending on the thickness of the waste prism. Using the methods of Bray and Rathje (1998), the estimated seismic displacement under the loading of the MCE ranges from 0.5 to 3.7 inches, depending on the waste thickness. These estimated displacements are less than the commonly acceptable range of seismic displacement of 6 inches to 12 inches (Seed and Bonaparte, 1992) and would not be expected to inhibit the functional integrity of the cover. In addition, damage to the cover should be evident in post-earthquake inspection and can be easily and quickly repaired as a part of post-earthquake maintenance. The seismic-induced permanent displacement calculations for the prescriptive final cover are provided in Attachment 5 of the GLA (2003) report, included in Appendix C.

D.4.7 GEOLOGIC HAZARDS DUE TO SURFACE AND NEAR SURFACE PROCESSES

Landslides

The potential for landsliding was evaluated by WCC (1995) based on review of stereo aerial photographs and field reconnaissance study and geologic or geomorphic features characteristic of landslides were not observed in or adjacent to the landfill site. However, the natural slopes will be modified by the project and the stability of these man-made cut slopes are of potential concern.

The three most common types of cut-slope failures are block-slip failures, wedge-slip failures, and circular failures. Block-slip failures are most common in slopes that are underlain by bedrock with distinctive partings (e.g., fractures) that dip in the same direction but at a shallower angle than the cut. Wedge-slip failures occur when the bedrock has two or more partings (e.g., a weathered dike and a joint) with orientations such that their line of intersection dips at a shallow angle in the direction of the cut. Finally, circular failures develop where the substrate is loosely consolidated and comparatively homogeneous.

As stated in Section D.4.6, a stability assessment was performed using a kinematic analysis (Norrish and Wyllie, 1996), to see if movement along one or more of the main discontinuity planes is possible. The kinematic analysis shows that large-scale block-slip movement and wedge-failure are not likely given the geometry of the dominant directions of discontinuity in Gregory Canyon. However, mapping should be performed and this conclusion reevaluated as the excavation proceeds. It is also possible that small-scale, localized block falls may occur when fractures daylight the cut or where a higher density of fractures are encountered during excavation.

As previously indicated, circular failures develop where the substrate is loosely consolidated and comparatively homogeneous. All the rocks exposed at Gregory Canyon are compact and cohesive, even when weathered, so a circular failure of the cut slopes is similarly unlikely. As a result, the proposed cut slopes are anticipated to be stable and no significant impacts are anticipated.

Rockfalls

Rockfalls are abrupt movements of independent blocks of rock that become detached from steep slopes. Falling rocks can reach the base of a slope by free-falling, bouncing, rolling down the slope surface, or by some combination of the above. There is clear evidence that rockfalls have occurred at the site during mass wasting of Gregory Mountain located east of the proposed project.

A first scenario was calculated by GLA (1998) for elastic bouncing trajectories, which yield the maximum encroachment of a bouncing rock fragment into the footprint of the landfill. The encroachment distance from the edge of refuse was estimated at 300 feet, and the travel time from the top of the profile to its final resting point was estimated at 22 seconds. GLA (1998) calculated a second scenario, incorporating the more realistic condition that some of the kinetic energy of the falling rock fragment would be dampened by impact. The bouncing rock would stop within a few feet after reaching the limit of refuse with an estimated travel time of 23 seconds. The analysis of this scenario indicated that the bouncing trajectories become smaller in length and traveling height as the bouncing rock fragment moves from the medial to the lower reaches of the slope. A third scenario addressed rolling particles, and suggested that rolling rock fragments could travel as much as 360 feet onto the landfill if unchecked.

Based on this analysis, construction of a "catching" wall or other diversion structure near the edge of the landfill is recommended to effectively mitigate the risk of rock fragments rolling onto the landfill. Rockfall trajectories can reasonably be expected to be even shallower and shorter for profiles with gentler slopes. The conclusions reached through the analysis of this profile are of general application throughout the eastern slope of the landfill site. Siting and design of any rockfall mitigation structure(s) will be performed during the design of the eastern perimeter storm drain channel, and may consist of flexible barriers, drapery or anchored mesh systems. Details as to the design of these systems will be included in the design report required prior to construction of the drainage facilities. Figure 36 shows typical rockfall protection designs.

Debris flows

Earth, mud, and debris flows form when a mass of unconsolidated sediment is mobilized by sudden ground vibration (e.g., an earthquake) or by a sudden increase in weight and pore water pressure (e.g., after soaking of the soil by heavy rains). The initial movement of a flow is enhanced by steep topography and deforestation, but once mobilized flows can spread over gently sloping terrain.

Debris flows cannot be forecasted, but the susceptibility for formation of debris flows on any given site can be estimated by looking for evidence of previous flow events. GLA (1998) reviewed aerial photographs of the site, and concluded that there is a deposit of poorly-sorted colluvium that could have been formed as a debris flow deposit (Figure 29). The deposit forms a landform with a rough lobate shape and comparatively steep boundaries, but lacks levees or pressure ridges, and so could also have been formed by erosion of an older colluvial fan.

The natural development of vegetation will reduce potential debris flow hazards. Special precautions such as diversion structures near the upper reaches would need to be taken if vegetation is destroyed. The diversion structures should be built so as to be permeable, allowing almost free draining of runoff, but should capture high viscosity earth-, mud- or debris.

E.3.5 FIRE AND/OR EXPLOSIONS

The following procedures will be followed during incidents of fire and/or explosions:

- Contact the appropriate fire protection agency, with the San Diego County Fire Authority, of which the GCLF is within the sphere of influence, or the County of San Diego, to provide fire protection, even if on-site capabilities are deemed adequate to extinguish fires or control future explosions. On-site landfill personnel will be instructed to follow the fire department's directions and give their full cooperation.
- In the event of an off-site fire near the landfill, such as a structural fire, the operator will lend its personnel and equipment, if available, to the Fire Department to fight the fire.

E.3.6 FLOOD

The landfill footprint and borrow/stockpile areas are not located within the designated boundaries of a 100-year floodplain. The access road/bridge would be located within the designated boundaries of the 100-year and 500-year floodplains. However, the lowest elevation of the access road/bridge would be 312.0 while the 100-year floodplain at the upstream is 310.7 feet. Therefore, the access road/bridge is designed to be above the highest record elevation of the 100-year floodplain so that no significant flooding impacts would occur during operations. The landfill perimeter drainage network would collect all surface drainage flowing toward the landfill footprint.

The following procedures will be followed if flood waters occur at the GCLF in excess of the handling capability of the stormwater control system:

- Earthen berms may be constructed in areas prone to flooding.
- If berming is ineffective, the operator may cut a diversion channel to avoid inundation of the refuse cell.
- Sand bags may be used in conjunction with berms or diversion channels.

EXHIBIT G

APPENDIX C-2

TECHNICAL MEMORANDUM – REVIEW OF ISSUES RELATED TO PROPOSED GREGORY CANYON LANDFILL

Technical Memorandum

Date: June 24, 2009

To: Mr. William Hutton
Law Offices of E. William Hutton
6303 Owensmouth Ave
Woodland Hills, CA 91367

From: Dr. David Huntley
Professor Emeritus of Geological Sciences
San Diego State University

Subject: Review of issues related to proposed Gregory Canyon Landfill (Privileged and Confidential)

As requested, I have undertaken an overview of the groundwater conditions and proposed groundwater monitoring plan for the proposed Gregory Canyon Landfill to provide an independent, outside review of the adequacy of, or possible weaknesses in, that plan. I have been provided the 1997 Phase 5 Hydrogeologic Investigation; Appendix C of the 2003 Geologic, Hydrologic, and Geotechnical Investigations Report; Appendix C of the 2004 Supplemental Hydrogeologic Investigation Report; the 2007 Water Supply Report; and the 2007 Water Quality Monitoring Report; all prepared by GeoLogic Associates. In addition, I have been provided San Diego Regional Water Quality Control Board (RWQCB) Tentative Order R9-2009-04, Tentative Monitoring and Reporting Program R9-2009-04, and the Technical Report for Order R9-2009-04.

