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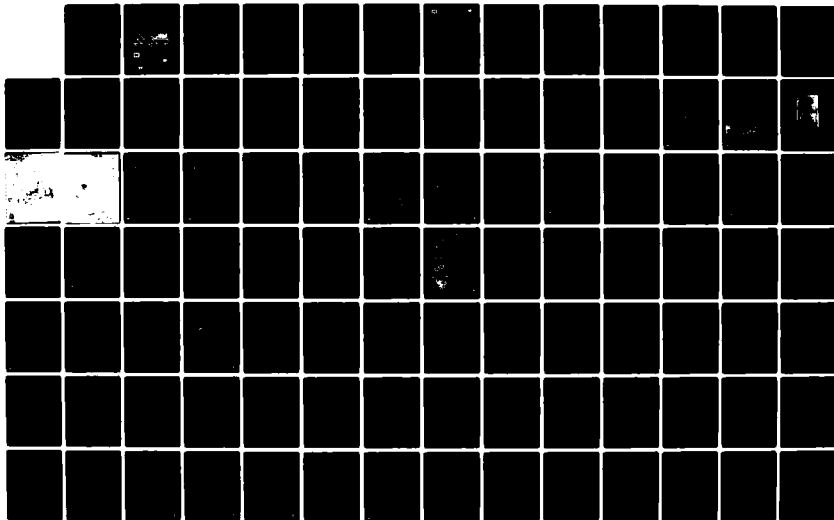
PROPOSED EXPANSION OF ACME LANDFILL OPERATIONS CONTRA
COSTA COUNTY CALIFORNIA VOLUME 1(U) CORPS OF ENGINEERS
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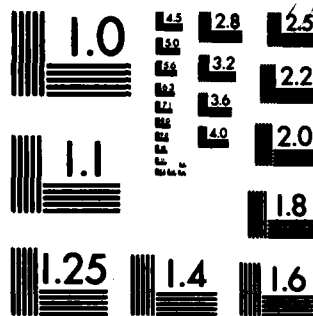
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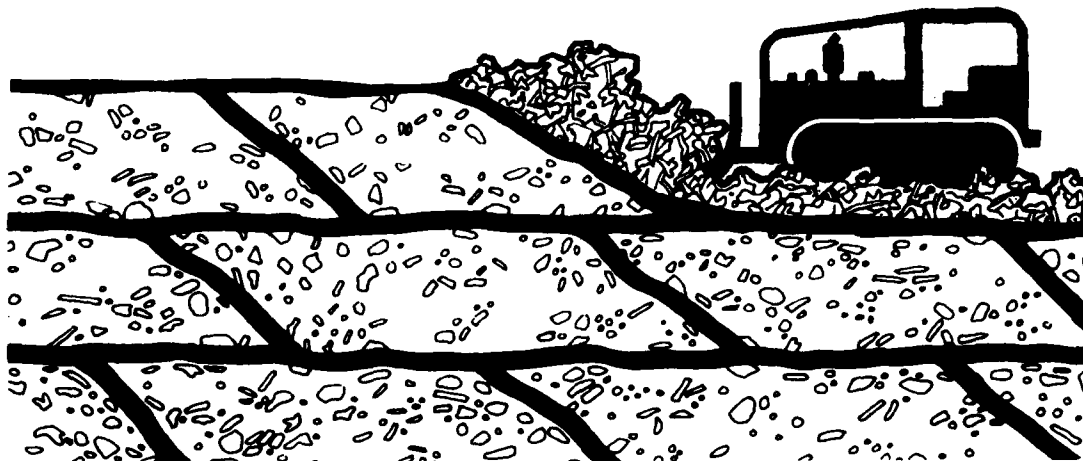
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Final
Environmental Impact Report/
Environmental Impact Statement
Volume 1

ADA 129662

ACME LANDFILL EXPANSION



US Army Corps
of Engineers
San Francisco District



JUN 23 1983



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This Environmental Impact Report/Environmental Impact Statement (EIR/EIS) was prepared by Torrey & Torrey Inc., San Francisco, California, to conform to the National Environmental Policy Act, Council on Environmental Quality Regulations Corps of Engineers' EIS Regulations, California Environmental Quality Act and State and County EIR Guidelines. Torrey & Torrey Inc. has used its best efforts to prepare an inclusive report by identifying and evaluating possible environmental impacts and possible measures to mitigate adverse impacts of the proposed project, and by considering alternatives to the project as proposed.

This EIR/EIS is intended to be a full disclosure document and is provided solely to assist in the evaluation of the proposed project. Torrey & Torrey Inc. shall not be liable for costs or damages of any client or third parties caused by use of this document for any other purpose, or for such costs or damages of any client or third parties caused by delay or termination of any project due to judicial or administrative action, whether or not such action is based on the form or content of this report or portion thereof prepared by Torrey & Torrey Inc.

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FINAL
ENVIRONMENTAL IMPACT REPORT/
ENVIRONMENTAL IMPACT STATEMENT
Volume 1

PROPOSED EXPANSION OF ACME LANDFILL OPERATIONS

Contra Costa County, California

Prepared for
Contra Costa County Planning Department
U.S. Department of the Army - Corps of Engineers - San Francisco District

By
Torrey & Torrey Inc.
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June 1983



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Acme Fill Corporation has proposed the expansion of an existing sanitary landfill operation near Martinez, California onto an adjacent 200 acre area. The proposed landfill expansion requires Department of the Army authorization under Section 10 of the River and Harbor Act of 1899 and under Section 404 of the Clean Water Act. Contra Costa County issued a land use permit in 1958 which authorizes most of the proposed landfill expansion. The County needs to determine the consistency of the proposed landfill expansion with its land use permit.

This Final Environmental Impact Report/Environmental Impact Statement (EIR/EIS) has been prepared by the Contra Costa County Planning Department and the San Francisco District, U.S. Army Corps of Engineers to comply with the environmental impact document requirements of the California Environmental Quality Act and the National Environmental Policy Act. A joint state and federal document has been prepared in order to minimize the duplication of effort in the County and Corps of Engineers permit processes.

The Contra Costa County Planning Department and the Corps of Engineers are circulating this Final EIR/EIS to appropriate government agencies, interested organizations, and the public. The State and Federal environmental document processes differ in that the Federal process includes a comment period on final documents while the State process does not. Your written comments should therefore be sent to the Corps of Engineers by the date indicated on the cover sheet which follows this page.

This main text of the Final EIR/EIS, which consists of two volumes, is supplemented by an Appendices volume which contains supporting information and documents. Copies of the Appendices were distributed to regulatory agencies with the Draft EIR/EIS and are not being redistributed with the Final EIR/EIS unless they are specifically requested. Copies of the Final EIR/EIS, including the Appendices, are available for review at most libraries in Contra Costa County. Single copies of the main text may be obtained without cost by contacting Scott Miner of the San Francisco District, U.S. Army Corps of Engineers at (415) 974-0446. Additional copies of the main text may be obtained for \$18.00 (per set of two volumes) to cover printing, mailing and handling costs by contacting the Contra Costa County Planning Department at (415) 372-2026. Copies of the Appendices volume may be obtained from the Planning Department for \$10.00 to cover printing, mailing and handling costs.

Thank you for your assistance in reviewing this document.

Sincerely,

Edward M. Lee, Jr.

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U.S. Army Corps of Engineers

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**FINAL ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT
ACME LANDFILL EXPANSION
CONTRA COSTA COUNTY, CALIFORNIA**

COVER SHEET

A. ABSTRACT

The Acme Fill Corporation has applied to the U. S. Army Corps of Engineers, San Francisco, for a permit under Section 10 of the River and Harbor Act of 1899 and Section 404 of the Clean Water Act (Public Notice No. 13881E59) authorizing expansion of their sanitary landfill facility located near Martinez, California. Acme has a land use permit from Contra Costa County authorizing landfill in most of the proposed expansion area. In order to determine consistency with the County land use permit and to provide the Corps of environmental data for evaluating the permit application for the expansion, Contra Costa County and the Corps of Engineers have prepared this joint Environmental Impact Report/Environmental Impact Statement (EIR/EIS). This Final EIR/EIS examines the impacts of several on-site alternatives, alternative methods of disposal, and the alternative of using another site for landfill disposal.

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C. REVIEW PERIOD

Written comments on the EIS should be sent to the District Engineer, U.S. Army Engineer District, San Francisco, 211 Main Street, San Francisco, CA 94105. Comments must be received by 17 JUL 1983 (or the end of the 30-day comment period specified by the Notice of Availability published in the Federal Register, whichever is later).

The State of California's environmental impact process does not include a comment period on final reports. The Contra Costa County Planning Commission is scheduled to consider the EIR for certification at its July 12, 1983 meeting.

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GLOSSARY

Agricultural Solid Wastes - Wastes resulting from the production and processing of farm or agricultural products, including manures, prunings and crop residues wherever produced.

Alluvium - Detrital deposits resulting from the operations of modern rivers, thus including the sediments laid down in river beds, flood plains, lakes, fans at the foot of mountain slopes, and estuaries.

Aquifer - A zone well below the surface of the earth capable of producing useable quantities of water through wells or springs.

Baling - A method of reducing volume and restraining solid waste volume by mechanical compaction to achieve high density per unit volume.

Benefication - The concentration, enhancement or upgrading of waste materials in a resource recovery processing system so that they may be more readily used as secondary materials.

British Thermal Unit (Btu) - The quantity of heat required to raise the temperature of one pound of air free water from 60 to 61 degrees Fahrenheit.

Cell - Compacted waste and subsequent cover constitute a cell.

Class I Disposal Site - A waste disposal site where there is no possibility of discharge of pollutant substances to usable waters. Artificial barriers may be used for the control of lateral waste movement only. Usable groundwater may underlie the site, but only under extreme cases and where natural geological conditions prevent movement of the wastes to the water and provide protection for the active life of the site. Inundation and washout must not occur. All waste groups may be received. (California Water Resources Control Board definition.)

Class I Disposal Site (Limited) - A special case of Class I site is established where a threat of inundation by greater than a 100-year flood exists. A limitation is placed on the type and amount of Group 1 wastes that may be accepted. (California Water Resources Control Board definition.)

Class II-1 Disposal Site - These sites may be above or adjacent to usable groundwater. Artificial barriers may be used for both vertical and lateral waste confinement in the absence of natural conditions. Protection from a 100-year frequency flood must be provided. Groups 2 and 3 wastes can be accepted and, under special conditions, certain Group 1 materials may be accepted. (California Water Resources Control Board definition.)

GLOSSARY

Class II-2 Disposal Site - These sites may have vertical and lateral continuity with usable groundwater but have features that provide for the protection of water quality. Group 2 and 3 wastes may be accepted. (California Water Resources Control Board definition.)

Class III Disposal Site - These are sites where Group 3 wastes could under certain conditions be dumped directly into ground or surface water or where there is inadequate protection to water quality. Only Group 3 wastes may be accepted. Construction practices and facilities that could cause a discharge of soil or accelerate downstream transport of soil are also considered Class III disposal sites. (California Water Resources Control Board definition.)

Closure Plan - A plan that specifies how a disposal site will be taken out of operation once the site has reached capacity. The plan includes measures required to prevent any dangers or nuisances that may occur after the site has reached capacity, the configuration and capacity of the ultimate site, and conceptual planned uses of the completed site.

Co-generation - A method of producing electric power in conjunction with process steam or heat which utilizes the energy supplied by fuel (e.g., solid wastes) to maximize the energy produced for consumption.

Co-incineration, Co-disposal - The use of sewage sludge and solid wastes as a fuel in a waste-to-energy facility.

Combustibles - Various materials in the waste stream which are burnable, such as paper, plastic, lawn clippings, leaves and other light, organic materials.

Commercial Wastes - Waste material that originates in wholesale, retail or service establishments, such as office buildings, stores, markets, theaters, hotels and warehouses, excluding residential and industrial wastes.

Composting - The natural conversion of most organic materials to humus by micro-organism activity.

Construction/Demolition Wastes - Wastes that include waste building materials, packaging and rubble resulting from construction remodeling, repair and demolition operations on pavements, houses, commercial buildings and other structures. Includes steel, concrete, glass, brick, asphalt roofing material, and lumber.

Cover Material - Soil or other suitable material used to cover compacted waste in a sanitary landfill.

GLOSSARY

Curbside Collection - The gathering of recyclables that have been placed at the curb of a street.

Dredge Spoil - Material excavated from cleaning and/or deepening water course channels.

Earthquake - Groups of elastic waves propagating in the earth, set up by a transient disturbance of the elastic equilibrium of a portion of the earth. Vibration received by waves produced by sudden slippage along a fault.

Earthquake (Richter) Magnitude - The amplitude of the shock wave recorded at a standard seismograph at a distance of a 100 kilometers from the epicenter.

Effluent - Treated wastewater.

Energy Recovery - The conversion of solid waste to energy or marketable fuel. The conversion can be either from unprocessed municipal solid waste or from refuse-derived fuel.

Epicenter - Point on the earth's surface directly above the focus of an earthquake.

Expansive Soils - Soils, particularly silts and clays, which exhibit volume changes (shrink or swell) with changes in moisture content.

Fault - Fracture or fracture zone along which there has been displacement of the rocks on either side of the fault relative to each other and parallel to the fracture.

Fault Trace - A lineation or scar on the earth's surface marking the intersection of a fault with the earth's surface.

Fault Zone - A fault that is expressed as a zone of numerous small fractures or fault gouge. A fault zone may be as wide as hundreds of meters.

Ferrous - Metals which are predominantly composed of iron. Most common ferrous metals are magnetic. In the waste materials stream, these usually include steel or "tin" cans, automobiles, old refrigerators, stoves, etc.

Fly Ash - Small solid particles of ash and soot generated when burning coal, oil or waste materials. With proper equipment fly ash is collected to prevent it from entering the atmosphere. Fly ash can be used in building materials, such as bricks, or disposed of in a landfill.

GLOSSARY

Franchise - A contract which grants exclusive rights to collect municipal refuse to a successful bidder by the franchisor, which is some form of local government.

Furnace - Chamber of an incinerator where drying, ignition, and combustion occur.

Ground Rupture - A breaking or fracturing of the earth's surface along a fault during an earthquake. Also called surface faulting.

Group 1 Waste - A waste that consists of or contains toxic substances which could significantly impair the quality of usable waters. (California Water Resources Control Board. California Administrative Code, Title 23, Chapter 3, Subchapter 15.)

Group 2 Waste - A waste that consists of or contains chemically or biologically decomposable material which does not include toxic substances nor those capable of significantly impairing the quality of usable waters. (California Water Resources Control Board. California Administrative Code, Title 23, Chapter 3, Subchapter 15.)

Group 3 Waste - A waste consisting entirely of non-water soluble nondecomposable inert solids. (California Water Resources Control Board. California Administrative Code, Title 23, Chapter 3, Subchapter 15.)

Habitat Suitability - The potential of a specific area to support a selected evaluation species.

Habitat Suitability Index (HSI) - A unitless number bounded by 0.0 and 1.0 where 0.0 represents unsuitable habitat and 1.0 represents optimal habitat.

Habitat Suitability Index Model - The rules, in either written or mathematical form, by which a Habitat Suitability Index is determined for a particular evaluation species at a particular location. The HSI model consists of two parts: a value of interest (numerator) and a standard of comparison (denominator). The denominator is a description of optimal habitat; a value of interest (numerator) and a standard of comparison (denominator). The denominator is a description of optimal habitat; the numerator is a description of habitat in the area of interest.

Habitat Units (HU) - A value derived by multiplying the Habitat Suitability Index for an evaluation species by the size of the area for which the HSI was calculated. The HU provides a standardized basis for comparing habitat changes over time and space.

GLOSSARY

Hazardous Waste - (California Health and Safety Code Division 20, Chapter 6.5) a waste or combination of wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may either:

- a. Cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness.
- b. Pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

Other definitions of hazardous waste are provided in the California Administrative Code Title 22, Division 4, Chapter 30 Article 1 and in Title 14, Division 7, Chapter 3, Article 4. The definition of hazardous waste in this glossary is the one used in the Contra Costa County Solid Waste Management Plan (December 1981, Revised January 1982).

Beyond the definition provided by the California Health and Safety Code, RCRA (40 CFR 243.101 n) further takes into account "...the toxicity of such waste, its persistence and degradability in nature, its potential for accumulation or concentration in tissue, and other factors that may otherwise cause or contribute to adverse acute or chronic effects on the health of persons or other organisms." A more technical definition of hazardous wastes is provided by RCRA (40 CFR 261) which specifies criteria for identifying the characteristics of hazardous waste, four characteristics of hazardous waste (ignitability, corrosivity, reactivity, and EP toxicity) as well as lists of hazardous wastes.

Hydrocompaction - Settlement and collapse of foundation soils caused by wetting.

Incineration - The controlled process by which solid waste, liquid or gaseous combustible wastes are burned and changed into gases; the residue produced contains little or no combustible material.

Industrial Waste - All types of solid wastes and semi-solid wastes that result from industrial processes and manufacturing operations.

Landfill - A disposal site employing a method of disposing of solid waste on land without creating nuisances or hazards to public health or safety by using the principles of engineering to confine the waste to the smallest practical area, to reduce them to the smallest practical volume, and to cover them with a layer of suitable cover material at specific designated intervals.

GLOSSARY

Landslide - A mass movement of soil or rock debris.

Leachate - A liquid that has come in contact with or percolated through waste materials and has extracted or dissolved substances therefrom.

Lense - A geologic deposit bounded by converging surfaces (at least one of which is curved), thick in the middle and thinning out toward the edges, resembling a convex lens; e.g., an orebody having a length many times greater than its width and pinching out laterally at its extremities.

Liquid Wastes - Waste materials that are not spadeable.

Lift - A complete horizontal series of cells.

Liquefaction - The process of saturated granular soils becoming liquid or "quick" under earthquake shaking. Under such conditions, the soil loses its bearing strength and may settle or flow toward a topographic depression or free face.

Litter - Improperly discarded waste material, including, but not limited to, convenience food, beverage and other product packages or containers constructed of steel, aluminum, glass, paper, plastic and other natural and synthetic materials, thrown or deposited on the lands and waters of the State.

Market - An individual or organization which will purchase or acquire by other means ownership of recovered waste products.

Manual Separation - The separation of waste materials by hand. Sometimes called hand-picking, manual separation is done in the home or office by keeping recyclables separate from garbage, or in a recovery plant by picking out certain materials.

Methane - An odorless, colorless, flammable gas which can be formed by the anaerobic decomposition of organic waste matter or by chemical synthesis.

Mudwave - A shear failure in which a soil mass moves in a fluid-like manner.

Nonferrous - Metals which contain no iron. In waste materials these are usually aluminum, copper, brass, bronze, etc.

Off-site Hazardous Waste Facilities - Hazardous waste facilities that are not located on the same site where the hazardous wastes are generated and are used by many different generators.

GLOSSARY

On-site Hazardous Waste Facilities - Hazardous waste facilities which manage hazardous waste on land owned, or leased, by the waste generator and which only accept hazardous waste produced by that generator.

Open Dump - A facility for the disposal of solid waste which does not comply with the criteria set forth in the Federal Resource Conservation and Recovery Act (RCRA).

Organic Content - Synonymous with volatile solids except for small traces of some inorganic materials such as calcium carbonate, which lose weight at temperatures used in determining volatile solids.

Permeability - The property or capacity of a porous rock, sediment, or soil for transmitting a fluid. It is a measure of the relative ease of fluid flow under equal pressure.

Piezometer - Device to measure pore water pressure.

Pore Pressure - The part of the total normal stress in a saturated soil due to the pressure of pore water.

Putrescible Wastes - Wastes that are capable of being decomposed by micro-organisms with sufficient rapidity as to cause nuisances because of odors, gases, or other offensive conditions, and to include materials such as food wastes, offal and dead animals.

Recovered Materials - Materials which are recovered from solid waste by separation, collection, or other means to reuse for sale.

Recycling - The process of sorting, cleaning, treating and reconstituting waste or other discarded materials for the purpose of using the altered form.

Residential Waste - All types of domestic garbage and rubbish which are generated in houses and apartments.

Residue - Material that remains after gases, liquids or solids have been removed.

Resource Recovery - The reclamation or salvage of wastes for reuse, conversion to energy or recycling.

Runoff - Portion of precipitation or applied water that drains from an area as surface flow.

GLOSSARY

Salvaging - The controlled removal of waste material for utilization.

Sanitary Landfill - A disposal site employing an engineered method of disposing of solid wastes in a manner that minimizes environmental hazards by spreading and compacting wastes to the smallest practical volume and applying cover material over all exposed wastes daily.

Seiche - An earthquake generated wave within an enclosed or restricted body of water, such as a lake, reservoir, or lagoon.

Sewage Sludge - Any residue, excluding grit or screenings, removed from a wastewater, whether in a dry, semi-dry or liquid form.

Slope Failure - The downward and outward movement of rock or soil as a unit or series of units.

Sludge (Raw or Undigested) - Liquid and semisolid wastes resulting from the treatment of domestic wastewater. Characteristically raw sludge is high in organic content, unstable, odorous and contains a substantial population of pathogenic organisms.

Sludge (Digested) - Sludge that has been stabilized through the biological degradation of the organic components in the waste either in the presence of oxygen (aerobic digestion) or in the absence of oxygen (anaerobic digestion). As a result of the digestion process, sludge becomes less putrescible and the quantity of solids present for ultimate disposal is reduced.

Solid Waste - Generally defined as all putrescible and non-putrescible solid and semi-solid wastes such as refuse, garbage, rubbish, paper, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid and semi-solid wastes, and other discarded solid and semi-solid wastes, and also includes liquid wastes disposed of in conjunction with solid wastes. These wastes include (1) sewage collected and treated in a municipal or regional sewerage system, or (2) materials or substances having commercial value which have been salvaged for re-use, recycling or resale. (California Administrative Code Title 14, Division 7, Chapter 3, Article 4).

RCRA (40 CFR 241.101 v) defines solid waste as garbage, refuse, sludges, and other discarded solid materials resulting from industrial and commercial operations and from community activities. It does not include solids or dissolved materials in domestic sewage or other significant pollutants in water resources, such as silt, dissolved or suspended solids industrial wastewater effluents, dissolved materials in irrigation return flows or other common water pollutants. A more technical definition of solid waste is also provided by RCRA (40 CFR 261.2). For this EIR/EIS, the definition provided by the California Administrative Code is used.

GLOSSARY

Source Separation - The segregation and collection of individual recyclable components before they become mixed into the solid waste stream.

Tectonic Creep - Deformation that occurs along a fault but is not expressed by rupture along the fault.

Tipping Fee - A fee charged to transporter of wastes to dispose of the wastes at a transfer station, resource recovery facility or landfill.

Toxic Substances - Materials that contain or have the effects of a poison.

Transfer Station - Intermediate waste handling facilities where solid wastes are transferred from hauling vehicles to a transfer vehicle and where the waste or portion thereof may undergo incidental processing, recycling or further handling before transport to a disposal site, waste processing facility or other facilities.

Tsunami - A sea wave generated by underwater ground movement, usually associated with an earthquake.

Vector - Any insect or other arthropod, rodent, or other animal capable of transmitting the causative agents of human disease, or disrupting the normal enjoyment of life by adversely affecting the public health and well being.

Waste Reduction - Reducing the total volume of waste through longer product durability, better recycling, and improved packaging and consumption.

Waste-to-Energy Projects - Facilities where the energy value of solid wastes are reclaimed through a process such as incineration with heat recovery.

Waterwall Combustion - A system using a furnace constructed with walls of welded steel tubes through which water is circulated to absorb the heat of combustion. The steam or hot water thus generated may be put to a useful purpose, or simply used to carry the heat back to the outside environment.

White Goods - Inoperative and discarded refrigerators, ranges, washers, water heaters, and other similar domestic and commercial appliances.

GLOSSARY

Sources:

¹California Administrative Code, Title 14, Division 7, Chapter 3, Articles 1 through 7.

²California Administrative Code, Title 23, Chapter 3, Subchapter 15.

³California Health and Safety Code, Division 20, Chapter 6.5, Article 2.

⁴Contra Costa County, Solid Waste Management Plan, Draft 12/81, Revised 1/82

⁵Kleinfelder & Associates, 1982.

⁶Regional Planning Commission, Regional Solid Waste Resource Recovery Program, Jefferson, Orleans, St. Bernard, St. Tammany Parishes (Louisiana), January 1981.

⁷U.S. Fish and Wildlife Service, Division of Ecological Services, Habitat Evaluation Procedures (HEP) ESM 102, March 31, 1982.

SUMMARY

A. DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES

Acme Fill Corporation has applied to the U.S. Department of the Army, Corps of Engineers, San Francisco District for a permit authorizing expansion of their sanitary landfill operations into an area subject to Corps jurisdiction as specified under Section 10 of the River and Harbor Act of 1899 and Section 404 of the Clean Water Act. Acme has a land use permit from Contra Costa County authorizing landfill in most of the proposed expansion area. In order to determine consistency with the County land use permit and to provide the Corps with environmental data to evaluate the permit application for the expansion, Contra Costa County and the Corps of Engineers have, as lead agencies, prepared this joint Environmental Impact Report/Environmental Impact Statement (EIR/EIS). The Contra Costa County Planning Department (the County's Environmental Agency) was designated to administrate the preparation of the EIR/EIS and conduct the review process. The federal process is being conducted by the Corps of Engineers.

This EIR/EIS examines potential impacts of the proposed project and four alternatives. The proposed project is referred to as Alternative A throughout the report. As the other on-site alternatives, Alternative B is a reduced landfill project and Alternative C is a landfill elsewhere on the Acme property. Alternative D is an evaluation of other methods of disposal and Alternative E is an evaluation of the use of other existing or new landfills for disposal.

Exhibits S-1, S-2, and S-3 show Acme's regional location, the project location, and an aerial view of the site.

This EIR/EIS is a revised version of the Draft EIR/EIS which was circulated for general review between August 13 and September 27, 1982. The lead agencies decided to revise the Draft EIR/EIS, rather than append a response document to it, to produce a unified and more readable final report. They determined that the large number of responses to be answered (see Chapter XIV) as well as the changes that were needed because of new state legislation and federal regulations which went into effect in 1983 would be best addressed in revisions to the primary EIR/EIS text.

References in this EIR/EIS to material in appendices refer to parts of the EIR/EIS Appendices which were distributed with the Draft EIR/EIS in 1982 and which are also part of this Final EIR/EIS.

Brief descriptions of the proposed project and alternatives follow.

No Project Alternative

The No Project Alternative was eliminated from detailed consideration because of the need to have suitable landfill space ready to accommodate

SUMMARY

A. DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES (continued)

approximately 64 percent of the county's solid waste when the current Acme operational sites are complete in 1983. For this reason, the No Project Alternative is considered neither reasonable nor feasible.

Alternative A - Proposed Project

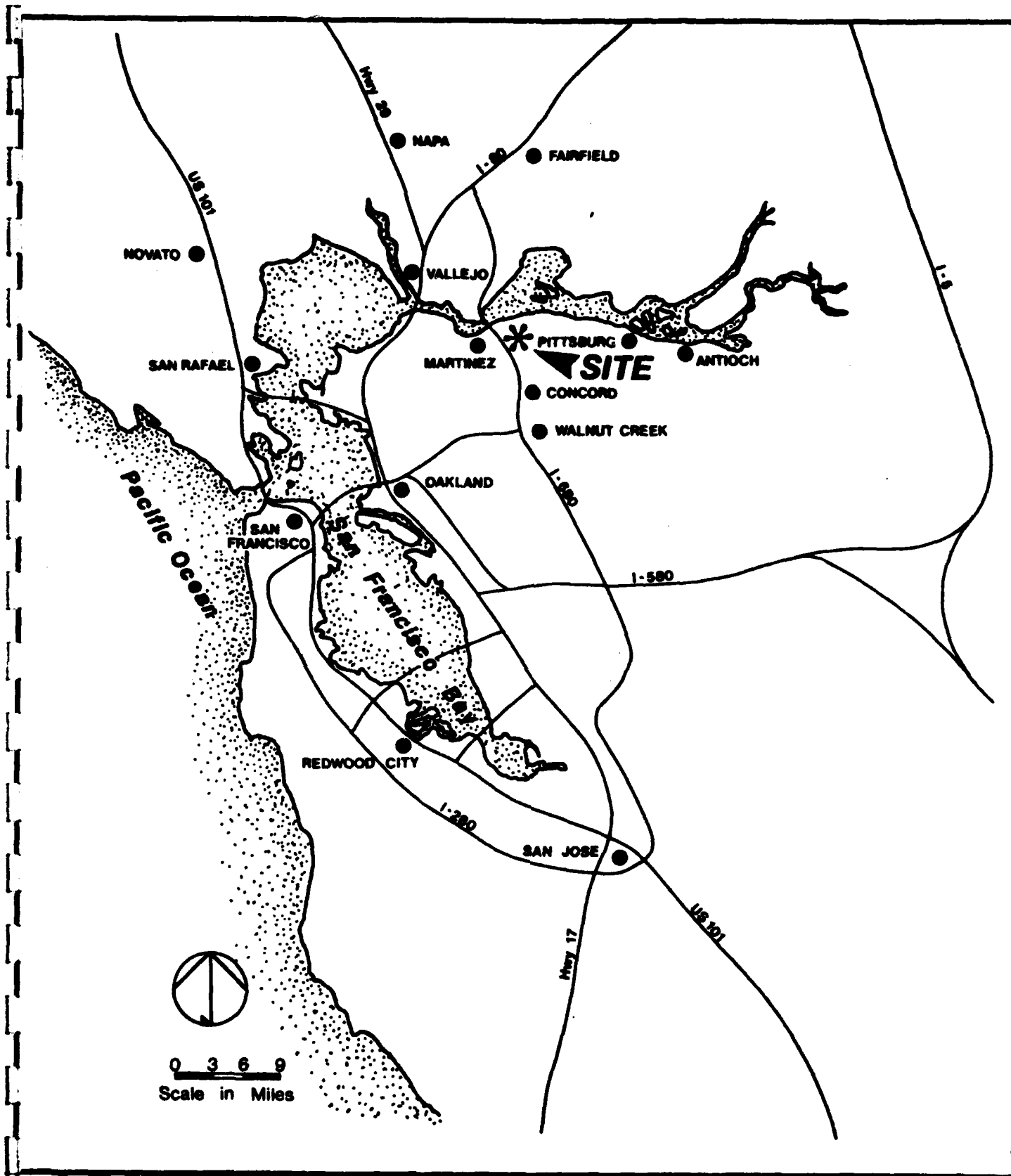
Acme Fill Corporation has proposed the expansion of the existing landfill operations at its site in Contra Costa County. (Exhibit S-4) With the existing operation area approaching capacity, Acme proposes to fill an adjacent 200 acres to create additional capacity for solid waste. The proposal includes the following elements and characteristics:

1. Three bridges across the Central Contra Costa Sanitary District pipeline
2. About 5,700 linear feet of levees surrounding the proposed expansion area and 14,300 feet of levees for interior disposal cell construction
3. Possible new entrance from Waterbird Way (Industrial Access Road)
4. Drying area for dredged materials from maintenance of adjacent flood control channels.
5. Cover soil supply primarily from dredged materials drying area. Additional cover material from borrow site on southern portion of Acme's property.
6. Off-site mitigation area of 160 acres to compensate for loss of wetlands
7. About 8 acres of buffer zones around easements and pipelines
8. Additional landfill capacity to 1991
9. Continued current recycling/salvage efforts

Alternative B - Reduced Landfill Project

This alternative would expand the Acme landfill operations into the same adjacent area as Alternative A. However, only about 100 acres would be used for disposal operations. The remaining area of approximately 100 acres would be restored to marsh, opened to tidal action, and maintained as an on-site mitigation area. (Exhibit S-5) This reduced project alternative would include the following elements and characteristics:

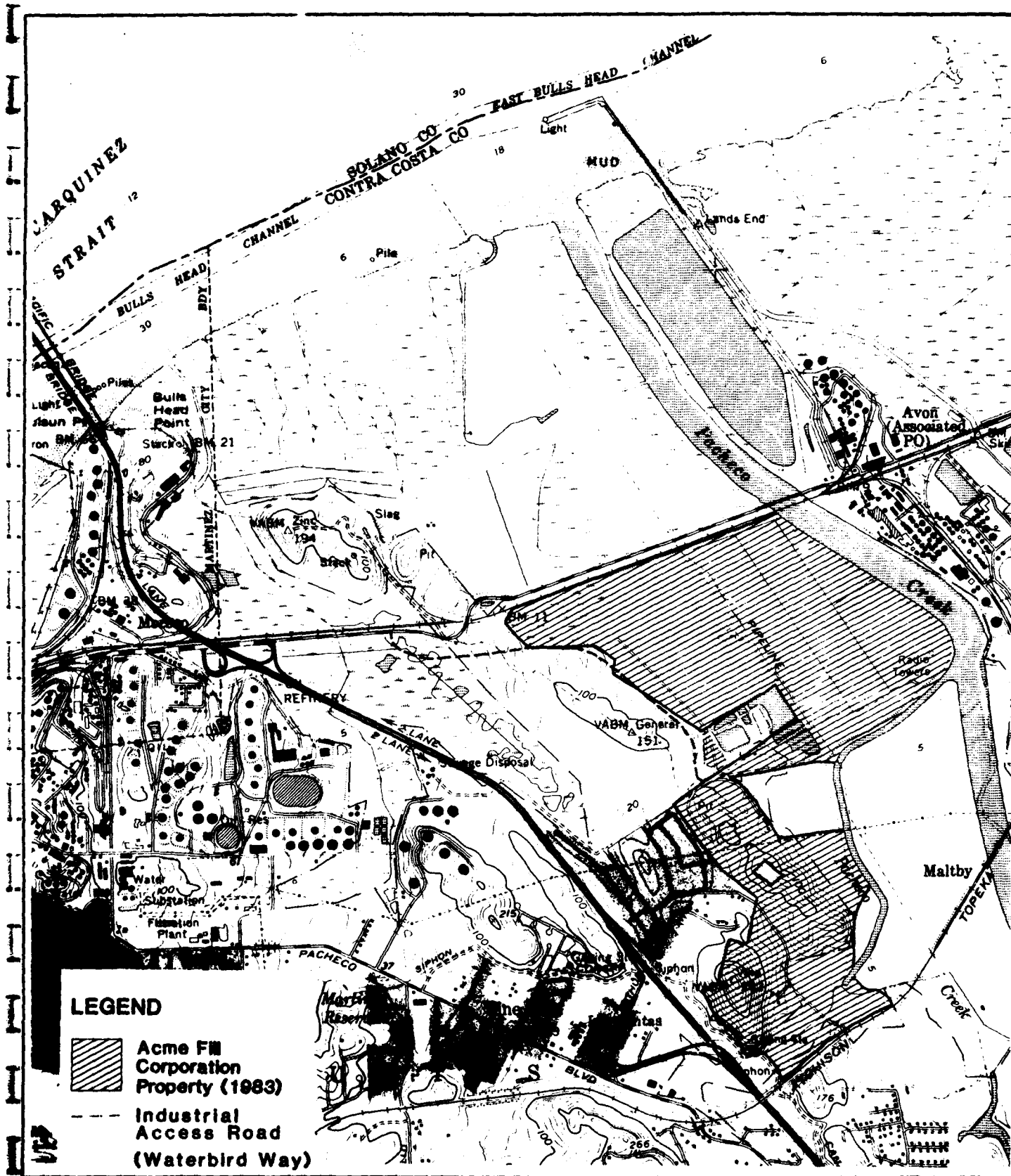
1. Three bridges across the Central Contra Costa Sanitary District pipeline
2. About 10,000 feet of levees surrounding the expansion area
3. Possible new entrance from Waterbird Way
4. Cover soil supply from borrow site located on southern portion of Acme's property



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REGIONAL LOCATION

EXHIBIT
S-1



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Project Location

EXHIBIT
 S-2

LEGEND FOR EXHIBIT S-3

----- ACME FILL CORPORATION PROPERTY LINE

----- EXISTING LEVEES OR
EDGE OF LANDFILL OPERATIONS

----- CENTRAL SANITARY DISTRICT SEWER LINE

----- BOUNDARY OF IDENTIFIED
LANDFILL OPERATIONS

(Class I Site is within the ACME property)

ERRATA

Henry's Tree Service actually occupies the southern half of the identified parcel.

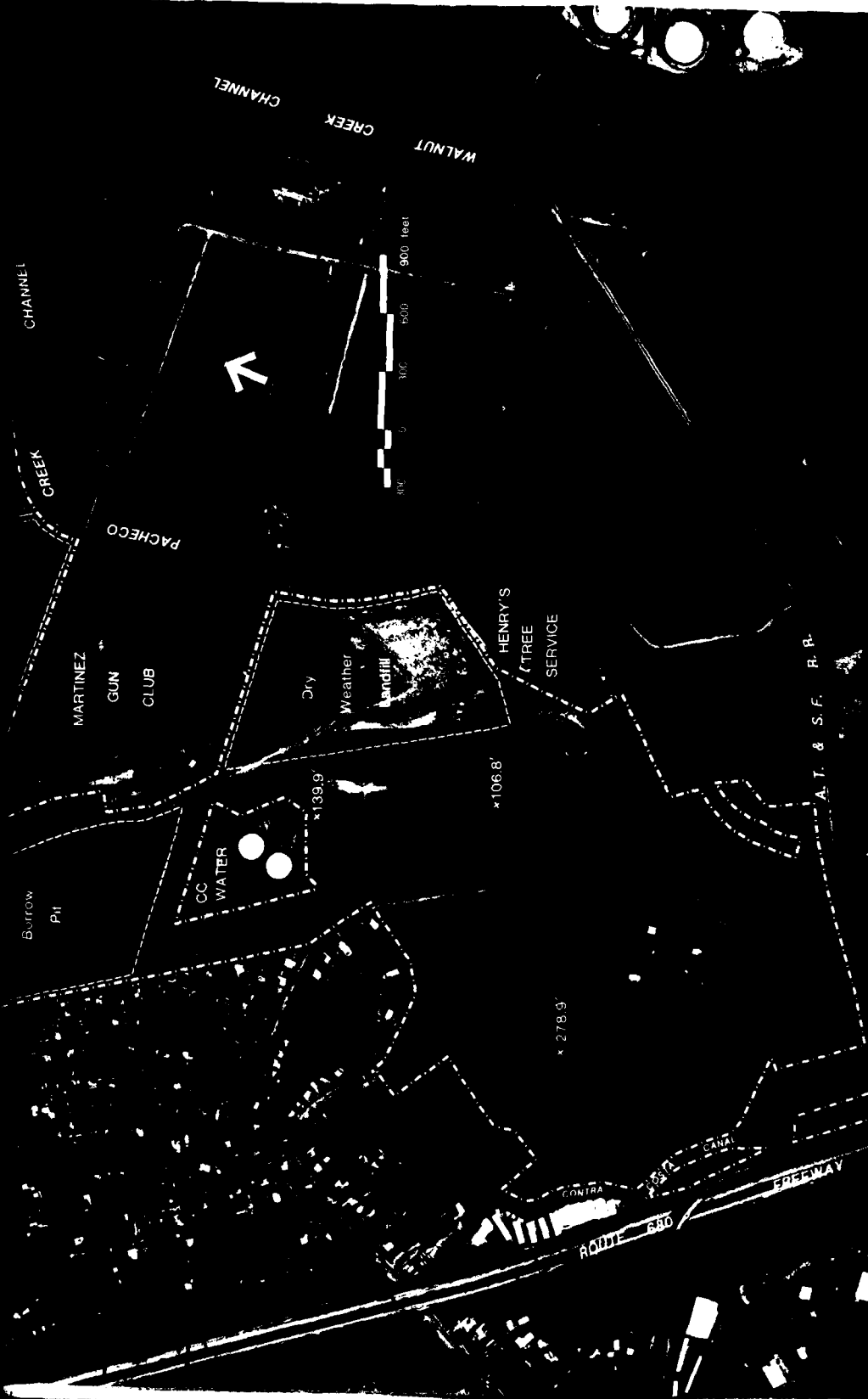
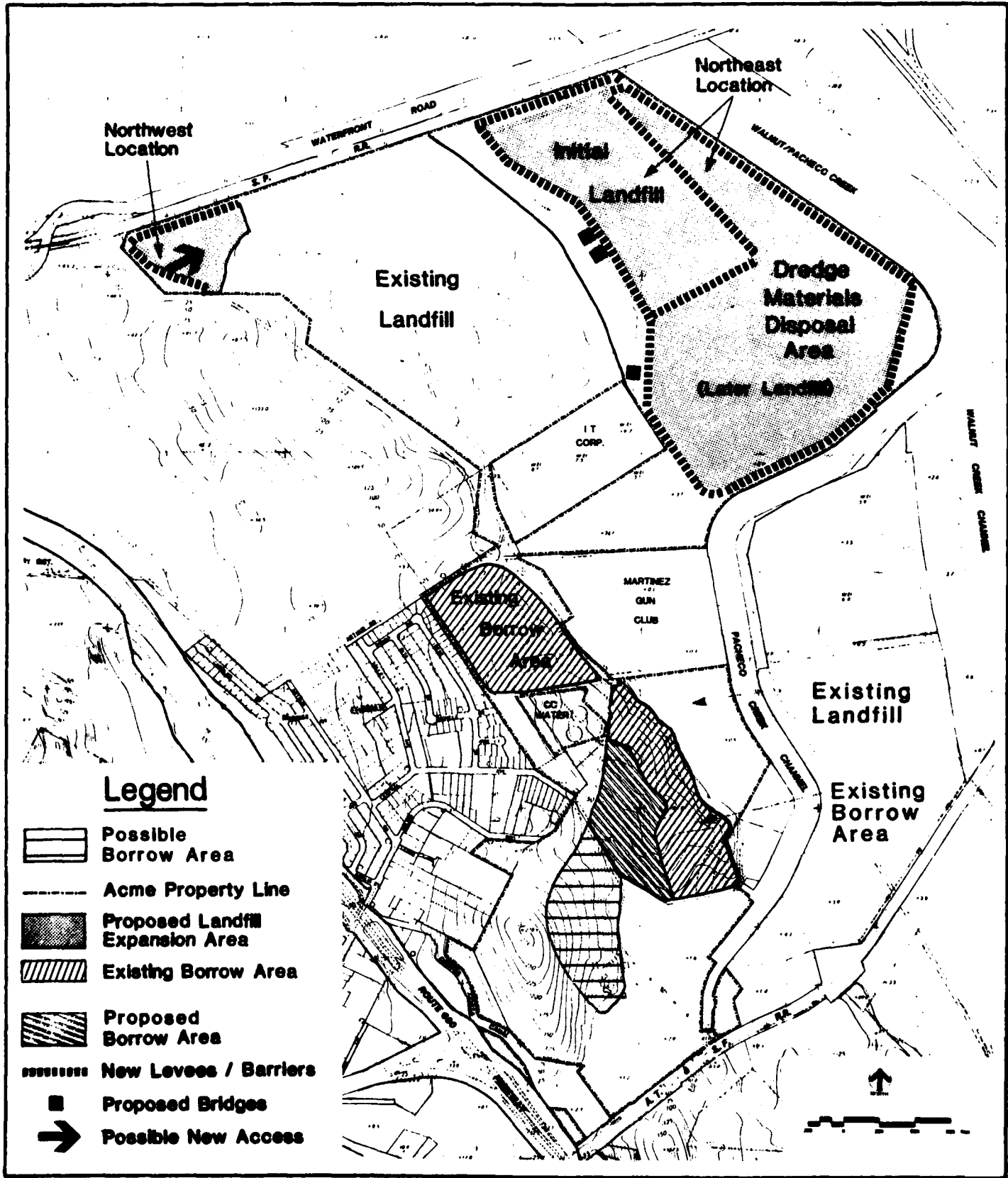
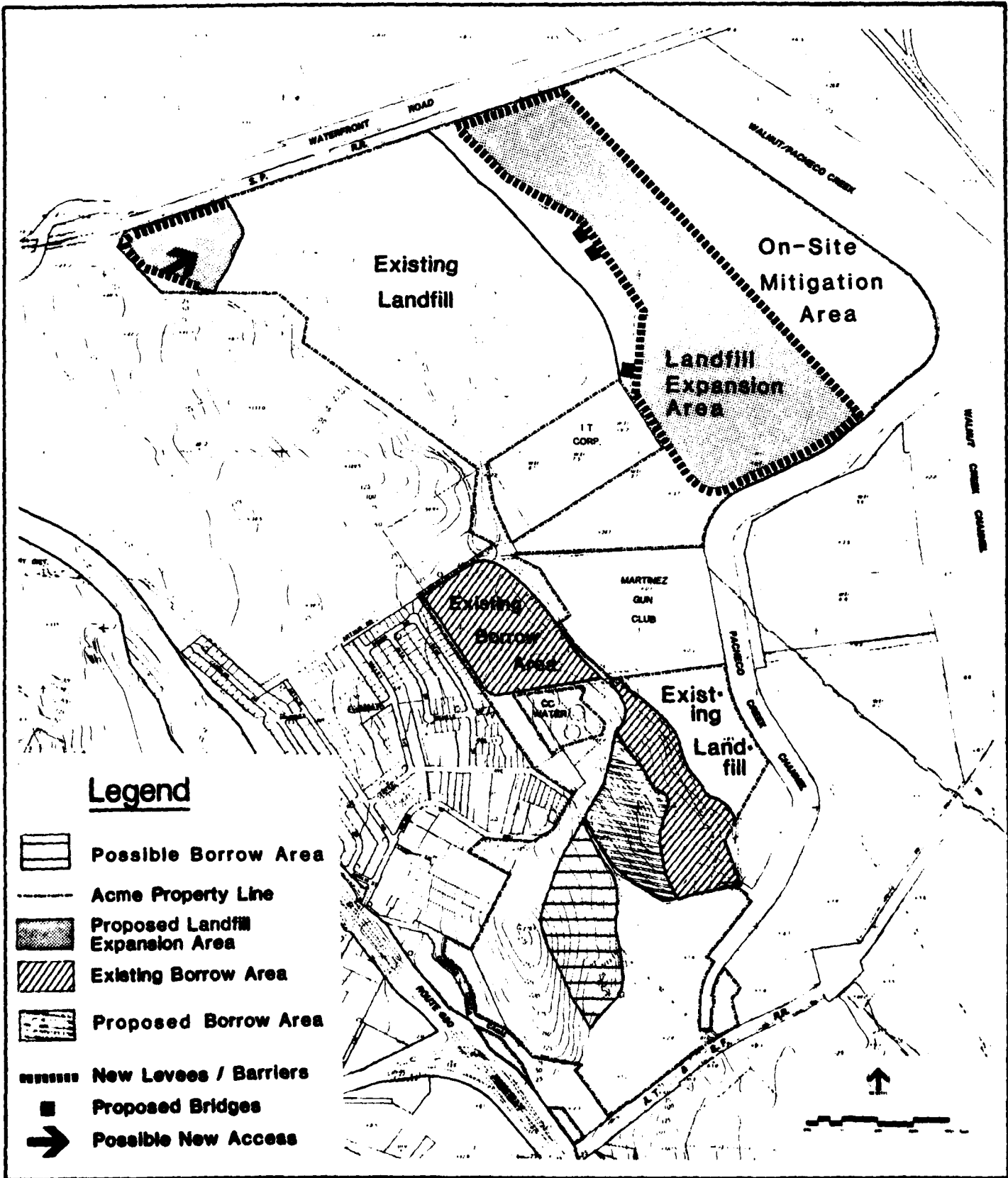


EXHIBIT S-3





SUMMARY

A. DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES (continued)

5. About 3.5 acres of buffer zone around the Central Sanitary District sewer line
6. Additional landfill capacity to 1987
7. Continued current recycling/salvage efforts

Alternative C - Landfill Disposal Elsewhere on Acme Property

This alternative would shift landfill operations to the southern portion of the Acme property. (Exhibit S-6) Although the southern parcel consists of 178 acres, 22 acres are already being used for landfill and, of the remainder, only about 40 acres are suitable for landfill operations because of topographic constraints and utility easements. The currently inactive 20-acre Class I site is not part of this alternative. This alternative would include the following elements and characteristics:

1. An undetermined footage of levees
2. Buffer zones around all utilities and easements
3. Additional landfill capacity to 1985
4. Continued current recycling/salvage efforts

Alternative D - Other Methods of Disposal (No Corps of Engineers Action)

This alternative consists of a comprehensive program designed to reduce the amount of solid waste going to landfills. It does not eliminate the need for a sanitary landfill. Three basic elements with the following characteristics comprise this alternative.

