

SCS ENGINEERS



**AMENDMENT TO OCTOBER 1993
FINAL CLOSURE AND POSTCLOSURE PLAN FOR
THE CITY OF SACRAMENTO
28TH STREET SANITARY LANDFILL**

Presented to:

City of Sacramento

Solid Waste Division
2812 Meadowview Road
Sacramento, CA 95832

Presented by:

SCS ENGINEERS
3117 Fite Circle, Suite 108
Sacramento, CA 95827
(916) 361-1297

Revised April 12, 2013

March 8, 2013

File No. 01197137.05, Task 11

Offices Nationwide
www.scsengineers.com

**AMENDMENT TO OCTOBER 1993
FINAL CLOSURE AND POSTCLOSURE PLAN
FOR THE CITY OF SACRAMENTO
28TH STREET SANITARY LANDFILL**

Presented To:

City of Sacramento
Solid Waste Division
2812 Meadowview Road
Sacramento, CA 95832

Presented By:

SCS ENGINEERS
3117 Fite Circle, Suite 108
Sacramento, CA 95827
(916) 361-1297

Revised April 12, 2013

March 8, 2013

File No. 01197137.05, Task 11

Amly *McCoady*



A circular professional engineer seal for the State of California. The seal contains the text: "REGISTERED PROFESSIONAL ENGINEER", "AMLY MCCOADY", "25390", "EXP. 12-31-13", "CIVIL", and "STATE OF CALIFORNIA". The seal is stamped in blue ink and is partially overlaid by handwritten signatures in blue ink.

Table of Contents

Section	Page
Introduction Revised.....	5
Revised Landfill Boundary And Waste Footprint.....	6
Closure Of The Active And Inactive Site West Of 28 th Street.....	6
Current Land Uses.....	8
Interim And Long Term Postclosure Land Use.....	109
Closure Schedule Revised.....	11
Monitoring And Control Systems – Operation And Maintenance.....	11
Leachate Collection And Removal System.....	16
Revised Closure Cost Estimate And Financial Assurances Revised.....	16
Financial Responsibility Revised.....	17
Foundation Stability For The Landfill Containment Berms.....	18
Site Life And Additional Landfill Capacity Revised.....	18
Groundwater Remediation.....	19
Geologic Cross Sections.....	19
Groundwater Pumping/Effluent Testing.....	19
Discharge To Percolation Ponds After Treatment.....	2121
Kleinfelder Report.....	21
Current Threat To Groundwater Quality From The 22.5 Acre Inactive Landfill.....	22
Detection Monitoring Program { Title 23 §2550.1 (A) (1) }.....	23
Evaluation Monitoring Program { Title 23 §2250.1 (A) (2) & (3) }.....	23
Completion Of Corrective Action Program { Title 23 §2250.1 (A) (4) }.....	23
Termination Of Corrective Action Program.....	24
Water Quality Protection Standard { Title 23 §2550.2 (A) }.....	25
Constituents Of Concern { Title 23 §2550.3 }.....	25
Concentration Limits { Title 23 §2550.4 (A) (3) }.....	26
Monitoring Points And The Point Of Compliance { Title 23 §2550.5 }.....	26
Groundwater Quality Testing.....	26
Groundwater Quality Monitoring System { Title 23 §2550.7 (B) }.....	26
Unsaturated Zone Monitoring { Title 23 §2550.7 (D) }.....	27
Future Workplan.....	27
Closure Schedule And The Operation Of The Compost Program.....	27
Waste Discharge Requirements For Solid Waste Landfills.....	2828

Figures

- 1 – Site Survey and Title Reports [\(Missing\)](#)
- 2 – Site History and Fill Sequence
- 3 – Active Site Final Cover Section
- 4 – Inactive Site Final Cover Section
- 5 – Conceptual Park Plans
- 6 – Deleted
- 7 – Tonnage & Capacity v.s. Time
- 8 – Proposed Grading Plan
- 9 – Construction Grading Plan [\(Figures C4 and C5 from Construction CQA Report 1/23/98\)](#)
- 10 – Surface Drainage Capacity Increase – Surface Drainage Patterns
- 11 – Landfill Cross Section (In-Place Waste and Groundwater Elevations)
- 12 – P1 and P2 Drawdown
- 13 – Percolation Pond Location
- 14 – Groundwater Monitoring Well Locations (Background and Compliance Wells)
- 15 – Detention Pond #2 Plans and Specifications [\(Missing\)](#)
- 16 – Perimeter Landfill Gas Collection System Drawings [\(Figures 1 and 2 from CQA 1/23/98\)](#)

Tables

- 1 – Schedule – Closure/Post Closure Revised
- 2 – Post Closure Activities Revised
- 3 – GW Protection Standards
- 4 – Key Personnel – Emergency Personnel

Appendices

- A – Compost Program Operation Plan
- B – Revised Closure Cost Estimate
- C – Pledge of Revenue Agreement
- D – Production Well Specifications
- E – P1/P2 Composite Chemical Analysis
- F – Kleinfelder Report [\(Missing\)](#)
- G – Leachate Pumping From Gas Wells (Information Sheets) [\(Missing\)](#)
- H – Proposed Detection Monitoring and Reporting Program
- I – March 1, 1991 Cap Tasks 1 and 2
- J – GW Well Logs, Well Designs
- K – Field Sampling Procedure
- L – National Pollution Discharge Elimination System (NPDES) Policy Prevention & Storm Water Monitoring Program – Industrial Sewer Use Permit [\(Missing\)](#)
- M – Landfill Gas Collection Systems and Operations and Maintenance [\(Missing\)](#)
- N – Proposed Order Waste Discharge Requirements for Solid Waste Landfills
- O – Postclosure Land Use Plan (PCLUP), [January 8, 2013 \(revised April 12, 2013\)](#)
- [P – Agency Review Comments on PCLUP](#)

**AMENDMENT TO THE OCTOBER 1993
FINAL CLOSURE AND POSTCLOSURE PLAN
FOR THE CITY OF SACRAMENTO
28TH STREET SANITARY LANDFILL**

Facility Permit Number: #34-AA-0018
Facility Address: 20 28th Street, Sacramento, CA
Facility Operator: City of Sacramento
Local Regulator: Sacramento County Environmental Management Department

INTRODUCTION

The following Amendment to the Final Closure and Postclosure Maintenance Plan (FCPMP) has been prepared for the City of Sacramento (City) 28th Street Landfill (Figure 1) for the addition of 1.5 Mega Watts (MW) of solar generating panels on parts of the permitted landfill property. The support structures associated with the solar panels will be ground mounted and column supported. The City of Sacramento is the owner of the site and is the Responsible Party (RP) for implementation of this Amendment and the latest 28th Street Landfill Post Closure Maintenance Plan and Amendments.

The proposed amendment to the FCPMP has been prepared in accordance with California Code of Regulations (CCR) Title 27, Section 21190. The Plan addresses the following requirements of Section 21190. This Amendment will be implemented in compliance with Central Valley Regional Water Quality Control Board (RWQCB) waste discharge requirements Order R5-2004-0039 as well as all CEQA requirements.

The 28th Street Landfill was certified as closed in 1998 in accordance with the approved Final Closure and Postclosure Plan dated June 18, 1991 and subsequent amendments. Specific additions to this amendment of the Final Closure and Postclosure Plan are:

- Installation of solar power generation components on the final cover of the west area of 28th Street Landfill.
- Postclosure Land Use changes resulting from the solar installation, Appendix O.
- A maintenance plan associated with the final cover supporting the solar installation, Appendix O
- An updated postclosure cost estimate, reflecting additional costs associated with maintenance of the solar landfill cover supporting the solar installation.

These amendment details are presented in Appendix O, Postclosure Land Use Plan, February 8, 2013, of the October 1993 Closure and Post Closure Maintenance Plan.

This amendment incorporates review comments of the CalRecycle letter dated December 3, 2012; County of Sacramento, EMD, Local Enforcement Agency (LEA) letter, dated December 7,

2012 and email January 10, 2013; and California Valley Regional Water Quality Control Board letter, dated December 10, 2012, Appendix P.

**AMENDMENT TO THE JUNE 18, 1991
FINAL CLOSURE AND POSTCLOSURE PLAN
FOR THE CITY OF SACRAMENTO'S
28TH STREET SANITARY LANDFILL**

Facility Permit Number: #34-AA-0018
Facility Address: 20 28th Street, Sacramento, CA
Facility Operator: City of Sacramento
Local Regulator: Sacramento County Environmental Management Department

INTRODUCTION

Pursuant to Title 14, California Code of Regulations (14 CCR), Section 18272, an amendment to an approved Preliminary Closure and Postclosure Plan must be prepared in conjunction with a solid waste facility permit review. A review of a solid waste facility's operating permit is to be performed every five years as noted in CCR §18213. An updated Report of Disposal Site Information and solid waste facility permit application have been previously submitted for review. This document has been prepared to satisfy CCR §18272; this document will address ~~a specific fragment~~ concerns of CalRecycle, formerly known as the California Integrated Waste Management Board's (CIWMB), and other agencies related to the total amount of acreage (active and inactive) landfilled; currently proposed land uses; and, it is intended to facilitate the approval of the 28th Street Landfill's application for a permit revision.

The 28th Street Landfill is currently in the process of closure, as described in the approved Final Closure and Postclosure Plan dated June 18, 1991. Specific additions to the Final Closure and Postclosure Plan are:

- The addition of City owned acreage to the west of 28th Street, which was landfilled prior to issuance of the first Solid Waste Facility Permit.
- Revision of the permitted landfill's boundary to include City owned buffer property.
- An updated closure cost estimate, reflecting the additional closure costs associated with the acreage West of 28th Street, and the completion of final cover over the unlined waste management unit east of 28th Street.
- Inclusion of updated information on postclosure land use and the closure schedule.
- The addition of information on groundwater remediation efforts.

This amendment also addresses the issues raised in the CIWMB's letter to the City of Sacramento dated March 3, 1993.

REVISED LANDFILL BOUNDARY AND WASTE FOOTPRINT

The 1984 Solid Waste Facility permit identifies the landfill site as 113 acres. This acreage consisted of a 78 acre unlined waste management unit (WMU A) and a 35 acre lined waste management unit (WMU B). The Solid Waste Division has recently completed an extensive survey of the City owned property, including the permitted landfill and adjacent property. The results of the survey indicate the following:

Active landfill Acreage East of 28th Street – 107.025
Inactive landfill Acreage West of 28th Street – 22.498
Total City Owned Acreage landfilled – 129.523
Total City Owned Acreage – 172.217
Landfill Buffer Acreage – (172.217-129.523) 42.694

The Buffer acreage that has been included in the permitted acreage has historically been used for this purpose. Although the permitted acreage of the landfill has changed, the waste footprint has not been expanded. This change simply reflects a correction of the original estimated landfill acreage to reflect the actual acreage.

Landfilling took place on the 22.498 acres west of 28th Street from approximately 1963 to 1971. This area was landfilled prior to advent of State regulations, and was unpermitted. The area is currently utilized for the storage of low permeability clay and daily cover soil, and as a compost facility. This acreage is now being included in the total permitted facility acreage at the request of the California Integrated Waste Management Board (CIWMB).

Maps and Title Reports are attached as Figure 1. These maps include bearings and distances as well as the acreage of each parcel. This survey will be recorded and will become the official survey of record for the parcels included in the study area.

Figure 2 presents the site history and fill sequence for the entire area, including parcels not owned by the City of Sacramento. Dates and approximate locations of waste in place are shown. The information on this figure was obtained by reviewing historical aerial photos, which provide fairly accurate information regarding the time and location of filling but far less accurate information on the type of material landfilled.

As shown on the fill sequence figure, significant acreage has been landfilled to the west of the current 28th Street Landfill. This area is privately owned and the City of Sacramento has no plans to include this acreage in the permitted site closure schedule. However, the existing network of 19 groundwater quality monitoring wells does encompass the area to the west of the City owned property.

CLOSURE OF THE ACTIVE AND INACTIVE SITE WEST OF 28TH STREET

The final cover section for the 107 acres of waste to the east of 28th Street (Active site) is shown in Figure 3. This section has been installed on 71.1 acres of the unlined waste management unit to date. Another 3.5 acres of final cover needs to be installed to complete the final cover section over the unlined waste management unit.

Landfill access roads, detection ponds, the paved employee parking lot, and the American River Levee occupy a portion of the 107 acre area and will not receive the final cover shown in Figure 3. Landfill access roads, which will continue to be used during the postclosure maintenance period, will receive an alternative final cover which is suitable for four season vehicle traffic. Access roads will be slurry sealed with an asphalt emulsion. This slurry seal will be reapplied as required to maintain an impermeable surface.

The 22.5 acres landfilled to the west of 28th Street (Inactive site) was not included in the June 18, 1991 Final Closure and Postclosure Plan. This area ~~has been~~ will be graded to drain and receive the final cover sections shown in Figure 4. The 10 acre compost site is currently vacant. will continue to be used on an interim basis until a full scale compost facility is sited by the Sacramento Regional County Solid Waste Management District and is operational. It is anticipated that a full scale compost facility will not be operational for at least five years. The final cover section for the compost site includes a 3" section of asphaltic concrete, which will provide an all-weather surface and prevent infiltration of water. After compost operations ~~are moved to the permanent full scale facility,~~ the condition of the asphalt paving ~~was~~will be evaluated and repairs ~~will be~~ made, as necessary, to maintain the water tight integrity of the paving. ~~The compost program's operation plan is included in this report as Appendix A.~~

The 12.5 acre site South of the compost facility, which is currently used to stockpile final cover clay and daily cover soil, will be graded to drain (3% slope or greater) and shall receive the final cover section shown in Figure 4. This area contains waste which is over 22 years old. Historic groundwater monitoring data indicates that this area does not pose a threat to groundwater. Groundwater monitoring well C12 is directly downgradient of the subject area. A comparison of C12 lab results with a background well is included in this report. (Copies of the 28th Street Landfill's Quarterly Groundwater Monitoring Reports are sent to the various regulatory agencies including Tamara Zielinski with the California Integrated Waste Management Board.) In addition, due to the age of the waste in place, differential settlement in this area is not considered to be a problem. The final cover section proposed for the 12.5 acre site will have the same use restrictions as the final cover section shown in Figure 3; that is, no irrigation, no deep rooted vegetation, no surface water ponding, etc., will be allowed.

Both the active and inactive sites which receive vegetative soil layer will receive erosion control and be planted with shallow rooted grasses. The erosion control consists of a Cal-Trans specification DM2 mixture of mulch and a tacking substance to hold the mulch in place. This mixture has proven to be very effective controlling soil loss. In addition, the vegetative soil layer will receive a grass seed mixture consisting of 90% Annual Rye, 7% Rose Clover, and 3% California Poppies.

This seed mixture is augmented by the seeds contained in the erosion control mulch itself. Wheat straw is typically used as mulch, and in past seasons, a moderate growth of wheat has been observed in areas that have received the DM2 erosion control.

POSTCLOSURE OF THE ACTIVE AND INACTIVE SITE

~~Senate Bill No. 855 was introduced by Senator Greene on March 4, 1993. This bill creates the Sacramento Regional County Solid Waste Management District~~The City of Sacramento, which is responsible for all solid waste functions within the City ~~and unincorporated County area.~~ ~~District Task 5 includes the following language:~~ “Post-closure, monitoring, and maintenance of the City’s 28th Street Landfill is the responsibility of the City of Sacramento ~~will become the responsibility of the District once since~~ all closure activities have been completed.” The City of Sacramento~~District~~ will is therefore become responsible for the maintenance of both the 107.21 acre active landfill and the 22.5 acre inactive landfill.

After closure of the inactive site and throughout the post-closure period, the City of Sacramento~~District~~ will maintain the integrity and effectiveness of the final cover section. This maintenance will consist of regrading of the vegetative soil layer as necessary to correct the effects of differential settlement and to prevent ponding. Differential settlement, as measured by the three permanent settlement markers installed along the ridge of WMU A has been minimal. Total settlement measurements after the landfill surface reached final elevation were approximately one foot per year, measured between May 1992 and May 1993.

Any erosion gullies which may form in the final cover section’s vegetative soil layer will be repaired by regrading or filling with soil as soon as weather permits. If erosion has progressed to the point that the integrity of the clay layer is affected, the gully will be filled with clay and compacted. A stockpile of suitable clay will be maintained on site for purpose of repairing such damage.

Any erosion repairs will receive the same standard erosion control mentioned above. This type of erosion control has proven very effective in preventing soil loss from the surface of the final cover section.

All monitoring and control systems at the 28th Street Landfill will also be maintained. These facilities include the perimeter and interior landfill gas collection system, the leachate sump and pumping system, the gas and groundwater monitoring system, and the groundwater production wells.

Site security will also be maintained throughout the post-closure period for as long as it is deemed necessary by the regulatory agencies. Fencing will be repaired as needed and all perimeter gates will remain locked.

CURRENT LAND USES

Current operations and facilities at the 28th Street Site include the following:

- Portions of 28th Street Landfill have been converted to features of Sutter Landing Park.
- A 1.5 Mega-Watt solar facility is proposed on the site. Solar arrays are proposed in the parking area, Dog Park, and the former compost area west of the Dog Park. The

Formatted: List Paragraph, Indent: Left: 0.25", Bulleted + Level: 1 + Aligned at: 0.29" + Indent at: 0.54"

Formatted: Superscript

Formatted: List Paragraph, Indent: Left: 0.25", Bulleted + Level: 1 + Aligned at: 0.29" + Indent at: 0.54"

proposed installations are described in detail in the 2013 Postclosure Land Use Plan in Appendix O.

● ~~Active Waste Disposal Site—107 acres~~

~~Approximately 300 tons per day of baled waste is disposed in a 27-acre lined area of the landfill. This fill activity will continue through July of 1994. By October 1996 the entire active waste disposal acreage will be closed in accordance with state regulations.~~

● ~~Compost Facility—10 acres~~

~~On June 22, 1993 Council approved improvements to the city compost site to process approximately 12,000 tons per year. The acreage will be graded to drain and then paved to comply with state regulations for closure and compost activities. This compost site will be operational for approximately 5 years.~~

● ~~Baling—4 acres~~

~~The City currently operates a 300 tons per day baling facility. Baling is used as a method of compacting waste thus increasing landfill capacity. The current baling operation will continue through July 1994.~~

● Vehicle Dispatch, Parking and Maintenance – 4 acres

Solid Waste dispatches approximately 80 trucks per day. The facility provides maintenance and parking to approximately 140 pieces of equipment. Presently there has been no commitment as to the length of time this facility will be operational. There are also no plans for expanding the existing facility beyond its current capacity.

● Employee Parking – 3.5 acres

The existing employee parking lot provides parking for Solid Waste and Fleet Management personnel. This need will continue as long as vehicle dispatch, parking and maintenance functions are located at the 28th Street facility. The size will differ based on the number of employees at the site.

● Inactive Acreage – 12.5 acres

This acreage was once actively landfilled and must be closed in accordance with today's closure standards. This closure work ~~was will be completed by October in 1998~~6. Irrigation will not be permitted on this acreage without upgrades to the final cover section.

● Buffer Property – 42.69 acres (includes some acreage previously mentioned, such as the vehicle maintenance facility)

This acreage surrounds the active landfill property. No active landfilling has occurred on this acreage and therefore is the most suitable for park development.

Interim and Long Term Postclosure Land Use

The 28th Street Landfill has been designated as Parks, Recreation and Open Space in the 1986-2006 General Plan Update. ~~Much discussion has occurred regarding the interim and long term uses of the property after the landfill reaches capacity.~~

~~In February 1987, City Council adopted Resolution 87-110 which eliminated the 28th Street site from any consideration as a solid waste transfer station. In the context of developing joint use facilities with the County of Sacramento, the Department of Public Works has hired a consultant to conduct a more detailed analysis of the cost benefits associated with operating a bale transfer station at the 28th Street site. The preliminary findings of this study have revealed that bale transfer savings are less significant than previously estimated. In addition, many residents of this area have expressed concerns over several issues including truck traffic, conformity with the General Plan to use this acreage as a park, and the previous Council commitment to exclude this site from use as a transfer station. Based on these findings,~~ The bulleted items below reflect planned land uses for the 28th Street site:

- In accordance with the City of Sacramento General Plan, the 28th Street Landfill will become “Open Space/Park” and all Solid Waste Division activities will be relocated.
 - ~~Upon~~Since reaching capacity, solid waste ~~will~~ no longer be disposed of at the 28th Street landfill. All City collected solid waste ~~is will be~~ hauled to a licensed landfill to the County landfill.
 - Solid Waste vehicles will continue to be dispatched and maintained at this location during the next five to seven years (1999-2001), or until a regional facility is sited and developed. If the regional facility is developed sooner than 2001, solid waste vehicle maintenance, dispatch and repair activities will be transferred to the regional facility.
 - ~~The compost program will continue to be operated as an interim facility for the next 5-7 years (1999-2001), or until a large scale facility can be sited and developed by the Sacramento County Regional Solid Waste Authority (SWA). If a regional facility is developed sooner, composting activities will be transferred to the SWA facility and the compost program at 28th Street will be discontinued.~~
- The land will be developed for park uses subject to available funding and regulatory approval.

- Staff will coordinate with the California Integrated Waste Management Board to plan for interim and long-term park uses for the closed acreage of the landfill. See Figure 5 for the conceptual Park Plan. Restrictions regarding the types of uses, and the vegetation that could be planted may be placed on park development. Public access will be restricted in certain areas of the landfill, such as the landfill gas flare and pump station, the leachate sump and pumping station, etc.

~~▪ The Sacramento Regional County Solid Waste Authority will take ownership of the property with the understanding that the property will be developed into a park and that the Richards Boulevard Connector will ultimately be constructed.~~

~~▪ A study will be conducted during the next eighteen months to determine if a small vehicle maintenance facility will be required for long term use on site. This maintenance facility would not be a corporation yard, limiting vehicle and traffic impacts to the local neighborhood.~~

CLOSURE SCHEDULE

The City of Sacramento 28th Street landfill was certified closed in 1998 and has been in postclosure monitoring and maintenance since closure.

Formatted: Superscript

The City of Sacramento ~~has~~ maintained a policy of closing sections of the landfill as they reached final grade. ~~This policy is intended to minimize the amount of infiltration through the landfill.~~ This policy ~~was~~ will be continued as additional sections of the landfill reach final grade. ~~To date the approved final cover section has been installed over 71.1 acres of waste management unit (WMU) A (unlined). The remaining 3.5 acres of WMU A will be completed in Spring 1995.~~

~~Installation of the final cover section's foundation layer over WMU B will also begin in Spring 1995. An estimated 10 acres of WMU B will have reached final grade at that time. The 27 acre unit will have the foundation layer installed in phases starting with the 10 acre section in the northeast quadrant of the unit. Completion of the foundation layer is anticipated in Fall 1995, several months after the southern portion of the unit reaches final capacity.~~

Installation of the clay and soil layers ~~took~~ will take place in Spring 1998~~6~~. The low permeability layer ~~was~~ will be installed per the approved specifications for installation of the 1'-0" thick low permeability layer contained in the June 18, 1991 Final Closure Plan's Appendix E. Final site closure ~~was~~ is expected to be completed ~~by October 1996~~ in 1998.

MONITORING AND CONTROL SYSTEMS – OPERATION AND MAINTENANCE

Operation and maintenance of the 28th Street Landfill's monitoring and control systems after closure ~~has been~~ will be performed by ~~City of Sacramento~~ Sacramento County Solid Waste Management District personnel. ~~The City of Sacramento Solid Waste Division will coordinate with the District to transfer functions and ensure that no gaps in monitoring data occur.~~

Existing environmental control systems at the landfill consist of the following:

- Existing leachate collection and removal system
- Existing landfill gas collection systems, interior, perimeter and cutoff trench
- Existing network of landfill gas monitoring probes
- Existing groundwater monitoring system
- Existing surface water monitoring system
- Existing groundwater production well system
- Inspection and Maintenance of the Leachate collection and removal system (LCRS)

The landfill's WMU B was constructed with a leachate collection and removal system. This system currently collects both leachate and rain water. After the unit reaches final capacity, the system will only collect leachate. The system also allows accurate measurements of the amount of leachate produced.

WMU B's leachate collection system consists of gravel trenches and perforated pipe installed above the unit's clay liner. Lateral collection trenches are connected to a single line running the length of the unit and exiting under the containment berm to the leachate sump.

Consistent with 14 CCR §17781, leachate shall be controlled and monitored until the operator can demonstrate to the CIWMB and RWQCB that leachate is no longer being produced, or that the discharges of leachate will have no effect on water quality. During the postclosure period, both the quantity and quality of leachate shall be monitored on a quarterly basis, during normal groundwater quality monitoring events.

LCRS operation will be verified once each year in the Fall. The inspection will include the entire pumping system and individual well pump controls. If any potential of existing system failures are detected before October 1996, the City of Sacramento Flood Control and Sewer Division is available to make the necessary repairs. After closure, the ~~Sacramento Regional County Solid Waste Management District~~ City of Sacramento ~~is will be~~ responsible for inspection and maintenance of the facility. An estimated maximum of 9,000 gallons per day of leachate could be collected by the system, assuming the waste is fully saturated.

- Existing landfill gas collection systems, interior, perimeter and cutoff trench

Consistent with 14 CCR §17783, landfill gas generated on site shall be controlled based on the following guidelines:

- The concentration of methane gas must not exceed 1.25% by volume in air within on-site structures.
- The concentration of methane gas migrating from the landfill must not exceed 5% by volume in air at the facility property boundary. The property boundary for compliance purposes includes all buffer property surrounding the waste boundary.
- Surface venting of trace gases shall be controlled to prevent adverse, acute, and chronic exposure to toxic or carcinogenic compounds, or both.

Compliance with these guidelines shall continue for a period of 30 years after closure of the site, unless the operator can demonstrate by way of collection data or any additional studies that there is no potential for gas migration beyond the property boundary or into on-site structures.

The interior landfill gas collection system is operated and maintained by Laidlaw Gas Recovery Systems, Inc. Laidlaw will continue to operate and maintain the system until May 1, 2010, as specific by the existing contract. Appendix M contains Laidlaw's operation and maintenance plan. Thereafter, the system will be operated and maintained by the ~~Sacramento Regional County Solid Waste Management District~~ City of Sacramento, if necessary. The interior system's flare and pump station will be decommissioned and removed from the site after it is determined that operation of the interior system is no longer necessary.

Development plans for the interior landfill gas collection system assume that the full system will be installed in three phases. The first and second phases of the system, encompassing WMU A, have been installed and are currently operating. The third phase of the system ~~was~~ will be installed in WMU B after the unit ~~has~~ reached final grades. ~~Installation of the phase three system is estimated to take place in 1995.~~

Operation of the perimeter gas migration control system is tied to the operation of the interior system. There are a total of 22 perimeter landfill gas wells installed along the southeastern boundary of the landfill. This is a co-flow system, similar to the interior system, where the perimeter wells are connected to a 6" polyethylene pipe that transports both landfill gas condensate and methane gas. Wells are individually controlled with a valve at each well head. The interior system's vacuum is used to drive the perimeter system; therefore, operation of the perimeter system will be discontinued when operation of the interior system is discontinued. Operation and maintenance procedures for the perimeter system are contained in Appendix M, perimeter system drawings are contained in Figure 16.

The landfill gas cutoff trench installed in early 1988 is a passive system. The cutoff trench was installed to prevent landfill gas from migrating east to the Riverpark subdivision. The trench consists of a physical barrier and a passive vent. No maintenance of this system is required. It is anticipated that, as the landfill ages, the cutoff trench will no longer be needed. However, due to the underground nature of the cutoff trench, there will be no need to decommission it and remove it from the site.

- Existing network of landfill gas monitoring probes

Appendix B of the June 18, 1991 Final Closure and Postclosure Plan, contains information on the existing landfill gas monitoring system. Probes are generally installed on 200' centers and are between 15' and 20' deep. This system will be maintained after closure and throughout the postclosure maintenance period. Gas monitoring will be performed once a month for a period of 30 years after closure or unless the operator can demonstrate by way of collected data, or any additional studies, that there is no potential for gas migration beyond the property boundary or into on-site structures.

Maintenance of the gas monitoring probes ~~will~~ consist of ensuring that the probes are always readable, and that the probe housings are in good operating condition. Probe housings are not currently locked. Locks can be added to the housings, if necessary, to prevent access by the public.

Probes damaged or destroyed by vandals ~~are~~ repaired or replaced in a timely manner.

- Reporting and monitoring frequency after Closure

~~After~~Since closure, gas monitoring reports ~~are~~ submitted to the Local Enforcement Agency of the CIWMB on a quarterly basis. The report will include perimeter gas probe readings and quantities of gas collected by the interior gas collection system. These reports will also include any special occurrences that happened at the landfill during that quarter, such as vandalism, brush fire, etc. Copies of the gas monitoring report ~~are~~ sent to other State and local agencies if requested.

- Existing groundwater monitoring system

There are 19 groundwater quality wells installed on and around the landfill. These wells will remain in service throughout the postclosure monitoring period. It is anticipated that these wells will never be decommissioned, and although the monitoring frequency may be reduced, they will remain in service. Groundwater quality wells are currently monitored on a quarterly basis. The frequency of groundwater well monitoring ~~are~~ determined by provisions in the landfill's Waste Discharge Requirements, as amended by the Regional Water Quality Control Board and by applicable Federal regulations.

All groundwater monitoring wells ~~are~~ inspected for signs of failure or deterioration during each sampling event. If damage is discovered, the nature and extent of the problem will be recorded during the sampling event. Depending on the problem (e.g., low flow, biofouling, etc.), a decision will be made to replace or repair the well. Possible repairs include redevelopment, chemical treatment, partial replacement of the casing, or pumping and testing. If a well needs to be replaced, it will be properly decommissioned. Damaged wells will be repaired or replaced before the next sampling event. Dedicated bladder pumps installed in each monitoring well will be inspected and/or repaired as necessary to maintain proper operation, and to ensure that water samples can be acquired when necessary.

Information on groundwater sampling procedures is contained in Appendix A of the June 18, 1991 Final Closure and Post Closure Plan.

- Existing Surface Water Monitoring System

Consistent with CCR 23 §2546(a), the landfill's final drainage system has been designed to limit, to the greatest extent possible, ponding, infiltration, erosion and slope failure. Generally, surface water drainage is handled with sheet flow over the side slopes and collected by "V" type ditches to be carried offsite. To prevent ponding of storm water on the

fill due to differential settlement, grading is periodically adjusted to maintain proper drainage. Drainage ditches are lined with low permeability clay and run to detention basins before the surface runoff leaves the site.

Consistent with Title 23 §2550.7(c), a surface water monitoring system has been established. Included in this report is the landfill's Stormwater Pollution Prevention Plan and Storm Water Monitoring Program, Appendix L. These plans recommend that surface water monitoring be performed at the landfill at several locations consisting of: the landfill's northern detention basin, which discharges to the American River, the southern detention basin, which discharges to the City's sanitary/storm sewer system, and the existing 12" corrugated metal pipe which drains approximately 20% of the landfill area to the American River.

The landfill's surface water monitoring system ~~wasis not~~ completed and improvements to the system are continuing. These improvements ~~are to will~~ provide the following advantages for groundwater quality: 1) Lined detention ponds will eliminate infiltration of surface water, 2) Surface drainage channels eliminate the risk of infiltration due to underground reinforced concrete pipeline leakage. A second detention pond will be installed in Fall 1993.

Surface runoff from the closed portion of the landfill (WMU A) is disposed of in one of two detention basins. These detention ponds serve the dual purpose of providing a monitoring point for surface water runoff and allowing sediment to settle out before the runoff is discharged. Detention basin #1 drains to the American River and is a sampling point for the landfill's established NPDES monitoring program. Detention basin #2 drains into the City's combined sewer system and monitoring is determined by the landfill's Industrial Sewer Use Permit conditions (see Appendix L). In addition, these ponds will be monitored through the rainy season to ensure that they are functioning properly, and that outlet structures are not blocked by debris.

Pursuant to 23 CCR §2546(d), collection and holding facilities associated with precipitation and drainage control systems shall be emptied immediately after reach storm, or otherwise managed to maintain the design capacity of the system. The landfill's detention ponds have been designed to retain approximately one foot of water during runoff periods, to allow sediment to drop out of suspension. Detention pond capacities have been increased to accommodate the maximum peak flows associated with a 100 year, 24 hour storm.

Both the "V" ditch system and the detention ponds will be maintained throughout the postclosure maintenance period. Necessary repairs due to differential settlement or erosion will be repaired each year before the start of the next rainy season.

- Existing Groundwater Production Well System

The landfill currently has two 50 GPM groundwater production wells. These wells will be operated and maintained in accordance with the approved groundwater corrective action program. Once the groundwater quality protection standards have been met, or these wells are determined to no longer be effective, their operation may be discontinued. However,

they will not be abandoned, and may be periodically operated to bring the landfill back into compliance.

Maintenance of these wells will involve chemical treatment for biofouling as it becomes necessary. Biofouling causes the well screens to plug and the water level within the casing to drop. Wells will be chemically treated when this occurs. Also, well pumps and piping may be removed and the well casing “swabbed” as needed to maintain the efficiency of the production well.

LEACHATE COLLECTION AND REMOVAL SYSTEM

The landfill’s WMU B was constructed with a leachate collection and removal system. This system has been in operation since its completion in 1986. ~~Because the unit has not been filled to capacity, a significant quantity of rain water was collected and pumped during the winter months. Due to this condition, leachate generation rates have been higher than is anticipated after closure, and current leachate chemical analysis may not be indicative of the leachate produced after closure.~~ Testing of any leachate produced after final closure will be performed as specified in the landfill’s WDRs or as directed by the CIWMB.

As part of the Feasibility Study for Sutter’s Landing Park Development, dated May 7, 1990, a leachate generation study was performed. This study utilized the Hydrologic Evaluation of Landfill Performance (HELP) model, Version 2, and the approved final cover design section. Results of the study indicated that for the final landfill closure condition, as approved, 25% or 4.56 inches of precipitation would percolate through the section each year. After the refuse exceeds its moisture-holding capacity, all the percolation will ultimately become leachate. However, this saturated condition may not occur for many years after final closure has taken place.

Based on the 27 acre expansion area reaching saturation sometime after final closure, and the estimated 4.56 inches per year of percolation figure, a total of 3.4 million gallons of leachate can be expected to be pumped each year.

REVISED CLOSURE COST ESTIMATE AND FINANCIAL ASSURANCES

As required under 14 CCR §18263 and 14 CCR §18266 a written cost estimate for closure and postclosure maintenance of the landfill has been prepared (see Appendix B). The estimate has been prepared using the CIWMB’s Initial Cost Estimate Worksheet as an outline. Changes in this estimate from the previous estimate included in the June 18, 1991 Final Closure and Postclosure Plan are as follows:

1. A substantial portion of the landfill has been closed and the final cover section applied.
2. Many of the landfill improvements, such as the landfill gas collection system and the detention ponds, have been built.
3. Costs associated with closure of the inactive landfill acreage have been added.
4. Postclosure maintenance costs associated with the inactive landfill acreage have been added.

5. Postclosure maintenance costs associated with the solar installation have been added.

The revised closure cost estimate is based on the final cover section discussed in the approved Final Closure and Postclosure Plan. Postclosure cost estimates are based upon the activities described in this report. These activities are summarized in the Table of Post Closure Activities. The revised closure and postclosure maintenance cost estimate includes the cost of materials, labor, and administration. These costs are assumed to continue for a minimum of 30 years, although the attached estimate only includes 15 years of funding.

FINANCIAL RESPONSIBILITY

The City of Sacramento Solid Waste Division has two existing Capital Improvement Projects in place to cover the costs of landfill closure. Fund 253, CIP YA06, contains sufficient funds to cover the costs of landfill closure, as described in this amendment and the approved Final Closure and Postclosure Maintenance Plan. This CIP has funded all the closure work to date, with the exception of the two detention ponds, which were funded out of the Solid Waste Division's operating budget. The total landfill closure budget is \$4,810,476. As of 9/27/93, the closure CIP had an available balance of \$2,697,364. Additional Postclosure funds to maintain the cover with the solar generating components is \$6,980 per year or \$104,700 for 15 years of postclosure.

Fund 415, CIP YB36, ~~will have~~ accumulated \$1,068,000.00, ~~by the time the landfill reaches capacity and closes.~~ This CIP is specifically designated to cover the costs of groundwater remediation, and was justified on the basis of meeting the Regional Water Quality Control Board's groundwater cleanup standards.

In compliance with Title 23, California Code of Regulations, §2550.0(b), the City shall obtain and maintain assurances for financial responsibility for initiating and completing corrective action for all known and reasonably foreseeable releases into the groundwater from the waste management unit. The City has in place a Pledge of Revenue Agreement as the financial assurance mechanism for any additional postclosure maintenance costs as well as future groundwater cleanup costs, beyond the program that is currently being proposed in this report.

The Pledge of Revenue Agreement, as detailed in Title ~~2744~~, California Code of Regulations, §~~2224518290~~, is one alternative to assure funding for post closure maintenance costs. Other mechanisms available are trust funds, Government Securities, a Letter of Credit, Surety Bond, Financial Means Test, and Guarantees. Most of these are more appropriate for privately owned landfills and do not lend themselves well to government financing. The Pledge of Revenue Agreement consists of a Council Resolution authorizing an agreement between the operator of the landfill and the RWQCB to establish the Pledge, a commitment from the operator that the necessary groundwater cleanup funds will be available in a timely manner, and a future commitment that the operator will at all times retain control of the ability to allocate an pledged revenue to pay groundwater cleanup costs.