It should be noted that this review focused on the "big picture". The RWQCB raised concerns about the adequacy of the downgradient (point of compliance) monitoring program and noted that I raised similar concerns about monitoring the groundwater in and around the proposed Campo Landfill, placed in a similar fractured rock environment. Accordingly, much of my review was focused on that issue. This memo does not address any, more detailed, opinions that I might have about the analyses described in the above reports, except those that related to the "big picture" issues that are the subject of this memorandum.

Adequacy of Point of Compliance Monitoring

As of the date of this memorandum the point of compliance monitoring is comprised of wells GMW-1, GLA-2, GLA-12, GLA-13, GLA-14, GLA-A, GLA-B, GLA-C, GLA-D, GLA-E, GLA-F and GLA-G in the fractured rock system, and well GMW-3 in the alluvium, with sentry wells GLA-16 and SLRMWD #34R. The

RWQCB, in their technical report related to the tentative order, expresses three concerns:

1. The hydrogeologic setting at Gregory Canyon is comprised of three systems – an alluvial system located downgradient of the footprint of the landfill, a weathered bedrock aquifer that underlies and is north (downgradient) of the footprint of the landfill, and a fractured rock system that, in turn, underlies the weathered bedrock. The proposed monitoring plan treats the weathered bedrock and underlying bedrock systems as one, so monitoring is not capable of distinguishing between the two.

2. Much of the aquifer testing was conducted in wells that are completed in both the weathered and un-weathered bedrock, though most research and texts recommend separately testing individual aquifers in a multiple aquifer system.

3. Monitoring of groundwater quality from point-source releases of contaminants, such as a breach in a liner, in a fractured rock system is very difficult.

In my opinion, these concerns are worthy of consideration. In particular, groundwater flow is markedly different in weathered and un-weathered bedrock. Weathered bedrock acts much more like an intergranular porous medium, with directions of groundwater flow defined more by the gradient and less by discrete avenues of permeability. Directions of groundwater flow are largely defined by discrete pathways in a fractured rock system. Therefore, a monitoring network is more likely to pick up indications of releases in weathered bedrock than in a fractured rock system. Wells that are completed in both weathered bedrock and in slightly fractured rock are likely to be providing information about the weathered bedrock system and may provide little or no information about the underlying fractured bedrock. It is much preferable to have wells separately completed in weathered and un-weathered bedrock. Further, aquifer testing of wells completed in both weathered and slightly fractured un-weathered bedrock is likely to provide little or no information about the fractured, un-weathered bedrock.

A review of the well logs and, more importantly, the geophysical and tracer logs conducted by Colog, provides some insight about which zones are likely to be monitored by the proposed wells. Wells GLA-A, GLA-E, GLA-2, GLA-F, GLA-D, and GLA-13 are all screened only in the fractured rock to the west of the thalweg of Gregory Canyon. Weathered bedrock is above the water table in all of those wells, so monitoring of weathered bedrock west of GLA-13 is not possible or appropriate.

The only monitoring well along the canyon thalweg is GMW-1, which is completed only in weathered bedrock. This appears to be an oversight, as the canyon thalweg parallels the primary fracture orientation and appears as a lineament in aerial photos. I recommend:

1. That a well completed only in unweathered, fractured rock be drilled at this location to a depth sufficient to intersect conductive fractures.

2. In addition, the water table appears to be above the weathered bedrock/alluvium interface at that location, so a monitoring well in alluvium should be placed there as well.

3. Because no monitoring wells are completed in weathered bedrock west of the canyon thalweg, I recommend that a well be drilled between GLA-3 and GLA-13 and screened only in weathered bedrock.

To the east of the canyon thalweg, wells GLA-C, GLA-B, and GLA-G appear to be completed only in weathered bedrock (the well log of GLA-G appears to identify materials consistent with weathered bedrock to the total depth of the well, though cross-section AA' shows unweathered bedrock at the base). Only well GLA-12 appears to be screened in unweathered, fractured bedrock (though cross-section AA' shows the well completed in weathered bedrock, the well log shows unweathered bedrock at 30 ft of depth, above the screened interval of the well and above the water table). Therefore, the weathered bedrock appears to be adequately monitored east of the canyon thalweg. However, the un-weathered fractured rock system is largely unmonitored east of the canyon thalweg. I recommend:

1. Additional wells be drilled and completed in the unweathered and fractured bedrock between GMW-1 and GLA-12.

2. These wells should be spaced and drilled to depths that, based on fracture geometry (fracture spacing and orientation) are very likely to intersect most productive fractures.

Completion of additional monitoring wells based on the above recommendations should provide additional assurance that the monitoring well network will detect any significant release. However, as I commented on the proposed Campo Landfill, there is simply no way in a fractured rock system that anyone can guarantee that any releases will be detected by a monitoring well network. It should be noted, however, that the relation between the landfill and potential receptors is different at Gregory Canyon Landfill than at the proposed Campo Landfill. At the proposed Campo Landfill, the most sensitive receptors were groundwater users dependent upon wells that are completed in the fractured rock system. One of the characteristics of solute transport in fractured rock is that velocities can be surprisingly high, due to moderate permeabilities and low porosities, and there is little dilution of solutes along the flow path. Therefore, wells intersecting fractures that have become contaminated by a release may be impacted quite soon after the release and at concentrations nearly the same as concentrations in the source area.

At Gregory Canyon, there are no receptor wells completed in fractured rock downgradient of the proposed landfill before groundwater flows into the alluvial aquifer of the San Luis Rey River Valley. Potential receptor wells are all completed in the alluvium. And while solutes can travel very rapidly in fractures and with little dilution, the flux is relatively low. Contaminants flowing through fractures with a low flux to an alluvial system are subject to a lot of dilution. For example, a series of fractures over a width of 50 ft with an effective hydraulic conductivity of 0.1 ft/day, subject to a gradient of 0.1 ft/day will transmit 0.5 ft^3/day/ft of depth to the alluvial aquifer at the base of Gregory Canyon. That alluvial aquifer, under a gradient of 0.01 and with a hydraulic conductivity of 20 ft/day will transmit 10 ft^3/day/ft of depth over a 50 ft wide section. That means that concentrations of VOCs on the order of 20 ug/l in the fractured rock system would be diluted to concentrations of 1 ug/l or less over a distance of 50 ft in the alluvial system. Research over the past decade indicates that the primary pathway in fractured rock systems is actually the intersection of fractures (a line), not the length of the fracture (a plane), so additional dilution would occur because of the vertical interval of contamination in the fractured rock system is much smaller than the corresponding interval in the alluvial aquifer. It is very likely that, if any release occurs to the fracture rock system, contaminants would be rapidly diluted to below the detection limit in the adjacent alluvial system. I am unaware of any alluvial aquifer which has been contaminated by releases to an adjacent fractured rock aquifer.

Summary of Recommendations

1. Additional groundwater monitoring wells should be completed in the fractured rock (unweathered) system at GMW-1 and between GMW-1 and GLA-12. The number of wells between GMW-1 and GLA-12 should be based on the proposed depth and the spacing and orientation of fractures in nearby boreholes, but should be spaced such that there is a reasonable assurance of intersecting permeable fractures.

2. An additional well completed in the weathered bedrock should be placed between GLA-3 and GLA-13.

3. An additional monitoring well should be completed in the alluvium at GMW-1 or downgradient of GMW-1 but as close to GMW-1 that alluvium becomes saturated.