1. Waste Reduction
 - Public Information Program to encourage substituting reusable products for throwaway items and buying less
2. Material Recovery and Recycling
 - central processing center
 - source separation and curbside collection
 - purchase or buy-back program
 - satellite program
 - donation program
 - office paper collection
3. Waste-to-Energy Facility
 - As proposed by Contra Costa Central Sanitary District, this project would use mass combustion to incinerate solid waste to produce electricity and reduce the volume of solid waste to be landfilled.

SUMMARY

A. DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES (continued)

- The project also includes the possibility of incinerating the sludge produced by CCCSD that is presently being disposed of by landfill.

Alternative E - Evaluation of Other Areas for Landfill (No Corps of Engineers Action)

This alternative considers the use of existing or new landfills at locations other than the Acme Fill Corporation property to dispose of wastes from Acme Landfill's current service area. Contra Costa County, in conjunction with the Corps of Engineers, selected five areas to be evaluated as alternative locations for sites for long-term landfill operations. Four areas are located in Contra Costa County. The fifth area is the existing Altamont Landfill in Alameda County. (Exhibit S-6)

Each of the areas in Contra Costa County is believed to include two or more potentially suitable landfill sites as determined by previous studies and field reconnaissance. The general area approach was used as a manageable way for comparison of multiple locations in dispersed areas.

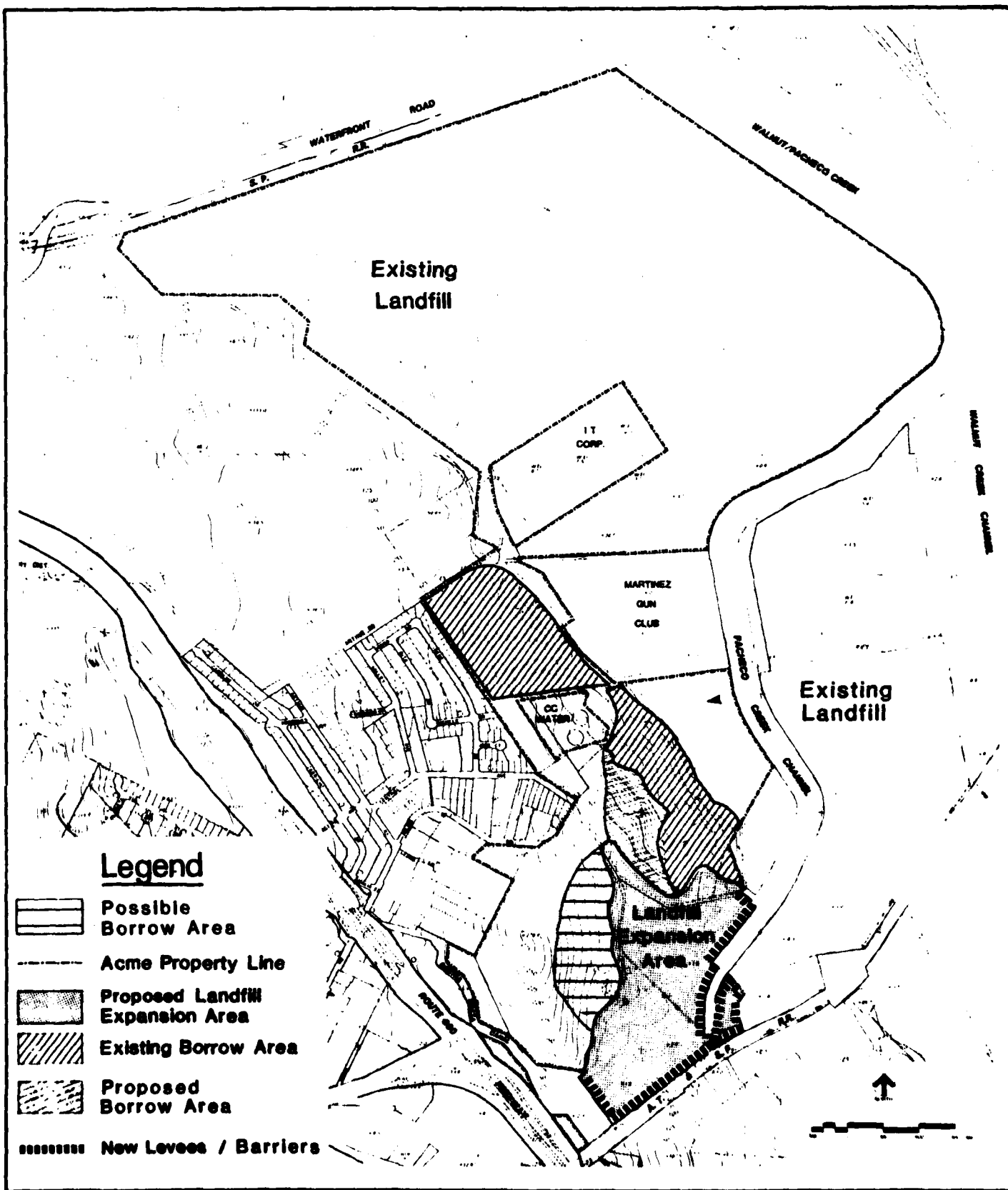
The evaluation of these areas for landfill site potential is necessarily general because no specific site is being considered at this time. Additional environmental analysis would be required before any specific site could be considered for a landfill operation. Characteristics and costs associated with a hypothetical site which could be located in any of the areas within Contra Costa County are indicated and compared with the costs associated with the use of existing landfill sites.

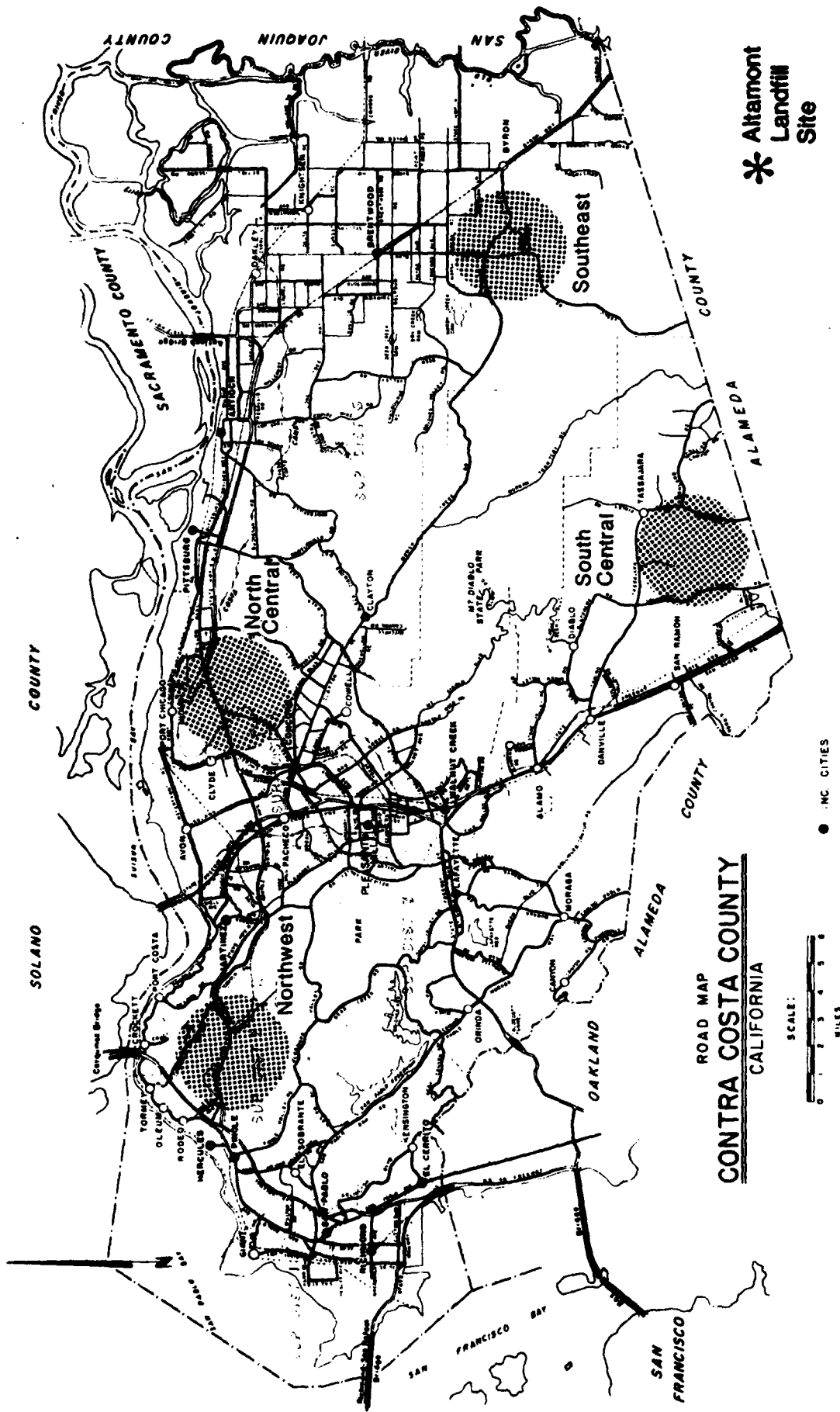
B. SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATIONS

The following table presents a summary of the significant adverse impacts and recommended mitigation measures for the proposed project and alternatives. For detailed discussions, please refer to the appropriate sections of the text following this chapter. Those impacts which cannot be avoided are indicated in Section V.

The recommended mitigation measures should be required to effectively reduce the impacts of the proposed project to levels of insignificance, unless it is found that (1) particular measures are beyond the capability of Acme Fill Corporation to provide, (2) particular measures are beyond the capabilities of the permitting agencies to require, or (3) specific overriding social or economic reasons indicate that they should not be required. These findings will be made by Contra Costa County when the EIR is certified, but will not be binding upon the other permitting agencies.

The Corps of Engineers will use the information in this EIS and other pertinent information, including comments received on this Final EIS, to





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Potential Areas for Landfill - Alternative E

EXHIBIT
S-7

SUMMARY

A. SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATIONS (Continued)

determine whether the project as proposed by the Acme Fill Corporation is in the public interest. That determination will be made during the preparation of the Corps' Record of Decision following the comment period on this Final EIS. If it is found that the project as proposed by the Acme Fill Corporation is not in the public interest due to avoidable environmental impacts, the Corps of Engineers can (1) request that Acme Fill Corporation modify their permit application to include measures that will reduce or eliminate those impacts, or (2) ensure that appropriate mitigation measures are implemented by imposing permit conditions or by requiring Acme Fill Corporation to enter into formal agreements with other appropriate agencies.

The recommended mitigation measures are thought to be within the capability of Acme Fill Corporation to provide and within the combined capabilities of the permitting agencies to require except in the instances, indicated in parentheses, where other agencies have exclusive jurisdiction.

The process of requiring that the recommended mitigation measures be included in the project is complicated because of the multiplicity of agencies having approval authority and their overlapping jurisdictions. The Corps of Engineers may require that certain mitigation measures be included in the project through application modifications or permit conditions; other mitigation measures would be included in the project through the requirements of the state regulatory agencies or the U. S. Environmental Protection Agency, and the remaining measures (as well as some already covered) would be included in the Solid Waste Facilities Permit or the Land Use Permit(s) issued by the County. The County's Solid Waste Facilities Permit would be the last of the operating permits to be issued.

SUMMARY

B. SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATIONS

	Impact	Mitigation	Alternative(s) Affected
<u>Land Use</u>			
	<ul style="list-style-type: none"> High potential for incompatibility with nearby residential areas due to noise, odors, and dust 	<ul style="list-style-type: none"> Provide visual/acoustical buffer area between neighborhood and landfill operations; plant landscape screen 	A, B, C
<u>Earth: Geology, Soils and Seismicity</u>			
	<ul style="list-style-type: none"> High susceptibility to landslides (mudwave) on Bay Mud soils 	<ul style="list-style-type: none"> Provide setbacks and low side slopes as proposed; monitor to verify predicted performance 	A, B, C
	<ul style="list-style-type: none"> Damage to levees, utilities, and pipelines due to differential settlement and soil movement 	<ul style="list-style-type: none"> Provide setbacks from existing levees and sewer lines; monitor to verify predicted design settlement 	A, B, C
	<ul style="list-style-type: none"> Dredge materials may exceed permeability limits for suitable top cover material 	<ul style="list-style-type: none"> Analyze dredge materials for suitability as cover material; mix with low permeability materials if necessary 	A
	<ul style="list-style-type: none"> Potential for release of Group 1/Hazardous waste due to an earthquake or movement along the Concord Fault 	<ul style="list-style-type: none"> Mitigation Options: <ol style="list-style-type: none"> Remove setback requirements for Group 1/Hazardous wastes from the fault based on geotechnical evidence indicating that a significant hazard does not exist, or Perform additional geotechnical studies to attempt to locate the fault and implement the RMQCB and EPA (RCRA) setbacks for Group 1/Hazardous waste, or 	A, B, C

SUMMARY

B. SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATIONS (Continued)

Impact	Mitigation	Alternative(s) Affected
	<ol style="list-style-type: none"> 3. Establish a setback from the west edge of the State's Special Study Zone or at some specified distance from the inferred location of the fault, or 4. Designate area remote from the inferred or determined location of the fault, such as Cell A₁, to receive Group 1/Hazardous wastes, or 5. Deny approval for Acme to receive Group 1/Hazardous wastes in the expansion area 	A, B, C
	<ul style="list-style-type: none"> - Design (engineer) landfill cells to contain fill material and leachate under anticipated seismic conditions - Inspect cells for damage following earthquakes; repair damage 	A, B, C
<u>Water: Surface Water, Groundwater, Erosion</u>		
• Leachate may contaminate surface waters	<ul style="list-style-type: none"> - Provide evidence of water quality protection (levee thickness, impermeable barriers, etc.) to permitting agencies - Install monitoring wells to check leachate depth and to test seepage - Implement procedures for evaluating and detecting leachate seeps in expansion area - Direct drainage from the landfill away from the mitigation area - Enclose the Contra Costa Canal adjacent to the Acme property or provide screening - Prepare detailed surface drainage plans to be implemented during landfill operations 	<p>A, B, C, E</p> <p>A, B, C, E</p> <p>A, B, C</p> <p>B</p> <p>C</p> <p>A, B, C, E</p>

SUMMARY

B. SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATIONS (Continued)

Impact	Mitigation	Alternative(s) Affected
<ul style="list-style-type: none"> Leachate may contaminate ground water 	<ul style="list-style-type: none"> Ensure the equivalent of a clay layer at least 5 feet thick with permeability of 1×10^{-6} cm/sec or less on the bottom (which may be provided by Bay Mud) and sides of all disposal areas, or install bottom liner system specified by RCRA Construct impermeable barriers to separate the landfill from the flood control and perimeter levees; provide a buffer zone between the landfill and the exterior levees if required by the permitting agencies Utilize Group 3 materials as the first layer of fill materials to keep other fill materials above leachate level Construct additional observation wells to monitor groundwater in the mitigation area Construct observation wells to monitor groundwater adjacent to the Contra Costa Canal 	<ul style="list-style-type: none"> A, B, C A, B, C A, B, C B C
<ul style="list-style-type: none"> High salinity of dried dredged materials used for refuse cover may inhibit vegetation 	<ul style="list-style-type: none"> Mix dredged materials with upland soils when used for cover material to be vegetated, if necessary Prepare revegetation plans that include salt-tolerant plant species 	<ul style="list-style-type: none"> A A
<ul style="list-style-type: none"> Erodable surface area would be increased 	<ul style="list-style-type: none"> Develop revegetation program for operations period Divert surface runoff to a reinforced channel or pipe Revegetate all levees facing the mitigation area 	<ul style="list-style-type: none"> A, B, C, E A, B, C, E B

SUMMARY

B. SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATIONS (Continued)

Impact	Mitigation	Alternative(s) Affected
<ul style="list-style-type: none"> Very high potential for erosion and sedimentation in southern parcel due to topography 	<ul style="list-style-type: none"> Prepare a detailed erosion and sediment control plan which includes structural measures, revegetation methods and species 	C
<ul style="list-style-type: none"> Truck wash water is a potential pollutant 	<ul style="list-style-type: none"> Install a portable or permanent truck washing area where wash water can be disposed or treated 	A, B, C
Biota: Vegetation and Wildlife		
<ul style="list-style-type: none"> Existing wetland vegetation would be eliminated and eventually replaced by upland grassland resulting in reduced habitat value and lost wetland restoration potential 	<ul style="list-style-type: none"> Identify and acquire mitigation area(s) which would mitigate for the loss of wetlands and reduced habitat value All mitigation areas should be thoroughly evaluated by the California Department of Fish and Game, U.S. Fish and Wildlife Service and National Marine Fisheries Service to determine adequacy of compensation Increase habitat values of all mitigation areas to replace the habitat value of the area lost to landfill expansion by using proven marsh restoration practices 	A, C A, B, C A, B, C
<ul style="list-style-type: none"> Local wildlife populations would be reduced 	<ul style="list-style-type: none"> Increase and sustain habitat values on mitigation areas by completing and implementing a detailed habitat management plan for each mitigation area. 	A, B, C

SUMMARY

B. SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATIONS (Continued)

Impact	Mitigation	Alternative(s) Affected
<u>Air Quality</u>		
• Dust, odor, and gas generation would continue to affect adjacent areas	- Develop and implement a complete dust control program	A, B, C
	- Treat dried dredge materials used for cover to control dust	A
	- Apply cover materials daily to reduce odors; (some days of odor problems are unavoidable especially in Alternative C due to closeness of residential neighborhoods)	A, B, C, E
	- Obtain a BAAQMD Permit (which may have additional conditions for operation to mitigate air quality impacts), if required	A, B, C, D, E

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Circulation and Traffic

- Hazardous traffic conditions and occasional flooding would continue at the Waterfront Road off-ramp of I-680 which can limit access to Acme property

- Regrade and repave northbound I-680 off-ramp at Waterfront Road; construct a right-turn lane (Caltrans)

A, B, C

Noise

- Excavation of proposed borrow areas may expose residential areas to increased noise

- Implement noise and visual buffer required by existing land use permit; retain ridgeline of large hill

A, B, C

- Minimize excavation of hill borrow areas by using materials from landfill floor and, for Alternative A, using dredged materials

A, B, C

SUMMARY

B. SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATIONS (Continued)

Impact	Mitigation	Alternative(s) Affected
Public Health and Safety		
• Methane generation may present a hazardous condition for adjacent areas	<ul style="list-style-type: none"> - Expand methane gas collection system to include landfill areas - Conduct further hydrogeologic studies to evaluate the effectiveness of levees as barriers to lateral gas migration, if necessary - Install monitoring probes as disposal operations are conducted 	A, B, C A, B, C A, B, C
• The potential for fire hazards would continue with the extended landfill operations	<ul style="list-style-type: none"> - Continue to provide fire protection equipment and follow preventive practices - Follow appropriate emergency fire response procedures as described in Contingency Plan 	A, B, C A, B, C
• Vector hazards would continue with the extended landfill operations and deposition of dredged materials	<ul style="list-style-type: none"> - Continue vector control program (daily cover, etc.) in the landfill expansion areas; perform regular diskings to close cracks in drying dredged material - Design resource recovery operations to minimize vector accessibility 	A, B, C, D
• Birds at the landfill may present a hazard for aircraft operations at Buchanan Field	<ul style="list-style-type: none"> - Conduct further investigation to determine the degree of bird hazard at Buchanan Field and possible mitigation if a hazard is shown to exist 	A, B, C
• Landfill expansion in Alternative C conflicts with FAA regulations requiring a minimum of 10,000 feet between runway and landfill operations	<ul style="list-style-type: none"> - Evaluate the Acme site to determine compliance with safety regulations (FAA responsibility) 	C
• Combustion residue resulting from waste-to-energy facility could be a hazardous waste	<ul style="list-style-type: none"> - Test composition of combustion residue in order to formulate appropriate disposal criteria 	D

SUMMARY

B. SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATIONS (Continued)

	Impact	Mitigation	Alternative(s) Affected
<u>Resource Conservation and Recovery</u>			
<ul style="list-style-type: none"> Existing solid waste disposal methods that emphasize landfill rather than material and energy recovery would be continued 		<ul style="list-style-type: none"> Promote material conservation and recovery efforts and initiate waste-to-energy project when economically feasible Continue planning for the implementation of a central county waste-to-energy project 	<p>A, B, C, D, E</p> <p>A, B, C, D, E</p>
<u>Cultural Resources</u>			
<ul style="list-style-type: none"> Unknown impacts on cultural resources located in Acme southern parcel 		<ul style="list-style-type: none"> Perform on-site reconnaissance of southern parcel to locate prehistoric artifacts 	<p>C (and new borrow areas for A and B)</p>
<u>Aesthetics</u>			
<ul style="list-style-type: none"> High potential for conflict with nearby residential neighborhoods (including noise, odor, dust, etc.) 		<ul style="list-style-type: none"> Use dredged material as cover material to reduce the need for on-site excavation Provide visual buffer between neighborhood and landfill operations Retain hill and ridgeline east of neighborhood during 22-acre landfilling 	<p>A</p> <p>A, B, C</p> <p>A, B, C</p>
<ul style="list-style-type: none"> High potential for visual and aesthetic conflicts along Waterfront Road (designated scenic road) and along Walnut/Pacheco Creek (future equestrian trail system) 		<ul style="list-style-type: none"> Smooth landscape contours and revegetate landfill areas not in use Include enhancement landscaping in the Closure Plans for the site 	<p>A, B, C</p> <p>A, B, C</p>

SUMMARY

C. SUMMARY COMPARISON OF ALTERNATIVES AND IMPACTS

Impact Area	Alternative				
	A	B	C	D	E
1. Land Use	-m	-m	-m	x	x
2. Geology/Seismicity/Soils	-m	-m	-m	x	x
3. Surface Water	-m	-m	-m	x	x
4. Ground Water	-m	-m	-m	x	x
5. Erosion	-m	-m	-m	x	x
6. Vegetation	-m	-m	-m	x	x
7. Wildlife	-m	-m	-m	x	x
8. Air Quality	-m	-m	-m	-m	-m
9. Traffic	-m	-m	-m	x	x
10. Noise	-m	-m	-m	x	x
11. Economics	0	0	0	x	x
12. Public Health & Safety	-m	-m	-m	-m	x
13. Resource Conservation & Recovery	-m	-m	-m	-m	-m
14. Energy	0	0	0	x	x
15. Cultural Resources	-m	-m	-m	x	x
16. Aesthetics	-m	-m	-m	x	x
17. Recreation	0	0	0	x	x

+ = Beneficial Impact

0 = No Significant Impact

- = Adverse Impact (m indicates mitigations recommended)

x = Impacts Cannot Be Determined At This Time

Alternatives

- A Proposed Project - 200 acre landfill expansion
- B Reduced Project - 100 acre landfill expansion
- C Alternative Acme Location - south parcel
- D Other Methods of Disposal
- E Other Areas (off-site) For Landfill

A. HISTORY AND BACKGROUND OF THE PROJECT

Acme Landfill near Martinez has been operated as a private enterprise by Acme Fill Corporation since 1949. It presently serves as the primary solid waste disposal site for Contra Costa County. In addition to the central county, its service area includes Rodeo with waste also received from Benicia in Solano County. Approximately 1500 tons per day (TPD) of Groups 2 and 3 and certain hazardous/Group 1 wastes are received at the site. (Table 1)

The existing 125- and 22-acre operations, as well as the proposed 200-acre expansion, are portions of approximately 535 acres owned by Acme Fill Corporation east of the City of Martinez and Interstate 680. (Summary Section Exhibits S-1 and S-2) Other major portions of the property include a 178-acre southern portion which provides cover material and is the location of the 22-acre operational area. A 20-acre non-operational Class I site is also part of the Acme property (Summary Section Exhibit S-3).

The entire property is bounded on the north by the Southern Pacific Railroad (SPRR) tracks parallel to Waterfront Road, on the east by the Pacheco Creek and Walnut Creek Flood Control Channels and Henry's Tree Service, by the Santa Fe Railway (AT&SF) on the south, the Contra Costa Canal and the East Vine Hill/Pacheco neighborhoods on the southwest, and the Shell Oil Company land holdings on the northwest. Within this delineated area are located the Martinez Gun Club, an industrial waste disposal site owned by IT Corporation, and a parcel of land owned by the Contra Costa Water District. Two small portions of the Acme property are located to the southwest between the Contra Costa Canal and Interstate 680. (Summary Section Exhibits S-2 and S-3)

Acme Landfill is allowed to accept all Group 2 and 3 wastes along with certain hazardous/Group 1 wastes and treated dewatered sewage sludge from the Central Contra Costa Sanitary District under a Class II-1 permit from the San Francisco Regional Water Quality Control Board (RWQCB) and an Interim Status Document from the California Department of Health Services. Group 1 wastes consist of certain substances that could impair the quality of useable waters. Group 2 wastes consist of chemically or biologically decomposable material of municipal (residential/commercial), industrial, or agricultural origin. Group 3 wastes consist of nondecomposable inert solids such as construction and demolition debris. Table I shows the estimated daily quantities of these wastes disposed by Acme in 1982. A discussion of hazardous/Group 1 waste is provided in Chapter III. H. Public Health and Safety. Details of applicable and required permits for Acme's operation are provided in this chapter in Section D, Regulatory Permit Requirements and Status.

I. INTRODUCTION
A. HISTORY AND BACKGROUND OF THE PROJECT (Continued)

Table 1

ESTIMATED WASTE QUANTITIES DISPOSED AT ACME LANDFILL
(Tons Per Day)^a

Source	<u>1982</u>
Residential/Commercial (Group 2)	941
Industrial (Non-Hazardous) (Group 2)	114
Construction/Demolition (Group 3)	215
Hazardous Wastes (Group 1)	50 d
Sewage Sludge ^b (Group 2) ^c	<u>180</u> (wet) ^d
Total	1,500 e

^aBased on seven-day week.

^bSludge from Central Contra Costa Sanitary District.

^cThe Regional Water Quality Control Board considers "dewatered sludge" to be a Group 2 waste and further defines it as digested sludge having a moisture content of less than 85 percent.

^dBased on recent monthly reports of Acme Fill to RWQCB.

^eEstimated by Acme Fill Corporation.

SOURCE:

Data based on Acme Fill Corporation's total estimate.

I

INTRODUCTION

A.

HISTORY AND BACKGROUND OF THE PROJECT (Continued)

Acme operates as a Class II-1 sanitary landfill. Class II-1 disposal sites may be located above or adjacent to usable groundwater. Artificial barriers may be used beneath or alongside the fill to contain waste if natural conditions do not provide such confinement. Protection from a 100-year frequency flood must be provided. Groups 2 and 3 wastes can be accepted and, under special conditions, certain Group 1 materials may be accepted. Sanitary landfills must conform to federal and state regulations which require waste to be disposed in a restricted portion of the site, compacted to specified density, graded to designated slope, and covered daily with 6 inches of cover. Burning is not allowed.

In addition to disposing of solid waste, Acme staff recycle and salvage certain materials that are brought to the site. Some newspaper, cardboard, metals, scrap aluminum, and glass are separated by hand and sold to processors.

In December 1978, Acme applied to the U.S. Department of the Army, Corps of Engineers for a permit to construct levees and expand its landfill disposal operations. That permit was denied primarily on the basis that the project would destroy valuable wetlands for a non-water-dependent purpose, that an environmentally preferable alternative was potentially available on a 178-acre portion of the Acme site south of the Gun Club, and that Acme failed to provide sufficient and timely environmental information. Previously, the U.S. Fish and Wildlife Service evaluated the 200-acre expansion area in 1979 for wildlife habitat and found that approximately 91 acres support seasonal-wetlands vegetation, approximately 95 acres support lowland-grassland vegetation, and several wildlife species frequent the site. This evaluation estimated that filling the site would result in the loss of 5576 habitat units of mixed wetland and grassland vegetation. A 1977 study concluded that the primary value of this parcel is its potential as restorable marshland and that breaching the flood control levees and create a productive salt marsh within a relatively short time.¹

In 1980 Acme Fill Corporation and the California Department of Fish and Game agreed to a Memorandum of Understanding for the acquisition and management of 160 acres of wetlands as an off-site mitigation for the proposed project. A new permit application, the one currently under consideration, was submitted to the Corps of Engineers on 11 March 1981 with revisions submitted in December 1982.

I INTRODUCTION

Acme Fill submitted a Closure Plan for the existing 125-acre and 22-acre landfill sites on January 31, 1983. The Closure Plan was prepared to comply with the requirements of the RWQCB and the DOHS and is subject to EPA approval. It recommends a final cover of at least 3 feet of soil planted with grass species. A 12" stratum of this "cap" would be compacted to achieve permeabilities of less than 1×10^{-6} cm/sec. to impede surface water infiltration into the landfill. Other elements of the plan include: lined drainage ditches; additional leachate barriers; a leachate reduction program; additional studies to develop a leachate monitoring collection and disposal program; continued gas collection by Getty Synthetic Fuel, Inc.; and a post closure monitoring and maintenance program. The estimated date for completing all phases of the Closure Plan is fall of 1988 for the 125-acre site and fall of 1984 for the 22-acre site.

There are no final long-range land uses planned for either site. The various uses being considered by Acme include a golf course and park, light industrial buildings, storage yards or water-related industrial facilities. Acme expects that the proposed final configuration of the site would be compatible with these uses. The estimated total closure cost for both sites would be about \$1,802,000 with annual post-closure maintenance costs of \$12,000 during a 30-year period. The Closure Plan for the existing landfill sites is currently under review by the RWQCB and the DOHS. Acme has stated that the general concepts presented in this plan would apply to the proposed 200-acre expansion (Alternative A) and that more specific closure requirements would have to be developed for that site.

B. PURPOSE AND NEED FOR THE PROJECT

1. Acme's Service Role

Acme Landfill provides a significant public service which contributes to the efficient functioning of households, businesses, industry, and government in central Contra Costa County. Approval of the proposed project would allow Acme Fill Corporation to use a 200-acre portion of its land to continue its business of providing waste disposal services to the public. Waste is also brought to Acme from Benicia in Solano County, across Carquinez Straits.

At the present time, Acme Landfill disposes of approximately 64 percent of the county's solid wastes. It is the largest landfill in Contra Costa County and one of the largest in California. There are 8 collectors in its service area. In 1982, Acme Fill Corporation estimated that 1,500 tons per day (7 day week) of solid wastes are handled at the landfill.

The site collects from approximately 425,000 to 450,000 people in its service area. That service area includes the areas shown in Exhibit I-1

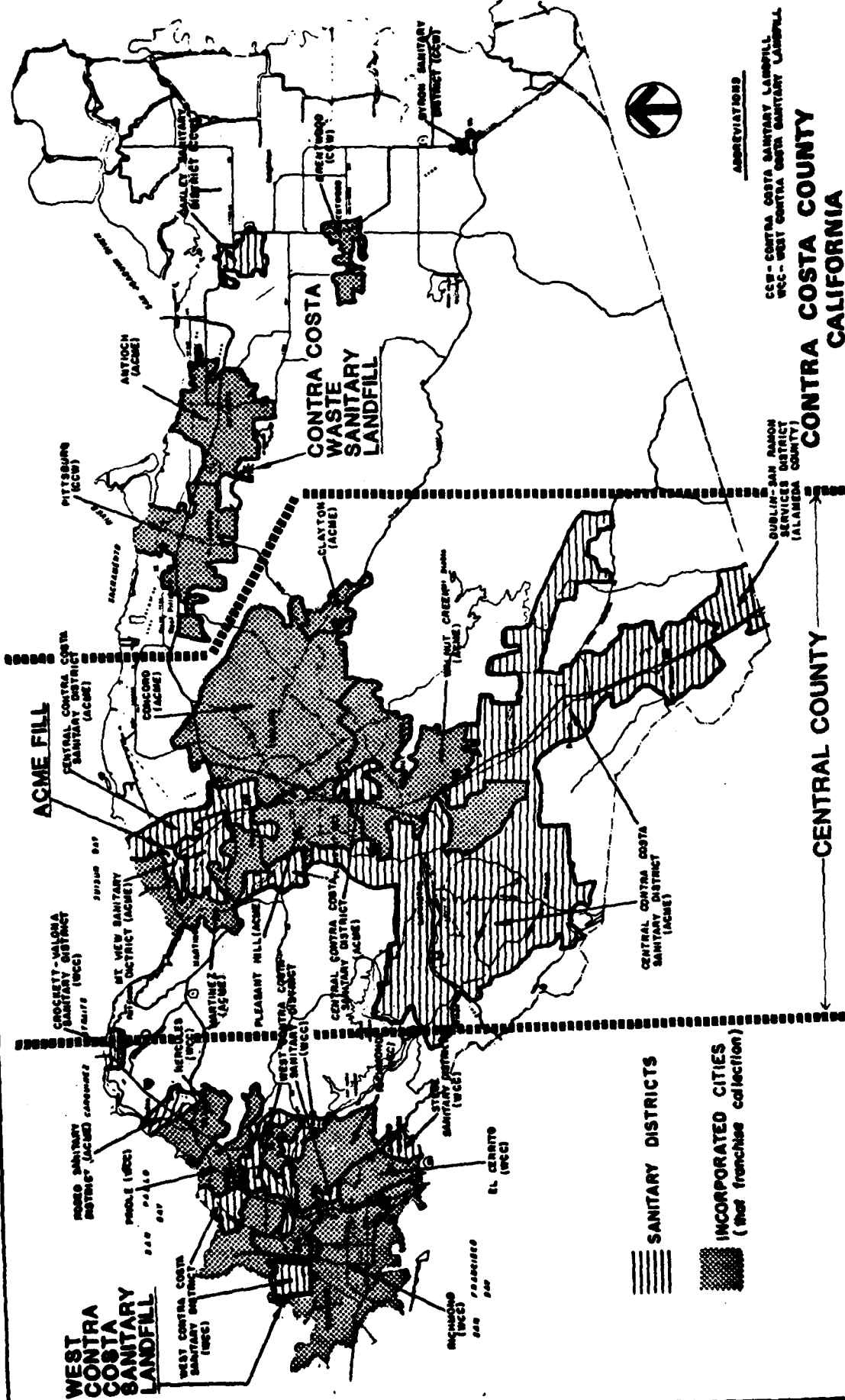


EXHIBIT
I-1

Franchised Collection Areas

TORREY & TORREY INC.
environmental/urban
planning and design

I INTRODUCTION

B. PURPOSE AND NEED FOR THE PROJECT (Continued)

as incorporated cities and Central Contra Costa Sanitary District in the central county (exclusive of Dublin-San Ramon Service District). Some isolated service areas are located on the fringes of this central service area.² The cities and communities included in this area are: Orinda, Lafayette, Moraga, Walnut Creek, Martinez, Clyde, Concord, Pleasant Hill, Diablo, Clayton, San Ramon, Danville, Alamo, Briones, and West Pittsburg. In addition, waste is brought from Rodeo, and from Benicia in Solano County across Carquinez Straits.

Beyond serving its present service area, Acme is expected to accept wastes now going to the Contra Costa Waste Sanitary Landfill and Pittsburg Landfill when these sites close in 1993 if Acme is still operating. Acme would then be accepting 300 additional tons per day or a total of approximately 72 percent of Contra Costa's solid waste .

Continued growth in population and employment is predicated on a supportive infrastructure of facilities and services. Part of this infrastructure is the proper disposal of solid wastes. Acme presently provides the major disposal facility in Contra Costa County.

The 1982 County Solid Waste Management Plan "...reaffirms local government support for the expansion of Acme landfill to the 200-acre (nominally) parcel adjacent to the existing fill area." The Plan also recognizes that a new landfill site will be needed by the beginning of the next decade and gives the private sector until 1985 to secure a new site elsewhere in the County.

Note: Subsequent to the preparation of this text, which is based on the County's 1982 Solid Waste Management Plan, refuse from Antioch was diverted from Acme to the Contra Costa Waste Sanitary Landfill while refuse collected in Pittsburg was diverted from the latter facility to Acme. The net effect of these changes is negligible for the purposes of this EIR/EIS.

2. Acme's Role in Hazardous Waste Management

Acme Landfill accepts approximately 50 tons per day of hazardous/Group 1 waste that is generated almost entirely by the petroleum and chemical industries in Contra Costa County.³ This solid waste, which is permitted by the Regional Water Quality Control Board, is buried on the currently operational 125-acre Class II-1 site. (Descriptions of these hazardous/Group 1 wastes, disposal process requirements, and Acme's hazardous waste management plan and contingency plan are provided in III.H. Public Health and Safety.)

The Acme property includes a 20-acre former Class 1 site with 4 ponds. Now inactive, this site was used for the disposal of liquid hazardous wastes. This site is located between the Martinez Gun Club and the Class I site owned and operated by IT Corporation. Before 1968 the Acme Class 1

I. INTRODUCTION

B. PURPOSE AND NEED FOR THE PROJECT (Continued)

site was used for winter disposal of waste west of the existing ponds. Subsequently it was leased to IT Corporation (then the Industrial Tank Company) from 1961 to 1971.⁴ The site was not used again until the Fall of 1980 when Acme used it for a short period for hazardous/Group 1 waste disposal with concurrence of the RWQCB. The provisions of the Interim Status Document issued by the California Department of Health Services prohibit disposal of hazardous waste in the previously used Class 1 hazardous waste ponds. This restriction is based on Assembly Bill 2370 (effective January 1, 1981) which prohibits expansion, opening, or re-opening Class 1 sites within 2,000 feet of existing residences other than industrial dwellings after August 6, 1980. Provisions in this bill exempt hazardous waste disposal facilities that were actually and lawfully disposing of hazardous waste on that date. Because the Acme Class 1 site was inactive on August 6, 1980, re-opening the site for active use would be prohibited within 2,000 feet of residential type land uses pursuant to the California Health and Safety Code. (Further discussion is provided in Section D, Regulatory Permit Requirements; E, Policy Context; and in III.H. Public Health and Safety.)

Additionally, the Regional Water Quality Control Board Waste Discharge Requirements Order 76-37 issued April 28, 1976 prohibits Acme from using the Class 1 site for Group 1 wastes. Acme was required by the RWQCB to meet the provisions of the Porter-Cologne Water Quality Control Act. Although these improvements were completed in the Fall of 1980 and reported to the RWQCB in 1981, the site has remained inactive.⁵ As an inactive site, it is not subject to regulations governing continued operation or monitoring under formal closure.

Acme is presently reserving the inactive Class 1 area as a possible future Class 1 site. Whether or not re-opening Acme's Class 1 site for hazardous/Group 1 wastes would preclude its subsequent use for disposal of Groups 2 and 3 wastes would depend on the nature of hazardous/Group 1 wastes disposed. The specific wastes, the concentrations of hazardous substances in those wastes, and the physical state of the materials disposed there would be a factor in Acme's decision to re-open or formally close the site. This matter would also depend on what materials are allowed by conditions of the RWQCB's Waste Discharge Order Requirements for that site. Further, the compatibility of Groups 2 and 3 wastes disposal methods with handling procedures required for Group 1 wastes would have to be determined at a later date. The use of solar evaporation ponds, for example, would preclude the use of spreading and compaction equipment used for landfilling municipal solid wastes.

If Acme elects to formally close the Class 1 site, the suitability of that site for Groups 2 and 3 wastes would depend on Acme's closure plan. A plan for that site is not available at the present time. Disposal of

I INTRODUCTION
B. PURPOSE AND NEED FOR THE PROJECT (Continued)

Groups 2 and 3 wastes in the site may be possible once the Class I site is closed and capped (as was done at the Contra Costa Waste Sanitary Landfill).

Acme representatives estimate that the Class I site would have a 4- to 6-months' capacity for Groups 2 and 3 wastes if used exclusively for this purpose since the location of the site and its topography restrict the amount of waste that could be disposed there.⁶

Because of the length of time required to process hazardous waste facility permits, it is possible that the permits required to dispose of hazardous wastes in the proposed landfill expansion area would not be granted until after all other regulatory requirements have been met. If this occurs, Acme Fill Corporation could dispose of only non-hazardous wastes in the expansion area while the hazardous waste permits are pending. Hazardous wastes might continue to be disposed of at the existing 125-acre site. The portions of the expansion area used to dispose of non-hazardous wastes may not be suitable for later disposal of hazardous wastes, depending on the site preparation requirements and other conditions of the hazardous waste facility permits.

The issue of demand for hazardous waste disposal facilities is complex and controversial. Waste-monitoring requirements promulgated by EPA under the Resource Conservation and Recovery Act of 1976, as amended (RCRA) established a "cradle-to-grave" monitoring system of hazardous wastes. When these controls became effective in November 1980 it was assumed that increasing volumes of hazardous wastes would be directed to RCRA-permitted facilities for disposal.

However, a nationwide survey conducted for the EPA shows that the total volume of waste received by 9 firms for landfill disposal actually declined by 10 percent between 1980 and 1981. This reduction may be attributable to several factors:⁷

1. Many industries hardest hit by the recession are generating less waste that requires off-site disposal.
2. Huge price increases for hazardous waste management services have made some waste-reducing options and on-site treatment methods economically more attractive than they were in the past when off-site disposal was a relatively inexpensive option. Increased costs have also encouraged generators to segregate hazardous from non-hazardous wastes to minimize hazardous disposal costs.

I INTRODUCTION

B. PURPOSE AND NEED FOR THE PROJECT (Continued)

3. Some large-volume waste streams, such as paint sludges and pickle liquor sludge, have been delisted as hazardous by the EPA.
4. A short-term, and paradoxical, effect of the regulations was to increase the "frantic pace" of improper, illegal dumping that the regulations were designed to prevent.⁸

In California, regulations adopted December 23, 1982 in response to Executive Order B8881 restrict the land disposal of certain hazardous wastes. These wastes include specific concentration levels of liquid hazardous wastes: free cyanides, certain metals, polychlorinated biphenals as well as liquid hazardous waste having a pH less than or equal to 2.0 and hazardous wastes containing halogenated organic compounds greater than or equal to 1,000 mg/kg. The regulations establish a series of phase-out dates extending from June 1, 1983 to July 1, 1985 for specific concentration levels of certain hazardous wastes if alternative treatment capacity is available prior to the scheduled phase-out date.

Whether the reduced demand nationwide for hazardous waste management facilities between 1981 to 1982 was a short-term effect or the beginning of a trend that will affect Acme remains to be seen. It is not known if the Contra Costa County industries that rely on Acme as a disposal site are generating wastes that are similar to those included in the EPA survey nor is it known if local industry hazardous waste generation and disposal trends mirror the national situation.

3. Projected Future Solid Waste Quantities

In the preparation of the County Solid Waste Management Plan an estimate was made of the quantities of solid waste received at Acme Landfill. Projections of waste quantities to be disposed of at the site were made to 2000 on a five-year incremental basis. Acme Fill Corporation generally accepts these projections as reasonable.⁹ Table 2 shows the five-year totals of solid waste tonnage per day, the five year percent change, and average annual percent change. An itemization by waste group (Groups 1, 2, and 3) is presented in Appendix A.

I INTRODUCTION
B. PURPOSE AND NEED FOR THE PROJECT (Continued)

Table 2
PROJECTED FUTURE WASTE QUANTITIES
SERVICE AREA OF ACME FILL*
1980 - 2000
(Tons Per Day)**

	<u>1980</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>
Total Waste Disposal at Acme Landfill	1,344	1,550	1,736	1,883	2,014
Percent Change	15.3%	12.0%	8.5%	7.0%	
Average Annual Percent Change	2.9%	2.3%	1.6%	1.4%	

*Includes imports from Benicia (Solano County).

**Based on seven-day week.

SOURCES: ABAG, Solid Waste Facilities Study, December 1979.
Contra Costa County, Public Works Department, County Solid
Waste Management Plan, Final Draft, December 1981, with
revisions made January 1982.

4. Life Expectancy of Acme Landfill

Acme Fill Corporation expects its 125-acre and 22-acre sites, where current landfill operations are conducted, to be full before the end of 1983. To continue operations beyond that date would require additional capacity.