This financial mechanism was considered most suitable due to the uncertainty regarding the effectiveness of the proposed program and the undetermined cost of a future groundwater

cleanup program at the site. Should the cleanup strategy proposed in this report provide a sufficient level of improvement in groundwater quality, then the Pledge of Revenue Agreement may never be brought into play. Post-closure Maintenance, as described in the landfill's January 1989 Final Closure and Post-closure Plan, encompasses maintenance of the landfill's final cover section and all required environmental monitoring. The existing Pledge of Revenue Agreement with the CIWMB included in the approved Closure and Post-closure Plan addresses the costs of post-closure maintenance.

Appendix (C) contains the City Council report approving the Pledge of Revenue Agreement with the CIWMB. This financial mechanism should also be acceptable to the RWQCB, as future groundwater cleanup costs may be a part of postclosure maintenance.

FOUNDATION STABILITY FOR THE LANDFILL CONTAINMENT BERMS

The CIWMB has contracted with the Department of Water Resources to perform an independent slope stability analysis on the landfill's expansion area containment berms. The study has not been transmitted to this office by the time this report was being prepared and therefore, no results or proposed corrective measures are available.

A previous slope stability study was performed by Kleinfelder, Inc. for Brown and Caldwell on June 19, 1990. The results of this study indicate that the embankment slopes generally meet accepted criteria for static stability. However, two of the four slope configurations failed to meet minimum factors of safety for seismic stability. Potential effects of a "failure" would be limited to minor slumping or lateral spreading of the slope face. The study concluded that there would not be a catastrophic failure which would expose in-place waste.

During the heavy winter rains of 2/93, some localized slope failures did occur along the old levee embankment in the southeast section of the landfill. These slumps were easily repaired and did not pose any threat of exposing in-place waste. These types of repairs would be covered under the landfill's postclosure maintenance program.

SITE LIFE AND ADDITIONAL LANDFILL CAPACITY

[The landfill was certified closed in 1998.](#)

The facility has a final approved capacity of 5.175 million cubic yards (CY), as stated in the landfill's WDRs. This capacity was increased as a result of the approval of the 1991 Final Closure and Postclosure Maintenance Plan. The plan increased the final construction elevations of the landfill's WMU A from +72 MSL to +86 MSL. This increase, allowing for the anticipated total settlement of the landfill over a 30 year period, will ensure that positive surface drainage will be maintained during the postclosure period. The increase in landfill capacity as a result of this change is estimated to be 1,205,000 CY. See Figure 8 and 9.

The capacity of the landfill's WMU B was also slightly increased as a result of the change in surface drainage from underground drainage to surface drainage. The change to surface drainage will allow "V" ditches to be cleaned and maintained by standard landfill equipment, and allow the drainage system to be visually inspected. The change to surface drainage necessitated raising

a portion of the northern perimeter of the expansion area to gain the required drainage ditch slope. See Figure 10. The increase in landfill capacity as a result of this change is estimated to be 134,000 CY.

The final landfill capacity is therefore:

5,175,000	1988 Capacity
1,205,000	WMU Elevation
<u>134,000</u>	Ditch
6,514,000	cubic yards (CY)

This capacity change extended the final closure date of the landfill as well as the date the facility would stop accepting waste.

The number of tons of municipal solid waste the landfill was able to accept was also increased due to the increased efficiency of the balefill operation. This change did not affect the total capacity of the landfill but did extend the closure date. Information on the balefill operation is contained in the May 1993 RDSI amendment.

GROUNDWATER REMEDIATION

Geologic Cross Sections

A variety of geologic cross sections have been prepared for the City of Sacramento landfill. These cross sections indicate that the soils immediately underlying the waste management units are primarily sandy silts and fine or medium grained sand. In addition, there is an interbedded layer of medium to coarse gravel at an average depth of -17 feet MSL located in the area of the two groundwater production wells. These soils were derived from flood basin and stream channel deposits and are 200 to 300 feet thick. Based on the City's Water Quality Solid Waste Assessment Test (SWAT) Report and the subsequent exploratory work done at the landfill, the aquifer underlying the landfill has a large capacity to store and transmit water.

Waste was initially placed in WMU A at an elevation of +15 MSL. RWQCB Order No. 75-155 raised the discharge elevation to +20 MSL after June 1975. WMU B was constructed with a minimum waste disposal elevation of +15 MSL. Groundwater elevations in 1991 ranged from a low of +1.55 MSL to a high of +3.73 MSL. During the winter of 1986, groundwater elevations greater than +25 MSL were recorded. Based on the above elevations, inundation of the in-place refuse is possible during periods of high groundwater. Figure 11 also depicts in-place waste at the permitted elevation.

Groundwater Pumping/Effluent Testing

The landfill currently has two groundwater production wells operating at a rate of 50 gallons per minute each. Well P-1 was installed and began pumping in May 1991. Well

P-2 was installed and began pumping in February 1992. Specifications for the wells are contained in Appendix D.

Figure 12 depicts a theoretical drawdown configuration for the landfill's two 50 GPM production wells. The DREAM analytical groundwater flow program (Bernadine Bonn and Stewart Rounds, 1990) was used to produce the figure. Assumed input parameters are also included. Based on this model, it is apparent that the zone of influence of the two existing production wells is small, and the number of additional wells needed to prevent further migration of affected groundwater offsite would be large. The cost of installing such a system, and the amount of effluent produced that would require treatment, would make such a system infeasible. In addition, due to the difficulty of drilling through some of the subsurface soils underlying the landfill, such as clean fine sands and loose gravel, installation of additional groundwater production wells would be difficult.

Due to the groundwater direction fluctuations, it may not be possible to accurately model the movement of either ground water or contaminants beneath the landfill. The use of a more complex computer model than DREAM would be advisable, such as a three-dimensional finite-difference model. However, the City of Sacramento Solid Waste Division lacks the required software and computer equipment to perform this task. If more accurate modeling of the groundwater flow underneath the landfill is necessary, a consultant should be retained.

The production wells must be brought out of service periodically to treat biofouling of the well screens. Drawdown within the well casings is typically 7' when the well screens are clear. Drawdown within the wells' casings cannot drop below the submersible pump intake or damage to the pump can occur. As determined by a series of Biological Activity Reaction Tests (BARTS), the groundwater underlying the landfill has a variety of aerobic and anaerobic bacteria present. The primary causes of biofouling of the two production wells are slime forming and iron related bacteria which produce growths on the well screens.

Treatment for biofouling consists of alternating treatments of either chlorine, or an acid with an acid enhancer such as Deepwell 310. Due to the nature of the bacteria, no phosphate based cleaners are used.

Although VOCs have been found in the perimeter groundwater monitoring wells, they have not been detected in the production wells with the exception of Vinyl Chloride. Appendix E contains the results of the chemical analysis for production wells P-1 and P-2. The results indicate that the effluent from the two production wells does not contain significant quantities of volatile organic compounds or heavy metals. The effluent is well within the specifications contained in the landfill's Industrial Sewer Use permit for discharge to the sanitary sewer system. This permit allows the landfill to discharge up to 150 gallons per minute. The addition of a third 50 gallon per minute well is therefore possible if necessary.

Discharge to Percolation Ponds After Treatment

The groundwater production well effluent is within the RWQCB water quality protection standards as described in the Landfill's WDRs #88-207, with the exception of Vinyl Chloride, specific Conductance and Iron and Chlorides. If these constituents are removed or reduced below protection standards, the effluent would be suitable for recharge back into the groundwater table. This could be accomplished by a series of sand drains and a percolation pond, as shown in Figure 13. The benefit of a percolation pond would be that a reverse hydraulic barrier would be created in the area of the pond, keeping contamination on site.

Kleinfelder Report

A report was prepared by Kleinfelder, Inc. on September 28, 1992 (see Appendix F). The report contained a review of the 28th Street Landfill's groundwater cleanup strategy, a list of Constituents of Concern and Concentrations Limits, and Statistical Tests. The City of Sacramento requests adoption of the groundwater contaminate concentrations limits contained in the Kleinfelder report. In some cases, these limits are higher than those described in the landfill's WDRs.

The Kleinfelder report also concludes that the Corrective Action Tasks 4 through 6 represent the best approach to remediation at the landfill. The City of Sacramento also requests adoption of the corrective action recommendations contained in the Kleinfelder report.

Task 4 involves the installation of a landfill gas and condensate collection system. Phases one and two of this system have been completed and are in full operation.

Task 4 may also include pumping leachate from the existing landfill gas production wells. Many of the landfill gas wells have standing leachate in a portion of the well casing. This leachate may be pumped out of the gas wells, increasing the efficiency of the gas well itself and drying out the in-place refuse. Because WMU A is not lined, moisture contained in the refuse would eventually migrate down to the groundwater and exacerbate the contamination problem. Leachate pumping from gas wells has been done at many other landfills in the U.S. (see Appendix G).

Task 5 involves placing an impermeable VLDPE liner over the top of WMU A. (WMU B has a liner and LCRS. Installation of a liner over that area would not be as cost effective.) This liner should eliminate the infiltration of rainfall into the waste, thereby reducing the amount of leachate generated and released into the groundwater. This installation would be an upgrade of the approved final cover section, which allows approximately 25% of the rainfall to percolate into the refuse. Funding for the installation of the 30 mil. VLDPE liner is contained in the Capital Improvement Program YB36, Groundwater Remediation. Total funding in this CIP will be \$1,287,000 after the FY 93-94 budget yet contribution.

Installation of the 30 mil. VLDPE liner may also be viewed as a source control technique. Eliminating the percolation of surface water into the refuse will also eliminate one possible source of leachate generation. Installation of the VLDPE liner should be deferred until the majority of the differential settlement has occurred (after FY 93-94).

Task 6 encompasses groundwater monitoring for all 19 existing water quality wells for one year (after installation of the ULDPE barrier) to assess the effects of these remedial measures. If the landfill gas/condensate collection system and groundwater production wells perform as expected, the concentrations of leachate parameters in the groundwater will decrease over time. This decrease should be statically significant, based on the approved statistical method (prediction intervals).

CURRENT THREAT TO GROUNDWATER QUALITY FROM THE 22.5 ACRE INACTIVE LANDFILL

The City owned acreage west of 28th Street was landfilled during the approximate period of 1950 to 1971. Some of the early landfilling was dump and burn. Landfill operations in the late 1960's and early 1970's were more traditional with dumping and compacting in a confined area. This waste is therefore a minimum of 22 years old and it is assumed that the majority of the settlement has occurred. Refuse thickness between 23rd and 28th Streets varies from 15 to almost 60 feet, based on the June 1988 HLA Geotechnical Investigation for the Richards Boulevard connector. Also, based on HLA's exploratory borings between 23rd and 28th Streets, it is presumed that little or no compactive effort was provided during the early sanitary landfilling operations. In-place waste was characterized as residential refuse mixed with garden refuse and some soil. During periods of high groundwater, portions of the in-place refuse may be inundated.

Two groundwater quality wells are located down gradient of the inactive site. Well C-12 is located at the north end of 27th Street along the southern toe of the Southern Pacific railroad embankment. Well D-17 is located between D and E Streets on 27th Street (see Figure 14). Assuming the age of the refuse is at least 22 years old, and that the rate of groundwater movement is about 30 to 50 feet per year to the south (Kleinfelder, 1992), then affected groundwater could have traveled between 660 and 1,100 feet since it was placed. Well D-17 is approximately 1,200 feet from the edge of the inactive site, and should therefore be outside any plume of affected groundwater that may have been generated by the inactive landfill site. A comparison of the leachate parameters for wells C-12 and the assumed background monitoring well D-17 are shown below.

LEACHATE PARAMETER COMPARISON – WELLS C-12 AND D-17

	Well C-12 4Q91	Well C-12 4Q92	Well D-17 4Q91	Well D-17 4Q92
pH	7	8	6.7	7
EC	1780	1760	1340	1300
CL	17	26	106	69

FE	<.01	.04	<.01	<.01
COD	3.1	5.4	10	13

No organic compounds have been detected in either well. The chemical compounds in the groundwater which could be attributed to landfill operations are inorganic. These inorganic compounds are naturally occurring, and any additions associated with landfill operations would be diluted as the groundwater migrates south.

Although EC values are higher for well C-12, CL and COD values are lower. There does not appear to be any significant reduction in the quality of the groundwater in C-12 when compared with D-17. From this comparison it could be concluded that the inactive landfill site is not impacting the groundwater down gradient. Grading and capping this area will improve the existing condition of the area and help prevent any impact in the future.

DETECTION MONITORING PROGRAM {Title 23 §2550.1 (a) (1)}

If the waste management unit has been in compliance with the water quality protection standards for a period of three consecutive years, the landfill can return to detection monitoring. The 28th Street Landfill is currently operating under a Corrective Action Program which is intended to reduce constituent levels contained in the groundwater. See Appendix H for the Detection Monitoring and Reporting Program. This program would become effective after monitoring data for the constituents of concern have been maintained below the specified concentration limits for the required three year period.

EVALUATION MONITORING PROGRAM {Title 23 §2250.1 (a) (2) & (3)}

If, after the 28th Street Landfill has returned to detection monitoring, statistically significant evidence of a release is obtained, the City shall institute the Evaluation Monitoring Program. Significant physical evidence, such as those examples enumerated in subsection 3, can also be used as evidence triggering the Evaluation Monitoring Program. An evaluation monitoring report has not been prepared and included with this report because the landfill is currently in the process of remediating existing contamination. After completion of the corrective action program, and the facility begins detection monitoring, an evaluation monitoring program will be prepared.

COMPLETION OF CORRECTIVE ACTION PROGRAM {Title 23 §2250.1 (a) (4)}

The City of Sacramento has submitted a Corrective Action Program which the Solid Waste Division is in the process of implementing. This Corrective Action Program was submitted in response to the Landfill's December 14, 1988 Waste Discharge Requirements, C. Provisions, #17.

The Corrective Action Program dated January 31, 1990 included six short term tasks to be completed by the City of Sacramento Solid Waste Division. Task 1 required the analysis of historic groundwater data collected at the landfill. Additional migration vector diagrams were prepared and the extent and the rate of transport of any groundwater plume was determined. The

March 1, 1991 Corrective Action Program submittal satisfied this Task. Task 2, characterization of the contaminates, was also completed on March 1, 1991.

Task 3, completion of the landfills surface drainage system and maintenance of positive surface drainage throughout the site has been largely completed. A northern detection basin and the center drainage swale were completed in 1992. Final grades for WMU A have been reached and surface slopes of 3% or greater exist within the unit.

Remaining construction includes the installation of a second detention basin at the southern portion of the landfill and completion of final cover on WMU B.

Task 4, completion of the landfill gas collection system has been accomplished for WMU A. The gas collection system in this unit was installed in two phases. The second phase was completed in October 1992. Phase three of the gas collection system will be installed after the WMU B is brought to final grade.

Progress on Task 5, application of the final cover section, has been made. During 1993, 27 acres of final cover was applied to WMU A. An estimated 3 acres of WMU A remain to be capped. This area is scheduled to be capped in Spring 1994.

Application of the final cover section over WMU B is anticipated to take place after the unit reaches construction grades in 1994. Final closure of the landfill, including application of erosion control over WMU B, is expected to be complete by October 1996.

Task 6 consists of groundwater monitoring for a period of one year after the final cover has been completed over WMU A; this task will begin in June 1995. This task will therefore be completed in June 1996, or three years later than stated in the January 31, 1990 Corrective Action Program. This delay was caused by the longer than anticipated time needed to bring WMU A to final construction grades.

Although 3 acres of final cover remain to be applied to WMU A, infiltration into the unit from 1993-94 rainfall should be reduced significantly.

After completion of task 6 of the short term corrective action program, long term alternatives may be evaluated. As recommended in the September 28, 1992 Kleinfelder report, statistical testing should not be used until stasis has been reached within the shallow groundwater aquifer underlying the landfill.

TERMINATION OF CORRECTIVE ACTION PROGRAM

Corrective action measures taken pursuant to CCR §2550.10 (c) may be terminated when the discharge demonstrates to the satisfaction of the Regional Board that the concentrations of all constituents of concern are reduced to levels below their respective concentration limits. This demonstration shall be based on the following criteria and requirements:

- (1) The concentrations of each constituent of concern in each sample from each monitoring point in the Corrective Action Program for the waste management unit

must have remained at or below its respective concentration limit during a proof period of at least one year, beginning immediately after the suspension of corrective action measures; and

- (2) The individual sampling events for each monitoring point must have been evenly distributed throughout the proof period and have consisted of no less than eight sampling events per year per monitoring point.

After termination of the Corrective Action Program, the landfill shall return to the detection monitoring program for the term of the compliance period. The compliance period is the number of years equal to the active life of the waste management unit plus the closure period. Although the closure period is not defined in Title 23, Article 10, closure is defined as “termination of waste discharges at a waste management unit and operations necessary to prepare the closed unit for post-closure maintenance. Closure may be undertaken incrementally.” Title 14, §17761 defines closure as “the period of site activity following the final receipt of waste when the approved closure plan is being implemented. The closure period ends upon the acceptance of the certification of closure by the approving agencies.”

Based on the above, and Title 23 §2550.6 (c), Compliance Period, the compliance period shall be extended until the discharger can demonstrate that the waste management unit has been in compliance with its water quality protection standard for a period of three consecutive years. After this three year period, monitoring of the compliance points will occur as per the detection monitoring program for a period of thirty years after the date of certification of closure by the approving agencies.

WATER QUALITY PROTECTION STANDARD {Title 23 §2550.2 (a)}

Water quality protection standards are contained in the Landfill’s December 14, 1988 Waste Discharge Requirements. These standards were proposed by the Central Valley Regional Water Quality Control Board (CVRWQCB). Contained in Table 3 are the proposed protection standards based on concentration limits greater than background.

The City of Sacramento requests adoption of the proposed protection standards contained in Table 3.

CONSTITUENTS OF CONCERN {Title 23 §2550.3}

The current constituents of concern are as identified in the current quarterly monitoring reports submitted to the CVRWQCB. The list of organic constituents is based on EPA Method 601/602 testing which can be performed by the City of Sacramento Water Quality Laboratory.

The City landfill has an extensive network of groundwater monitoring wells which are sampled each quarter. Analytical costs for all 19 groundwater monitoring wells are currently manageable, partly due to the availability of the City’s water quality laboratory for much of the analytical work. Expanding the list of constituents of concern and increasing the accuracy of the analytical requirements will greatly affect the City due to the larger number of groundwater monitoring wells installed.

However, future groundwater monitoring will be performed as specified in the tentative Waste Discharge Requirements for municipal solid waste landfills. These requirements are patterned after the Federal Subtitle D regulations, which will become effective October 9, 1993. Landfills having a documented release to the groundwater will be required to test for both the Appendix I and Appendix II constituents of concern, which include almost all known hazardous inorganic and organic constituents. Test methods for these constituents have not been determined at this time. (Method 8240 or 8260 for Appendix I VOCs and Method 6010 for inorganic constituents have been suggested.) It is possible that the City Solid Waste Division may no longer be able to utilize the City's water quality laboratory for groundwater analysis.

CONCENTRATION LIMITS {Title 23 §2550.4 (a) (3)}

Current concentration limits for groundwater are contained in the landfill's existing Waste Discharge Requirements, Order No. 88-207.

Proposed concentration limits greater than background are contained in Table 3. These concentration limits have been established for the landfill groundwater monitoring wells which have been designated as points of compliance for groundwater quality.

This proposed list of concentration limits is justified on the basis that there are no drinking water wells in the area and the average groundwater gradient is to the south, away from the American River.

MONITORING POINTS AND THE POINT OF COMPLIANCE {Title 23 §2550.5}

The points of compliance wells, as contained in the existing Waste Discharge Requirements, are wells B-1, B-3, B-4, B-6, C-7 and C-8. The designated background wells are C-9 and C-10. All other groundwater monitoring wells will continue to be monitored and sampled but the results will not be related to the permitted site. Data gained by sampling wells which are not points of compliance will continue to be graphed and included with the City's quarterly groundwater monitoring reports.

GROUNDWATER QUALITY TESTING

The City of Sacramento will switch from the current EPA method 601/602 testing for organic compounds to a test method which will provide the necessary accuracy for the required range of constituents specified in Appendix I and Appendix II of Subtitle D, and the newly revised WDRs. This revised testing program to comply with the new regulations will begin in January 1994.

GROUNDWATER QUALITY MONITORING SYSTEM {Title 23 §2550.7 (b)}

Background and compliance well locations are shown on Figure 14. Appendix J contains copies of the drillers logs of the wells as they were installed and the groundwater quality well designs used.

The field sampling procedure for groundwater samples is as described in Appendix K. Items included in the procedure are: 1) sample collection (e.g., purging, sampling equipment, decontamination, etc.), 2) sample preservation, 3) analytical procedures, and (4) chain of custody control.

UNSATURATED ZONE MONITORING {Title 23 §2550.7 (d)}

No unsaturated zone monitoring is required due to the lack of separation between in-place refuse and the groundwater table. The landfill's waste discharge requirements, #88-207, state that unsaturated zone monitoring is not necessary at this facility.

FUTURE WORKPLAN

1. Complete closure of the entire 172 acre facility as approved in the Final Closure/Postclosure Plan ~~was~~~~will be~~ implemented. Final closure of the site ~~will~~ significantly reduce the amount of surface water entering the waste and reduce the amount of leachate generated.
2. The cost of implementing the January 31, 1990 Corrective Action Program's Task 5 will be ascertained. Completion of Task 5 will further reduce the amount of leachate generated by WMU A that is released into the groundwater table. This task should be coordinated with the City of Sacramento Parks and Recreation Department. Installation of an impermeable cap could be performed in conjunction with possible irrigation of portions of the site.
3. Monitoring the groundwater will continue as described in the Corrective Action Program's Task 6 for a period of two years after completion of Task 5. With little or no leachate entering the groundwater, the existing compounds in the groundwater will be diluted and possibly consumed by anaerobic bacteria present in the aquifer. (The presence of an active biologic population in the aquifer is confirmed by the biofouling of production wells P1 and P2.) Attenuation of compound concentrations should be observed over time.
4. Based on the conclusion in Kleinfelder's 1992 report that pulling the plume of affected groundwater back on site would be virtually impossible, various other alternatives to active remediation should be investigated if, after the two year monitoring period described in Task 6, a reduction in compound concentrations is not demonstrated.

CLOSURE SCHEDULE AND THE OPERATION OF THE COMPOST PROGRAM

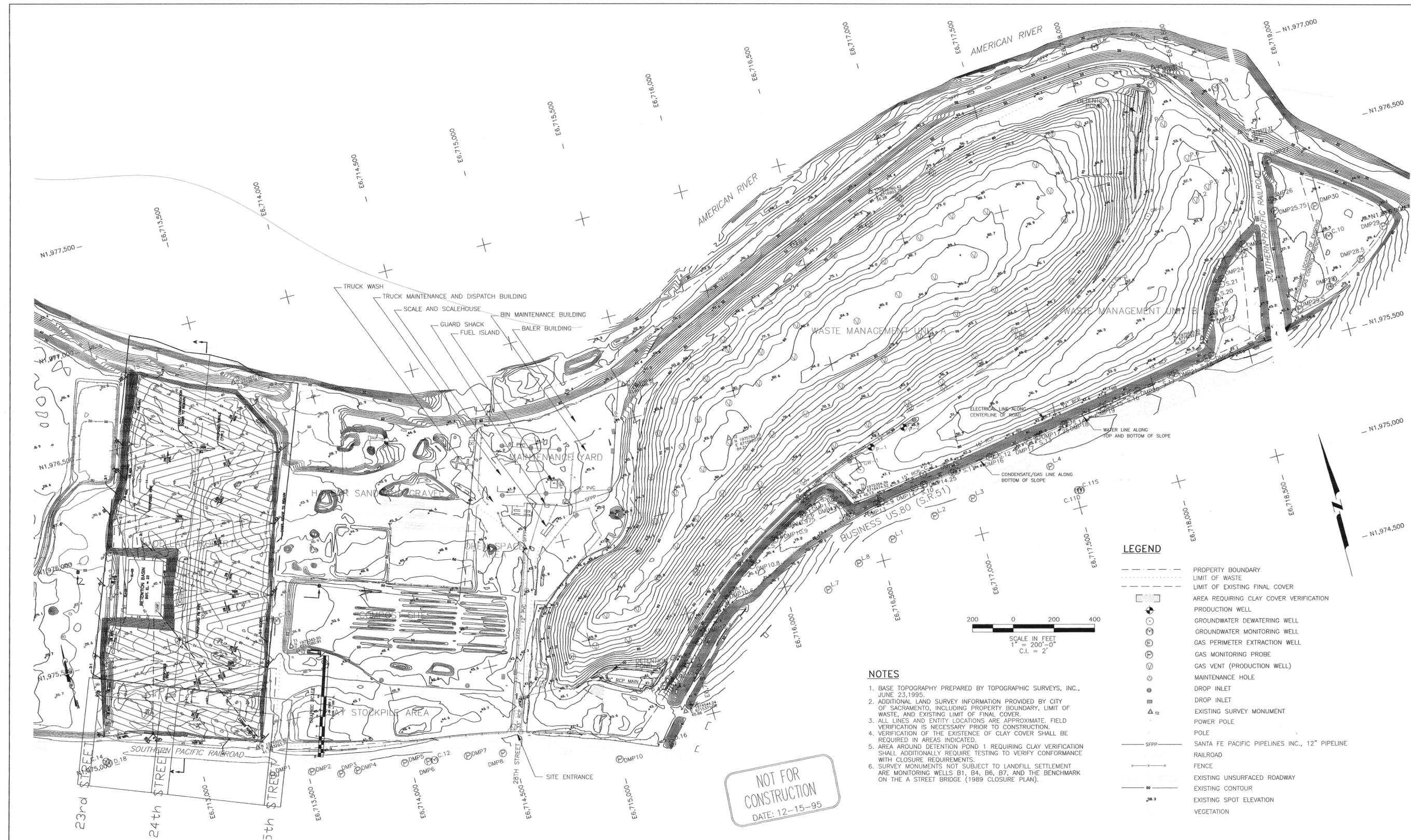
Please see Appendix A for the Compost Operation Plan. Please see Table 1 for the Closure/Post Closure Plan.

WASTE DISCHARGE REQUIREMENTS FOR SOLID WASTE LANDFILLS

Appendix N contains the blanket waste discharge requirements prepared by the Regional Water Quality Control Board in response to the Federal regulations contained in Subtitle D. These waste discharge requirements supersede the landfill's current discharge requirements after October 9, 1993.

FIGURES

Figure 1 (Missing)



LEGEND

- PROPERTY BOUNDARY
- LIMIT OF WASTE
- LIMIT OF EXISTING FINAL COVER
- ▨ AREA REQUIRING CLAY COVER VERIFICATION
- ⊕ PRODUCTION WELL
- ⊙ GROUNDWATER DEWATERING WELL
- ⊙ GROUNDWATER MONITORING WELL
- ⊙ GAS PERIMETER EXTRACTION WELL
- ⊙ GAS MONITORING PROBE
- ⊙ GAS VENT (PRODUCTION WELL)
- ⊙ MAINTENANCE HOLE
- ⊙ DROP INLET
- ⊙ DROP INLET
- ⊙ EXISTING SURVEY MONUMENT
- ⊙ POWER POLE
- ⊙ POLE
- SFPF — SANTA FE PACIFIC PIPELINES INC., 12" PIPELINE
- RAILROAD
- FENCE
- EXISTING UNSURFACED ROADWAY
- EXISTING CONTOUR
- ⊙ EXISTING SPOT ELEVATION
- VEGETATION



NOTES

1. BASE TOPOGRAPHY PREPARED BY TOPOGRAPHIC SURVEYS, INC., JUNE 23, 1995.
2. ADDITIONAL LAND SURVEY INFORMATION PROVIDED BY CITY OF SACRAMENTO, INCLUDING PROPERTY BOUNDARY, LIMIT OF WASTE, AND EXISTING LIMIT OF FINAL COVER.
3. ALL LINES AND ENTITY LOCATIONS ARE APPROXIMATE. FIELD VERIFICATION IS NECESSARY PRIOR TO CONSTRUCTION.
4. VERIFICATION OF THE EXISTENCE OF CLAY COVER SHALL BE REQUIRED IN AREAS INDICATED.
5. AREA AROUND DETENTION POND 1 REQUIRING CLAY VERIFICATION SHALL ADDITIONALLY REQUIRE TESTING TO VERIFY CONFORMANCE WITH CLOSURE REQUIREMENTS.
6. SURVEY MONUMENTS NOT SUBJECT TO LANDFILL SETTLEMENT ARE MONITORING WELLS B1, B4, B6, B7, AND THE BENCHMARK ON THE A STREET BRIDGE (1989 CLOSURE PLAN).

NOT FOR CONSTRUCTION
 DATE: 12-15-95



HARDING LAWSON ASSOCIATES
 Engineering and Environmental Services
 10265 Rockingham Drive, Suite 150
 Sacramento, California 95827
 (916) 364-0793
 DRAWN: JPH
 PROJECT NUMBER: 33338 001.3

SITE PLAN
 28TH STREET LANDFILL
 CITY OF SACRAMENTO

APPROVED: _____ DATE: 12-15-95
 REVISED DATE: _____

107 ACRE ACTIVE LANDFILL FINAL COVER SECTION

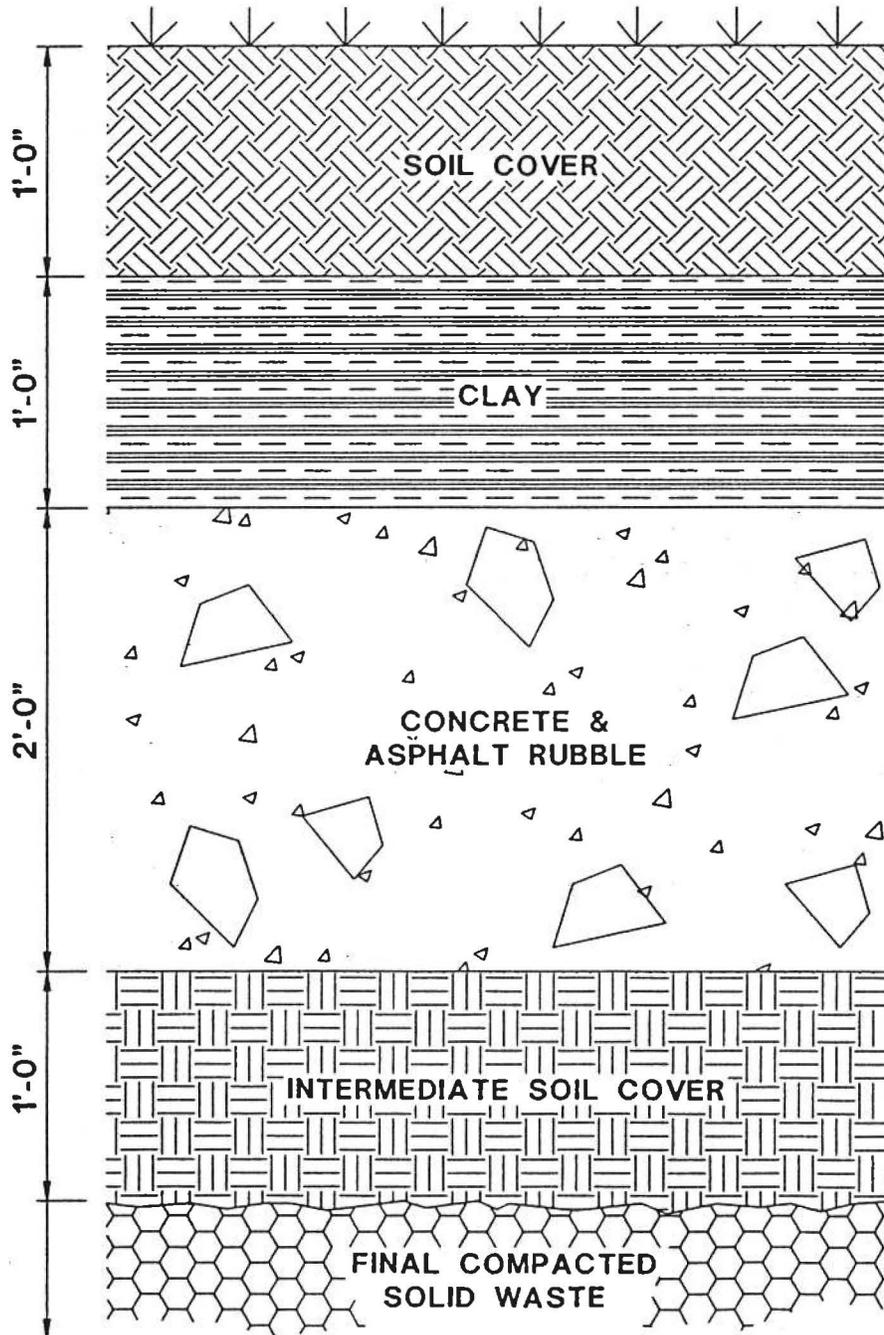
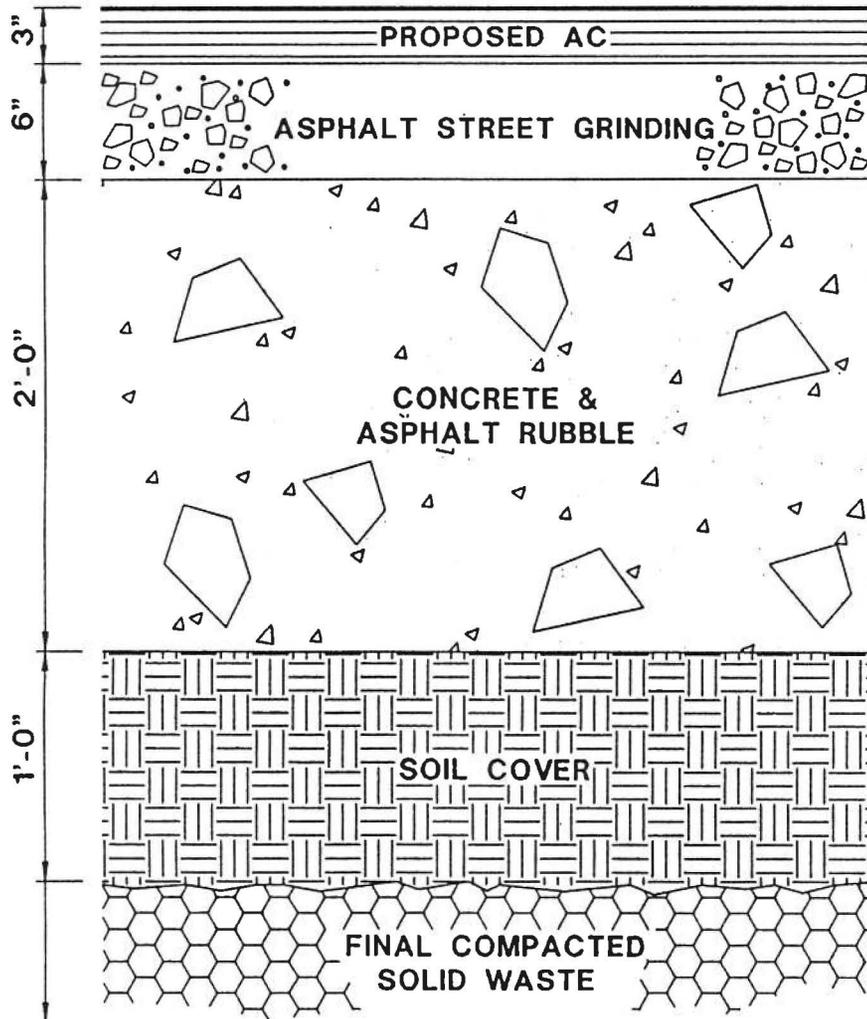