EXHIBIT H

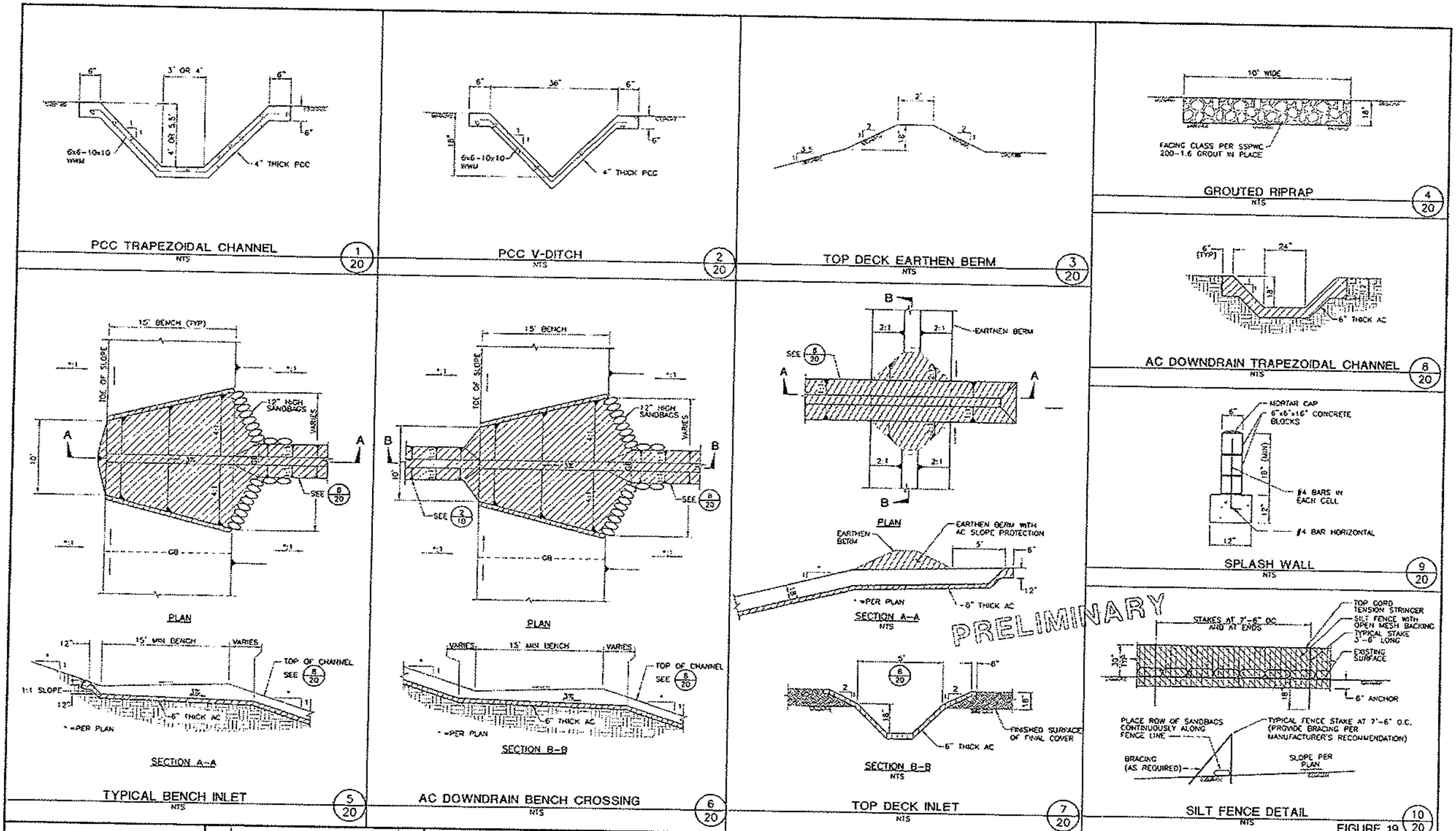

FIGURE 19

NO	REVISION DESCRIPTION	BY

BAS
BRYAN A. STIRRAT & ASSOCIATES
CONSULTING CIVIL & ENVIRONMENTAL ENGINEERS
1360 E. VALLEY VISTA DRIVE
DIAMOND BAR, CALIFORNIA 91765
(909) 860-7777

GREGORY CANYON LANDFILL
DETAIL SHEET

DESIGNED BY:	SCALE: AS SHOWN
DRAWN BY: T.J.S	DATE: FILE NO:
CHECKED BY:	DATE:
APPROVED BY:	DATE:

DRAWING 21

FOR PERMIT PURPOSES ONLY - NOT FOR CONSTRUCTION

EXHIBIT I

Estimated Leachate Production Rates

Modeling of potential leachate generation was performed using the U.S. Army Corps of Engineers HELP3 (Hydrologic Evaluation of Landfill Performance) computer program, which uses representative rainfall and evapo-transpiration data to determine the amounts of leachate that might be generated in municipal solid waste landfills. The program takes into account the total area landfilled, representative precipitation patterns, representative evapo-transpiration, and the hydraulic conductivity of various construction materials to calculate leachate generation and accumulation. The initial climate properties (excluding precipitation) were selected from HELP3 default values for the City of San Diego, and corrected for the latitude of the proposed Gregory Canyon Landfill. Precipitation data were adjusted to a conservative 50-year annual average of 18 inches, with a minimum yearly total of 4.40 inches and a maximum yearly total of 24.79 inches. The annual average precipitation value was evaluated for consistency by reviewing data compiled by Wright et al, (1991) from 116 rainfall stations throughout the county and presented on a map prepared for the County of San Diego Department of Public Works. On this map, the Gregory Canyon site falls between the 15- and 18-inch average annual precipitation contours. In addition, review of the National Oceanic and Atmospheric Administration (1974) database, indicated an estimated average annual precipitation of 16 inches in this part of the county. It should be noted that heavy rain does not necessarily result in increased leachate generation, because leachate generation is a function of infiltration, not precipitation.

Modeling was performed by subdividing the 185-acre landfill (excludes the three transmission pads on the eastern edge) into eight zones for the "floor" area (40.6 acres), and another eight for the "slope" areas (145.8 acres). Modeling of refuse placement was performed taking into account the anticipated timing and volumes of refuse that will be placed, as well as the footprint areas and elevations that are expected as the landfill incrementally approaches capacity. During active phases of landfilling at any given zone, it was conservatively assumed that refuse was left uncovered, but it was also assumed that an interim cover was placed at the conclusion of refuse placement on that zone. For the model, leachate drains in the Leachate Collection and Recovery System (LCRS) were positioned at 500-foot intervals within the bottom LCRS gravel. Along the side slopes, drains were positioned at 100-foot intervals (measured along the slope). Closure of the proposed Gregory Canyon Landfill was modeled using a prescriptive CCR, Title 27 low-permeability final cover.[9]

The results of the HELP3 analysis indicate generally low values for both the total leachate generation and peak daily leachate generation until the final cover is placed in year 31, with the exception for significant "spikes" associated with heavy precipitation over a considerable length of time to allow significant infiltration during years 3, 16 and 22. After the final cover is placed in year 31, leachate generation would be expected to decrease substantially. The amount of leachate generated reaches a maximum value in year 16, when the projected total leachate generation is estimated at 53,984 ft^3 (403,854 gallons), of which 8,187 ft^3 (61,247 gallons) are generated from the floor area and 45,797 ft^3 (342,607 gallons) are generated from the slope area. The peak daily leachate generation is estimated to be 142 ft^3 (1,062 gallons) for the floor areas

9 As indicated in Section 3.7.1.5, if an alternative final cover design were to be considered, the appropriate modeling would be performed and presented to the reviewing agencies to ensure consistency with the performance of a prescriptive cover system. In addition, while this EIR evaluates the environmental impacts of closure to ensure that all phases of the project have been considered, a separate discretionary action and CEQA review and clearance will be required prior to approval of the Final Closure Plan.

and 1,094 ft^3 (8,184 gallons) for the slope areas during the 16th year. Calculated peak daily head on the liner reaches a maximum at 0.25 inches during the 16th year. The proposed LCRS design complies with Federal Standards Title 40, Section 258.40 of Subpart D, which allows a 12-inch range.