The County Solid Waste Management Plan estimated the longest possible life expectancy for Acme Landfill to be to the year 2000 with material recovery and a waste-to-energy facility. This projection is based on the Plan's Scenario 6 (Appendix A). Scenario 6 assumes the use of the existing

I INTRODUCTION
B. PURPOSE AND NEED FOR THE PROJECT (Continued)

operation area plus use of areas A, B, C, D, E and F shown in Figure I-2. These areas are the 200-acre northeastern parcel, a portion of the 178-acre southern parcel against the existing hills, the currently inactive 20-acre Class I site, and two additional properties not now owned by Acme. Life expectancy could be lengthened if additional fill capacity is made available by filling the borrow pit now being used for cover material.¹⁰

For the purpose of estimating capacity, the County plan assumes a maximum fill height of 40 feet, 4:1 side slope ratio, in-place density of refuse of 1,200 pounds per cubic yard, and refuse-to-cover material ratio 9:1.¹¹

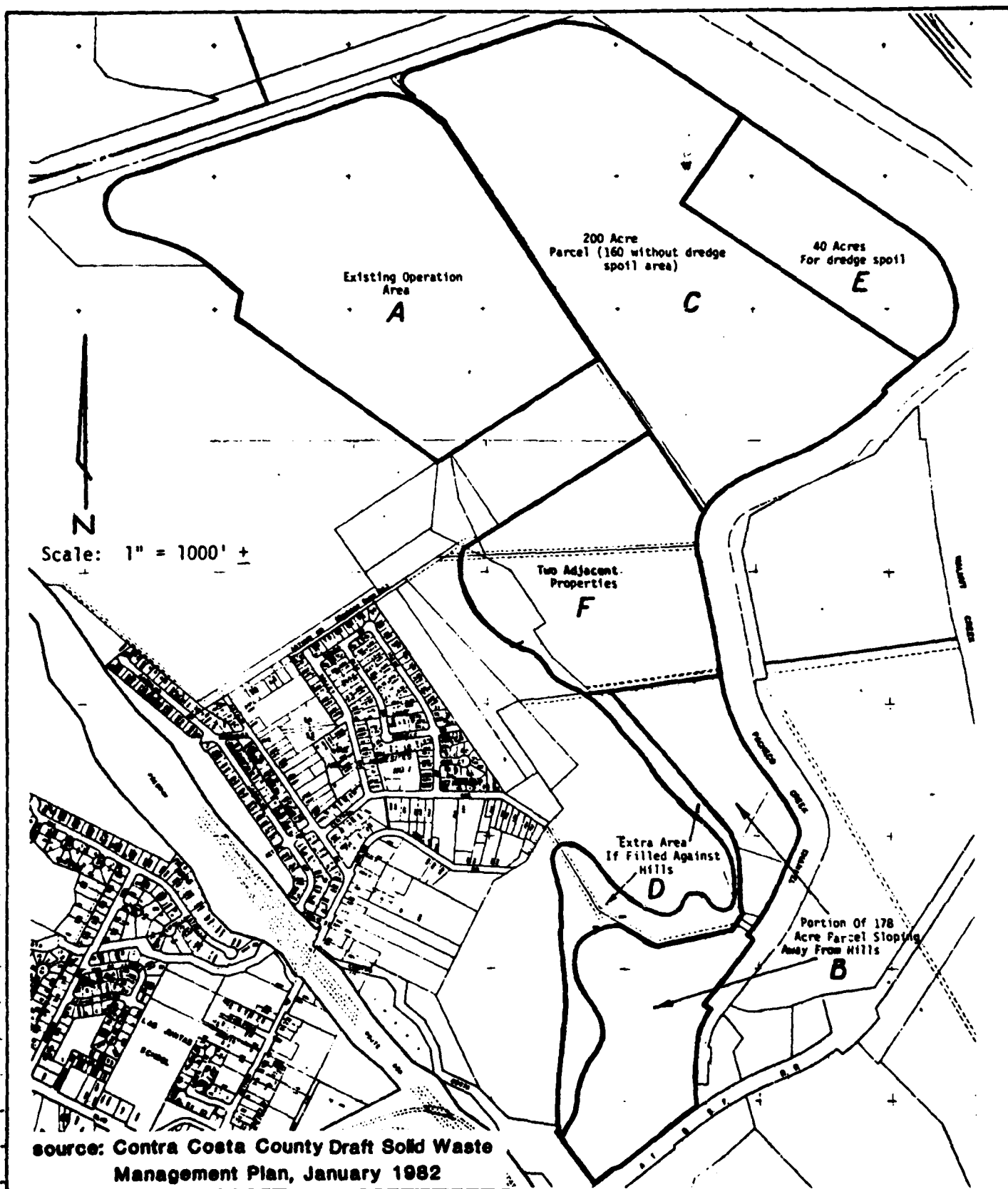
These assumptions differ somewhat from Acme's current practices. Current fill in the northern parcel is about 80 feet high in some places, average slope 5:1, refuse-to-cover is shown in recent quarterly reports to the Regional Water Quality Control Board as 4:1 to 5:1, and in-place density is estimated to be slightly higher than 1,200 pounds per cubic yard.¹²

Without recycling or energy recovery, the longest possible life expectancy under Scenario 6 is reduced to 1994.¹³

C. PURPOSE AND NEED FOR AN EIR/EIS

This EIR/EIS has been prepared to meet the requirements of both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) as part of the state and local, and federal permitting processes.

A previous permit application submitted by Acme Fill Corporation to the U.S. Department of the Army, Corps of Engineers, San Francisco District in December 1978 was denied, in part, on the basis of lack of sufficient and timely environmental information. This report has been prepared to provide such information for a new permit application submitted by Acme to the Corps 11 March 1981 (revised December 1982).



I INTRODUCTION

D. REGULATORY PERMIT REQUIREMENTS AND STATUS

The primary permitting agencies for the proposed activity and its alternatives are Contra Costa County and the U.S. Department of the Army, Corps of Engineers. However, because of the particular nature of the proposed activity and because a wetlands area is involved, several other federal, state and local agencies also have regulatory authority. Permits which would be required for Alternatives A through D are explained in paragraphs 1 through 7 below. Additional regulatory considerations are discussed at the end of this section.

The City of Martinez is currently contemplating annexation of the Acme property and surrounding area. The City currently has no regulatory authority over the project. General City policies which would apply to the project are also discussed in this section.

1. U. S. Department of the Army, Corps of Engineers

Permit Required: Department of the Army Permit

Statutory Authority: A Department of the Army permit is required under Section 10 of the River and Harbor Act of 1899 and Section 404 of the Clean Water Act of 1977 (formerly the Federal Water Pollution Control Act Amendments of 1972) in order to construct levees and drainage structures, discharge dredged material, and dispose of compacted solid wastes in formerly navigable waters of the United States and waters of the United States. Section 10 gives the Corps of Engineers authority to regulate construction of levees, fill and other structures in navigable waters, including the authority to deny a permit for reasons concerning fish and wildlife, conservation, pollution, aesthetics, ecology, and the general public interest. Section 404 gives the Corps the authority to regulate the discharge of dredged or fill material into waters of the United States. Because the discharge of solid wastes is regulated by the Environmental Protection Agency or the States under Section 402 of the Clean Water Act, sanitary landfills are not considered to be a discharge of fill material under Section 404. The preparation of the site including construction of the levees for containing the waste is regulated under Section 404. Under Corps of Engineers regulations (33 CFR 323) "waters of the United States" includes wetlands adjacent to other waters of the United States. Exhibit I-3.

Department of the Army regulations (33 CFR 320.4) also require the Corps to determine the desirability of using alternative locations and methods (to the proposed activity) and to discourage the unnecessary alteration or destruction of wetlands. Specifically, the District Engineer, when

I
D

INTRODUCTION

REGULATORY PERMIT REQUIREMENTS AND STATUS (Continued)

determining whether or not to issue a permit under these authorities, is required to consider whether an activity proposed for a wetlands area is primarily dependent upon being located in, or close to, the aquatic environment and whether feasible alternate sites are available.

Existing Permits: None required on current 125-acre or 22-acre operations at this time.

Permit Application: 11 March 1981 for proposed project (Alternative A)

Permit Requirements: Of the 200 acres that are the subject of Alternative A, about 180 acres are within the jurisdiction of the Corps of Engineers. Alternative B would also require a Corps permit. Portions of the 178-acre site of Alternative C are also within the Corps' Section 10 and Section 404 jurisdictions. Whether Alternative D would require a Corps permit depends on the location of any landfill associated with this alternative.

In granting a permit the Corps may require a set of Special Conditions in addition to the General Conditions included in all permits. Special Conditions normally address the location or design of a structure or fill rather than its use or operation. Certain mitigation measures recommended in this EIR/EIS may be included in a permit issued to Acme either by incorporation into the plans for the landfill or as Special Conditions.

When considering issuance of Department of the Army permits the Corps is required to coordinate with other federal, state, and local agencies and to address the mandates of other applicable federal legislation and regulations discussed in this section.

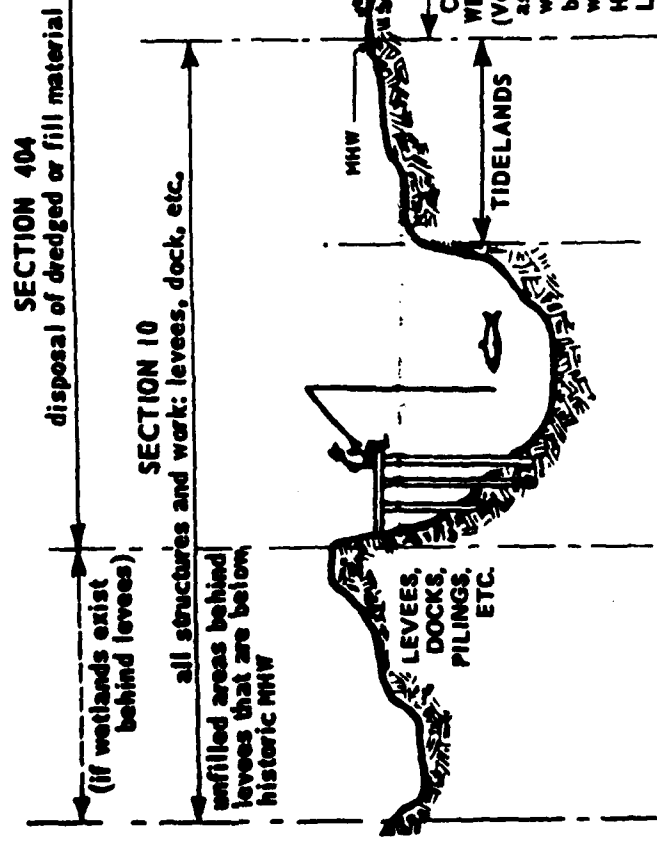
Comments: An earlier application dated December 1978 by Acme Fill Corporation for this permit was denied by the Corps in December 1980. The primary reasons for denial were that the project would destroy valuable wetlands for a non-water-dependent purpose, an environmentally preferable alternative was potentially available in the 178-acre southern property, and Acme failed to provide sufficient and timely environmental information.

2. U.S. Environmental Protection Agency (EPA)

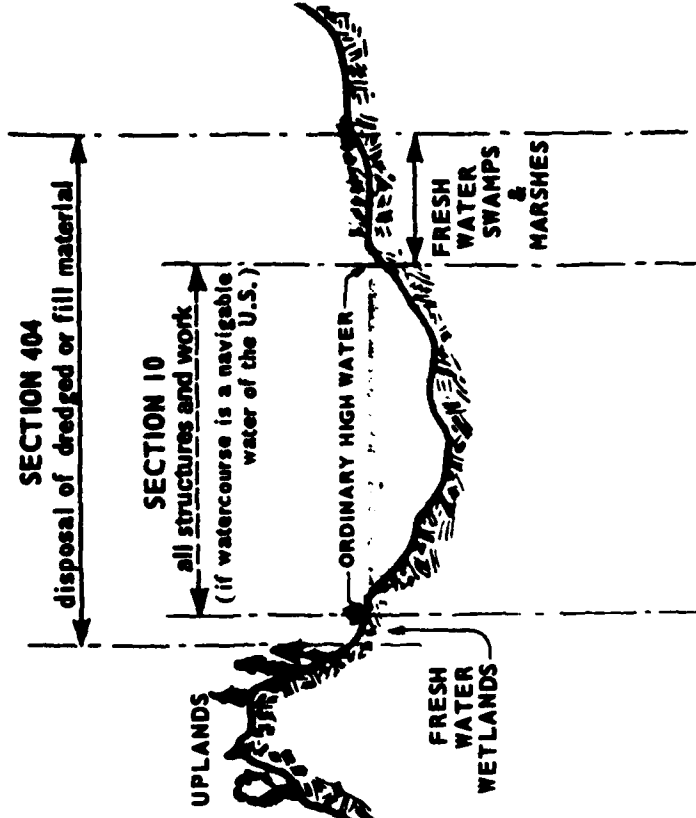
Permit Required: Hazardous Waste Facility Permit

Statutory Authority: Resource Conservation and Recovery Act of 1976, as amended (RCRA); 40 CFR 122; 40 CFR 264.11, 265.11.

TIDAL WATERS



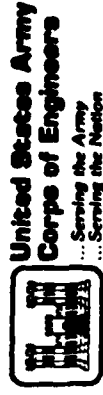
FRESH WATERS



NOTE:

IN ADDITION TO SECTIONS 10 AND 404 JURISDICTIONS, THE CORPS REGULATES THE TRANSPORTATION OF DREDGING MATERIAL FOR THE PURPOSE OF DISPOSING INTO OCEAN WATERS (SECTION 103).

SOURCE:



United States Army
Corps of Engineers
... Serving the Army
... Serving the Nation

San Francisco District

TORREY & TORREY INC.
environmental/urban
planning and design

Corps of Engineers Regulatory Jurisdiction

EXHIBIT
I-3

I INTRODUCTION
D REGULATORY PERMIT REQUIREMENTS AND STATUS (Continued)

Existing Identification Number: CAD 041835696

Regulations promulgated under Section 3010 of the Resource Conservation and Recovery Act require any person who owns or operates a facility for disposal of hazardous waste to notify the EPA of hazardous waste activity. Acme filed a Hazardous Waste Activity Notification Sheet in August 1980. After receiving this notification, EPA issued an identification number and distributed a hazardous waste facility permit application Part A. The identification number is not a permit. It would remain effective for Alternatives A, B, and C.

Area Included: The area specified by Acme on the RCRA Part A Permit application covers 535 acres including the 125- and 22-acre operations, the inactive Class I site and the area for Alternatives A, B, and C.

Permit Requirements: In response to RCRA regulations (40 CFR 122) which provide for a two-part hazardous waste facility permit application, Acme Fill Corporation filed the first part, Part A Forms 1 and 3 November 19, 1980. Part A enables a facility to qualify for "interim status" that allows it to continue to operate pending issuance of a federal hazardous waste facility permit by EPA. To obtain this permit, a Part B application must be submitted.

In a letter dated 28 January 1983, EPA requested Acme Fill Corporation to submit Part B of the permit application. First submittal of Part B is due 1 August 1983 for the initial completeness check of the EPA review process. Unlike Part A which consists of consolidated forms, Part B, as promulgated in 40 CFR 122.25 is a detailed narrative document which requires extensive information to substantiate compliance with RCRA regulations.

Comments: EPA and the states share responsibilities for the administration of the RCRA program. Each state's role in the permitting process varies according to the status of its authorization to administer the hazardous waste permit program. The current status of the State of California's authorization is discussed in 3. California Department of Health Services. EPA officials indicated at a 31 January 1983 meeting called by the County that Region 9 may administer the new RCRA landfill requirements, which became effective 26 January 1983, for a period before authorizing administration by California.

Acme's history of compliance with RCRA regulations at the inactive Class I site and 125-acre landfill is not a subject of this EIR/EIS. It may be considered by the EPA in their review of Acme's Part B Permit Application for a hazardous waste facility permit. Conditions to assure Acme's compliance with 40 CFR 264 may be made a part of any permit issued by EPA.

I INTRODUCTION
D REGULATORY PERMIT REQUIREMENTS AND STATUS (Continued)

3. California Department of Health Services (DOHS)

Permit Required: California Hazardous Waste Facility Permit

Statutory Authority: California Hazardous Waste Control Act (California Health and Safety Code, Division 20, Chapter 6.5) and California Hazardous Waste Control Regulations (California Administrative Code, Title 22, Division 4, Chapter 30).

Existing Authority to Operate: Interim Status Document CAD 04183569

The Interim Status Document (ISD) is not a permit to operate. It is issued by the DOHS as an authorization for Acme to operate as a hazardous waste facility pending DOHS issuance of a final permit. The number of this document is the same as the identification number issued by the Environmental Protection Agency. A facility operating under Interim Status is not subject to civil or criminal penalties for operating without a permit but is otherwise subject to the provisions of Chapter 6.5 and the rules, regulations, standards, and requirements issued or promulgated pursuant to Chapter 6.5.

Issued: Effective October 23, 1981

Area Included: The ISD does not specifically state what Acme site area is included for hazardous waste disposal. Rather, the ISD prohibits the use of specific areas for disposal of hazardous waste. The current 125-acre operational area and those parts of Alternatives A and B not specifically excluded may receive and dispose of hazardous waste, by inference.

Areas Excluded: The State DOHS Interim Status Document specifically prohibits disposal of hazardous wastes on any portion of the facility which was not actually and lawfully used for the disposal of hazardous waste as of August 6, 1980 and which is situated within 2,000 feet of a permanently occupied residence, a human hospital, a school for people under 21 years of age, a children's day care center, or any permanently occupied human habitation other than industrial dwellings. This prohibition specifically includes, but is not limited to, any portion of Alternatives A and B which are situated within 2,000 feet of any of these land uses, the 22-acre dry-weather site in the southern portion of the property, and the inactive 20-acre Class I hazardous waste ponds site. By implication, Alternative C would be included in this exclusion.

I INTRODUCTION
D REGULATORY PERMIT REQUIREMENTS AND STATUS (Continued)

New Permit Requirements: Alternatives A, B, C, and D, to the extent that a landfill is involved, all require a hazardous waste facilities permit from the DOHS in order to accept hazardous wastes. By letter dated October 13, 1982, the DOHS requested Acme to submit an Operations Plan 6 months later in April 1983. An Operations Plan is a detailed document, essentially equivalent to the RCRA Part B permit application submittal. (See 2. Environmental Protection Agency, Permit Requirements) The Operations Plan includes additional information to respond to specific California requirements (California Administrative Code, Title 22, Division 4, Chapter 30). Like the RCRA Part B Permit Application, it is an essential submittal in the permit process. The DOHS Hazardous Waste Facility Permit may include the same areas for hazardous waste disposal as covered by the ISD, or it may revise the designation of those areas that can receive hazardous waste in accordance with future policy decisions. (See Areas Included, Areas Excluded) If EPA determines that Acme's proposed facility expansion would not constitute a major modification to their existing hazardous waste operations, the conditions of the current ISD would apply until a Hazardous Waste Facility permit is issued.

Comments: The EPA and the states share responsibility for the administration of the RCRA hazardous waste program. Although State programs are established and operate under State law, EPA-approved State RCRA programs also implement Federal law and operate in lieu of Federally administered programs. A permit issued by the State after its program has been approved satisfies the Federal permit requirements.

On October 31, 1980, the DOHS and the State Water Resources Control Board jointly submitted California's application to EPA requesting interim authorization for the State's hazardous waste program. EPA granted Phase I Interim Authorization June 4, 1981. Since then California has also received Phase IIa Authorization which confers on the DOHS the authority to issue permits for hazardous waste treatment and storage facilities in lieu of a federal permit. Still pending is Phase IIb Authorization for the State to issue permits for hazardous waste landfill facilities, including Acme, in lieu of a Federal permit. Once this status is conferred, the State permit would be considered equivalent to the Federal permit. At the present time, it is expected that separate Federal and State hazardous waste facility permits will be required for the Acme facility. The DOHS Hazardous Waste Facility permit would replace the Interim Status Document.

4. San Francisco Bay Regional Water Quality Control Board (RMQCB)

Permit Required: Waste Discharge Requirements Order

Statutory Authority: California Water Code, Division 7, Chapter 4, Article 4, Section 13.260

Existing Permit: Waste Discharge Requirements Order No. 76-37

Issued: April 20, 1976

Amended: By Order 770139 November 1977. By letters from the Executive Officer, May 13, August 31, and December 14, 1981.

Site Classification: Class II-1

Areas Included: Order No. 76-37 allows 480 acres of Acme's property to be used for the disposal of specifically authorized Group 1 wastes. According to Acme's engineers, Harding Lawson and Associates, a more recent survey shows the site acreage to be on the order of 535 acres. From Regional Water Quality Control Board maps (Appendices page B-50) it appears that Alternatives A and B are included in Waste Discharge Order No. 76-37. Engineering surveys are required to determine the extent of Alternative C included in Order 76-37.

Areas Excluded: Areas within 100 feet of the Concord Fault and the inactive 20-acre Class I site are excluded from disposal of Group 1 waste. Engineering surveys would be required to determine if these areas are included with the approximate 55 acres that are not covered by Order 76-37.

New Permit Requirements: Existing Waste Discharge Order No. 76-37, as amended conditionally covers any of the 480 acres included by the order subject to Staff review, new findings approval, and conditions. Approval includes a written statement by the Executive Officer that measures necessary to meet waste discharge requirements have been taken. In effect, Alternatives A, B, and C require this written approval. The project must also meet the minimum standards for a Class II-1 disposal site pursuant to Subchapter 15, Chapter 3, Title 23, of the California Water Code. Any discharge under Section 402 of the Clean Water Act is subject to the requirements of Sections 301, 302, 306, 307, 308, and 403 of the Clean Water Act. Depending on engineering and geotechnical reports, a National Pollutant Discharge Elimination System (NPDES) permit may be needed. The RWQCB would make this determination during review of Acme's proposed expansion and could attach this requirement as a condition to amended orders. A Report of Waste Discharge must be filed with the RWQCB at least 180 days before any discharge of dredged material return water begins. The RWQCB may set Waste Discharge Requirements for the discharge, including requirements for monitoring the discharge's effects on water quality to ensure compliance with the standards set by the RWQCB.

5. Bay Area Air Quality Management District (BAAQMD)

Permits Required: Authority to Construct; Permit to Operate

I INTRODUCTION
D REGULATORY PERMIT REQUIREMENTS AND STATUS (Continued)

Statutory Authority: Bay Area Air Quality Management District Regulation 2-1-301 Authority to Construct, 1972, Re-Codified, effective January 1, 1980. Regulation 2-1-302 Permit to Operate.

Existing Permit: None

Comments: According to the BAAQMD, an Authority to Construct and a Permit to Operate would be required for implementation of Alternatives A, B, and C. Alternative D would require BAAQMD Authority to Construct and Permit to Operate for the waste-to-energy conversion facility. The BAAQMD may attach conditions to an Authority to Construct and Permit to Operate. Acme's current 125-acre disposal operation was begun before the BAAQMD (formerly the Bay Area Air Pollution Control District) was established and permits required. It is Acme's position that a permit is not required since BAAQMD was formed after Acme's operations began.

6. Contra Costa County, Board of Supervisors

Permit Required: Land Use Permit

Statutory Authority: Contra Costa County Ordinance Code, Chapter 418-4, Health and Safety Code

Existing Permits:

a. LUP 615-60

Issued: December 2, 1958

Areas Included: The eastern portion (only) of the current 125-acre landfill, the eastern portion of the proposed project areas and the 20-acre hazardous wastes site (inactive).* The 178-acre southern parcel is not included in this permit.

b. LUP 2052-81

Issued: July 7, 1981

Area Included: The 22-acre landfill area in the southern parcel.

New Permit Requirements: Alternatives A and B would require a Land Use Permit for the northwest portion of the proposed expansion area, near the access road. Alternative C would require a Land Use Permit for the portions of the southern parcel to be filled. Alternative D could require

*The parcels covered under existing Land Use Permits are shown in the Regulatory Appendix.

I INTRODUCTION
D REGULATORY PERMIT REQUIREMENTS AND STATUS (Continued)

a permit if the reduced fill in that alternative were not located entirely on lands currently under permit. A Land Use Permit would also be required to regulate expanded cover excavations on the southern site and may be necessary as a means of assuring some of the mitigation measures.

7. Contra Costa County, Health Services Department

Permit Required: Solid Waste Facilities Permit

Statutory Authority: Government Code Title 7.3 Section 66796.30

Existing Permit: 07-AA-002 Solid Waste Facilities Permit

Approved: December 4, 1981 by the State Solid Waste Management Board

Issued: December 9, 1981 by the Health Services Department as the local enforcement agency

Area Included: 503.61 acres consisting of the 125-acre current operations area, 178.61-acre southern site (Alternative C), and the 200-acre eastern area (Alternatives A and B). The permit would be revised or superseded to cover major changes in the operation of the landfill.

Area Excluded: The 20-acre Class I hazardous waste site.

Comments: A Solid Wastes Facilities Permit is required under Government Code Title 7.3 Section 66796.30. It is a local permit issued by the Contra Costa County Department of Health Services, the Local Enforcement Agency, after approval by the State Solid Waste Management Board. Acme's current 1981 permit nullifies the previous May 1979 permit and conditions it contained.

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E. POLICY CONTEXT

In addition to the preceding discussion regarding Permit Requirements and Status, the following paragraphs summarize other applicable portions of Federal, State and local laws, ordinances, policies and regulations which must be considered by various agencies prior to issuance of the seven permits discussed in the preceding section.

1. Resource Conservation and Recovery Act of 1976, as Amended. **Public Law 94-580 (RCRA)**

The Resource Conservation and Recovery Act of 1976 (RCRA) amended the Solid Waste Disposal Act to provide for a hazardous waste regulatory program; a program to eliminate open dumping; financial and technical assistance for planning enhanced solid waste management programs; grants to rural communities to improve solid waste management systems; and authority for research, demonstrations, and studies.

Of importance for landfill facilities which dispose of hazardous wastes, Subtitle C charged the Environmental Protection Agency (EPA) with developing guidelines and regulations regarding the disposal of hazardous wastes. These regulations apply to generators and transporters of hazardous waste as well as treatment, storage, and disposal hazardous materials facility operators. Subtitle C creates a "cradle-to-grave" management system intended to insure that hazardous waste is treated, stored, or disposed of safely.

First, Subtitle C requires EPA to identify hazardous waste. Second, this Subtitle creates a manifest system designed to track the movement of hazardous waste. Third, owners and operators of treatment and disposal facilities must comply with standards that "may be necessary to protect human health and the environment" which are established by EPA under Section 3004 of RCRA. These standards are generally implemented through permits that are issued by authorized states or by EPA to owners and operators of hazardous waste treatment, storage, and disposal facilities.

The regulations to carry out these requirements that pertain to Acme Landfill are generally contained in 40 CFR 122, 261, 264, and 265. The most recent regulations, the land disposal requirements that became effective January 26, 1983, set forth design and operating standards, groundwater protection standards including monitoring requirements, as well as closure and post closure care for landfill facilities, such as Acme, that handle hazardous wastes. Design and operating standards were adopted to minimize the formation of leachate and the migration of leachate to adjacent subsurface soils and to ground water and surface waters. These standards require landfills to have liners to prevent

I INTRODUCTION
E POLICY CONTEXT (Continued)

migration of wastes to the subsurface soil or to ground water and surface waters during the active life of the site. Also required are leachate collection and removal systems to minimize leachate remaining after closure. A variance from the liner and leachate collection requirements is available if it can be demonstrated that wastes will never migrate to ground water or surface water. In addition, ground water protection requirements establish a three-stage program to detect, evaluate and, if necessary, correct groundwater contamination during the active life of the fill plus a compliance period designated in the permit.

2. Coastal Zone Management Act of 1972 (federal)

Section 307(c) of this act, as amended, prohibits the Corps of Engineers from issuing a Department of the Army permit in a coastal zone unless the permit applicant has furnished certification that the proposed activity complies with the State's coastal zone management program, in this case the Bay Conservation and Development Commission (BCDC) Bay Plan. Although the project site lies outside the BCDC jurisdiction under the McAteer-Petris Act (i.e., it lies more than 100 feet inland from the line of highest tidal action of the San Francisco Bay and its tributaries)¹⁴ the project may affect land uses and water uses within the jurisdiction. Section 307(c)(3)(A) of the Coastal Zone Management Act requires any proposed activity requiring a Federal permit to be consistent with the State's program (Bay Plan) if it would affect land or water uses within the coastal zone, regardless of the project location. In the case of actions affecting land or water uses in the coastal zone of San Francisco Bay, no permit can be issued by the Corps of Engineers until the BCDC has concurred with the applicant's certification of consistency with the Bay Plan. BCDC's decision may be appealed to the U. S. Secretary of Commerce. BCDC believes that the Acme expansion may affect land uses in the coastal zone because it would be a non-conforming use in a water-related industry priority area (the Bay Plan designates "priority use areas"). This could conceivably force new, water-related industries into non-industrial areas of the waterfront area, or onto new fill.

Bay Plan Maps 17 and 19 designate most of the Martinez-West Pittsburg shoreline area for water-related industry. (The remainder of the area is designated for conservation of tidal marshes.) The County believes that it is doubtful, given the large amount of undeveloped area designated for water-related industry and the low demand for water-related industrial sites, that the proposed project or its alternatives would affect future land or water uses in the coastal zone in the near future; however, the Bay Plan designations are based on a study of land use needs to the year 2020. The County further believes that the site is presently unsuitable for industrial use but that filling of the proposed expansion area would enable the site to be used for water-related industry in the future. Consequently, it has opened discussions with BCDC staff for a review of the BCDC plan land use designations along the County's northern shoreline.

I INTRODUCTION
E POLICY CONTEXT (Continued)

3. Fish and Wildlife Coordination Act

This act requires the Corps to consult and fully consider the recommendations of the U. S. Fish and Wildlife Service, National Marine Fisheries Service, and California Department of Fish and Game prior to issuance of a Department of the Army permit. Formal consultation with these agencies will occur through their review of the Corps' Public Notice and this EIR/EIS. The Corps of Engineers' regulatory program requires the District Engineer to give great weight to the views of these agencies in evaluating a permit application.

All three agencies have expressed preliminary concerns which are discussed in Section III (Biota) of this report. The U. S. Fish and Wildlife Service has expressed concern regarding the potential loss of wildlife habitat on the 200-acre expansion area as well as the potential for leachates from the landfill reaching the Walnut Creek channel (and subsequently the Bay-Delta estuary) and potential seismic problems of the site particularly regarding the integrity of the levees.¹⁵ In 1979, in response to an earlier Acme application for a permit, the U. S. Fish and Wildlife Service, in coordination with the California Department of Fish and Game, conducted a Habitat Evaluation Procedures (HEP) analysis of the 200-acre area which identified specific plant and wildlife types and assigned an overall Habitat Unit Value to that parcel (see Biota Appendix).¹⁶ The California Department of Fish and Game and the National Marine Fisheries Service have agreed, in principle, to acquisition and restoration by Acme of a tidal marsh area off-site as compensation for loss of on-site wetlands. This compensation area would be a diked, historical wetland of approximately the same size as the existing on-site wetland area and would be owned and managed, after restoration, by the California Department of Fish and Game. Although a specific compensation site has not been agreed to by all parties, Acme and the California Department of Fish and Game have entered into a Memorandum of Understanding providing for the purchase, restoration, and acceptance of 160 acres of off-site restorable wetlands.¹⁷ (This memorandum contemplates 160 acres because Acme claims that 40 acres of the 200-acre expansion area are either outside Corps jurisdiction or cannot be filled because of the need to avoid the Sanitary District's pipeline which crosses the site.¹⁸) The National Marine Fisheries Service has recommended that Acme purchase and restore to tidal action 206 acres of historic wetland.¹⁹

The U. S. Fish and Wildlife Service has not agreed to compensation for the loss of existing wetlands. It is the policy of this agency to oppose non-water-dependent projects which involve the filling of wetlands, particularly if alternative upland sites are available.

The California Resources Agency has determined that the Acme landfill qualifies for an exemption from that agency's Wetland Policy²⁰ due to governmental actions which occurred prior to the issuance of the Policy in September 1977, including approval of the Contra Costa County Solid Waste

I INTRODUCTION
E POLICY CONTEXT (Continued)

Plan by the State Solid Waste Management Board and field assessments of the project by the California Department of Fish and Game and the U. S. Fish and Wildlife Service.²¹ Under the Wetland Policy, the Resources Agency (and its Departments, Boards and Commissions) would not normally approve projects which involve the filling of wetlands.

4. Endangered Species Act

This Act was passed in 1973 to provide protection for animal and plant species that are currently in danger of extinction ("endangered") and those that may become so in the foreseeable future ("threatened"). Section 7 of this Act requires federal agencies to ensure that their actions do not have adverse impacts on the continued existence of threatened or endangered species or on the designated areas (critical habitats) that are important in conserving those species. The U. S. Fish and Wildlife Service maintains current lists of species which have been designated as threatened or endangered. At this time, none of those species listed have been reported from the Acme site. However, restoration of portions of the site to tidal salt marsh could provide habitat for some species. Section III.D. Biota of this report discusses the implications of the project and the alternatives on endangered species.

5. National Historic Preservation Act of 1966, as Amended, and Executive Order 11593, Protection and Enhancement of the Cultural Environment (May 13, 1971)

This Act established the National Register of Historic Places and requires the Corps of Engineers to consider the impacts of proposed activities on properties included in the National Register. Executive Order 11593 requires the Corps, when considering issuance of a permit, to identify in consultation with the state historic preservation agency any property potentially affected by the proposed action which is eligible for listing in the National Register. No properties listed or proposed for listing in the National Register, State Historic Landmarks or other known cultural resources are located within or adjacent to the project site. The California Archaeological Site Survey found that the proposed 200-acre landfill expansion area (Alternatives A and B) is an area of low archaeological sensitivity and concluded that no field survey of that area is necessary.²² However, upland portions of the southern parcel (Alternative C and new cover excavation areas for Alternatives A and B) are considered highly sensitive and, therefore, excavation or filling of these areas will require an archaeological site survey.²³ (For further discussion of archaeological and other cultural resources see Section III.L.)

I INTRODUCTION
E POLICY CONTEXT (Continued)

6. Executive Order 11988, Floodplain Management (May 24, 1977)

In order to reduce the risk to human safety health, welfare and property associated with floods and in order to preserve the natural and beneficial values served by floodplains, federal agencies are directed by this Order to evaluate the potential effects of actions, including the granting of permits, which they may take in floodplains. This EIR/EIS evaluates these effects, including the effects of other practicable alternatives as required by the Order.

Most of the Acme property including the entire fill area for Alternatives A, B, and C, is located within the flood hazard area indicated by the HUD Flood Hazard Boundary Maps (revised September 1977). The levees along Walnut and Pacheco Creeks currently protect the Acme site from a 100-year fluvial (stream) flood. The site is currently subject to flooding from a 100-year tide, which has a predicted elevation of 6 feet MSL at the site. The perimeter levees proposed by Acme would extend to an elevation of 8 feet MSL and protect the proposed landfill from tidal flooding. (See Section III. C. 1. Surface Water for further discussion of the proposed project's hydrological effects).

7 Executive Order 11990, Protection of Wetlands (May 24, 1977)

This Order calls for Federal agencies to "preserve and enhance the natural and beneficial values of wetlands" in carrying out agency activities which involve wetlands. Because the order specifically exempts issuance of Federal permits to private parties for activities on non-Federal property, this authority would not be considered by the Corps of Engineers during review of Acme's application for a Department of the Army permit. However, the U. S. Fish and Wildlife Service frequently cites Executive Order 11990 as one authority for making formal comments on non-Federal projects to the Corps of Engineers under provisions of the Fish and Wildlife Coordination Act.

8. EPA Guidelines for Specification of Disposal Sites for Dredged or Fill Material

These guidelines (40 CFR Part 230), which regulate the Corps of Engineers' evaluation of permit applications under Section 404 of the Clean Water Act, prohibit "the discharge of dredged or fill material if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other adverse environmental consequences." The practicability of an alternative must take into account cost, existing technology and

I INTRODUCTION
E POLICY CONTEXT (Continued)

logistics in light of overall project purposes, but need not require ownership of an alternate site by the project applicant. For projects which are non-water-dependent, it is presumed that alternative sites located in non-aquatic areas would be available and would have a less severe impact on the aquatic ecosystem. The information and evaluation required by these guidelines has been included in this EIR/EIS.

9. CEQ Memorandum on Analysis of Impacts on Prime or Unique
Agricultural Lands

This memorandum from the Council on Environmental Quality, dated August 11, 1980, instructs all Federal agencies to determine the effects of agency or agency-permitted actions on prime or unique agricultural lands, and to examine alternatives to these actions, in the preparation of environmental documents under NEPA. Federal agencies are also instructed to cooperate with state and local governments in their efforts to help retain these lands.

The Soil Survey of Contra Costa County indicates that the predominant soil type in the proposed expansion areas is Omni Silty Clay (Ob) which is "poorly suited to farming" due to salinity and poor drainage characteristics.²⁴ The University of California Extension Service in Pleasant Hill has confirmed that the unfilled Acme lands have a very low potential for agriculture due to poor soils and the surrounding, potentially toxic land uses.²⁵

10. Federal Aviation Administration Order 5200.5

Federal Aviation Administration Order 5200.5 is a policy guideline for siting new sanitary landfills. It establishes the policy of maintaining 10,000 feet between a landfill and any airport runway used by turbojet aircraft in order to avoid hazards to planes caused by birds that might be attracted to the landfill. The 156-acre southern parcel (Alternative C) generally falls within 10,000 feet of the northernmost runway at Buchanan Field, which is used by turbojet aircraft; the 200-acre area for Alternatives A and B falls just north of this line. (An approximation of the 10,000 foot line is shown in Exhibit III-4.) This Order is applicable to Buchanan Field.²⁶

11. Executive Order B-8881

As issued by Governor Brown October 13, 1981, this Order set forth California State policy to reduce dependence on chemical landfills for the disposal of untreated toxic wastes and to encourage the construction of new advanced waste management facilities for the recycling, treatment, and

I INTRODUCTION
E POLICY CONTEXT (Continued)

permanent destruction of toxic wastes. Among other actions to implement this policy, the Order directed the Department of Health Services to "...prohibit the land disposal of highly toxic wastes." In response, the DOHS prepared regulations to restrict land disposal of hazardous wastes that are highly toxic, persistent in the environment or bioaccumulative, and mobile in a land disposal environment. These wastes are considered to present the greatest long-term risk to public health and the environment when disposed on or into the land. Regulations to restrict such land disposal were approved by the Office of Administrative Law and adopted on December 23, 1982. They create a new Article 15 in Chapter 30, Division 4, Title 22 of the California Administrative Code. The regulations establish a series of phase-out dates extending from June 1, 1983 to July 1, 1985 for specific concentration levels of certain hazardous wastes if alternative treatment capacity is available prior to the scheduled phase-out date. A discussion of the schedule, wastes affected, and the effect of Article 15 on Acme's proposed disposal plans is provided in Section III H. Public Health and Safety, 6. Potential for Hazards from Wastes.

12. Assembly Bill 2370

The California Department of Health Services, pursuant to Assembly Bill 2370, effective January 1, 1981, prohibits expansion, opening or re-opening of any Class I site within 2,000 feet of existing residences, a school for persons under 21 years of age, a hospital, a day care center for children, or a permanently occupied human habitation other than those used for industrial purposes after August 6, 1980. DOHS expressly prohibited the disposal of Group 1 wastes on the 22-acre Acme parcel opened in 1981 and also on Acme's former Class I 20-acre site which is now inactive. Nearly all of the 156-acre southern parcel is within 2,000 feet of the East Vine Hill neighborhood. Acme Fill Corporation presently contests the applicability of this bill in this situation because the landfill and Class I ponds were in operation prior to authorization of this bill. Both DOHS and the State Solid Waste Management Board, however, believe it is applicable. The County Counsel's office, the County Health Services Department and the State Legislative Counsel's office disagree with the applicability of the 2000-foot limitation for the 22-acre site. The Act contains exceptions which the latter offices believe exempts the south parcel from the 2000-foot limitation.

13. Suisun Marsh Protection Plan

This plan was prepared in 1976 pursuant to the Nejedly-Bagley-Z'berg Suisun Marsh Preservation Act of 1974. The Acme site is south of the Suisun Marsh planning area; however, offsite mitigation has been proposed within the area covered under the plan. BCDC is the land use permitting agency for major projects in the designated primary management area which encompasses 89,000 acres of tidal marsh, managed wetlands, adjacent

I INTRODUCTION
E POLICY CONTEXT (Continued)

grasslands, and waterways. At this time, the specific location of the offsite mitigation area has not been identified. Therefore, no specific analysis of conformance with the findings and policies of the plan can be made.

14. General Plans and Zoning Ordinances

The Acme property and surrounding lands currently fall under the jurisdiction of Contra Costa County and its General Plan. The Acme landfill and its expansion are recognized in the Refuse Disposal Plan, a part of the County General Plan which was adopted in 1973. In 1975 the County adopted a General Plan amendment for the Vine Hill - Pacheco Boulevard Corridor which designates the Acme lands as "Controlled Industry". Within this category the County zoning ordinance permits heavy industry including waste disposal sites.

Several other components of the County General Plan, including the Seismic Safety, Recreation and Circulation Elements, are applicable to the Acme Landfill area and are cited in appropriate discussions in this report.

The County has issued Land Use Permits to Acme for landfills in the existing fill areas. The exception is a largely-filled area of about 52 acres, located in the northwestern sector of the Acme site, which was inexplicably left out of the property description for the 1958 permit application. The 1958 permit also covers about 190 acres of the proposed expansion area. (See Section I.D, Regulatory and Permit Requirements and Status.) It should also be noted that Waterfront Road is designated as a scenic route by the County General Plan.

This area also falls within the Sphere of Influence of the City of Martinez which ultimately expects to annex the area. The Martinez General Plan designates these lands as industrial with a conservation overlay which gives additional attention to wetlands and landforms. The City Zoning Ordinance suggests rezoning of the Acme lands as a combined Environmental Conservation District and Heavy Industrial District.

15. Subdivision Ordinance (Drainage)

Contra Costa County Ordinance Code, Section 8.2-2.014 requires the project to comply to requirements of Division 914 (Drainage) of the Subdivision Ordinance.

16. Contra Costa County Grading Ordinance - Acme Exempt

Under provisions of this Ordinance (Article 716-4.106(5)), a grading permit is not required for refuse and garbage disposal sites controlled by other regulations. The County Building Inspector concurs with this and

I INTRODUCTION
E POLICY CONTEXT (Continued)

states that the excavation and haul necessary to provide cover material for sanitary fill is exempt from the grading ordinance if otherwise performed in conformance with the land use permit. Also, Acme Fill was in operation well before the grading ordinance was adopted in 1960.²⁸

17. Contra Costa County Refuse Disposal Site Ordinance

Chapter 418-4 (Health and Safety) Section 418-4.101 provides any permit issued under any prior County Ordinance is continued in effect by the operation of this section for the purposes of Section 418-4.008 (Permit required), subject to the provisions of this chapter and subject to such regulations as may be established from time to time for operations under such permits. Acme Fill's land use permit was granted in 1958 well before 1972 when this ordinance was in effect. Therefore, the 1958 land use permit meets the criteria of this ordinance.²⁹

18. Surface Mining and Reclamation Ordinance - Acme Exempt

The State Surface Mining and Reclamation Act exempts operations conducted to produce materials for on-site use ("on-site construction"). The Acme excavation and fill activities have therefore been exempted from the County Surface Mining and Reclamation Ordinance. Contra Costa County adopted a Surface Mining and Reclamation Ordinance, now Chapter 88-11, in 1979 to implement the State law.

I INTRODUCTION (Continued)

Footnotes

- ¹Madrone Associates, Wildlife Habitat Evaluation Acme Fill Contra Costa County California, 1977.
- ²Dave Okita, Contra Costa County, Public Works Department, Environmental Control, telephone conversation, July 1982.
- ³Frank Boerger, P. E., Civil Engineer, Harding Lawson and Associates, telephone conversation, July 1982.
- ⁴Frank Boerger, telephone conversations July 19 and 22, 1982.
- ⁵Frank Boerger, telephone conversation July 14, 1982.
- ⁶Frank Boerger, telephone conversation July 1982.
- ⁷Chemical and Engineering News, "Waste Treatment Firms Handling Less Volume" May 31, 1982, p. 32.
- ⁸San Francisco Chronicle, "Toxic Waste Shuffled to Beat New Law," November 17, 1980.
- ⁹Daniel Balbiani, Harding Lawson and Associates, telephone conversation, June 1982.
- ¹⁰Contra Costa County, Solid Waste Management Plan, Draft 12/81, Revision January 1982, pp. 8-5, 8-10, 8-13.
- ¹¹Ibid., p. 8-10.
- ¹²Daniel Balbiani, telephone conversation, June 1982.
- ¹³Contra Costa County, Solid Waste Management Plan, Draft 12/81, Revision January 1982. p. 8-8.
- ¹⁴Letter to Dale Sanders, Contra Costa County Planning Department, from Nancy Wakeman, Bay Conservation and Development Commission, July 24, 1982.
- ¹⁵Letter of Response to Notice of Intent to Prepare an EIS, addressed to Col. Paul Basilwich, Jr., San Francisco District, U. S. Army Corps of Engineers, from James J. McKeivitt, Field Supervisor, U. S. Fish and Wildlife Service, dated July 21, 1981.

I INTRODUCTION (Continued)

- 16 Letter to Col. John Aasit, San Francisco District, U. S. Army Corps of Engineers, from James J. McKeivitt, Field Supervisor, U. S. Fish and Wildlife Service, Sacramento, dated September 14, 1979.
- 17 Memorandum of Understanding between Acme Fill Corporation and California Department of Fish and Game, September 10, 1980.
- 18 Letter from E. C. Fullerton, Director, California Department of Fish and Game to Huey D. Johnson, Secretary for Resources, March 14, 1980.
- 19 Letter from Alan W. Ford, Regional Director, National Marine Fisheries Service to Colonel Paul Bazilwich, Jr., District Engineer, Corps of Engineers, November 14, 1980.
- 20 State of California Resources Agency, "Policy for Preservation of Wetlands in Perpetuity," September 19, 1977.
- 21 Letter from E. C. Fullerton, Op. Cit.
- 22 Letter to Contra Costa County Planning Department staff from Allan G. Bramlette, Assistant Coordinator, Northwest Regional Office, California Archeological Site Survey, dated July 30, 1981.
- 23 Letter to Rube Warren, Contra Costa County Planning Department, from Allan G. Bramlette, Assistant Coordinator, Northwest Regional Office, California Archeological Site Survey, dated February 4, 1982.
- 24 USDA Soil Conservation Service in cooperation with the University of California Experiment Station, Soil Survey of Contra Costa County, September 1977, pp 67-69.
- 25 Telephone conversation with Mr. Ross Sandborne, University of California Extension Service, June 28, 1982.
- 26 Federal Aviation Administration, Burlingame Field Office, John Soldek, Airport Certification Safety Officer, Telephone Conversation, 10 April and 19 July 1982.
- 27 Memorandum from Robert D. Stephens, Ph.D., Deputy Director Toxic Substances Control Division to Staff of the Toxic Substances Control Division, Subject: Making the Landfill Phase-Out Program Work, January 17, 1983.
- 28 Contra Costa County Public Works Department, Memorandum From J. Michael Walford, Acting Public Works Director and A. A. Dehaesus, Director of Planning to Internal Operations Committee, March 3, 1981, p. 3.
- 29 Ibid. p. 1.

II DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES

INTRODUCTION

This chapter describes in detail Alternatives A, B, C, and D. The purpose and intent of Alternative E is provided with reference to Chapter IV which describes and evaluates that alternative in detail. Alternatives A and B include wetland mitigation measures. Alternatives A and B and probably C would require a Corps of Engineers' permit. Alternatives D and E are the Corps of Engineers' No Action alternatives because they would be the possible results of denial of Acme's current permit application. Only Alternatives A and B are mutually exclusive. Any other combination of alternatives discussed in this EIR/EIS is possible.

The Corps of Engineers has established categories by which an alternative may be defined. These categories are:¹

- i Within the capability of applicant and within the jurisdiction of the Corps
- ii Within the capability of applicant but outside the jurisdiction of the Corps
- iii Reasonable, foreseeable but outside capability of applicant but within jurisdiction of Corps
- iv Reasonable, foreseeable but outside capability of applicant and outside jurisdiction of the Corps.

On this basis, the alternatives are defined as:

Alternative A: i
Alternative B: i
Alternative C: i
Alternative D: iv
Alternative E: ii or iv, depending on the specific location of sites

NO PROJECT ALTERNATIVE

After initial consideration, the No Project, or Do Nothing, Alternative was eliminated from detailed study. On the basis of current rate of fill and landfill practices, Acme Fill's current site capacity is expected to be filled by 1983. As the only landfill that serves the central county and several additional communities, Acme disposes of almost two thirds of the waste generated in the county. (I. Introduction, B. Purpose and Need for the Project)

II DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES

NO PROJECT ALTERNATIVE (Continued)

The present allowable landfill areas of Acme's site are expected to reach capacity in 1983. The capacity of the existing landfill is based on fill height limits contained in the June 22, 1978, Report of Disposal Site Information for the main 125-acre site, and its September 22, 1981, revision for the 22-acre site addition which were referenced in the permits issued by the Regional Water Quality Control Board and the County Department of Health Services. The height parameters for the fillable areas of the 125-acre site originated in Acme Fill Corporation's Solid Waste Development-Acme Landfill plan report of 1975. That plan called for initial filling to the 40-foot level, and subsequent filling to the 60-foot level after a period of consolidation (a portion of the site had been filled to the 80-foot level). The fill height for the 22-acre addition, a dry weather site, was set at 60 feet. These fill heights are being reached.