FIGURE 3

22.5 ACRE INACTIVE LANDFILL FINAL COVER SECTIONS

10 ACRE COMPOST FACILITY



12.5 ACRE OPEN SPACE

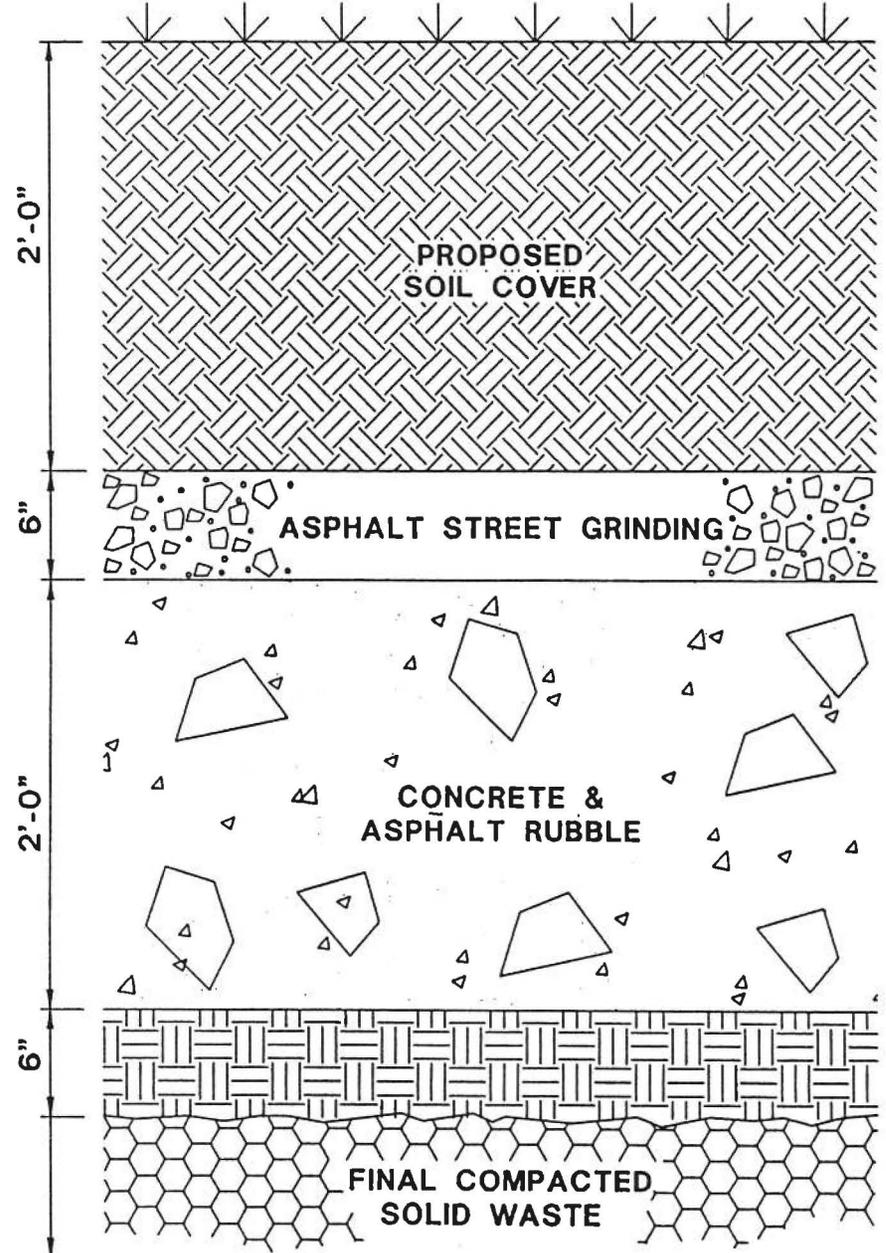


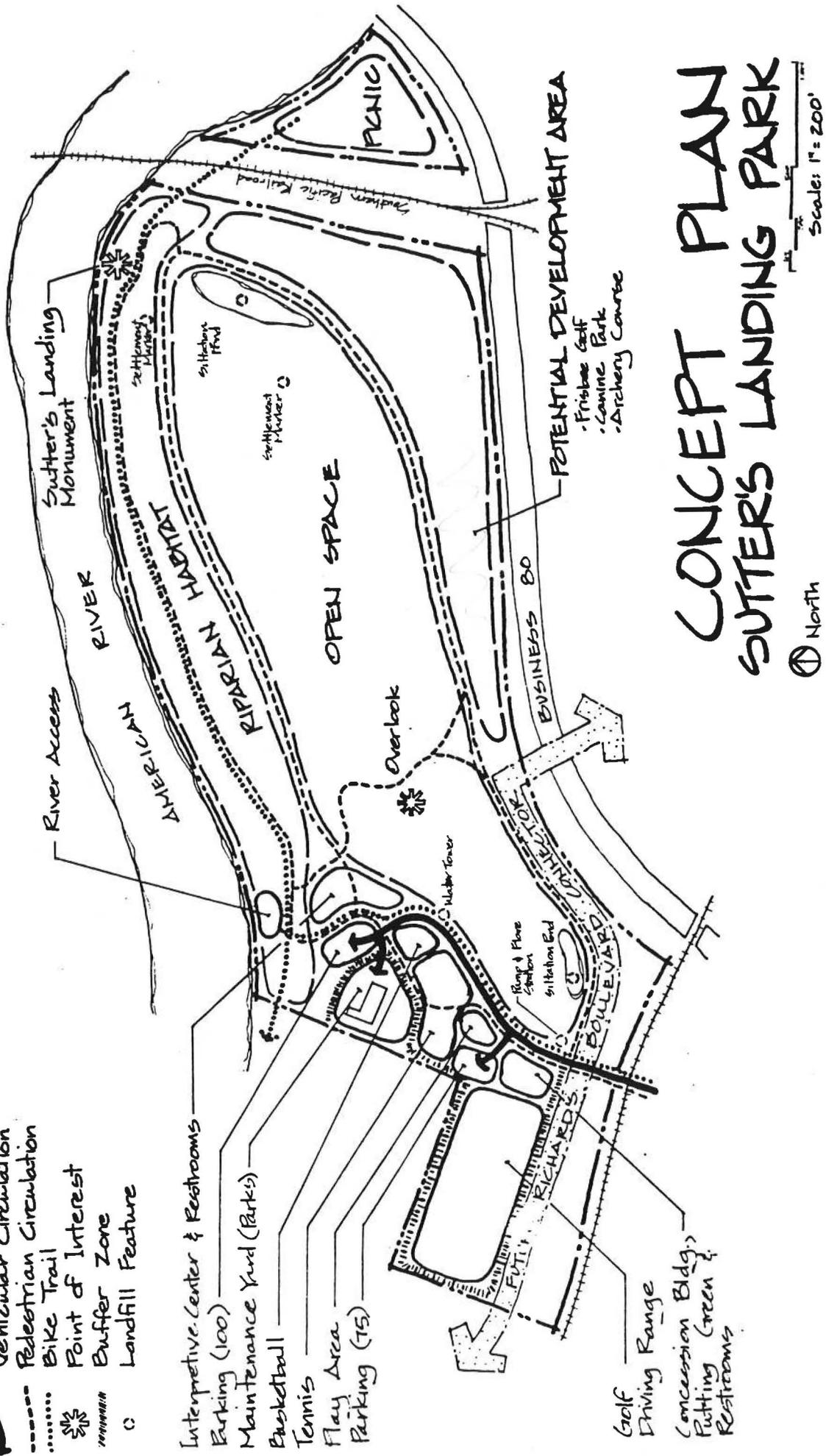
FIGURE 4

KEY:

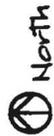
- Vehicular Circulation
- - - Pedestrian Circulation
- ⋯⋯⋯ Bike Trail
- ⊙ Point of Interest
- ⊞ Buffer Zone
- ⊞ Landfill Feature

- Interpretive Center & Restrooms
- Parking (100)
- Maintenance Yard (Barks)
- Basketball
- Tennis
- Play Area
- Parking (75)

- Golf
- Driving Range
- Concession Bldg.,
Fishing Green &
Restrooms



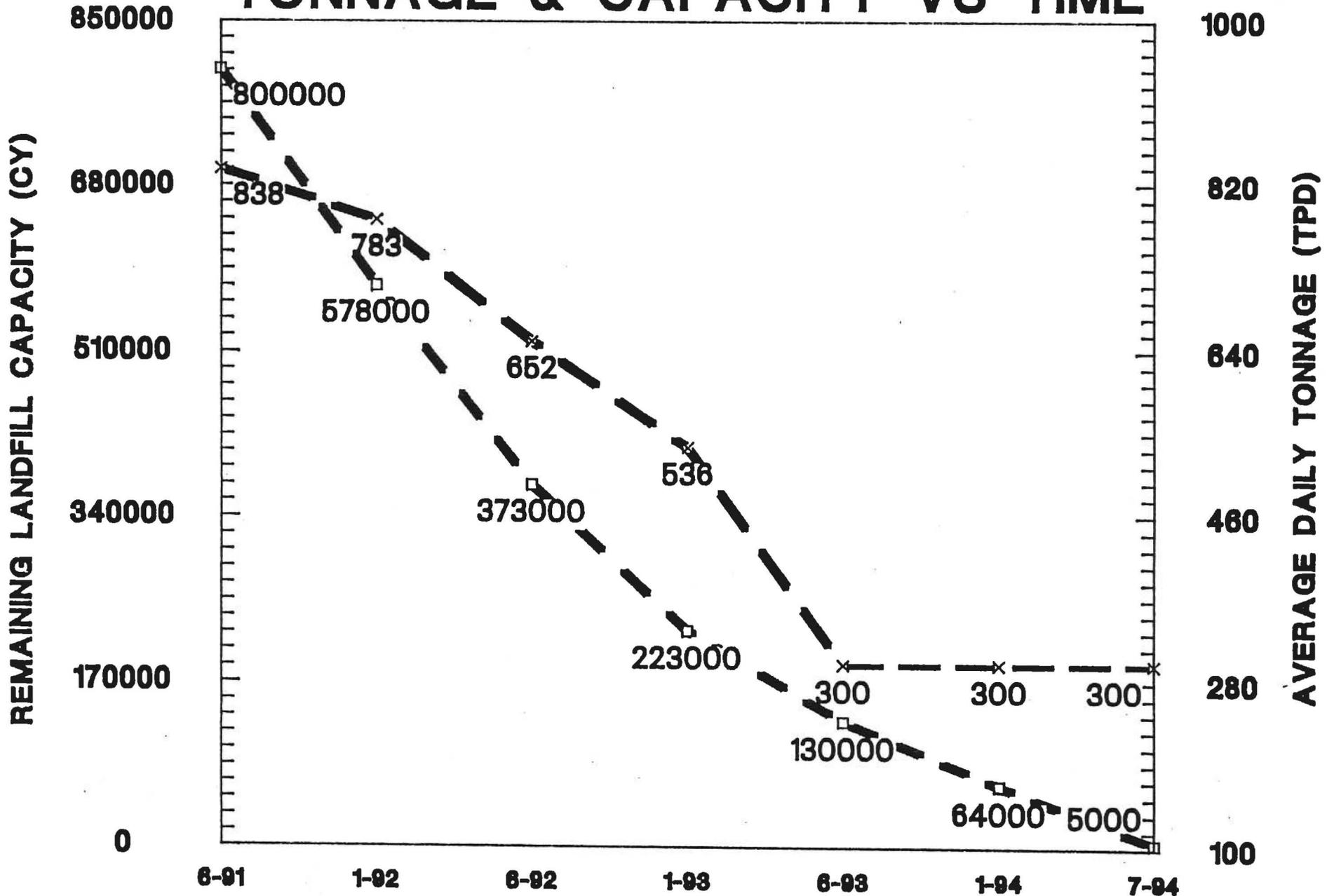
CONCEPT PLAN SUTTER'S LANDING PARK



Scale: 1" = 200'

FIGURE 5

TONNAGE & CAPACITY VS TIME



CONVERSIONS: CONVENTIONAL LANDFILL 2.2 CY/T
 BALEFILL 1.7 CY/T

FIGURE 7

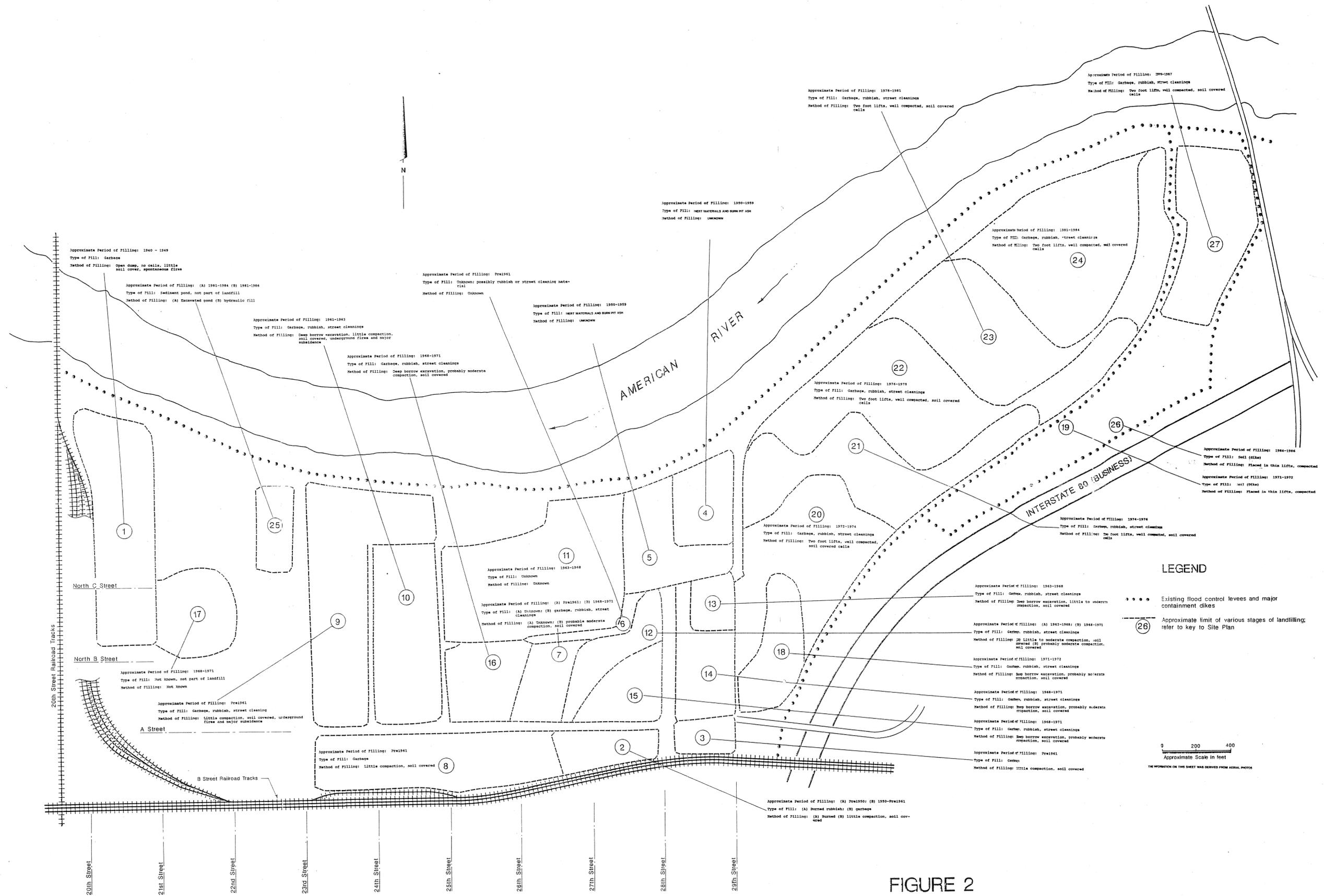


FIGURE 2

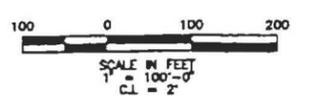
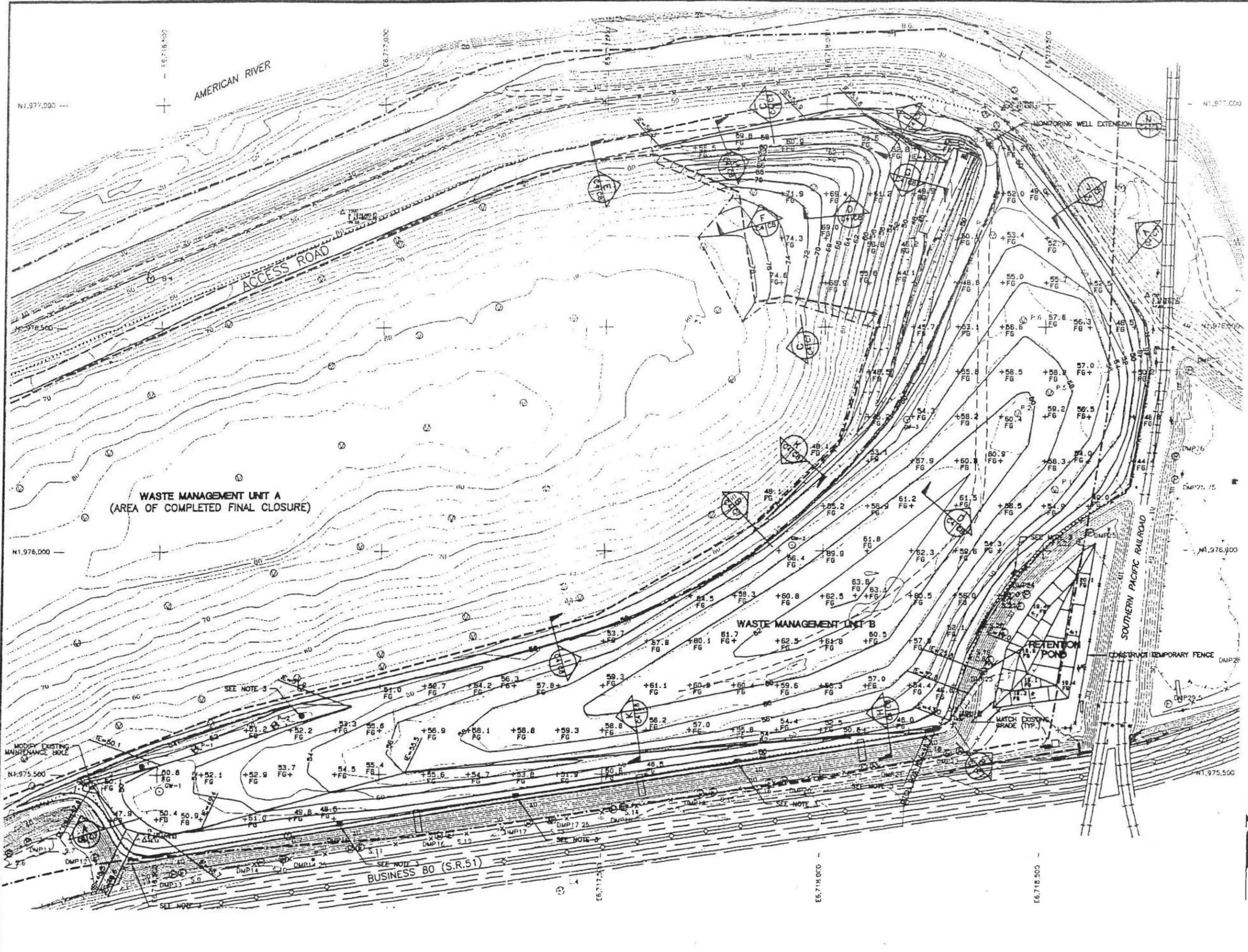
REVISIONS				BENCH MARK DESCRIPTION	ELV.	FIELD BOOK	CITY OF SACRAMENTO DEPARTMENT OF PUBLIC WORKS			CITY OF SACRAMENTO		SHEET - OF -
NO.	DESCRIPTION	DATE	BY				SCALE	DESIGNED BY:	DATE	CHECKED BY:	DATE	

DRAWN BY: BRUNING & CO.

Figure 9 (C4 and C5 from Construction CQA Report 1/23/98)

NOTES

1. ADDITIONAL LAND SURVEY INFORMATION PROVIDED BY CITY OF SACRAMENTO, INCLUDING PROPERTY BOUNDARY, LIMIT OF WASTE, AND EXISTING LIMIT OF FINAL COVER.
2. FINAL GRADING TO BE CONSTRUCTED TO FENCE LINE EAST OF THE PROPERTY BOUNDARY.
3. EXISTING DROP INLETS AND MAINTENANCE HOLES WITHIN WMU B GRADING LIMITS TO BE ABANDONED UNLESS REQUIRED FOR SITE DRAINAGE IMPROVEMENTS INDICATED.



REVISIONS			BENCH MARK DESCRIPTION	ELEV.	FIELD BOOK
NO.	DESCRIPTION	DATE BY			

CITY OF SACRAMENTO
DEPARTMENT OF PUBLIC WORKS

DRAWN BY: J. HENDERSON DESIGN BY: J. HENDERSON CHECKED BY: G.F.
DATE 07 JUN 98 R.C.E. DATE 07 JUN 98 R.C.E. 38159 DATE 6/7/98

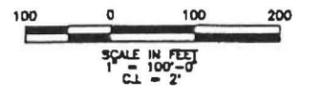
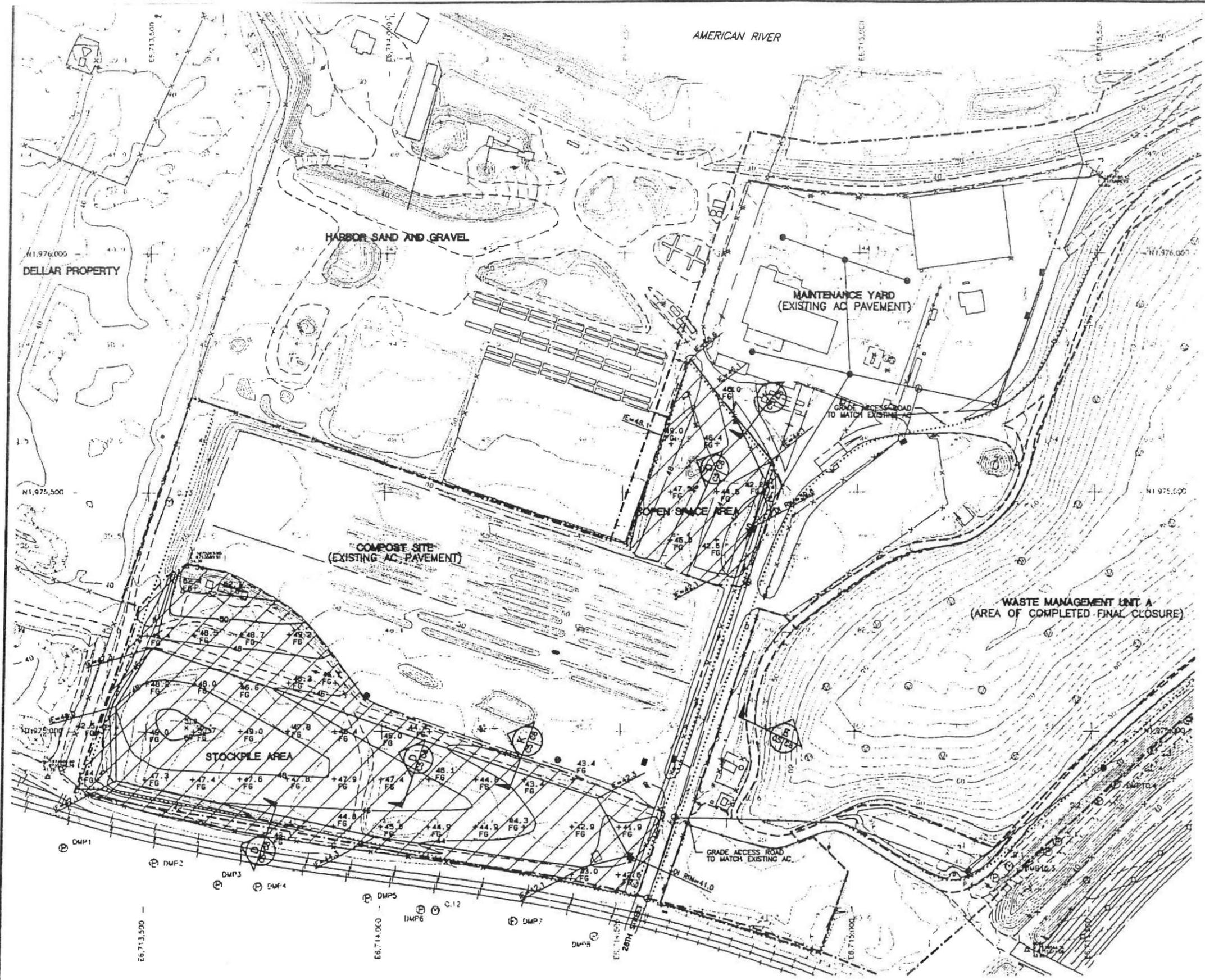
FINAL GRADING PLAN - WMU A & B
28TH STREET LANDFILL CLOSURE

PN: YA06 SHEET C4
8

AMERICAN RIVER

NOTES

1. ADDITIONAL LAND SURVEY INFORMATION PROVIDED BY CITY OF SACRAMENTO, INCLUDING PROPERTY BOUNDARY, LIMIT OF WASTE, AND EXISTING LIMIT OF FINAL COVER.
2. STOCKPILE AREA GRADING PLAN SUBJECT TO REVISION AFTER REMOVAL OF CLAY AND OTHER ACTIVITIES.



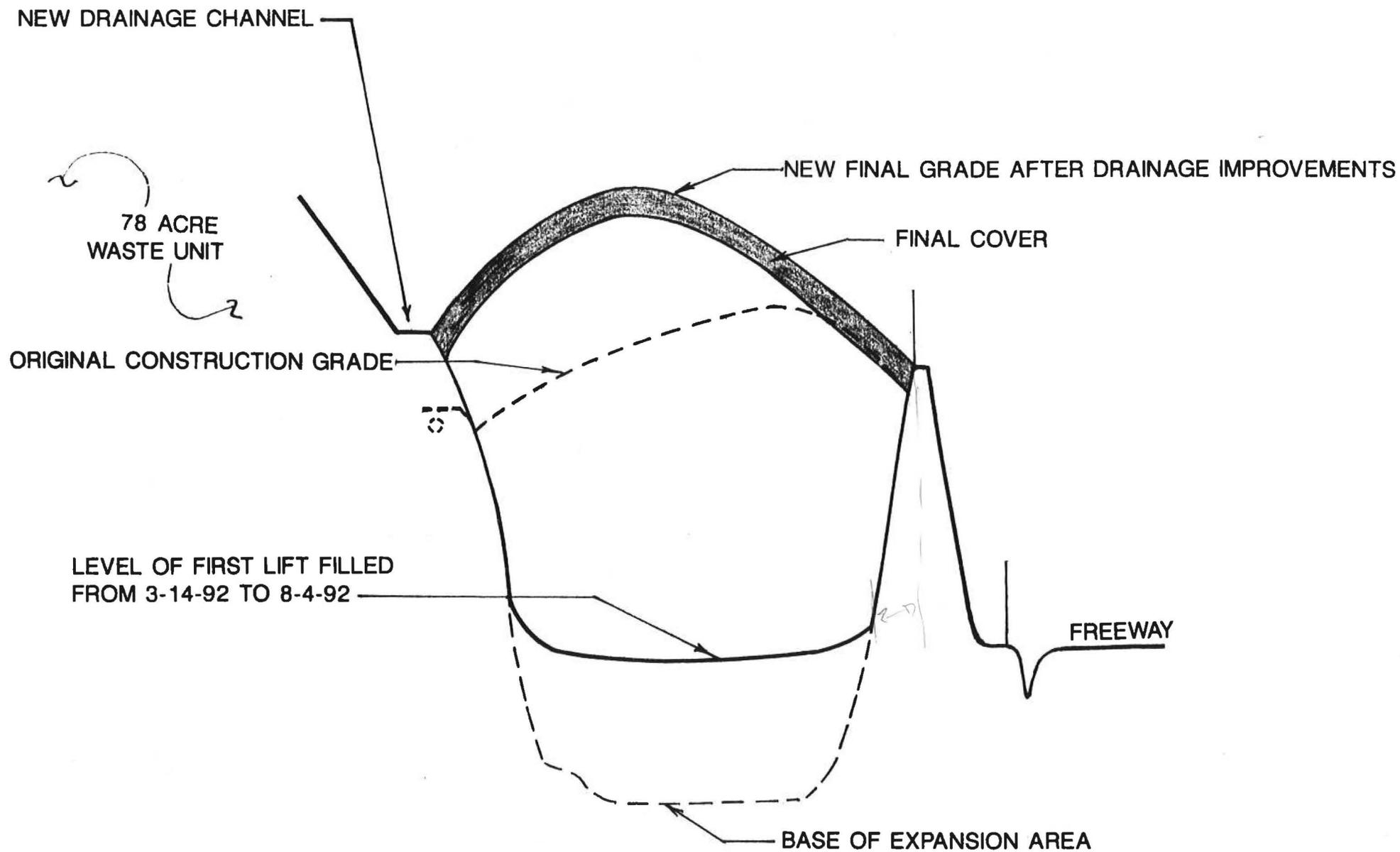
REVISIONS				BENCH MARK		FIELD BOOK
NO.	DESCRIPTION	DATE	BY	DESCRIPTION	ELEV.	SCALE

CITY OF SACRAMENTO
DEPARTMENT OF PUBLIC WORKS

DRAWN BY: J. HENDERSON DATE 07 JUN 96	DESIGN BY: J. HENDERSON R.C.E. DATE 07 JUN 96	CHECKED BY: G.F. R.C.E. 38150 DATE 4/7/96
--	--	--

FINAL GRADING PLAN - UNCLASSIFIED AREAS
28TH STREET LANDFILL CLOSURE

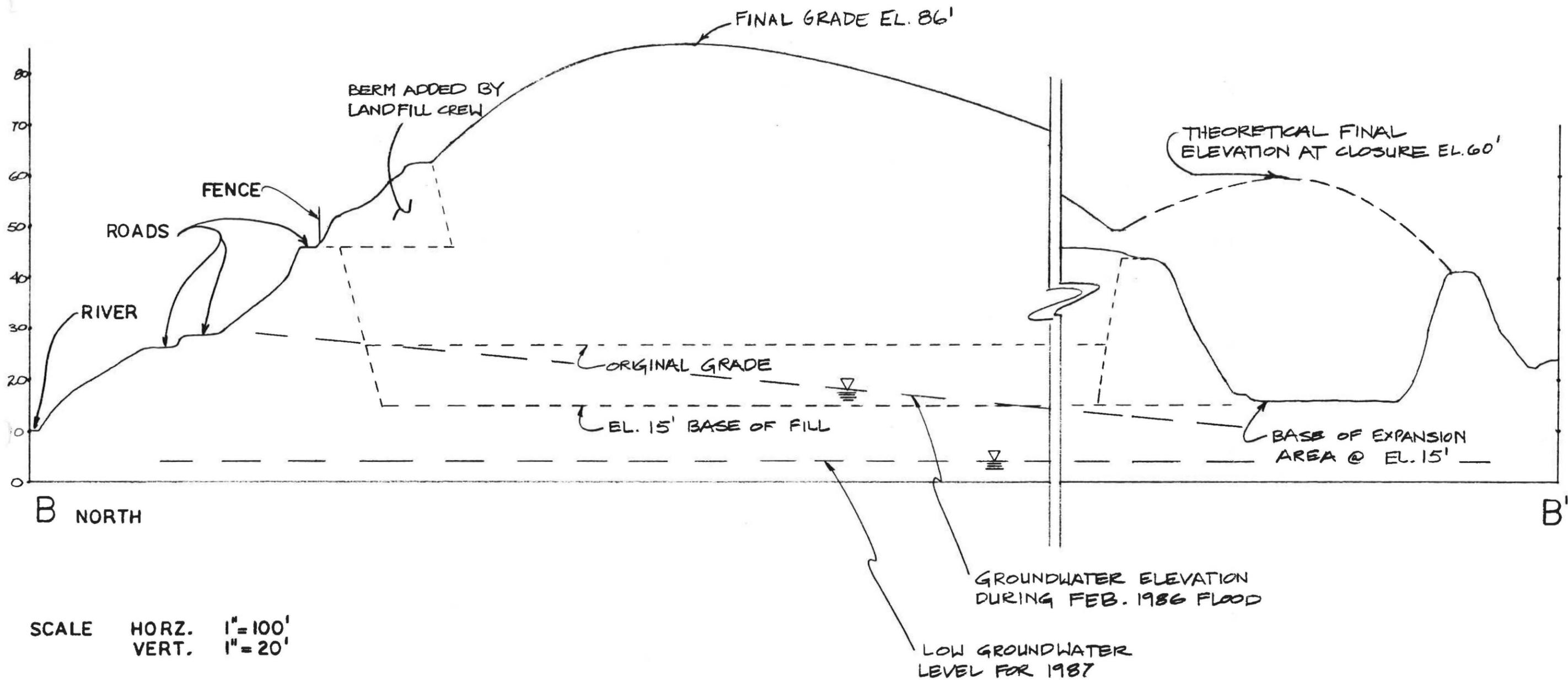
NO. YAO6
SHEET C5
8



SCALE: HORIZ. 1"=100'
 VERT. 1"=10'

NSD 9-23-92

FIGURE 10



KAJ 5-11-88

REV. NSD 10-5-93

FIGURE 11

***** WELL DATA *****

To make a selection, use then <return>. Pumping times are ignored for steady-state routines. Use an F key to exit this page.

Number of Wells : 2

	LOCATION		PUMPING RATE	PUMPING TIME
	X in feet	Y in feet	gallons / min.	days
	MMMMMMMMMMMMMM	MMMMMMMMMMMMMM	MMMMMMMMMMMMMMMM	MMMMMMMMMMMMMMMM
Well # 1	0.00	0.00	50.000	60.00
Well # 2	183.00	13.00	50.000	60.00

F1 Help F2 DOS Shell F3 Well Data F4 Grid Data F5 Velocity
F6 Drawdown F7 Water Level F8 Streamlines F9 Start Again F10 Quit

***** GRID DATA *****

To make a selection, move the cursor with the arrow keys, then press return. Use an F key when finished with this page.

DREAM calculates data at each grid point. The grid is oriented such that East = +X and North = +Y.

Value in feet
MMMMMMMMMMMMMMMMMMMM

Minimum X	-200.00
Maximum X	325.00
Minimum Y	-15.00
Maximum Y	150.00
Spacing X	20.00
Spacing Y	20.00

F1 Help	F2 DOS Shell	F3 Well Data	F4 Grid Data	F5 Velocity
F6 Drawdown	F7 Water Level	F8 Streamlines	F9 Start Again	F10 Quit

***** VELOCITY ROUTINE *****

This routine calculates the steady-state velocity and the direction of flow at every grid point. Please enter the natural flow direction using a compass angle:

North = 0, East = 90, South = 180, West = 270 degrees.

	Value	Units
	MMMMMMMMMMMM	MMMMMMMMMMMMMMMMMM
Transmissivity	2653.00	square feet / day
Natural Gradient	0.001000	dimensionless
Direction of Flow	150.00	compass degrees
Aquifer Thickness	36.00	feet
Porosity	0.30	dimensionless

Begin the Routine

F1 Help F2 DOS Shell F3 Well Data F4 Grid Data F5 Velocity
F6 Drawdown F7 Water Level F8 Streamlines F9 Start Again F10 Quit

***** DRAWDOWN ROUTINE *****

This routine calculates drawdown at every grid point. To enter a value, move the cursor to the desired location, press return and type in the number. To start the routine, move the cursor to ** Begin the Routine ** and press return.

	Value	Units
	MMMMMMMMMMMM	MMMMMMMMMMMMMMMMMMMM
Storage Coef.	0.000100	dimensionless
Transmissivity	2653.00	square feet / day

Begin the Routine

F1 Help	F2 DOS Shell	F3 Well Data	F4 Grid Data	F5 Velocity
F6 Drawdown	F7 Water Level	F8 Streamlines	F9 Start Again	F10 Quit

WELL	ELEVATION	DEPTH TO WATER	WATER ELEVATION	TIME/DAY
P1	45.76	41.84	3.92	5/6 12:22
		48.53	-2.77	5/6 2:00
		48.74	-2.98	5/7 7:55
		48.77	-3.01	5/8 8:10
		49.55	-3.79	5/12 9:45
P2	46.34	42.43	3.91	5/6 12:2
		42.43	3.91	5/6 2:00
		42.52	3.82	5/7 7:55
		42.52	3.82	5/8 8:10
		43.18	3.16	5/12 9:45
PIEZ.	45.93	42.02	3.91	5/6 12:2
		42.12	3.81	5/6 2:00
		42.22	3.71	5/7 7:55
		42.22	3.71	5/8 8:10
		42.88	3.05	5/12 9:45

100-75GPM PUMP TEST

Performed November 13, 1992

WELL	ELEVATION	DEPT TO WATER	WATER ELEVATION	TIME/RATE
P1	45.76	43.1 58.5 59.0 59.0 59.0 59.0 59.0 59.0 59.0 59.0 59.0	2.66 -12.75 -13.24 -13.24 -13.24 -13.24 -13.24 -13.24 -13.24 -13.24 -13.24	8:00AM/100GPM 8:25/90 8:30/75 8:42/75 9:00/75 9:30/75 10:30/75 11:30/75 12:30PM/75 1:15/75 3:30/75
P2	46.34	43.68 43.70 43.70 43.71 43.71 43.71 43.71 43.71 43.71 43.72	2.66 2.64 2.64 2.63 2.63 2.63 2.63 2.63 2.63 2.62	8:00AM/100 8:25/90 8:42/75 9:00/75 9:30/75 10:30/75 11:30/75 12:30PM/75 1:15/75 3:30/75
PIEZ.	45.93	43.27 43.35 43.38 43.40 43.40 43.41 43.41 43.41 43.41 43.44	2.66 2.58 2.55 2.53 2.53 2.52 2.52 2.52 2.52 2.49	8:00AM/100 8:25/90 8:42/75 9:00/75 9:30/75 10:30/75 11:30/75 12:30PM/75 1:15/75 3/30/74
C7	NO CHANGE THROUGHOUT PUMP TEST			

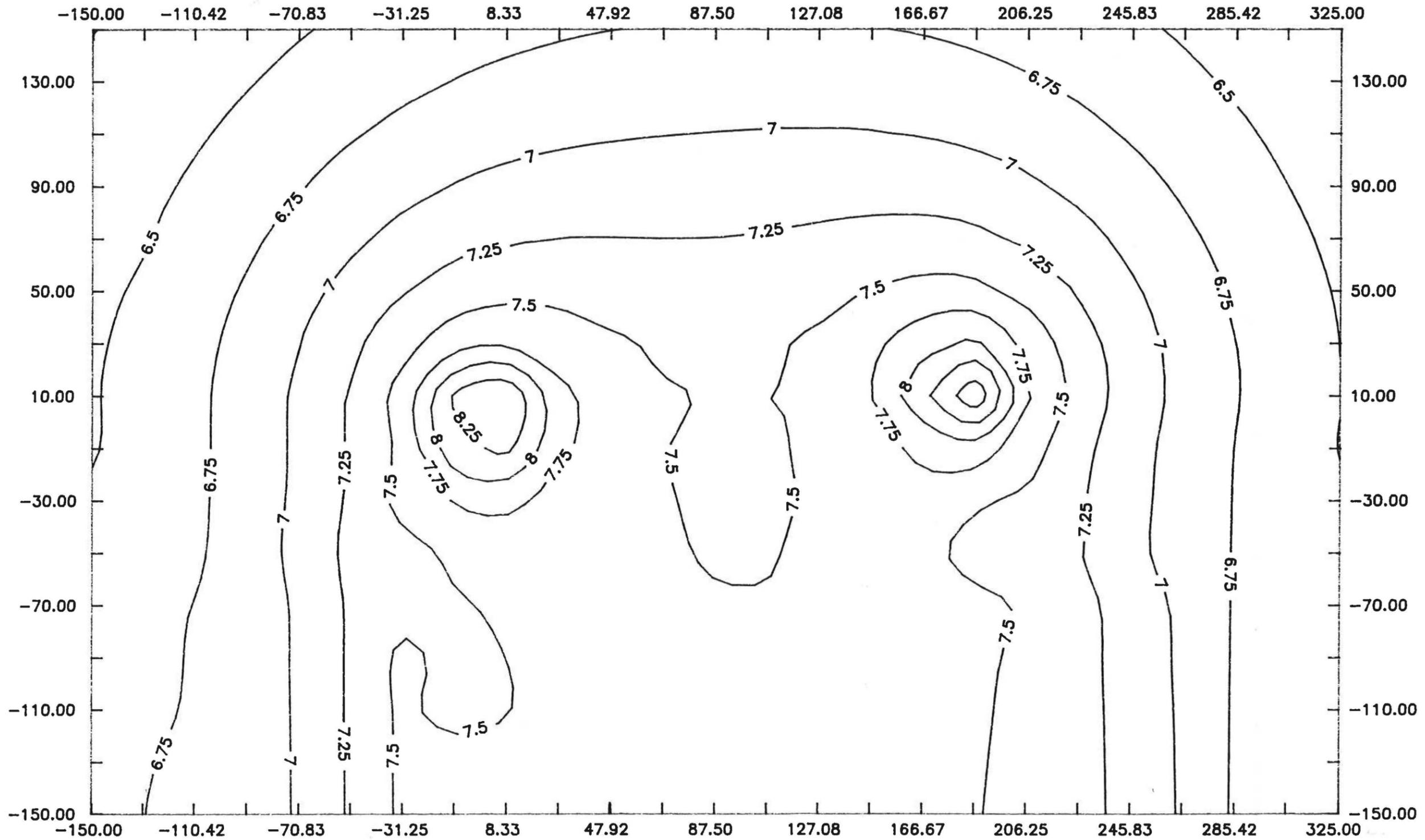
***NOTE:** SPECIFIC CAPACITY = 75 GPM/15.9FT. = 4.7 GPM/FT.