Potential Contamination of Adjacent Groundwater Supplies

The proposed landfill will occupy one of the tributary canyons to the Pala groundwater basin (Exhibit 4.3-1). The western part of the basin is managed by the San Luis Rey Municipal Water District (SLRMWD). In 1995, SLRMWD requested that Gregory Canyon Ltd. perform an assessment of potential impacts that could occur to the basin if leachate was released from the proposed landfill. GLA (1995) performed computer model simulations of groundwater flow for the Pala basin in the vicinity of the proposed landfill, estimated worst-case leakage from the landfill, and identified production wells (ones from which water is extracted) within the basin that could be impacted by a leachate release. The analysis assumed that the leachate containment systems incorporated in the project design meet the requirements for environmental protection mandated by U.S. and California EPAs.

GLA (1995) developed a two-dimensional groundwater flow model using the finite difference computer program Flowpath (Franz and Guiguer, 1992). Constituent transport modeling with the Flowpath computer program is accomplished with the use of particle tracking techniques, which simulate constituents as "particles" that follow the groundwater flowlines. The particle tracking method is a case of simple advective transport where no dispersion, absorption or decay are allowed. Particles are tracked until they are pulled into a modeled pumping well, or until they stagnate and are overwhelmed by a much larger flux of groundwater.

Two conditions were simulated using the groundwater flow model. The first (Exhibit 4.3-5) was to simulate groundwater flow under existing conditions with a worst-case leakage through the liner of 10 gallons per day per acre (1,850 gallons per day for the entire site) and head conditions in the Pala basin at levels approximately equal to those as provided by the SLRMWD from measurements taken in 1993. (The GLA study assumed a landfill footprint of 185 acres, which excludes the three transmission pads on the eastern edge of the landfill.) The release is assumed to be a point source and is modeled as an injection well. The second simulation (Exhibit4.3-6) involved dropping groundwater approximately 10 feet lower than ground surface in the southwest corner of the basin, as could happen if increased pumping took place during extended drought periods.

The first model showed that steady-state groundwater flow in the Pala basin can be reasonably assumed to follow the topography, with flow lines following the general trend of the river (Exhibit 4.3-5). Owing to slightly increased recharge in the vicinity of the river, groundwater velocities are higher immediately adjacent to the trace of the river. Exhibit 4.3-5 also shows the predicted pathways of particles released from the proposed landfill. The particle pathways are shown to extend past the on-site wells #41 and #42 (San Luis Rey Water District designations) when allowed to flow under steady state conditions.

The particle pathways then extend along the southern perimeter of the canyon until the particles intercept the point of constriction within the canyon, on the western side of the site at the base of the bluff where the Verboom homestead is located. (This is within the site at least 1/3 of a mile from the down gradient boundary.) At this point the pathway merges with the underflow of the San Luis Rey River. The particles do not extend beyond this point because the computer

EXHIBIT J

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Seattle, Washington 98107
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January 3, 2011

Mr. Mike Porter, Engineering Geologist
San Diego Regional Water Quality Control Board
9174 Sky Park Court, Suite 100
San Diego, CA 92123-4340

Dear Mr. Porter:

I am providing this letter for your consideration on behalf of RiverWatch and the Pala Band of Mission Indians to address their concerns with the impacts to water quality that would occur if the proposed Gregory Canyon Landfill is approved as presently planned. Specifically, I explain why the project proponent has failed to model stormwater flows in the canyon properly because of the use of out-dated and poorly applied modeling techniques. I also explain why the proposed stormwater management facilities are inadequate to control stormwater flows and sediment transport during the 30-year period of operation and the 30 years of post-closure.

In forming my opinions I reviewed and assessed a number of documents submitted to describe the project overall and its stormwater management features, including but not limited to:

Updated Evaluation of Hydrogeomorphology and Beneficial Uses at Gregory Canyon (Updated Evaluation Report);
The Hydrogeologic Map of the Gregory Canyon area;
Joint Technical Document, Volumes 1 and 2, Gregory Canyon Landfill, San Diego County, California (JTD);
Revised Final Environmental Impact Report (FEIR) and Technical Appendices A Through D;
U.S. Army Corps of Engineers' Jurisdictional Delineation (ACOE Delineation); and
Aerial photographs of the Gregory Canyon area.

In evaluating the Gregory Canyon Landfill documents I applied the experience of my 34 years of work in the stormwater management field and 11 additional years of engineering practice. During this period I have performed research, taught, and offered consulting services on all aspects of the subject, including investigating the sources of pollutants and other causes of aquatic ecological damage, impacts on organisms in waters receiving urban stormwater drainage, and the full range of methods of avoiding or reducing these impacts. The attachment to this letter presents a more complete description of my background and experience. My full *curriculum vitae* are available upon request.

THE PROJECT PROPONENT USED OUT-DATED AND POORLY APPLIED MODELING TECHNIQUES

Overall, the conclusion that stormwater can be managed to eliminate negative impacts to the San Luis Rey River and its beneficial uses is predicated on the use of methods that are inadequate to support the conclusions reached or to serve as a basis for design decisions for such an important project. Furthermore, the methods were often applied in a less than rigorous and sometimes inconsistent fashion, with inadequate input data and insufficient detail and explanation for an independent analyst to evaluate conclusions and design specifications. Accordingly, the Regional Board should require a reanalysis of the site's hydrology, employing methods I outline in this letter; reconsideration of the stormwater management plan; redesign of the conveyance and treatment facilities as needed; and thorough demonstration that the resulting system will allay the many concerns I express.

Inadequacy of the Selected Hydrologic Models

The most fundamental shortcoming is the proponent's reliance on hydrologic models of very limited capability and the failure even to apply these models in the most effective way. Modeling was based on the Rational Method and the HEC-1 model, models that have serious limitations, in different applications over the course of project development as reported in the JTD and Updated Evaluation Report. Because of those limitations, the hydrologic modeling field has begun using the superior "continuous hydrograph simulation" method, a technique also developed for the San Diego region. San Diego County and its municipal stormwater co-permittees have a beta version of a continuous simulation model, based on the U.S. Environmental Protection Agency's (USEPA's) Hydrologic Simulation Program—FORTRAN (HSPF), under testing to be completed by January 14, 2011, prior to release into regular practice.

The Rational Method amounts to an equation with which a dependent variable (flow) is computed as the product of three independent variables that are supposed to represent all of the physical processes that determine how much rainfall in a storm event is converted to surface runoff and at what peak rate it flows. It has been used in essentially the same form since its introduction in 1851, which is equivalent to communicating with Morse's telegraph (invented in 1844) in the internet age. The extremely simplistic Rational Method is severely limited in representing actual hydrologic events and magnitudes for a multitude of reasons and has no standing whatsoever among well informed hydrology professionals.

The HEC-1 model incorporates some basic hydrologic processes, like rainfall interception and depression storage, and thus avoids some of the limitations of the Rational Method. However, it still is restricted to predicting runoff from one precipitation event at a time and is better suited to watersheds larger than Gregory Canyon. Results produced by a single-event model, like both the Rational Method and HEC-1, are a function of the event or events selected, often a specified return frequency (e.g., 10 years) and duration (e.g., 6 hours). Such a selection always has some degree, and often a high degree, of arbitrariness. These models are usually run for only one or a few events, a practice followed in the Gregory Canyon analysis, and thus give a poor idea of the runoff outcome of the numerous and highly variable natural geophysiographic conditions responsible for runoff generation.

A continuous simulation model overcomes the major disadvantages of these event-based models and permits an examination of runoff produced by all of the storms in a precipitation record. It thus incorporates a full range of site-specific variables, such as total quantity of rainfall, intensity, antecedent dry period, repetitiveness of storms in a short period of time, etc. This capability allows identification of the critical conditions that must be taken into account in assessing potential impacts and in designing appropriate management facilities. These advantages have important implications for the effectiveness of facilities in protecting the aquatic ecosystems and beneficial uses of waters receiving stormwater discharges. Whereas single-event models predict only the runoff from the rather arbitrarily selected storm frequency and duration, continuous simulations provide runoff estimates for a host of other possible conditions, such as relatively intense storms (high rainfall per unit time) and repeated storms in a short period of time (e.g., three storms, each of one to several inches, within a week). A stormwater basin designed correctly based on a peak rate and volume of flow from a given storm might still lack capacity under conditions like those described, and consequently fail to protect the receiving water from the impacts of high and prolonged flows and pollutant loadings delivered by the discharges in excess of those expected based on the inferior model.