The capacity restraints described above are not absolute in that subsidence and trenching may allow some future refuse disposal to take place on the existing landfills until they are closed. Short-term subsidence may allow additional refuse disposal in the subsided areas. The older portions of the 125-acre area are expected to subside up to 8 feet and the 22-acre area up to 5 feet. The amounts of fill or the exact periods when additional capacity might be available have not been estimated.

The No Project Alternative is not considered reasonable or feasible because of the unavoidable public need for waste disposal facilities and the limited capacity available at the existing Acme landfill operation. If none of the on-site alternatives (A, B, and C) are approved, the majority of the wastes currently being disposed of at the Acme site would have to be taken to another existing or new landfill (Alternative E) beginning in 1984, even if other methods of disposal (Alternative D) are implemented to the maximum extent feasible.

ALTERNATIVE A - THE PROPOSED PROJECT WITH OFF-SITE MITIGATIONS

The project proposed by Acme Fill Corporation would expand landfill operations into a 200-acre area of Acme's 535-acre property enabling the company to continue its Class II-1 sanitary landfill operation when the present disposal areas reach capacity in 1983. The new operation area would provide landfill capacity to 1991² based on current rates of fill, compaction, and final slope.

The proposed landfill expansion consists of two areas. One area, the Northeast Area, is an approximate 190-acre parcel located east of the existing 125-acre landfill operation. It is bounded by Waterfront Road and the Southern Pacific Railroad (SPRR) tracks on the north, Walnut Creek/Pacheco Creek Flood Control Channel on the east and south, and

II DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES
ALTERNATIVE A - THE PROPOSED PROJECT WITH OFF-SITE
MITIGATIONS (Continued)

existing disposal operations on the west. The Northwest Area, an approximate 10-acre parcel, is located between the current 125-acre landfill and the Waterfront Road/SPRR alignment, and the Shell Oil property. (Summary Section Exhibit S-4)

The project would require about 5,700 linear feet of exterior levees and about 14,300 linear feet of interior cell-forming levees. These would necessitate about 54,000 cubic yards of earth material for the former and about 91,000 cubic yards for the latter. Much of the earth material would be expected to come from shallow scraping of the landfill floor and from dredged materials. The remainder would come from the borrow areas on the site.

As part of the same permit application submitted to the Corps of Engineers 11 March 1981, Acme is requesting permission for the Contra Costa Flood Control and Water Conservation District to discharge dredged material from the maintenance of the adjacent Walnut Creek/Pacheco Creek Flood Control Channel. Initially, approximately 500,000 cubic yards of this material would be hydraulically dredged by the District and spread over 110 acres in the Northeast Area. (Exhibit S-4) The fluid portion of the dredged slurry would be decanted over a weir and into Walnut Creek via a new tide gate in the flood control levee. The Flood Control District would be responsible for the construction of the containment levees and the installation of drainage and decant structures necessary for the development of the dredged material drying pond. The solid material would be allowed to dry and later used as a source of cover material for landfill operations. Less drying area would be required for subsequent dredgings which are estimated at 250,000 cubic yards every two years³. The actual area would be determined by the amount dredged and the requirements of landfill operations which are considered by Acme as having first priority. Dredged materials could provide 1,000,000 cubic yards, or more, of the cover material. Ultimately, the entire 110-acre parcel would be used for landfill operations.

Of the proposed 200-acre project area, approximately 3.5 acres would be allocated as a buffer zone around the Central Contra Costa Sanitary District's (CCCSD) 72-inch sewer main which traverses the property. This CCCSD outfall buffer zone would, in effect, separate the existing 125-acre landfill from the proposed Alternative A or B fill areas. Another 4.0 acres surrounding the PG&E high-voltage transmission line and towers within the Northeast Area would be restricted from fill operations. With these buffer zones, approximately 192 acres would be left for landfill operations.

To compensate for the expected loss of wildlife habitat, seasonal wetlands vegetation, and lowland-grassland vegetation, an off-site mitigation area would be provided by Acme. A 160-acre restorable wetlands area would be purchased and restored by Acme and managed by the California Department of Fish and Game.

II DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES
ALTERNATIVE A - THE PROPOSED PROJECT WITH OFF-SITE
MITIGATIONS (Continued)

The proposed project would continue to serve approximately 425,000 to 450,000 people from a service area which includes the central county as well as the Rodeo Sanitary District and Benicia in Solano County.

The proposed project would continue to accept an approximate total of 1500 tons⁴ per day of primarily Group 2 household and commercial wastes and Group 3 construction and demolition debris. Included in this tonnage is approximately 180 tons a day of treated sewage sludge from Central Sanitary District's treatment plant. Also included is 50 tons a day of limited types of Group 1 solid wastes, as permitted by the San Francisco Regional Water Quality Control Board.^{5, 6} (Table 1) Additional total landfill capacity would be approximately 10,151,000 cubic yards.

Current landfill recycling/salvage efforts would continue.⁷ At the Acme site, some cardboard, aluminum, various metals, and some glass are separated by hand and sold to processors.

Operations would continue 7 days a week with the site open to collection companies, private haulers, and the public from 7 am to 5 pm. The current complement of Acme personnel, which averages 21 people, would continue this operation.

As proposed by Acme, the landfill operation on the project site would be essentially the same as the current operation which is based on the formation of cells shown on the cover of this report. Current equipment or similar would be used to form these cells. Each cell, consisting of layers of waste compacted by heavy equipment, is enclosed by soil on all sides. A series of cells, approximately the same height, form lifts.

Completed fills on terrain such as Alternative A usually have several lifts. Cell dimensions vary, depending on disposal rates, site conditions, and topography. Acme's current operations on the 125-acre site, are based on an average cell working face of approximately 200 feet by 200 feet compared to approximately 400 feet by 400 feet on the 22-acre southern site. Lift heights average about 20 feet with an overall completed site height of 40 to 50 feet. Final site height for Alternative A is currently planned for 80 feet with maximum side slopes of 6:1 (horizontal to vertical), although this ratio may change. Ratio of refuse to cover material is planned at 9:1 to 10:1, although 1982 quarterly reports submitted to the Regional Water Quality Control Board for the current operations report a ratio closer to 4:1 to 5:1. In-place density is expected to be approximately 1200 pounds per cubic yard, similar to current density.⁸ These specifications are the same as the assumptions adopted by the County Solid Waste Management Plan (1982) in estimating Acme's future site life.⁹

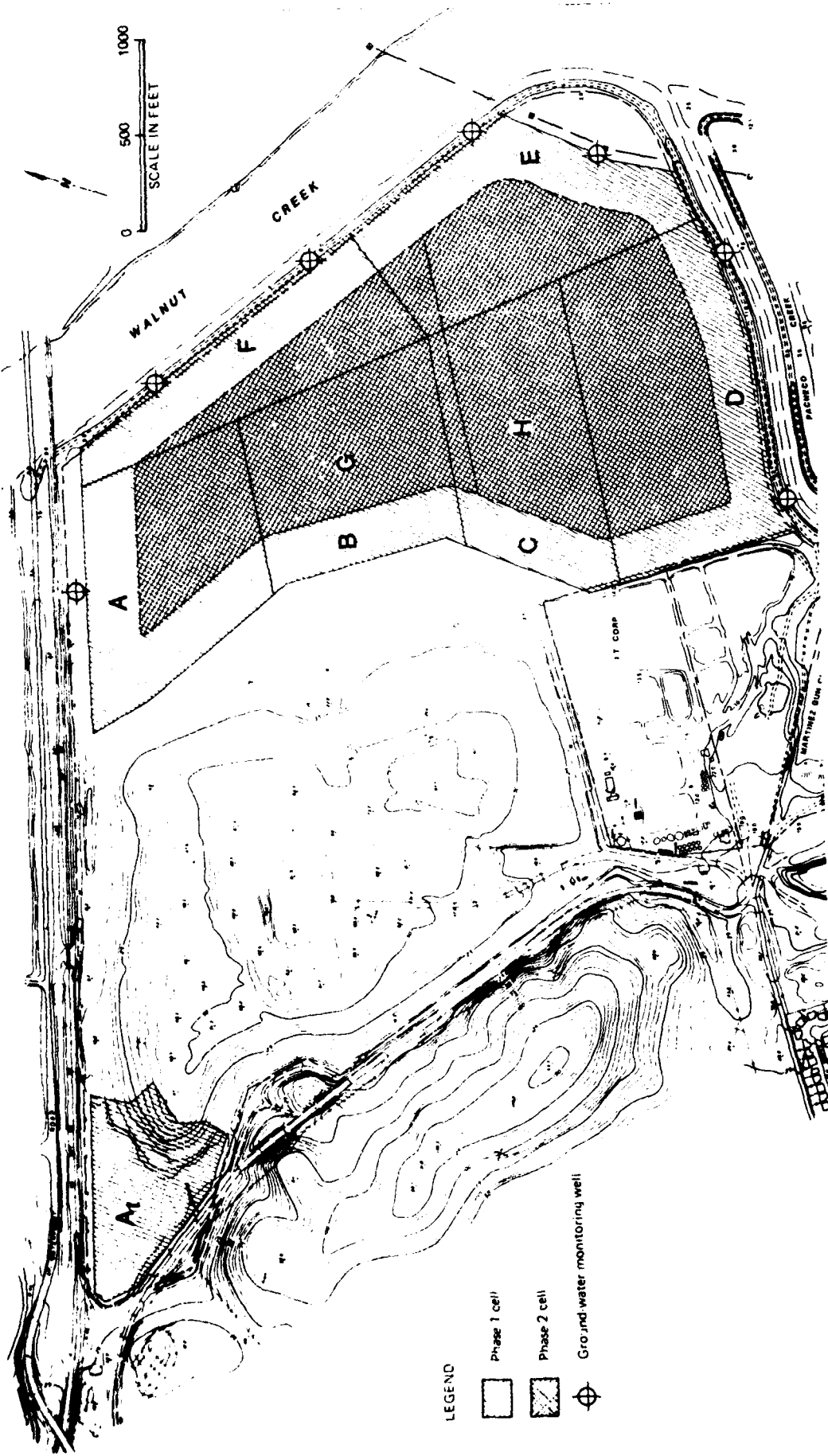
II DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES
ALTERNATIVE A - THE PROPOSED PROJECT WITH OFF-SITE
MITIGATIONS (Continued)

Acme has proposed that the landfilling operation be completed according to the cell plan shown on Exhibit II-1. The cells referred to here are major containment features (see Exhibit II-1), not the small cells formed daily by the application of earthen cover over the day's deposit of refuse.

Filling of the northeast parcel would consist of two phases: 1) raising the entire parcel (cells A through F) to approximate elevation 40 feet, and 2) raising a portion of the parcel (cells G and H) from elevation 40 feet to a final elevation of 80 feet. The northwest parcel (cell A₁) would be developed in a single phase to elevation 40 feet. With the exception of cell A₁, the cells would be filled in alphabetical order. Cell A₁ would be constructed after the perimeter drainage channel has been constructed.

The projected volumes (refuse and cover) and the expected time to fill each cell are given in Table 3. These projections are based on current landfill rates of about 100,000 cubic yards per month and an assumed cover ratio (volume of compacted daily cover divided by volume of compacted refuse multiplied by 100 percent) of about 10 percent.

Cover soil would be supplied by the dredged material drying area located on the Alternative A site and from a borrow area on Acme's southern property. Acme proposes to use the half million cubic yards or more of material scheduled to be dredged during the summer of 1984 after it has dried as the major source of cover material. To speed up the drying process, Acme would artificially agitate or disk the top crust. Until the dredged material is available for cover operations, soil would be taken from a borrow area on the southern property, as shown in Summary Section Exhibit S-4. This area lies west of the existing 22-acre operations and south east of the hills which separate the Acme property from the East Vine Hill neighborhood. Acme proposes to stay east of the ridgeline until the 22-acre area is filled, and to maintain a visual and noise buffer thereafter. During the dry season, cover soil is moved from this borrow area and stockpiled in areas near the working face. The location of the stockpile changes with the landfill operations so that cover material is convenient to operations.



Source: Harding Lawson Associates

TORREY & TORREY INC.
environmental/urban
planning and design

EXHIBIT
II-1

Alternative A - Cell Plan

II DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES
ALTERNATIVE A - THE PROPOSED PROJECT WITH OFF-SITE
MITIGATIONS (Continued)

Table 3

PROJECTED VOLUME AND LIFE EXPECTANCY OF PROPOSED LANDFILL CELLS

<u>Cell</u>	<u>Volume of Compacted Refuse (cubic yards)</u>	<u>Volume of Compacted Daily Cover (cubic yards)</u>	<u>Total Cell Volume (cubic yards)</u>	<u>Time Required to Complete (months)</u>
A ₁	208,000	21,000	229,000	2-1/4
A	1,045,000	104,000	1,149,000	11-1/2
B	1,210,000	121,000	1,331,000	13-1/4
C	1,275,000	128,000	1,403,000	14
D	1,477,000	148,000	1,625,000	16-1/4
E	1,176,000	118,000	1,294,000	13
F	774,000	77,000	851,000	8-1/2
G	825,000	82,000	907,000	9
H	1,238,000	124,000	1,362,000	13-1/2
Total	9,228,000	923,000	10,151,000	101-1/4

Source: Harding Lawson Associates

Litter would continue to be controlled by portable screens used on site where required by operations, hand collection by Acme crews, berms created by stored cover material, and perimeter fencing. Energy consumption, including fuel for equipment and electricity, would be consistent with current site use. Security would be similar to current security measures described in III.H. Public Health and Safety. Safety practices and equipment would be maintained for site personnel and visitors to the site.

Construction required for the proposed site would include 3 reinforced concrete bridges to span the sewer line and 20,000 feet of levees. The levees would be constructed with impermeable barriers as specified in Exhibit II-2 to prevent lateral migration of leachate. As part of the proposed project, Acme is considering relocating the entrance to the northwest corner of the property in the vicinity of Waterfront Road and Waterbird Way. A scale for weighing incoming loads may be installed at the relocated entrance.

Feasibility studies would be needed to determine the potential for methane recovery with Alternative A. Methane now being piped from the current 125-acre site operations to the Getty Synthetic Fuels processing plant on

II DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES
ALTERNATIVE A - REDUCED LANDFILL PROJECT WITH ON-SITE
MITIGATIONS (Continued)

Acme's property is expected to generate from 7 to 14 years. Alternative A in no way affects the current methane processing operations.

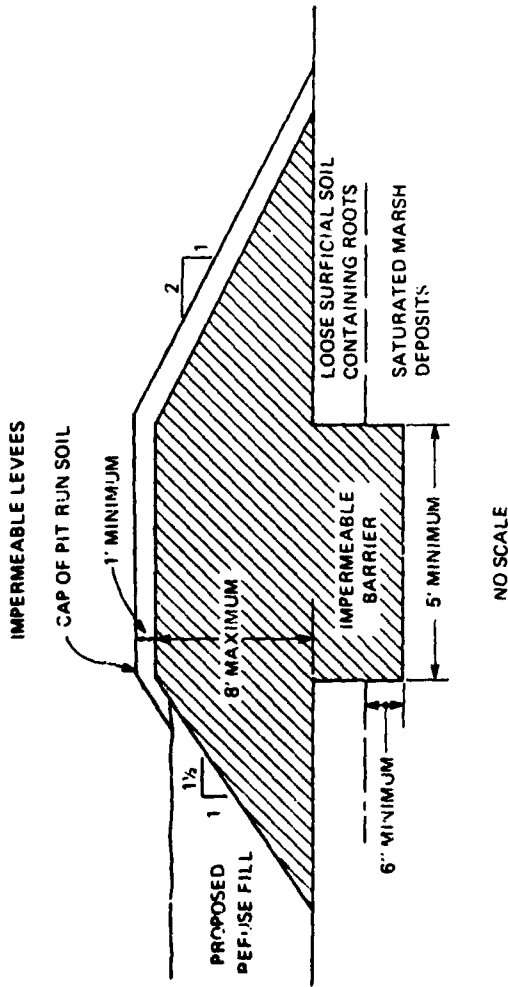
The proposed final landfill configuration is indicated on Exhibit II-3 and the cross-sections through the levees and future landfill area are shown on Exhibits II-4 and II-5.

A drainage plan has been prepared by Acme which describes the methods whereby surface runoff from the covered site would be discharged to Walnut and Pacheco Creeks. Runoff would be collected by a system of lined surface ditches constructed as the filling of each cell nears completion. Energy dissipators would be installed to prevent erosion of the flood control levee where surface ditches discharge to the creek. Precipitation that contacts uncovered refuse would be contained within the individual cells. Additional perimeter drainage channels would be constructed around Cell A₁ and along the base of the east slope of the existing landfill. All new channels would be tied into the existing perimeter channels to provide continuous drainage from the site. Locations and construction details of the lined surface ditches and the perimeter drainage channels are shown on Exhibits II-6 and II-7.

The features of Acme's proposed development plan are subject to regulatory agency approval and may be modified in the review process.

ALTERNATIVE B - REDUCED LANDFILL PROJECT WITH ON-SITE MITIGATIONS

In this alternative only a portion of the expansion area proposed in Alternative A would be used to continue the Class II-1 landfill operation. See Summary Section Exhibit S-5. Of the 200 acres, 100 acres of existing and former wetland would be reserved for on-site mitigation. The off-site mitigation area described as part of Alternative A would not be included. The dredged materials project would also not be included as part of this alternative, but considerable levee building material could be scraped from the floor of the landfill area. Dredged materials from Walnut/Pacheco Creek would have to be disposed at another site, selected by the Contra Costa County Flood Control and Water Conservation District. Possible alternative disposal sites include the previously used disposal site located on the United Towing Company property across Waterfront Road from the Acme site; a diked, 20-acre area located north of Waterfront Road and east of Walnut/Pacheco Creek on Tosco Company property; and the designated Carquinez Straits aquatic disposal site. Both the United Towing and Tosco sites are outside of Corps of Engineers jurisdiction. The impacts of using alternative disposal sites are beyond the scope of this EIR/EIS.

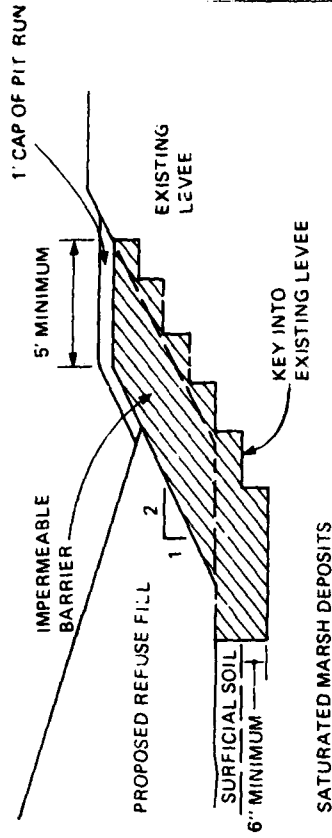


- NOTES:
- 1) The impermeable barrier should have a coefficient of permeability (k) less than or equal to 1.0×10^{-6} cm/sec.
 - 2) The site surficial clays are suitable fill material for the levee construction. The fill material should be compacted sufficiently to obtain permeabilities less than or equal to 1.0×10^{-6} cm/sec.
 - 3) The impermeable barrier should be at least 5 feet wide and excavated at least 6 inches into the saturated marsh deposits.
 - 4) The cap is intended to prevent fissuring of the levee material due to desiccation. It should be 1-foot thick and contain pit run soil.
 - 5) The levee should extend to Elevation 8 feet.

Source: Harding Lawson Associates

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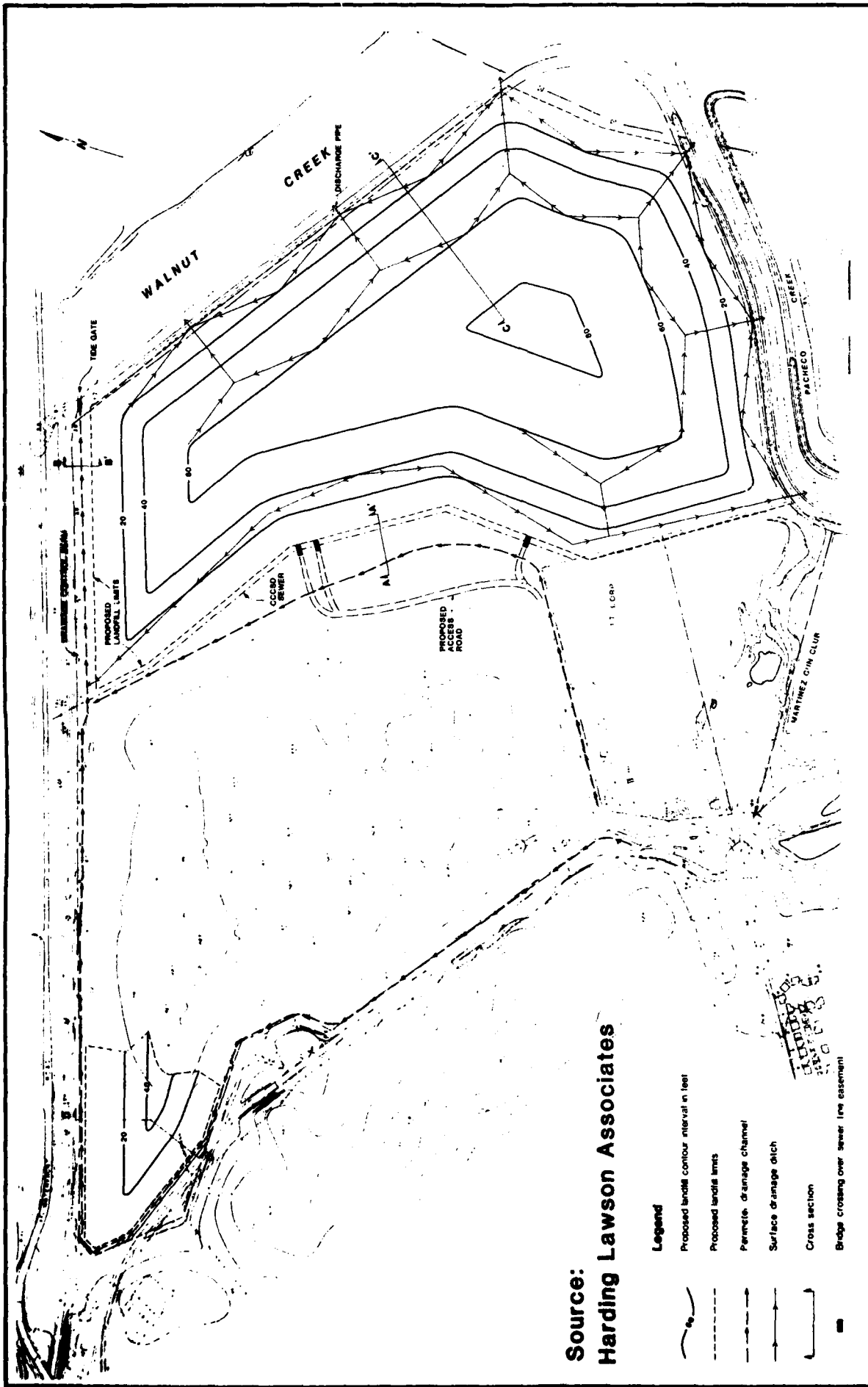
IMPERMEABLE BARRIER



- NOTES:
- 1-4 Same as for the impermeable levees.
 - 5 A series of level benches should be excavated into the levee in order to provide a working surface upon which to place the fill.
 - 6 The impermeable barrier should extend to Elevation 8 feet.

EXHIBIT
II-2

Alternative A-Impermeable Levees & Barrier



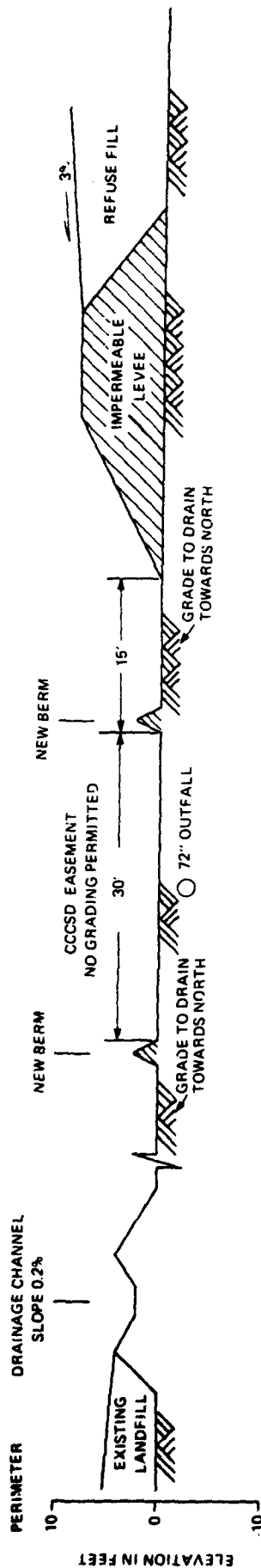
Source:
Harding Lawson Associates

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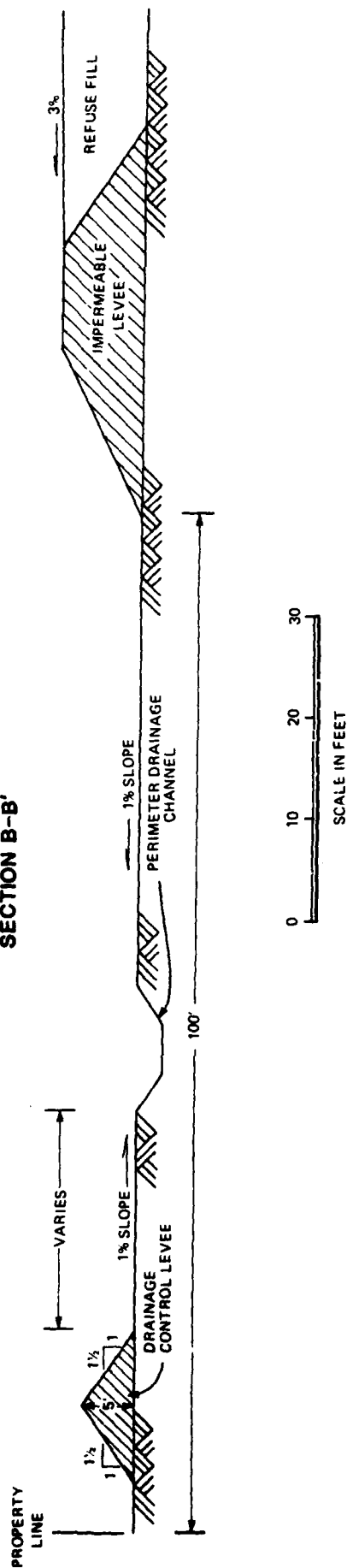
Alternative A-Final Landform Configuration

EXHIBIT
II-3

SECTION A-A'



SECTION B-B'



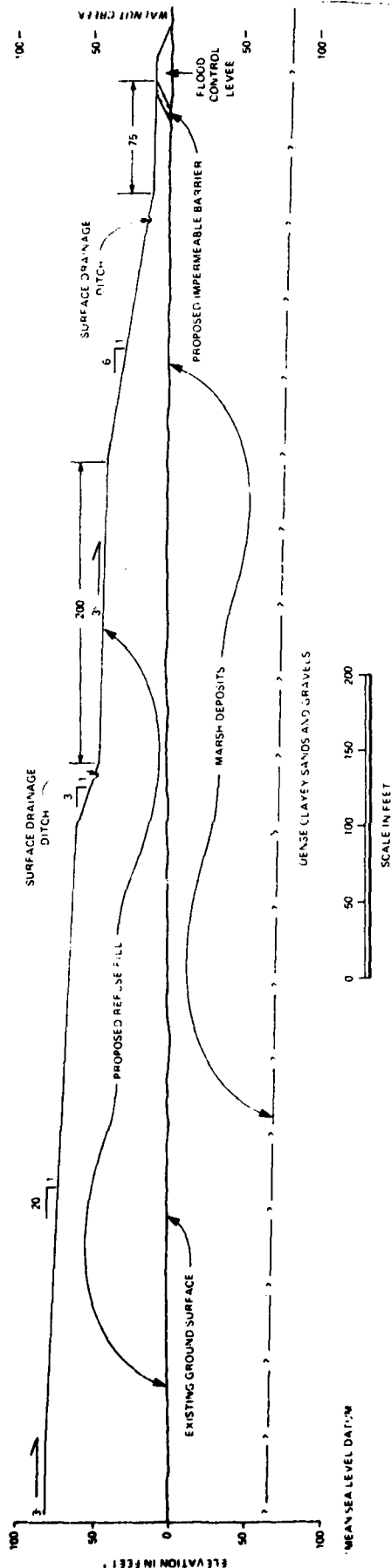
Source: Harding Lawson Associates

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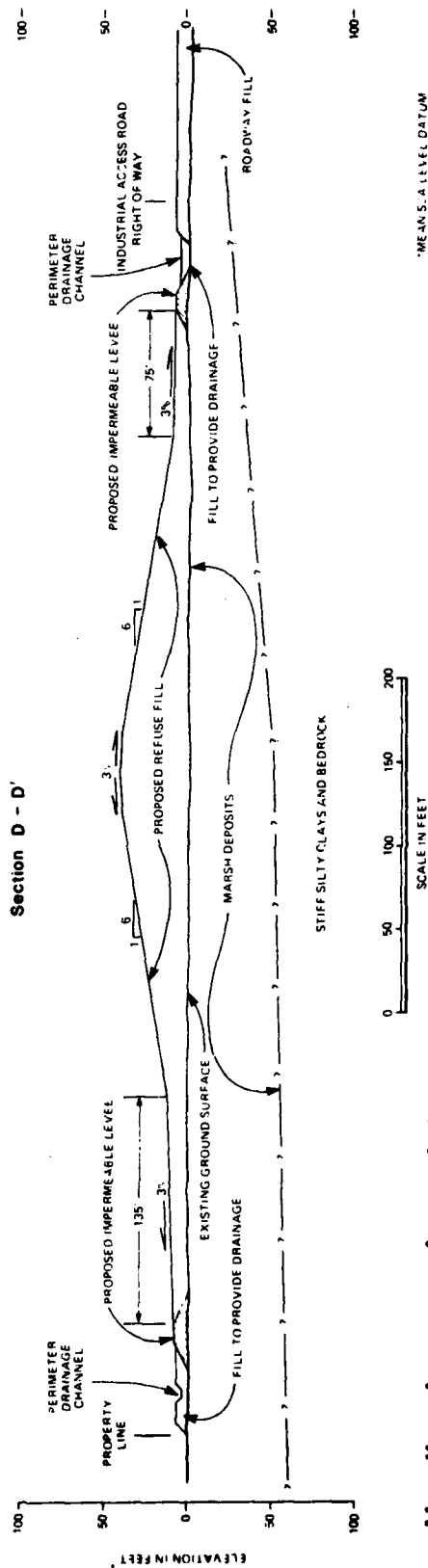
Alternative A-Drainage Cross Section

EXHIBIT
II-4

Section C - C'



Section D - D'



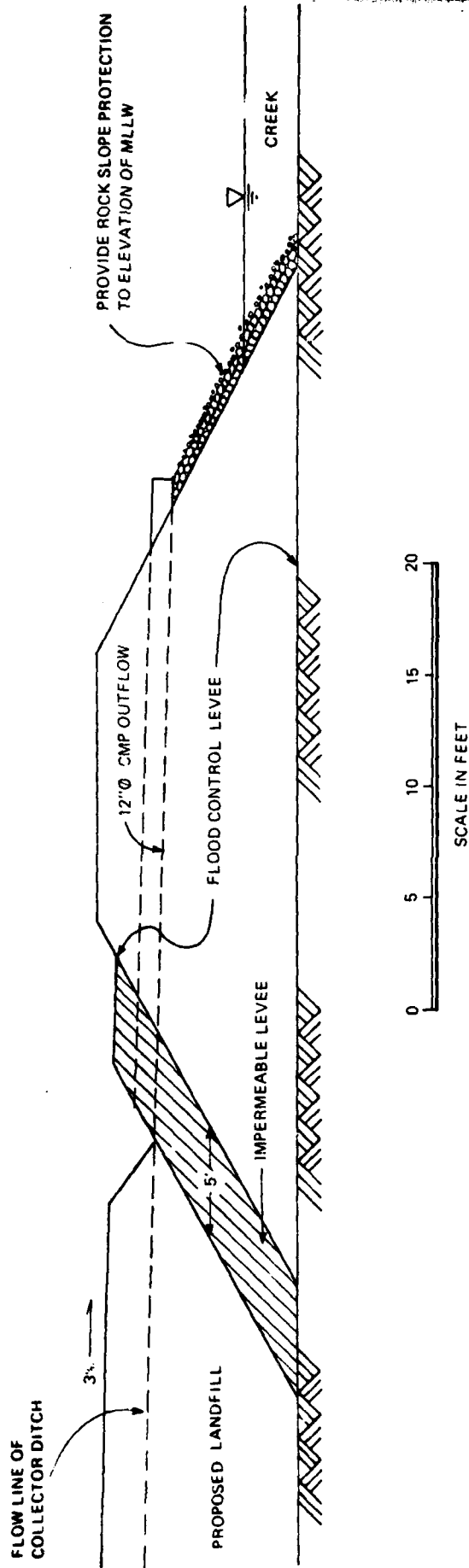
Source: Harding Lawson Associates

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Alternative A-
Proposed Landfill Cross Sections

EXHIBIT
II-5

TYPICAL SURFACE DITCH DISCHARGE PIPE



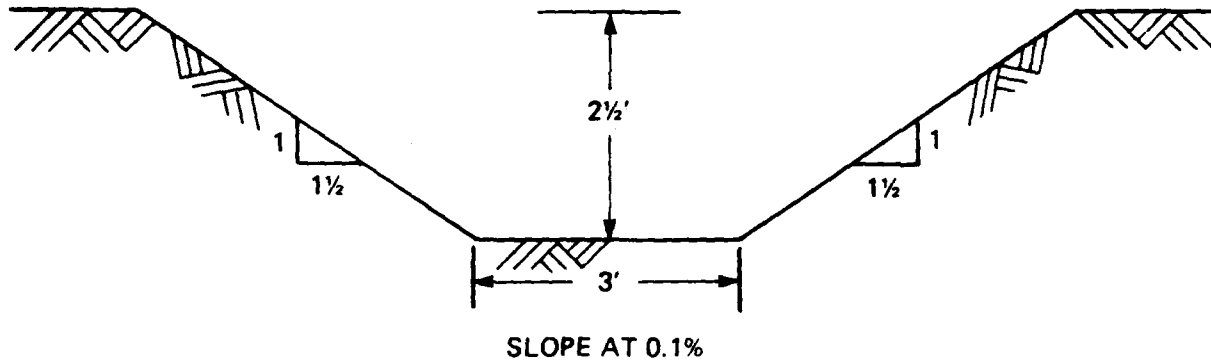
Source : Harding Lawson Associates

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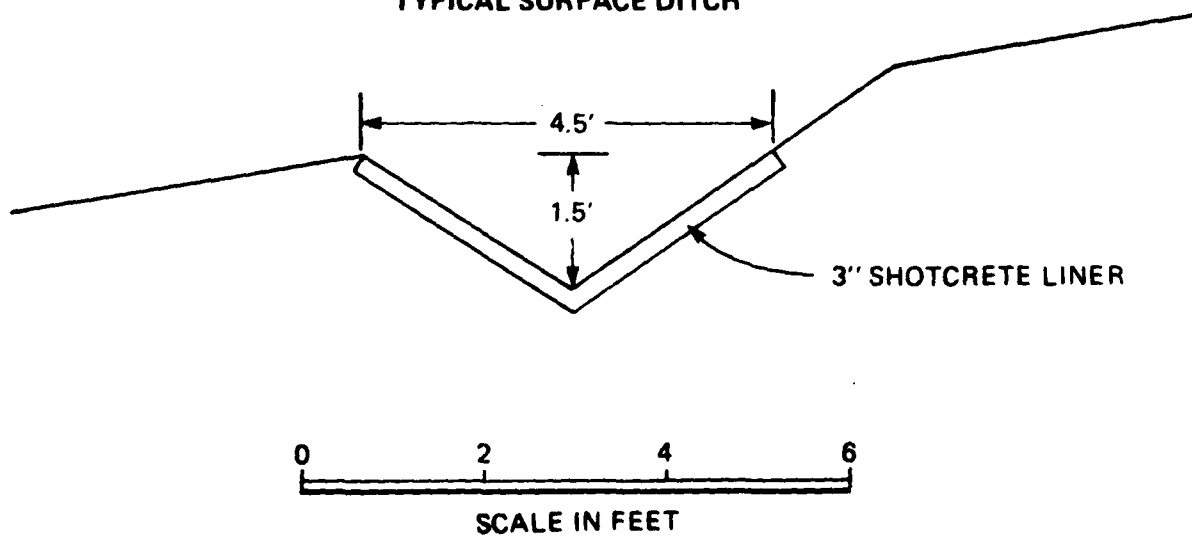
Alternative A-Surface Ditch Discharge Pipe

EXHIBIT
II-6

TYPICAL PERIMETER DRAINAGE CHANNEL



TYPICAL SURFACE DITCH



Source: Harding Lawson Associates

II DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES
ALTERNATIVE C - LANDFILL DISPOSAL ELSEWHERE ON ACME
PROPERTY (Continued)

Considering the 3.5 acres allocated as a buffer zone around the Central Sanitary District sewer main, approximately 96.5 acres would be available for waste disposal operations. On the basis of the current rate of fill, compaction, and final slope, the reduced area would provide disposal space for approximately 4 years to 1987. (Summary Section Exhibit S-4)

Alternative B would serve the same service area and accept the same waste as provided by Alternative A. Acme's current recycling/salvage efforts would continue. Operational hours, personnel, disposal practices, equipment, cover supply, litter control, energy use, and security and safety procedures would also be essentially the same as those in Alternative A. Cover material would be largely supplied by the borrow site on the southern property. About 460,000 cubic yards of compacted cover material would be required.

Related construction would consist of 3 reinforced concrete bridges to span the sewer main and 10,000 feet of levees. It is not known whether a relocated entrance with weighing equipment would be included by Acme as part of this alternative.

The potential for methane recovery in the landfill expansion area would require feasibility studies. Since the landfill disposal area would be approximately half of the area used for Alternative A, methane generation could be expected to be correspondingly less. Implementation of this alternative in no way affects the current methane recovery operation.

ALTERNATIVE C - LANDFILL DISPOSAL ELSEWHERE ON ACME PROPERTY

Alternative C would shift Acme's landfill operation to the southern portion of the Company's property instead of moving operations from current disposal areas to the 200-acre parcel described in Alternatives A and B. The dredging project included in Alternative A would not be included in Alternative C, but some levee building material could be obtained from the floor of the landfill area. Dredged material from Walnut/Pacheco Creek would be disposed at another site as in Alternative B. The inactive 20-acre Class I site was excluded from consideration as part of Alternative C primarily because of its current indeterminate status and potential for exclusive disposal of Group 1 wastes. The extremely limited estimated capacity of 4-6 months further restricts the feasibility of this site as a viable part of Alternative C. (I. Introduction, B.2.) On the basis of the current rate of fill, compaction, and final slope, Alternative C would provide disposal area for approximately 2-1/2 years to 1985.

DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES
ALTERNATIVE C - LANDFILL DISPOSAL ELSEWHERE ON ACME
PROPERTY (Continued)

The southern portion of Acme's property is an irregularly shaped 178-acre area. With the 22-acre disposal area already in operations here, approximately 156 acres are left for inclusion in Alternative C. This area is bounded on the northwestern corner by IT Corporation's Class I disposal site; on the northeastern corner by the Martinez Gun Club; on the east by Pacheco Creek Channel and Henry's Tree Service; on the south by the Atchison, Topeka, and Santa Fe Railway (AT&SF), and on the west by the Contra Costa Canal and the Vine Hill neighborhood. A 275-foot hill on the western side of the parcel is a visual and acoustical barrier for the residential neighborhood in the northern part of this area. An adjacent 140-foot hill is capped by 2 Contra Costa Water District storage tanks. (Summary Section Exhibit S-6)

At the present time, the 22-acre portion of this area is being used for Group 2 and Group 3 wastes during the dry season. It is expected to be filled to capacity during the dry season of 1983. Hazardous waste is specifically prohibited by the Interim Status Document issued by the California Department of Health Services. The northern portion of the site in the vicinity of Acme's Class I site and the Martinez Gun Club is also in use as a borrow area for cover soil used in current fill operations. The new borrow area would be located immediately west of the 22-acre site. The amount of cover material necessary for this alternative is estimated at 175,000 cubic yards (compacted).

Topographic constraints and utility easements leave approximately 40 acres of this parcel as suitable for continuing effective landfill operations. Easements for the Martinez sewer connector, high-voltage transmission lines, telephone lines, and oil and gas pipelines cross this area and the Contra Costa Water District has a 5.5-acre parcel within the property.

Use of a portion of this site would probably require a permit from the Corps of Engineers because portions of the area are located below the elevation of former mean high water and/or contain wetland indicator species. It would also require demolition of ranch buildings owned by Acme and relocation of the ranch operation.

Alternative C would include all other disposal-related activities as provided by Alternative A and B. It would serve the same service area and accept the same waste as provided by Alternatives A and B. Acme's current recycling/salvage efforts would continue. Operational hours, personnel, disposal practices, equipment, cover supply, litter control, energy use, and security and safety procedures would also be essentially the same as Alternatives A and B.

II DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES
ALTERNATIVE C - LANDFILL DISPOSAL ELSEWHERE ON ACME
PROPERTY (Continued)

Related construction would consist of an undetermined footage of levees. It is not known at the present time whether a relocated entrance and scale would be part of Alternative C.

The potential for methane recovery in the landfill expansion area would have to be determined by future feasibility studies. Implementation of this alternative in no way affects the current methane recovery operation.

ALTERNATIVE D - OTHER METHODS OF DISPOSAL
(NO CORPS OF ENGINEERS ACTION)

To reduce the amount of solid waste going to landfills, a comprehensive approach would be required. This approach would require waste reduction, material recovery and recycling and a waste-to-energy facility. Neither the alternative as a whole nor any of the individual elements would be operational in time to extend Acme's current site life beyond 1983. A landfill would be required for materials not recycled or burned, for ash residue, and as back-up for waste-to-energy facility maintenance periods. These elements, which are based on Planning Statements of the 1982 County Solid Waste Management Plan are:

1. Waste Reduction

Decreasing the quantity of material that reaches the solid waste stream, or waste reduction, can be accomplished by four major methods: reducing materials, such as packaging, that are not strictly integral to consumable goods, increasing the lifetime of durable goods such as appliances, substituting re-usable products such as ceramic dishes for throwaway paper plates, and simply buying less.

Changes in advertising and marketing, which affect product packaging, and increasing product longevity, which requires a shift in the philosophy of "built-in obsolescence" and corresponding adjustments in design concepts and manufacturing methods, are efforts best pursued by marketing specialists and manufacturers. Regulatory action, if required, would be appropriate on the federal and possibly, state levels.

2. Material Recovery

The material recovery and recycling element is a major component of Alternative D which would include a central processing center which would support curbside collection, buy-back, office paper, donations, and satellite programs. Material collection would focus on newsprint, magazines, glass, wine bottles, aluminum cans, and bimetal or "tin" cans.

II DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES
ALTERNATIVE D - OTHER METHODS OF DISPOSAL (Continued)

Materials would be brought to a central processing center as described in the County Plan for further sorting, cleaning, and market preparation. The center could be patterned on the E.C.ology Recycling Center, a successful venture operating in El Cerrito and serving the western part of Contra Costa County in El Cerrito and Kensington, and Albany in Alameda County. Such a center would perform a variety of functions: 1) a depository for residential curbside collections of recyclables; 2) a center for purchase (buy-back) operations; 3) a drop-off place for donations of recyclable items; 4) a center for commercial office papers collections; 5) a headquarters to receive materials from satellite collection areas such as large condominiums or apartment complexes as well as regional shopping centers. A processing center could also accept a wider variety of material than is possible in curbside recycling - for example, plastic beverage bottles, cardboard, wood, yardwastes, textiles, rubber, and leather.

In addition to traditional activities, a central processing center could also serve as:

- a) a collection area for Goodwill and similar charitable donations for items such as clothing, furniture, bric-a-brac, to provide one-stop recycling for the convenience of people who sell or donate other recyclables to the processing center, and
- b) a collection area for high-grade recycling to recover certain materials with high monetary or environmental value. These materials include aluminum, such as lawn furniture and cooking utensils; copper utensils, wiring and fixtures; brass fixtures and trims; cast iron such as auto parts and machinery; steel including old tools and auto parts; and household appliances. These materials would be sorted, cleaned, and marketed. Acme conducts such a program at the landfill by contract to a subsidiary. That program would be increased with more materials and articles such as construction wastes, plastics, and rubber tires culled from the waste stream. (To avoid infringing on existing salvage and recycling operations, consideration should be given to salvage and recycling that is now accomplished by private businesses and salvage companies.)

Closely related to any recycling program are supportive ordinances and fee structures. The Solid Waste Commission is developing a Model Solid Waste Ordinance which will consider curbside collection. Financial support for recycling through franchise fees, as stated in the County Solid Waste Management Plan, would be left to the discretion of local government.

II DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES
ALTERNATIVE D - OTHER METHODS OF DISPOSAL (Continued)

3. Waste-to-Energy Facility

This element of Alternative D would be coordinated with the Material Recovery effort. Once recyclables have been separated from the waste stream, the remaining portion would have potential for waste-to-energy conversion. This element is based on a waste-to-energy facility as planned by Central Contra Costa Sanitary District and described in the County Solid Waste Management Plan. This project consists of two components: Title 1 and Title 2. Each component has a different capacity and can be implemented separately or together. Title 1 would incinerate approximately 116 tons per day of municipal solid waste from the Acme landfill in retrofitted furnaces with approximately 180 wet tons a day of sludge to provide by-product energy for use in-plant or possible export. Title 2 according to one scenario in the feasibility study, would use an additional 884 tons per day in waste-to-energy conversion facilities based on mass burning waterwall boiler technology. Title 1 and 2 facilities combined would divert approximately half of the current daily tonnage from Acme's service area. Title 2 would generate 20 megawatts of electricity for sale with PG&E targeted as the prime energy market.

In early 1983, the Title 2 program was transferred to the County to organize the cities and sanitary districts into a Joint Powers Authority to study and implement the project.

**ALTERNATIVE E - EVALUATION OF OTHER AREAS FOR LANDFILL
(NO CORPS OF ENGINEERS ACTION)**

This alternative considers the use of existing or new landfills at locations other than the Acme Fill Corporation property to dispose of wastes from Acme Landfill's current service area.

The use of existing landfill sites within Contra Costa County would have minimal environmental impacts and would not require the approval of any government body (provided that the requirements of existing permits are met). However, the use of existing landfills within Contra Costa County would not provide a long-term solution to the need for additional landfill capacity to serve central Contra Costa County. If Alternative A is approved, a new landfill site would still be needed in 8 years. Alternative E, therefore, focuses on new or existing landfill sites which would provide a long-term solution to the waste disposal needs of central Contra Costa County.

Contra Costa County in conjunction with the Corps of Engineers selected five areas to be evaluated as alternative sites for operating a sanitary landfill on a long-term basis. Four areas are located in Contra Costa

II. DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES
ALTERNATIVE E - EVALUATION OF OTHER AREAS FOR LANDFILL (Continued)

County, and a fifth area is the existing Altamont Landfill operation in Alameda County. (Summary Section Exhibit S-7) Specific sites within the four areas have not been identified. Therefore, the analysis is necessarily limited to a general discussion because of the large areas involved.