1992 50GPM PUMP TEST

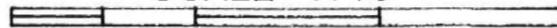
WELL	ELEVATION	DEPT TO WATER	WATER ELEVATION	DAY/TIME
P1	45.76	41.84	3.92	5/6 12:22
		48.53	-2.77	5/6 2:00
		48.74	-2.98	5/7 7:55
		48.77	-3.01	5/8 8:10
P2	46.34	42.43	3.91	5/6 12:22
		42.43	3.91	5/6 2:00
		42.52	3.82	5/7 7:55
		42.52	3.82	5/8 8:10
PIEZ.	45.93	42.02	3.91	5/6 12:22
		42.12	3.81	5/6 2:00
		42.22	3.71	5/7 7:55
		42.22	3.71	5/8 8:10

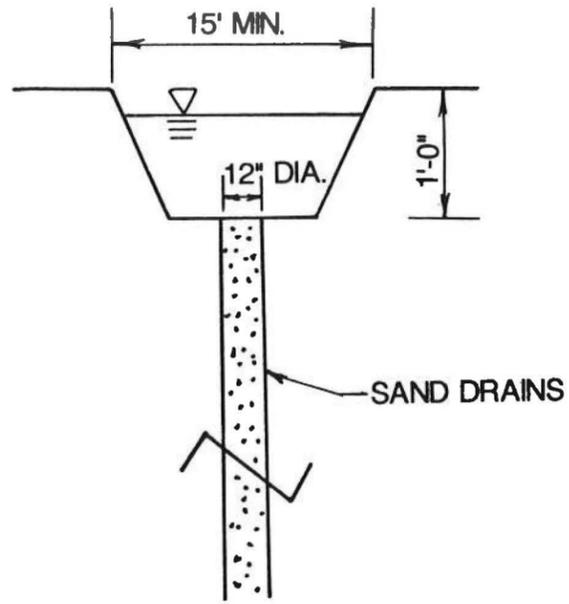
***NOTE: SPECIFIC CAPACITY = 50 GPM/6.93 FT. = 7.2 GPM/FT.**

TWO 50GPM PRODUCTION WELLS — DRAWDOWN

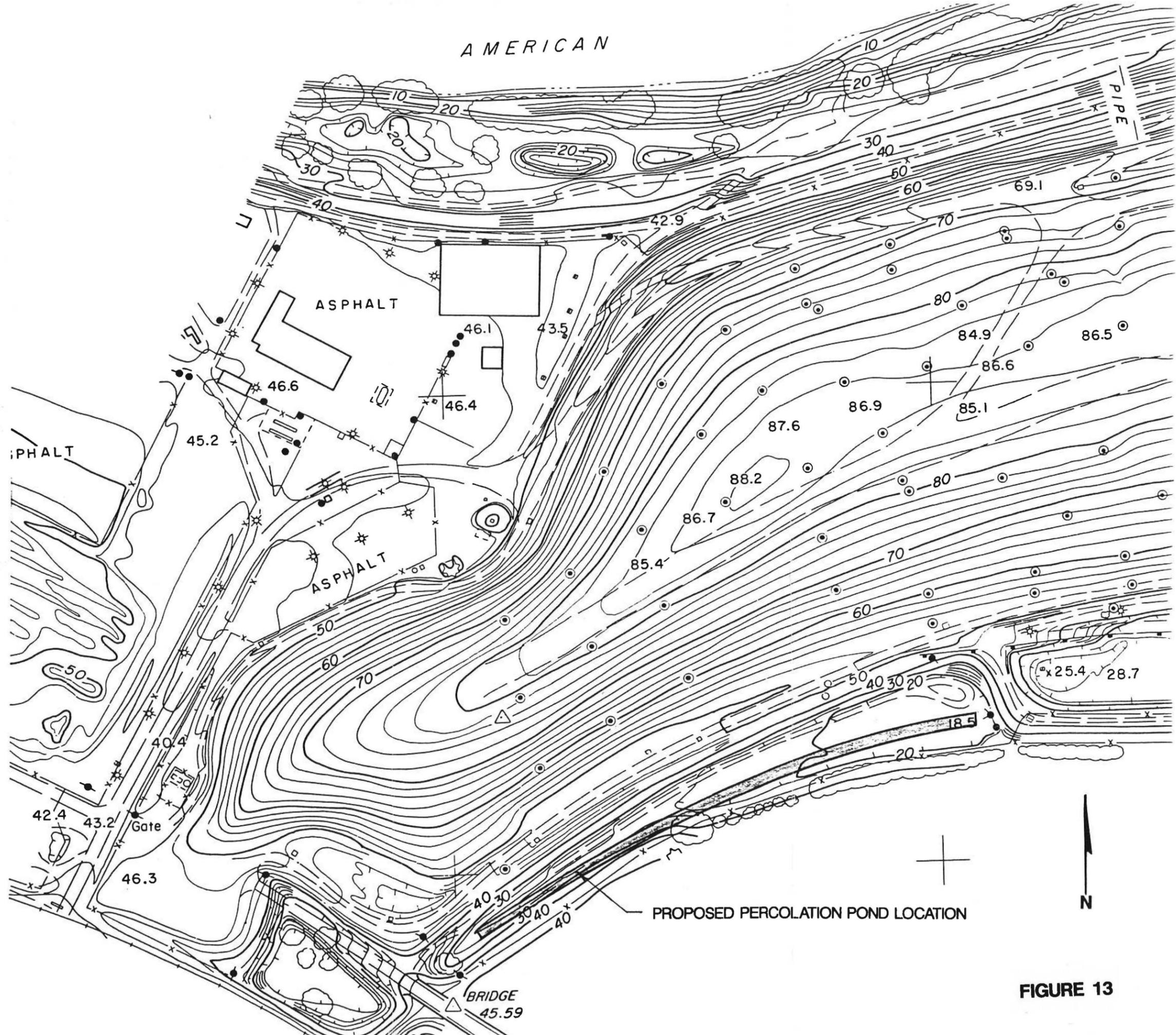


SCALE 1:40





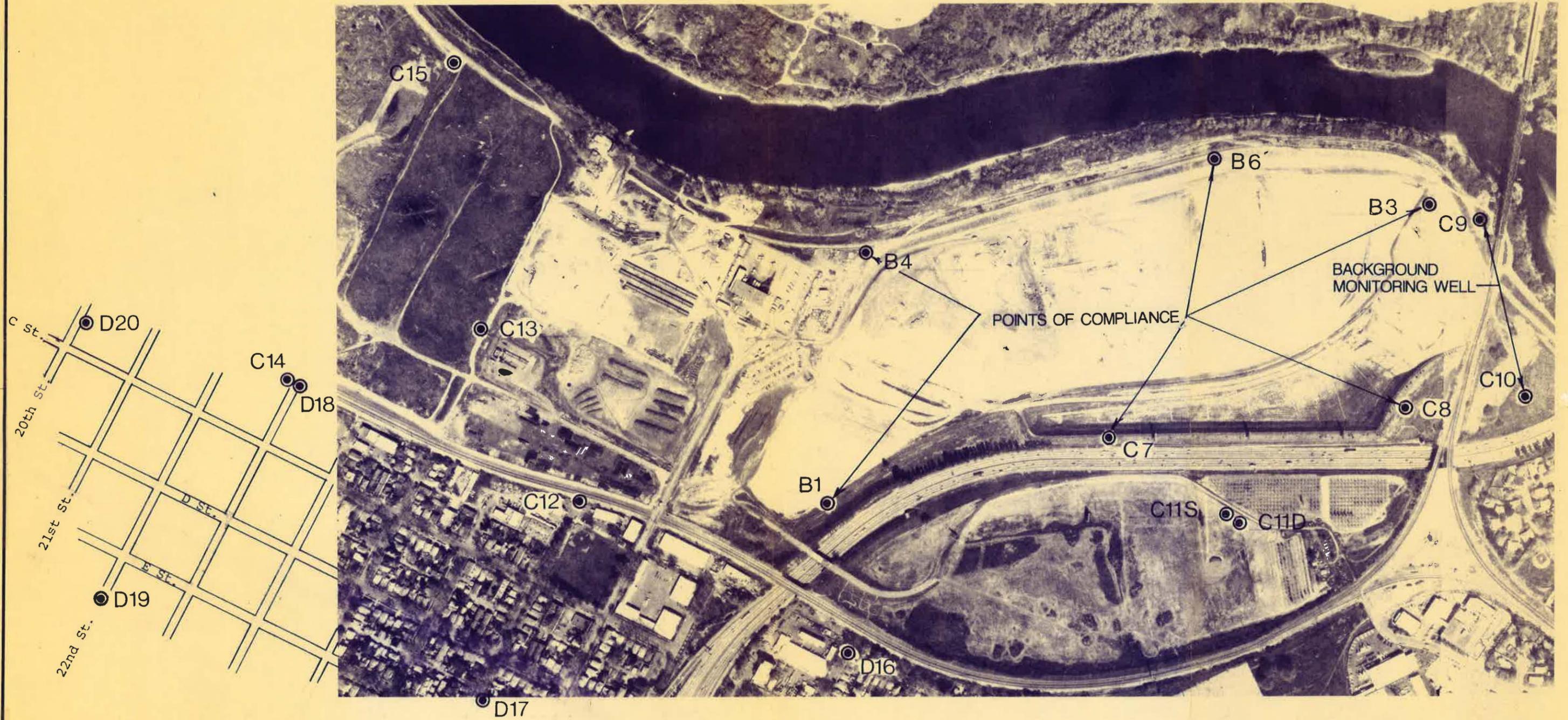
DRAIN DETAIL



PERCOLATION POND LOCATION

PROPOSED PERCOLATION POND LOCATION

FIGURE 13



● MONITORING WELL
 — GROUNDWATER CONTOUR

FIGURE 14

SCALE 1" = ±500'

REVISIONS				BENCH MARK DESCRIPTION	ELV.	FIELD BOOK
NO.	DESCRIPTION	DATE	BY			

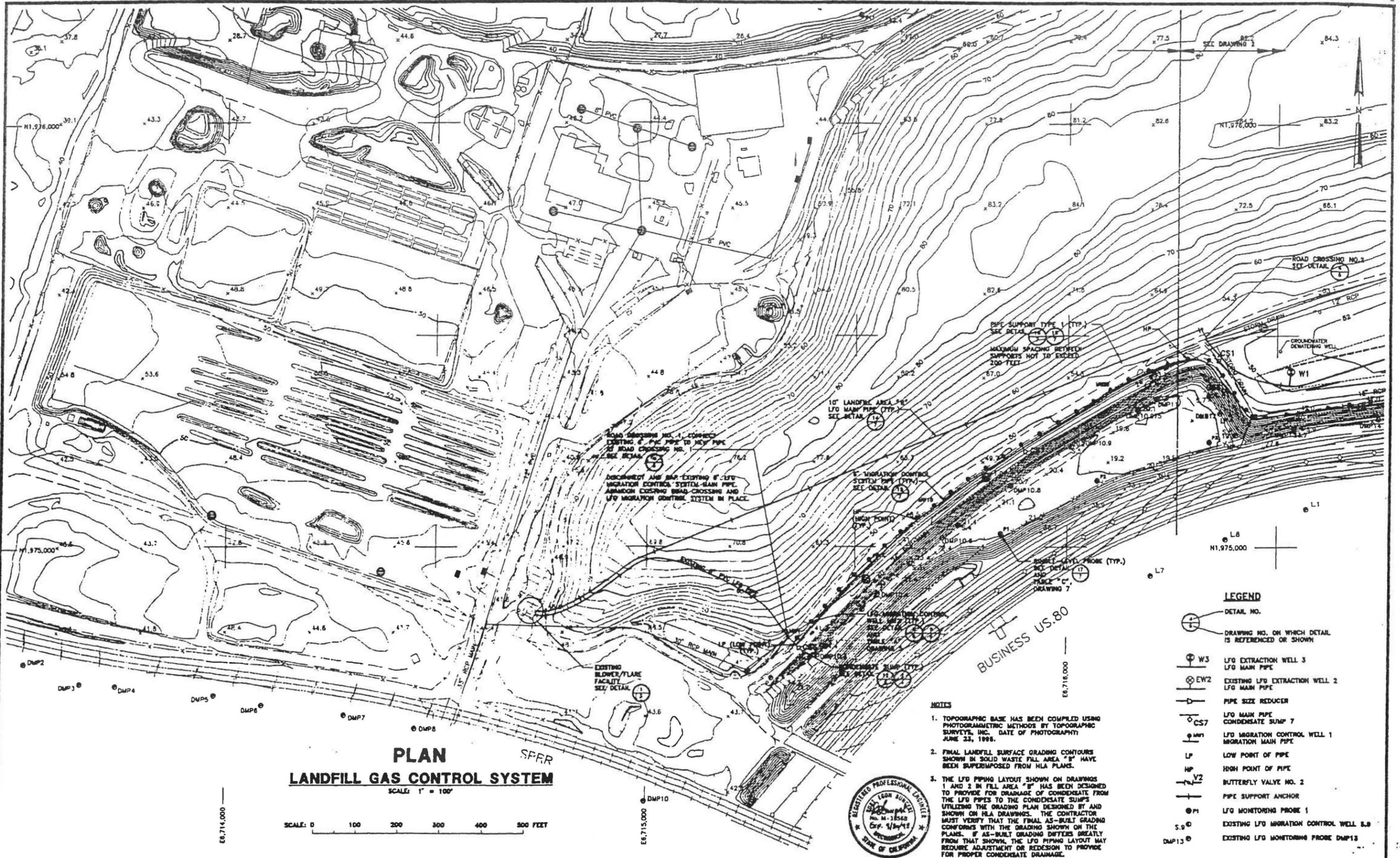
CITY OF SACRAMENTO
DEPARTMENT OF PUBLIC WORKS

SCALE HORIZ. _____ VERT. _____	DRAWN BY: <u>KAJ</u> DATE: <u>1-6-89</u>	DESIGNED BY: _____ R.C.E. _____ DATE _____	CHECKED BY: _____ R.C.E. _____ DATE _____
--------------------------------------	---	---	--

CITY OF SACRAMENTO LANDFILL
WATER QUALITY MONITORING WELLS

Figure 15 (Missing)

Figure 16 (LFG Sheet 1 and 2 from Construction CQA Report 1/23/98)



PLAN
LANDFILL GAS CONTROL SYSTEM
 SCALE: 1" = 100'

SCALE: 0 100 200 300 400 500 FEET

- NOTES**
1. TOPOGRAPHIC BASE HAS BEEN COMPILED USING PHOTOGRAMMETRIC METHODS BY TOPOGRAPHIC SURVEYS, INC. DATE OF PHOTOGRAPHY: JUNE 23, 1998.
 2. FINAL LANDFILL SURFACE GRADING CONTOURS SHOWN IN SOLID WASTE FILL AREA "B" HAVE BEEN SUPERIMPOSED FROM HLA PLANS.
 3. THE LFG PIPING LAYOUT SHOWN ON DRAWINGS 1 AND 2 IN FILL AREA "B" HAS BEEN DESIGNED TO PROVIDE FOR DRAINAGE OF CONDENSATE FROM THE LFG PIPES TO THE CONDENSATE SUMPS UTILIZING THE GRADING PLAN SHOWN BY AND SHOWN ON HLA DRAWINGS. THE CONTRACTOR MUST VERIFY THAT THE FINAL AS-BUILT GRADING CONFORMS WITH THE GRADING SHOWN ON THE PLANS. IF AS-BUILT GRADING DIFFERS GREATLY FROM THAT SHOWN, THE LFG PIPING LAYOUT MAY REQUIRE ADJUSTMENT OR REDESIGN TO PROVIDE FOR PROPER CONDENSATE DRAINAGE.

- LEGEND**
- ⊕ DETAIL NO.
 - ⊕ DRAWING NO. ON WHICH DETAIL IS REFERENCED OR SHOWN
 - ⊕ W3 LFG EXTRACTION WELL 3
LFG MAIN PIPE
 - ⊕ EW2 EXISTING LFG EXTRACTION WELL 2
LFG MAIN PIPE
 - PIPE SIZE REDUCER
 - ⊕ CS7 LFG MAIN PIPE
CONDENSATE SUMP 7
 - ⊕ MW1 LFG MIGRATION CONTROL WELL 1
MIGRATION MAIN PIPE
 - LP LOW POINT OF PIPE
 - HP HIGH POINT OF PIPE
 - V2 BUTTERFLY VALVE NO. 2
 - PIPE SUPPORT ANCHOR
 - ⊕ P1 LFG MONITORING PROBE 1
 - ⊕ S.O EXISTING LFG MIGRATION CONTROL WELL S.O
 - ⊕ DWP13 EXISTING LFG MONITORING PROBE DWP13



NO.	REVISIONS DESCRIPTION	DATE	BY	BENCH MARK DESCRIPTION	ELEV.	FIELD BOOK

CITY OF SACRAMENTO
 DEPARTMENT OF PUBLIC WORKS

SCALE: _____

DRAWN BY: _____ DATE: _____
 DESIGN BY: _____ R.C.E. DATE: _____
 CHECKED BY: _____ R.C.E. DATE: _____

emcon
 1821 BIRWOOD AVENUE
 SAN JOSE, CALIFORNIA 95131

PROJECT NO. 2002B-091.008 TASK 14.1

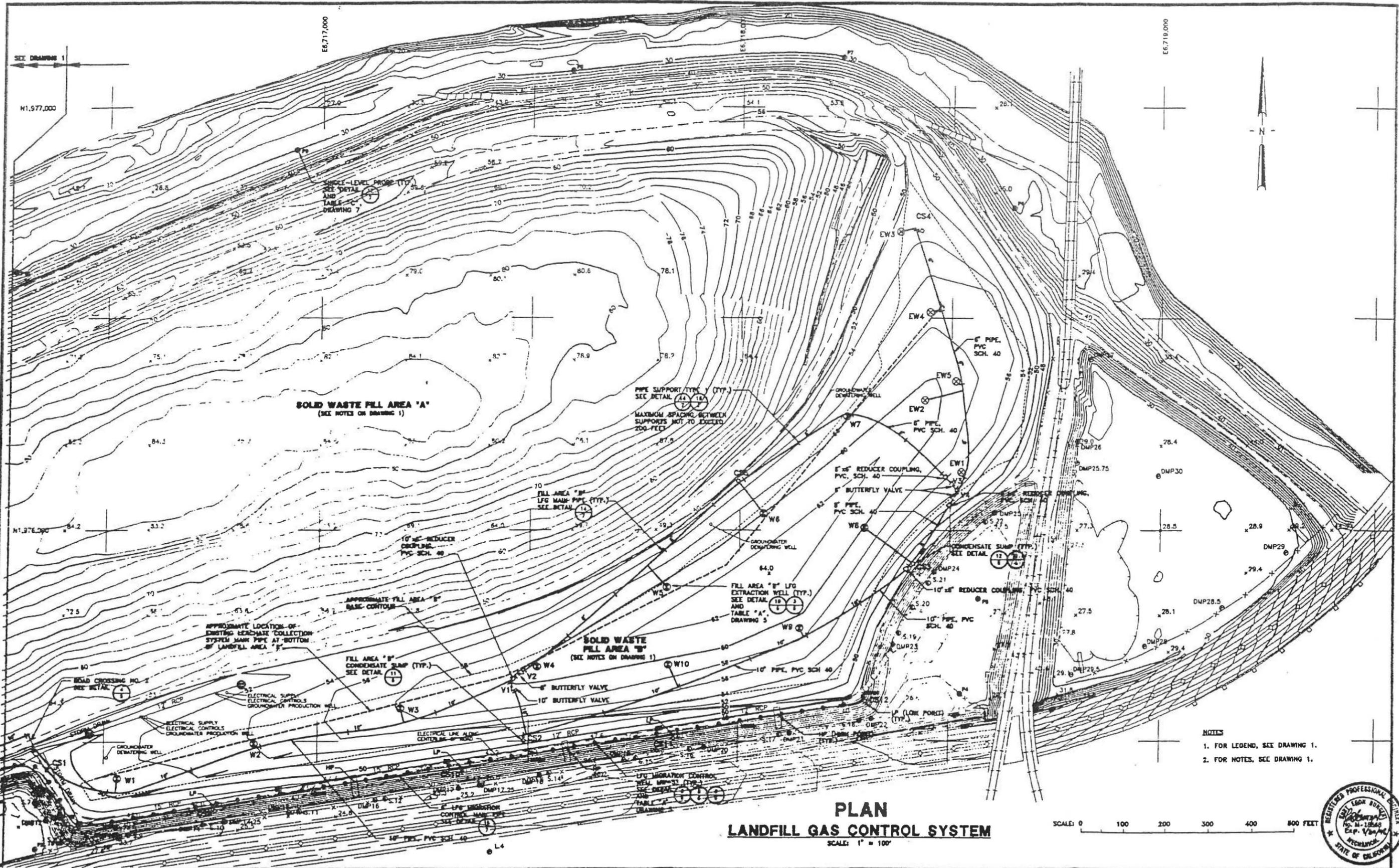
DATE: 8/13/98
 DATE OF ISSUE: _____
 DATE OF REVISION: _____

CITY OF SACRAMENTO
 SACRAMENTO LANDFILL
 SACRAMENTO, CALIFORNIA

LFG CONTROL SYSTEM

DRAWING NO.
LFG 1 OF 7
 SHEET NO. 2002B-01.09
 DATE 8.1.98

PLAT MICRO POC 8/13/98 13:18:28 IN



PLAN
LANDFILL GAS CONTROL SYSTEM
SCALE: 1" = 100'

SCALE: 0 100 200 300 400 500 FEET

- NOTES**
1. FOR LEGEND, SEE DRAWING 1.
 2. FOR NOTES, SEE DRAWING 1.



REVISIONS NO. DESCRIPTION DATE BY		BENCH MARK DESCRIPTION ELEV.	FIELD BOOK SCALE	CITY OF SACRAMENTO DEPARTMENT OF PUBLIC WORKS			 1801 BROADWAY AVENUE SAN JOSE, CALIFORNIA 95131	CITY OF SACRAMENTO CITY OF SACRAMENTO LANDFILL SACRAMENTO, CALIFORNIA		DRAWING NO. LFG 2 OF 7
DRAWN BY: _____ DATE: _____				DESIGN BY: _____ R.C.E. DATE: _____	CHECKED BY: _____ R.C.E. DATE: _____	PROJECT NO. 20022-001,006 TASK 14.1	ISSUED FOR CONSTRUCTION DATE: 8/12/98 PREPARED BY: J.P. ... CHECKED BY: J.P. ... DATE: 8/12/98	LFG CONTROL SYSTEM		PROJECT NUMBER 20022-01.06 TABLE 14.1

ISSUED FOR CONSTRUCTION

TABLES

TABLE 1
SCHEDULE OF 28TH STREET
LANDFILL SITE CLOSURE

	1993	1994	1995	1996
REFUSE	1/93	7/94		
FOUNDATION			4/95 - 9/95	
CLAY, SOIL AND EROSION CONTROL				4/96 - 10/96

Certified Closed

**CITY OF SACRAMENTO
28TH STREET LANDFILL**

**Table 2
Postclosure Maintenance Costs/Activities**

Item	Unit	Unit Cost	Quantity	Total
<u>Postclosure Maintenance Costs (Annual)</u>				
1. Vegetation Maintenance	acre	\$ 150	2	\$ 300
2. Leachate Control System Inspection, Maintenance, Sampling and Analysis	annually	15,850	1	15,850
2a. Operation, Treatment or Removal ²	annually	75,000	1	75,000
3. Landfill Gas Monitoring and System Maintenance	annually	11,000	1	11,000
4. Ground-water Monitoring and System Maintenance ³	annually	93,428	1	93,428
5. Final Cover Maintenance ⁴	acre	25	50	1,250
6. Repair and Cleaning of Drainage Structures and Surface-water Monitoring	annually	30,000	1	30,000
7. Periodic Inspections, Documentation, reporting, Regulatory Compliance, and Miscellaneous Maintenance ⁵	quarterly	10,000	1	10,000
Total Annual Postclosure Maintenance Costs (1993 dollars)				\$238,978

Notes:

¹All initial costs are in 1993 dollars.

²Assumes average leachate production of 9,000 gal/day as predicted by the HE infiltration model. This appears to be a gross over estimate.

³Assumes repair to approximately one well every 5 years.

⁴Assumes soil replacement limited to 2 tons per year and revegetation of approximately 2 acres per year.

⁵Assumes annual repair or replacement of 5 percent of existing fence.

8. Solar Installation Maintenance of final Cover starting in 2013

TABLE 3
CURRENT WATER QUALITY PROTECTION STANDARDS

Constituent	RWQCB WQPS	Units	Proposed CLGB	Source of CLGB
pH	6.3-8.5	pH Units	6.3-8.5	WQPS
EC	700	umhos/cm ²	900	2° MCL
COD	30	mg/l	DC	-
Cl	25	mg/l	250	2° MCL
Fe (total)	50	mg/l	300	2° MCL
Total Hardness	325	mg/l	DC	-
Vinyl Chloride	0.18	ug/l	0.5	1° MCL
1,1-Dichloroethane	ND	ug/l	5.0	1° MCL

1° Primary
 2° Secondary
 DC Delete Constituent
 MCL Maximum Contaminant Level
 ND Not determined



TABLE 3 (CONT.)

ORGANIC CONSTITUENTS OF CONCERN	
volatile organics	
vinyl chloride ug/l	cis-1,3-dichloropropene ug/l
methylene chloride ug/l	dibromochloromethane ug/l
trichlorofluoromethane ug/l	1,1,2-trichloroethane ug/l
1,1-dichloroethene ug/l	2-chloroethyl vinyl ether ug/l
trans-1,2-dichloroethene ug/l	bromoform ug/l
chloroform ug/l	tetrachloroethene ug/l
1,2-dichloroethane ug/l	1,1,2,2-tetrachloroethane ug/l
1,1,1-trichloroethane ug/l	chlorobenzene ug/l
carbon tetrachloride ug/l	1,3-dichlorobenzene ug/l
bromodichloromethane ug/l	1,2-dichlorobenzene ug/l
1,2-dichloropropane ug/l	1,4-dichlorobenzene ug/l
trans-1,3-dichloropropane ug/l	bromomethane ug/l
trichloroethene ug/l	chloroethane ug/l
benzene ug/l	toluene ug/l
ethylbenzene ug/l	1,1-dichloroethane ug/l

**TABLE 4. 28th Street Emergency Response Personnel
(March 2013)**

Name	Title	Telephone
John Olesen	Site Superintendent	916-264-7132
Steve Harriman	Integrated Waste General Manager	916-808-4949

APPENDICES

APPENDIX A

I. FACILITY OVERVIEW

SECTION 3 - COMPOST SITE INFORMATION

A. - INTRODUCTION

This section describes the design and operation of the City of Sacramento Compost Facility, which is operated by the City of Sacramento Solid Waste Division. The facility is located on property owned by the City of Sacramento.

This facility has been in operation continuously since February 1979. The first compost equipment was purchased with a grant under SB650.

Based on the results of the Solid Waste Composition Study performed by R.W. Beck, and the results of the City's Solid Waste Generation Study, the compost program objectives are as follows:

- o To reduce the City of Sacramento's total waste stream through composting. In 1989 the City disposed of 60,247 tons or approximately 120,494 cubic yards of yard waste in it's 28th Street landfill.
- o To reduce the hazard associated with landfilling yard waste. Once landfilled, yard waste is one of the major producers of landfill gas, which can be a hazard to the public. It is also a significant cause of differential settlement of the landfill's final cover section due to the rapid decomposition and consolidation.

Because yard waste is the largest single component of the residential waste stream (40.9% by weight), an effective yard waste collection and composting program is essential to achieve the AB 939 landfill diversion goals.

The existing compost program diverts yard waste generated by the City's Street Cleaning Department through the uncontainerized pickup program. Waste accepted by the program may include brush, tree trimmings, leaves, grass and yard waste generated by commercial and industrial sources. The proposed improvements to the compost program will increase the amount of yard waste accepted by the program. Factors affecting the generation rates of yard waste include drought and the implementation of water rationing programs, diminishing green space, and an increase in backyard composting. Programs such as urban re-forestation may increase the amount of yard waste generated within the City if they are successful in their goal of planting one million additional trees.

B. - SITE LOCATION

The facility is located on a 10 acre site to the west of the permitted 28th Street Landfill. See Figure 19 for site plan and drainage plan. This plan includes underground piping, power lines, fire hydrants and

other water outlets, and windrow and processing areas. Figure 1A and indicates the 1000' perimeter around the site boundary. Both maps are at a scale of 1" = 200'.

LANDFILL

The compost facility is located over in-place municipal solid waste. The waste is at least 22 years old, and is no longer generating measurable quantities of landfill gas, based on the zero readings from adjacent monitoring probes. This property was landfilled prior to Title 14 regulations and was unpermitted.

No records exist regarding landfill construction or the types of waste in-place. This area was operated under the direction of the City of Sacramento Street Division during the period from approximately 1968 to 1971. This acreage is currently not included in the landfill's approved Closure/Postclosure Plan. An amendment to the Closure/Postclosure Plan has been prepared which will address closure of this area. Due to the age of the waste, it is anticipated that very little additional differential settlement will occur in this area, and therefore postclosure maintenance will be minimal.

After secession of landfilling in this area, inert materials and clean soil were applied to the surface. Additional concrete and asphalt rubble was applied to the site prior to commencement of compost operations. At that time the site was graded to drain and asphalt street grindings were applied to the surface to create an all weather working surface.

The current site drainage pattern will be revised to carry all surface water runoff to drainage inlets. These drainage inlets are connected to the combined storm/sewer system. The City of Sacramento has an Industrial Sewer Use Permit for this use.

C. - DAILY OPERATIONS

The Solid Waste Division landfill staff have many years of valuable experience operating various types of compost processing equipment and managing a compost program. The program is very popular with City of Sacramento residents. This year, sales to the general public were tremendously successful, and all the processed compost was sold in three weekend sales.

Leaves and yard waste are accepted each fall. Material is accepted during the heaviest leaf fall so the program receives predominately leaves. In addition, Christmas trees may be shredded and mixed with the leaves. Some material collected during the fall leaf season consists of more brush and tree trimmings than leaves. This type of material lengthens the composting process. Some loads of summer yard waste may also be accepted by the facility. These loads contain a high percentage of grass clippings which add nitrogen and accelerate the composting

process. Rugs, tires and metal are pulled out, if noticed, before the material enters the shredder.

Once the material is shredded, it is placed in windrows approximately 8 feet high and 12 feet wide. These initial windrows shrink in size as the material begins to compost. The eventual volume reduction is about 50%. Temperature and moisture will be monitored in accordance with proposed Green Composting Permit, Regulation 9. Temperature readings are taken with a 4' long thermometer. Moisture is monitored visually and with a moisture meter. Water is added by placing soaker hoses along the tops of the windrows or with the landfill's water truck.

Windrows are currently turned with a front end loader. Ideally, Windrows are turned when the internal temperature reaches 140 degrees F. Windrows are turned in all cases before the material goes anaerobic. Aerobic composting conditions are always maintained.

The material is screened in the late summer and fall to produce a finished product. It can be screened to either 1 1/4", 3/4" or 3/8". The screened material is stockpiled and allowed to finish stabilizing.

The current operation requires almost an entire year to produce a finished product. This is partially due to the lack of staff and equipment for the program. Equipment owned by the Solid Waste Division and utilized by the compost program consists of a Case 2 cubic yard front loader, a Read Screen-all RD-40 vibrating screen, and a WHO tub grinder. Additional equipment to be purchased in conjunction with site improvements will include another front end loader and a self propelled windrow turner.

The yard waste separately collected by the City's Street Cleaning Division is contaminated with all types of debris such as plastic bags, cars parts and construction waste. Due to this contamination the material is difficult to process and causes excessive wear on the equipment.

In October 1989, B.W. Beck produced a report for the Solid Waste Division titled "Yard Waste Composting Options for Yard Waste Recycling in the City of Sacramento". This report contains additional information regarding the City's existing program and recommendations for the implementation of a large scale compost program.

Program contingency plans include the ability to load stockpiled material into container trucks or 25 yard rear loaders for landfilling, the use of additional front end loaders from the baler operation, and utilizing any other City equipment that may be needed in an emergency. Because the compost facility has an all weather surface, site access in inclement weather is not a problem.

D. - SERVICE AREA

Yard waste is collected from the incorporated City of Sacramento.

E. - NATURE AND QUANTITY OF WASTES TO BE ACCEPTED

Only City collected residential yard waste will be accepted by this program. A characterization of this waste is included in the attached Solid Waste Generation Study, Appendix C.

CEQA

This is an existing program that is currently permitted in conjunction with current site operations. No expansion of the compost program acreage is planned.

MAXIMUM DAILY LOAD CAPACITY

The daily capacity of the compost program will vary with the time of year. An average daily capacity, based on 12,000 tons of waste accepted and 260 operating days is 46 tons per day. Using an average yard waste packer load of 7.5 tons per load, this equates to approximately six loads of yard waste per day.

During the fall leaf season, the number of packer truck loads entering the site will exceed six per day. Typically, leaves collected in the Downtown, Landpark, and Riverpark areas will be dumped at the program. It is anticipated that no more than 12 loads per day would be delivered to the program during leaf season.

This facility will accept only a portion of the yard waste separately collected by the City of Sacramento. The majority of the separately collected yard waste is transported to L and D Landfill for disposal. At no time will more yard waste be accepted at the facility than can be shredded in a one week period.

AVERAGE DAILY THROUGHPUT

All loads accepted by the compost program will be weighed at the landfill's scalehouse before they are dumped at the site. The maximum capacity of the 10 acre site is estimated to be 12,000 tons per year. Capacity calculations, based on a 3.2 month retention time for the material and 7' high X 16' wide windrows, confirm the 12,000 TPY figure. The capacity of the compost program, after site improvements and the purchase of additional equipment, cannot be expanded further without expanding site acreage. The material retention time and acreage under windrows will remain the same. Tonnage projections for the next five years are therefore constant at 12,000 tons per year.

Using a conversion of 2.1 finished cubic yards of compost per ton

yard waste accepted, the total site capacity in cubic yards is 25,200 CY.

Reject or unsuitable material will be removed from the site and landfilled. It is estimated that approximately 15% of the material accepted by the facility will not be compostable, (woody material, plastic contaminated material) and will be loaded out and landfilled.

WASTE TYPES

Only yard waste separately collected by the City of Sacramento will be accepted. Yard waste collected by the City includes leaves, brush, tree trimmings, and grass. No liquid wastes, commercial or residential waste will be accepted. Unsuitable materials will be removed from the site and landfilled.

F. - TYPES AND NUMBERS OF VEHICLES ENTERING THE FACILITY

City packer trucks will be delivering yard waste to the facility. No more than 12 truck loads per day will be accepted. This is consistent with existing site operations. No new yard waste pick-up programs are planned.