Jurisdictions like the state of Washington and many of its municipalities, some years ago, and Contra Costa County, California, more recently, moved to computerized, continuous simulation hydrologic models as the standard of practice. These jurisdictions made the foundation model, usually the USEPA's HSPF, convenient to use by developing "runoff files" encapsulating input data appropriate for the area. The San Diego region has recognized the merits of this superior approach in its movement to develop such a model for the area, which as stated above is imminently ready for full use. The Regional Board should require the proponent to reanalyze the Gregory Canyon Landfill project using an HSPF-based model, either the regional runoff files version or the base HSPF model with input data supplied by the analyst.

Poor Application of the Models Selected

While the models selected were inadequate, as I pointed out above, the user failed even to take maximum advantage of their limited capabilities. Specifically, the analysis was performed with insufficient precipitation and soils data.

Precipitation patterns vary substantially in an area with considerable topographic variation like Gregory Canyon. Modeling of runoff in response to rainfall events benefits greatly from the use of on-site data. In this case, even though there was every opportunity to do so, the project proponent did not install a rain gauge on the site at the outset of planning for the project, diminishing the ability to make reliable hydrologic forecasts.

Pages 2-6 and 2-7 of the Updated Evaluation Report indicate that an on-site rain gauge had been installed by January 2010. While very tardy, this equipment could be useful in upgrading the hydrologic forecasts. Assuming that it continued to operate through the year, it would have recorded one of the potentially critical meteorologic events instrumental in determining existing flow patterns in Gregory Canyon and the San Luis Rey River, predicting future flows after the project's inception, and designing the stormwater facilities to manage these flows for the protection of the natural water resources. The Fallbrook gauge recorded approximately 9 inches of rain from December 18 to 22, 2010. This is exactly the type of rainfall pattern that must be taken into account in designing stormwater management infrastructure, and that is missed by single-event models but captured by continuous simulations.

In lieu of an on-site gauge, and to provide a long-term record, data could be used from three rain gauges located in the general vicinity of Gregory Canyon, which exhibit substantial variability. Instead of taking advantage of all three gauges, the proponent used data from only one (Fallbrook according to the Updated Evaluation Report). An approach yielding better hydrologic predictions is to use data from all available gauges in the vicinity and standard techniques to interpolate the rainfall at the site from the multiple records. I encourage the Regional Board to require the proponent to reanalyze the project's hydrology with a computerized, continuous simulation hydrologic model using the full precipitation record from the three vicinity gauges, supplemented by the short-term record from the on-site gauge.[1]

In addition, the available documents indicate that the proponent collected limited on-site soils data (at 19 locations over a depth range of 0-7 ft, with percolation testing at 10 according to the FEIR) and relied heavily on the U.S. Department of Agriculture (USDA) soil survey to identify on-site soils. In my experience, the USDA soil survey is often incorrect at the site-specific level, even if properly representing the broader-scale soil matrix. Another issue is potential debris flow from the adjacent mountainsides into the project area and its runoff conveyances and desilting and infiltration basins. While the FEIR briefly addressed this issue and stated that a gabion diversion structure "... may [emphasis added] need to be installed ..." in Basin 1, it did not quantify the sediment loading expected to occur under actual storm conditions. Without that analysis, it was impossible to consider the implications of debris flow sediment loading for designing the site and its stormwater conveyances and basins and subsequently maintaining those features.

It is essential, in my opinion, that the proponent thoroughly characterize the soils of all portions of the site that would flow through the proposed perimeter channels, desilting basins, and infiltration basins. This characterization should include areally extensive soil coring to some depth below the surface and the beds of the proposed stormwater management basins, analysis of textural properties in the core samples, percolation testing to determine infiltration rates, and

[1] I note that there is inconsistency in the average rainfall data employed in different portions of the site analysis. Whereas hydrologic modeling to estimate runoff and to design conveyance and treatment facilities was based on an average annual rainfall of 14.1 inches, the FEIR used an average annual rainfall amount of 25 inches as the basis for estimating the groundwater recharge potential of the fractured bedrock system, based on rainfall amounts at Lake Henshaw. As it is impossible for there to be two different average annual rainfall amounts at a single site, let alone these two wildly different amounts, the Regional Board must require that the proponent choose one or the other for all purposes. That said, the average annual rainfall at a location somewhat remote from the site is not the key meteorological statistic for analyzing runoff generation and designing stormwater management facilities. Instead, these analyses should be performed with a continuous simulation model equipped with precipitation input from the best available, representative network of rain gauges.

identification of any areas where seasonal high water table could affect runoff production and stormwater management facility design and operation. The resulting data should be employed in the improved modeling effort I propose.

Soils and these related hydrogeologic conditions can vary extensively within short distances. There is no single numerical rule governing the number or spacing of monitoring locations. A strategy would be to scatter pits throughout the entire property and then replicate them in order to narrow spacings. Areas for proposed infiltration basins should be especially well covered (one test site for each 5000 ft^2 of basin surface is recommended by the Stormwater Management Manual for Western Washington). If replication should show little variability in some locations but more in others, it would then be reasonable to concentrate the last set of tests in the areas of greater variability. This strategy is consistent with the advice in what, in my opinion, is one of the better stormwater manuals, issued by the City of Santa Barbara:

> The number of test pits required depends largely on the specific site and the proposed development plan. Additional tests should be conducted if local conditions indicate significant variability in soil types, geology, water table levels, bedrock, topography, etc. Similarly, uniform site conditions may indicate that fewer test pits are required.

Unreliability of Modeling Results

The two models used by the proponent gave widely varying runoff quantity estimates. For example, in modeling Gregory Canyon flow rates the Updated Evaluation Report estimated the 10-year, 24-hour peak flow rate at 8 cubic ft/second (cfs) by one method and 31 cfs by another, and the 50-year, 24-hour rate at 105 or 423 cfs. In this source the 10-year, 6-hour peak rate is given as 5 cfs. However, the ACOE Delineation estimated the rate for this latter frequency and duration at a much higher 343.5 cfs. In modeling for the desilting basins, the alternative models yielded extreme variability. As shown in the Stormwater Management Plan (JTD, Volume II-B, Appendix I), post-project flows associated with the 10-year, 24-hour design condition were estimated as summarized in Table 1. Even with variations of an order of magnitude for volumes, and higher yet for flow rates, the proponent did not seek to reconcile the differences in any way. While it is not clear which runoff estimate was used to design the stormwater management facilities, it appears that the lower flow estimates were used, at least for the infiltration basins.

Table 1. Flow Rates and Volumes Estimated by the Proponent for Desilting Basins Using Two Hydrologic Models

	East Basin	West Basin
Flow rate by Rational Method (cfs)	290	210
Flow rate by HEC-1 (cfs)	11	3
Volume by Rational Method (acre-ft)	16.3	15.8
Volume by HEC-1 (acre-ft)	2.5	1.2

Given these broad deviations, I assert that it is irresponsible to proceed to the design phase at all. Instead, a third model with more advanced capabilities and better input data must be used to obtain more assurance as to what runoff rates and volumes actually can be expected.

THE PROPONENT IMPROPERLY USED PAST OBSERVATIONS TO MAKE FUTURE PREDICTIONS

Forecasts of future discharge patterns are compromised by drawing upon past observations in the existing Gregory Canyon system, whereas the contributing catchments and the discharge conveyances would change markedly if the project goes forward.