Dredged material disposal would not be included as part of this alternative. The County Flood Control and Water Conservation District would need to locate a separate disposal site for dredged materials from Walnut/Pacheco Creek as in Alternative B.

Because of the different type of analysis used to evaluate Alternative E, the analysis of these five areas is included as a separate section in this report. A matrix indicating relative suitability and rank of these five areas and the Acme site based on various environmental and cultural considerations has been used to summarize the analysis. This analysis is included in Chapter IV, Evaluation of Other Areas for Landfill Use. In addition, a hypothetical landfill site has been described which would be comparable to the Acme site. A general cost analysis is included to compare the costs of opening and using a new landfill site to the costs of using existing landfills, including Acme.

II DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES

Footnotes

- ¹United States Department of the Army, Corps of Engineers. ER 200-2-2, paragraph 14.b.(5)(b).
- ²Harding Lawson Associates. Memorandum to Torrey & Torrey, Inc., March 11, 1982.
- ³Contra Costa County Flood Control and Water Conservation District, Mr. Milton Kubicek, Acting Deputy Director, Operations and Flood Control.
- ⁴Current generation. Future generation projections provided in Economics Section Table 10.
- ⁵Telephone conversations with Daniel Balbiani, Harding Lawson Associates, March 30, April 5, 1982.
- ⁶See Appendices, page B-48 for itemized list of types of wastes.
- ⁷See Resource Conservation and Recovery Section for current recycling efforts.
- ⁸Daniel Balbiani, Harding Lawson Associates, Telephone Conversation, June 23, 1982.
- ⁹Contra Costa County, Public Works Department, Solid Waste Management Plan, p. 8-10.

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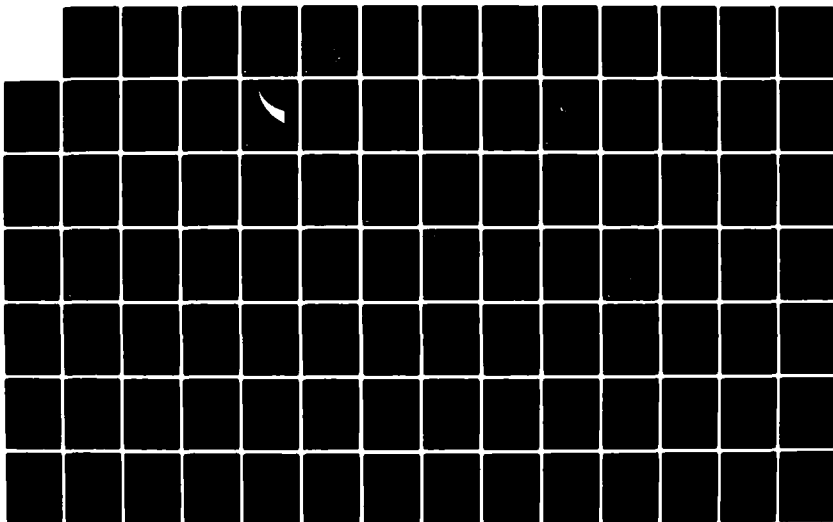
PROPOSED EXPANSION OF ACME LANDFILL OPERATIONS CONTRA
COSTA COUNTY CALIFORNIA VOLUME 1(U) CORPS OF ENGINEERS
SAN FRANCISCO CA SAN FRANCISCO DISTRICT JUN 83

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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

III ENVIRONMENTAL SETTING, IMPACTS AND RECOMMENDED MITIGATIONS

A. LAND USE

Setting

1. Physical Environment

The Acme Fill Corporation property is a 535-acre tract on the southern edge of the Suisun Bay marsh lands. (Exhibit III-1). It is about 3 miles east of central Martinez and about 3 miles west of the U. S. Naval Weapons Station at Port Chicago. The east side of the property borders the Pacheco Creek-Walnut Creek channel which flows north to Suisun Bay. Most of the property is isolated from the tidal action of the Bay by levees which run along the north and east boundaries, although a tidal gate at the northeast corner and a low point at the southeast corner allow seasonal flooding of portions of the site.

The north levee forms the bed of the adjacent Southern Pacific Railroad tracks and Waterfront Road, a parallel, two-lane, east-west arterial that joins Interstate 680 about 1/2 mile west of the Acme site. The east levee runs along the west edge of the Pacheco Creek channel. The western edge of the property is formed by a series of hills which screen views of the site from Highway 680 and the Vine Hill neighborhood to the west. The south end of the property, near the upstream end of the Pacheco Creek channel, borders the Atchison, Topeka and Santa Fe Railway right-of-way. Vehicular access is gained from Waterfront Road via a newly constructed industrial access road (Waterbird Way) along the northwest boundary of the site. Waterbird Way is a county-maintained road opened in February 1982 and primarily serves as a route for truck traffic to and from the Acme Landfill and the adjacent IT Corporation liquid waste disposal site. Waterfront Road joins Interstate Route 680 about 1/2 mile west of the Acme site. The Buchanan Field airstrip at Concord is about 6500 feet southeast of the southern property line.

Summary Exhibit S-3 shows the property and immediately surrounding lands in more detail. Currently, fill operations are limited to a 125-acre area in the northwest portion of the site and a recently opened, 22-acre area beside the Pacheco Creek channel. At present, the 22-acre site is filled during dry-weather periods. The 125-acre fill area has been filled to elevations of about 40 to 80 feet above the original ground level. Exterior fill slopes are generally 5:1 (horizontal to vertical). This area accepts residential and commercial wastes, construction and demolition debris and certain, relatively inert toxic (Group 1) wastes.

The source of cover material for fill operations is a borrow pit in a hillside on the west boundary of the property. Excavation at the pit is limited by the proximity of two Contra Costa Water District water storage tanks on the hill top.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS

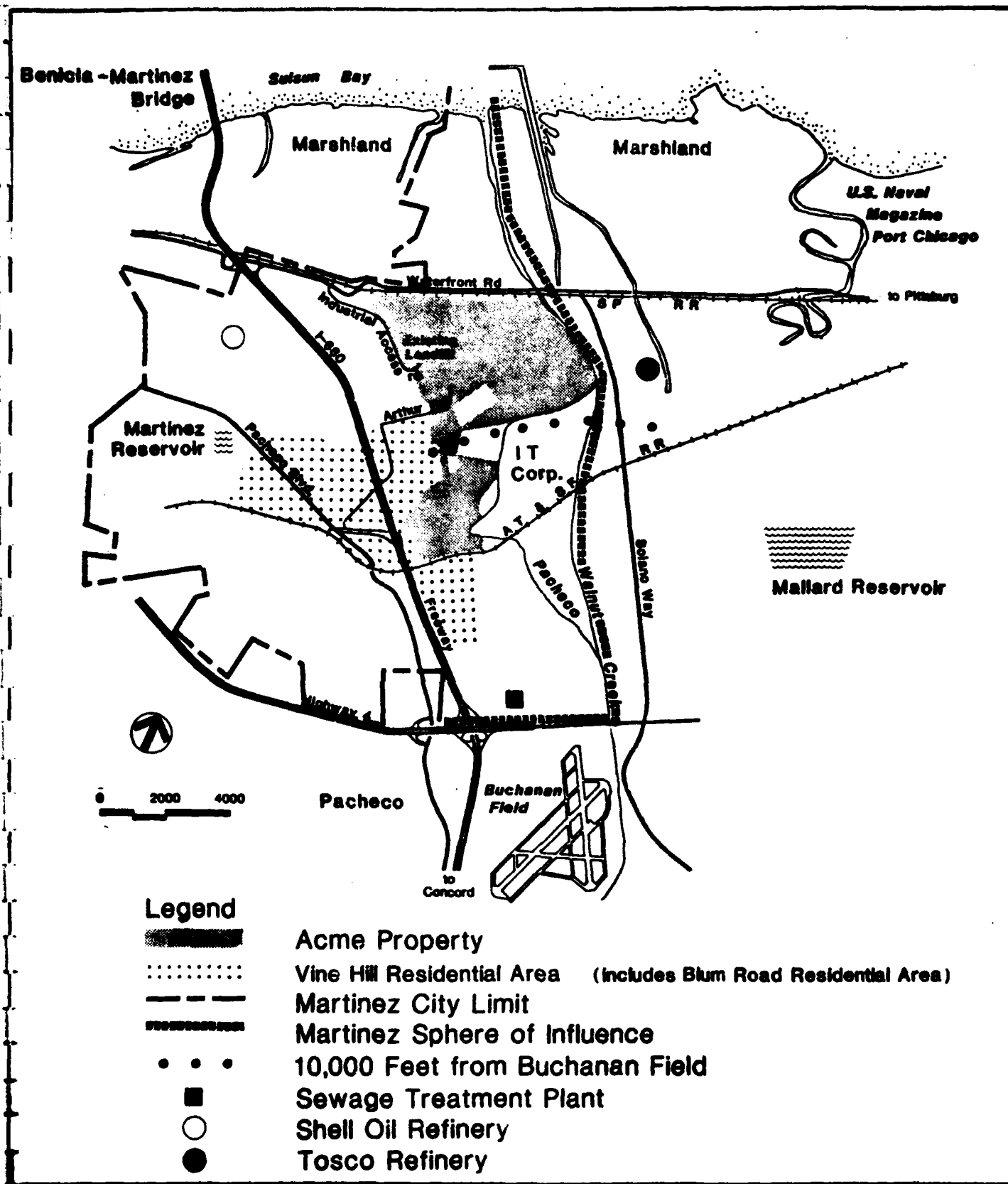
A. LAND USE (Continued)

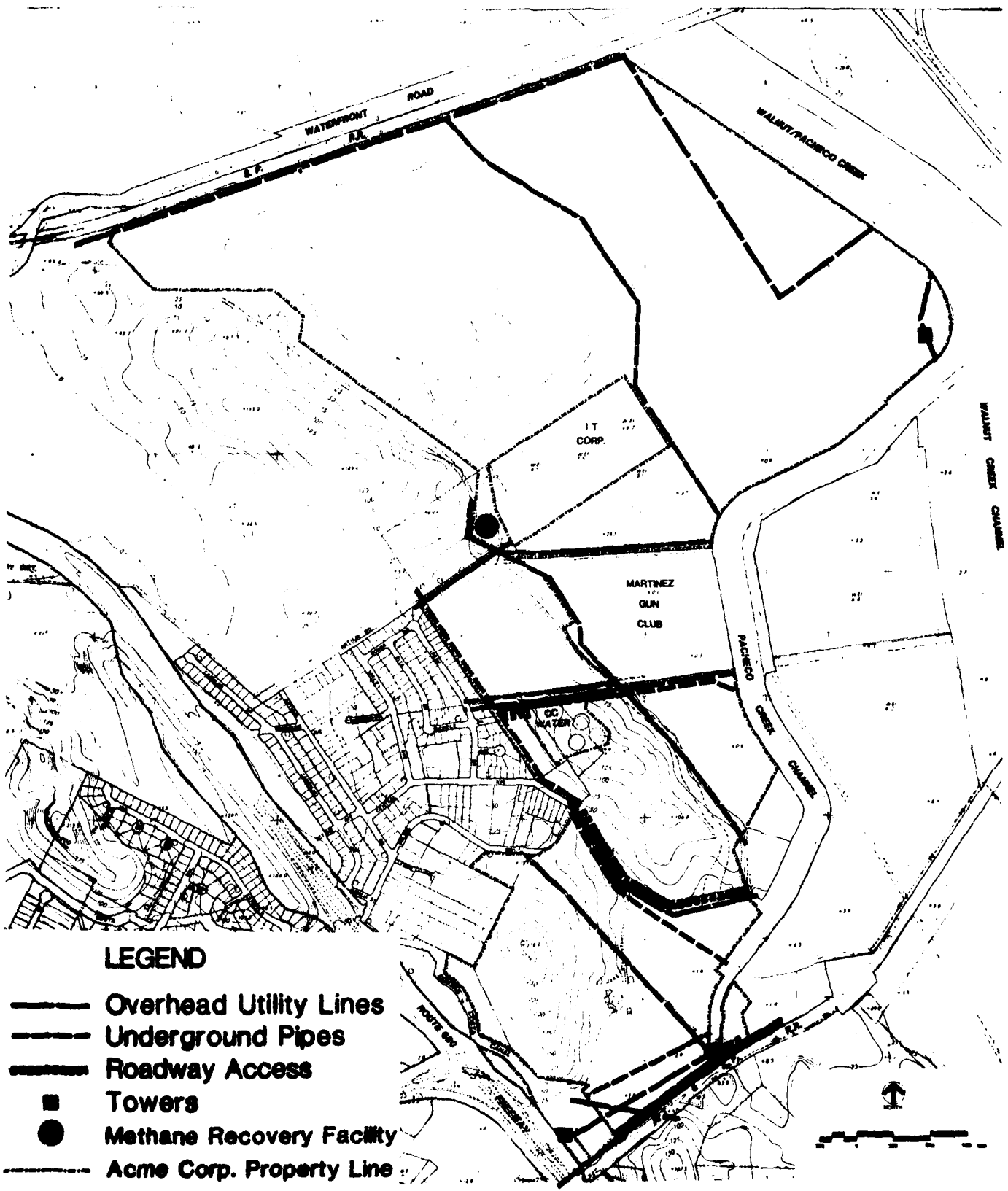
A 20-acre, triangular parcel owned by Acme was leased to the nearby IT Corporation during the 1960's for use as a Class I liquid waste disposal site. Although IT ceased use of this parcel in the late 60's, the evaporation beds, which contain sludge, are still present and frequently fill with rainwater during the wet season. The west end of the parcel is currently used by Acme for vehicle parking and as a recycling/salvage area in conjunction with the ongoing landfill operations.

The two remaining Acme parcels are essentially undeveloped. The large parcel between the existing fill area and the creek channel (the 200-acre, proposed expansion area) is a low, flat area which contains about 91 acres of seasonal wetlands and about another 95 acres of lowland-grasslands. About another 15 acres is occupied by levees and maintenance roads. This parcel is also crossed by a 72 inch sewerline and two overhead power lines (shown in Exhibit III-2). The northern powerline is a low-voltage line which could be relocated; the other is a high-voltage line on steel pylons and concrete pads which cannot be moved. Both powerlines are owned by PG&E. The sewer line is the principal outfall for the Central Contra Costa Sanitary District treatment plant south of the AT&SF Railway right-of-way. This line empties into Suisun Bay to the north. The line has been relocated due to an earlier movement caused by slippage of the adjacent landfill. About 3.5 acres around this line would not be able to be filled, in order to avoid further damage to the sewer line.

The majority of the remaining 178-acre southern parcel (156 acres without the existing 22-acre landfill), is characterized by hilly terrain. However, there is a low, relatively flat area at the southern end where a creek crosses the property and drains into the Pacheco Creek channel. This area is used principally for cattle grazing. A cluster of farm buildings is located on the hillside in the southwestern corner. A road easement bisects the southern portion of this parcel, connecting the AT&SF right-of-way with Central Avenue in the Vine Hill residential neighborhood. (see Summary Exhibit S3) The existing borrow pit is located at the north end of this parcel.

The Acme property surrounds or partially surrounds several other parcels. IT Corporation owns a parcel of about 25 acres where Class I liquid wastes are processed in boilers and pumped to evaporation ponds elsewhere on the parcel and on a large tract across Pacheco Creek. The Martinez Gun Club owns and operates a shooting range on a 30 to 35-acre flat area near the creek. Henry's Tree Service owns a 7-acre parcel along Pacheco Creek where lumber is cut, stacked and sold for firewood. A small, wooden office and storage structure are located on the lot. A portion of the lot is also used as a storage site for septic tanks. The Central Contra Costa





III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
A. LAND USE (Continued)

Contra Costa Water District owns a parcel on the ridge line in the southern area where 2 water storage tanks are located. The tanks, as part of a wastewater reclamation system, hold water for industrial use. Effluent treated by Central Contra Costa Sanitary District's treatment plant near Highway 4 is pumped via a pipeline in an easement in Acme's 156-acre parcel to Contra Costa County Water District's ion exchange softening plant (25 mgd capacity). Due to start-up difficulties the softening plant is not yet functional but water is being stored in the tanks and pipeline.

The land uses which surround the Acme property are described below and indicated on Exhibit III-1.

To the west. The Contra Costa Canal, a partially subterranean and partially open concrete channel which carries water, via several siphons, to the Martinez Reservoir at the west end of the Vine Hill residential neighborhood. This water is used as City drinking water.

The East Vine Hill neighborhood, located between the southern Acme parcel and Highway 680 has approximately 300 dwelling units, predominantly single-family units built in the 1950's and 60's. The ridgeline on the Acme parcel serves as a visual and noise barrier between this neighborhood and the landfill operations. Until the recent opening of Waterbird Way, truck traffic from Acme and IT Corporation used Arthur Road through this neighborhood as the primary access route to and from Highway 680. When the new access road was opened, Arthur Road was permanently closed at the entrance to the landfill. A secondary access to the Acme property and Henry's Tree Service from Highway 680 is Central Avenue through the East Vine Hill neighborhood, although this route is not used for waste disposal traffic. The remainder of the Vine Hill neighborhood, including an elementary school, lies west of Highway 680.

Shell Oil, which operates a refinery on the west side of Highway 680, owns a vacant tract of about 200 acres between the existing landfill and the freeway. A ridgeline running the length of the parcel on the east side screens the landfill from views along the freeway. The western half of this property is a seasonal wetland. The land is currently used for cattle grazing. Shell Oil has no immediate plans for developing this property.

To the north. This area is mostly Bay marshlands with large intermittent filled areas. Only two parcels are developed. One parcel, near the intersection of the Waterbird Way and Waterfront Road contains large oil and gas storage tanks owned by Land-Sea Corporation. Directly north of the existing landfill is an auto-wrecking yard. Waterfront Road and Southern Pacific Railroad cross the Pacheco Creek channel on bridges near the northeast corner of the Acme property. The mean high-water mark of Suisun Bay is about one mile north of the property line.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
A. LAND USE (Continued)

To the east. The Tosco oil refinery is located across the Pacheco Creek-Walnut Creek channel. The refining operations are located near Waterfront Road; the main storage tanks are located south of this area. A spur of the Southern Pacific Railroad runs north-south through the refinery area. East of the refinery are mostly marshlands and open grasslands owned by Tosco, and the 168-acre Mallard Reservoir operated by the Central Contra Costa Water District. Further east are the Concord Naval Weapons Station and the Port Chicago Naval Magazine. Directly across the Pacheco Creek channel from the southern Acme parcel, on the spit of land between the two creek channels, are the IT Corporation's evaporation ponds for treated Group 1 wastes.

To the south. Directly south of the southern Acme parcel is an open hilly area beyond which is a single-family residential neighborhood. East of this area is the large tract owned by the Central Contra Costa Sanitary District. The sewage treatment plant is located at the southern end of this parcel near Highway 4. South of Highway 4 is Buchanan Field. West of Highway 680 south of the Acme property is a low density, single-family hillside residential area which is an extension of the Vine Hill neighborhood.

2. Policy Setting

The plans, policies, laws, and regulations affecting the project site are described in Section I.E. Particular restrictions which these policies may place on the Acme property are summarized in the following paragraphs. The compatibility of the proposed project and its alternatives with these restrictions are subsequently discussed in this section under "impacts."

Local plans and zoning.

The site lies within an unincorporated area of Contra Costa County, just east of the City of Martinez. The County General Plan includes a Refuse Disposal Plan which was adopted in 1973. Although much of the plan was outdated by state legislation mandating countywide Solid Waste Management Plans, it does recognize the Acme landfill and its expansion. The County's General Plan and zoning ordinance permits heavy industry, including solid waste disposal sites, on this property. Most of the proposed expansion area is covered by County Land Use Permit 615-60, issued in 1958, which permits solid waste disposal on the site. The General Plan also designates Waterfront Road as a scenic route.

The site also falls within the Sphere of Influence of the City of Martinez which ultimately expects to annex the area. The Martinez General Plan currently recommends industrial use for the property with consideration for its wetlands, topographic features and other natural environmental characteristics.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
A. LAND USE (Continued)

Wetlands policies.

Because the proposed expansion area includes a wetland, several Federal and State agencies have special jurisdiction, or a review mandate, in matters concerning use of the site. These agencies include the U.S. Army Corps of Engineers, the Environmental Protection Agency, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the California Resources Agency, and the California Department of Fish and Game. In general, the policies of these agencies advise against or prohibit the issuance of permits which allow the filling or destruction of wetlands where a practicable non-wetland alternative exists. In some cases such permits are issued if an off-site wetland of roughly equivalent size is restored to provide an equivalent or greater value in terms of wetland habitat. (See Sections I.D., I.E. and III.D.) Because filling of the wetland would require a Department of the Army Permit under Section 10 of the River and Harbor Act and Section 404 of the Clean Water Act, the Corps of Engineers is the lead federal agency responsible for coordinating the concerns of the various federal agencies involved.

In addition to concerns about the loss of wetland habitat due to filling, many of these agencies also have concerns about leachates from the fill contaminating nearby water courses and the Suisun Bay. These concerns are addressed in Sections III.C. and III.D.

Other policies.

California Assembly Bill 2370 prohibits the location of Class I disposal sites within 2000 feet of residences other than industrial dwellings. The 2000-foot limit measured from the Vine Hill residential area would include most of the remaining 156 acres of the southern parcel. Under AB2370 the California Department of Health Services prohibited disposal of Group 1 wastes on the 22-acre Acme parcel opened in 1981 and also on Acme's former Class I 20-acre site which is now inactive. (See discussion under I. E. Policy Context.)

Federal Aviation Administration Order 5200.5 establishes a guideline of maintaining 10,000 feet between any airport runway used by turbojet aircraft and new sanitary landfills to avoid hazards to planes which might be caused by birds attracted to landfills. Most of the remaining 156-acres of the southern parcel fall within 10,000 feet of Buchanan Field, in Concord, which is used by turbojet aircraft.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
A. LAND USE (Continued)

Impacts

The primary land use impact of Alternative A would be the conversion of a large, restorable marsh area to industrial use (landfill), including the destruction of about 95 acres of wetlands. The project would be consistent with the Contra Costa County General Plan and with the Martinez General Plan and Zoning Ordinance. It would not be prohibited by AB2370 or by FAA Order 5200.5. The existing sewer pipeline and the PG&E high-tension line would restrict placement of fill in portions of the site.

The next most significant potential impact of the project would be the removal of part of the ridgeline of the small hill now separating the Vine Hill neighborhood from the landfill. Part of the ridgeline would be removed as borrow material is required for levee construction and as cover material. The ridgeline would be retained intact while landfill operations continued in the existing 22-acre area. Part of the hill would remain because of the presence of water storage tanks of the Contra Costa Water District and because excavations would reduce, not remove, the hill. Acme would provide a visual and a noise buffer between the residential area and the landfill to replace the amenities lost by excavating part of the hill (the amount of excavation in the area will depend on how much levee-building and cover material is obtained from the landfill floor and from dredged materials). Part of the large hill adjoining I-680 is also proposed to be used for a borrow area if this is found to be necessary.

The buffering requirement is provided by condition 11 of LUP 2052-81, which requires:

Within three months of the U. S. Army Corps of Engineers decision regarding the proposed 200-acre expansion the applicant shall submit to the Board of Supervisors for its review and approval a plan to buffer the residential area to the west from the effects of landfill operations. The plan shall delineate the amount of fill required for dump operations on the 200 acres, the amount of dredge material available for use as cover and the amount of material to be removed from the low hill separating the East Vine Hill neighborhood and Acme landfill. The plan must provide for continued buffering between the two land uses.

Alternative B would also convert an open tract to industrial use (landfill) but could preserve a majority of the 95-acre wetlands area. The landfill capacity of this alternative would be about half that of the proposed project. This alternative would also be consistent with local planning policy and would not be prohibited by either AB2370 or FAA Order 5200.5. The existing sewer pipeline would restrict placement of fill somewhat.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
A. LAND USE (Continued)

Alternative C would fill portions of the southern parcel. Placement of fill would be restricted by existing road and utility easements and would require filling a minor wetlands area at the southern end of the parcel. The majority of this parcel would also fall within areas potentially restricted by AB2370 and FAA Order 5200.5. The acceptance of Group 1 wastes for this alternative would be subject to California State Department of Health Services approval.

Alternatives A, B, and C would expand landfill operations in a generally industrial environment and would have no adverse effect on these surrounding industrial uses. The area of primary sensitivity to adverse impacts is the interface of the excavation and fill operations with the Vine Hill residential neighborhood. Visual, noise, dust, smell and nuisance impacts on this neighborhood would be severe if Acme were allowed to remove the two hills in the southern parcel or substantially lower their ridgelines without providing compensating buffering. Because all waste disposal traffic would use the new industrial access road, Waterbird Way, traffic from Alternatives A, B, and C would not affect the Vine Hill residential neighborhood.

Mitigations

Filling the low-lying seasonal wetlands, according to Alternatives A, B, or C, would result in these areas being made suitable for intermediate and long-term reuse.

Measures which would mitigate the conversion of wetlands, the primary land use impact, have been incorporated in the proposed project and its alternatives. Alternative A, for example, would restore a marshland at an off-site location; Alternatives B and C would allow on-site mitigation of wetland impacts.

The following mitigation measures pertain to Alternatives A, B, and C. For the hill between the residential neighborhood and the landfill, the provisions of Condition 11 of LUP 2052-81 should be implemented as soon as possible.

Excavation on the hill adjoining I-680 should be allowed only if other areas on the site will not provide adequate material. Excavation is subject to a County Land Use Permit. Conditions similar to those in LUP 2052-81 and providing for regrading and re-landscaping, should be provided in the permit.

III. ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS

B. EARTH: GEOLOGY, SOILS, AND SEISMICITY

1. Geology and Soils

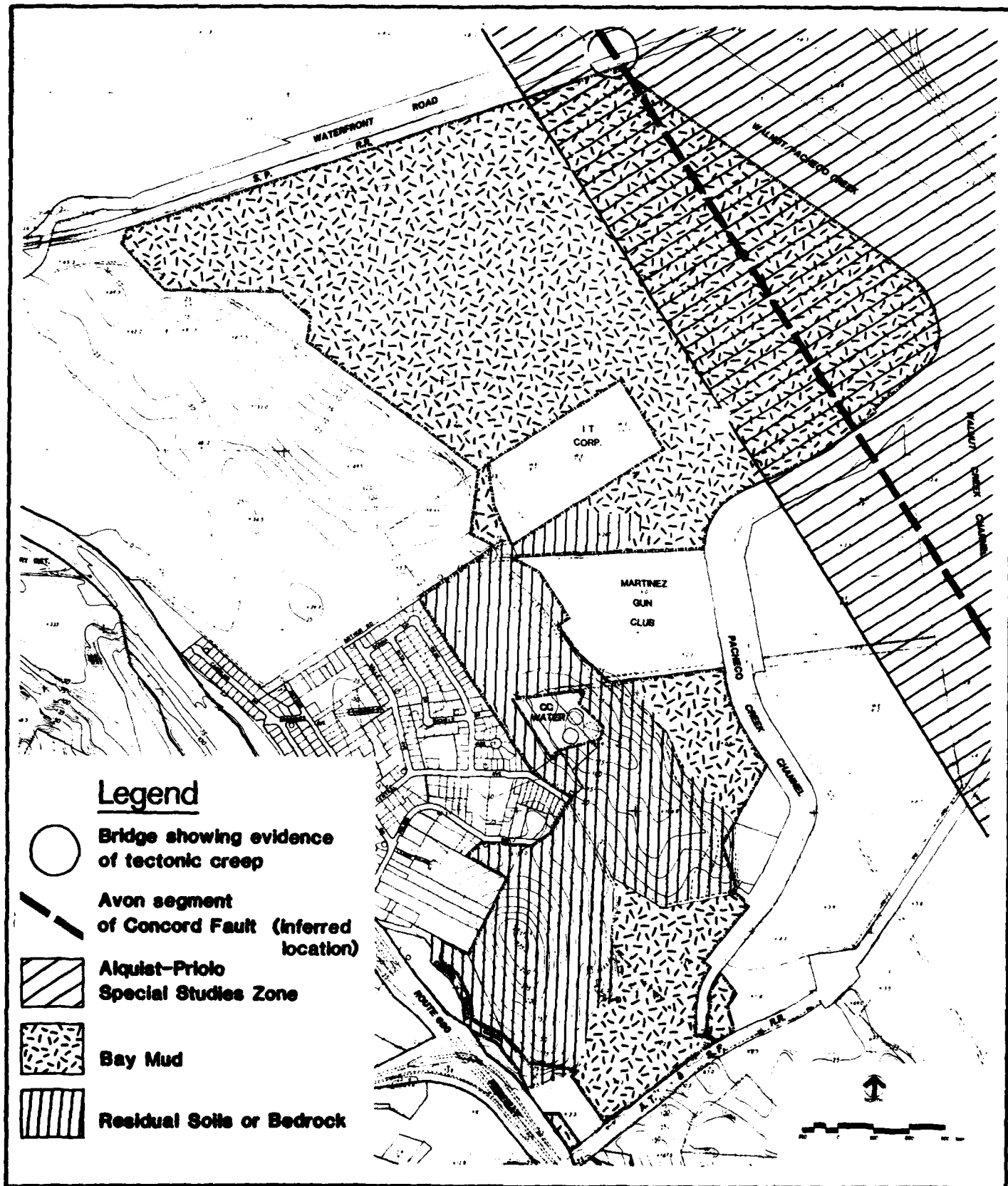
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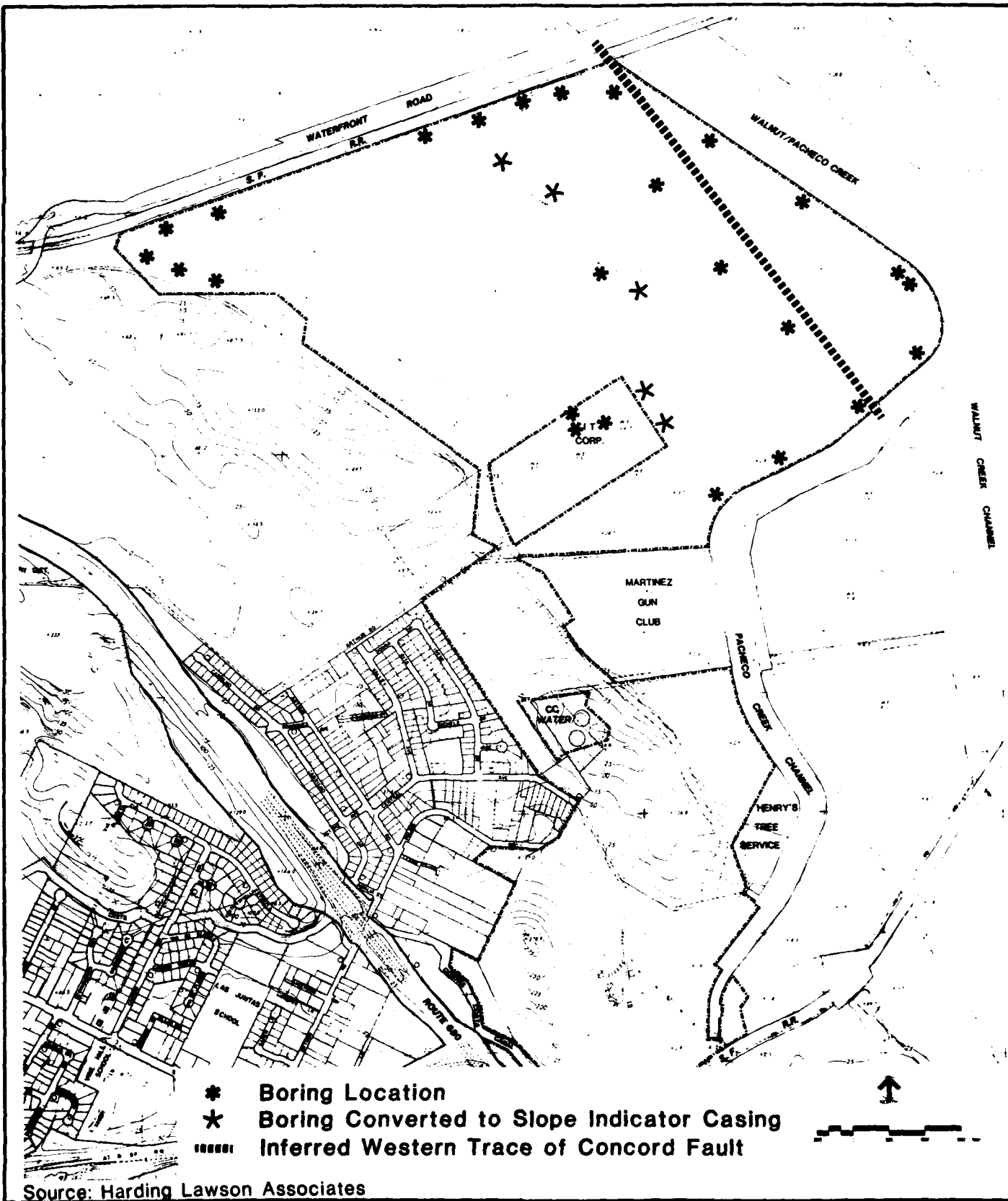
The Acme site is located in the Coast Range physiographic province, which is a series of northwest trending mountains and valleys. The Coast Ranges have undergone a complex geologic history including periods of sedimentation, folding, faulting, uplift, and erosion. The Carquinez Straits to the north of the site were eroded through the East Bay Hills as they were being elevated in Late Tertiary time (A Geologic Time Scale is included in the Earth Appendix, Exhibit 1).¹ These straits connect the site area with San Francisco Bay. Alluvial and marsh deposits, or Bay Mud, in varying amounts overlie bedrock and are exposed at the surface over most of the 535-acre site. Bedrock consists of sedimentary rocks of Cretaceous age known as the Panoche Formation. Bedding planes in the bedrock strike north to northwest and generally dip between 50 degrees west to vertical in the site area. Depth to bedrock varies from surface exposure to more than 100 feet.²

No bedrock is exposed at the surface in the 200-acre area of Alternatives A and B. Quaternary surficial marsh deposits of Bay Mud cover the entire area, and are underlain by alluvial silts and clays. Panoche Formation bedrock was encountered at a depth of 103 feet in a boring between the existing 125-acre landfill, and the proposed Alternative A area.³

The 178-acre southern parcel, which includes the existing 22-acre landfill and the Alternative C area, can be divided into two distinct areas. One is a lowland area of Bay Mud and alluvial soils; the other is an upland area underlain by bedrock with a veneer of residual and colluvial soils. The upland area rises with moderately steep slopes to an elevation of approximately 280 feet at Vine Hill. The lowland area is essentially flat with an elevation at or near sea level.⁴ Exhibits III-3 and III-4 indicate underlying geology, seismic features and boring locations.

The suitability of soils of landfill sites is primarily governed by the need to isolate the waste material and its leachate from surface water and ground water (The potential effects of contamination of water supplies by leachate are discussed in Section III C, Water). Bay Mud underlies the Alternative A and B areas, and the lowlands of the Alternative C area. Its properties influence and, in many cases, control the design and performance of the landfill and many proposed and existing improvements, including the levees, access and interior roads, the Central Contra Costa Sanitary District (CCCCSD) line and an overhead transmission line tower support.





TORREY & TORREY INC.
environmental/urban
planning and design

Boring & Fault Locations

EXHIBIT
III-4

III. ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
B. EARTH: GEOLOGY, SOILS, AND SEISMICITY (Continued)

Low permeability is generally considered to be the single most important characteristic of earth material used to isolate waste and leachate although it is far from the only important characteristic.⁵ Permeability can be evaluated by laboratory tests. However, other characteristics such as compressibility and shear strength also contribute to waste and leachate isolation, as discussed below. Earth Appendix Table I presents typical engineering properties of Bay Mud.

The most important properties of Bay Mud are its small particle size (fine texture) and its loosely- formed cellular structure which incorporates salt water derived from the site of its deposition. As a result Bay Mud has high porosity, very high water content, high compressibility, and is very weak and plastic. It is said to have "high groundwater", but the groundwater is salt water loosely bound within its mineral cell and is not usable or easily retrievable.

When loads - such as the weight of fill material - are applied to Bay Mud the water it has absorbed slowly escapes by travelling to and through the most permeable nearby layer or to the surface. The mud consolidates and its surface settles as water it has absorbed escapes. As it consolidates, it gains strength.

The water in Bay Mud, or any water-bearing soils, moves from locations with a higher hydrostatic pressure, or "head", to locations with a lower head. When refuse or other fill is applied over Bay Mud the head within it increases and the water it has absorbed travels upward or laterally because the head increases with the weight of the overburden of fill. The head will vary laterally from place to place according to the load of overlying materials.

As consolidation takes place and water is squeezed from the Bay Mud its porosity and permeability decrease substantially. As filling is completed the head would dissipate but would always be higher than in the overlying fill. These characteristics of Bay Mud do not allow leachate to enter it; water is expelled from the mud into any surrounding material where the head is lower, particularly to material of higher permeability. The result is that Bay Mud can be compared to a sponge with a damp cloth (representing overburden) laid over it. If the sponge were dry it would absorb water from the cloth. When saturated and compressed the sponge would release water and make the cloth wetter.

Bay Mud's in-place plasticity is nearly equal to moist clay of a consistency that is ready to be applied to a potter's wheel. Hence, shear failures - cracks that form in brittle and hard materials - rapidly dissipate in the upper Bay Mud. Shears give way to zones of plastic distortion.

III. ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
B. EARTH: GEOLOGY, SOILS, AND SEISMICITY (Continued)

Bay Mud is weak but gains strength when its water is gradually dissipated. In 1978, too rapid loading of the mud in a wastefill sloped at roughly 3:1 (horizontal to vertical) on the Acme facility caused a slope failure in the landfill, and its foundation. A mud wave ("toe bulge") formed at the toe of the failure that laterally displaced and uplifted the CCCSD outfall sewer line. As a result, the sewer outfall line was relocated to an alignment roughly paralleling the eastern face of the present fill area on the 125-acre parcel.

Permeability governs the rate of movement of water through soils, regardless of the direction of movement. Material with a permeability of 1×10^{-6} centimeters per second (cm/sec) (approximately one foot/year) or less is generally considered to be acceptable for impermeable material for a landfill. Acme's soil and geological consultants, Harding Lawson Associates, tested the vertical permeability of the Bay Mud at the Alternative A, B, and C areas and the permeability of the siltier dredged, dried and compacted material in the existing flood control levees. The Bay Mud had permeabilities between 5.2×10^{-5} centimeters per second (cm/sec) (too high) and 6.7×10^{-8} cm/sec (acceptably low) at the Alternative A and B sites. At the Alternative C site permeabilities were almost entirely less than 1×10^{-6} cm/sec. Some unacceptable permeability rates were judged by Harding Lawson Associates to result from sample disturbance. Two tests from siltier Bay Mud in the extreme northeast corner of the Alternative C site indicate that an 8-foot thick layer is present there that has a permeability greater than 1×10^{-6} cm/sec. Harding Lawson Associates delineated the approximate area underlain by the more permeable layer and recommended that the landfill either be relocated away from the permeable layer, or the permeability of the siltier layer be lowered by compaction or covering with imported impermeable material.⁶

Flood control levees that were tested had permeabilities greater than 10^{-6} cm/sec. Harding Lawson Associates states that an impermeable barrier will be required adjacent to the flood control levee to meet Regional Water Quality Control Board (RWQCB) regulations, and that impermeable barriers along the northern and southern boundaries of the lowland area, and between cells will also be required to control horizontal movement of the leachate.

Harding Lawson Associates' permeability tests indicate vertical permeability for individual specimens. The vertical permeability of a mass is controlled by the most impermeable strata within the mass. Horizontal permeability is controlled by the most permeable soil strata and can be expected to be faster than the vertical permeability. As discussed above, the Bay Mud would tend to reject leachate due to its existing saturation.

III. ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
B. EARTH: GEOLOGY, SOILS, AND SEISMICITY (Continued)

Although the site areas for Alternatives A, B, and C are not subject to subsidence due to hydrocompaction or peat oxidation, settlement of the landfill surface will occur during and after the period of refuse disposal. Harding Lawson Associates have predicted that settlement would occur due to four mechanisms:⁸

1. Compression of the refuse fill
2. Refuse decomposition
3. Migration of the finer refuse particles and soil cover into the voids in the refuse.
4. Consolidation of the underlying marsh deposits beneath the refuse fill weight.

These factors would apply to Alternatives A, B, and C. Settlement due to Bay Mud consolidation, Item 4, would be the largest contributing factor. As shown on Exhibit III - 5, total settlement of 7 to 11 feet is anticipated by Harding Lawson after 30 years where the Bay Mud is more than 60 feet thick.⁹

In addition to the four factors listed by Harding Lawson Associates, if methane recovery is extended to new landfills it would contribute to settlement of the refuse itself (not the underlying soils) by lowering pressure within any waste cell from which methane is recovered.

For Alternative A (The proposed project), dredged material from periodic maintenance of Walnut/Pacheco Creeks is planned to be dried and later used for cover material. Exhibit S-4 shows the Alternative A disposal area. Dredgings would consist of combinations of silts and clays and, in general, when dried and compacted, should provide an acceptable landfill cover.¹⁰

Additional testing would be required, however, because high silt contents could increase the permeabilities above the 10^{-6} cm/sec. requirements for impermeable cover (daily cover is not required to be impermeable).

Three bridges are planned to span the CCCSD sewer line and approximately 20,000 feet of levees are included in Alternative A and B, and an undetermined number of levees would be required for Alternative C. Overhead utility lines exist on the site for Alternatives A and B, and a high tower supporting an overhead electric transmission line is in the southeast part of Alternative A and the mitigation area for Alternative B.

III. ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
B. EARTH: GEOLOGY, SOILS, AND SEISMICITY (Continued)

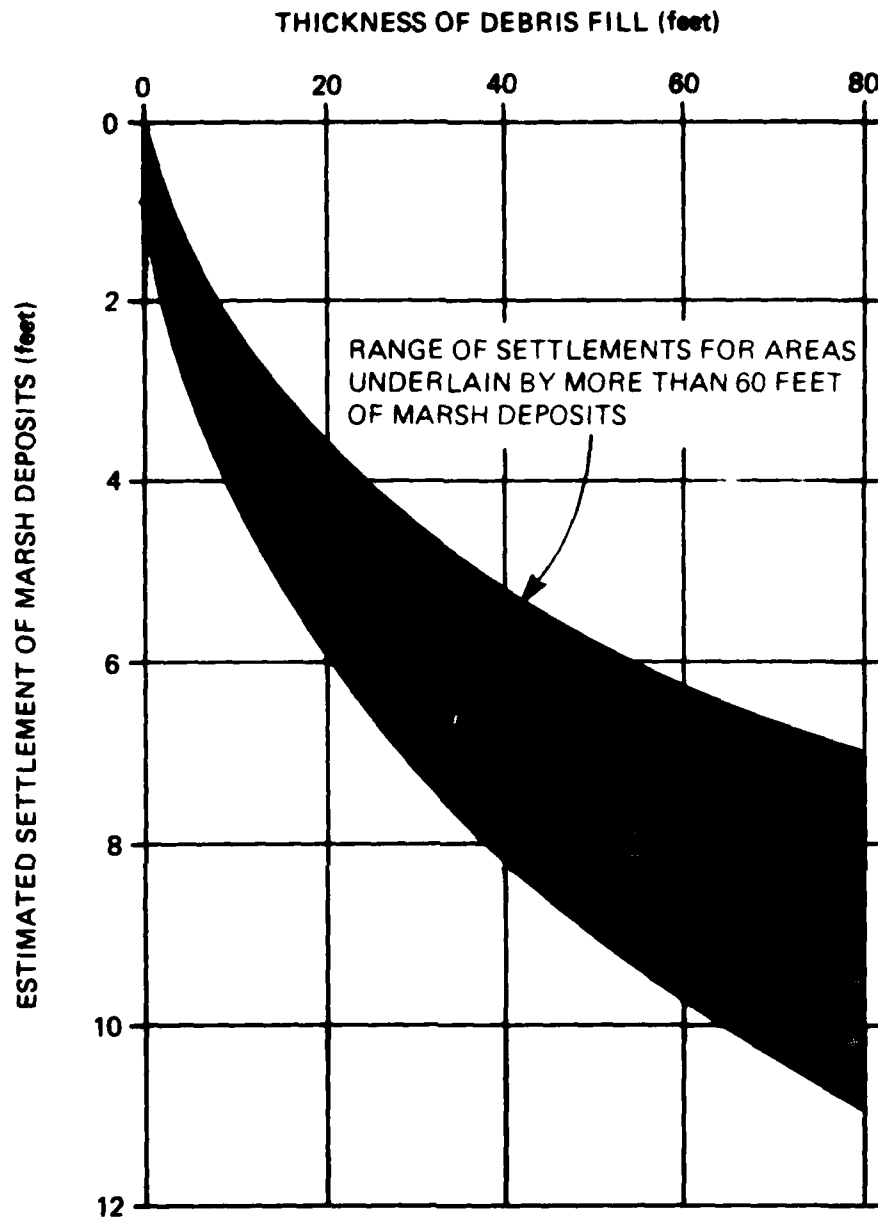
The damage potential to these facilities, and appropriate mitigation measures, are discussed in the following section.

The previous discussions center on the unusual properties of Bay Mud, which directly underlies the surface of the sites for Alternatives A and B. The 178-acre southern parcel which included Alternative C has not been studied in detail. It is covered by stiff residual silts and clays in the upland areas and by alluvial deposits of medium to stiff clayey silt derived from adjacent hills, and Bay Mud in the lowland areas. The alluvial clayey silts probably interfinger laterally with Bay Mud and vary from 0 to at least 35 feet thick.

The U. S. Soil Conservation Service (SCS) Soil Survey of Contra Costa County shows that the soils underlying the southern area are of the Omni, Altamont and Lodi series.¹¹ The SCS calls marsh deposits of Bay Mud, "Omni soils". These soil were discussed previously in connection with Alternatives A and B. The Altamont and Lodi soils occur on the hill northeast of the ranch road and on Vine Hill, respectively.

The Altamont clay consists of well-drained soils underlain by shale and soft, fine-grained sandstone. The soil is found on slopes of 15 to 30 percent. Depth to bedrock is typically 3-1/2 to 5 feet. The Lodi silty clay loam consists of excessively drained soils underlain by soft sandstone and shale. The soil is found on slopes of 9 to 50 percent. Depth to bedrock is generally 1 to 1-1/2 feet.¹² Collectively these soils are predominantly clays and have low permeabilities. Testing performed by Harding Lawson Associates indicates permeabilities ranging from about 10^{-4} cm/sec. to 10^{-7} cm/sec.⁶ Although this is believed to be a reasonable value range for vertical permeability, horizontal permeability values may be higher. The permeability of these soils can be lowered by remolding during compaction, and their vertical and horizontal permeabilities made nearly equal. Shrink-swell potential of these soils is moderate to high.¹³

Ponding conditions on the east lowland areas during rainy periods shows their poor percolation and poor surface drainage. Infiltration of rainwaters may be at a greater rate on the slopes and exposed rock surfaces of the central and western hilly areas. The depression created by the removal of borrow material for landfill cover in the northern part of this parcel allows direct infiltration of surface water. Ground water is not known to underlie these hills, and no water wells are known in the area bounded by Interstate 680 to the west, Waterfront Road to the north, Pacheco Creek to the east, and the A. T. & S. F. railroad to the south.¹⁴



- NOTES:
- 1.) This chart presents settlement of the marsh deposits 30 years after fill placement and does not include settlement within the refuse fill.
 - 2.) The wet unit weight of the refuse fill is assumed to be 60 pcf.

III. ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
B. EARTH: GEOLOGY, SOILS, AND SEISMICITY (Continued)

Impacts

The proposed project or any chosen alternative must meet the minimum standards contained in the California Administrative Code Title 23, Chapter 3, Subchapter 15 for a Class II-1 disposal site. These regulations stipulate that geologic conditions must be naturally capable of preventing lateral and vertical movement of liquids and gases coming from the waste in the site or the disposal area must be modified to achieve such capability. Harding Lawson Associates has concluded that the Bay Mud deposits beneath the Alternative A and B sites would be sufficiently impervious to vertical migration of liquids. The RWQCB is concerned that the underlying Bay Mud is slightly more permeable than the 1.0×10^{-6} cm/sec required for Class II-1 sites. They also indicate that the deposits may provide equivalent containment if Harding Lawson Associates further evaluates the Bay Mud as a sufficient barrier. If the Bay Mud proves to be an inadequate seal, the RWQCB may require a seal layer, usually 5 feet of low permeability clay, under the proposed landfill area. The EPA has expressed concern that the disposal of hazardous waste in Alternatives A, B, and C would require the placement of a liner system beneath the landfill to meet RCRA requirements (Section 264.301). An exception to the requirements for a liner may be made by the EPA if containment of hazardous wastes can be demonstrated by other means. Additional analysis beyond the scope of this EIR/EIS must be submitted with the applicant's Part B application to EPA for a Hazardous Waste Facility Permit. Further discussion of RCRA requirements is included under I. D, Regulatory Permit Requirements and Status.

Even with sufficient evidence that the Bay Mud would provide containment for vertical movement of leachate, there is still a potential for horizontal movement. Due to the increase in water pressure with depth, the most significant movement is at the surface. This could be significant for Alternatives A, B, and C. Mitigating barriers and discussed in the following section. Harding Lawson Associates is now studying the potential for horizontal migration of leachate in more detail.¹⁵

As a result of Bay Mud's plasticity and weakness, existing and new levees, existing utilities, and proposed improvements such as the bridges would have to be protected from the effects of slope failures, mud waves and lateral movement due to horizontal earth pressures. Failure of any improvements could cause interruption or loss of their service, with consequential effects such as a health hazard from breakage of the CCCSD line, loss of electric power, loss of access to part of the landfill site, or, in the case of a serious levee failure, flooding from Pacheco Creek.

III. ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
B. EARTH: GEOLOGY, SOILS, AND SEISMICITY (Continued)

Settlement could have adverse impacts on site drainage, the elevation of flood protection levees along Pacheco Creek and Walnut Creek, and the elevation of the IT Corporation pond levees. Harding Lawson Associates estimate that the elevation of the levees will be reduced 0.8 feet over a 30-year period following the placement of landfill. If the elevations reduced by settlement were not restored by regular maintenance, leachate contamination of surface waters could result. The impacts of such contamination are discussed in Section III C, Water.

Although no methane recovery is planned at the present time for the Alternative A, B, or C sites, the contractual arrangements between Acme Landfill Corporation and Getty Synthetic Fuels, Inc. allow for methane recovery elsewhere on the property if future studies demonstrate the feasibility of continuing the project. If methane recovery is extended to the site areas of Alternatives A, B, or C, the removal of methane on those sites would also lead to waste consolidation, and its settlement.

Mitigations

Since consolidating Bay Mud will not accept leachate, the use of land underlain by Bay Mud is a mitigation to potential groundwater contamination that could occur more readily at alternative sites, including the uplands of Alternative C, or Alternative E. Even when consolidation of the Bay Mud is essentially complete, the water in the underlying soils will have a higher pressure head from the load of waste material on it than surrounding unloaded soil, hence it would still not accept leachate. The favorable geologic condition required by California Administrative Code should be present.

The potential for horizontal migration of leachate through the Bay Mud is being studied further by Harding Lawson. If any laterally widespread excessively permeable strata are found, mitigation means are available. Harding Lawson Associates has recommended that leachate barriers be constructed on the inboard side of the existing flood control levees to prevent horizontal movement of liquids. The RWQCB has further recommended that the leachate barriers be separate from the flood control levees to allow a buffer zone between the landfill and the levees for the open waterway. This zone would provide an unfilled area to allow for minor slope or leachate barrier failure and to protect the landfill from possible inundation or flood waters. The RWQCB has also recommended a leachate barrier setback from the adjacent IT Corporation Class I ponds to serve as a buffer for these areas. The EPA also may require a separation between the flood control levees and the landfill perimeter. A resolution of which recommendation constitutes adequate mitigation must be made by the RWQCB and EPA prior to their approvals of the project. Additional studies by Harding Lawson Associates will be necessary to develop the information that will be required by these agencies to make their decisions.

III. ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
B. EARTH: GEOLOGY, SOILS, AND SEISMICITY (Continued)

The proposed landfill configuration for Alternative A would effectively reduce the potential for slope failure by implementing the following recommendations suggested by Harding Lawson Associates.¹⁶

1. Maximum landfill elevations for the northeast and northwest parcels should be 80 and 40 feet, respectively.
2. Slopes are to be set back 75 feet from the inboard side of the impermeable and flood control levees except for the north slope of Cell A₁, where the setback is 135 feet.
3. Setback areas should be filled with refuse to Elevation 8 adjacent to the levees and sloped at 3 percent.
4. A 200-foot-wide bench should be placed at Elevation 40 feet and sloped at 3 percent.
5. Exterior slope gradients should not exceed those shown on Exhibit II-5.

These recommendations are based upon slope stability analyses for various fill heights, fill slope gradients, and setbacks; and with and without earthquake loading. The computed factor of safety for the recommended slope configurations is 1.4 or greater under ordinary conditions and 1.25 when earthquake loading increases pore pressures as expected from a Richter Magnitude 6 earthquake on the Concord fault. The effects of a larger hypothetical earthquake on the Concord fault have not been evaluated. Exhibits II-5 and II-6 show how Harding Lawson's recommendations would be implemented.

Existing slope indicators for monitoring soil movement are located near the CCCSD sewer line in the northeastern property. Additional slope indicators should be installed as filling progresses in the 200- and 100-acre Alternatives A and B areas. Harding Lawson Associates have recommended that seven slope indicator casings, as well as additional piezometers and settlement markers, should be installed and monitored to determine the effects of filling on the underlying soils. A regular monitoring program should be devised to identify potential problem areas and implemented by conditions of project approval. Reports on the performance indicated by the monitoring program should be reviewed by concerned regulatory agencies to verify that unexpected conditions are not allowed to go unremedied.

Buffer zones around the existing CCCSD line and the tower for the overhead transmission line are intended to mitigate soil instability problems. The small overhead electric transmission line should be relocated, as landfill proceeds, to a stable area.

III. ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
B. EARTH: GEOLOGY, SOILS, AND SEISMICITY (Continued)

Landfill cover should be visually monitored for cracking due to differential settlements. Open cracks should be sealed (regraded) as part of maintenance. Larger differential settlements may require landfill cover to be regraded to maintain design grades for runoff control.

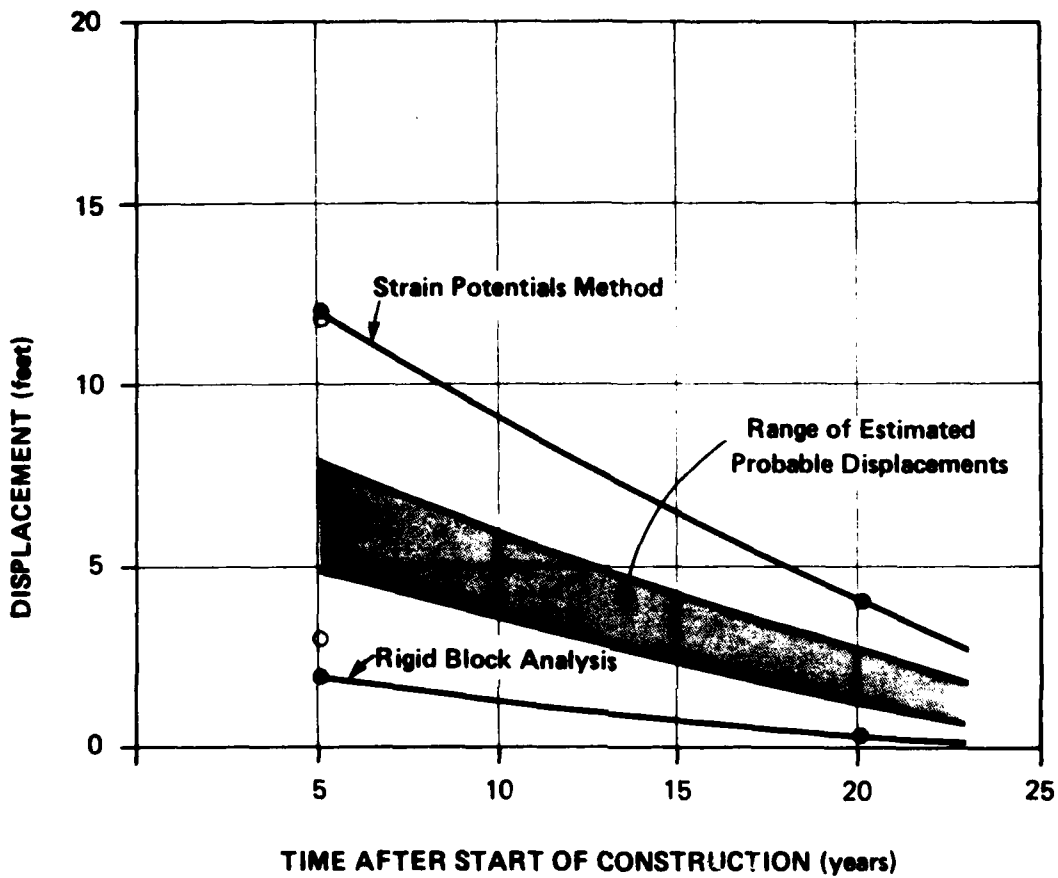
Bridges constructed on Bay Mud must be supported on pile foundations driven to provide adequate bearing capacities, including reserve capacities to overcome downdrag, as designed by a geotechnical engineer. Levees should be keyed into subsoils a minimum of two feet and constructed to heights that will maintain required freeboard after expected settlements. Loose surficial soils containing roots should be removed prior to levee construction.

Setbacks in the lowlands or marsh areas have been necessary historically due to the weakness of foundation soils, i.e., Bay Mud. As the Bay Mud consolidates under fill loading, adjacent levees or underlying utilities founded on or in Bay Mud would experience settlement. Based on previous site experience with the October 1978 slope failure and its impact on the CCCSD sewer line, the setbacks recommended by Harding Lawson should be enforced. Specific setback requirements of landfill and leachate barriers from utilities, pipelines, and levees should be stated during permit approval. Maintenance of the height of the adjacent flood control levees and the levees adjacent to the IT Corporation Class I ponds should be assured through permit conditions.

Design settlement predictions should be verified by fill and levee monitoring systems during and after construction. Settlement monitoring systems typically consist of plates embedded at the base of fills with a connected casing rising through the fill. However, since it is difficult to avoid damaging the casings during fill activities, the use of remote sensing devices should be considered.

Dredged material should be excavated and removed or dried and compacted before placing any overlying landfill in Alternative A. Successful drying of dredged material usually requires spreading to a thickness of 1 to 2 feet. Periodic disking or scarifying would help to expose as much surface area as possible to promote drying. Compaction would be difficult because of the weak underlying marsh deposits and would be accomplished best with light equipment working on 1- to 2- foot thicknesses.

The permeability of compacted dredged material should be verified by laboratory testing. If found acceptable by an engineering analysis, dried dredged material that is to be used for impermeable cover should be treated in a manner similar to current cover material, i. e., moisture conditioned and compacted as determined by laboratory tests. American



- Concord EVENT M = 6
- Calaveras EVENT M = 7.5

III. ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
B. EARTH: GEOLOGY, SOILS, AND SEISMICITY (Continued)

Society for Testing and Materials test procedure ASTM D1557 provides suitable procedures.¹⁶ These conditions can be imposed by the regulatory agencies having approval powers over the design of the project.

Recommended mitigations for Alternative D would depend on the impact associated with whatever landfill is later found to be necessary for the alternative chosen.

2. Seismicity

Setting

The western branch of the Concord fault is inferred to underlie the eastern part of the Acme site, as shown on Exhibit III-3, and is believed to be active. The fault's inferred activity and location are based on suspected fault creep effects on the Waterfront Road bridge immediately north of the Acme site and on the A. T. & S. F. railway bridge about 2,500 feet south of the junction of Walnut Creek with Pacheco Creek. Between these points there are no surface manifestations of faulting. Based on these two locations of inferred fault creep, suspected creep on a parallel branch about 2,000 feet to the east, creep evidence in downtown Concord, and an earthquake and aftershock sequence in 1955,¹⁷ the State established a Special Studies Zone over 3,500 feet wide that covers the eastern two-thirds of the Alternative A site. The Alternative B are also within the zone.¹⁸ The Alternative C site is about 1,700 feet west of the zone. The west boundary of the Special Studies Zone is at least 700 feet west of the inferred primary fault trace of the western fault branch.

No subsurface investigations near the site pinpoint the fault's location. Fault exploration conducted for new real estate projects and commercial and industrial facilities provide subsurface data for most active faults. The Concord fault is well located by subsurface data and surface creep manifestations in downtown Concord. However, all studies that verify and pinpoint the location of the Concord fault are at least 2 miles southeast of the Acme site. Information that led to establishment of the Special Studies Zone has not improved for the Acme site area since 1973.¹⁹

The location of the Concord fault in the Acme vicinity cannot be expected to be determined by further on-site study. Direct subsurface observations cannot be made at the Acme site, and geophysical investigations commonly record stray anomalies related to bedrock folding and stratification that cannot be confidently sorted from the effects of strike-slip faulting. However, the width of the Special Studies Zones was established by the State Division of Mines and Geology to contain the significant branches of faults.²⁰

III. ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
B. EARTH: GEOLOGY, SOILS, AND SEISMICITY (Continued)

The epicenter of an October 23, 1955 earthquake with a Richter magnitude (R. M.) of 5.4 has been placed along the trace of the Concord Fault about 4 miles south of the site. Other major San Francisco Bay Area faults which could generate ground shaking at the Acme site include the San Andreas, Hayward, Green Valley, Calaveras, and Antioch faults. Harding Lawson Associates has identified the three closest faults to the site (Calaveras, Green Valley, and Concord) with estimated Richter Scale magnitudes, distances to the site and peak accelerations as follows:

<u>Fault</u>	<u>Magnitude of Maximum Credible Earthquake</u>	<u>Distance To Site (miles)</u>	<u>Peak Acceleration (g)</u>
Calaveras	7.5	11.0	0.4
Green Valley	7.0	5.0	0.5
Concord	6.0	1.0	0.6

Harding Lawson's analysis of the same characteristics for events on other faults in the region indicates that those faults are less critical to the stability of the landfill.²¹

The effects on the Acme site of an earthquake centered on the Concord fault depends on the magnitude of the earthquake and the true distance of the site from the earthquake focus, its rupture point at depth. The design earthquake may be the "maximum credible earthquake", or MCE, or a lesser earthquake considering the statistical probability of various magnitude earthquakes, their probable recurrence intervals and the acceptable risk to the site considering its usage; for example, for Groups 2 and 3 waste, or for relatively inert Group 1 waste as well.

The Concord fault is known at the surface for a length of approximately eleven miles, based on the current State of California Special Studies Zone Maps. However, if the Concord fault is part of a fault system (Calaveras fault zone, or Calaveras Zone) that extends from south of Hollister to Napa County, its total length is approximately 170 miles. Based on fault length/rupture length/earthquake magnitude relationships, the MCE for the Concord fault is approximately 6, while the MCE for the Calaveras Zone is approximately 7 to 7.8, most likely $7\frac{1}{4}$.²² According to the Contra Costa County Seismic Safety Element, Technical Background Report, "The relationship of the Concord fault to the Calaveras fault is not clearly established". The connection of the Concord fault to the

III. ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
B. EARTH: GEOLOGY, SOILS, AND SEISMICITY (Continued)

Calaveras Zone is suspected by the U. S. Geological Survey²⁵ and some other geologists, but remains speculative. No absolute criteria exist by which to choose the MCE for the Concord fault.

In downtown Concord, a little over 2 miles south of the site, fault creep has been measured since 1973. The long-term creep rate at the points measured is approximately 4 to 6 mm/year with an apparent slowing of the creep rate since 1979 to 2 or 3 mm/year.^{23, 24} If fault creep is occurring at the Alternative A site at the maximum measured creep rates, displacement of the leachate barriers and flood control levees is unlikely to occur for millenia. The state of geologic and seismological knowledge does not allow a firm conclusion whether fault creep relieves, follows, or is a precursor to earthquakes.

Loading of the earth's surface by large reservoirs has led to earthquakes. The increase in subsurface pressure from 80 feet of refuse fill would, following Harding Lawson Associates' recommended compactive effort, be slightly less than the pressure increase due to an 80-foot deep water reservoir. Reservoirs of sizes and pressures similar to the Acme landfills proposed size and landfill pressure are not known to have induced seismicity. Therefore, induced seismicity should not be an impact on the site or area.

Impacts

Fault movements produce primary and secondary effects. The primary effects are the generation of vibrations that are felt as earthquake shaking and, occasionally, the propagation of a fracture to the earth's surface, either as sudden fault rupture or fault creep, with or without small earthquakes. Secondary effects result from the ground shaking and consist of slope failures, settlement, vibration damage to structures, liquefaction, seiche (a sloshing of water in the basins of deep closed bodies of water) and tsunami (large seismic sea waves that cross oceans and reach shorelines with potentially destructive force). Liquefaction occurs in loose saturated clean sand and silts. The Seismic Safety Element of the Contra Costa County General Plan indicates that such material may be present on the Acme site. However no such materials have been found in Harding Lawson's borings at the site,²⁶ so liquefaction should not occur. No deep closed bodies of water or open-ocean shoreline are present near the Acme site, so no seiche or tsunami is expected to affect the site.

III. ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
B. EARTH: GEOLOGY, SOILS, AND SEISMICITY (Continued)

Surface offsets along the Concord fault indicate it is a strike-slip fault with a horizontal, dextral (right-lateral) sense of displacement, with the land across the fault moving to the right in relation to an observer looking across the fault from either side. Observations of past surface ruptures shows their maximum surface displacements are related to the Richter magnitude of the earthquake that generated them. On that basis, the maximum surface offset that could be expected along the Concord fault from a Richter magnitude 6 earthquake is approximately 5 feet. This is much less than the width of the impermeable levees and the same as the width of the impermeable barriers recommended by Harding Lawson. If the MCE for the Calaveras Zone were taken for design purposes, 20 to 30 feet of fault displacement of impermeable barriers and flood control levees must be considered, according to one recent reference.²² For a comparison with a real earthquake, however, surface displacements of approximately 15 to 20 feet resulted from the Richter magnitude 8.25 (estimated) 1906 earthquake.

According to Harding Lawson surface fault rupture is unlikely to affect thick Bay Mud deposits. Harding Lawson concluded that "the probability of a rupture resulting from an earthquake propagating through 80 feet of highly plastic silts and clay is extremely remote".²⁷ The County's Planning Geologist agrees with Harding Lawson Associates' analysis for earthquakes up to magnitude 6 or so. However, larger magnitude earthquakes would so severely distort containment structures, either by primary or secondary seismic effects, that it is doubtful that they would remain effective. The plasticity of Bay Muds is discussed in the previous Section, 1. Geology and Soils. Surface rupture is the result of shear failure of earth materials. Shear failures occur along individual surfaces of failure in relatively "brittle" materials, while plastic materials can deform without shear. The deformation is spread over a wider "zone" than an individual shear.

With regard to problems of secondary earthquake effects, Harding Lawson Associates has prepared an evaluation of the earthquake stability of the proposed site (Alternatives A and B). Based on their previous experience with refuse materials, they conclude that most land deformation during earthquake shaking will occur in the underlying Bay Mud. Therefore, they performed detailed analyses to assess the deformation characteristics of Bay Mud under seismic loading. Two different methods were used to compute the seismically induced displacements of the landfill. The results of both procedures for the maximum credible events on the Concord and Calaveras faults are indicated on Exhibit III-6.²⁸

Harding Lawson reports that the variation between displacements computed by the two procedures is mainly a result of differences in the assumptions concerning material behavior, and the actual possible displacement is most

III. ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
B. EARTH: GEOLOGY, SOILS, AND SEISMICITY (Continued)

likely somewhere between the two as indicated on Exhibit III-6. Harding Lawson also indicates that the potential displacement should decrease with time due to the increased strength of the Bay Mud as a result of consolidation.

Harding Lawson Associates report that displacements on the order of 1 to 3 feet have occurred in the Bay Mud underlying the existing landfill without showing evidence of cracking at the surface of the refuse fill. Based on the experience with the existing fill and the maximum seismic displacement calculated, (5 to 8 feet) Harding Lawson Associates concludes that "the consequences of seismic deformations will most likely be slight to moderate cracking of the refuse fill surface with little or no slumping". They further conclude that "the development of a large failure is unlikely since the factor of safety against sliding will remain well above 1.0 (1.25) after an increase in pore pressures of 75 percent due to a seismic event."²⁹

The DOHS has expressed concern that this estimate is overly optimistic. They cite the previous slope failure (without an earthquake) in the existing fill which resulted in extensive cracking with open cracks up to 20 feet in length, and slumping of the landfill several hundred feet in length. However, that failure occurred while loading too rapidly and too high to allow pore pressure dissipation.³⁰ The operating practices recommended by Harding Lawson Associates would prevent the recurrence of such conditions.

There may still be a potential for release of leachate due to fissuring or off-setting of levees and impermeable barriers during an earthquake. The hazards associated with the release of leachate, regardless of the cause, are discussed in Section III C, Water.

For Alternatives A, B, and C, seismic activity on the Concord or other major Bay Area faults could produce potentially damaging ground shaking at the site. Due to local soil conditions, an attenuation of the expected bedrock acceleration at the ground surface is possible. Damage could occur to landfill improvements such as bridges, levees, utilities, and landfill blankets or covers.

Impacts for Alternative D would depend on the location and extent of any landfill required.

Mitigations

Before mitigation measures can be set forth, seismic design criteria and the risk acceptable to the community must be discussed. The following paragraph is intended to accurately reflect the range of uncertainty in their selection.

III. ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
B. EARTH: GEOLOGY, SOILS, AND SEISMICITY (Continued)

Harding Lawson Associates have established an MCE for design purposes based on the Concord fault, not the Calaveras Zone and, in the opinion of the County's Planning Geologist the MCE selected is based on the present state of geologic knowledge and reasonable assumptions. The analysis is neither for the worst case or the most optimistic outlook. Further analysis during the time available for decision-making would not be likely to improve knowledge of geologic conditions; therefore a judgemental decision needs to be made as to whether the impacts, risks, and mitigation measures are appropriate for the site for disposal of (a) limited types of Group 1 and Groups 2 and 3 wastes, or (b) only Groups 2 and 3 wastes. It is the opinion of the County's Planning Geologist that the risk is acceptable for Groups 2 and 3 and relatively inert Group 1 waste. Therefore, the following mitigation measures are presented based on the Richter magnitude 6 MCE that has been the basis for design to date. It is the opinion of the County's Planning Geologist that if a significantly larger MCE is selected, the mitigation measures would not be effective.

For Alternatives A, B, and C, the risk of seismically induced displacement or secondary failure of levees, leachate barriers, and fill slopes should be reduced by design and construction details which take into account the potential ground motion parameters. The development plan for Alternative A prepared by Harding Lawson Associates is intended to meet these design parameters. It is being reviewed by the regulatory agencies having design control over the project. These agencies can accept, reject, or cause modifications to be made to it. The agencies would have similar control over development plans prepared for Alternatives B or C.

For Alternatives A, B or C, if an earthquake is experienced at the site, technically qualified soil and geologic personnel should conduct a field inspection of levees, leachate drainage and control structures, and other significant structures, such as bridges and gas collection equipment. If any surface cracks, soil bulges, or other unusual surface features are noted, repairs to structures such as leachate control devices, gas collection facilities and levees should be made immediately. Less critical facilities could be repaired later. Permits issued by the State and County should be conditioned to require periodic inspection reports and repair of damaged facilities, from whatever cause.

Based on existing site-specific data, mitigation measures for liquefaction impacts would not be required. Any new on-site borings should be carefully logged to check for the presence of clay-free sand lenses. If any sand lenses are encountered, standard penetration tests should be performed for liquefaction evaluation.

III. ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
B. EARTH: GEOLOGY, SOILS, AND SEISMICITY (Continued)

The following discussion relates to mitigation of any surface fault rupture potential for Alternative A and B, the only sites affected. Leachate leakage or spillage could result if the faulting were to sever or displace impermeable barriers for leachate containment or flood control levees. The RWQCB has asked for a 100-foot setback of Group 1 wastes from the fault, and the EPA indicates that a 200-foot setback may be required. Harding Lawson does not present any mitigation measures in their operational plan because they believe the possibility of surface fault rupture is unlikely. Contra Costa County's Planning Geologist agrees with Harding Lawson, and believes the presence of the plastic Bay Mud deposits is a natural mitigation for the potential of the fault to propagate to the surface of the Bay Mud.³¹

If the regulatory agencies disagree with this analysis the following options are available:

1. Additional geotechnical studies could be required to attempt to locate the fault so that the RWQCB and EPA setbacks can be implemented.
2. Setbacks could be established at the west edge of the Special Studies Zone, some 700 feet from the fault's inferred location.
3. Setbacks could be established 100 or 200 feet from the inferred location of the fault, as decided by the most stringent permit authority, as shown by the State's Special Studies Zone Map, Port Chicago Quadrangle.
4. An area remote from the inferred or determined location of the fault, such as Cell A1, could be designated for hazardous/Group 1 waste disposal.
5. Acme could be denied permits to accept hazardous/Group 1 material for its expansion area and be restricted to the disposal of Group 2 and 3 wastes.

The complete exclusion of hazardous/Group 1 wastes from the Acme Alternative A site would also cast doubt on the viability of Alternative B and possibly Alternative C for hazardous/Group 1 waste disposal.

If a setback area excluding hazardous/Group 1 wastes is required, it should be clearly marked at the site to prevent accidental mislocation of these wastes.

Separation of the leachate barriers at the perimeter of the landfill from the flood control levees along Walnut/Pacheco Creek, as recommended by the RWQCB and EPA, would reduce the possibility of leachate entering surface waters in the unlikely event that levees are displaced due to seismic activity.

III. ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS

Footnotes

- ¹Norris & Webb, Geology of California, 1976, p. 365.
- ²Harding Lawson Associates, Sanitary Landfill and Dredged Material Disposal Pond Development, April 28, 1982.
- ³Harding Lawson Associates, Daniel A. Babiani, personal communication and additional logs of borings 8, H-1, I-1, March 15, 1983.
- ⁴Harding Lawson Associates, Phased Landfill Development Plan, North Part of Southern Parcel, Acme Landfill, Martinez, California; April 14, 1981.
- ⁵American Society for Testing and Materials, Permeability and Groundwater Contaminant Transport, 1981, is an entire symposium proceedings on the subject.
- ⁶Loc. Cit. Harding Lawson Associates, 1982.
- ⁷Ibid.
- ⁸Ibid.
- ⁹Ibid.
- ¹⁰Harding, Miller, Lawson & Associates, Laboratory Testing of Dredge Spoil, Pacheco Slough, Contra Costa County. Prepared for Contra Costa County Flood Control and Water Conservation District. July 1971.
- ¹¹U. S. Department of Agriculture, Soil Conservation Service (SCS), Soil Survey of Contra Costa County, California, 1977.
- ¹²Ibid.
- ¹³Ibid.
- ¹⁴Blake, James, Contra Costa County Health Department, personal communication to Todd Nelson, March 10, 1983.
- ¹⁵Lyle Lewis, Harding Lawson Associates, personal communication to Todd Nelson, March 10, 1983.
- ¹⁶Loc. Cit. Harding Lawson Associates, 1982.

III. ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS

Footnotes (Continued)

- 17 Sharp R. V. Map Showing Recent Tectonic Movement of the Concord Fault, Contra Costa & Solano Counties, California, U. S. G. S. MF-505, 1983.
- 18 State of California, Special Studies Zone Map, Port Chicago quadrangle; 1974.
- 19 Todd Nelson, Senior Planning Geologist; personal communication.
- 20 Ibid.
- 21 Loc. Cit. Harding Lawson Associates, 1982.
- 22 Slemmons, D. Burton, and D. H. Chung, Maximum Credible Earthquake Magnitudes for the Calaveras and Hayward Fault Zones, California, California Division of Mines and Geology Special Publications 62, 1982.
- 23 Galehoun, Jon S., Beth D. Brown, Brian Purce, and James J. Thordsen, Changes in Movement Rates on Certain East Bay Faults; in California Division of Mines and Geology Special Publication 62; 1982.
- 24 Harsh, Philip W., and Robert O. Burford, Alinement-Array Measurements of Fault Slip in Eastern San Francisco Bay Area, California; in California Division of Mines and Geology Special Publication 62; 1982.
- 25 Wesson, R. L., E. J. Helley, K. R. Lajoie, and C. M. Wentworth, Faults and Future Earthquakes in U. S. Geological Survey Professional Paper 941A, 1975.
- 26 Loc. Cit., Harding, Miller Lawson & Associates, 1971.
- 27 Harding Lawson Associates, 1982.
- 28 Ibid.
- 29 Ibid.
- 30 Harding Lawson Associates, Geotechnical Investigation, Slope Movement, Acme Landfill, Martinez, California; November 21, 1978.
- 31 Todd Nelson, personal communication.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS

C. WATER: SURFACE WATER, GROUNDWATER, EROSION

1. Surface Water

Setting

Nearby Water Bodies - The 200-acre parcel of proposed continued landfill, Alternatives A and B, is bordered on the northeast by the Pacheco Creek/Walnut Creek Flood Control Channel. Walnut Creek is the major contributor to flow in the channel. The gaging station on Walnut Creek at the city of Walnut Creek reports a mean daily flow of 28 cubic feet per second (cfs). This flow varies from an average of 2.1 cfs during September to 83 cfs during January¹. The flood control channel empties into the Carquinez Strait - Suisun Bay area approximately 6000 feet from the northeastern corner of the Acme property. On the southeastern border is Pacheco Creek Channel, a 6000-foot-long dredged channel. The 200-acre parcel is crossed with a number of drainage ditches, constructed by the Contra Costa Mosquito Abatement District, which flow to a tide gate at the levee. The tide gate is open and allows water on the site to drain during low tide but is closed against incoming flow at the high tide. It is the only point of discharge for flood water and is maintained by the Contra Costa Mosquito Abatement District. An Acme representative reports local fishermen have occasionally blocked the tide gate from closing at high tide, allowing tidal water to enter the drainage channels².

Alternative C, the southern 178-acre Acme parcel, is bordered on the east by the southern end of the Pacheco Creek Channel. On the west side of the parcel is the Contra Costa Canal. The canal, through a series of siphons, transfers water to the Martinez Reservoir about a mile to the west. These surface water features are shown on Exhibit III-7.

Drainage Patterns - The Acme property is in an area that generally receives 15 inches of precipitation per year.³ The USGS estimates that 0.5 to 1.0 inch of the precipitation could be expected to flow off the area as runoff if the land was in natural condition.⁴ The path of this runoff and the general drainage patterns on the properties are shown on Exhibit III-7.

Water Quality - The water quality control plan for the San Francisco Bay Basin identifies beneficial uses of waters in the area. Walnut Creek and its upstream tributaries have identified with them beneficial uses of warm water habitat, cold water habitat, and wildlife habitat. Potential



III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
C. WATER: SURFACE WATER, GROUND WATER, EROSION (Continued)

beneficial uses include both contact and non-contact water-based recreation. San Pablo Bay, which receives water from Walnut Creek and the Carquinez Strait, has beneficial uses of industrial service supply, navigation, water contact and non-contact recreation, occur commercial and sport fishing, wildlife habitat, including rare and endangered species, marine habitat fish migration and spawning areas, and shellfish harvesting. It has the potential for use as a preservation area of special biological significance. The beneficial uses of the waters of Suisun Bay are the same as those of San Pablo Bay with the addition of industrial process supply and the deletion of shellfish harvesting.

A Corps of Engineers' report (1974) on the area's water quality as part of the 1973 dredging operation characterized the Creek as having a high organic load concentration yet with a dissolved oxygen concentration near saturation. That is, even though the water had a great demand for oxygen this demand was easily met. Turbidity, the relative muddiness of the water, was found to be about 15 to 30 Jackson Turbidity Units (JTUs) during outgoing tides. Incoming tides brought in suspended sediment raising turbidity from 15 to 70 JTUs with 45 minutes. Heavy metal concentrations were very low. Visual water pollution was present in the form of a high-water oil and grease line on the rooted water plants. Black deposits were visible at locations along the banks; slight agitation of these deposits turned the water black. Background pH levels were found rather high, but still within the 7.0 to 8.5 range desired by the RWQCB. The cause of the slightly high pH was not determined. More recent (1979) water quality observations were made of highly toxic leachate entering the Creek from drainage channels near the active landfill, as described later in the Impacts section. This led to corrective actions. Such leachate streams are specifically prohibited by the RWQCB, regardless of the size, location, geological, or hydrological constraints of the site.

Floodplain - On maps of flood-prone areas prepared by the U.S. Geological Survey in 1969, all areas of the Acme property except Vine Hill and the adjacent hills are shown as areas subject to occasional flooding.⁵ More recent maps (1977) prepared by the Department of Housing and Urban Development show the current Acme landfill outside the flood hazard boundary due to its elevation.⁶ The existing flood control levee along Walnut/Pacheco Creek provides 100-year flood protection of the site from flooding by the Creek. The proposed expansion site is currently subject to flooding from a 100-year tide, which would extend to an elevation of 6 feet MSL. The Regional Water Quality Control Board (RWQCB), as part of Order No. 76-37, required Acme to protect the landfill site from inundation which could occur as a result of floods having a predicted frequency of once in 100 years.

Impacts

Implementation of Alternatives A, B, and C may have an adverse impact on surface water quality in the adjacent Pacheco Creek and Pacheco/Walnut

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
C. WATER: SURFACE WATER, GROUND WATER, EROSION (Continued)

Creek Flood Control Channels. If leachate streams are produced, (as they have been produced on occasion at the existing landfill), and if the streams reach surface waters, the leachate may lessen beneficial uses of such surface waters. Specific impacts of leachate in surface waters are described in Table 4.

Alternatives A and B both include separating the landfill operation from tidal water bodies by a levee and impermeable barrier. Alternative C may have a significant impact on the water quality in the Contra Costa Canal. If landfill operations are conducted near the open portions of the canal, dust and flying debris may land in the canal. Contaminated surface runoff from the landfill could reach the canal. The impact of Alternative D on surface water quality would depend in part on the location of a landfill to accommodate the remainder of solid waste not recycled and the residues from the waste-to-energy project.

Surface drainage patterns are important in determining the amount of infiltration and, therefore, leachate impact, at a landfill. If depressions are allowed in the landfill areas in Alternatives A, B, and C, so that some ponding is likely, infiltration would be increased in those areas. Such ponding creates additional problems: most notably odor and mosquitoes⁸.

In October 1978, a portion of the existing landfill slid into the adjacent 200-acre parcel. (This is the slope failure noted in Section B., Earth: Geology, Soils, Seismicity.) Alternatives A and B may develop a significant adverse impact if a similar landslide occurs on the eastern border of the 200-acre site facing the flood control channels. In addition to the potential water quality impacts of refuse and debris in the channel, the slide may restrict the flow of flood waters. If a slide occurs during the rainy season, when the last slide occurred, flooding in the vicinity is possible. A landslide into Pacheco Creek may produce flooding into IT Corporation's nearby Class I waste ponds located immediately upstream of Alternatives A and B. Though a major landslide is unlikely, this could cause flooding which could allow toxic wastes to enter the channel and drain into the Bay, an extremely serious impact. Acme's proposed landfill configuration for Alternative A includes a 75-foot setback of the landfill slope from the flood control levees. The area between the landfill slope and the levees would be filled to a height of about 8 feet. This configuration greatly reduces the potential for sliding material to enter the channels.

Alternatives A, B, and C could affect surface water quality adversely by the wash water from a truck wash area. The primary constituent in the wash water is mud, picked up by the vehicles during rainy weather. At the current operation trucks are washed using portable equipment located on the landfill. The waste water is absorbed into the landfill. An oily substance (perhaps used crankcase oil from landfill equipment) has been dumped into a drainage ditch behind the existing offices. This practice could have an adverse impact in a continued operation.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
C. WATER: SURFACE WATER, GROUND WATER, EROSION (Continued)

Table 4
Potential Leachate Problems in Surface Water⁷

<u>Parameter</u>	<u>Impact</u>	<u>Associated Problems</u>
BOD	oxygen depletion	septic conditions, discoloration, taste and odor problems
Iron	rust-colored stains	discoloration, slime growth on stream bottom, taste and odor problems
Decreased pH	increased toxicity	potential problems for domestic use, irrigation, and stock watering downstream
Increased pH	metal precipitation	blanketing of stream bottom, long-term toxicity
Metals	increased toxicity	potential problems for domestic use, irrigation, and stock watering problems
Organics	increased toxicity	potential problems for domestic use, irrigation, and stock watering downstream
Nitrogen	algal blooms	interference with domestic and recreational use
Phosphorus	algal blooms	interference with domestic and recreational use
Color	discoloration	reduced photosynthesis and oxygen depletion, aesthetically unpleasant

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
C. WATER: SURFACE WATER, GROUND WATER, EROSION (Continued)

The perimeter levees proposed by Acme would protect the landfill area from 100-year tidal flooding (See Exhibit II-2). The levees and landfill would not measurably affect flood elevations elsewhere.

Acme is requesting permission to deposit material dredged from the adjacent Pacheco Creek-Walnut Creek flood control channel. Exhibit II-1 illustrates the expansion progression scheme and the areas set aside for dredged material deposition. The method of dredging and specific time schedule for dredging operations have not been determined.

In 1973, the Army Corps of Engineers dredged a similar portion of the channel from Suisun Bay to just north of the AT&SF railroad bridge (approximately 2.5 miles) including the channel adjacent to the 200-acre site. Dredged material was deposited on the parcel just north of the Acme site. A second disposal site was between Pacheco and Walnut Creeks on land owned by IT Corporation. A series of cells were formed to allow material in sections of the disposal site to settle. Spillways transferred the transport water above the settled material back to the channel. In general, the areas used for deposition of dredged material performed satisfactorily in maintaining water quality standards set for the effluent. It is expected the proposed dredged material discharge operations could be conducted in a similar manner to meet water quality standards.

Mitigations

For Alternatives A, B, and C, site development and operations plans with evidence of water quality protection (levee thickness, impermeable barriers, and additional monitoring wells) should be submitted to the appropriate agencies for approval prior to landfill operation. Specific mitigations (such as setback of impermeable barriers from the flood control levee) recommended by the RWQCB or EPA should be required as conditions for permit approval by those agencies.

Acme has submitted a site development plan for Alternative A to the RWQCB and other regulatory agencies for their review. It is intended to provide the water quality protection that their site development regulations require.

Alternative B appears to require a more complex drainage plan than Alternative A. The drainage should slope away from the low-lying mitigation areas toward containment areas. Barriers between the landfill and the mitigation areas should meet the same flood protection criteria as the existing flood control levee. In Alternative C, the most effective mitigation measures would be for Acme to contribute funds toward the cost of enclosing the Contra Costa Canal through the area of potential impact. A less costly, though also less effective, measure would be the construction of a dust and debris barrier of both fencing and vegetation.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
C. WATER: SURFACE WATER, GROUND WATER, EROSION (Continued)

In addition to the debris screens currently used at Acme, a windbreak screen of fast-growing tall vegetation should be constructed. (The Contra Costa Resource Conservation District can provide assistance in the selection and spacing of windbreak vegetation.) To prevent surface runoff from reaching the canal, combination drainage berms and swales should be constructed upslope from the canal. These would be in addition to the drainage system constructed around the refuse disposal area.

A detailed surface drainage plan to be implemented during the active landfill operations should be prepared for Alternatives A, B, and C by Acme. The plans should locate drainage channels throughout the site to remove rainwater in a quick yet non-erosive manner. The plans should also indicate a method of containing and disposing of the collected rainwater. An evaporation pond located away from the refuse areas would be an alternative. A storage tank to hold the water for later use in dust control is another alternative method of disposal. This could involve a collecting pond with a pump to place water in an enclosed elevated tank. Water trucks would then be filled by gravity flow from the elevated tank. It is important to prevent leachate streams or seeps from entering drainage channels. The surface drainage plan should be reviewed by Contra Costa County Flood Control and Water Conservation District, Contra Costa Mosquito Abatement District, and the Regional Water Quality Control Board.

Alternatives A, B, and C should be operated with close review by consulting engineers and engineering geologists. The height restrictions and setbacks proposed by Acme for the perimeter of the Alternative A landfill should be implemented for Alternatives A, B, or C. Instrumentation to monitor landfill movement should be installed and the contingency plan for the landfill should include procedures for responding to landslide occurrence. (See Section B, Earth: Geology, Soils, Seismicity for more detailed description of potential landslide impacts.)

Truck wash water should be considered a potential pollutant. Acme should continue to use a method of preventing or controlling discharge from the wash area. Acme field personnel and mechanics should be trained in proper methods of disposal of waste oil. Drainage ditches on the site should be restricted to disposal of accumulated rain water. These mitigations apply to Alternatives A, B, and C.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
C. WATER: SURFACE WATER, GROUND WATER, EROSION (Continued)

2. Groundwater

Setting

Groundwater in the sense of a usable water supply is not known to exist at the Acme site. The groundwater in the low-lying portions of the site is saltwater loosely bound within the cellular structure of the Bay Mud. The factors which control the vertical and horizontal movement of this groundwater are discussed in III. B. 1. Geology and Soils. Groundwater is not known to underlie the hills on the western part of the Acme site. No water wells are known to exist in the area bounded by Interstate 680 to the west, Waterfront Road to the north, Pacheco Creek to the east, and the A. T. & S. F. railroad to the south.

Leachate is water that has travelled through the waste materials in a sanitary landfill and become contaminated with pollutants. The water may result from rainfall seeping into the ground or from groundwater flow already in the ground. The dangerous qualities of leachate are not necessarily derived from hazardous wastes. Although leachate contaminants are commonly thought to be derived directly from such sources as residual pesticides in spray cans, residual chemical solvents in steel drums, herbicide residues on grass clippings, or organic wastes in disposable baby diapers, a significant portion of the contaminants come from the refuse itself. Apart from the obvious constituents (iron from rusting cans or organic materials from food and garden wastes), a considerable portion of the leachate strength may be attributable to the textiles, rubber, leather, wood, paper, and cardboard present in the refuse⁹. Leachate often contains high concentrations of a organic matter and inorganic ions, including heavy metals. Several cases of pollution caused by leachates from solid waste disposal sites have been well documented, including the report compiled by the California Water Pollution Control Board (currently the State Water Resources Control Board)¹⁰.

Rainfall either infiltrates the refuse or runs off as overland flow. In sanitary landfills such as Acme, the rate of infiltration is governed by the permeability and infiltration capacity of the soil used as cover for the refuse. In addition, the slope of the fill determines how quickly rainwater flows off the site while the number of level areas or depressions in the fill determines the amount of ponded water the site retains. Part of the water entering the refuse percolates downward to the soil zone and eventually to the water table. If the water table is below the refuse deposit, the percolating water travels vertically through the refuse to the water table. During this travel, the water leaches both organic and inorganic pollutants from the refuse¹¹.

Upon reaching the water table, the leachate becomes part of and moves with the groundwater flow system. As part of this flow system, the leachate may move laterally (sideways) in the direction of the groundwater flow to

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
C. WATER: SURFACE WATER, GROUND WATER, EROSION (Continued)

a point of discharge at the land surface, as reported by the RWQCB in March 1979 (see Water Appendix). Surface flow could then enter nearby water bodies. If the water table is above the bottom layer of refuse, water may move horizontally through the refuse. This travel may increase the concentrations of pollutants in the leachate.

The proposed project area in general has a high water table. Specific ground water elevations throughout the site vary with the seasons. The soil is subject to occasional ponding with surface water running off slowly. Construction of drainage ditches and levees has tended to lower the water table to a depth of 30 to 40 inches. Some salinity in the groundwater limits plant growth.

As a condition of approval of the current Acme landfill operation, the San Francisco Bay Regional Water Quality Control Board (RWQCB) requires Acme to monitor the groundwater conditions at the landfill. Quarterly reports are submitted to the RWQCB with an annual report filed, at the end of each year. Acme has established six observation wells surrounding the landfill to monitor groundwater and three wells within the landfill to monitor leachate. (Exhibit III-11).

During 1981, the observation well data indicated total organic carbon ranged from 6 to 230 mg/l, total Kjeldahl nitrogen ranged from less than 0.5 to 580 mg/l, and pH ranged from 6.2 to 7.3 among the different wells. A number of other water quality parameters are monitored by Acme and reported to the RWQCB. The leachate exhibited a wide range of values which are within the expected range of sanitary landfill leachate.

Acme's self-monitoring reports are effective in identifying long-term trends in groundwater conditions. For 1981, as an example, the reports indicated the water quality parameters monitored had not changed significantly over the last year. There were some fluctuations observed, but there were no major trends higher or lower. A summary of recent self-monitoring reports is included in the Water Appendix.

The locations of the groundwater monitoring wells proposed by Acme for Alternative A are shown in Exhibit II-1. Monitoring wells large enough to admit a pump will also be installed at the low point of each areal cell to monitor leachate accumulation and allow removal of excessive leachate.