II. COMPOST PROCESSING SITE DESIGN, CONSTRUCTION AND SITE IMPROVEMENTS

A. - COMPOSTING SITE DESIGN

Figure 19 illustrates the proposed design section. This section consists of the existing section of concrete and asphalt rubble, the existing layer of asphalt street grindings and the new 3" section of asphalt paving.

Property limits are illustrated in Figure 3.

Figure 19 details the site drainage plan and layout. Included is information on existing topography, access points into and out of the site, and land uses. Access to the compost facility is gained off of 28th Street, which is an improved City street. Also shown is the extent of the compost processing pad and windrow area.

This facility utilizes asphalt paving as final cover for the inactive landfill and as a liner for the composting operations. Asphalt paving creates an impermeable surface on which to work. Repairs and any overlays which may be needed in the future will be performed by the City of Sacramento Street Division. There is no leachate collection system installed at this site. Waste containing free liquids will not be accepted or processed at the site.

Surface water runoff is disposed of in the combined storm/sewer system. Proposed improvements to the existing compost facility include additional drainage inlets, and regrading to force surface water runoff

to flow east to the drainage inlets. There are a total of two existing drainage inlets. Two additional drainage inlets will be installed as part of the site improvements.

Monitoring of the surface water runoff from the site will be accomplished in conjunction with the landfill's existing Industrial Sewer Use Permit (153-0293) monitoring program. This program requires quarterly monitoring at maintenance hole #12, which is downstream from any compost program discharges. Appendix G is the complete text of this permit, with a detailed description of the monitoring required.

TRAFFIC

Increased truck traffic associated with the compost facility site improvements is expected to be very minimal. Other facilities in the immediate area such as the landfill itself, the 28th Street Solid Waste Dispatch facility, and Bell Harbor Sand and Gravel generate the majority of the truck traffic on 28th Street. 28th Street is a designated truck route through the residential neighborhood to the south of C Street. Yard waste collection vehicles delivering waste to the facility will utilize the designated truck routes whenever possible.

B. COMPOSTING SITE IMPROVEMENTS

The existing site condition consists of an all weather surface composed of concrete and asphalt rubble and asphalt street grindings, drainage inlets, water lines and hydrants, and a small kiosk utilized only during compost sales to the public. Employee facility's such as lockers and bathrooms are located at the 28th Street dispatch facility. The site is fenced on all sides for security and facility identification and entry signs are mounted near the front gate.

Composting site improvements will consist of the following:

- Regrading of the entire site to change the surface drainage patterns. These changes will force all surface water runoff to flow to existing or proposed drainage inlets.
- 3" of asphalt paving over the entire 10 acre site
- 300 additional feet of storm line and two additional drainage inlets will be installed along 28th Street. These drainage inlets will be connected to the combined storm/sanitary sewer system.
- Installation of a water delivery system

The total cost of these improvements is estimated to be in excess of one quarter million dollars.

VISUAL SCREENING

The surrounding acreage is zoned heavy commercial and warehouse. No visual screening has been budgeted. Due to the nature of the subsurface

materials, no trees or other landscaping are planned.

FACILITY CONSTRUCTION

Other than the site improvements listed above, the compost facility will remain as currently constructed. Unloading, storage, processing, and parking areas will not be revised as a result of the improvements. Current site operations do not lend themselves to the allocation of fixed areas for unloading or processing. Unloading and processing may occur anywhere within the 10 acre site because the yard waste shredding equipment is used to form the windrows.

The schedule for site improvements depends upon the outcome of the June 1993 Solid Waste Division budget hearings. If funding is approved this fiscal year, the improvements may begin during summer 1993 and be completed before the 1993 leaf season. Site improvements will only begin after all stockpiled compost is removed from the site.

III. COMPOST FACILITY OPERATIONS

A. INTRODUCTION

The green composting facility is owned and operated by the City of Sacramento Solid Waste Division.

B. FACILITY PERSONNEL

The Solid Waste Division landfill staff have many years of valuable experience operating various type of compost processing equipment and managing a compost program. There is currently one budgeted position in the Solid Waste Division budget for facility operation. There are no plans to increase the number of dedicated personnel at the facility. Additional personnel may be needed periodically. Landfill staff will be available to assist at the compost facility until June 1994. At that time, personnel needs at the facility will be reevaluated.

Compost facility personnel are directly supervised by the landfill's Senior Landfill Equipment Operator. General supervision is provided by the Solid Waste Division's Senior Engineer. Resumes of the management personnel are attached as Appendix F.

Site maintenance will be performed by either landfill staff or Street Division staff, depending on the type of maintenance involved.

PUBLIC SALES

The facility is only open to the public during specified periods. During these periods, personnel from the Solid Waste Division office staff are assigned to assist with the public. Typically, two additional personnel from the office are present for sales to the public. Traffic

control during public sales is provided if necessary.

OPERATOR

Resumes of management personnel are attached as Appendix F.

Operator's Interest in Site

The City of Sacramento's Compost Facility is municipally owned and operated.

Operator's Experience

The City of Sacramento's compost program is the oldest municipal operation in California. It is the recipient of several awards for excellence. They are:

- Administrator's Recycling Award by U.S. Environmental Protection Agency--April 1991
- "Best Compost Program in California" by California Resource Recovery Association--1991
- Renew America 1992 Special Merit Award

City of Sacramento Solid Waste Division personnel are frequently called upon to provide information regarding our compost program. Numerous representatives of municipalities and counties have toured our facility. Senior Engineer, Keith Johnson, and Gary Van Dorst, Waste Reduction Coordinator, have spend many hours lending their composting expertise to other communities. Solid Waste Division staff have also made numerous presentations on the subject of composting at statewide conferences. A history of the City's compost program is attached as Appendix K.

Administrative Record Keeping and Staff Training

Three Solid Waste Division staff have completed course work through the University of Wisconsin on municipal composting. Gary Van Dorst, Waste Reduction Coordinator II, Keith A. Johnson, Senior Engineer, and Michael Root, Maintenance Worker II, all completed a correspondence class in 1989 with completion grades of an "A".

All maintenance workers assigned to the compost area are certified by classification to drive and operate heavy equipment such as front loaders. Personnel assigned to screen material with the City vibrating screen or who operate the City's tubgrinder receive personal instruction by veteran operators prior to assignment. In all instances, personnel initially assigned to operate compost equipment have received training from the manufacturer's representative upon purchase of the equipment.

All administrative record keeping shall conform to all proposed

Green Composting Regulations, CCR §17877. In summary, records shall be kept of the following:

- Tonnages of yard waste received by facility
- Cubic yards of compost produced, shipped, and stored on site
- Tonnages of reject material and its disposition
- Number of vehicles used to import and export material from the facility
- A daily log of any major problems and action taken to resolve problem(s)
- log of all temperature readings and dates windrows are turned
- A daily log documenting results of periodic self-inspections and load checks in conformance with §17875
- Laboratory analysis of finished product

In addition to those records required by the proposed Green Composting Regulations, CCR §17877, records will also be kept of the following:

- A record of all sales receipts
- A log or journal documenting all nuisance complaints such as malodors or dust and documentation of staff response resolving the complaint

C. - FACILITY EQUIPMENT

Existing compost equipment consists of a Case W14 front end loader, a Read vibrating screen, and a WHO tub grinder. New compost processing equipment will be purchased to augment the existing equipment. A self propelled windrow turner will be purchased to ensure aerobic conditions are maintained within the windrows. A new 4 cubic yard front end loader will be purchased to perform material handling and loading. The total cost of the new compost equipment is estimated to be \$272,000.

EQUIPMENT MAINTENANCE

Equipment maintenance will be performed by Fleet Maintenance staff from the 28th Street Garage.

STANDBY EQUIPMENT

Front end loaders stationed at the landfill serve as standby equipment. These loaders may be utilized to turn stockpiled yard waste if the windrow turner is down for repairs. If the shredding equipment requires repair, yard waste will be diverted to the landfill. Therefore no standby equipment exists for yard waste shredding.

HOUSEKEEPING

On a weekly basis, the Associate Engineer assigned to the landfill will be assigned to inspect and evaluate the condition of the facility. This inspection will include:

- visual inspection for any hazardous waste that may have been illegally dumped at the facility (along 28th Street).
- visual inspection for the accumulation of litter on site.
- visual inspection of perimeter fencing and front gate to assure site security.
- visual inspection to determine that all equipment is safely secured.
- visual inspection of drainage facility's to determine that they are properly functioning.

Results of this inspection will be included by the Associate Engineer in the landfill's daily log.

The LEA is responsible for performing a monthly inspection of the site. Items of concern will be noted on the monthly inspection report.

D. - MATERIALS HANDLING ACTIVITIES

UNLOADING

Unloading of yard waste will be as directed by the compost staff. The location of the unloading area will be determined by where new windrows are being formed. The tub grinder's stacking conveyor is used to form the windrows, after the yard waste is shredded. The moisture of the yard waste accepted by the facility is such that windblown debris is usually not a problem.

SALVAGING

No salvaging operations are planned at the facility.

HAZARDOUS WASTE SCREENING

The same HHW screening and storage procedures utilized at the Baler Facility will be used at the compost facility.

MATERIAL PREPARATION

No material preparation is required. Yard waste will be processed in the condition that it arrives at the site. Operation of the shredder has not created any health, safety or nuisance problems to date.

SOLID WASTE REMOVAL

Approximately 15% of the yard waste accepted at the facility is unsuitable for composting. This material will be screened out of the fully composted windrows and be removed from the site. Unsuitable material for composting includes plastic, wood chips, metal, and inerts. Segregation of this material from the finished compost is accomplished with the compost facility's vibrating screen.

The unsuitable material will be removed from the site within 48 hours after it is screened out of the fully composted windrows. Based on the 15% rejection rate and a maximum tonnage accepted by the facility of 12,000, the total number of tons of solid waste to be removed from the site is 1,800 tons.

Unsuitable material will be loaded into a drop box and hauled to a landfill. Unsuitable material will be landfilled at the 28th Street Landfill until July 1994. L and D Landfill will be the designated disposal site for unsuitable material after July 1994.

FIRES

The response time from the 13th and I fire station is less than 10 minutes. City fire equipment would be the primary pieces of equipment utilized to extinguish any fires. Secondary fire fighting equipment would include the landfill water truck, and compost facility water delivery systems.

Due to the high moisture content maintained in the compost windrows, fires are not deemed to be a major problem. Moisture contents of 30% to 50% are maintained in all stockpiled material.

If a fire occurs at the site, City personnel will immediately contact the City Fire Department. A 24 hour security guard at the 28th Street maintenance facility can see the compost facility site from the guard station. Any fires that occur after work hours will be reported to the City Fire Department by the security guard.

E. - PROCESSING OPERATIONS

Pre-operational Tests

The compost facility has been in continuous operation since February 1979. No change in facility processing operations is proposed.

PROCESS WATER

City water from a water main located along 28th Street is used for compost moisture control. Adequate information does not exist to prepare an estimate of the volume of water used at the site. Water usage depends on the amount of seasonal rainfall, ambient humidity levels, ambient temperatures, and the type and initial moisture content of incoming material.

The Solid Waste Division currently uses old City of Sacramento Fire Department hoses for water delivery at the facility. These hoses have holes drilled in them to act like a garden "soaker hose". These hoses are placed on top of the windrows. After water is observed running out of the bottom of the windrow, the hose is moved to an adjacent windrow. Water hoses can either be attached to fire hydrants along 28th Street or to the fire hydrant located at the old Vegetal Processing Facility site along A Street.

PROCESS TIME

The compost program utilizes a low tech approach to composting. This process approach requires six months to a year to produce finished compost. Processing time can be greatly reduced by the use of a self propelled windrow turner. It is estimated that processing time could be reduced to between three to four months with the use of a windrow turner.

COMPOST TESTING

The City of Sacramento has provided the CIWMB, Cal Trans, the California Department of Forestry and the California Department of Parks and Recreation with results of laboratory analysis of its current product. The CIWMB has used this analysis in its effort to develop compost specifications in conjunction with the State Department of General Services. Other State agencies have used this analysis to evaluate our compost in reports to the CIWMB on our material which was purchased under a grant program offered by the Waste Board. All laboratory analysis of current and preceding City compost products has been determined to meet and exceed proposed standards for unrestricted use of municipal compost.

Laboratory analysis by a State certified laboratory of finished compost will conform to the CIWMB proposed Green Composting regulations, CCR §17889. No chemical additives are planned to be added to the windrows.

In conformance with proposed regulations, at least one representative composite sample shall be taken for every 5,000 cubic yards of compost produced. Samples shall be analyzed for maximum acceptable metal concentrations as defined by proposed CCR §17887.

Temperatures of the active compost shall be monitored and recorded as

specified in proposed regulations, CCR §17887 (a) (2) (A) 1. or 4. Pathogen destruction will be demonstrated by maintenance of a temperature log documenting the following:

- Daily temperature readings for every 100' of windrow or 250 cubic yards of material
- Maintenance of windrows in an aerobic condition
- For at least 15 consecutive days within the composting period, a minimum stabilized temperature of not less than 55 degrees Celsius shall be maintained throughout the mixture, during which the windrows shall be turned a minimum of 5 times; or
- The temperature of all active compost shall be maintained at a minimum of either 53 degrees Celsius for 5 consecutive days, 55 degrees Celsius for 3 days, or 70 degrees Celsius for 30 mins.; and either the density of fecal coliform in the stabilized compost shall be less than 1,000 Most Probably Number per gram of total solid (dry weight basis), or the density of Salmonella sp. bacteria in the stabilized compost shall be less than three Most Probably Number per four grams of total solid (dry weight basis).

COMPOST END USE

Anticipated uses for the finished product include both internal and external markets. The City of Sacramento plans to utilize compost produced by it's program as a portion of the 28th Street landfill's final cover section, as a soil amendment or mulch for the Parks and Community Services Division, and as planting material in median strips maintained by the Street Division.

Externally, the City has identified several commercial markets for the finished product. These include commercial landscapers, potting soil manufacturers, and sand and gravel plants who must reclaim spent land. In addition, Cal Trans has shown an interest in purchasing compost for use along highways. SB 1322 (Bergeson) required the State of California to purchase a variety of recycled materials, and compost falls under this category. The City of Sacramento and the City of Redding are the only two municipal composting programs as of this writing to have marketed significant amounts of compost to Cal-Trans. AB 1306 (Killea) requires State agencies to use increasing amounts of recycled materials in the construction of new roadways, and compost could be used during the installation of the roadway landscaping. The City views Cal Trans as a major market which has not yet been developed and one where a significant amount of compost could be utilized. The State is currently developing specifications for compost and the City is certain that the compost produced by the program will meet those specifications.

The City's program will produce at least two grades of compost to meet the needs and specifications of new markets. Although not viewed by the City as a practical market at this time, agricultural use of compost could have substantial benefits. Benefits of applying compost to

cultivated fields include, increased aeration, improved moisture retention, decreased soil erosion, reduced soil surface crusting, plant disease suppression, and improved tilth. Should AB 939 waste diversion goals force all garden refuse in California to be composted, agricultural use of the product may be the only way to avoid a glut of compost on the market.

Finished compost produced by the City's program resembles soil, and may be suitable for use in place of the daily cover soil currently used at the 28th Street landfill.

The City of Sacramento Solid Waste Division currently markets all compost produced in its operation conducted at the 28th Street Landfill. Compost is sold in bulk to the general public for \$8/cubic yard two to four weekends in March. The remaining compost has been sold in bulk to landscape contractors, sand and gravel firms and State agencies during normal operating hours throughout the year.

F. - COMPOST FACILITY CONTROLS

LEACHATE CONTROL

Leachate generated by the compost program will be disposed of in the combined storm/sanitary sewer system. This is permitted under the terms of the City of Sacramento Solid Waste Division's Industrial Sewer Use Permit, #153-0293. Quarterly monitoring of the effluent is required.

Leachate volumes are impossible to quantify. No metering system currently exists or is planned to be installed at the facility. Leachate volumes will vary with the moisture content of the incoming material, the annual rainfall, and how carefully water is added to the windrows. Water management will be monitored daily by City staff to minimize the generation of leachate.

The site grading and paving will ensure that leachate does not travel off site. Surface runoff will be channeled to drop inlets at the perimeter of the site.

GROUNDWATER MONITORING

The 28th Street Landfill has 19 dedicated groundwater quality monitoring wells surrounding the site. These wells are periodically monitored in conjunction with the landfill's Waste Discharge Requirements. It has been documented that the landfill has affected the shallow groundwater aquifer underlying the site.

No additional groundwater quality monitoring wells are planned to be installed at the compost facility. The nearest groundwater quality well is C-13, which is 50' west of the compost facility's western border.

DRAINAGE CONTROL

This facility utilizes asphalt paving as final cover and as a liner for the composting operations. Asphalt paving creates an impermeable surface on which to work. Repairs and any overlays which may be needed in the future will be performed by the City of Sacramento Street Division. There is no leachate collection system installed at this site. Waste containing free liquids will not be accepted or processed at the site.

Surface water runoff is disposed of in the combined storm/sewer system. Proposed improvements to the existing compost facility include additional drainage inlets, and regrading to force surface water runoff to flow east to the drainage inlets. There are a total of two existing drainage inlets. Two additional drainage inlets will be installed as part of the site improvements.

Design of the drainage system is in keeping with other site improvements at the 28th Street Facility such as the Dispatch Facility Parking lot and the Employee Parking lot. The capacity of the entire drainage system cannot exceed the capacity of the existing 33" storm/sanitary sewer installed in 28th Street.

NUISANCE CONTROL

The facility will be operated and maintained so as not to create a public nuisance. Due to the proximity of residential neighborhoods, the Solid Waste Division will be sensitive to the complaints of nearby residents if odors become a problem. The Solid Waste Division recognizes that odors from compost programs are a major concern and will work diligently to minimize any odors from the program. Key to the minimization of odors from a compost facility is maintenance of all windrows in an aerobic condition. In the Summer of 1993, staff accepted 4-5 packer trucks/day of garden refuse at its compost facility in an experiment to determine if odors could be controlled with the use of a tunnel windrow turner. Even though the grass to leaves ratio was significantly greater than 2 to 1, frequent turning of windrows with a rented tunnel windrow turner kept all windrows in an aerobic condition. As a result of this successful experiment, no complaints from nearby residential areas were received.

When odors are created, it is due to anaerobiosis. Monitoring wind direction to maximize turning of piles when the nearby residential area is upwind from the City's compost program will also mitigate any potential for complaints regarding odor. The prevailing wind direction for the compost facility places the nearby residential area upwind.

DUST CONTROL

If needed, the landfill's water truck can be used to provide dust control at the facility. By keeping the moisture content of the

stockpiled material within composting standards, dust generation will not be a significant problem.

LITTER CONTROL

As stated in the housekeeping section above, the site will be inspected on a weekly basis. Litter will be prevented from accumulating at the facility.

NOISE CONTROL

Yard waste shredding equipment is noisy by nature. The adjacent zoning is heavy commercial or warehouse, which is not particularly sensitive to noise. Shredding of yard waste will only be performed during business hours.

TRAFFIC CONTROL

No stacking of collection vehicles off site is anticipated. Traffic in and out of the facility will have a minimal impact on 28th Street traffic.

During sales to the public, some stacking of private vehicles along 28th Street does occur. An additional City staff person will be assigned to traffic control during sales events. In addition, temporary traffic signs will be posted on 28th Street during sales events warning of slow cross traffic ahead.

IV. MAINTENANCE PROGRAM

A. - FACILITY MAINTENANCE PROGRAM

The Associate Engineer assigned to the landfill will also be assigned to inspect the compost facility. Any conditions requiring maintenance will be reported to the landfill's Senior Equipment Operator for repair. Inspections by the Associate Engineer will be performed weekly.

Maintenance of the drainage facilities will be performed by the landfill staff. Maintenance of the 3" asphalt pavement section will be performed by the City of Sacramento Street Division. Maintenance of compost equipment will be performed on a preventative maintenance schedule by the City of Sacramento Fleet Management Division.

V. HEALTH AND SAFETY PROGRAM

The City of Sacramento has three full time safety officers responsible for employee safety. The IPP(Injury Prevention Program) manual describes the City's safety program in detail.

A. - SANITARY FACILITIES

Sanitary facilities are located at the 28th Street Dispatch Facility, and at the Baler Facility.

B. - WATER SUPPLY

Potable water is located on site.

C. - COMMUNICATION FACILITIES

Telephones are located at the 28th Street Dispatch Facility, and at the Baler Facility.

D. - LIGHTING

No night operations at the compost facility are anticipated.

E. - FIRE FIGHTING EQUIPMENT

The response time from the 13th and I fire station is less than 10 minutes. City fire equipment would be the primary pieces of equipment utilized to extinguish any fires. Secondary fire fighting equipment would include the landfill water truck, and compost facility water delivery systems.

Due to the high moisture content maintained in the compost windrows, fires are not deemed to be a major problem. Moisture contents of 30 to 50% are maintained in all stockpiled material.

F. - PROTECTION OF USERS

No solid waste will be accepted at the facility; therefore, no personnel or members of the public will be in contact with solid waste.

G. - SAFETY EQUIPMENT

Any safety equipment deemed necessary by the City of Sacramento safety officers will be provided to City staff working at the compost facility.

H. - POWER FAILURE

No electrical power is required at the facility.

VI. POST-OPERATIONAL USE

The landfill is designated as an open space/park in the City of Sacramento General Plan. This facility would be incorporated into the park after termination of composting operations.

VII. FACILITY RECORDS AND REPORTING PROCEDURES

A. - WEIGHT AND VOLUME RECORDS

All yard waste will be weighed at the landfill scale before it is deposited at the compost facility. Weight records will be kept by the landfill's Associate Engineer and will be reported in the monthly report to the LEA.

Records will be stored at the Solid Waste Division office:

City of Sacramento
Solid Waste Division
921 10th Street, #500
Sacramento, CA 95814

B. - SPECIAL OCCURRENCES

Any special occurrences will be logged by the landfill's Associate Engineer. Special occurrences will include fires, injury and property damage accidents, explosions, incidents regarding hazardous wastes, flooding and other unusual occurrences. The landfill staff assigned to the compost facility is also authorized to make entries into the log.

APPENDIX B

from rainy to dry periods, wet and dry years, well locations and variations in the subsurface geology.

Highest recorded level (depth in ft) 28.6 FT. MSL

Well Number B-3 Date Recorded 2-21-86

Lowest recorded level (depth in ft) 4.32 FT. MSL

Well Number B-3 Date Recorded 11-17-86

Typical 9.8 FT. EL.

b. What direction does the groundwater flow? S TO SW

c. What is the groundwater gradient? .0009 TO .00048 FT/FT

CLOSURE COSTS

INACTIVE AREA

Final Cover

12.5 ACRES SOUTH OF THE COMPOST SITE

17. Area of Landfill for Final Cover

a. Area of top deck to be capped (ft²) A_d = 544,500 SF

b. Area of side slopes to be capped (ft²) A_s = _____
(map area)

Side Slopes

Horizontal:Vertical

Conversion Factor (C)

5 : 1	1.02
4 : 1	1.03
3 : 1	1.05
2 1/2 : 1	1.08
2 : 1	1.12
1 3/4 : 1	1.15

18. Final Cover Soil

a. Thickness

1) Top deck (minimum 3 feet of soil)

T_d = (≥ 3') 544,500 SF OF 3' OF SOIL

2) Side slope (minimum 3 feet normal to slope)

T_s = (≥ 3') _____

b. Volume = [(T_d x A_d) + (T_s x A_s x C)]/27 = (yd³)

60,500 CY

9-28-93

INITIAL COST ESTIMATE WORKSHEET

[rev. 10/89]

Site Description

The following questions will provide general information regarding the site description, the type of waste accepted at the site and basic geological information. This information will aid in assessing factors that may affect the initial cost estimates.

Prepared By: KEITH A. JOHNSON, SENIOR ENGINEER

General Site Information

Name of Solid Waste Landfill CITY OF SACRAMENTO
28TH. STREET SANITARY LANDFILL

Solid Waste Facility Permit Number 34 - AA - 0018

Facility Operator CITY OF SACRAMENTO SOLID WASTE DIVISION

Site Owner CITY OF SACRAMENTO

Site Location (California coordinates, township & range or longitude/latitude, preferred) T9N-R5E / SAC. EAST QUAD.

Assessors Parcel Number SEE FIGURE 1, CLOSURE PLAN AMENDMENT

Site Address 20 28TH. ST., SAC. CA. 95814

1. What is the existing State Water Resources Control Board classification of the solid waste landfill?

New¹

old

Class I

Class I

Class II-1

Note: The solid waste landfill is excluded from these requirements, if the facility is a hazardous waste facility or co-disposal facility of both hazardous and nonhazardous waste as a RCRA Subtitle C facility subject to specified closure plan requirements.

¹If Waste Discharge Requirements (WDR) revised since 11/84

Class II

Class II-2

Class III

Class III

2. What is the anticipated closing date for the existing permitted landfill? Proposed expansions which have not been approved by the Board and LEA are not to be included in these calculations. Include calculations supporting the estimated date. (Attach additional sheets as necessary.)

month JULY, year 1994

Note: All facilities with an anticipated closure date of September 28, 1992, or earlier, will be required to submit their closure and postclosure maintenance plan no later than July 1, 1990.

Type of Fill

3. Type of Fill (circle appropriate letters)

A. Trench

D. Canyon

B. Area

E. Other (describe)

C. Pit

Volume of Waste

4. What is the estimated in-place volume of landfilled wastes at the site in cubic yards? _____
5. What is the design capacity of the site in cubic yards? _____
6. Minimum thickness of waste (ft)? 15'
7. Average thickness of waste (ft)? 45'
8. Maximum thickness of waste (ft)? 67'
9. Average height above surrounding terrain (ft)? 42'
10. Typical inclination of side slopes, in slope ratio? (horizontal:vertical) 8 : 1
11. Quantity of waste typically received (tons/day)?

300 TPD AVERAGE

from rainy to dry periods, wet and dry years, well locations and variations in the subsurface geology.

Highest recorded level (depth in ft) 28.6 FT. MSL

Well Number B-3 Date Recorded 2-21-86

Lowest recorded level (depth in ft) 4.32 FT. MSL

Well Number B-3 Date Recorded 11-17-86

Typical 9.8 FT. EL.

b. What direction does the groundwater flow? S TO SW

c. What is the groundwater gradient? .0009 TO .00048 FT/FT

CLOSURE COSTS INACTIVE ACREAGE
10 AC. COMPOST PROGRAM

Final Cover

17. Area of Landfill for Final Cover

a. Area of top deck to be capped (ft²) A_d = 43,5600 SF

b. Area of side slopes to be capped (ft²) A_s = φ
(map area)

Side Slopes

Horizontal:Vertical

Conversion Factor (C)

5 : 1	1.02
4 : 1	1.03
3 : 1	1.05
2 1/2 : 1	1.08
2 : 1	1.12
1 3/4 : 1	1.15

18. Final Cover Soil

a. Thickness

1) Top deck (minimum 3 feet of soil)

T_d = (≥ 3') 3" ASPHALT / 6" BRICK / 2' FOUNDATION LAYER

2) Side slope (minimum 3 feet normal to slope)

T_s = (≥ 3') _____

b. Volume = [(T_d x A_d) + (T_s x A_s x C)] / 27 = (yd³)

N/A - IMPERMEABLE SURFACE

- c. % Native soil 0
- d. Native material acquisition cost (excavation, hauling, etc.) (\$/yd³) \$ _____
- e. Native soil cost (Line 18b x Line 18c x Line 18d) \$ _____
- f. % Imported soil 0
- g. Imported material acquisition cost (purchase, delivery, etc.) (\$/yd³) \$ _____
- h. Imported soil cost (Line 18b x Line 18f x Line 18g) \$ _____
- i. Placement, grading and compaction (to achieve relative compaction of .90) unit cost (\$/yd³) \$ _____
- j. Placement, grading and compaction cost (Line 18b x Line 18i) \$ _____
- k. Subtotal final cover soil (Line 18e + Line 18h + Line 18j) \$ _____

19. ~~Clay Layer~~ **ASPHALT PAVING**

- a. Area to be capped (ft²) (Line 17a) + (Line 17b x c) 435,600 SF
- b. Thickness (ft) (minimum 1 foot) 3" AC / 6" AB
- c. Volume (yd³) (Line 19a x Line 19b) / 27 N/A
- d. % On-site Clay N/A
- e. On-site material acquisition cost (excavation, hauling, etc.) (\$/yd³) \$ _____
- f. On-site clay cost (Line 19c x Line 19d x Line 19e) \$ _____
- g. % Imported clay N/A
- h. Imported material acquisition cost (purchase, delivery, etc.) (\$/yd³) \$ _____

ASPHALT/BASEROCK

- i. Imported ~~clay~~ cost \$ 292,000 AC + 50,000 ROCK
(Line 19c x Line 19g x Line 19h)
- j. Placement/spreading, grading, compaction (to achieve permeability no greater than 1×10^{-6} cm/sec) unit costs (\$/yd³)
\$ INCLUDED IN I
- k. Placement, grading and compaction cost
(Line 19c x Line 19j)
\$ _____
- l. Subtotal clay costs \$ 342,000
(Line 19f + Line 19i + Line 19k)

20. Synthetic Membrane (if applicable)

Note: This item must be estimated in addition to the clay barrier layer unless/until an alternative final cover design has been approved in the closure plan.

- a. Type of membrane (e.g., HDPE, CPE, PVC) _____

- Thickness (minimum 30 mils) _____
- b. Quantity (ft²) _____
- c. Purchase, delivery and installation unit cost (\$/ft²)
\$ _____
- d. Synthetic layer testing (percent of total synthetic membrane unit cost)
_____ %
- e. Synthetic layer costs \$ _____
(Line 20b x Line 20c x (1 + 20d))

21. What other types of materials/layers are/will be included in the design (e.g., asphalt-tar, gravel for gas venting)?

Note: Thickness of individual layers may be modified depending on the integrated cover design.

22. Construction Quality Assurance

The following cost estimates apply to the quality assurance activities necessary to ensure that the final cover is installed

- c. % Native soil 0
- d. Native material acquisition cost (excavation, hauling, etc.) (\$/yd³) \$ _____
- e. Native soil cost (Line 18b x Line 18c x Line 18d) \$ _____
- f. % Imported soil 62,500 CY
- g. Imported material acquisition cost (purchase, delivery, etc.) (\$/yd³) \$ 5/cy
- h. Imported soil cost (Line 18b x Line 18f x Line 18g) \$ 302,500
- i. Placement, grading and compaction (to achieve relative compaction of .90) unit cost (\$/yd³) \$ _____
- j. Placement, grading and compaction cost (Line 18b x Line 18i) \$ _____
- k. Subtotal final cover soil \$ 302,500
(Line 18e + Line 18h + Line 18j)

19. Clay Layer

- a. Area to be capped (ft²) (Line 17a) + (Line 17b x C) _____
- b. Thickness (ft) (minimum 1 foot) _____
- c. Volume (yd³) (Line 19a x Line 19b)/27 _____
- d. % On-site Clay _____
- e. On-site material acquisition cost (excavation, hauling, etc.) (\$/yd³) \$ _____
- f. On-site clay cost (Line 19c x Line 19d x Line 19e) \$ _____
- g. % Imported clay _____
- h. Imported material acquisition cost (purchase, delivery, etc.) (\$/yd³) \$ _____

from rainy to dry periods, wet and dry years, well locations and variations in the subsurface geology.

Highest recorded level (depth in ft) 28.6 FT. MSL

Well Number B-3 Date Recorded 2-21-86

Lowest recorded level (depth in ft) 4.32 FT. MSL

Well Number B-3 Date Recorded 11-17-86

Typical 9.8 FT. EL.

b. What direction does the groundwater flow? S TO SW

c. What is the groundwater gradient? .0009 TO .00048 FT/FT

CLOSURE COSTS ACTIVE SITE REMAINING
ACREAGE 107-71 = 36 AC.

Final Cover

17. Area of Landfill for Final Cover

a. Area of top deck to be capped (ft²) A_d = φ

b. Area of side slopes to be capped (ft²) A_s = 1,568,160
(map area)

Side Slopes

Horizontal:Vertical

Conversion Factor (C)

<u>5 : 1</u>	1.02
4 : 1	1.03
3 : 1	1.05
2 1/2 : 1	1.08
2 : 1	1.12
1 3/4 : 1	1.15

18. Final Cover Soil

a. Thickness

1) Top deck (minimum 3 feet of soil)

T_d = (≥ 3') φ

2) Side slope (minimum 3 feet normal to slope)

T_s = (≥ 3') 4' (2' RUBBLE FND, 1' CLAY, 1' SOIL)

b. Volume = [(T_d x A_d) + (T_s x A_s x C)]/27 = (yd³)

$$1,568,160 \times 4' \times 1.02 / 27 = 236,966 \text{ CY}$$

- c. % Native soil 2' FND. LAYER 50% FREE CONCRETE #
- d. Native material acquisition cost (excavation, hauling, etc.) (\$/yd³) ASPHALT RUBBLE \$ 0
- e. Native soil cost (Line 18b x Line 18c x Line 18d) \$ 0
- f. % Imported soil 25%
- g. Imported material acquisition cost (purchase, delivery, etc.) (\$/yd³) \$ \$5/cy
- h. Imported soil cost (Line 18b x Line 18f x Line 18g) \$ 296,208
- i. Placement, grading and compaction (to achieve relative compaction of .90) unit cost (\$/yd³) \$ 1.50/cy
- j. Placement, grading and compaction cost (Line 18b x Line 18i) \$ 88,623
- k. Subtotal final cover soil (Line 18e + Line 18h + Line 18j) \$ 385,070

19. Clay Layer

- a. Area to be capped (ft²) (Line 17a) + (Line 17b x c) 1,599,523 FT²
- b. Thickness (ft) (minimum 1 foot) 1,599,523 FT³
- c. Volume (yd³) (Line 19a x Line 19b)/27 59,242 cy
- d. % On-site Clay 0
- e. On-site material acquisition cost (excavation, hauling, etc.) (\$/yd³) \$ 0
- f. On-site clay cost (Line 19c x Line 19d x Line 19e) \$ 0
- g. % Imported clay 100%
- h. Imported material acquisition cost (purchase, delivery, etc.) (\$/yd³) \$ 10.16/cy

5.95/TON
 115#/CF = 1.55/cy
 # 9.24/cy x 1.1 INFLATION SINCE 1989 = # 10.16/cy

- i. Imported clay cost \$ 601,965
(Line 19c x Line 19g x Line 19h)
- j. Placement/spreading, grading, compaction (to achieve permeability no greater than 1×10^{-6} cm/sec) unit costs (\$/yd³) # 187/AC / 1,64 CY/AC \$ 1.16/CY
- k. Placement, grading and compaction cost (Line 19c x Line 19j) \$ 68,693
- l. Subtotal clay costs \$ 670,658
(Line 19f + Line 19i + Line 19k)

20. Synthetic Membrane (if applicable)

Note: This item must be estimated in addition to the clay barrier layer unless/until an alternative final cover design has been approved in the closure plan.

- a. Type of membrane (e.g., HDPE, CPE, PVC) N/A
Thickness (minimum 30 mils) _____
- b. Quantity (ft²) _____
- c. Purchase, delivery and installation unit cost (\$/ft²)
\$ _____
- d. Synthetic layer testing (percent of total synthetic membrane unit cost) _____ %
- e. Synthetic layer costs \$ _____
(Line 20b x Line 20c x (1 + 20d))

21. What other types of materials/layers are/will be included in the design (e.g., asphalt-tar, gravel for gas venting)?

N/A

Note: Thickness of individual layers may be modified depending on the integrated cover design.

22. Construction Quality Assurance

The following cost estimates apply to the quality assurance activities necessary to ensure that the final cover is installed

properly, as specified in the design parameters, and fulfill the conditions mandated by regulations.

a. Monitoring costs incurred while evaluating the final cover system components:

1) Laboratory test fees (e.g., soil permeability, soil density and moisture content)

\$ 5,000

2) Field test expenditures (e.g., test pad field permeability tests, relative compaction tests)

\$ 10,000

b. Inspections (e.g., initial inspection of native and imported soil or clay, visual check of completed cover)

\$ $370/AC \times 36AC =$ \$ 13,333

c. Reporting costs (e.g., daily reporting procedures, corrective measure reports)

\$ INCLUDED IN b

d. Engineering design costs \$ COMPLETED

e. Quality assurance costs \$ 28,333

(Line 22a1 + Line 22a2 + Line 22b + Line 22c + Line 22d)

23. Final Cover Subtotal \$ 1,084,060

(Line 18k + Line 19l + Line 20e + Line 22e)

385,070 + 670,658 + 28,333

Revegetation

24. Soil Preparation

a. Area to be vegetated, including closed area that needs replanting (acres) 36

b. Preparation unit cost (\$/acre) \$ 400/AC

c. Soil preparation subtotal \$ 14,400
(Line 24a x Line 24b)

25. Planting 3t#/AC SEED/# 28.6/AC

a. Type of vegetation 90% ANNUAL RYE, 7% ROSE

CLOVER, 3% CALIF. POPPIES

b. Planting unit cost (e.g., seeding, sprigging, plugs)
(\$/acre)

SEED LABOR
\$ 28.6/AC + 18/AC = 46.6/AC

c. Planting cost
(Line 24a x Line 25b)

\$ 1,678

26. Fertilizing

a. Type of fertilizer φ

b. Fertilizer unit cost (\$/acre) \$ _____

c. Fertilizing cost \$ _____
(Line 24a x Line 26b)

27. Mulching

a. Mulch unit cost (\$/acre) \$ INC. IN 24c DM-2 CAL-TRANS

b. Mulching cost \$ _____
(Line 24a x Line 27a) EROSION CONTROL

28. Irrigation installation cost \$ φ

29. Revegetation Subtotal \$ 16,078
(Line 24c + Line 25c + Line 26c + Line 27b + Line 28)

Landfill Gas Monitoring and Control

30. Does the landfill have a gas monitoring network?

YES X NO _____

If NO,

a. What will be the spacing between monitoring wells
(≤ 1000 ft)? _____

b. What criteria will be used to select this spacing?

c. Total number of gas monitoring wells? _____

Note: Depth of probes should equal at least 1 x depth of refuse within 1,000'.