Modified Land Cover

Land cover in the canyon now is native soils and native with some invasive vegetation, with little present-day or recent human disturbance. This cover will be extensively disturbed through clearing, grading, and covering the waste with soil from the borrow areas.

The JTD states that a "disturbed" area will be declared "undisturbed" when a specified degree of vegetation cover returns. However, the document cites two different revegetation levels, 20 and 70 percent, as the criterion for the assignment of "undisturbed" status. The Revised Universal Soil Loss Equation (RUSLE) predicts that annual soil loss at 20 percent cover would be approximately 6.7 times as great as with the 70 percent cover, everything else being equal. But even the 70 percent level itself is not highly protective. The RUSLE prediction of soil loss at 70 percent is about six (6) times as great as at 90 percent, again with equality in all other factors. Comparing 90 and 20 percent, the difference would be approximately 40 times as much annual soil loss with the lesser cover. Incompletely stabilized areas would not only result in higher sediment loadings to the flow but would also yield more runoff, at higher velocities, than from truly undisturbed or fully restabilized lands.

The runoff from these "undisturbed" areas is proposed to be collected in the perimeter drainage channels and to discharge to the infiltration areas, bypassing the desilting basins. In addition to lands disturbed in the landfill operation and then restabilized, the "undisturbed" areas will comprise mountainsides draining onto the property along with locations on the site outside the operational area. However, there is no analysis of how the infiltration basins will be able to manage the flows from all of these areas, especially for larger storm events, or whether they can assimilate the sediment loads and still function as claimed.

Sediments entering infiltration basins have a high potential to clog the beds over time and reduce the amount of water that will actually infiltrate. Clogging is a common cause of failure of infiltration facilities, and that vulnerability makes it essential to protect the basins from heightened sediment inputs. The best protection for the basins is strong source control to prevent sediment release to the flows in the first place. Disturbed areas should be required to attain at least 90 percent cover, as verified by a qualified botanist of horticultural professional, to be declared "undisturbed" and allowed to flow to infiltration basins. While California's construction stormwater general permit allows permit termination with establishment of 70 percent final cover, among other conditions, the Gregory Canyon landfill is not a short-term construction site and should be held to a higher standard.

Still, sediment loading to the infiltration basins from debris flows off the mountainsides would remain a concern. The proponent should be required to analyze the potential problem and alternative solutions, including source controls; diversion of debris flows away from the perimeter channels and infiltration basins; interception in debris basins of fully adequate design capacity ahead of infiltration areas; and combinations of these strategies.

Modified Conveyance Systems

The Updated Evaluation Report is incorrect in asserting that runoff from the canyon would be the same after construction because "Development of the landfill will result in creation of similar channels around both sides of the landfill to direct occasional concentrated flows past the landfill." As described in the JTD, the proposed perimeter channels will have a regular trapezoidal geometry and concrete pavement. That design would eliminate or reduce the effect of a number of phenomena that occur when water flows in the canyon today. For example, once collected in the channels, the water would no longer infiltrate into the subsurface in the canyon, eliminating recharge to the bedrock system and increasing the volume of the flow being directed to the river. Flows also would increase because there no longer would be water uptake into vegetative tissues for storage and transpiration to the atmosphere. Also, channel "roughness" created by irregular topography, rocks, and vegetation would no longer slow the flow of the water or result in the deposition of sediments. The result of all these factors would be higher runoff flow rates and total volumes, swifter flow velocities, and greater downstream delivery of sediments than exist now.

THE BASES FOR THE STORMWATER FACILITY SPECIFICATIONS IS UNCLEAR, BUT THE DESIGNS APPEAR TO BE INADEQUATE

Stormwater Collection and Conveyance System

The JTD claims that the perimeter channels will collect runoff from all "undisturbed" areas. However, after a careful reading, I could not determine how this system will collect and direct water into the perimeter channels. For example, there is no explanation of the elevations of the undisturbed areas within the proposed landfill footprint relative to the channels and how water from some of those areas, which appear to lie at lower elevations, would enter the channels. There also is no description of: (1) where and how water would sheet flow into the channels, (2) where and how concentrated flows in specific drainages would enter the channels, and (3) how these issues were addressed in designing the system and how they will be addressed in the construction and operation of the channels. This lack of clarity on important details raises serious questions as to whether the system as proposed would even work.

Infiltration Basins

Likewise, the methodology used to site and design the infiltration basins is not provided. Infiltration basins are customarily designed relative to a runoff quantity from the hydrologic model output, the soil's infiltration rate as established by on-site testing, and a specified maximum drain time. It is not clear that any of these factors were taken into account or could be with the information assembled. As pointed out earlier, the hydrologic models employed are inadequate and their output is unreliable. Also, there is no evidence that basin site soil types or their infiltration rates were identified. These crucial omissions pose great risk of failure for the project's key stormwater management feature, the infiltration basins.

To gain some insight into the possible adequacy of the infiltration basin sizes, I assumed a favorable condition for the smaller (1-acre) eastern basin, alluvial soil with an infiltration rate of 2.4 inches/hour, the maximum rate commonly recommended in stormwater management to protect groundwater quality, unless pretreatment is employed. With an additional assumption of a maximum 72-hour drain time, I estimated that the eastern basin could infiltrate up to approximately 5.4 acre-ft of runoff. As Table 1 above shows the discharge from the upstream east desilting basin alone was estimated by the proponent to be as high as 16.3 acre-ft. Additional flow would enter from the perimeter channel on that side of the project. This analysis raises serious questions about the adequacy of the infiltration basins.

Desilting Basins

Even though the desilting basins will only treat runoff from the "disturbed" areas, they still are inadequate to prevent sediment transport in their discharges. Again, the design of these basins suffers from the same problem as the infiltration basins, in that they rely on inadequate hydrologic modeling. Furthermore, their design is insufficient for facilities operating over a 60-year or longer period. The 10-year frequency design storm, while commonly used to design construction-site settling ponds, is not adequate for facilities that will operate for years. Construction generally finishes in a year or two, making the occurrence of the 10-year frequency storm less rather than more likely. In contrast, the proposed Gregory Canyon desilting basins would operate for 60 or more years, meaning that the basins would most likely experience a 10-year frequency storm multiple times, as well as larger events of less frequent occurrence (e.g., 25, 50, and possibly 100-year events). With the proposed 10-year frequency design basis, runoff from those larger storms would receive inadequate treatment.

The desilting basins as designed are sized to target the settling of particles in the medium range of the silt size fraction, or larger, at the design flow. Even at that flow, finer silts and all particles in the clay fraction would discharge before settling. At larger than design flows, some of the medium silts and larger particles would also escape. Since there are only spotty on-site soils data, there is no firm basis for setting a particle size capture target.

I analyzed the adequacy of the basins for their stated purpose using a simplified rule commonly applied for designing short-term construction phase desilting basins. At 1.8 acres in area, the east desilting basin could capture the medium silt particles in a flow of approximately 75 cubic ft/second (cfs), whereas the Rational Method prediction cited in the Stormwater Management Plan is 290 cfs flowing from the catchment contributing to this basin during the 10-year, 6-hour rainfall. The equivalent figures for the 3.7-acre west basin are a capability of treating a flow of about 150 cfs, with 210 cfs predicted by the Rational Method.

The desilting basins thus are too small even judged with respect to the inadequate design event criterion and improper modeling techniques. Even if the underlying rationale was more stringent and the basins were properly designed in relation to that rationale, they would still not be adequate in attenuating sediment transport. The most fundamental reason for that opinion is that size of the basins must increase greatly to capture relatively small particles, and small particles often make up the largest fraction of solids. Of course, without much site-specific soils data, no one can objectively and quantitatively evaluate this issue; but it is highly likely that small particles are an important consideration at this site. It is virtually impossible to design a basin to capture sediment toward or into the clay range without either making it very large or employing chemical treatment, discussed further below. This unfortunate truth about settling basins points out the primacy of source control as a strategy to prevent mobilizing sediments in the first place. A stabilization target of 20 percent cover, or even 70 percent, is not a prescription for effective source control. The sediments escaping the desilting basins will flow to the infiltration basins where, as pointed out earlier, they risk clogging the surface soils and causing the infiltration basins to fail.