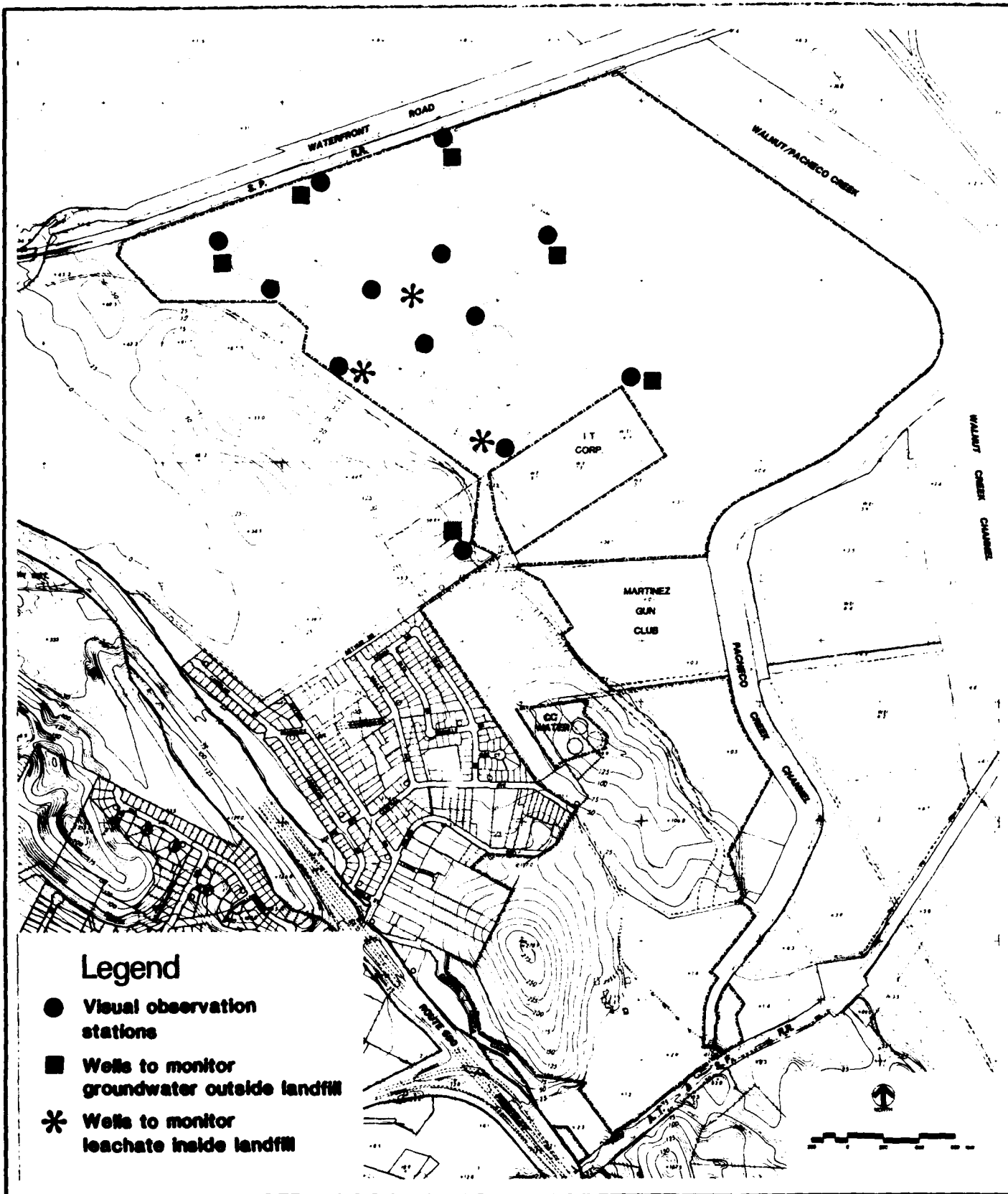
Impacts

Since Alternatives A, B, and C are expected to involve the same type of solid waste as the current operation, a similar quality of leachate would be produced. Both the RWQCB and the Department of Fish and Game have indicated the current leachate to be highly toxic. The potential impact of such leachate on groundwaters is shown in Table 5.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
 C. WATER: SURFACE WATER, GROUND WATER, EROSION (Continued)

Table 5
Potential Leachate Problems in Groundwaters¹³

<u>Parameter</u>	<u>Impact</u>	<u>Associated Problems</u>
BOD	oxygen depletion	discoloration, taste and odor problems
Iron	rust-colored stains	staining of clothes and fixtures, taste and odor problems
Decreased pH	increased toxicity	potential problems for domestic use, irrigation, and stock watering downstream
Increased pH	metal precipitation	possible aquifer clogging
Metals	increased toxicity	potential problems for domestic use, irrigation, and stock watering downstream
Organics	increased toxicity	potential problems for domestic use, irrigation, and stock watering downstream
Fluoride	high fluoride levels	mottled teeth
Selenium	toxicity	possible toxicity to humans
Color	discoloration	aesthetically unpleasant



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 planning and design

Observation Points and Wells

EXHIBIT
III-8

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
C. WATER: SURFACE WATER, GROUND WATER, EROSION (Continued)

The location of refuse in relation to the groundwater table is one of the most important factors affecting the quality of leachate from a solid waste landfill. The elevation of the water table for Alternatives A and B is at or near the surface. If the refuse is placed in the groundwater, highly potent leachate would be produced by infiltration and horizontal flow¹². Any leachate contamination of usable groundwater or surface water is specifically prohibited by the RWQCB.

If leachate reaches areas that are open to tidal flow, the pollutants may be discharged into Pacheco/Walnut Creek Channel and Suisun Bay and adversely impact the water quality elsewhere.

Alternative C has the added potential for adversely affecting the Contra Costa Canal through groundwater infiltration. If refuse cells are constructed at elevations above the canal elevation, leachate or contaminated groundwater may flow below ground toward the canal. Cracks or joints in the canal lining may allow pollutants to infiltrate the canal and reduce water quality.

Alternative D would require further study to determine what areas would be used for a landfill and the composition in the waste that would be disposed.

The self-monitoring program being conducted by Acme at the existing landfill is effective in identifying long-term trends in the groundwater conditions surrounding the site. It does not appear responsive, however, to short-term leachate problems such as those which occurred during 1979. Both the RWQCB and the Department of Fish and Game found the 1979 leachate streams to be highly toxic. Leachate problems with the current operation at Acme have tended to be located at the perimeters. The location of leachate streams and seeps identified by the RWQCB in 1979 is indicated in an exhibit in the Water Appendix. Additional leachate streams were observed by the DOHS and the RWQCB during the summer of 1982. Similar leachate problems could occur at the perimeter of the Alternative A and Alternative B sites, adjoining the 125-acre landfill. Additionally, there is a potential for leachate streams to emanate from the perimeters of Alternatives A, B, and C.

In Alternative A, dredged material from Pacheco/Walnut Creek Flood Control Channel would be discharged as a slurry onto a designated 110-acre portion of the parcel. As the material settles, the transport water would be returned to the channel. Return water could spill or seep into the refuse areas or leachate could contaminate the return flow. Alternatives B, C, and D would not have this potential impact.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
C. WATER: SURFACE WATER, GROUND WATER, EROSION (Continued)

Mitigations

In order to eliminate the possibility of escape of the leachate from the site, impermeable barriers must be constructed at the perimeters of the landfill areas proposed in Alternatives A, B, and C. These need to be both high enough and keyed into the ground surface deep enough to prevent outward migration of the leachates. The proposed impermeable barrier should be set back from the flood control levee as suggested by the RWQCB and EPA.

To lessen the impact of refuse placed in contact with groundwater in Alternatives A and B, the first layer of refuse could be restricted to primarily Group 3 materials such as inert construction debris. This would place the more potent leachate-forming materials above the water table. If leachate passes through a layer of unsaturated soil between the refuse and the groundwater, the quality of the leachate is improved.¹⁵

If the regulatory agencies do not concur with Acme that the Bay Mud provides an adequate bottom seal for the landfill, man-made barriers may be required. The current RWQCB requirement is for a clay layer at least 5 feet thick with a permeability of 1×10^{-6} cm/sec or less on the bottom and sides of all disposal areas. The EPA may impose equivalent or more stringent requirements. Such a barrier should be used if conditions warrant in Alternatives A, B, or C. See Section III H. Public Health and Safety for discussion of EPA requirements based on the Resource Conservation and Recovery Act.

In addition to these groundwater mitigation measures, Alternative B should include observation wells to monitor groundwater quality in the mitigation area. Contingency plans to seal the mitigation areas from tidal exchange if they become contaminated with leachate should be required. If the source of contamination could not be eliminated or significantly reduced, an off-site mitigation area should be acquired to compensate for the loss of on-site area.

In Alternative C, groundwater observation wells should be installed by Acme at the property boundary near the Contra Costa Canal. Construction specifications for clay or impermeable liners for cells near the canal should reflect the increased concern for potential groundwater contamination. Set-backs should be used to keep the landfill operation at a safe distance from the canal. Subsurface drains should be installed if well observations indicate contamination near the canal. Linear drains (trenches lined with an engineering filter fabric and filled with gravel and a perforated pipe) would be an alternative to the subsurface drains.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
C. WATER: SURFACE WATER, GROUND WATER, EROSION (Continued)

Mitigations for Alternative D would depend on the location of the landfill and the composition of wastes being disposed.

The procedures for inspection of leachate seeps in the self-monitoring program should be revised after consultation with responsible agencies. Even though two categories exist in the current reporting program (leachate observed entering or leaving the site), the personnel making the site visits have overlooked leachate discharges. A perimeter inspection (on foot) may be necessary at each visit to allow a thorough assessment of leachate conditions. Acme should increase the training of field personnel in identification of leachate seeps. The revised self-monitoring inspection guidelines should be submitted to the responsible agencies for approval prior to implementation. These mitigation measures should be implemented for Alternatives A, B, and C.

If leachate streams are observed, Acme personnel should take immediate action to contain the toxic fluid. Acme should prepare a leachate containment program and describe measures it would take to quickly contain such discharges. The program should identify measures available to collect the fluid (diversion ditches, berms, or trenches for example), measures to contain the fluid (excavated ponds or holding areas for example), and methods of disposal of the fluid (pumping to an approved storage pond on the property, pumping to tank trucks for shipment to a liquid waste disposal site, or spreading the liquid over the landfill for evaporation, as examples). The containment measures should be submitted to the responsible agencies for approval prior to implementation. Methods for securing compliance with these measures should be included in conditions for approval of Alternatives A, B, and C.

Leachate and groundwater monitoring after site closure is an important element of the long-term maintenance of the site. Acme should develop a groundwater monitoring element of the site closure plan. The element should be submitted to the agencies responsible for approval of the closure plans.

Detailed construction specifications for the containment system and spillways for the dredged material holding site in Alternative A should indicate the ability to isolate the dredge water from leachate and groundwater at the landfill. A Report of Waste Discharge must be filed with the RWQCB before any discharge of dredged material return water begins. If the Flood Control District has some responsibility for the dredged material discharge area, they must be named in the Waste Discharge Requirements. The thickness and permeability of containment berms should be submitted to the responsible agencies for approval. No mitigations are required for Alternatives B, C, or D.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
C. WATER: SURFACE WATER, GROUND WATER, EROSION (Continued)

3. Erosion

Setting

In 1982 the perimeter of the current landfill site, following four months of above-average rainfall, had numerous areas of active surface erosion. Rills were especially noticeable along the border with the new access road. Surface runoff is being allowed to flow off the landfill directly into drainage channels. The banks of the channels are cut with small gullies one to two feet deep. Lack of vegetation over much of the area allows surface erosion to take place unhindered. Portions of the proposed on-site mitigation areas are highly susceptible to siltation.

The borrow area where soil is collected to provide the daily covering over the refuse is also actively eroding. No impact is associated with this operation, however, because the site drains into itself. Sediment eroded from the borrow pit slopes is collected at the bottom of the site for later use.

Impacts

Continuation of the landfill at the Alternatives A or B sites may produce the same amount and type of erosion that is occurring on the current operation. If the gullies penetrate the cover material, buried refuse may be exposed. Lack of surface vegetation to control erosion also increases the potential for dust generation during the dry season.

Material dredged from the flood control channel in 1971 was found to have a high salinity content (3800 to 4800 parts per million)¹⁴. Use of such saline material for refuse cover in Alternative A may reduce the ability to provide a protective cover of vegetation. Alternatives B, C, and D would not have this potential impact.

While the impacts of sedimentation from the levees into the flood control channel would not be significant (the channel already transports a heavy sediment load), the impact of sedimentation on the on-site mitigation areas in Alternative B would be significant. Tidal exchange is important for the biology of the mitigation areas. (See Section D, Biota for a complete assessment). Sedimentation may raise the surface elevation of portions of the mitigation areas and reduce tidal access.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
C. WATER: SURFACE WATER, GROUND WATER, EROSION (Continued)

Because of the hilly topography and the excavation necessary before refuse disposal would begin, the potential volume of erosion and sedimentation area would be greatest for Alternative C on the southern property.

Potential impacts for Alternative D are unknown at this time.

Mitigations

An effective erosion control program including revegetation should be developed for Alternatives A, B, and C. (The assistance of the Contra Costa Resource Conservation District and the Contra Costa Consolidated Fire District is encouraged to reduce erosion and fire hazard). Low-cost broadcast seeding should be done several times per month during the September through April rainy season over the newly covered cells. Effective vegetative cover can mitigate a number of problems such as reducing surface erosion, reducing water available for leachate formation, and reducing dust. Use of shrub seed (such as native *Baccharis*) would produce vegetation also capable of trapping blowing debris.

In Alternative A, the dredged material, if found to be high in salt, should be mixed with cover material from the borrow area or used as core material for berms or levees on the site. Revegetation plans, both those used during active landfill operations to protect the site from winter rains and those prepared as part of the closure plans, should include plants (such as western wheat grass) that have a high salt tolerance. No mitigations required for Alternatives B, C and D.

Structural measures should also be employed to reduce surface erosion. Instead of allowing the surface runoff to flow over the steep fill slopes, top-of-slope berms should be maintained and the water should be diverted to a reinforced channel or pipe which would carry water down slopes in a non-erosive manner. This would also prevent sediment accumulations in the drainage channels.

In addition, Alternative B should have an effective stand of vegetation established on all levees and slopes facing the mitigation areas. Slopes should be seeded with a hydraulic slurry of seed, fertilizer, fiber mulch, and plant-based adhesive (tackifier). Seeding should be done during the month of September to take advantage of early fall rains for germination and establishment. If levee construction is continued past September, levee slopes should be protected from erosion immediately after construction by a straw mulch (3,000 pounds per acre or as specified by the project engineer), and anchored with jute netting, a plant-based adhesive or asphalt emulsion (rather than a polyvinyl acetate tackifier). The straw mulch would be applied in addition to the seed and fertilizer slurry.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
C. WATER: SURFACE WATER, GROUND WATER, EROSION (Continued)

In addition to the erosion and sedimentation mitigation measures identified for Alternatives A and B, the pre-disposal preparations for Alternative C should be conducted with a detailed erosion and sediment control plan. In addition to structural measures (such as silt fences, sediment basins, and diversion swales), the plan should specify revegetation methods and species. The control plan should be approved by the responsible agencies prior to grading operations.

Erosion mitigations for Alternative D would depend on the location and nature of the area selected. The general measures outlined above should be applied to any site selected.

Erosion mitigation measures, both revegetation and structural measures, can be included as conditions of the operating permits for the landfill.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
C. WATER: SURFACE WATER, GROUND WATER, EROSION (Continued)

Footnotes

- ¹Jorgensen, L.N., et al. California Streamflow Characteristics. USGS Open-file report. 1971.
- ²Boerger, F. Harding-Lawson Associates. Site Visit and Meeting. February 18, 1982.
- ³Contra Costa Public Works Department. Mean seasonal isohyets compiled from precipitation records of 1879-1973. Drawing No. B-166. 1977.
- ⁴Rantz, S.E. Mean annual runoff in the San Francisco Bay region, 1931-1970. U.S. Geological Survey, 1974.
- ⁵U.S. Geological Survey, Map of Flood Prone Areas. Port Chicago quadrangle. 1969.
- ⁶Department of Housing and Urban Development. Flood Hazard Boundary Maps. Revised September 1977.
- ⁷Cameron, R.D. "The Effects of Solid Waste Landfill Leachates on Receiving Waters," Journal of the American Water Works Association 70(3):173-176. 1978.
- ⁸Loc cit.
- ⁹Loc cit.
- ¹⁰California Water Pollution Control Board. Effects of Refuse Dumps on Ground Water Quality. California Water Pollution Control Board Pub. 24. 107 p. 1961.
- ¹¹Schneider, W. J. Hydrologic Implications of Solid Waste Disposal. U.S.G.S. Circular 601-F. 1970.
- ¹²Caffery, P., M. David, and R.K. Ham. "Evaluation of Environmental Impact of Landfills." Journal Environmental Engineering Division ASCE 110(1):55-69. 1979.
- ¹³Cameron, Op. Cit.
- ¹⁴Harding, Miller, Lawson & Associates. Laboratory Testing of Dredge Spoil, Pacheco Slough, Contra Costa County. Prepared for Contra Costa County Flood Control and Water Conservation District. July 1971.
- ¹⁵Loc cit.

III ENVIRONMENTAL SETTING, IMPACTS AND RECOMMENDED MITIGATIONS

D. BIOTA: VEGETATION AND WILDLIFE

1. Vegetation

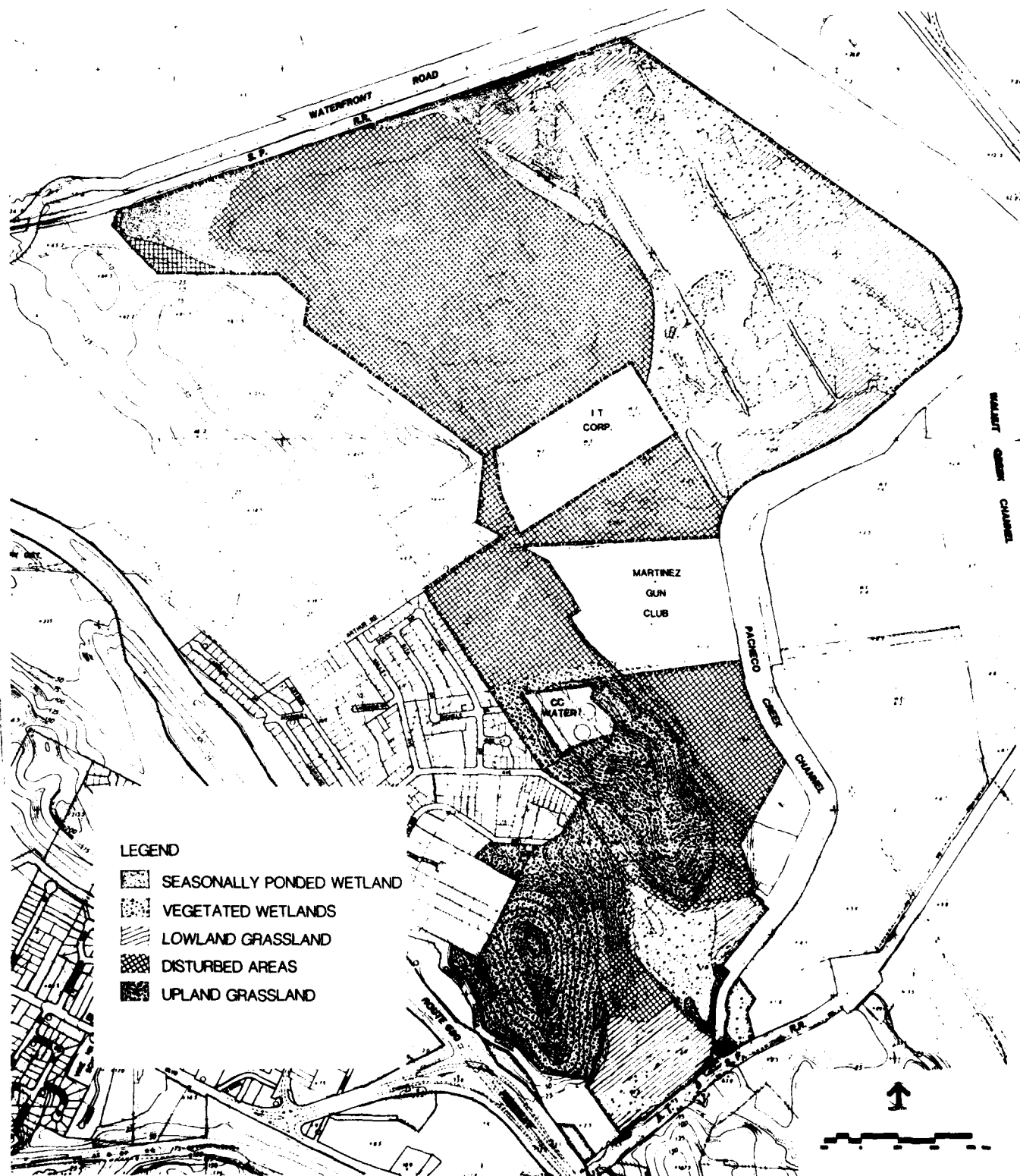
Setting

The Acme property contains two primary vegetation groups: seasonal wetland and grassland areas. All the low-lying wetland areas probably supported salt water marsh vegetation in the mid-1800's.¹ Much of this vegetation was eliminated with construction of levees in the early 1900's. Early photographs (1930-1950) indicate that portions of the site were in agricultural production and that marsh vegetation had been removed. With discontinued agricultural use, some areas have re-established wetland species.

Habitat evaluations were completed in 1977 and in 1979 on the proposed 200-acre expansion area (Alternative A).^{2,3} These evaluations identified and mapped wetland indicator plant species and assigned unit values to designated habitats. Three plant species, pickleweed (Salicornia virginica), brass buttons (Cotula coronopifolia) and salt grass (Distichlis spicata) identified as wetland indicators by the San Francisco District of the U.S. Army Corps of Engineers are still very much in evidence on portions of the 200 acres. Field surveys of the entire site in February and March 1982 by Torrey & Torrey Inc. determined the distribution of these species which is shown on Exhibit III-9 as "wetland vegetation". Those areas which are seasonally flooded or contain predominantly grassland vegetation are also indicated.

The Fish and Wildlife Service has designated the wetlands at the Acme site within Resource Category 2 under the Service's Mitigation Policy (46 Fed. Reg. 7643). The criteria for this designation indicate that "the habitat to be impacted is of high value for evaluation species and is relatively scarce or becoming scarce on a national basis or in the ecoregion section."⁴ The mitigation goal for the category is that no net loss of in-kind habitat value occur.

The average elevation of the proposed 200-acre expansion area is about one foot above mean lower low water (MLLW). All of this 200 acres is below the tidal line of mean higher high water (MHHW), but levees built by the Corps of Engineers in the 1960's and fill material beneath Waterfront Road and the Southern Pacific Railroad tracks now exclude tidal flows. Pondered surface runoff drains from the site into Walnut/Pacheco Creek channel via a ditch and flapgate at the northeast corner of the property (during low tides). In 1958, flooding at the chemical waste disposal ponds (west of the 200-acre area) broke retaining levees and inundated portions of this area.



source: Torrey & Torrey Inc.

TORREY & TORREY INC.
2T environmental/urban
 planning and design

VEGETATION AND HABITATS

EXHIBIT
III-9

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
D. BIOTA: VEGETATION AND WILDLIFE (Continued)

The seasonally flooded area in the northwest corner of the property was completely flooded during field inspections of 1982. Previous field investigations report some areas with complete cover of pickleweed, salt grass and fathen (Atriplex patula) and other areas with rabbitsfoot grass, alkali heath (Frankenia grandifolia) and brass buttons.^{5,6}

The southern portion of the Acme property is primarily grassland on the higher elevations and degraded wetlands in low lying areas. A ranch is presently in operation and most of the wetland species in the low-lying areas are limited and in poor condition due to the grazing of cattle and buffalo. There are also some areas of seasonal flooding, ranch operations and access roads where the vegetation is highly disturbed.

No plant species federally listed as rare or endangered have been reported from the Acme site. One species, soft bird's-beak (Cordylanthus mollis ssp. mollis) has been reported in salt marshes in the region. This species is considered rare and endangered by the California Native Plant Society, and was designated as rare by the California Department of Fish and Game pursuant to Section 1904 Fish and Game code (Native Plant Protection Act) effective 21 May 1982. Flowering occurs between July and November which is when positive identification would be possible. At this time, it is not known if this species occurs on the site.

Impacts

Alternative A would completely eliminate the existing wetland vegetation on the 200-acre parcel. When the landfill in this area reaches capacity, it would initially be converted to an open grassland habitat. This is considered a significant decrease in habitat value by the U.S. Fish and Wildlife Service and the California Department of Fish and Game. Alternative A, therefore, includes an off-site mitigation area at a yet to be determined location to compensate for the loss of wetland habitat on the site. Acme Fill Corporation has signed a Memorandum of Understanding with the California Department of Fish and Game (September 10, 1980) which describes what parameters constitute adequate mitigation. These parameters include the following items:

1. One hundred sixty acres would be deeded to the California Department of Fish and Game
2. Mitigation lands would not currently be subject to tidal action but could be restored to wetland habitat
3. Restoration to wetland status may or may not be the responsibility of Acme depending on the management needs of the property

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
D. BIOTA: VEGETATION AND WILDLIFE (Continued)

Several parcels in the general Suisun Bay area have been identified and are under active discussion by the applicant and the Department of Fish and Game. However as of May 1983, no specific mitigation plan has been proposed by the applicant. The mitigation area could be located outside the Suisun Marsh. A wetland mitigation plan will be submitted by Acme to the Corps of Engineers, Department of Fish and Game, U. S. Fish and Wildlife Service, and National Marine Fisheries Service for review prior to the Corps of Engineers' decision on Acme's permit application. Acme Fill Corporation has stated that it will be their responsibility to restore the mitigation area to the condition desired by the Department of Fish and Game.⁸

In response to an initial mitigation proposal which is no longer being considered, the U. S. Fish and Wildlife Service stated that compensation would have to consist of purchasing 185 acres and managing it as seasonal or permanent wetlands depending upon the capability of the site selected. They stated further that...

"(c)ompensation can be achieved when an existing or anticipated adverse land use is halted or prevented or when existing habitat values are increased through modification or management. The mere transfer of land does not offset any loss unless the land will be improved over the "No Project" condition. Since the proposed compensation site is already protected (under the Suisun Marsh Protection Plan prepared under mandate of the Suisun Marsh Preservation Act of 1977; A.B. 1717), its purchase alone will not suffice."⁹

Since June 1977, the U.S. Fish and Wildlife Service has consistently recommended that suitable upland landfill alternatives be developed in lieu of filling wetlands at the Acme landfill site. They recognize that some loss of wetland habitat could be in the public interest during a phase-out period during which the solid waste disposal operation is moved to a more suitable upland location. However, the Fish and Wildlife Service would require demonstration that filling was necessary and all habitat losses were compensated. It is Service policy to recommend against authorization of any project not properly designed or located to prevent significant damages to fish and wildlife and their habitat.

Alternative B would preserve about 100 acres of restorable diked wetland but would eliminate restoration potential on the remaining 100 acres due to the placement of fill material. Much of the 100 acres eliminated contains wetland species. However, the largest areas of wetland vegetation would be preserved in the protected 100 acres. If the

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
D. BIOTA: VEGETATION AND WILDLIFE (Continued)

preserved acreage were restored to tidal action and wetland vegetation became established over the entire area, the habitat value would be significantly increased. From a biological standpoint this alternative appears feasible. A complete habitat evaluation procedure would be necessary to determine if adequate compensation would be provided. Returning this 100 acres to tidal action would increase the likelihood of mosquitoes locally and for some distances. Salt marsh mosquitoes are strong flying insects and will migrate inland quickly.

Alternative C would eliminate any restoration potential on the degraded wetlands of the southern 178-acre parcel. Because the suggested fill area in Alternative C does contain wetland species and has restoration potential, adequate compensation would be necessary for the loss of about 25 acres. In addition, there would be lost area for grazing animals during the landfill operation. Grazing potential may be returned or even increased after closure of the site.

The impacts of Alternative D on vegetation cannot be determined at this time because no specific site has been identified for the activities suggested in this alternative.

Mitigations

For Alternative A, the applicant is to provide a mitigation area (or areas). The off-site mitigation areas should be thoroughly evaluated by the California Department of Fish and Game, the National Marine Fisheries Services and the U.S. Fish and Wildlife Service to determine the adequacy of the compensation prior to issuance of any Corps of Engineers permit. The habitat value of the off-site mitigation area selected should be increased by means of sound management practices to replace the habitat value of the area lost to landfill expansion.

In Alternative B, the preserved wetland area should be opened to tidal action and stream channels should be constructed to increase circulation, provide adequate flushing and encourage wetland vegetation. An impervious barrier should be placed between the preserved area and the landfill operations (above and below the ground surface) to prevent lateral movement of leachate into the wetland area. (Chapter III, Section B, Water) The habitat value of the mitigation area should be increased above the existing value by completing and implementing a resource management plan with clearly delineated areas of responsibility.

For Alternative C, a mitigation area should be identified which would compensate for the reduced habitat value on about 25 acres. Compensation could occur if other portions of Acme property were opened to tidal action and habitat values were sufficiently increased. The feasibility of

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III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
D. BIOTA: VEGETATION AND WILDLIFE (Continued)

permitting grazing activities on the site after closure should be investigated.

For Alternatives A, B, and C, the entire site should be surveyed during July - November to determine if the rare plant, soft birds' beak (Cordylanthus mollis mollis), exists on the site if the Department of Fish and Game determines that a survey is necessary.

2. Wildlife

Setting

The seasonal wetland and grassland areas on Acme property serve as valuable wildlife habitat. The "Wildlife Habitat Evaluation" prepared by Madrone Associates for Acme Fill in 1977 indicated that the site provides valuable wildlife habitat especially during the wet season when rainwater and upland runoff collects in low-lying areas. The presence of saltbush and many grasses provides a good source of food for both migratory and resident waterfowl.

The Shell Oil Company marsh located west of the site supports a wide variety of water-associated birds, and many of these make use of the seasonal wetland areas on Acme property at various times of the year. A list of bird species observed in the Shell marsh and vicinity is included in the Biota Appendix because the majority of these species would be expected to use the Acme wetlands. The flooded areas are used frequently by large numbers of gulls which have gathered to feed at the landfill. The landfill also attracts large flocks of blackbirds and starlings.

The California clapper rail, a state and federally listed endangered species, has been reported from tidal marshes in southern San Pablo and Suisun Bays. No recent reports have been made on its presence in the Shell Marsh or on the site. Generally, this species prefers areas of tall, dense, marsh vegetation. Such vegetation is not found on the Acme site.¹⁰

Pacheco Creek adjacent to the project site is a migration corridor for the watershed's steelhead trout population. Both the Fish and Wildlife Service and the Department of Fish and Game have recommended construction of fish passage facilities upstream from the proposed landfill site as part of the Walnut Creek Flood Control Project. This recommendation was made to increase the stream's steelhead trout production. Pacheco Creek empties into the Carquinez Strait which is used as a migration corridor for the entire steelhead and salmon populations of the Sacramento-San Joaquin Valley. Seaward migrating smolts tend to move along the shoreline rather than in the main channel. Other anadromous fish, including striped bass, sturgeon and American shad, also migrate through the Strait.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
D. BIOTA: VEGETATION AND WILDLIFE (Continued)

Reptiles and mammals depend on both the wetland and grassland areas. Rodents, jackrabbit, striped skunk, raccoon, garter snake and opossum have been reported on the site. Two species of special significance, the salt marsh harvest mouse and the ornate shrew were recorded from the Shell Marsh in the late 1950's.¹¹ The salt marsh harvest mouse is classified as an endangered species by both the U.S. Fish and Wildlife Service and the California Department of Fish and Game. This species is generally found in salt marsh habitat around San Francisco and San Pablo Bays where there is dense pickleweed mixed with saltbush and alkali heath submerged at the highest tides. The existing wetland areas of the Acme site would be marginal habitat for the salt marsh harvest mouse because of the limited distribution and low density of pickleweed.

Two marshes suitable for the salt marsh harvest mouse and California clapper rail are located along the bay shoreline approximately 0.3 miles southwest and 0.4 miles east of Pacheco Creek's confluence with the bay. These areas are designated as essential habitat in the draft "Salt Marsh Harvest Mouse and California clapper Rail Recovery Plan." The Fish and Wildlife Service views California coastal habitat for migratory waterbirds and waterfowl, the salmon and steelhead trout runs of the Sacramento and San Joaquin Rivers, and the endangered California clapper rail and salt marsh harvest mouse as resources of national importance.

The ornate shrew is not listed on either the federal or state endangered species list. However, it is considered to be locally endangered by the Contra Costa County Planning Department. Ornate shrews can be found in riparian zones, wet meadows, brush-covered hills, and salt marshes, which are damp or moist throughout the year. Both the seasonal wetland and grassland areas of the Acme property would be considered suitable habitat. It is unknown if this species exists on the Acme site.

Most of the southern grassland area of the site is presently used for grazing livestock and buffalo. Consequently, native wildlife is limited.

Impacts

Alternative A would significantly reduce the seasonal wetlands which support the wildlife in the area. The result would probably be a reduction in local wildlife populations. A proposed off-site mitigation area would probably compensate for this reduction if it is managed to increase its habitat value, but it may shift the wildlife to another area, depending upon the location. Therefore, there would be no benefits for wildlife which currently use both the Shell Marsh and the Acme site. This is an adverse impact, that is considered significant for localized bird species, reptiles, mammals, and other wildlife.

The large populations of gulls, blackbirds, and starlings which currently

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
D. BIOTA: VEGETATION AND WILDLIFE (Continued)

feed at the landfill would remain about the same for Alternatives A, B, and C since the existing operations would continue in the new areas.

In Alternative B, the preserved wetland habitat would encourage local wildlife populations especially if tidal action could be restored to the site. With proper management and restoration of the salt marsh habitat, this alternative would be the most beneficial alternative for local wildlife populations unless a local mitigation area is proposed for Alternative A. However, for this alternative, a management plan should be adopted in which the tasks of mosquito abatement and habitat management are clearly described and the responsibilities for implementing the plan and budgeting for foreseeable expenses are delineated.

For Alternative C, the loss of the grazed wetlands would be a significant adverse impact because of the loss of potential for restoration to tidal salt marsh. However, the loss for existing wildlife is not as significant because of the degraded condition of the vegetation due to grazing activities.

Alternatives A, B and C all have a high potential for degrading the aquatic habitat in Walnut and Pacheco Creeks as well as the San Francisco Bay ecosystem if the protective features of the landfill fail. Emission of any leachates from the landfill could have adverse impacts on the steelhead trout population within Walnut and Pacheco Creeks and contribute to further loss of salmon and steelhead trout in the Sacramento-San Joaquin River system. Emission of leachates from the landfill also could adversely affect marsh habitat located near the mouth of Walnut Creek and used by federally-listed endangered species.

The impacts of Alternative D on wildlife cannot be determined at this time because no specific site has been identified for the activities suggested in this alternative.

Mitigations

The mitigations recommended for impacts on vegetation apply to impacts on wildlife as well. Mitigations necessary to restore and protect vegetation would effectively compensate for impacts on wildlife.

The mitigations suggested for water quality impacts should be implemented to protect the aquatic habitat in Walnut and Pacheco Creeks and in the Carquinez Strait particularly with respect to fish migration.

For Alternatives A, B, and C where salt marsh restoration is recommended, habitat management plans should be prepared to ensure that the necessary requirements for wildlife are provided and the responsibility for managing the restored area(s) is clearly delineated.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
D. BIOTA: VEGETATION AND WILDLIFE (Continued)

It is desirable for the off-site mitigation area(s) for Alternative A to be located as close to the Acme property as possible to provide increased habitat values for local wildlife species.

Footnotes

¹Nichols, D. R. and N. A. Wright, "Preliminary Map of Historic Margins of Marshland San Francisco Bay, California." USGS Basic Data Contribution No. 9, 1971.

²Madrone Associates, Wildlife Habitat Evaluation Acme Fill Contra Costa County California, 1977.

³Letter by McKevitt, J. J., Field Supervisor, U.S. Fish and Wildlife Service to Colonel J. M. Adsit, San Francisco District, Corps of Engineers, September 14, 1979.

⁴"U.S. Fish and Wildlife Service Mitigation Policy," Federal Register, January 23, 1981.

⁵Madrone Associates.

⁶Contra Costa County. Draft EIR Industrial Access Road CP 79-70. January 1980.

⁷California Native Plant Society, Inventory of Rare and Endangered Vascular Plants of California, April 1980.

⁸Letter by Boerger, F. C., Agent for Acme Fill Corporation to District Engineer, U. S. Army Corps of Engineers, December 23, 1982.

⁹Letter by Sweeney, W. W., Area Manager, U. S. Department of Interior to Colonel J. M. Adsit, San Francisco District, Corps of Engineers, November 12, 1980.

¹⁰Contra Costa County Planning Department. "Areas of Natural Significance to Unique Wildlife," Keynote Number 6, February 1978.

¹¹Madrone Associates.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS

E. AIR QUALITY

Setting

The project site is located near the south shore of the Carquinez Straits, where climate and air quality are greatly influenced by winds blowing through the Straits. The prevailing wind direction is from the west, particularly in spring and summer. In winter, winds are more variable with periods of calm or light easterly winds, but west winds still predominate. Average wind speeds are relatively high, with windspeed highest in spring and summer and lowest in fall. At the Pittsburg Power Plant, located approximately 8 miles east of the project site, average windspeed is 10.1 mph. Calm conditions are rare, occurring about 1 percent of the time.¹

The project site is within the Bay Area Air Quality Management District (BAAQMD). The District maintains air quality monitoring sites in nearby Concord. In 1980, the federal standard for ozone was exceeded on 3 days in Concord. Exceedances of the state and federal standards for total suspended particulates were also recorded on 8 and 2 days respectively. (Particulate samples are generally taken every sixth day. In 1980, particulate samples were taken on 49 days at Concord.) Measured levels of carbon monoxide, nitrogen dioxide and sulfur dioxide did not exceed state or federal standards in 1980.²

The BAAQMD also responds to citizen complaints and enforces the public nuisance portions of the state Health and Safety Code. The Acme operation has, in part, resulted in numerous citizen complaints about odors and the issuance of 3 separate Notices of Violation for odors. In the fall of 1978, 1980, and 1981 sufficient complaints were received by the BAAQMD to justify the issuance of a Notice of Violation. Two of these episodes were evidently associated with unusual conditions when previously covered refuse was exposed to the air and, at the same time, light easterly winds, typical of fall weather, prevailed. In 1980, BAAQMD Notice of Violations were also issued to Acme for hydrogen sulfide and a visible plume from a truck dumping fly ash. In all these cases, problems were rectified to the satisfaction of the District so that no further action was taken by the District.³

Impacts

Landfill operations affect local air quality through the generation of dust and odors. Regionally, landfills affect air quality through the generation of organic gases and vehicle emissions associated with collection and transport. Alternative disposal systems, such as incineration, also can generate air pollutants.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
E. AIR QUALITY (Continued)

Dust Generation - Fugitive dust is generated at landfill operations by refuse vehicles and equipment used in moving, compacting, and covering the refuse. The potential for dust generation is greatest in summer, when winds are strongest and soil moisture is lowest. Because the prevailing and strongest winds at the site are from the west, dust impacts would occur primarily to the east of the site.

Under normal conditions with prevailing westerly winds, dust would not have a significant impact. However, during periods of occasional calm or light easterly winds, Alternative C, due to the proximity of the landfill operation to the Vine Hill neighborhood, would affect those residences. Potential dust impacts are less for Alternatives A and B. For both Alternatives A and B the landfill operation would be located at the northeast corner of the site, further from the nearest residences. Alternative D, with the least amount of solid waste to be landfilled, would result in an even lower volume of refuse, with corresponding less need for vehicles and equipment that generate dust.

Odor Generation - Malodorous gases are produced by the decomposition of putrescible wastes, particularly those containing sulfides. Odor is also caused by leachate. Under normal wind conditions these odors would be diluted by the wind and carried to the east. During winter and fall, however, periods of calm or light easterly winds do occur. The potential for odor complaints is greatest at this time of year, because residences are located west of the Acme site.

Alternative C has the greatest potential for odor complaints, due to the landfill operations proximity to the Vine Hill residential neighborhood. Alternatives A and B would have a lesser potential for odor problems, as they would locate the landfill operation further from the Vine Hill residential neighborhood. Alternative D would involve a reduced volume of refuse and would be expected to have a proportionally smaller potential for odor problems.

Generation of Organic and Other Gases - Solid waste generates a variety of gases as materials decompose, and these gases eventually reach the atmosphere. The majority of the gas created is methane, carbon dioxide, hydrogen and nitrogen. None of these gases are considered to be air pollutants. Small amounts of argon, hydrogen sulfide, sulfides and non-methane hydrocarbons such as propane, ethane, and hexane are also produced.⁴ With the exception of argon, these are all air pollutants. These gases are generated over a period of time and slowly leak into the atmosphere. The rate of gas production varies from landfill to landfill and is also dependent on temperature and moisture. (Further information on the composition of landfill gas is provided in J. Energy, 4. Methane Recovery).

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
E. AIR QUALITY (Continued)

The rate of production of these gases is proportional, in part, to the composition of the waste and the rate it is put into the landfill. Emissions, therefore, would be similar for Alternatives A, B and C. Alternative D would involve a lesser input to the landfill and would have a proportionally lesser impact. The composition of waste in Alternative D would also involve a lower proportion of organics and a relatively high proportion of sterile ash so that the production rate and composition of Alternative D landfill gas could differ from Alternatives A, B, and C.

The BAAQMD's 1982 Air Quality Management Plan identifies landfills as a significant source of hydrocarbons (a major constituent of landfill gas in the Bay Area.) Acme landfill contributes only a small part of the total. The plan calls for a reduction of 7.2 tons per day of landfill - derived hydrocarbons by 1987. The primary strategy for achieving this reduction is methane recovery which also results in the combustion of the non-methane hydrocarbons in the landfill gas. Regulations are being developed for implementation in 1984.⁵

Vehicle Emissions - Vehicle emissions are related to the Vehicle Miles Traveled (VMT) associated with refuse disposal. VMT is the product of the number of daily trips and the average trip length.

The VMT associated with Alternative A, B, and C would be identical, as trip generation and average trip length would be identical. Alternative D would involve fewer trips due to a lower volume of refuse, so that total VMT for this alternative would be proportionally lower.

Other Emissions - Alternative D which includes the construction of a waste-to-energy project, could include a new stationary source of air pollution. Such a project would be a significant source of hydrocarbons, carbon monoxide, suspended particulates, nitrogen oxides, and sulfur dioxide. Such emissions would not be a result of Alternatives A, B, or C.

Mitigations

A dust control program should be included in the operations plans for the disposal facilities to mitigate fugitive dust impacts from landfill activities. Wherever possible, on-site roads in Alternatives A, B, C, and D should be paved. Where paving is unfeasible, applications of water, calcium chloride, or waste oils to unpaved site roads would help suppress dust. The choice of material used would depend, in part, on relative humidity and road run-off conditions. Calcium chloride is useful when the relative humidity is over 30 percent and the substance is mixed with the top three inches of road surface. Waste oils, applied periodically, provide a packed oil soil crust with good resistance to water.⁸ Consideration must, however, be given to road drainage conditions to avoid having oil run-off mix with surface and/or groundwater. Since waste oil is considered a Group 1 waste, oiling of roads should not be allowed outside Class II-1 areas. Frequent application of water, as required, would probably be the simplest solution and have the least adverse environmental impacts.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
E. AIR QUALITY (Continued)

The landfill operation itself should be sprinkled with water as necessary to control dust.

Planting grass or other vegetation on the finished fill is another method of suppressing or preventing dust. Such a program would be particularly important for Alternative A where dried dredged materials would be used as cover material. These materials contain a large fraction of silt which is easily blown by the wind.

A dust control program is required by the regulatory agencies having control over the landfills operating conditions.

For Alternatives A, B, and C, and odor should be minimized by daily application of cover directly on the working face as required by the operating permits. Leachate odors should be controlled by implementing a leachate monitoring program. See Water Section.

The emission of organic gases from landfills would be reduced by methane recovery, like the new system at Acme landfill if the small proportion of hydrocarbons that are not methane are combusted or otherwise disposed of properly. Methane recovery should be implemented in Alternatives A, B, and C. This may be required by the BAAQMD. Such recovery would occur in the future, as several years are needed to produce a sufficient concentration of methane to make extraction profitable.

Alternatives A, B, C, and D may require a BAAQMD Authority to Construct and Permit to Operate. Under the regulations for modified or new sources, the District can attach operational conditions to mitigate odor problems and complaints. At the time of application for the permit, the District may place conditions of approval to minimize odor problems experienced with the existing Acme operation,⁸ as well as emissions of "criteria and/or hazardous pollutants" and other potentially deleterious air quality impacts.

A waste-to-energy facility, as included in Alternative D, probably would require an Environmental Impact Report for the project. The project would require an Authority to Construct and Permit to Operate from the Bay Area Air Quality Management District. Current regulations require the use of Best Available Control Technology (BACT) to reduce emissions. Best Available Control Technology would probably consist of a stack scrubber, although the exact definition of BACT is determined during the permit process.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
E. AIR QUALITY (Continued)

Footnotes

¹California Department of Water Resources, Wind in California, Bulletin No. 185, January 1978.

²Bay Area Air Quality Management District, Air Currents, Vol. 23, No. 4, March 1981.

³Theresa Lee, Information Officer, Bay Area Air Quality Management District, telephone conversation 9 March 1982.

⁴F. B. DeWalle, et al., "Gas Production from Solid Waste in Landfills," Journal Environmental Engineering Division ASCE, 104:415 (June 1978).

⁵Sally Freedman, Bay Area Air Quality Management District, telephone conversation, 1 April 1983.

⁶Central Contra Costa Sanitary District, Predesign Engineering for Solid Waste to Energy Project, Draft Final Report, Prepared by Wegman/Carollo, Engineers, February 1982.

⁷State Solid Waste Management Board, Landfill Techniques Seminar Manual Presented by Emcon Associates. Co-Sponsored by the Governmental Refuse Collection and Disposal Association and the California Refuse Removal Council, Spring 1979, III-30.

⁸Leonard Clayton, Bay Area Air Quality Management District 9 March 1982.

III ENVIRONMENTAL SETTING, IMPACTS AND RECOMMENDED MITIGATIONS

F. CIRCULATION AND TRAFFIC

Setting

Acme Landfill lies between Waterfront Road on the north and Highway I-680 on the west. To the east, across the Walnut Creek/Pacheco Creek Flood Control Channel is Solano Way. The new industrial access road, Waterbird Way, leads directly from Waterfront Road to Acme Landfill.

Waterfront Road is a 2-lane facility east of the I-680 northbound on-off ramps and a 4-lane facility west of these intersections. The roadway needs repaving in many areas. Although no shoulders are available on the north side of the road, the south side of the road provides some areas that are suitable for vehicle parking. Waterfront Road is a major road component of the County's thoroughfare system according to the Circulation Element of the County General Plan. The Scenic Routes Element (1974) of the Contra Costa General Plan lists 6.6 miles of Waterfront Road east of I-680 as a "scenic rural-recreation route."

To the west, Waterfront Road passes the entrance to a Shell Oil refinery as it continues to downtown Martinez. To the east, this route leads to several industrial facilities and the Port Chicago U.S. Naval Weapons Base. It also provides a connection to the Pittsburg-Antioch area. Most morning and evening peak hour traffic on Waterfront Road travels to or from the Shell Refinery to the west of the I-680 interchange.

The Waterfront Road/I-680 interchange is a partial cloverleaf with both north and southbound on-off ramps intersecting the south side of Waterfront Road. At the southbound on-off ramp intersection, the ramps are controlled by signals. Waterfront Road carries 2 lanes in each direction at this intersection with 1 of the 2 westbound lanes serving as an exclusive left-turn lane for vehicles turning to the southbound on-ramp. Waterfront Road is also controlled by signals at the northbound on-off ramp intersection. Waterfront Road carries only 1 through lane in each direction at this intersection, although a westbound left-turn lane is provided for vehicles turning to the northbound on-ramp. A second lane on the eastbound approach becomes an exclusive right-turn lane to this same northbound on-ramp. The northbound off-ramp approach to Waterfront Road has a very uneven pavement surface. Vehicles making a right turn to Waterfront Road experience a sharp drop halfway through the turn.