- d. Number of probes per wellbore? _____
 Suggested Minimum:
 1) Surface (5-10 ft)
 2) Intermediate (half the depth of boring)
 3) Deep (to depth of boring)
- e. Cost of design \$ _____
 f. Cost of drilling, materials \$ _____
 g. Cost of installation \$ _____
 h. Subtotal for monitoring network \$ _____
 (Line 30e + Line 30f + Line 30g)

If YES,

- i. How many gas monitoring wells are in place?
65
- j. What is the lateral spacing between gas monitoring wells?
200'
- k. What is the number of probes per wellbore?
1 to 3
- l. Additional monitoring wells required at closure? 0
- m. Number of probes per boring? 1 to 3
- n. Cost to expand existing monitoring network (design, drilling, and installation)?
 \$ N/A

31. Is there a gas control system operating at the landfill?

YES NO

If YES,

- a. What type(s) (e.g., recovery, perimeter extraction, air injection, etc.) is/are in place?

RECOVERY WELLS/PASSIVE TRENCH

If NO,

b. What type of system will be installed during closure?

c. Cost of design \$ _____

d. Cost of materials \$ _____

e. Cost of installation \$ _____

f. Subtotal for control system
(Line 31c + Line 31d + Line 31e) \$ _____

32. Landfill Gas Subtotal \$ 0
(Line 30h + Line 30n + Line 31f)

Groundwater Monitoring Installations

33. Does the landfill have a groundwater monitoring network?

YES X NO _____

If YES,

a. Number of upgradient (minimum 1) wells 19 TOTAL WELLS/GW GRADIENT CHANGES N/A

b. Number of downgradient (minimum 3) wells N/A

If less than minimum or NO,

c. Number of wells to be installed (minimum 1 upgradient
and minimum 3 downgradient) _____

d. Drilling total footage (ft) _____

e. Cost of design \$ _____

f. Developing, installing, materials \$ _____

34. Groundwater monitoring subtotal \$ 0
(Line 33e + Line 33f)

Drainage

35. Is there a surface water runoff and runoff control system existing at the site?

YES X NO _____ TWO DETENTION BASINS/V DITCHES

If NO,

- a. What will be the estimated cost of installation and construction of the drainage conveyance system to accommodate anticipated runoff (e.g., diversion ditches, downdrains, energy dissipators) and protection from runoff (e.g., dikes, levees, protective berms)
- \$ _____
- b. Cost of design
- \$ _____
- c. Drainage subtotal
(Line 35a + Line 35b)
- \$ 0

Security

36. Is there a security system established at the landfill (e.g., fencing surrounding the permitted site boundary, access gates, locks on the gates, informational signs)?

YES X NO _____

a. What is presently in place at the site? (mark appropriate boxes)



Fencing



Gates



Locks



Signs



Other (describe)

AUTOMATIC GATE/24HR SECURITY GUARD

b. What will be the estimated cost of installing a security fence, access gates with locks, and/or informational signs (e.g., either around site perimeter or around enclosures) to protect equipment and the public and is compatible with postclosure use?

\$ _____

c. What will be the estimated cost of dismantling and removing security equipment, not necessary after closure and incompatible with postclosure use?

\$ _____

d. Security system costs
(Line 36b + Line 36c)

\$ 0

SUPPLEMENTAL DATA

37. Itemize costs on additional worksheets for closure procedures, specific to this solid waste disposal site, and attach at the end of this worksheet. Make sure each page is appropriately labeled with site name and SWIS number.

Other - Closure Costs \$ NONE

POSTCLOSURE MONITORING AND MAINTENANCE COSTS

Revegetation

38. Fertilizing

- a. Area to be fertilized (acres) 0
- b. Type of fertilizer _____
- c. Fertilizer unit cost (\$/acre/yr) \$ _____
- d. Fertilizing cost (\$/yr) \$ _____
(Line 38a x Line 38c)

39. Irrigation

- a. Type of irrigation system 0
- b. Quantity (gallon/day) _____
- c. Unit cost (\$/gallon) \$ _____
- d. How many irrigation days per week? _____
- e. Annual irrigation costs (\$/yr) \$ _____
{ (Line 39b x Line 39c) x Line 39d } x 52 wk/yr
- f. Annual maintenance costs (\$/yr) \$ _____
- g. Irrigation costs (\$/yr) \$ _____
(Line 39e + Line 39f)

40. Revegetation subtotal (\$/yr) \$ 300/YR
(Line 38d + Line 39g)

SOIL + MULCH @ 2AC/YR = 300/YR

Leachate Management

41. Does the solid waste disposal site have a liner?

YES X NO _____

42. Does the landfill have a leachate collection/removal system? (e.g., leachate barrier and recovery system, dendritic system)

YES X NO _____

If YES,

a. What type of system? DENDRITIC COLLECTION SYSTEM ABOVE CLAY LINER

b. Annual cost of operation and maintenance of system. (\$/yr)

\$ 15,000/YR

43. List types of leachate (including leachate-affected water and landfill gas condensate) treatment are being used and that will continue to be used during closure and postclosure maintenance (e.g., discharge to sewer, on-site or off-site management).

a. Type of treatment (on-site) N/A

b. Volume/unit frequency (e.g., gals/day, gals/month)

9,000 GAL/DAY

c. Unit cost of treatment (\$) \$ N/A

d. Annual costs of on-site treatment (\$/yr)

\$ N/A

44. Type of treatment (off-site) POTW

a. Volume/unit frequency (e.g., gals/day, gals/month)

9,000 GAL/DAY BASED ON HELP II MODEL (OVERESTIMATE)

b. Unit cost of treatment (\$) \$ N/A

c. Annual costs of off-site treatment (\$/yr)

\$ 75,000/YR

d. Other (explain) SAC REGIONAL SANITATION

TREATS LEACHATE AND EFFLUENT FROM GW

PRODUCTION WELLS

45. Leachate sampling and testing

- a. Number of samples/round 2
- b. Sampling costs/round \$ 150/ROUND
- c. Frequency of sampling per year YEARLY
- d. Annual sampling costs (\$/yr) \$ 150
(Line 45b x Line 45c)
- e. Testing costs/sample \$ 350/SAMPLE
- f. Annual testing costs (\$/yr) \$ 700/YR
(Line 45a x Line 45c x Line 45e)
- g. Annual sampling/testing cost subtotal (\$/yr)
(Line 45d + Line 45f) \$ 850/YR

46. Leachate management costs (\$/yr) \$ 90,850/YR
(Line 42b + Line 43d + Line 44c + Line 45g)

Monitoring

47. Gas Monitoring Systems

- a. Monitoring devices of principal gases (e.g., Gastech, OVA, etc.)
GASTECH OVA LANDFILL MONITOR & GASTECH ^{NP-204} GAS INDICATOR
- b. Frequency of monitoring (e.g., daily, weekly, monthly)
MONTHLY
- c. On-site annual monitoring costs for principal gases? (\$/yr)
\$ 11,000/YR (CITY STAFF)
- d. Annual sampling costs for trace gases? (\$/yr)
\$ N/A
- e. Annual testing costs for trace gases? (\$/yr)
\$ N/A
- f. Assumed replacement frequency, of probes, in years.
N/A

- g. Installation unit cost for probes \$ N/A
- h. Annual replacement costs \$ N/A
(Line 30i x Line 47g)/Line 47f
- i. Annual maintenance costs (\$/yr) \$ N/A
- j. Gas monitoring subtotal (\$/yr) \$ 11,000/YR
(Line 47c + Line 47d + Line 47e + Line 47h + Line 47i)

48. Is the vadose (unsaturated) zone monitored at this landfill?

YES NO

If YES,

a. What type of monitoring procedures and equipment are utilized? (e.g., vacuum/pressure lysimeter)

b. How many monitoring devices are utilized? _____

c. Annual sampling costs (\$/yr) \$ _____

d. Annual testing costs (\$/yr) \$ _____

e. Assumed replacement frequency, of devices, in years.

f. Installation unit cost of devices \$ _____

g. Annual replacement cost (\$) \$ _____
(Line 48b x Line 48f)/Line 48e

h. Annual maintenance costs (\$/yr) \$ _____

i. Vadose zone monitoring subtotal (\$/yr) \$ _____
(Line 48c + Line 48d + Line 48g + Line 48h)

49. Groundwater Monitoring

a. Number of wells 19

b. Frequency of monitoring, per year QUARTERLY

c. Analytical methods (e.g., EPA 601 and 602 or 624, and 625)

EPA 524/ICAP/MISC.

d. Number of samples/round 19

e. Testing costs/sample \$ 703

f. Annual groundwater sampling & testing costs (\$/yr)
[(Line 49d x Line 49e) x Line 49a] x Line 49b
\$ 19 x 703 x 4 = 53,428

g. Annual monitoring costs (\$/yr) \$ 10,000

h. Assumed replacement frequency, of wells, in years.
30 YEARS

i. Installation unit cost of wells \$ 24,000 ASSUMED
(Line 34/Line 33c)

j. Annual replacement cost \$ NOT NEEDED
(Line 49a x Line 49i)/Line 49h

k. Annual maintenance costs (\$/yr) \$ 30,000

l. Groundwater monitoring subtotal (\$/yr) \$ 93,428
(Line 49f + Line 49g + Line 49j + Line 49k)

50. Monitoring Cost Subtotal (\$/yr) \$ 104,428
(Line 47j + Line 48i + Line 49l)
11,000 0 93,428

Drainage

51. How often do you anticipate the need to perform maintenance activities (e.g., clear material from runoff surface water conveyances, minor grading, repair of articulated drains; also problems with runoff maintenance and repair of levees, dikes, protective berms)? For example, after major storms, before the rainy season or quarterly.

ONCE PER YEAR

a. Annual maintenance costs (\$/yr) \$ 30,000

Security

52. What are the estimated annual maintenance costs to repair/replace fencing, gates, locks, signs, and/or other security equipment at the landfill site? (\$/yr)

\$ 5,000

Inspection

53. What will be the routine maintenance inspection frequency of the landfill during postclosure (minimum semi-annually)?

SEMI-ANNUALLY

a. Inspection unit cost

\$ 5,000

b. Annual inspection costs during the postclosure care period?

(\$/yr) 5,000

Components that should be inspected include, but are not limited to:

- ▶ Final cover - erosion damage
- ▶ Final grading - ponding caused by settlement
- ▶ Drainage control systems - continuity of articulated drains, sediment choked conduits
- ▶ Gas collection/control systems
- ▶ Leachate collection and treatment systems effectiveness, and continuity
- ▶ Security - fences, gates and signs
- ▶ Vector and fire control
- ▶ Monitoring equipment
- ▶ Litter control

SUPPLEMENTAL DATA

54. Itemize annual costs, on additional worksheets, for monitoring and postclosure maintenance procedures, specific to this solid waste disposal site, and attach at the end of this worksheet. Make sure each page is appropriately labeled with site name and SWIS number.

Other - Annual Postclosure Maintenance Costs \$ _____

APPENDIX C

PLEDGE OF REVENUE AGREEMENT

ESTABLISHING A PLEDGE OF REVENUE FOR POSTCLOSURE MAINTENANCE OF THE CITY OF SACRAMENTO LANDFILL.

This Agreement shall become effective immediately, and is made and entered into by and between City of Sacramento ("City") and the California Integrated Waste Management Board ("Board").

WHEREAS, California Government Code Section 66796.22 and Sections of Title 14 of the California Code of Regulations ("Regulations"), Chapter 5, Subarticle 3.5, require operators of solid waste landfills to demonstrate the availability of financial resources to conduct closure and postclosure maintenance activities;

WHEREAS, Sections 18283 and 18290 of the Regulations specify a pledge of revenue as an acceptable mechanism to demonstrate financial responsibility for postclosure maintenance of a solid waste landfill;

WHEREAS, The City operates the 28th Street Landfill, a solid waste landfill, in conformance with the findings, conditions, prohibitions and requirements contained in Solid Waste Facilities Permit No 34-AA-00018 issued by the County of Sacramento Environmental Health Department serving as Local Enforcement Agency for the Board;

WHEREAS, The City in its discretion collects fees for collection and disposal of solid waste;

WHEREAS, The City, in its discretion, will adjust the fee schedule for solid waste collection and disposal services as necessary to provide adequate funds for the postclosure monitoring and maintenance of the landfill in accordance with Board regulations;

WHEREAS, the 15 year postclosure period will begin when the closure/postclosure plan has been approved by the California Integrated Waste Management Board, Local Enforcement Agency and Regional Water Quality Control Board and the facility has completed all closure construction activities, which is estimated to occur on approximately January 1, 1995;

NOW THEREFORE, The City and Board do agree as follows;

1. The City shall establish a pledge of revenue to demonstrate financial responsibility for postclosure maintenance of the 28th Street Landfill in accordance with Sections 18283 and 18290 of the Regulations.
2. The City agrees to pledge revenues from solid waste collection fees as described herein.
3. The amount of the pledge revenue shall be equal to \$57,000 per year for the 15 year period commencing with the date of expiration of the current Solid Waste Facility Operating Permit representing the current monitoring and

City Agreement No. 90-070

postclosure maintenance cost estimate for the 28th Street Landfill, including contingencies of 20% of the total. It is agreed that the amount of this pledge may increase or decrease to match any adjustment to the identified cost estimate which is determined by an updated Engineers Estimate prepared by the City in accordance with Board Regulations.

4. If the City at any time determines to cease to allocate the pledge revenue as identified herein to pay postclosure maintenance costs, the City shall give the Board and the local enforcement agency sixty (60) days notice of its intention, and shall obtain alternate coverage within sixty (60) days of the date such notice specifies as the effective date of the City's action.
5. The City reserves the right as allowed by the existing law to rescind this Pledge of Revenue and to substitute one or more other available mechanisms to demonstrate financial responsibility for postclosure maintenance of the 28th Street Landfill.
6. In the event that the Board determines that the City has failed to perform postclosure maintenance as required by law, the Board may direct the Director of Finance to pay from the Postclosure Fund such amounts as are necessary to insure sufficient postclosure maintenance, in accordance with the Board regulations.

IN WITNESS WHEREOF, The parties have executed this agreement on the date and year as set forth below.

CITY OF SACRAMENTO
A Municipal Corporation

CALIFORNIA INTEGRATED WASTE
MANAGEMENT BOARD

By Walter J. Slope
City Manager

By _____

Title

APPROVED AS TO FORM:

ATTEST:

By [Signature]
City Attorney

By Saline A. Burrows
City Clerk

RESOLUTION NO. 90-438

ADOPTED BY THE SACRAMENTO CITY COUNCIL

ON DATE OF JUN 5 1990

CERTIFIED AS TRUE COPY
of Resolution No. 90-438

JUN 15 1990

Debra G. Harrison
CITY CLERK, CITY OF SACRAMENTO

FINANCIAL ASSURANCE FOR CLOSURE AND POSTCLOSURE MAINTENANCE
OF THE CITY OF SACRAMENTO 28TH STREET SOLID WASTE LANDFILL.

WHEREAS, Government Code Section 66796.22 and Sections of Title 14 of the California Code of Regulations ("Regulations"), Chapter 5, Subarticle 3.5, require operators of solid waste landfills to demonstrate the availability of financial resources to conduct closure and postclosure maintenance activities; and

WHEREAS, Sections 18283 and 18285 of the Regulations specify an Enterprise Fund and related financial assurance mechanism as an acceptable mechanism to demonstrate financial responsibility for financing closure and/or postclosure maintenance of a solid waste landfill; and

WHEREAS, Sections 18283 and 18290 of the Regulations specify a pledge of revenue as an acceptable mechanism to demonstrate financial responsibility for financing postclosure maintenance of a solid waste landfill; and

WHEREAS, The City of Sacramento has established and maintains an Enterprise Fund ("Enterprise Fund") which includes funding for the 28th Street solid waste landfill ("Landfill") and deposits in the Enterprise Fund all fees derived from solid waste collection activities.

NOW, THEREFORE, BE IT RESOLVED by the City Council of The City of Sacramento that:

1. The Director of Finance ("Director") is directed to transfer from the Enterprise Fund into the financial assurance mechanism hereafter provided, sufficient funds to meet the requirements of Sections 18282 and 18285 of the Regulations on a timely basis.

FOR CITY CLERK USE ONLY

RESOLUTION NO.: 90-438

DATE ADOPTED: JUN 5 1990

2. The funds required for the financial assurance mechanism referred to in Section 1 above shall be accounted for by the Director in a separate fund to be known as the 28th Street Landfill Closure/Postclosure Maintenance Fund ("Closure/Postclosure Fund") established by the Director and shall be used to pay only for closure and postclosure maintenance of the Landfill.
3. To the extent permitted by law, the Closure/PostClosure Fund shall be and remain inviolate against all other claims, including claims of the City or its City Council or the creditors thereof, it being the intent of this Resolution that the mechanism established hereby will provide equivalent protection to a trust fund in ensuring that the assured amounts of funds will be available in a timely manner for closure and/or postclosure maintenance of the Landfill.
4. In the event the California Integrated Waste Management Board determines after a noticed public hearing, that the City has failed to perform closure and/or postclosure maintenance as required by law, the Board may direct the Director to pay from the Closure/Postclosure Fund such amounts as are necessary to insure sufficient closure and/or postclosure maintenance. Such funds shall then be used for closure or postclosure maintenance in accordance with the directive of the California Integrated Waste Management Board, which shall be given only after a noticed public hearing on the matter has been held.
5. In order to demonstrate financial responsibility for postclosure maintenance, the City Manager is authorized and directed to execute the attached agreement with the California Integrated Waste Management Board providing for a pledge of revenue from the fees collected from Solid Waste Collection Services in accordance with Section 18290 of the Regulations.
6. The Director of Public Works is directed to produce an annual report for transmittal to the California Integrated Waste Management Board, containing the following information concerning the 28th Street Landfill:
 - (a) As appropriate, a revised closure cost estimate, prepared as specified by Section 18263 of the Regulations.
 - (b) As appropriate, a revised postclosure maintenance cost estimate, prepared as specified by Section 18266 of the Emergency Regulations.
 - (c) Status, including current balance of the 28th Street Landfill Closure/Postclosure Maintenance Fund.

7. The City Council shall reconsider this resolution whenever the number of then current members of the City Council who voted affirmatively when this Resolution was adopted or last reaffirmed is less than a majority of the total members.

ANNE RUDIN
MAYOR

VALERIE BURROWES
CLERK

RESOLUTION 90-438

RESOLUTION NO.

ADOPTED BY THE SACRAMENTO CITY COUNCIL

ON DATE OF _____

FINANCIAL ASSURANCE FOR CLOSURE AND POSTCLOSURE MAINTENANCE OF THE CITY OF SACRAMENTO 28TH STREET SOLID WASTE LANDFILL

WHEREAS, Government Code Section 66796.22 and Sections of Title 14 of the California Code of Regulations ("Regulations"), Chapter 5, Subarticle 3.5, require operators of solid waste landfills to demonstrate the availability of financial resources to conduct closure and postclosure maintenance activities; and

WHEREAS, Sections 18283 and 18285 of the Regulations specify an Enterprise Fund and related financial assurance mechanism as an acceptable mechanism to demonstrate financial responsibility for financing closure and/or postclosure maintenance of a solid waste landfill; and

WHEREAS, Sections 18283 and 18290 of the Regulations specify a pledge of revenue as an acceptable mechanism to demonstrate financial responsibility for financing postclosure maintenance of a solid waste landfill; and

WHEREAS, The City of Sacramento has established and maintains an Enterprise Fund ("Enterprise Fund") which includes funding for the 28th Street solid waste landfill ("Landfill") and deposits in the Enterprise Fund all fees derived from solid waste collection activities.

NOW, THEREFORE, BE IT RESOLVED by the City Council of The City of Sacramento that:

1. The Director of Finance ("Director") is directed to transfer from the Enterprise Fund into the financial assurance mechanism hereafter provided, sufficient funds to meet the requirements of Sections 18282 and 18285 of the Regulations on a timely basis.

FOR CITY CLERK USE ONLY

RESOLUTION NO.: _____

DATE ADOPTED: _____

7. The City Council shall reconsider this resolution whenever the number of then current members of the City Council who voted affirmatively when this Resolution was adopted or last reaffirmed is less than a majority of the total members.

MAYOR

Secretary

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
CENTRAL VALLEY REGION3 ROUTIER ROAD, SUITE A
SACRAMENTO, CA 95827-3098

23 May 1990

Mr. Keith A. Johnson
Solid Waste Division
City of Sacramento
921 Tenth Street, Suite 500
Sacramento, CA 95814-2715

CITY OF SACRAMENTO 28TH STREET LANDFILL, SACRAMENTO COUNTY (CASE No. 2891)

We have reviewed your letter of 8 May 1990 with the revised Appendix E for construction quality assurance (CQA) and the corrected cost estimate.

The revised CQA plan now includes more tests and greater testing frequencies. The CQA plan also includes an outline of project responsibilities and authorities, a sample daily CQA field report form and a sample certification statement.

We find the revised CQA plan acceptable with the following conditions:

1. The City shall provide a detailed description of the level of experience and training for the contractor, the work crew and the CQA inspectors for every major phase of construction prior to the start of construction.
2. CQA reports submitted for each phase of construction shall include copies of all daily observation and testing logs and inspector's field notes.
3. Placement of the vegetative layer shall be certified by the CQA officer in accordance with Subchapter 15.
4. The compacted clay layer shall be protected from desiccation prior to placement of the vegetative soil layer.
5. The City shall provide a description of the vegetation proposed for planting on the closed landfill and evidence of rooting depth.
6. The City shall provide satisfactory demonstration that landfill slopes greater than 2 to 1 are seismically stable.
7. The City is required to maintain a minimum three percent slope on the landfill cover during the post-closure period. This requirement shall be stated in the post-closure plan.

The corrected closure cost estimate for ground water monitoring averages about \$200 per well per quarter. This value is low but acceptable in view of the City's in-house laboratory capabilities for which no costs are charged to the Solid Waste Division.

The proposed conceptual surface drainage design changes also appear acceptable at this time.

If you have any questions, please contact Steve Rosenbaum at (916) 361-5732.

William J. Marshall

WILLIAM J. MARSHALL, Chief
Waste Discharge to Land Unit

SER

cc: Mr. Michael Finch, California Integrated Waste Management Board, Sacramento
Mr. Robert Berger, Sacramento County Environmental Health, Sacramento



DEPARTMENT OF
PUBLIC WORKS

CITY OF SACRAMENTO
CALIFORNIA

921 TENTH STREET
SUITE 500
SACRAMENTO, CA
95814-2715

SOLID WASTE DIVISION

916-449-5757

June 29, 1990

DAVID A. PELSER
SOLID WASTE
DIVISION MANAGER

Mr. Michael Finch
Standards and Regulations Division
California Waste Management Board
1020 Ninth Street
Sacramento, California 95814

Subject: CEQA Compliance for the Closure Plan
Facility No. 34-AA-0018

Gentlemen:

The following is an excerpt from my January 9, 1990 letter to you regarding the 28th Street Landfill Closure Plan approval.

"In 1984, the City approved the expansion of the landfill site located at 28th and North B Streets to increase the available site area by a total of about 35 acres. In conjunction with this approval, the City prepared and certified an environmental impact report. The Waste Management Board was served with a copy of the Draft EIR and provided comments which were included in the final EIR. Copies of the Draft and Final EIRs are submitted herewith. This EIR addressed the proposed landfill expansion, as well as the anticipated closure of the site upon landfill exhaustion of its capacity. A proposed closure plan consistent with the then-existing regulations was set forth in the environmental impact report. The landfill expansion project was subsequently approved by and incorporated into the landfill permit issued by the local enforcement agency (the County) and the California Waste Management Board."

"The closure and postclosure maintenance plans submitted in conjunction with SWIS #34-AA-0018 were prepared in conformance with the regulations issued by the California Waste Management Board. From the City's perspective, it has no discretion insofar as its adoption of a closure and postclosure maintenance plan as currently mandated by Government Code 66796.22 and the implementing regulations issued by the Waste Management Board, and as will be mandated by AB 939 upon its effective date. The City is confident that the plans that it has submitted are consistent with and meet the requirements of the foregoing statutes and regulations.

Mr. Michael Finch
Page 2

Nevertheless, if there are deficiencies in the proposed plans, presumably the Waste Management Board will point out these deficiencies and the City will be required to incorporate them into their plans."

The City of Sacramento Solid Waste Division was the lead agency for the Expansion Area EIR and the Board was noticed as a responsible party. It is the City's opinion that the Expansion Area EIR, SCH #83030302, is still adequate. Changes to the landfill's Closure Plan since this document was prepared have been made solely to reflect new regulations that have come into force.

The City Council approved the landfill's January 1989 Closure Plan on February 14, 1989 (see attached Council report), and the 180 day challenge period has passed. At the time the Council Resolution was adopted, the City's legal staff determined that no additional CEQA work was necessary. Per Section 15052 of the Guidelines, if the California Integrated Waste Management Board Determines that more CEQA work is required, they would become the lead agency. Per my discussion with Mr. John Keene with the State Clearinghouse on 6/27/90, the Clearinghouse staff has no position on the issue and defers to the City of Sacramento, as the lead agency for the Expansion Area EIR, to determine the adequacy of the document.

The Expansion Area EIR, in it's entirety, was attached to the January 9, 1990 Closure Plan update. Should you have any questions regarding this letter, the original Closure Plan, or the Expansion Area EIR, please call me at 449-5758.

Sincerely,


Keith A. Johnson
Senior Engineer

cc: Central Valley Regional Water Quality Control Board
Sacramento County Environmental Management Department,
Environmental Health Division
David Pelser, Solid Waste Division Manager
File: LF-4.1

IWMB.CLS



DEPARTMENT OF
PUBLIC WORKS

SOLID WASTE DIVISION

CITY OF SACRAMENTO
CALIFORNIA

1231 I STREET
SUITE 103
SACRAMENTO, CA
95814-2933

916-449-5757

February 14, 1989

Transportation and Community Development/
Budget and Finance Committees
Sacramento, California

Honorable Members in Session:

SUBJECT: LANDFILL CLOSURE PLAN AND COSTS

SUMMARY

This report provides information on the status of closing the City's 28th Street Landfill, transmits the 1989 Landfill Closure Plan, and identifies needed additional funding. It also recommends adoption of a resolution which would defund other solid waste capital improvement projects and augment the funding for the landfill closure capital improvement project in order to comply with State regulations.

BACKGROUND

The City owns and operates the 28th Street Sanitary Landfill. It is operated under various State laws and permits issued by the Central Valley Regional Water Quality Control Board (CVRWQCB) and the California Waste Management Board (as administered by the Sacramento County Environmental Management Department as the Local Enforcement Agency, or LEA). In 1986, the City prepared a Landfill Closure Plan in response to requirements of the CVRWQCB. The Closure Plan was updated and submitted to the CVRWQCB in January each year. This year, the Closure Plan has been rewritten to reflect new State requirements.

Attached is a copy of the 1989 Landfill Closure Plan which was recently submitted to the CVRWQCB and will soon be submitted to the California Waste Management Board (CWMB) and LEA. New this year is a section on post closure maintenance in response to recent legislation enforced by the CWMB. Also new is a requirement that a professional engineer prepare an estimate of closure and post closure maintenance costs and that the City certify the funding of these costs. The cost estimates have been included in the 1989 Landfill Closure Plan.

The original 1986 Closure Plan identified the final grading contours of the landfill and estimated its remaining capacity would serve the City through 1990. The controlling factor in the site life is the final grading plan elevations. Variables which influence the remaining site life include waste generation rates in the City, effectiveness of garbage compacting operations, and settlement of completed waste cells in the fill. Our current estimates indicate the landfill can continue to receive waste until the end of 1991, about one year longer than previously thought. It appears the major reason for this additional year of site life is greater than expected settlement of the waste already placed and compacted in the fill. In addition to the settlement, the actual waste received at the landfill in 1988 was less than projected.

Summary of fiscal impacts:

PROPOSED FUNDING FROM CURRENTLY APPROVED CIP PROJECTS BY
ATTACHED PROPOSED RESOLUTION

CANCEL YA71 DISP. SITE ACQ.	\$750,000.00
CANCEL YA61 VEG. SHRED. STR. REP.	63,000.00
DEFUND YA11 TRANSFER/DIR. HAUL	135,000.00
SUBTOTAL THIS ACTION	<u>948,000.00</u>
AUGMENT CLOSURE PROJECT IN 1989-94 PROPOSED CIP FROM STATE PAYMENT TO FUND (NOT PART OF THIS ACTION)	1,202,000.00
TOTAL (ADDITIONAL FUNDING REQUIRED FOR LANDFILL CLOSURE)	<u><u>\$2,150,000.00</u></u>

POLICY MATTERS

Policy decisions included in this proposed action are:

1. Determining to comply with State requirements for funding of estimated landfill closure and post closure costs.
2. Cancelling and defunding certain existing capital improvement projects as described in the financial data section above.
3. An understanding that the Proposed 1989-94 CIP will include augmenting Project YA06 by \$1,202,000 from the Solid Waste Fund, which equals the recent State payment for the vegetal shredder facility.

MBE/WBE

No impact.



DEPARTMENT OF
PUBLIC WORKS

SOLID WASTE DIVISION

February 21, 1989

City Council
Sacramento, California

Honorable Members in Session:

SUBJECT: LANDFILL CLOSURE PLAN AND COSTS

CITY OF SACRAMENTO
CALIFORNIA

1231 I STREET
SUITE 103
SACRAMENTO, CA
95814-2933

916-449-5757

SUMMARY

This report provides information on the status of closing the City's 28th Street Landfill, transmits the 1989 Landfill Closure Plan, and identifies needed additional funding. It also recommends adoption of a resolution which would defund other solid waste capital improvement projects and augment the funding for the landfill closure capital improvement project in order to comply with State regulations. The attached report was heard by the joint committees of Transportation and Community Development/Budget and Finance on February 14, 1989.

BACKGROUND

See attached report.

FINANCIAL DATA

See attached report.

POLICY MATTERS

See attached report.

MBE/WBE

See attached report.

RECOMMENDATION

Staff recommends the adoption of the attached proposed resolution which will amend the Capital Improvement Program Budget to effectively move funds between existing capital improvement projects, all within the Solid Waste Fund, to augment the additional funding needed for the landfill closure project.

Respectfully submitted,



DAVID A. PELSNER
Solid Waste Division Manager

Recommendation Approved:



WALTER J. SLIPE
City Manager

Approved:



MELVIN H. JOHNSON
Director of Public Works

Contact Person to
Answer Questions:

February 21, 1989
All Districts

DAVID A. PELSNER, SOLID WASTE DIVISION MANAGER
449-2043

REPORTS COUNCIL COMMITTEES (Continued)

26. Various matters regarding Sanitary Sewer Sump 36 Reconstruction. (D7)
(Bud. and Fin. Committee)
- A. Res. amending the Capital Improvement Program by the appropriations of funds, in the amount of \$50,000.00.
 - B. Approve plans and specifications for Sanitary Sewer Sump 36 Reconstruction, estimated cost \$55,000.00, a non-refundable fee of \$25.00 is required.

RECOMMENDATION OF STAFF: A. ADOPT RES.
B. ADOPT PLANS AND SPECIFICATIONS; BIDS DUE 03-14-89

COUNCIL ACTION: A. CC89-148
B. PLANS AND SPECIFICATIONS ADOPTED; BIDS DUE 03-14-89

VOTING RECORD: MOV: D5 SEC: D7
AYES: UNANIMOUS

27. Various matters regarding resolution relating to the 28th Street Landfill: (D-All) (Jt. Trans. and Com. Dev./Bud. and Fin. Committees)
- A. Amend the Capital Improvement Program budget by cancelling the Disposal Site Acquisition and Vegetal Shredder Structural Repair projects.
 - B. Amend the Capital Improvement Program budget by defunding the Transfer Station project, in the amount of \$135,000.00.
 - C. Further amend the Capital Improvement Program budget by transferring funds to the Landfill Closure, in the amount of \$948,000.00.

RECOMMENDATION OF STAFF: A-C: ADOPT RES. AMENDING BUDGET

COUNCIL ACTION: A-C: CC89-149

VOTING RECORD: MOV: D8 SEC: D6
AYES: UNANIMOUS

28. Office Paper Recycling Program Information Report. (D-All) (Jt. Trans. and Com. Dev./Bud. and Fin. Committees)

RECOMMENDATION OF STAFF: FILE

COUNCIL ACTION: FILED

VOTING RECORD: BY CONSENSUS

RESOLUTION NO. 89-149

ADOPTED BY THE SACRAMENTO CITY COUNCIL ON DATE OF

FEB 21 1989

A RESOLUTION AMENDING THE CAPITAL IMPROVEMENT PROGRAM BUDGET

BE IT RESOLVED BY THE COUNCIL OF THE CITY OF SACRAMENTO THAT:

1. The Capital Improvement Program Budget is hereby amended by cancelling projects YA71, "Disposal Site Acquisition" (415-500-YA71), and YA61, "Vegetal Shredder Structural Repair" (415-500-YA61), and transferring their total respective balances to the Solid Waste Fund Contingency Reserve (415-710-7012-4999).
2. The Capital Improvement Program Budget is hereby amended by defunding project YA11, "Transfer Station" (415-500-YA11-4810), in the amount of \$135,000 and transferring said amount to the Solid Waste Fund Contingency Reserve (415-710-7012-4999).
3. The Capital Improvement Program Budget is hereby amended by transferring \$948,000 from the Solid Waste Fund Contingency Reserve (415-710-7012-4999) to project YA06, "Landfill Closure" (415-500-YA06-4820).

ANNE RUDIN

MAYOR

ATTEST:

ACTING JANICE BEAMAN
Assistant CITY CLERK _____



5-D-1

DEPARTMENT OF
FINANCE

BETTY MASUOKA
DIRECTOR

CITY OF SACRAMENTO
CALIFORNIA

CITY HALL
ROOM 14
915 J STREET
SACRAMENTO, CA
95814-2685

916-449-5736

DIVISIONS:
ACCOUNTING
BUDGET
REVENUE
RISK MANAGEMENT

May 16, 1990

Budget and Finance Committees
Sacramento, California

Honorable Members in Session:

SUBJECT: LANDFILL CLOSURE AND POST CLOSURE MAINTENANCE FINANCIAL ASSURANCE

SUMMARY

As an alternative to advanced funding for postclosure maintenance of the 28th Street landfill, it is recommended that an annual Pledge of Revenue be used as a financing mechanism. The cost of this alternative is \$57,000 per year, estimated to begin in FY 1994-95. This will allow deletion of the proposed FY 1990-91 funding for CIP project YA06, which budgeted \$494,000 for landfill postclosure. This change, in addition to defunding of the Landfill Gas Control Program (YA36) in the amount of \$470,000, allows the proposed Solid Waste rate increase to be adjusted from 18% to 9%.

BACKGROUND

The Solid Waste Division has prepared a cost estimate for closure and postclosure for the 28th Street landfill pursuant to the California Integrated Waste Management Board's (CIWMB) August 1989 Emergency Regulations (Sections 18263 and 18266 of Title 14, of the California Code of Regulations ("Regulations"), Chapter 5, Subarticle 3.4). This estimate includes the costs involved with closing the landfill in accordance with current CIWMB and Central Valley Regional Water Quality Control Board (RWQCB) Regulations and the cost of 15 years of postclosure maintenance. The estimate also includes a CIWMB mandated 20% contingency.

The Regulations detail acceptable financial mechanisms or combinations of mechanisms which can be used to assure the funding of the closure and post closure activities. City staff in the Departments of Public Works and Finance have examined these alternative financial assurance mechanisms. Staff has determined it is in the City's best interest to use an Enterprise Fund as specified in Section 18285 of the Regulations for funding closure activities. A Pledge of Revenue as detailed in Section 18290 of the Regulations is recommended to assure funding post closure maintenance costs. Other mechanisms available are trust funds, Government Securities, Letter of Credit, Surety Bond, Financial Means Test, and Guarantees. Most of these are more appropriate for privately owned landfills and do not lend themselves well to government financing.

A Pledge of Revenue Agreement, as specified by Sections 18283 and 18290 of the Regulations, can be used to demonstrate financial responsibility for postclosure maintenance only. The mechanism consists of a Council Resolution authorizing an agreement between the operator of the landfill and the CIWMB to establish the Pledge, a commitment from the operator that the necessary post closure maintenance funds will be available in a timely manner, and a further commitment that the operator will at all times retain control of the ability to allocate any pledged revenue to pay post closure maintenance costs. As stated in Section 18277 of the Regulations, post closure maintenance of the landfill must continue for a minimum of 30 years.

Approved by Council 6/5/90

RESOLUTION NO.