Chemical treatment of sediment-bearing stormwater has been perfected in the construction industry in the Pacific Northwest and has begun spreading out to other regions. Injection with non-toxic chemicals like chitosan or another polymer followed by settling has been shown to yield impressive reductions of suspended sediments, turbidity, phosphorus, and other pollutants. The proponent should be required to analyze this method of desilting, and to adopt it and design adequate facilities to implement it, or explain fully why it is not being adopted.

PROBABLE CONSEQUENCES OF DESIGN INADEQUACIES

The core of Gregory Canyon landfill's stormwater management plan is directing runoff from "disturbed" areas to desilting basins and then to infiltration basins, while flows from "undisturbed" areas bypass the desilting basins and pass straight to infiltration. The flow estimates for both of these sources and pathways are suspect because of the use of inferior hydrologic models, inadequate input data for the chosen models, and a faulty presumption that concrete channels will create flow patterns similar to those in the existing natural drainage ways. Even accepting the flow estimates, I have concluded that the desilting and infiltration basins are too small to serve their intended functions.

Both the "disturbed" and "undisturbed" areas will contribute sediments to the runoff flows. Sediments from "disturbed" areas will not be effectively captured by the under-designed desilting basins, and much of that sediment loading will flow on to the infiltration basins. "Undisturbed" areas will yield approximately six times as much sediment over time when stabilized to the proposed 70 percent cover as compared to a more stringent 90 percent requirement. This sediment will also reach the infiltration basins. Mountainside debris flows will be intercepted by the perimeter channels and flow unimpeded to the infiltration basins. All of these sediment sources risk clogging the infiltration basins, preventing them from infiltrating water as expected and allowing runoff and sediments to discharge on the surface.

As proposed, the east and west infiltration basin discharge points are in the San Luis Rey River floodplain, with the smaller eastern infiltration area itself being within the 100-year floodplain and close to the river channel, especially in high flow periods. The project documents do not provide sufficient information for me to determine if, when, and under what circumstances the site flow and sediments would reach the river's channel, what quantities would be involved, and the resulting effects on the designated beneficial uses. However, with insufficient basin sizes and the high potential to clog the infiltration basins, I have no doubt that the probability of flow and sediments originating from the landfill site and reaching the active channel would be far higher after the project's inception than at present. I believe it is incumbent on the proponent to correct the major flaws in the analysis performed to date, improve the management plan, and make a full demonstration to alleviate this concern.

I would be pleased to answer any questions you may have and invite you to contact me if you with wish.

Sincerely,

Richard R. Horner

Richard R. Horner

Attachment: Background and Experience; Richard R. Horner, Ph.D.

BACKGROUND AND EXPERIENCE

RICHARD R. HORNER, PH.D.

I have 34 years of experience in the urban stormwater management field and 11 additional years of engineering practice. During this period I have performed research, taught, and offered consulting services on all aspects of the subject, including investigating the sources of pollutants and other causes of aquatic ecological damage, impacts on organisms in waters receiving urban stormwater drainage, and the full range of methods of avoiding or reducing these impacts.

I received a Ph.D. in Civil and Environmental Engineering from the University of Washington in 1978, following two Mechanical Engineering degrees from the University of Pennsylvania. Although my degrees are all in engineering, I have had substantial course work and practical experience in aquatic biology and chemistry. For 12 years beginning in 1981 I was a full-time research professor in the University of Washington's Department of Civil and Environmental Engineering. I now serve half time in that position and have adjunct appointments in two additional departments (Landscape Architecture and the College of Forest Resources' Center for Urban Horticulture). While my research and teaching continue at a somewhat reduced level, I spend the remainder of my time in private consulting through a sole proprietorship. My full credentials are available upon request.

I have conducted numerous research investigations and consulting projects involving all aspects of stormwater management. Serving as a principal or co-principal investigator on more than 40 research studies, my work has produced three books, approximately 30 papers in the peer-reviewed literature, and over 20 reviewed papers in conference proceedings. I have also authored or co-authored more than 80 scientific or technical reports. In addition to graduate and undergraduate teaching, I have taught many continuing education short courses to professionals in practice. My consulting clients include federal, state, and local government agencies; citizens' environmental groups; and private firms that work for these entities, primarily on the West Coast of the United States and Canada but in some instances elsewhere in the nation.

Over an 18-year period I spent a major share of my time as the principal investigator on two extended research projects concerning the ecological responses of freshwater resources to urban conditions and the urbanization process. I led an interdisciplinary team for 11 years in studying the effects of human activities on freshwater wetlands of the Puget Sound lowlands. This work led to a comprehensive set of management guidelines to reduce negative effects and a published book detailing the study and its results. The second effort, extending 10 years, involved an analogous investigation of human effects on Puget Sound's salmon spawning and rearing streams. These two research programs had broad sponsorship, including the U.S. Environmental Protection Agency, the Washington Department of Ecology, and a number of local governments.

I have helped to develop stormwater management programs in Washington State, California, and British Columbia and studied such programs around the nation. I was one of four principal participants in a U.S. Environmental Protection Agency-sponsored assessment of 32 state, regional, and local programs spread among 14 states in arid, semi-arid, and humid areas of the West and Southwest, as well as the Midwest, Northeast, and Southeast. This evaluation led to the 1997 publication of "Institutional Aspects of Urban Runoff Management: A Guide for Program Development and Implementation" (subtitled "A Comprehensive Review of the Institutional Framework of Successful Urban Runoff Management Programs").

My background includes 15 years of work in Southern California, where I have been a federal court-appointed overseer of stormwater program development and implementation at the city and county level and for two Caltrans districts. I was directly involved in the process of developing the 13 volumes of Los Angeles County's Stormwater Program Implementation Manual, working under the terms of a settlement agreement in federal court as the plaintiffs' technical representative. My role was to provide quality-control review of multiple drafts of each volume and contribute to bringing the program and all of its elements to an adequate level. I have also evaluated the stormwater programs in San Diego, Orange, Riverside, San Bernardino, Ventura, Santa Barbara, San Luis Obispo, and Monterey Counties, as well as a regional program for the San Francisco Bay Area. At the recommendation of San Diego Baykeeper, I have been a consultant on stormwater issues to the City of San Diego, the San Diego Unified Port District, and the San Diego County Regional Airport Authority.

I was a member of the National Academy of Sciences-National Research Council (NAS-NRC) committee on Reducing Stormwater Discharge Contributions to Water Pollution. NAS-NRC committees bring together experts to address broad national issues and give unbiased advice to the federal government. The present panel was the first ever to be appointed on the subject of stormwater. Its broad goals were to understand better the links between stormwater discharges and impacts on water resources, to assess the state of the science of stormwater management, and to apply the findings to make policy recommendations to the U.S. Environmental Protection Agency relative to municipal, industrial, and construction stormwater permitting. The committee issued its final report in October 2008.