ADOPTED BY THE SACRAMENTO CITY COUNCIL

ON DATE OF _____

FINANCIAL ASSURANCE FOR CLOSURE AND POSTCLOSURE MAINTENANCE OF THE CITY OF SACRAMENTO 28TH STREET SOLID WASTE LANDFILL

WHEREAS, Government Code Section 66796.22 and Sections of Title 14 of the California Code of Regulations ("Regulations"), Chapter 5, Subarticle 3.5, require operators of solid waste landfills to demonstrate the availability of financial resources to conduct closure and postclosure maintenance activities; and

WHEREAS, Sections 18283 and 18285 of the Regulations specify an Enterprise Fund and related financial assurance mechanism as an acceptable mechanism to demonstrate financial responsibility for financing closure and/or postclosure maintenance of a solid waste landfill; and

WHEREAS, Sections 18283 and 18290 of the Regulations specify a pledge of revenue as an acceptable mechanism to demonstrate financial responsibility for financing postclosure maintenance of a solid waste landfill; and

WHEREAS, The City of Sacramento has established and maintains an Enterprise Fund ("Enterprise Fund") which includes funding for the 28th Street solid waste landfill ("Landfill") and deposits in the Enterprise Fund all fees derived from solid waste collection activities.

NOW, THEREFORE, BE IT RESOLVED by the City Council of The City of Sacramento that:

1. The Director of Finance ("Director") is directed to transfer from the Enterprise Fund into the financial assurance mechanism hereafter provided, sufficient funds to meet the requirements of Sections 18282 and 18285 of the Regulations on a timely basis.

FOR CITY CLERK USE ONLY

RESOLUTION NO.: _____

DATE ADOPTED: _____

2. The funds required for the financial assurance mechanism referred to in Section 1 above shall be accounted for by the Director in a separate fund to be known as the 28th Street Landfill Closure/Postclosure Maintenance Fund ("Closure/Postclosure Fund") established by the Director and shall be used to pay only for closure and postclosure maintenance of the Landfill.
3. To the extent permitted by law, the Closure/PostClosure Fund shall be and remain inviolate against all other claims, including claims of the City or its City Council or the creditors thereof, it being the intent of this Resolution that the mechanism established hereby will provide equivalent protection to a trust fund in ensuring that the assured amounts of funds will be available in a timely manner for closure and/or postclosure maintenance of the Landfill.
4. In the event the California Integrated Waste Management Board determines after a noticed public hearing, that the City has failed to perform closure and/or postclosure maintenance as required by law, the Board may direct the Director to pay from the Closure/Postclosure Fund such amounts as are necessary to insure sufficient closure and/or postclosure maintenance. Such funds shall then be used for closure or postclosure maintenance in accordance with the directive of the California Integrated Waste Management Board, which shall be given only after a noticed public hearing on the matter has been held.
5. In order to demonstrate financial responsibility for postclosure maintenance, the City Manager is authorized and directed to execute the attached agreement with the California Integrated Waste Management Board providing for a pledge of revenue from the fees collected from Solid Waste Collection Services in accordance with Section 18290 of the Regulations.
6. The Director of Public Works is directed to produce an annual report for transmittal to the California Integrated Waste Management Board, containing the following information concerning the 28th Street Landfill:
 - (a) As appropriate, a revised closure cost estimate, prepared as specified by Section 18263 of the Regulations.
 - (b) As appropriate, a revised postclosure maintenance cost estimate, prepared as specified by Section 18266 of the Emergency Regulations.
 - (c) Status, including current balance of the 28th Street Landfill Closure/Postclosure Maintenance Fund.

7. The City Council shall reconsider this resolution whenever the number of then current members of the City Council who voted affirmatively when this Resolution was adopted or last reaffirmed is less than a majority of the total members.

MAYOR

Secretary

PLEDGE OF REVENUE AGREEMENT

ESTABLISHING A PLEDGE OF REVENUE FOR POSTCLOSURE MAINTENANCE OF THE CITY OF SACRAMENTO LANDFILL

This Agreement shall become effective immediately, and is made and entered into by and between City of Sacramento ("City") and the California Integrated Waste Management Board ("Board").

WHEREAS, California Government Code Section 66796.22 and Sections of Title 14 of the California Code of Regulations ("Regulations"), Chapter 5, Subarticle 3.5, require operators of solid waste landfills to demonstrate the availability of financial resources to conduct closure and postclosure maintenance activities;

WHEREAS, Sections 18283 and 18290 of the Regulations specify a pledge of revenue as an acceptable mechanism to demonstrate financial responsibility for postclosure maintenance of a solid waste landfill;

WHEREAS, The City operates the 28th Street Landfill, a solid waste landfill, in conformance with the findings, conditions, prohibitions and requirements contained in Solid Waste Facilities Permit No 34-AA-00018 issued by the County of Sacramento Environmental Health Department serving as Local Enforcement Agency for the Board;

WHEREAS, The City in its discretion collects fees for collection and disposal of solid waste;

WHEREAS, The City, in its discretion, will adjust the fee schedule for solid waste collection and disposal services as necessary to provide adequate funds for the postclosure monitoring and maintenance of the landfill in accordance with Board regulations;

WHEREAS, the 15 year postclosure period will begin when the closure/postclosure plan has been approved by the California Integrated Waste Management Board, Local Enforcement Agency and Regional Water Quality Control Board and the facility has completed all closure construction activities, which is estimated to occur on approximately January 1, 1995;

NOW THEREFORE, The City and Board do agree as follows;

1. The City shall establish a pledge of revenue to demonstrate financial responsibility for postclosure maintenance of the 28th Street Landfill in accordance with Sections 18283 and 18290 of the Regulations.
2. The City agrees to pledge revenues from solid waste collection fees as described herein.
3. The amount of the pledge revenue shall be equal to \$57,000 per year for the 15 year period commencing with the date of expiration of the current Solid Waste Facility Operating Permit representing the current monitoring and

postclosure maintenance cost estimate for the 28th Street Landfill, including contingencies of 20% of the total. It is agreed that the amount of this pledge may increase or decrease to match any adjustment to the identified cost estimate which is determined by an updated Engineers Estimate prepared by the City in accordance with Board Regulations.

4. If the City at any time determines to cease to allocate the pledge revenue as identified herein to pay postclosure maintenance costs, the City shall give the Board and the local enforcement agency sixty (60) days notice of its intention, and shall obtain alternate coverage within sixty (60) days of the date such notice specifies as the effective date of the City's action.
5. The City reserves the right as allowed by the existing law to rescind this Pledge of Revenue and to substitute one or more other available mechanisms to demonstrate financial responsibility for postclosure maintenance of the 28th Street Landfill.
6. In the event that the Board determines that the City has failed to perform postclosure maintenance as required by law, the Board may direct the Director of Finance to pay from the Postclosure Fund such amounts as are necessary to insure sufficient postclosure maintenance, in accordance with the Board regulations.

IN WITNESS HEREOF, The parties have executed this agreement on the date and year as set forth below.

CITY OF SACRAMENTO
A Municipal Corporation

CALIFORNIA INTEGRATED WASTE
MANAGEMENT BOARD

By _____
City Manager

By _____

Title

APPROVED AS TO FORM:

ATTEST:

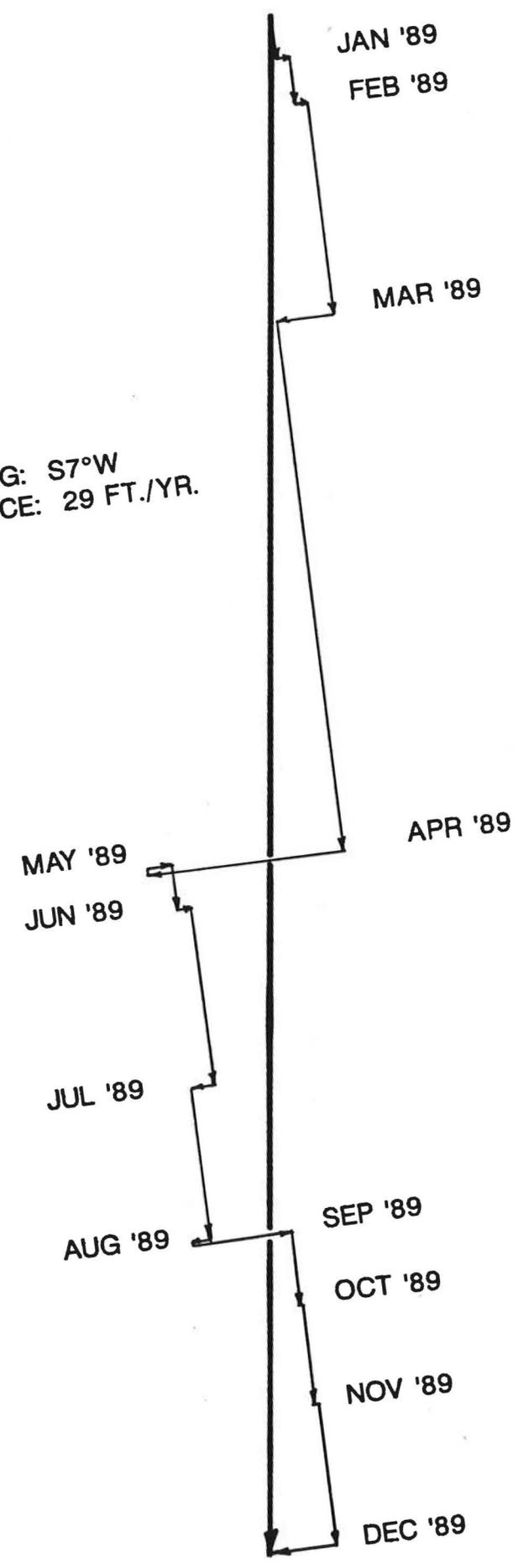
By _____
City Attorney

By _____
City Clerk

APPENDIX D

3TH. ST. LANDFILL GROUND WATER FLOW VECTOR DIAGRAM
JANUARY 1989 THRU DECEMBER 1989

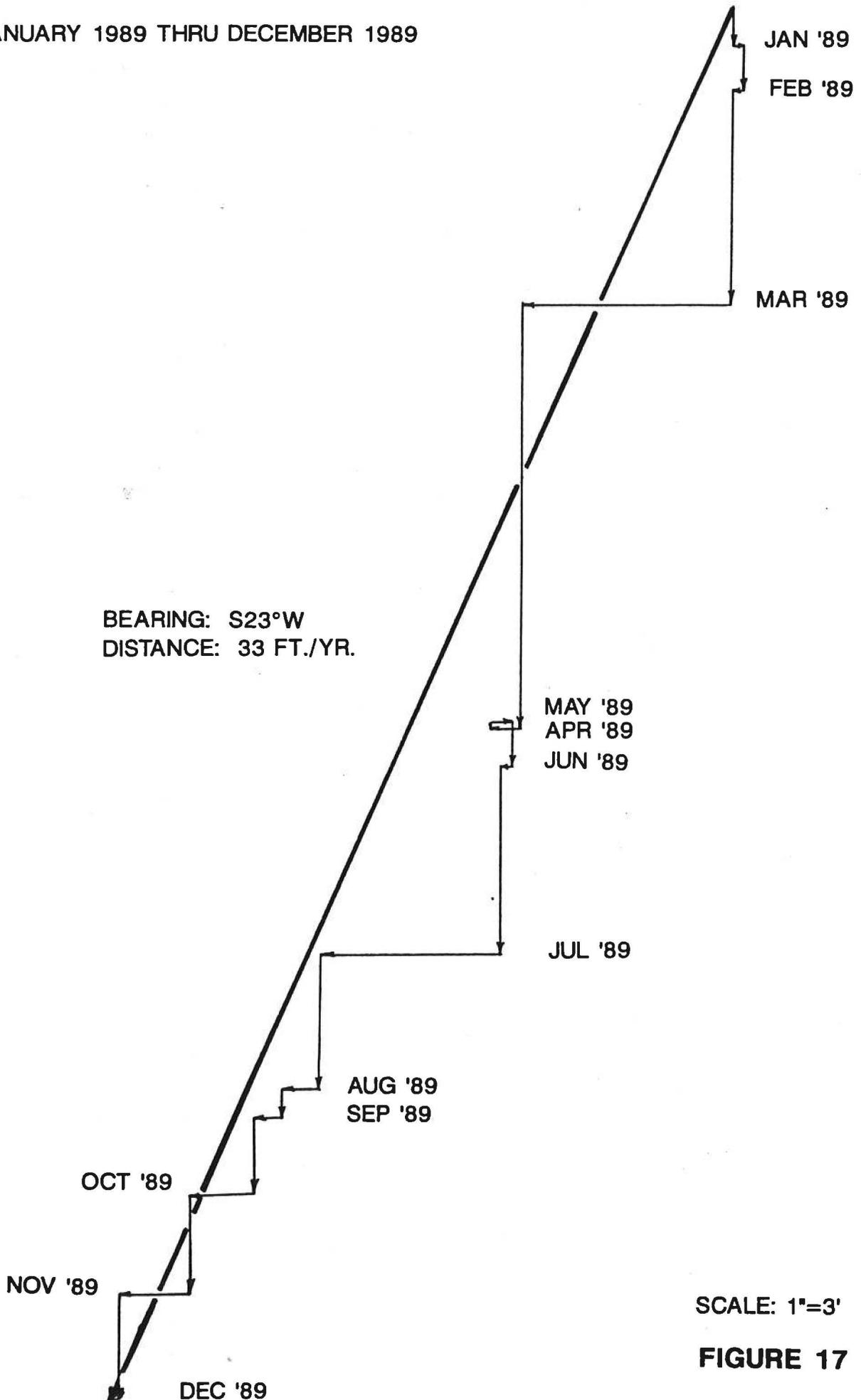
BEARING: S7°W
DISTANCE: 29 FT./YR.



SCALE: 1"=3'
FIGURE 16

28TH ST. LANDFILL GROUND WATER FLOW VECTOR DIAGRAM AT WELL B4

JANUARY 1989 THRU DECEMBER 1989



SCALE: 1"=3'

FIGURE 17

28TH ST. LANDFILL GROUND WATER FLOW VECTOR DIAGRAM AT WELL B1

JANUARY 1990 THRU DECEMBER 1990

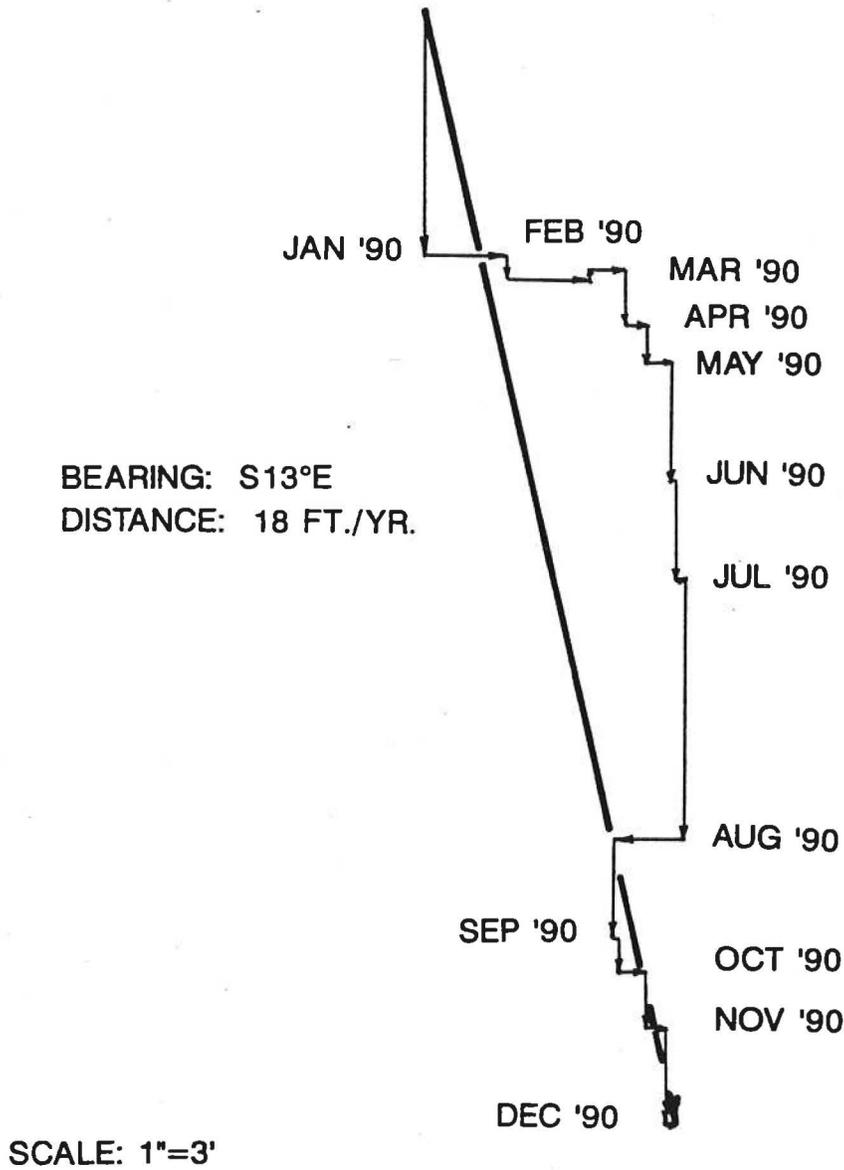


FIGURE 18



CITY OF SACRAMENTO

DEPARTMENT OF PUBLIC WORKS

ENGINEERING DIVISION

**CONTRACT SPECIFICATIONS
FOR
GROUNDWATER PRODUCTION WELL
AT 28TH STREET LANDFILL**

PN:YA06

VIKING DRILLERS, INC.

Dewatering Systems

801 Northport Drive
West Sacramento, CA 95691
(916) 372-4993
California License #476668

April 24, 1991

Mr. Keith Johnson
City of Sacramento
Solid Waste Division
921 10th Street, #500
Sacramento, California 95814-2715

RECEIVED

APR 26 1991

CITY OF SACRAMENTO
SOLID WASTE DIVISION

Dear Mr. Johnson:

Enclosed is our itemized bid form to construct one well at the 28th Street Landfill. Methods and materials to be used are as follows:

Drilling Method - Reverse head drilling with Gus Pech Bucket Rig - 24" diameter nominal bore hole size.

NOTE: Unit quantities for filter, grout and bentonite are adjusted to the 24" size.

Filter - 1/4" Birdseye pea gravel supplied by Schwartzgruber Sand & Gravel of Madison, California.

Pump Controller - Nema 3R, Raintite, fused disconnect w/H.O.A.

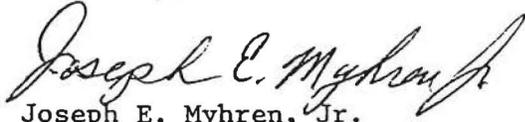
Riser Pipe - Stainless steel to surface through well seal, then Schedule 40 PVC to existing discharge.

Development - Pumping and surging with an electric submersible pump with bottom suction.

We will need a source of water for filling our water truck for the drilling operation. Estimate availability of material to be one to two weeks. Construction time - 3 days.

Thank you for the opportunity to quote you on this project.

Sincerely,


Joseph E. Myhren, Jr.
President

JEM/rb
Encl:

FAX (916) 372-1337

<u>Item No.</u>	<u>Est. Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Total</u>
Stainless Steel Well Casing, 304	48	LF	<u>71.25</u>	<u>3,420.00</u>
Conductor Casing	5	LF	<u>15.00</u>	<u>75.00</u>
Stainless Steel Well Screen, 304	15	LF	<u>100.93</u>	<u>1,513.95</u>
Gravel Pack	157 94.5	CF	<u>3.18</u>	<u>300.51</u>
Bentonite Seal	37 15	CF	<u>37.79</u>	<u>566.85</u>
Cement Bentonite Grout	15 125	CF	<u>4.67</u>	<u>630.45</u>
Locking Cap	1 cap	EA	<u>100.00</u>	<u>100.00</u>
Submersible Pump 50 GPM, Stainless with flow sleeve	1 pump	EA	<u>822.72</u>	<u>822.72</u>
Discharge Piping, Stainless in well	58	LF	<u>19.97</u>	<u>1,158.26</u>
Discharge Piping, Stainless/plastic from well to manhole	50	LF	<u>2.00</u>	<u>100.00</u>
Check Valve	1 valve	EA	<u>30.00</u>	<u>30.00</u>
Electrical Box with Weather Head	1 box	EA	<u>503.22</u>	<u>503.22</u>
Equipment				<u>3,769.00</u>
Labor				<u>4,912.00</u>
			<u>Total</u>	<u>\$17,901.96</u>

FOLLOWING FORMS TO BE FILLED OUT AND SIGNED

ONLY

IF AWARDED CONTRACT

DRUG-FREE WORKPLACE POLICY AND AFFIDAVIT

BID MAY BE DECLARED NONRESPONSIVE IF THIS FORM (COMPLETED) IS NOT ATTACHED.
Pursuant to City Council Resolution CC90-498 dated 6/26/90 the following is required.

The undersigned contractor certifies that it and all subcontractors performing under this contract will provide a drug-free workplace by:

1. Publishing a "Drug-Free Workplace" statement notifying employees that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance is prohibited in the contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition.
2. Establishing a Drug-Free Awareness Program to inform employees about:
 - a. The dangers of drug abuse in the workplace.
 - b. The contractor's policy of maintaining a drug-free workplace.
 - c. Any available drug counseling, rehabilitation, and employee assistance program.
 - d. The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace.
3. Notify employees that as a condition of employment under this contract, employees will be expected to:
 - a. Abide by the terms of the statement.
 - b. Notify the employer of any criminal drug statute conviction for a violation occurring in the workplace.
4. Making it a requirement that each employee to be engaged in the performance of the contract be given a copy on the "Drug-Free Workplace" statement.
5. Taking one of the following appropriate actions, within thirty (30) days of receiving notice from an employee or otherwise receiving such notice, that said employee has received a drug conviction for a violation occurring in the workplace:
 - a. Taking appropriate disciplinary action against such an employee, up to and including termination; or
 - b. Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a federal, state, or local health, law enforcement or other appropriate agency.

* I certify that any person employed by this company, corporation, or business has not been convicted of any criminal drug statute violation on any job site or project within three years of the date of my signature below.

EXCEPTION: _____
Date Violation Type Place of Occurrence Yes No
Was Employed By This Firm.
If additional space is required use back of this form.

* The above statement will also be incorporated as a part of each subcontract agreement for any and all subcontractors selected for performance on this project.

IN THE EVENT THIS COMPANY, CORPORATION, OR BUSINESS IS AWARDED THIS CONSTRUCTION CONTRACT, AS A RESULT OF THIS BID; THE CONTRACTOR WITH HIS/HER SIGNATURE REPRESENTS TO THE CITY THAT THE INFORMATION DISCLOSED IN THIS DOCUMENT IS COMPLETE AND ACCURATE. IT IS UNDERSTOOD AND AGREED THAT FALSE CERTIFICATION IS SUBJECT TO IMMEDIATE TERMINATION BY THE CITY.

The Representations Made Herein On This Document Are Made Under Penalty Of Perjury.

CONTRACTOR'S NAME: _____

BY: _____ Date: _____
Signature Title

Effects of violations: a. Suspension of payments under the contract. b. Suspension or termination of the contract. c. Suspension or debarment of the contractor from receiving any contract from the City of Sacramento for a period not to exceed five years.

WORKMEN'S COMPENSATION INSURANCE CERTIFICATION

TO THE CITY OF SACRAMENTO:

The undersigned does hereby certify that he is aware of the provisions of Section 3700 et seq. of the Labor Code which require every employer to be insured against liability for workmen's compensation claims or to undertake self-insurance in accordance with the provisions of said Code, and that he will comply with such provisions before commencing the performance of the work on this contract.

Viking Drillers, Inc. Bidder

By _____

Title _____

Address _____

Date _____

PLEASE READ CAREFULLY BEFORE SIGNING

To be signed by authorized corporate officer or partner or individual submitting the bid. If bidder is: (example)

1. An individual using a firm name, sign: "John Doe, and individual doing business as Blank Company."
2. An individual doing business under his own name, sign: your name only.
3. A co-partnership, sign: "John Doe and Richard Doe, co-partners doing business as Blank Company, by, John Doe, Co-Partner."
4. A corporation, sign: "Blank Company, by John Doe, Secretary." (or other title)

AGREEMENT

This Agreement dated for identification as of _____, between the CITY OF SACRAMENTO, a municipal corporation, (hereinafter called "City") and Viking Drillers, Inc. (hereinafter called "Contractor").

The parties hereto mutually agree to the terms and conditions set forth herein.

1. THE WORK

Contractor agrees to furnish all tools, equipment, apparatus, facilities, labor and material and transportation necessary to perform and complete in a good and workman like manner to the satisfaction of the City all the work called for and in the manner designated in and in strict conformity with the contract documents entitled Groundwater Production Well at 28th Street Landfill. In addition to the above-listed contract documents, the following documents shall also be included: this agreement, the standard City specifications, and any other plans or technical specifications.

2. PAYMENTS

City agrees to pay and Contractor agrees to accept in full payment for the above work in the sum of \$ 17,901.96, which sum is to be paid according to the schedule and the manner set forth herein and subject to additions, deductions, and withholding as provided in the contract documents.

3. METHOD OF PAYMENT

Subject to the terms and conditions of the contract, City shall cause payment to be made upon demand of the contract as follows: On the first of the month, Contractor shall present to the City Engineer a statement showing the amount of labor and materials incorporated in the work during the preceding month; the City Engineer shall inspect the statement and, if the City Engineer approves the statement, shall issue a certificate for ninety percent (90%) of the amount it shall find to be due. The final payment including retention if any, shall be made at the completion of the project.

4. COMMENCEMENT OF THE WORK

Contractor shall commence the work when directed to do so by the City. It will diligently prosecute the work to its final completion, which completion shall be on or before 30 calendar days from and after direction by the City to proceed. Time is and shall be of the essence in these contract documents.

5. GUARANTEE

Except as otherwise expressly provided in the Specifications, and excepting only items of routine maintenance, ordinary wear and tear and unusual abuse or neglect, Contractor guarantees all work executed by him and all supplies, materials and devices of whatsoever nature incorporated in, or attached to the work, or otherwise delivered to City as a part of the work pursuant to the Contract, to be absolutely free of all defects of workmanship and materials for a period of one year after final acceptance of the entire work by the City of Sacramento. Contractor shall repair or replace any or all such work or material, together with all or any other work or material which may be displaced or damaged in so doing, that may prove defective in workmanship or material within said one year guarantee period without expense or charge of any nature whatsoever to City.

In the event of failure to comply with the above described conditions within five days' time after being notified in writing, then the City shall have the right to proceed to have any and all defects repaired and made good at the expense of the Contractor who will pay said expense upon demand.

6. INDEMNITY AND HOLD HARMLESS

Contractor shall assume the defense of, and indemnify and save harmless, the City, its officers, employees, and agents, and each and every one of them, from and against all actions, damages, claims, losses or expenses of every type and description to which they may be subjected or put, by reason of, or resulting from, the performance of the work, provided that such action, damage, claim, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to, or destruction of property, whether upon or off the work, including the loss of use thereof, and is caused in whole or in part by any negligent act or omission of the Contractor, and subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, whether or not it is caused in part by a party indemnified hereunder.

7. INSURANCE

During the term of this Agreement and until final completion and acceptance of the work required by the Contract Documents, Contractor shall maintain in full force and effect at his own cost and expense the following insurance coverage:

(A) Worker's Compensation

Full Worker's Compensation Insurance and Employer's Liability policy or provide evidence of ability to undertake self-insurance. Limits of coverage shall be at least \$1,000,000 for any one person. In the event Contractor is self-insured, he shall furnish a Certificate of Permission to Self-Insure by the Department of Industrial Relations Administration of Self-Insurance, Sacramento.

(B) **Comprehensive Auto and General Liability Insurance**

Contractor must provide sufficient broad coverage to include:

**Comprehensive Auto and General Liability Insurance
Products and Completed Operation Liability
Broad Form Property Damage Liability
Contractual Liability
Personal Injury Liability**

The amount of the policy shall be no less than \$1,000,000 Single Limit per occurrence, issued by an admitted insurer or insurers as defined by the California Insurance Code, providing that the City of Sacramento, its officers, employees and agents are to be Named Insured under the policy, and the policy shall stipulate that this insurance will operate as Primary insurance and that no other insurance effected by City or other Named Insured will be called on to contribute to a loss covered thereunder.

(C) **Certificate of Insurance**

Contractor shall have City's standard Certificate of Insurance completed and filed with the Finance Director within fifteen (15) days of the execution of this Agreement. Said policies shall provide that no cancellation, major change in coverage, or expiration may be effected by the insurance company or the insured during the term of this Agreement, without first giving to City thirty (30) days written notice prior to the effective date of such cancellation or change in coverage.

(D) **Worker's Compensation Certificate**

Contractor by executing this contract acknowledges and certifies that he is aware of the provisions of Section 37000 et seq. of the Labor Code which requires every employer to be insured against liability for worker's compensation claims or to undertake self insurance in accordance with the provisions of said Code and that he will comply with such provisions before commencing the performance of the work on this contract .

IN WITNESS WHEREOF, the parties hereto have signed this Agreement on the date set for opposite their names.

CONTRACTOR

Under penalty of perjury, I certify that the taxpayer identification number and all other information provided here are correct

DATE _____

BY _____

Title

Federal Tax ID # or Social Security #

CITY OF SACRAMENTO
a municipal corporation

DATE: _____

By _____
City Manager

ATTEST:

City Clerk
ORIGINAL APPROVED AS TO FORM

FUNDING AVAILABLE: 415-310-3147-4258

City Attorney

Accounting Officer

EXCERPTS FROM THE CALIFORNIA LABOR CODE RELATING TO
APPRENTICES ON PUBLIC WORKSChapter 1 of Division 2
APPRENTICES ON PUBLIC WORKS*(Note: Boldface type denotes key points.)*

1773.3. An awarding agency whose public works contract falls within the jurisdiction of Section 1777.5 shall, within five days of the award, send a copy of the award to the Division of Apprenticeship Standards. When specifically requested by a local joint apprenticeship committee, the division shall notify the local joint apprenticeship committee regarding all such awards applicable to the joint apprenticeship committee making the request. Within five days of a finding of any discrepancy regarding the ratio of apprentices to journeymen, pursuant to the certificated fixed number of apprentices to journeymen, the awarding agency shall notify the Division of Apprenticeship Standards.

(Added by Stats. 1978, Ch. 1249)

1776. (a) Each contractor and subcontractor shall keep an accurate payroll record, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by him or her in connection with the public work.

(b) The payroll records enumerated under subdivision (a) shall be certified and shall be available for inspection at all reasonable hours at the principal office of the contractor on the following basis:

(1) A certified copy of an employee's payroll record shall be made available for inspection or furnished to the employee or his or her authorized representative on request.

(2) A certified copy of all payroll records enumerated in subdivision (a) shall be made available for inspection or furnished upon request to a representative of the body awarding the contract, the Division of Labor Standards Enforcement and the Division of Apprenticeship Standards of the Department of Industrial Relations.

(3) A certified copy of all payroll records enumerated in subdivision (a) shall be made available upon request by the public for inspection or copies thereof made; provided, however, that a request by the public shall be made through either the body awarding the contract, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement. If the requested payroll records have not been provided pursuant to paragraph (2), the requesting party shall, prior to being provided the records, reimburse the costs of preparation by the contractor, subcontractors, and the entity through which the request was made. The public shall not be given access to the records at the principal office of the contractor.

(c) Each contractor shall file a certified copy of the records enumerated in subdivision (a) with the entity that requested the records within 10 days after receipt of a written request.

(d) Any copies of records made available for inspection as copies and furnished upon request to the public or any public agency by the awarding body, the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement shall be marked or obliterated in such a manner as to prevent disclosure of an individual's name, address and social security number. The name and address of the contractor awarded the contract or performing the contract shall not be marked or obliterated.

(e) The contractor shall inform the body awarding the contract of the location of the records enumerated under subdivision (a), including the street address, city and county, and shall, within five working days, provide a notice of a change of location and address.

(f) In the event of noncompliance with the requirements of this section, the contractor shall have 10 days in which to comply subsequent to receipt of written notice specifying in what respects the con-

tractor must comply with this section. Should noncompliance still be evident after the 10-day period, the contractor shall, as a penalty to the state or political subdivision on whose behalf the contract is made or awarded, forfeit twenty-five dollars (\$25) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due.

(g) The body awarding the contract shall cause to be inserted in the contract stipulations to effectuate this section. These stipulations shall fix the responsibility for compliance with this section on the prime contractor.

(h) The director shall adopt rules consistent with the California Public Records Act (Ch. 3.5 (commencing with Sec. 6250), of Div. 7, Title 1, Gov. C.) and the Information Practices Act of 1977, (Title 1.8 (commencing with Sec. 1798) Pt. 4, Div. 3, Civ. C.) governing the release of these records, including the establishment of reasonable fees to be charged for reproducing copies of records required by this section.

(Amended 1983 ch. 681)

1777.5. Nothing in this chapter shall prevent the employment of properly registered apprentices upon public works.

Every such apprentice shall be paid the standard wage paid to apprentices under the regulations of the craft or trade at which he or she is employed, and shall be employed only at the work of the craft or trade to which he or she is registered.

Only apprentices, as defined in Section 3077, who are in training under apprenticeship standards and written apprentice agreements under Chapter 4 (commencing with Section 3070) of Division 3, are eligible to be employed on public works. The employment and training for each apprentice shall be in accordance with the apprenticeship standards and apprentice agreements under which he or she is training.

When the contractor to whom the contract is awarded by the state or any political subdivision, or any subcontractor under him or her, in performing any of the work under the contract or subcontract, employs workers in any apprenticeable craft or trade, the contractor and subcontractor shall apply to the joint apprenticeship committee administering the apprenticeship standards of the craft or trade in the area of the site of the public work for a certificate approving the contractor or subcontractor under the apprenticeship standards for the employment and training of apprentices in the area or industry affected. However, approval as established by the joint apprenticeship committee or committees shall be subject to the approval of the Administrator of Apprenticeship. The joint apprenticeship committee or committees, subsequent to approving the subject contractor or subcontractor, shall arrange for the dispatch of apprentices to the contractor or subcontractor in order to comply with this section. Every contractor and subcontractor shall submit contract award information to the applicable joint apprenticeship committee which shall include an estimate of journeyman hours to be performed under the contract, the number of apprentices to be employed, and the approximate dates the apprentices will be employed. There shall be an affirmative duty upon the joint apprenticeship committee or committees administering the apprenticeship standards of the craft or trade in the area of the site of the public work to ensure equal employment and affirmative action in apprenticeship for women and minorities. Contractors or subcontractors shall not be required to submit individual ap-

lications for approval to local joint apprenticeship committees provided they are already covered by the local apprenticeship standards. The ratio of work performed by apprentices to journeymen who shall be employed in the craft or trade on the public work may be the ratio stipulated in the apprenticeship standards under which the joint apprenticeship committee operates, but, except as otherwise provided in this section, in no case shall the ratio be less than one hour of apprentices work for every five hours of labor performed by a journeyman. However, the minimum ratio for the land surveyor classification shall not be less than one apprentice for each five journeymen.

Any ratio shall apply during any day or portion of a day when any journeyman, or the higher standard stipulated by the joint apprenticeship committee, is employed at the job site and shall be computed on the basis of the hours worked during the day by journeymen so employed, except for the land surveyor classification. The contractor shall employ apprentices for the number of hours computed as above before the end of the contract. However, the contractor shall endeavor, to the greatest extent possible, to employ apprentices during the same time period that the journeymen in the same craft or trade are employed at the job site. Where an hourly apprenticeship ratio is not feasible for a particular craft or trade, the Division of Apprenticeship Standards, upon application of a joint apprenticeship committee, may order a minimum ratio of not less than one apprentice for each five journeymen in a craft or trade classification.

The contractor or subcontractor, if he or she is covered by this section, upon the issuance of the approval certificate, or if he or she has been previously approved in the craft or trade, shall employ the number of apprentices or the ratio of apprentices to journeymen stipulated in the apprenticeship standards. Upon proper showing by the contractor that he or she employs apprentices in the craft or trade in the state on all of his or her contracts on an annual average of not less than one hour of apprentice work for every five hours of labor performed by a journeyman, or in the land surveyor classification, one apprentice for each five journeymen, the Division of Apprenticeship Standards may grant a certificate exempting the contractor from the 1-to-5 hourly ratio as set forth in this section. This section shall not apply to contracts of general contractors or to contracts of specialty contractors not bidding for work through a general or prime contractor, when the contracts of general contractors or those specialty contractors involve less than thirty thousand dollars (\$30,000) or 20 working days. Any work performed by a journeyman in excess of eight hours per day or 40 hours per week, shall not be used to calculate the hourly ratio required by this section.

"Apprenticeable craft or trade" as used in this section, means a craft or trade determined as an apprenticeable occupation in accordance with rules and regulations prescribed by the Apprenticeship Council. The joint apprenticeship committee shall have the discretion to grant a certificate, which shall be subject to the approval of the Administrator of Apprenticeship, exempting a contractor from the 1-to-5 ratio set forth in this section when it finds that any one of the following conditions is met:

(a) Unemployment for the previous three-month period in the area exceeds an average of 15 percent.

(b) The number of apprentices in training in such area exceeds a ratio of 1 to 5.

(c) There is a showing that the apprenticeable craft or trade is replacing at least one-thirtieth of its journeymen annually through apprenticeship training, either on a statewide basis, or on a local basis.

(d) Assignment of an apprentice to any work performed under a public works contract would create a condition which would jeopardize his or her life or the life, safety, or property of fellow employees or the public at large or if the specific task to which the apprentice is to be assigned is of such a nature that training cannot be provided by a journeyman.