EXHIBIT K

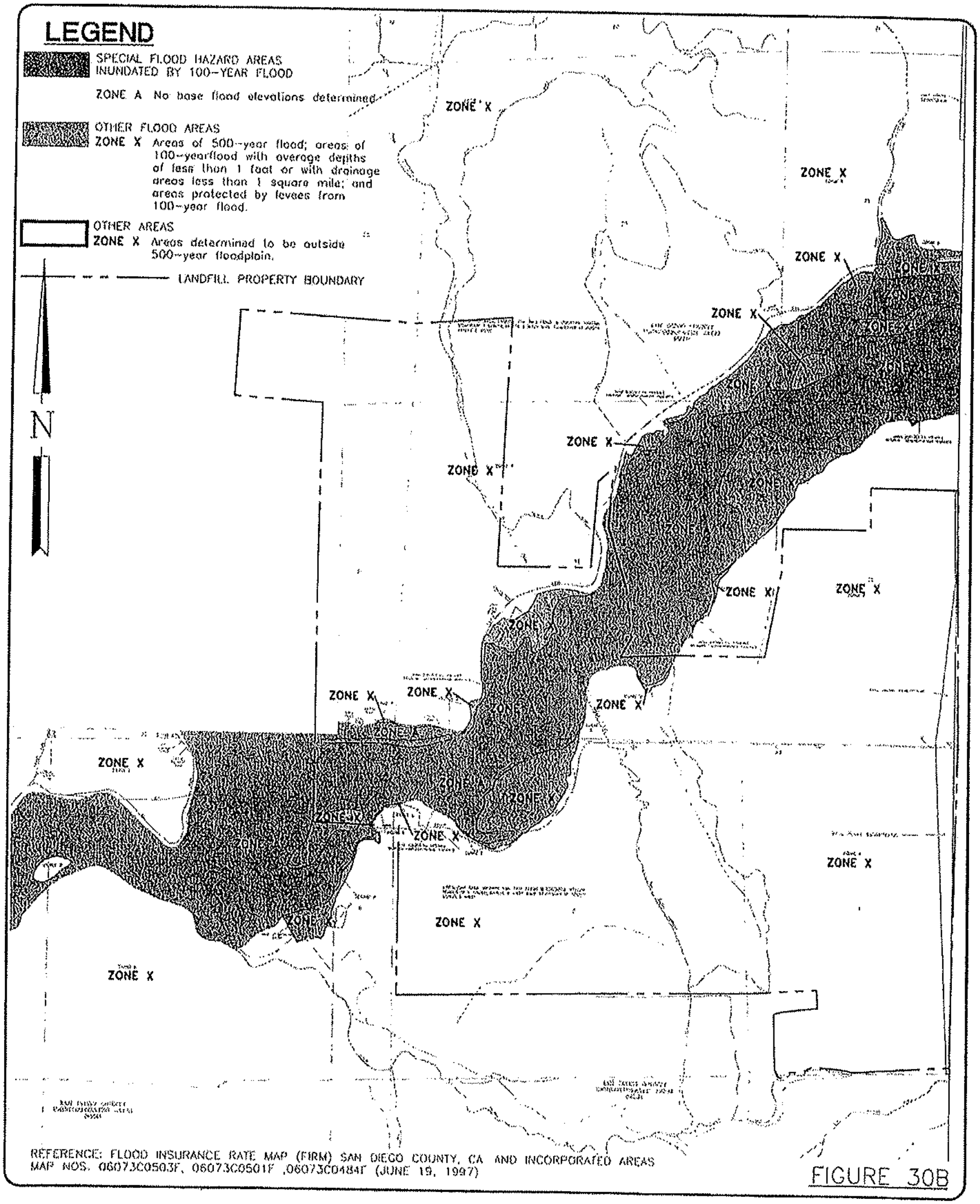

FIGURE 30B

BAS (909) 860-7777
BRYAN A. STIRRAT & ASSOCIATES
CIVIL AND ENVIRONMENTAL ENGINEERS
1360 VALLEY VISTA DRIVE DIAMOND BAR, CA 91765

GREGORY CANYON LANDFILL

FLOOD PLAIN MAP

JOB NO.	97139-7
DATE	3-2004
DRAWN BY	M.T.B.
FILE NAME	1718610B

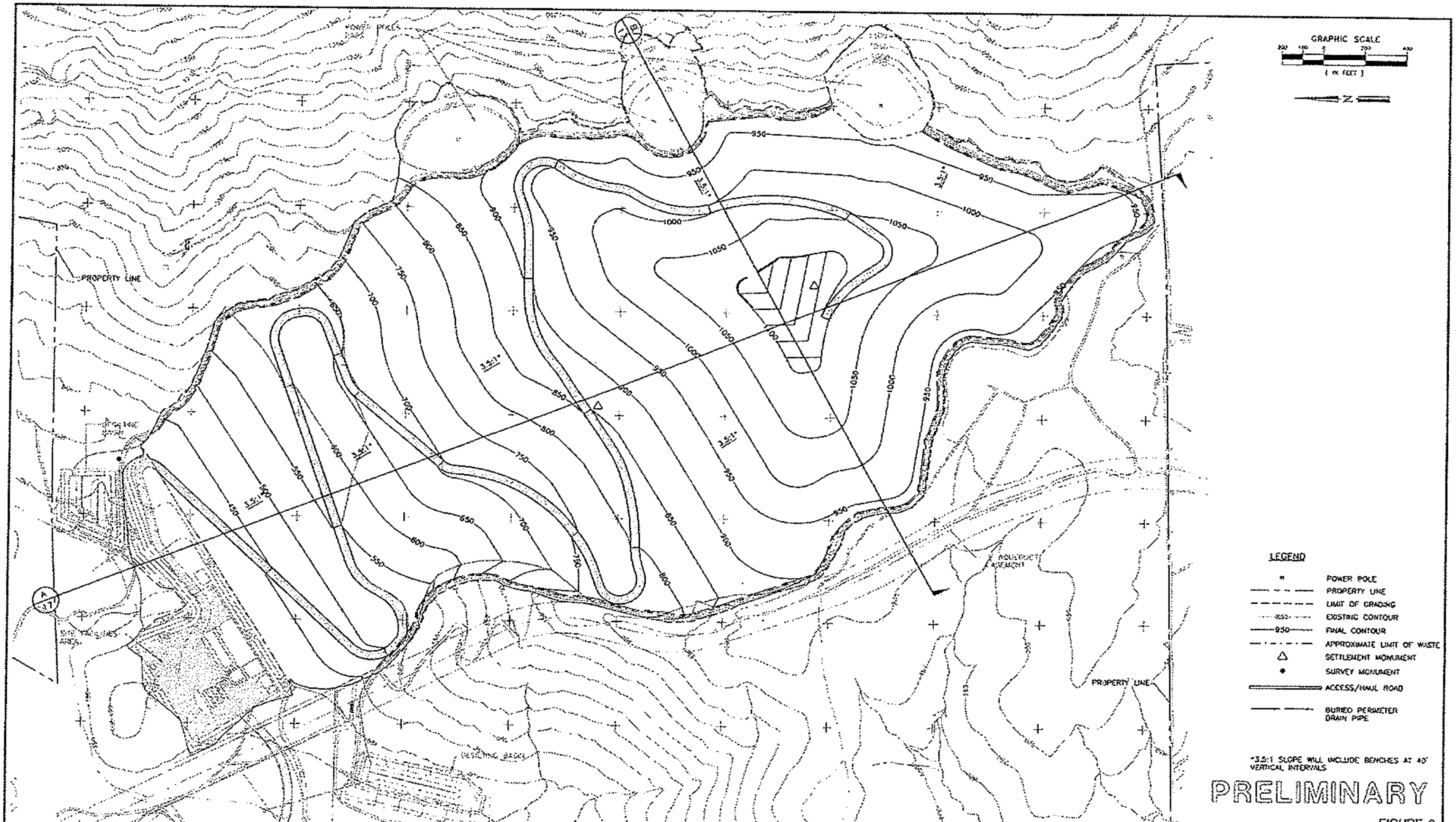

FIGURE 9

NO.	REVISION DESCRIPTION	BY

BAS
BRYAN A. STIRRAT & ASSOCIATES
CONSULTING CIVIL & ENVIRONMENTAL ENGINEERS
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GREGORY CANYON LANDFILL

MASTER FILL PLAN

DESIGNED BY: K.L.S.	SCALE: AS SHOWN		
DRAWN BY: M.T.B.	DATE: 8-2000	FILE NO. 2734SCE.DWG	
CHECKED BY:	DATE:		
APPROVED BY:	DATE:	DRAWING 6	

FOR PERMIT PURPOSES ONLY - NOT FOR CONSTRUCTION