When exemptions are granted to an organization which represents contractors in a specific trade from the 1-to-5 ratio on a local or

statewide basis the member contractors will not be required to submit individual applications for approval to local joint apprenticeship committees, if they are already approved by the local apprenticeship standards.

A contractor to whom the contract is awarded, or any subcontractor under him or her, who, in performing any of the work under the contract, employs journeymen or apprentices in any apprenticeable craft or trade and who is not contributing to a fund or funds to administer and conduct the apprenticeship program in any craft or trade in the area of the site of the public work, to which fund or funds other contractors in the area of the site of the public work are contributing, shall contribute to the fund or funds in each craft or trade in which he or she employs journeymen or apprentices on the public work in the same amount or upon the same basis and in the same manner as the other contractors do, but where the trust fund administrators are unable to accept the funds, contractors not signatory to the trust agreement shall pay a like amount to the California Apprenticeship Council. The contractor or subcontractor may add the amount of the contributions in computing his or her bid for the contract. The Division of Labor Standards Enforcement is authorized to enforce the payment of the contributions to the fund or funds as set forth in Section 227.

The body awarding the contract shall cause to be inserted in the contract stipulations to effectuate this section. The stipulations shall fix the responsibility of compliance with this section for all apprenticeable occupations with the prime contractor.

All decisions of the joint apprenticeship committee under this section are subject to Section 3081.

(Amended by Stats. 1989, Ch. 1224)

1777.6. It shall be unlawful for an employer or a labor union to refuse to accept otherwise qualified employees as registered apprentices on any public works, on the ground of the race, religious creed, color, national origin, ancestry, sex, or age, excepted as provided in Section 3077, of such employee.

(Amended by Stats. 1976, Ch. 1179)

1777.7. (a) In the event a contractor or subcontractor willfully fails to comply with Section 1777.5, the Director of Industrial Relations shall deny to the contractor or subcontractor, both individually and in the name of the business entity under which the contractor or subcontractor is doing business, the right to bid on, or to receive, any public works contract for a period of up to one year for the first violation and for a period of up to three years for the second and subsequent violations. Each period of debarment shall run from the date the determination of noncompliance by the Administrator of Apprenticeship becomes and order of the California Apprenticeship Council.

(b) A contractor or subcontractor who violates Section 1777.5 shall forfeit as a civil penalty the sum of fifty dollars (\$50) for each calendar day of noncompliance. Notwithstanding Section 1727, upon receipt of a determination that a civil penalty has been imposed, the awarding body shall withhold the amount of the civil penalty from contract progress payments then due or to become due.

(c) In lieu of the penalty provided for in subdivision (a) or (b), the director may for a first time violation and with the concurrence of the joint apprenticeship committee, order the contractor or subcontractor to provide apprentice employment equivalent to the work hours that would have been provided for apprentices during the period of non-compliance.

(d) Any funds withheld by the awarding body pursuant to this section shall be deposited in the General Fund if the awarding body is a state entity, or in the equivalent fund of an awarding body if the awarding body is an entity other than the state.

(e) The interpretation and enforcement of Section 1777.5 and this section shall be in accordance with the rules and procedures of California Apprenticeship Council.

(Amended by Stats. 1989, Ch. 1224)

GREATER SACRAMENTO AREA PLAN (GSAP) EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS
(Executive Order 11246)

The City of Sacramento is signatory to the "Greater Sacramento Area Plan" (hereinafter referred to as the "Plan") a joint industry-labor-minority representative agreement established for the purpose of increasing the employment of minorities in all phases and at all levels of skill in the building and construction industry within the greater Sacramento area. The City has adopted the "Plan" as its affirmative action program for City construction contracts and requires a contractor and his subcontractors be signatory to the Plan in order to be eligible for an award of a City contract. Additional information regarding the Plan is available at its headquarters office located at 2220 Watt Avenue, Suite B-5, Sacramento, 95825, Telephone No. (916) 489-3685.

1. As used in these specifications:
 - a. "Covered area" means the geographical area within the following counties: Amador, El Dorado, Nevada, Placer, Sacramento, Sierra, and Yolo.
 - b. "Director" means Director, of GSAP, or any person to whom the Director delegates authority;
 - c. "Minority" includes:
 - (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
 - (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race;
 - (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent or the Pacific Islands); and
 - (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.
3. If the Contractor is signatory under Part I of the GSAP a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of the GSAP. Each Contractor or Subcontractor participating in the GSAP is individually required to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.
4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.
5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.
6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.
7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully and shall implement affirmative action steps at least as extensive as the following:
 - a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

- b. Establish and maintain a current list of minority and female recruitment sources, provided written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.
- c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.
- d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
- e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.
- f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
- g. Review at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions, including specific review of these items with onsite supervisory personnel such as Superintendents, General foreman, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
- h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.
- i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.
- j. Encourage present minority and female employees to recruit other minority persons and women and where reasonable, provide after school summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.
- k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR, Part 60.3.
- l. Conduct at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
- m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.
- n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
- o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
- p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.
9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).
10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex or national origin.
11. The Contractor shall not enter into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.
12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended and its implementing regulations, by the Office of Federal Contract Compliance Program. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
13. The Contractor, in fulfilling its obligations under these specifications shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.
14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.
15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

GSAP REPORTING REQUIREMENTS

- (1) All contract and subcontracts (over \$10,000) are subject to the reporting requirements.
- (2) Contractors must submit a CC 257 (Monthly Employee Utilization Report) to the GSAP at 2220 Watt Avenue, Suite B-5, Sacramento, California 95825.
- (3) If the Contractor is already required to submit CC 257 there is no need to submit an additional form.
- (4) This report must arrive at the GSAP no later than the 5th working day of each month.
- (5) Failure to report is automatic cause to find the Contractor in noncompliance.
- (6) Each report is monitored by GSAP and measured against the specified goals for minorities and women.

SUBSTITUTION OF SECURITIES FOR MONEY WITHHELD

At any time prior to final payment, Contractor may request substitution of securities for any money withheld by the City to ensure performance of the contract. At the expense of Contractor, securities equivalent to the money withheld may be deposited with the City or with Wells Fargo Bank as escrow agent according to a separate Security Agreement. Securities eligible for substitution shall include those listed in Section 16430 of the Government Code or bank or savings and loan certificates of deposit. A fee set by the City Council shall be charged for such substitution.

8. NO PAYMENT FOR DELAYS

No damage or compensation of any kind shall be paid to Contractor or any subcontractor because of delays in the progress of the work whether such delays qualify for extensions of time under this agreement or not, and Contractor specifically waives all claims against City, its officials and employees, for any loss or damages sustained by reason of delays beyond the completion date, including modifications deemed necessary or desirable by the City to complete the work.

9. TERMINATION

If the Contractor should abandon the work or sublet it without the City's permission, or if the City Director of Public Works should determine the conditions of the contract are not being fulfilled by the Contractor, or the Contractor breaches any terms or conditions of the contract, then the City may after giving ten days written notification to the Contractor, terminate the contract, unless the Contractor corrects the deficiencies contained in the notice before the expiration of the ten days contained in the notice. If the Contractor does not so correct, then the City shall notify the Contractor that the contract is terminated, and the City may complete the contract itself. In the event the completion costs the City more than the funds remaining under the contract, then any additional cost shall be paid by the Contractor. In the event the contract is completed for less funds than remain in the contract balances, then the City shall refund any excess to the Contractor.

10. SUBSTITUTION OF SECURITIES

At any time prior to final payment, Contractor may request substitution of securities for any money withheld by the City to insure performance of this contract. At the expense of Contractor, securities equivalent to the money withheld may be deposited with the City or with the Wells Fargo Bank as escrow agent according to a separate security agreement. Any securities eligible for substitution shall conform to Section 16430 of the Government Code or be bank or savings and loan certificates of deposit. Fees set forth by the City Council shall be charged for such substitution.

NAME AND LOCATION OF CONTRACTOR

FEDERAL FUNDING AGENCY

5. CONSTRUCTION TRADE	6. WORK HOURS OF EMPLOYMENT (Federal & Non-Federal) Classifications	6. WORK HOURS OF EMPLOYMENT (Federal & Non-Federal)										9. TOTAL NUMBER OF EMPLOYEES		10. TOTAL NUMBER OF MINORITY EMPLOYEES			
		6a. TOTAL ALL EMPLOYEES BY TRADE		6b. BLACK (Not of Hispanic Origin)		6c. HISPANIC		6d. ASIAN OR PACIFIC ISLANDERS		6e. AMERICAN INDIAN OR ALASKAN NATIVE		7. MINORITY PERCENTAGE	8. FEMALE PERCENTAGE	M	F	M	F
		M	F	M	F	M	F	M	F	M	F						
	Journey worker																
	APPRENTICE																
	TRAINEE																
	SUB-TOTAL																
	Journey worker																
	APPRENTICE																
	TRAINEE																
	SUB-TOTAL																
	Journey worker																
	APPRENTICE																
	TRAINEE																
	SUB-TOTAL																
	Journey worker																
	APPRENTICE																
	TRAINEE																
	SUB-TOTAL																
	Journey worker																
	APPRENTICE																
	TRAINEE																
	SUB-TOTAL																
	TOTAL JOURNEY WORKERS																
	TOTAL APPRENTICES																
	TOTAL TRAINEES																
	GRAND TOTAL																

11. COMPANY OFFICIAL'S SIGNATURE AND TITLE

12. TELEPHONE NUMBER (include area code)

13. DATE SIGNED

PAGE _____ OF _____

INSTRUCTIONS FOR FILING MONTHLY EMPLOYMENT UTILIZATION REPORT (CC-257)

The Monthly Utilization Report is to be completed by each subject contractor (both prime and sub) and signed by a responsible official of the company. The reports are to be filed by the 5th day of each month during the term of the contract, and they shall include the total work-hours for each employee classification in each trade in the covered area for the monthly reporting period. The prime contractor shall submit a report for its aggregate work force and collect and submit reports for each subcontractor's aggregate work force to the Federal compliance agency that has Executive Order 11246 responsibility. (Additional copies of this form may be obtained from the U.S. Department of Labor, Employment Standards Administration, OFCCP's regional office for your area.)

- | | |
|--|---|
| Compliance Agency | .U.S. Government agency assigned responsibility for equal employment opportunity. (Secure this information from the contracting officer.) |
| Federal Funding Agency | .U.S. Government agency funding project (in whole or in part). If more than one agency, list all. |
| Contractor | .Any contractor who has a construction contract with the U.S. Government or a contract funded in whole or in part with Federal funds. |
| Minority | .Includes Blacks, Hispanics, American Indians, Alaskan Natives, and Asian and Pacific Islanders—both men and women. |
| 1. Covered Area | .Geographic area identified in Notice required under 41 CFR 60-4.2. |
| 2. Employer's Identification Number | .Federal Social Security Number used on Employer's Quarterly Federal Tax Return (U.S. Treasury Department Form 941). |
| 3. Current Goals (Minority & Female) | .See contract Notification. |
| 4. Reporting Period | .Monthly, or as directed by the compliance agency, beginning with the effective date of the contract. |
| 5. Construction Trade | .Only those construction crafts which contractor employs in the covered area. |
| 6. Work-Hours of Employment (a-e) | <p>a. The total number of male hours and the total number of female hours worked by employees in each classification.</p> <p>b.-e. The total number of male hours and the total number of female hours worked by each specified group of minority employees in each classification.</p> |
| Classification | .The level of accomplishment or status of the worker in the trade (Journey Worker, Apprentice, Trainee) |
| 7. Minority Percentage | .The percentage of total minority work-hours of all work-hours (the sum of columns 6b, 6c, 6d, and 6e divided by column 6a; just one figure for each construction trade). |
| 8. Female Percentage | .For each trade the number reported in 6a. F divided by the sum of the numbers reported in 6a. M and F. |
| 9. Total Number of Employees | .Total number of male and total number of female employees working in each classification of each trade in the contractor's aggregate work force during reporting period. |
| 10. Total Number of Minority Employees | .Total number of male minority employees and total number of female minority employees working in each classification in each trade in the contractor's aggregate work force during reporting period. |

GOALS AND TIMETABLES
SACRAMENTO, CALIFORNIA

APPENDIX A

The following goals and timetables for female utilization shall be included in all construction contracts and subcontracts in excess of \$10,000. The goals are applicable to the contractor's aggregate on-site construction workforce whether or not part of that workforce is performing work on a covered construction contract or subcontract.

AREA COVERED

Goals for Women apply Nationwide

GOALS AND TIMETABLES

Timetable	Goals (percent)
Until further notice	----- 6.9

APPENDIX B

Until further notice the following goals and timetables for minority utilization shall be included in all construction contracts and subcontracts in excess of \$10,000 to be performed in the respective covered areas. The goals are applicable to the contractor's aggregate on-site construction workforce whether or not part of that workforce is performing work on a covered construction contract or subcontract.

SACRAMENTO, CALIFORNIA

Area covered - Sacramento, Yolo, and Placer Counties, California.

GOALS AND TIMETABLES

Timetable	Trade	Goal (percent)
Until further notice	All-----	17.5 to 20.0

SPECIAL PROVISIONS

**CITY OF SACRAMENTO
SOLID WASTE DIVISION
TECHNICAL SPECIFICATION
GROUNDWATER PRODUCTION WELL**

GENERAL	1
CITY OF SACRAMENTO ENGINEER ON SITE	1
DRILLING METHOD	2
GRAVEL ENVELOPE	2
BENTONITE SEAL	2
GROUT SEAL	2
CASING SPECIFICATION	3
A. Conductor Casing	3
B. Well Casing	3
C. Well Screen	4
REFUSE FOUND	4
WELL DEVELOPMENT	5
ABANDONMENT OF HOLE	5
LOCATION OF WELLS	5
WELL LOGS	6
SITE EXAMINATION	6
SITE PREPARATION	6
CLEANUP	6
GROUNDWATER PUMP INSTALLATION	7
WORK TO BE PERFORMED BY CITY FORCES	7
SITE SAFETY	7
FIELD MONITORING REQUIREMENTS	10
BASIS FOR AWARD	11

Project Area Map

Attachment A

Site Map with Well Location

B

Well Configuration

C

Geologic Cross Section

Figure 1

CITY OF SACRAMENTO
SOLID WASTE DIVISION
TECHNICAL SPECIFICATION
GROUNDWATER PRODUCTION WELL

GENERAL

Work includes furnishing of all labor, materials, water, transportation, tools supplies, and appurtenances required for completing in a good workmanlike manner the drilling and construction of one groundwater production well. The well shall be in conformity with these specifications and all work must be completed to the satisfaction of the assigned City Engineer (City's Representative).

The Contractor shall be responsible for furnishing all tests, securing permits (both with the Department of Water Resources and the Sacramento County Environmental Health Department) and filling of the well log as required by law.

The Contractor shall use every precaution to insure straight, plumb wells without bends or offsets.

During construction, except when drilling is in progress, the top of each well shall be capped securely to prevent entrance of foreign matter and tampering.

CITY OF SACRAMENTO ENGINEER ON SITE

A City of Sacramento Engineer will be on site to log the boring, determine gravel pack and make field decisions and changes to the well construction specified herein.

DRILLING METHOD

The drilling method proposed by the bidder shall be briefly described in the bid submittal for the one single-cased well. The drilling method must meet the following performance objectives:

1. Meet the required configuration of the completed well (See Attachment C);
2. Minimize disturbance of the geological materials penetrated;
3. Minimize the introduction of air, fluids and mud that may interfere with the chemical quality of the water and/or inhibit optimal well development.

GRAVEL ENVELOPE

The annular space between the well screen and the bore hole shall be filled to the top of the screened casing just above the highest perforations with clean selected filter pack gravel. The filter pack shall be washed 1/4" pea gravel, unless specified otherwise by the City representative.

BENTONITE SEAL

Install approximately five (5) feet of bentonite pellets on top of gravel envelope.

GROUT SEAL

A cement bentonite grout seal shall extend from top of bentonite seal to the bottom of the 1.5' concrete slab. 4000psi concrete will be used to grout between the 1.5' concrete slab & the casing. Grouting shall be done using a grout pipe extended to the bottom of the annular space and remain submerged in the grout

during the entire operation. The grout shall be applied in one continuous operation for each well. The grout mixture shall be 6:1 Type I Portland cement (9 sack mixture) and bentonite powder unless noted otherwise.

CASING SPECIFICATION:

A. Conductor Casing

1. Casing diameter shall be 12" minimum, 1/4" thick steel pipe.
2. Casing shall extend at least 6" above the top of the concrete slab.
3. Conductor casing shall have a lockable well head cover which prevents rain water from entering the casing. The cap shall be a tight fit over the conductor casing.

B. Well Casing: (above the well screen)

1. Minimum eight (8) inches, inside diameter.
2. Material shall be 304 Grade .148 thick SCH. 10 stainless steel.
3. Well casing shall be welded or flush threaded. If welded, all welding shall conform to American Welding Society (AWS) codes and standards for 304 (8-12% Nickel) stainless steel. Welds will be slagged and wire brushed before installation.
4. It shall be the responsibility of the contractor to fabricate the casing from lengths of pipe in such a manner that there will be no separation or parting of the joints during or after their installation in the hole. The inside of the casing shall remain clear of any obstructions or any reductions of its inside diameter. The use of any glue or sealing compound is prohibited.
5. The well casing shall extend from top of the well screen to the elevation specified in Attachment C and, shall be flush thread connected or welded to the well screen material without the use of any glue or sealing compound.
6. The well and conductor casing shall have a proper electrical ground meeting City and State standards.

CITY OF SACRAMENTO
SOLID WASTE DIVISION
TECHNICAL SPECIFICATION
GROUNDWATER PRODUCTION WELL

C. Well Screen:

1. Material type shall be 304 grade .130 nominal thickness stainless steel v-wire production well screen.
2. Minimum eight (8) inches, inside diameter.
3. Well screen slot size shall be No. 10 (.010") or equivalent unless the City's Engineer determines that adjustments are necessary to assure that the combining features of slot size, gravel filter pack and soil type are compatible. The bottom of the screened casing shall be capped off.
4. It shall be the responsibility of the contractor to install the well screen lengths in such manner that there will be no separation or parting of the joints during or after their installation in the hole. The inside shall remain clear of any obstruction or any reduction of its inside diameter. All joints shall be flush threaded or welded per AWS codes and standards. The use of any glue or sealing compound is prohibited.
5. The well screen shall extend from elevation -25 feet U.S.G.S. to elevation -10 feet U.S.G.S. (15 feet total screen length). See Attachment C. The City's Engineer may vary these elevations depending on field conditions. The well screen shall be connected to the well casing as specified in the well casing section. The well screen elevations in this section were determined from the fluctuating groundwater levels that occur throughout the year.

REFUSE FOUND

If refuse is encountered during drilling, the contractor shall immediately notify the City's Engineer before drilling any further. It is not anticipated that refuse will be encountered at the well location. However, some concrete and asphalt debris may be encountered in the near surface soils.

WELL DEVELOPMENT

After the grout seal has set, as determined by the engineer, the well shall be developed.

The Contractor shall furnish all necessary pumps, compressors, plungers, bailing, or other needed equipment and shall develop the well until the produced water is clear and optimum production is achieved from the water bearing strata.

After completion of well development, the Contractor shall remove, by bailing or pumping, any sand or foreign material that may have been deposited in the well casing.

ABANDONMENT OF HOLE

In the event the Contractor abandons the hole because of causes which prevent completion of the well as specified, the Contractor, at his own expense, shall remove the casing to a depth of at least four (4) feet below the ground surface, perforate the casing as necessary, completely fill the hole and the annular space to six (6) inches above the abandoned casing with cement grout or other material approved by the City's Engineer, and backfill remaining hole with natural material.

LOCATION OF WELL

The location of the groundwater production well is shown on the site map, Attachment B. The groundwater production well secured by the contract will be installed in the 35 acre expansion area of the City of Sacramento's landfill disposal site located at 28th and A streets. The drilling location and ground elevations will be marked by City staff. The contractor will not be required to provide surveying services.

WELL LOGS

The City's Engineer shall log the well during drilling, and provide copies of the logs to the Contractor. Logs of monitoring wells shall be filed by the Contractor with the Department of Water Resources (DWR), on forms provided by DWR, pursuant to Water Code Section 13751. Soil shall be described according to the Unified Soil Classification System. Rock shall be described in a manner appropriate for the purpose of the investigation.

SITE EXAMINATION

The Contractor shall visit the work site and examine the premises in order to be completely familiar with the scope of work. Failure to examine the site shall not constitute basis for compensation claims for extra work occasioned by lack of knowledge or location of conditions which could affect the scope of work.

SITE PREPARATION

Any grading required for drilling purposes shall be performed by city forces with landfill equipment. Any other site preparation for drilling purposes shall be included in the bid price.

CLEANUP

Following completing of his work, the Contractor shall remove from the premises all excess materials, tools, and equipment used in the execution of his work. The well site and any adjacent area utilized shall be left free of litter and other debris.

GROUNDWATER PUMP INSTALLATION

After the well has been developed, the groundwater pump and piping shall be installed. The required continuous flow is 50 gallons per minute. The estimated pumping head is 80 feet. Water shall be discharged into a gravity flow storm sewer line. All submerged piping will be 304 grade stainless steel or plastic. The contractor shall furnish the groundwater pump, and appurtenant items necessary for a complete and operational installation such as: 1) electrical box (NEMA 4 enclosure) and weather head, 2) groundwater pump flow sleeve, 3) wiring, 4) pipe check valve 5) piping to storm sewer line. The groundwater pump shall be a stainless steel Grundfos 40S15-5 4" or equivalent. The City Engineer shall approve any substitutions. Installation shall be as shown in Attachment C. Any field modifications to this installation shall be approved by the City Engineer. The Contractor shall backfill the discharge pipe trench from the production well to the existing manhole. The contractor is not responsible for repair of the asphalt roadway destroyed during the trenching operation. The City Engineer shall inspect all piping for leaks before the trench is backfilled.

230
3 PHASE

WORK TO BE PERFORMED BY CITY FORCES

1. Final connection of the discharge line to the storm sewer line will be performed by the City Flood Control and Sewer Division. All trenching shall be done by the Contractor.
2. Final connection of the incoming electrical line to the electrical box. The electrical box and weather head shall be provided by the Contractor.

SITE SAFETY

The groundwater production well will be installed at the City's 28th Street Landfill. The permitted 113 acre landfill East of 28th Street has been in use since 1973 and currently has approximately 4.36 million cubic yards of residential and commercial refuse in place. Hazards associated with landfill's include contact with in place refuse, landfill gas, and leachate. Landfill gas and leachate has been documented to contain concentrations of organic compounds and metals. Test results are available at the Solid Waste Division Office.

ORGANIC COMPOUNDS

Skin and eye contact and inhalation of organic vapors are the significant routes of exposure during well installation activities. Effects of overexposure include central nervous system depression with symptoms such as dizziness, drowsiness, headache, fatigue, muscular weakness, and lack of coordination. Accidental ingestion may also occur through inadequate decontamination procedures or personal hygiene practices. Organic compounds that may be present on site include benzene, vinyl chloride, perchloroethylene, and trichloroethylene.

METALS

The potential health hazard from metals is believed to be low because concentrations are only slightly elevated. Accidental ingestion of metals may occur through inadequate decontamination procedures or personal hygiene practices. Dermal contact, particularly to the eyes, is also of concern because of possible irritation reactions. The proper selection of skin and eye protection, is critical to prevent exposure.

PHYSICAL

Physical hazards associated with this fieldwork include disturbance of underground utilities during well drilling, eye and skin contact hazards during drilling or auguring; tripping, falling, or slipping during drilling activities and possibly heat stress.

DRILLING/AUGURING HAZARDS

Electrical cables, gas lines, stormwater lines, and unknown objects such as concrete and asphalt rubble may be located under the proposed well site. A physical survey by city staff in conjunction with the contractor will be conducted to identify utility lines and pipes. The contractor will monitor for organic vapors during installation of the well. Eye and skin contact from contaminated water and rocks or other projectiles is also of concern during drilling. A face shield or safety glasses will be required for protection from potential eye injury. Noise exposure from the drilling operations is not expected to be a problem, however, the contractor will provide ear protection to all workers if noise levels should exceed 9dBa.

PROTECTIVE CLOTHING

Protective clothing is necessary to prevent contact with potentially hazardous concentrations of organic compounds and metals. As a minimum, the following protective clothing shall be worn at this site by all field personnel.

- . Saran-coated tyvek Coveralls
- . Nitrilated Butyl Rubber Gloves
- . Steel Toe, Steel Shank Neoprene Boots

- . Safety Glasses

- . Hard Hat

SAFETY EQUIPMENT

The following safety equipment shall be kept at the jobsite during drilling operations:

- . Decontamination Equipment

- . First Aid Kit

- . Combustible Gas Indicator

PERSONNEL AIR MONITORING

Personnel air monitoring will be conducted to assess the airborne concentration of identified contaminants and determine appropriate health and safety requirements. Initial perimeter and site monitoring will be conducted using a combustible gas indicator (CGI). During drilling operations periodic monitoring will be conducted at the drilling site. Enclosed spaces will be adequately ventilated to ensure personnel safety.

FIELD MONITORING REQUIREMENTS

INITIAL SITE MONITORING

Field monitoring shall be conducted upon initial site entry to meet the following objectives:

- . Determine existing or potential hazards that may affect the personnel on the jobsite

- . Collect information regarding the presence and concentration of landfill gas to determine the safety requirements for personnel.

Monitoring instrumentations for the task shall include, but is not limited to the following:

- Combustible gas indicator

The main focus of the initial monitoring is to rapidly identify immediate hazards and determine background concentrations.

FOLLOW-UP MONITORING

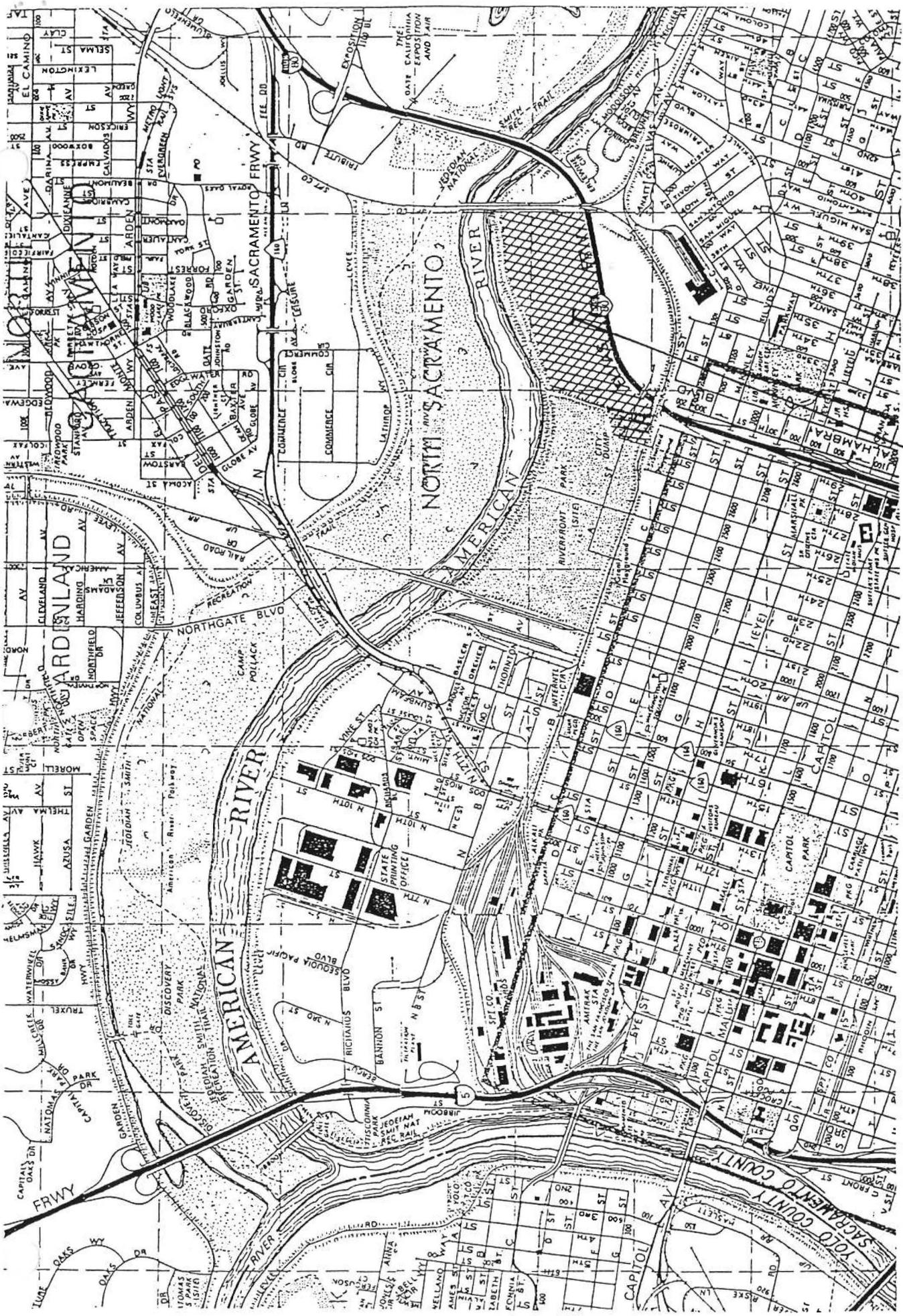
Monitoring shall also be conducted periodically throughout drilling activities for dust and landfill gas to ensure that the survey personnel are properly protected. Periodic dust monitoring will only be required under dusty conditions. It will not be required if it is raining.

RESIDUALS MANAGEMENT

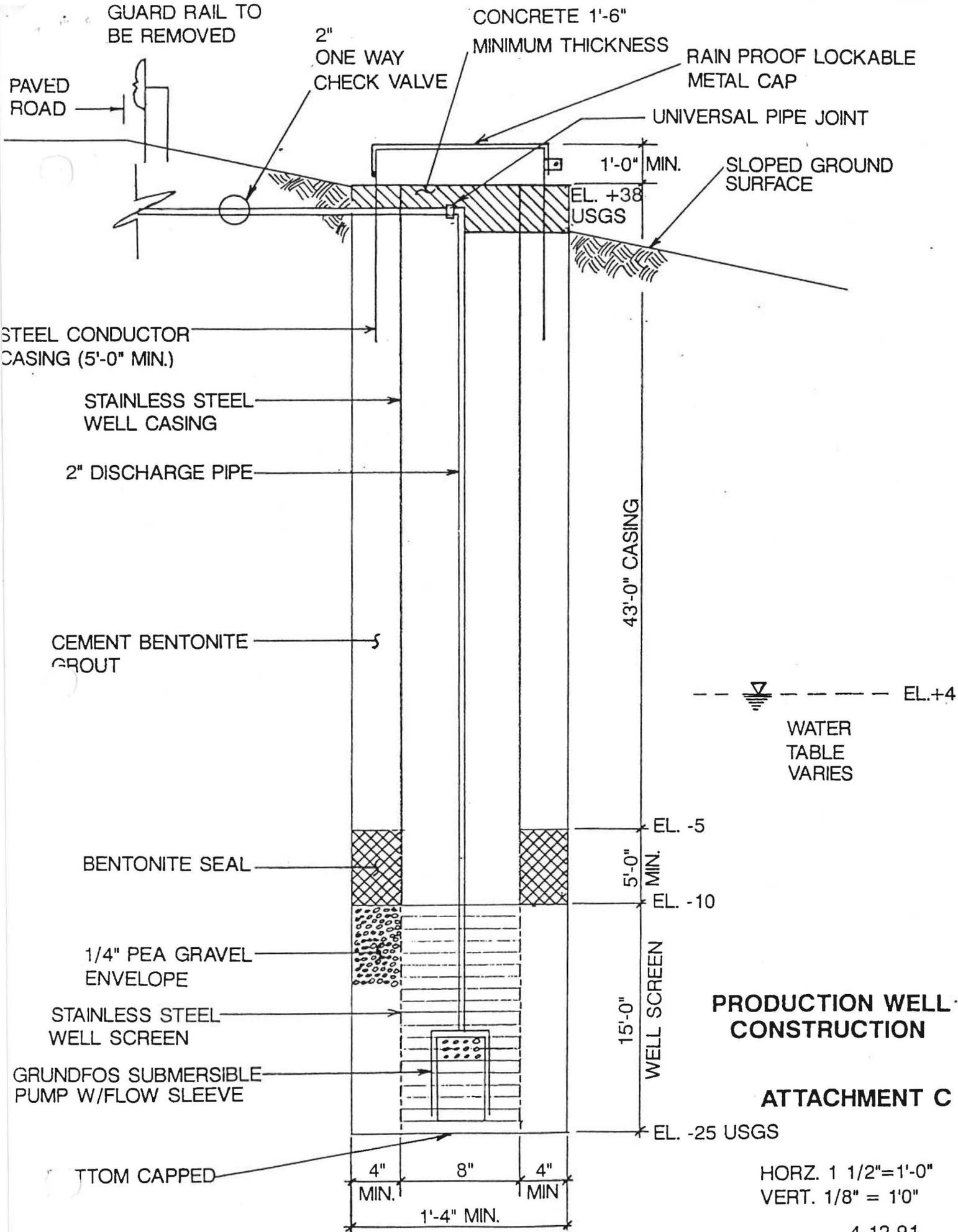
All residual soils, drilling fluids and groundwater, can be disposed of at the landfill.

BASIS FOR AWARD

The bidder shall complete the proposal form supplying prices for all items indicated. The contract shall be awarded to the lowest responsible bidder who submits a responsive quotation which is most advantageous to the City, based on the bid price, completeness of proposal, and contractor availability.



CITY OF SACRAMENTO LANDFILL
28TH & A STREETS



28TH ST. LANDFILL SITE GEOLOGIC CROSS SECTION A-A'

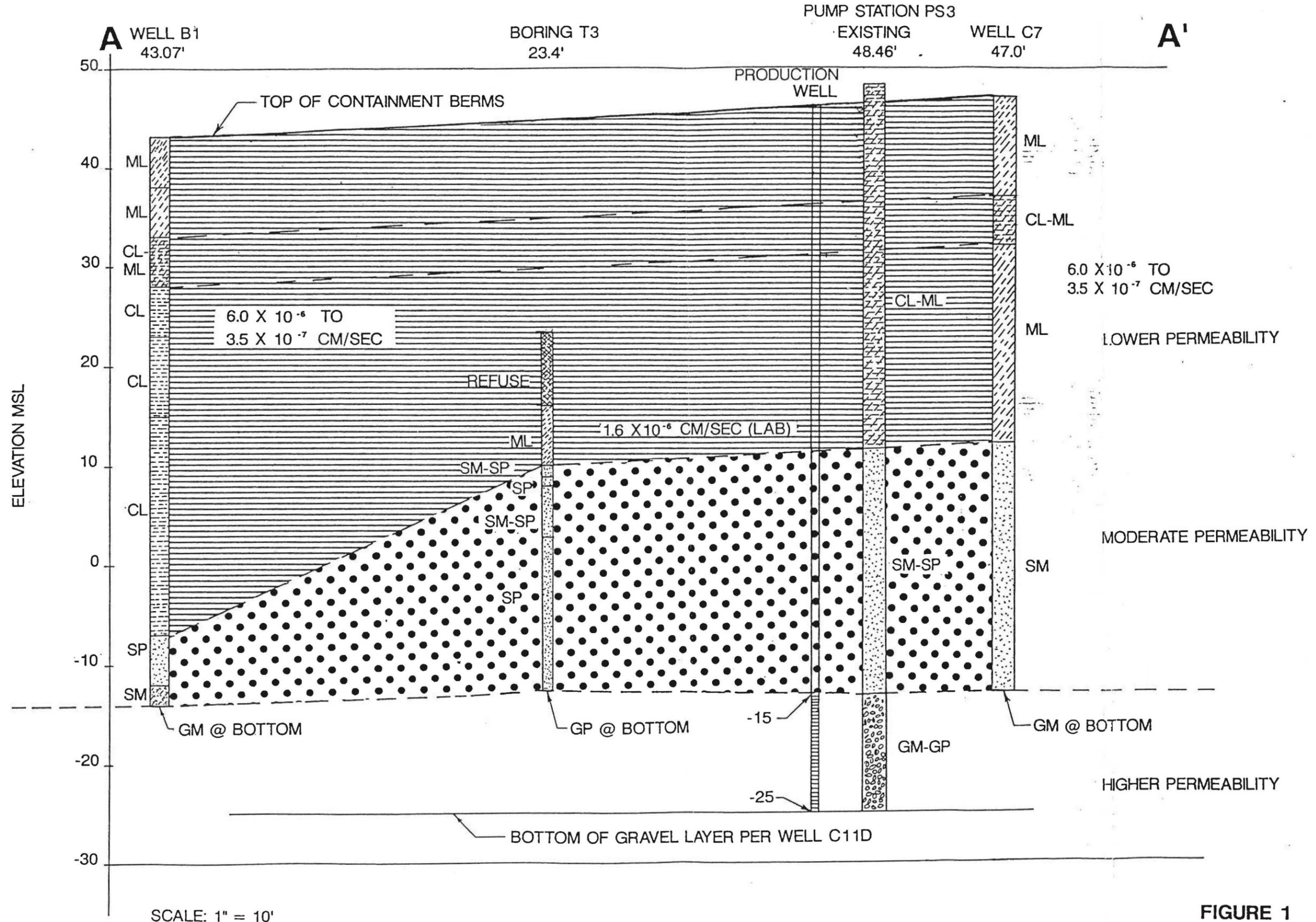


FIGURE 1