Waterfront Road is level at the Waterbird Way intersection. East of this point, the grade rises as it becomes an overpass above the SPRR railroad tracks. A westbound left-turn lane and an eastbound right-turn deceleration lane are provided on the Waterfront Road approaches to Waterbird Way, the access to the Acme landfill. Waterfront Road joins the Port Chicago Highway through the Concord Naval Weapons Station about three miles east of the site.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
F. CIRCULATION AND TRAFFIC (Continued)

Interstate 680 - is a 4-lane freeway leading to Benicia, Vallejo, and Sacramento via the Benicia-Martinez toll bridge. To the south, this freeway leads to Concord, Pleasant Hill, Walnut Creek, and Danville. It also connects with Highway 4 to Antioch and Pittsburg via a major cloverleaf interchange approximately 3 miles south of the Waterfront Road interchange. To the west, via Highway 24, I-680 connects to Lafayette and Orinda, and all other major cities in the San Francisco Bay Area.

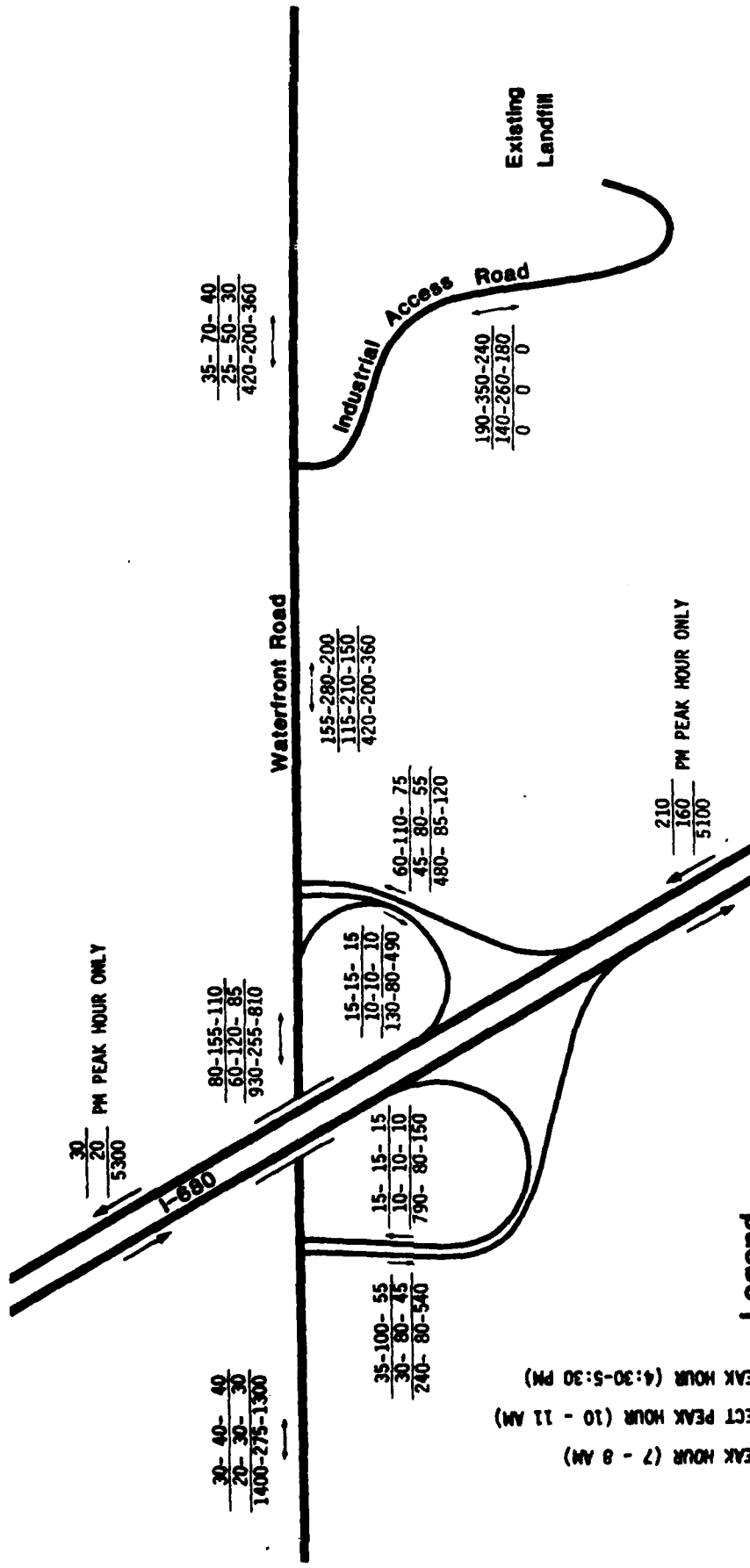
Industrial Access Road (Waterbird Way) - is a 2-lane, paved road which replaces the landfill access formerly provided by Arthur Road through the Vine Hill neighborhood. Arthur Road is now permanently closed at its eastern end to all traffic including Acme, IT, and Martinez Gun Club traffic. Construction of Waterbird Way, a \$900,000 project, was largely funded by Acme Fill Corporation and the IT Corporation. A \$150,000 Community Development Block Grant and other public monies paid for its design. Land for the road was donated by Shell Oil Company which owns land adjacent to Acme's northwest property. Waterbird Way was dedicated February 17, 1982.

The Contra Costa County General Plan Circulation Element proposes a future extension of Waterbird Way, through the southern portion of the Acme property, to the Central Sanitation District property. This extension would connect with a frontage road along Highway 4 at the southern end of the Central Sanitary District property. The frontage road would intersect Solano Way on the east and Pacheco Boulevard west of I-680.

Solano Way - is a 2-lane well-paved north-south roadway serving several industrial facilities between Waterfront Road and Highway 4. Solano Way is parallel to and easterly of I-680. Solano Way has an interchange at Highway 4. Volumes are light on Solano Way with speeds ranging from 35 to 45 mph.

Highway 4 - is a 4- to 6-lane east-west freeway through the Concord and Martinez area.

Existing a.m. peak, p.m. peak, and midday traffic volumes on the roadways near the Acme Landfill are shown on Exhibit III-13. Existing levels of service at the I-680 interchange on-off ramp intersections with Waterfront Road are shown in Table 6. The level of service is a scale referring to the ease or difficulty for vehicles to travel through an intersection. The scale ranges from level A to level F. Service level A indicates the best conditions with the least amount of delay while service level F indicates complete intersection congestion with significant delays. Service level D is the lowest level that is normally tolerated by jurisdictions during peak hour traffic conditions. The Circulation and Traffic Appendix contains definitions of level of service and capacity index, which is a more sensitive measure of capacity than level of service.



SOURCE: D.K. Goodrich count - 22 Feb 82
 Contra Costa County Public Works Dept.
 Caltrans

TORREY & TORREY INC.
 environmental/urban
 planning and design

Existing and Projected Hourly Traffic

EXHIBIT
III-10

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
F. CIRCULATION AND TRAFFIC (Continued)

In general, with one exception, both the north and southbound on-off ramp I-680 intersections with Waterfront Road are now operating at service level A conditions during all peak traffic hours including traffic going to and from Waterbird Way. During the a.m. peak traffic hour, however, the southbound on-off ramp intersection is operating at service level D. This would be the case even without landfill traffic. (It has been assumed in this analysis that each truck to or from Acme Landfill would have the same impact as 2.5 cars on intersection capacity.)

Weekday peak hour field counts in February 1982 at the new Waterbird Way/Waterfront Road intersection show that approximately 80 to 85 percent of the vehicles travel to and from the west on Waterfront toward the I-680 interchange while the remaining 15 to 20 percent travel to and from the east. Approximately 30 percent of the vehicles are 2-axle or larger collection trucks including approximately 7 percent liquid waste disposal trucks. The average for 1981 was 36 percent trucks and 64 percent other vehicles going to Acme.¹ The Industrial Access Road EIR showed that, for a typical summer week, more vehicles traveled to the landfill on a Saturday than on a weekday (917 versus 800).² Other peak traffic volumes, however, are much lower on Saturday.

Impacts

The following impacts apply to Alternatives A, B, and C. Although the volume of traffic associated with Alternative D is not known, it is assumed that this volume would be less than that associated with the other alternatives; therefore, the impacts of Alternative D would be the same as the impacts discussed below except that they would be proportionately less.

A 33 percent growth over existing daily traffic within the County would occur by 1994 based on population projections.³ These increased volumes are reflected in Table 6, which provides capacity indices and level of service for affected intersections. During morning and evening peak commute traffic, the increased number of vehicles entering and leaving the landfill would have a minimal impact on intersection level of service (a maximum 2-point increase in capacity index) and would cause no change in the level of service designation. During the midday peak hour of traffic to the landfill, capacity index would be increased by 5 points at each on-off ramp intersection. No change would occur in Service Level designation and a good Level of Service A operation would be maintained.

The northbound I-680 off ramp is constructed on bay mud and has differentially settled. This has given the ramp a "roller coaster" profile. This has a potential for safety and spill problems if driven at higher than posted speeds by poorly loaded vehicles.

Table 6
CAPACITY ANALYSIS

CONDITION	WATERFRONT ROAD/I-680 INTERSECTION			
	NORTHBOUND ON/OFF RAMP		SOUTHBOUND ON/OFF RAMP	
	CI ¹	LOS ²	CI ¹	LOS ²
A.M. PEAK HOUR				
Without Project	52	A	94	D
With Project-Existing	57	A	95	D
With Project-Maximum Use-1995	59	A	96	D
PROJECT PEAK HOUR				
Without Project	11	A	13	A
With Project-Existing	22	A	23	A
With Project-Maximum Use-1995	27	A	27	A
P.M. PEAK HOUR				
Without Project	30	A	53	A
With Project-Existing	36	A	60	A
With Project-Maximum Use-1995	38	A	62	A

¹CI = Capacity Index

²LOS = Level of Service

Source: D. K. Goodrich. The intersection capacity analysis in this Table is based on Transportation Research Board Circular 212, 1980, the currently recognized standard for all signalized intersection capacity analysis. This standard, based on the sum of critical conflicting turn volumes, takes into account intersection approaches with light as well as heavy volumes by assuming optimum signalization is working for each approach.

Individual approach capacity analysis, popular in the 1960's and early 70's, was not employed because it does not provide clear information on the impacts of intersection improvements on the overall circulation system (i.e. more improvements than are necessary to make an intersection operate acceptably may be recommended based on individual approach analysis).

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
F. CIRCULATION AND TRAFFIC (Continued)

Portions of Waterbird Way were unpaved when the Draft EIR/EIS was written. The County was waiting for the new roadbed to stabilize before paving it. The rough condition of the surface resulted in a concern for accidents and hazardous waste spills. In the ensuing period, however, the road has been paved and the problem eliminated.

Waterfront Road west of Waterbird Way, sections of the I-680 on-off ramps at Waterfront Road and a short section of I-680 south of the offramp flood on the average of 5 to 8 days per year.⁴ Serious flooding occurs only in extremely high rainfall years (such as 1982 and 1983) and it is influenced by concurrent high tides. The problem at the I-680 interchange is extended by slow drainage caused by the adjoining railroad track bed. The flooding may last several hours to an entire day but trucks are usually able to travel on the flooded roadways. Waterfront Road east of Waterbird Way also floods during the year with about the same frequency. Sometimes sections of Waterfront Road both east and west of Waterbird Way are flooded at the same time which may prevent access to the landfill by automobiles and small trucks. Waterfront Road was not closed to large trucks during the extremely high water conditions of the winters of 1981-82 and 1982-83.

If a new southern entrance to Acme were created by connecting the Highway 4 frontage road with an extension of Waterbird Way, diversion of traffic to this entrance could account for 60 - 70% of total daily traffic. Diverted traffic would have moderate impacts on the Solano Way interchange with Highway 4 because existing volumes through this interchange are light. (These volumes were observed during field studies by Goodrich Traffic Group.) Diverted dump traffic would have a major impact on the Pacheco Boulevard intersection with the frontage road, and the Pacheco Boulevard interchange with Highway 4. Signals, turn lanes and other widening would be needed along Pacheco Boulevard in the interchange area. The garbage trucks would also infringe on the edge of a residential area along Blum Road near Pacheco Boulevard.

Diversion of landfill traffic to the south would improve traffic circulation along Waterfront Road from the I-680 interchange to Waterbird Way.

A study by TJKM⁵ recently completed for the Navy details the impacts of closing the Port Chicago Highway and the eastern section of Waterfront Road east of Solano Way. At this time, the Navy has made no final decision about the issue.⁶ The TJKM report estimated that closing Waterfront Road would cause re-routing of approximately 1050 vehicles daily. Some of these vehicles would be diverted to Solano Way while

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
F. CIRCULATION AND TRAFFIC (Continued)

others would remain on Highway 4 and/or I-680. No negative impacts are now estimated on peak hour traffic conditions along Waterfront Road near I-680 and Waterbird Way. In fact, volumes would even decrease slightly. Distribution of traffic to and from the landfill along Waterfront Road near I-680 is estimated to remain essentially the same with or without closure of the Port Chicago Highway. Vehicles would continue to use Waterfront Road past the site to Solano Way which would be the chief alternate route to Highway 4, Concord, and points east.

Mitigations

For Alternatives A, B, and C the following mitigation measures apply assuming that the present access will continue to serve the site:

The northbound I-680 off-ramp to Waterfront Road should be repaved, especially at the northbound right turn. This would require regrading as well to provide a more gradual transition between the pavement surface level of the off-ramp and Waterfront Road. It is also suggested that a separate right-turn-only lane be built on the northbound off-ramp, at least 200 feet long. Renovation of the interchange would be a Caltrans responsibility.

A number of alternative measures to mitigate the effects of roadway flooding are possible, including placement of depth markers along Waterfront Road which would allow garbage truck drivers to perceive the depth of water to be crossed or approximate the time at which crossing would be possible, allowing the use of Arthur Road as a temporary emergency measure until flood waters recede, permanently raising the roadbeds above flood level, and curtailing garbage hauling during flood periods.

The preferred mitigation alternative would be placement of water depth markers along Waterfront Road in those locations where flooding occurs. Placement of such markers has worked successfully at landfills and other industrial sites in Solano County. Signs should be placed along I-680 and Highway 4 to warn landfill traffic and other eastbound traffic that Waterfront Road is blocked by flooding. These signs should be placed at least one exit in advance of Waterfront Road, or at Solano Way on Highway 4.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
F. CIRCULATION AND TRAFFIC (Continued)

Footnotes

¹Frank Boerger, P.E., Civil Engineer, Harding Lawson Associates.

²Contra Costa County, Draft EIR Industrial Access Road, January 1980.

³Contra Costa County, Solid Waste Management Plan, Draft 12/81, Revised 1/82.

⁴Contra Costa County Public Works Department

⁵TJKM, Traffic Analysis of Closure of Port Chicago Highway, September 1981.

⁶Louis Rivero, U. S. Navy, San Bruno.

III ENVIRONMENTAL SETTING, IMPACTS AND RECOMMENDED MITIGATIONS

G. NOISE

Setting

The primary source of ambient noise levels in the project area is traffic along Interstate Route 680 and Waterfront Road. The Noise Element (1975) of the Contra Costa County General Plan estimates that noise levels will exceed 60 dBA (CNEL) by 1990 within about 150 feet of Waterfront Road. The Noise Element establishes 60 dBA (CNEL) as the maximum acceptable outdoor noise level for residential land uses. Presently, there are no residences along this portion of Waterfront Road and lands on both sides of the road are planned for heavy industry. Measurements taken for the Waterbird Way EIR showed that within 25 feet of Waterfront Road, on a weekday afternoon, noise levels ranged between 50 and 80 dBA.¹ Noise levels averaged 50 dBA when truck traffic was absent and noise peaks reached 80 dBA when trucks were present. After construction of Waterbird Way noise levels within 25 feet of Waterfront Road were expected to reach peaks of 80 to 85 dBA for increased periods of time during the day.

The most sensitive noise receptor in the project area is the Vine Hill residential neighborhood. Until recently all truck traffic from the Acme and IT Corporation disposal sites used Arthur Road through this neighborhood to access to and from Highway 680. Measurements taken for the Waterbird Way EIR showed noise levels during peak traffic conditions reached 86 dBA (L₁₀); overall outdoor noise levels were estimated to be 83 dBA (CNEL). However, in January, 1982, Arthur Road was closed to disposal site traffic and noise levels are estimated to have dropped below the 60 dBA (CNEL) level.²

A lesser, intermittent source of ambient noise is the operation of collection vehicles and earth moving and compacting equipment on the landfill. According to equipment manufacturers, acceleration of vehicles and discharge of the load on the working face can generate peak noise levels ranging from 75 to 86 dBA at the area of operation. Presently, potential noise impacts from these sources on the Vine Hill Neighborhood are mitigated by the large hill on the southern parcel and by the distance of operations from the neighborhood (1500 - 2000 feet).

Impacts

The traffic analysis presented in Section III.F, shows that by 1995 (if Acme is still operating at maximum use) Acme-related traffic for Alternatives A, B, and C would increase existing traffic levels along Waterfront Road by less than 10 percent, except for the short stretch between Waterbird Way and the easterly on-off ramp at the I-680 interchange (which would experience an increase of approximately 17

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
6. NOISE (Continued)

percent). About 36 percent of this increase would be truck traffic, based on the current composition of Acme-related traffic. The peak hour for project traffic would continue to be mid-morning (10 am to 11 am); operating hours would generally continue to be from 7 am to 5 pm. (Some infrequent operations, such as a collector truck entering and exiting the site to drop off a load, could occur after 5 pm but before 10 pm.)

Based on these projections, noise levels along Waterfront Road would not increase significantly as a result of Alternatives A, B, or C, although the frequency and duration of daytime peak noise levels would increase slightly due to increased truck traffic. Community Noise Equivalent Levels (CNEL) would be expected to increase by less than 3 dBA along Waterfront Road by 1995 as a result of Acme-related traffic. The primary receptor of this increase would be wildlife which frequents the wetlands area north of Waterfront Road.

Acme does not expect to substantially increase the number or size of the bulldozers, compactors and other machinery now operating on the face of the landfill. The Vine Hill residential neighborhood east of Interstate Highway 680 would be exposed to greater noise levels during the construction of the visual and noise barrier discussed in the land use section, and possibly from the operation of excavation equipment on the western face of the lower of the two hills and on the eastern face of the large hill adjoining I-680 if cover material is required from that feature. The large hill itself would provide a noise buffer for the Vine Hill residential neighborhood west of I-680. These impacts pertain to Alternatives A, B, and C. Alternative C could have a significant impact on the residential area because it would locate fill operations within about 500 feet of nearby residences.

Mitigations

For Alternatives A, B, and C, the visual and noise buffer required by LUP 2052-81 should be implemented as soon as possible. Excavation equipment operating on the west face of the smaller of two hills or on the large hill should be restricted to normal daylight hours (e.g., 8:00 a.m. - 5:00 p.m.) on weekdays.

Acme should conduct an acoustical study to determine appropriate distances, operational procedures, and possible noise barriers to protect residents of the Vine Hill area from excessive noise levels.

For Alternatives A, B, and C, the ridgeline of the large hill in the southern parcel should be retained as a noise barrier for residents of the Vine Hill neighborhood.

For Alternatives A, B, and C, it is suggested that Acme properly maintain its equipment and use the best commercially available muffling devices on collection trucks and on-site machinery.

111 ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
6. NOISE (Continued)

Footnotes

¹Contra Costa County, Draft Environmental Impact Report, Industrial Access
Road CP79-70, January 1980, p. 16.

²ibid., p. 27.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS

H. PUBLIC HEALTH AND SAFETY

In this Chapter, Sections 1 through 5 address concerns that are generally applicable to landfills that dispose of Groups 2 and 3 nonhazardous wastes. These concerns are: landfill gas, fire hazards, vectors, site security, and personnel safety. Special concerns and regulatory requirements that pertain to landfills, like Acme, that deal with hazardous wastes are described in Section 6. Potential for Hazards From Wastes.

1. Landfill Gases

Setting

Landfill gases consist primarily of methane (CH_4) and carbon dioxide (CO_2) produced by biological decomposition of organic waste material. The concern for such gases arises from the potential explosion hazard of methane accumulation and the ability of carbon dioxide to affect the quality of a water supply. (Potential leachate impact discussed in Section C, Water: Surface Water, Groundwater, and Erosion.) The most dramatic characteristic of methane is its potential for explosion if ignited in concentrations between 4 to 15 percent by volume in air. However, oxygen is not present in sufficient quantities in a landfill to cause explosions when methane concentrations reach this level. It is flammable at atmospheric pressure and ordinary temperature.¹ (The value of methane as energy is discussed in Section J, Energy.)

The composition of the landfill gases at the existing 125-acre fill is itemized in J. Energy.

According to Acme representatives, methane gas generation has not presented a hazardous condition because operations are located in an open area, well away from development. In the past, methane has vented naturally on the 125-acre disposal area through permeable cover soils. When a piping system was recently installed to collect methane for the recovery project, the cover soil was "tightened" to restrict vertical escape.² Methane on this disposal area is now being drawn to a newly constructed processing plant located on the Acme property. The plant, located immediately southwest of the current entry gate, is owned and operated by Getty Synthetic Fuels, Inc. The plant processes and delivers methane to the Central Contra Costa County Sanitary District.

Lateral migration off the 125-acre site has been restricted by soil barriers compacted to 10^{-6} cm/sec or less permeability.^{3,4}

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
H. PUBLIC HEALTH AND SAFETY (Continued)

Soil barriers are also being used to restrict lateral methane migration in the new 22-acre area opened for disposal operations in 1981.⁵ Although Getty and Acme have an agreement which would allow continuation of methane recovery as landfill operations progress, further feasibility studies would be required to determine if such an operation should be initiated on the 22-acre area after methane has had time to develop. In the meantime, in accordance with the recommendations contained in the Harding Lawson Associates April 8, 1981 report, methane will vent naturally through the cover soil as it is produced.⁶

Impacts

Alternatives A, B, and C would all have approximately the same potential for producing methane in terms of the same geographical, geological, and climatic influences, as well as similar daily quantities of solid waste and proportion of organic material. The quantity of methane generated would vary, however, due to the different landfill capacity of each alternative. The material recovery and waste-to-energy components of Alternative D would reduce the amount of solid waste to be landfilled daily and, thereby, require a correspondingly longer time for methane to develop in this alternative than in Alternatives A, B, and C. Moreover, the large quantities of sterile ash produced in the waste-to-energy project in Alternative D would change the proportion of organic to inorganic composition of the solid waste and greatly reduce the potential for methane development.

Implementation of Alternatives A, B, C, and D would not affect the generation of methane in either the 125- or 22-acre current disposal site operations.

Mitigations

Acme should implement its plans to expand the existing methane gas collection system to collect gas from the proposed 200-acre site (Alternative A). This will maintain the existing low-risk factor of methane gas generation.

For Alternative A, Acme is proposing to restrict lateral migration of methane by using approximately 20,000 linear feet of levees to form impermeable sides for disposal cells. These barriers would be constructed to meet at least the RWQCB minimum standards of 5-foot thickness with a permeability of 10^{-6} cm/sec.¹⁰ Impermeable bay muds, between 40 to 60 feet thick, would restrict downward vertical migration. Methane would be allowed to vent naturally through the top of the landfill through permeable cover soils until the gas collection system is expanded.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
H. PUBLIC HEALTH AND SAFETY (Continued)

In Alternative B, further on-site hydrogeologic studies should be conducted by Acme's engineers to determine if any additional lateral gas migration barriers would be required to prevent gas escape from disposal operations to on-site wildlife habitat mitigation areas.

For Alternative C, on-site hydrogeologic studies should be conducted by Acme to determine if subsoil conditions are adequate to prevent vertical escape or if additional measures such as synthetic liners would be required. Acme should also determine the hydrogeologic conditions of adjacent properties to determine the potential for lateral off-site gas migration, particularly to the west of the site toward the East Vine Hill neighborhood which is immediately adjacent to the property. If test results indicate the necessity for such measures, Acme should install appropriate barriers at the landfill perimeter and at the base of the fill in the construction phase.

For Alternative D, all of the hydrogeologic mitigations recommended for Alternatives A, B, and C, should be implemented to the extent that they are required.

To meet federal, state, and RWQCB standards and requirements^{7,8,9} for methane control, monitoring probes should be installed as disposal operations are conducted. The number and location would be based on site-specific data concerning soils, groundwater, and surrounding land uses. Generally these probes are located between the landfill and the property line at a sufficient distance from the property line to allow a contingency plan to be implemented, if necessary.

If Acme's current plan to allow methane to vent naturally through permeable cover soils does not prove to be adequate, the gas should be vented by selective placement of other highly permeable materials, such as gravel to redirect the gas to a point of controlled release or, alternately, withdrawn with an exhaust blower system. In this system, vertical gravel-filled wells placed at intervals throughout the disposal site are connected by manifolding to an exhaust blower to create vacuum to draw gas from the field.

2. Fire Hazards

Setting

Since the adoption of Regulation 1 by the Bay Area Air Pollution Control District (now the Bay Area Air Quality Management District (BAAQMD)) March 10, 1957, open burning at landfills for general disposal purposes has been prohibited.¹⁰ The Resource Conservation and Recovery Act of 1976, as

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
H. PUBLIC HEALTH AND SAFETY (Continued)

amended¹¹, and the Clean Air Act of 1970, further restrict burning practices at landfills.¹² Despite these regulations and the site-specific prohibitions included as part of various Acme disposal operations permits,¹³ fire remains a potential hazard in any landfill due to the possibility of spontaneous combustion within the fill, the potential of smoldering loads for igniting landfill operations, and the potential for fires caused by landfill equipment.

Another potential fire hazard is created by landfill equipment. Investigation has revealed that most equipment fires are started by some kind of electrical malfunction which then spreads to oil, grease, and any refuse that collects on machines. Landfill compactors and dozers are vulnerable because they continually move over and through refuse.¹⁸ Acme maintains an appropriate size and type fire extinguisher with all operating equipment to fight small fires which might occur.

Acme's current landfill operations are located within the jurisdiction of the Contra Costa County Consolidated Fire District. Under the terms of the 1981 solid wastes facilities permit issued by the County Department of Health Services, Acme must comply with local fire district ordinances.

In the event of a fire, the District could respond with Engine 12 located at 1240 Shell Avenue, Martinez; Truck 14 located at 521 Jones Street in Martinez; and Engine 9 at 209 Center Street in Pacheco. Battalion Chief 2 has authority in the area. Engines 12 and 9 both have additional reserves that can be called, if necessary.

Under the 1979 Uniform Fire Code, which has been adopted by the District, an owner or occupant of any property where a fire occurs must immediately notify the local fire agency.¹⁴ A report must be made even if the fire has been brought under control. Standard procedures require the local fire agency to visit the site to inspect and confirm that the fire has been extinguished. The District reports that, in recent years, it has not had to respond to any fires on the Acme property.¹⁵ In addition, under conditions of the permit from the County Department of Health Services, Acme is required to notify the Sheriff and County DHS of any fires as soon as possible. The Sheriff's office reports that it has not received any such reports.¹⁶

Appropriate equipment available at the site to aid in extinguishing any fires includes a 150-gallon fire truck, water trucks, dozers, scrapers, and other earthmoving equipment.¹⁷

In addition, two fire hydrants nearby are supplied with water from an 8-inch main from the Contra Costa County Water District. One hydrant is located on Arthur Road and the other, a new one, is located next to the new Getty methane recovery plant. Fire officials estimate that 1000-foot

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
H. PUBLIC HEALTH AND SAFETY (Continued)

hoses can be attached to each hydrant. A third hydrant is being requested by the Fire District in the vicinity of the Waterfront Road/Waterbird Way intersection. Soil stockpiled near the working face for daily cover is also available to use in smothering fires, if appropriate to the nature of the fire.

Impacts

Alternatives A, B, and C, would all have continued potentials for fire, but there would be minimal expectation for fires to occur, given the current operation with its recent record of fire prevention. Operations are expected to be conducted by the same operator using similar practices, operating under similar regulations, and disposing of similar solid wastes.

Alternatives A, B, and C would all have minimal potential impact for fire hazard from landfill equipment since the same equipment, or equipment similar to what Acme is currently using, would be used on another site. Acme has reported minimal fires.

Alternative D would have an increased fire hazard potential from the resource recovery processing facility and the waste-to-energy facility. Stored papers and oils would have fire hazard potential at a waste processing facility. A waste-to-energy facility would present fire hazards from stored waste and from the nature of the operation.

Mitigations

In the event of fire which threatens human life or the environment, designated Acme personnel should follow the appropriate Response Procedures specified in the Acme Landfill Congingency Plan¹⁹ described later in this Chapter in Section 6. Potential for Hazards From Waste.

Acme Fill Corporation should continue to provide the fire-fighting equipment that is currently available for any continued operation and which is generally required by Land Use Permit 615-60 and the operations permit.

Other measures that should be incorporated by Acme, if not already a part of standard operating procedures, include the supervision of waste unloading to separate smoldering loads and wastes with a high fire potential from the working face, the practice of extinguishing burning loads with soil or water before incorporating them into the fill, and providing fire breaks or firelanes, if appropriate.

In addition, Acme should also provide adequate access and turnarounds for professional fire-fighting equipment in the event the Consolidated Fire District is required to respond.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
H. PUBLIC HEALTH AND SAFETY (Continued)

Acme should consider making frequent vehicle inspections, as often as biweekly, to reduce the potential for electrical vehicle fires. Such inspections should focus on electrical shorts and hydraulic or fuel line leaks. Daily washings help to reduce equipment fires by washing away refuse collected in the machinery and by loosening grease and oil.²⁰

Acme should consider installing automatic fire sensing and suppression systems on equipment to control fires once they have begun. Manual systems can be activated by the operator while using the equipment whereas the automatic fire-sensing system provides added protection when the vehicle is unattended. These systems should be inspected frequently to assure that they remain in good working order and that chemical tanks have a full charge. Such systems should be checked daily by operators by examining hoses, nozzles, and the fastenings that secure the system to the vehicle.²¹

For Alternative D, special care should be taken at the waste processing facility to assure that materials are stored correctly with as little potential for fire as possible. Any conditions attached to the Land Use permit by the Consolidated Fire District should be implemented by the owner/operator of the facility.

3. Vectors

Setting

Vectors, as defined in the California Minimum Standards for Solid Waste Handling and Disposal, are "...any insect or other arthropod, rodent, or other animal capable of transmitting the causative agents of human disease or disrupting the normal enjoyment of life by adversely affecting the public health and well being."²² Pests or vectors frequently present at landfills include: flies and birds which can carry diseases such as bacillary dysentery or salmonellosis (food poisoning); mosquitos which may carry viral diseases such as encephalitis, malaria, and yellow fever; rodents which are carriers of enteric and other infections; and gulls and other flocking birds which may pose hazards to low-flying aircraft when disposal sites are located near airports. In addition, cockroaches, dogs, cats, and raccoons are considered potential problems.^{23,24}

Two local agencies are responsible for vector inspection at the Acme Landfill: the County Department of Health Services, and the Contra Costa Mosquito Abatement District. In addition, the county airport, Buchanan Field, approximately 6500 feet south/southeast of Acme's southern parcel is particularly interested in the control of seagulls.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
H. PUBLIC HEALTH AND SAFETY (Continued)

Before Acme's operation conformed to federally-mandated landfill standards, flies and rodents were observed frequently at the site.²⁵ Aerial surveillance showed that adequate daily cover was not being applied.²⁶ During the Open Dump Inventory/Landfill Compliance Program, the County Department of Health Services inspected the site on the average of 2 to 3 times a week for approximately 3 months between 1980 and 1981. Since then, the landfill has been upgraded and brought into compliance with RCRA standards. Proper daily cover has been applied consistently and the County Health Services Department has found virtually no flies, rodents, or miscellaneous pests on the 125- and 22-acre disposal sites.²⁷ Availability of cover material and cover requirements are specified in the December 1981 Solid Waste Facilities Permit. Before October 1 of each year cover material sufficient to cover at least 2 weeks of solid waste are to be stockpiled near the active wet weather disposal face. This stockpile is to be rebuilt as soon as weather permits. In addition, solid wastes are not to be exposed for longer than 24 hours.

On low-lying marsh areas elsewhere on and around Acme property, however, mosquitos normally appear for temporary periods when conditions are favorable. Such conditions require a combination of moisture and warm weather as in spring, when the weather is warm and ponded areas remain where water has not drained from or been absorbed into the ground. To control this problem, the Contra Costa Mosquito Abatement Control District inspects routinely and sprays as required.²⁸

The normal mosquito problem was exacerbated in 1979 when a slope failure shifted the Central Sanitary District's 72-inch sewer main which extends through Acme's 200-acre northeast parcel. Subsequently, Acme unloaded and relocated previously disposed wastes from the area. These wastes, together with the odor of sewage, attracted mosquitos and required extra spraying for control.²⁹ The high organic load in the vicinity of Acme activities or a sewer pipe leak is very conducive to mosquito production whenever water is present either from rainfall, wash runoff, or tidal actions.

Although the immediate problem was controlled, drainage from the site has since been obstructed by an access road constructed to facilitate slope failure repairs. The road remains and continues to trap water in the northeast corner of the 125-acre site. Another drainage obstruction, unrelated to the landslide, is formed by levees in the northwest corner of Acme's property in the vicinity of the new Waterbird Way and the hill on that portion of the property. This area is also designated as a wetland suggested for protection by the U. S. Fish and Wildlife Service. Water is also trapped in the southeastern portion of the site as indicated on Exhibit III-7. These drainage obstructions create favorable mosquito-breeding conditions which require frequent inspection and spraying.³⁰

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
H. PUBLIC HEALTH AND SAFETY (Continued)

Solid waste disposal facilities attract birds as they often provide feeding, watering, and roosting areas. An increase in bird populations near airports may increase the probability of bird hazards to aircraft.³¹ According to reports from Buchanan Field, the facility has initiated seagull abatement control measures 30 times in the period between November 12, 1981 and March 29, 1982. The airport administration "assumes the birds come from Acme." Over the entire period a total of 9,080 seagulls were estimated on the airport runway. On the basis of the 30 times seagull abatement measures were put into effect, approximately 302 seagulls were estimated for each occasion. The number of seagulls at a given time is estimated to range from 50 to 2000.³² Abatement measures are initiated with a seagull distress call tape to disperse gulls followed by a shotgun, which explodes fire cracker shells 100 yards in the air.

Buchanan Field, which accommodates turbojets and small light jets, maintains a bird hazard report file dating from 1973. The field also provides the Notice to Airmen, a continuous advisory bulletin available to all pilots who use the airport. The notice advises, "...during November to March from daybreak to 10 am, and after rains, large numbers of seagulls are on the runways."³³

The issue of the degree to which Acme Landfill attracts gulls is complex and requires detailed study. Buchanan Field is listed by the State Solid Waste Management Board as one of the 5 airports in California as having a solid waste-related bird hazard.³⁴ A basic question is whether Acme is the sole cause or a contributory cause of gulls on the Field, or whether the bird hazard is due to other attractants such as the airport itself or other off-site features such as the nearby golf course.

Impacts

In terms of solid waste disposal, Alternatives A, B, and C all have essentially the same potential for adverse impacts from vectors as the present site operations. All would accommodate the same type of solid waste which would be disposed in the same manner and be subject to the same climate. The working face would be the same size so that harborage for vectors, other than mosquitos, would be approximately equal in these alternatives. Essentially the same kind of fencing would be used to enclose the site and to prevent access by domestic and wild animals. A major difference would be the acreage of ponded areas or marshlands which could attract mosquitos. The extent of these areas, which would vary in each alternative, has yet to be determined although Alternative B would perhaps have a greater potential for adverse impacts due to the on-site restored wetlands mitigation. The normal mosquito problem would also be extended and increased by a return to tidal flow, as proposed in

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Alternative B. Alternative D would probably have somewhat less of an adverse impact since less organic wastes would be landfilled while any landfill associated with this alternative would receive proportionately more inert, inorganic wastes.

The dredged materials area in Alternative A would add to the potential for attracting and breeding mosquitos. The extent of this impact would depend on several factors including the size of the area, the length of time the material remains in place, and the number of years the Acme property is used for spreading this material. Dredged materials have an approximate 85 percent water composition. As this material dries from the top, cracks form. These cracks, which tend to be very wide due to the consistency of the dredged soil, provide access to moist areas where mosquitoes breed beneath the dry surface.³⁵

In Alternative D, if a processing center did not adequately store, process, and clean used food containers, an additional vector impact could occur there as well as at landfill. Vectors that could be particularly drawn to a processing center include rodents, flies, mosquitos, domestic animals and, depending on the location of the center, wild animals such as raccoons. The degree to which a waste-to-energy facility would attract vectors would depend on the storage facilities. Such a facility could also have a significant impact, particularly if wastes are stored routinely before being burned or if frequent repairs necessitate unscheduled waste storage.

As a continuation of landfill operations, Alternatives A, B, and C could be expected to attract gulls to the area. Alternatives A and B would comply with FAA requirements for a 10,000-foot distance between turbojet airport runways and solid waste disposal facilities.³⁶ Alternative C, however, is within 10,000 feet of the end of the Buchanan Field runway. In this respect, Alternative C appears to have a greater potential for adverse impacts than Alternatives A and B. It is unknown at this time what potential impact Alternative D would have in respect to seagulls.

Mitigations

Mitigations for Alternatives A, B, and C should consist of the same practices Acme now uses to prevent vectors - namely, compacting wastes and minimizing the availability of food and harborage by applying a daily cover of 6 inches of soil. Daily cover means that solid wastes are not exposed for longer than 24 hours. These practices are required by the operating permits for the landfill.

In addition, for Alternative D, storage bins at a processing center should have tight covers that can be locked or latched to prevent animals from

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H. PUBLIC HEALTH AND SAFETY (Continued)

foraging. For a waste-to-energy conversion facility, wastes should be stored so that they are inaccessible to vectors and the storage period should be minimal.

For Alternatives A, B, C, and D, additional mitigations, if necessary, should consist of trapping and screening, using attractants, repellants, insecticides, rodenticides, and formulations such as solid and wet baits, fogs, mists, and residual sprays. Use of any chemicals for vector control should be highly restricted and selective to prevent any secondary impacts of application.

To reduce breeding areas for mosquitos in disposal areas, Acme should provide drainage wherever feasible in accordance with RWQCB regulations and waste discharge requirements. For Alternative B, restoration of the mitigation area to tidal action and excavation of channels to drain low spots would change the species complex, extend the appearance of mosquitos through the season and increase the overall population. The adoption and implementation of a good management plan would offset this and prevent mosquito appearance.

The potential for mosquito-breeding in the dredged materials drying area in Alternative A should be mitigated by spraying to control this problem when it occurs or by site engineering so that water within the drying area can drain from the site.³⁷ Acme reports that the site will be canted so that surface water will drain over a weir. To further speed the drying process, Acme plans to agitate or disk the dredged material.³⁸ This will close the cracks in the dredged material which would otherwise provide breeding areas for mosquitos.

Further investigation is needed to determine what degree of bird hazard at Buchanan Field would be caused by Alternatives A, B, and C. Issues that should be addressed jointly by Acme and officials of Buchanan Field include:³⁹

- establishing the flight patterns of the gulls to determine if the gulls that roost on the runway at Buchanan Field use Acme as a source of food.
- comparing the birds at the airport with birds elsewhere in areas surrounding the airport to determine if the birds are using another area as a base. All areas in the vicinity of

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the airport, as well as any airport features capable of attracting birds, should be identified, including: crop land; water; vegetation; open areas such as fields, and golf courses; animal feeding operations; and solid waste handling at the airport.

- determining the characteristics of bird populations at the airport including: whether the Acme operation is capable of supporting the number of birds found at Buchanan, whether the appearance of the gulls at the airport is related to seasonal patterns such as migration, and if the runway roosting pattern is related to inclement weather conditions when the birds are seeking shelter.

4. Site Security

Setting

A combination of barbed wire and cyclone fencing with locked gates is being used to restrict access to the existing Acme landfill operation. This system is intended to keep humans as well as domestic and wild animals from accidental contact with the waste disposal area. A 4-foot high, 4-strand barbed wire fence encloses the entire property. Additional precautions are provided around the 20-acre Class I site by a 6-foot high cyclone fence topped with barbed wire. A 6-foot high cyclone fence with wood slatting is also provided at the property perimeter in the area of the Vine Hill neighborhood.⁴⁰

Access to the current disposal operations is controlled at the main entry gate. Between 7 am and 5 pm, when the site is open to the public, at least one Acme employee is stationed at this gate to monitor incoming loads. All gates are closed and locked at the close of each working day. After hours a Burns guard is posted at the site to provide security and to allow member collection firms access to the site. The entrance gate area is lighted.⁴¹

The Contra Costa County Sheriff has jurisdiction in the area. Little demand is placed on this service.⁴²

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Impacts

Alternatives A, B, and C would have virtually no additional impact on site security as the property is already enclosed by fencing. These alternatives would not require any extra routine surveillance or special measures by the County Sheriff. Whatever landfill is required by Alternative D would require the same fencing and surveillance as currently provided.

Alternative D would require additional security precautions both at a processing center and waste-to-energy facility because of the increased potential for vandalism at both operations and the added requirement to keep humans and animals from accidental contact with wastes and heavy equipment at the waste-to-energy facility.

Mitigations

For Alternatives A, B, and C, existing site security should be maintained and extended, if necessary, by the use of guards and isolation of the site with security fencing. Where additional security is required, a 6-foot high cyclone fence with barbed wire should be installed.

In addition, for Alternative D, to prevent theft of recyclable materials with market value, a 6-foot high cyclone fence with barbed wire and locking gates should be used to enclose the processing center. Collection bins should be stored within a locked building. Site lighting should be installed so that the area is visible at all times. Occasional or routine inspection by the Sheriff, particularly if publicized in the media, would help discourage vandalism. Similar security precautions should be adopted at the waste-to-energy facility to prevent vandalism as well as accidental human or domestic animal contact with wastes and heavy equipment.

5. Personnel Safety⁴³

Setting

Acme reports that its employees are already experienced in solid waste handling when they are hired. Subsequently, periodic refresher training programs are conducted. These programs include accident prevention, safety, first aid, and instruction in the use of new equipment and procedures. Personnel safety measures must comply with conditions contained in the Department of Health Services Interim Status Document.⁴⁴

Site employees are provided with such safety equipment as hard hats, goggles, dust masks, coveralls, and gloves. Machinery is equipped with

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back-up lights. First aid supplies and equipment are located at the entrance gate and landfill office.

Telephones are available at the entrance gate and landfill offices. Phone numbers to use for outside sources in the event of an emergency are readily available and a list of equipment operators and officers of the company is also provided.

Impacts

If Acme continues to provide safety equipment and to conform to OSHA and other federal and state safety standards, no adverse impacts on employee safety would be expected to occur with Alternatives A, B, and C on the basis of Acme's current personnel safety practices.

Alternative D would have potential safety hazards resulting from a processing facility and waste-to-energy project. Materials received at a waste processing center would probably be limited to relatively harmless recyclables, although potential hazards would be present to employees in the form of ragged can edges and broken glass. Other hazards would depend on the design and operational practices of each facility.

Mitigations

In Alternative D, mitigations should include provision of employee training, and safety clothing and equipment appropriate to the processing center and waste-to-energy facility. Such training and equipment should be provided by the owner/operator of each facility and conform to applicable federal and state employee safety standards and regulations.

6. Potential for Hazards From Wastes

Setting

As a Class II-1 landfill, Acme is permitted to accept certain hazardous/Group 1 wastes, as well as Groups 2 and 3 wastes. Based on the 1982 estimated daily tonnage of 1500 tons of waste accepted at the site, only 50 tons, about 4 percent, consist of hazardous/Group 1 waste. The major volume, 1450 tons, consists of Groups 2 and 3 wastes which includes 180 tons of dewatered sewage sludge from Central Contra Costa Sanitary District's treatment plant. Treated sewage sludge is considered to be a Group 2 waste by the San Francisco Regional Water Quality Control Board. Hazardous/Group 1 wastes disposed of at Acme are limited to wastes specifically permitted by the RWQCB (Table 7A). Most of these wastes are chemical and refinery wastes generated in Contra Costa County.⁴⁵ A discussion of these wastes is provided later in this section in Hazardous/Group 1 Wastes.

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Landfill disposal of hazardous waste is regulated on the federal level by the EPA. In California, disposal of hazardous/Group 1 waste is directly regulated by the State Department of Health Services and the RWQCB. The DOHS is the permitting agency for Class I sites which accept hazardous/Group 1 waste. The RWQCB issues Waste Discharge Requirements Orders which designate the Group 1 wastes that may be discharged or disposed of on a specific site. For further discussion of the relationship between federal and state regulation of hazardous wastes, see I. Introduction, D. Regulatory Permit Requirements and Status.

Site Areas Permitted - Under conditions of the DOHS Interim Status Document CAD 041835695 issued October 23, 1981, hazardous waste materials are disposed only in the 125-acre Class II-1 site on Acme's property. The Document expressly prohibits hazardous wastes to be disposed of on any portion of the facility which was not actually and lawfully used for the disposal of hazardous wastes as of August 6, 1980, and which is situated within 2,000 feet of residences, a school for persons under 21 years of age, a hospital, a day care center for children, or any permanently occupied human habitation other than those used for industrial purposes.

This prohibition specifically applies, but is not necessarily limited, to the 22-acre area, the inactive 20-acre Class I hazardous waste ponds, and the portions of the 200-acre area (Alternative A) that are within 2,000 feet of any of these land uses.⁴⁶ (None of the proposed 200-acre area is within 2,000 feet of any of these uses.) The 2,000-foot restriction complies with the provisions of Assembly Bill 2370, as amended in 1982, which is described in Chapter I. Introduction, E. Policy Context.

The DOHS has prohibited disposal of hazardous wastes on the 22-acre site. The site was permitted for Groups 2 and 3 wastes by the State Solid Waste Management Board and the Contra Costa County Department of Health Services in December 1981. Further discussion is provided in I. Introduction, D. Regulatory Permit Requirements and Status.

Under provisions of the Regional Water Quality Control Board Waste Requirements Discharge Order 76-37, disposal of Group 1 wastes, liquid or solid is expressly prohibited on the Class I site and within 100 feet of the Concord fault.

Hazardous/Group 1 Wastes - Hazardous/Group 1 wastes disposed at the Acme 125-acre Class II-1 site are currently limited to materials specifically permitted by the RWQCB in their Waste Discharge Requirement Order 76-37 and subsequent letters of authorization (Tables 7 A and B). None of these wastes are radioactive.

Waste group and landfill classifications are designations adopted by the California State Water Resources Control Board March 2, 1972. The

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H. PUBLIC HEALTH AND SAFETY (Continued)

Table 7A

GROUP 1 WASTES DISPOSED AT ACME FILL
EXISTING 125-ACRE OPERATION

REFINERY WASTES

- a. Cat Cracker Fines (catalyst and coke wastes)
- a. Boiler Blowdown (mixture of calcium and magnesium salts)
- a. Centrifuge Waste (oily silt)
- a. Bleacher House Oily Clays (oil, lime, calcium, carbonate, and diatomaceous earth)

CHEMICAL WASTE

- a. RM-27 sludge (Aluminum hydroxide and water)
- a. ASD Filter Cake (Sodium and calcium salts, lime, sodium carbonate, sodium chloride, calcium carbonate, calcium chloride, diatomaceous earth, and some high molecular weight organic material)
- a. Perma-16 Filter Cake (Diatomaceous earth, and some high molecular weight organic material, and some solvent)
- b. Tannery Wastes
- b. Sewage Sludge
- b. Laboratory Refuse
- b. Asbestos Wastes
- b. Latex Waste
- b. Alkaline Sludge
- b. Fly Ash
- b. Kidney Machine Wastes
- b. Oily Wastes

NOTES:

- a. Group 1 waste authorized for disposal by San Francisco Bay Regional Waste Quality Control Board Waste Discharge Order 76-37 Attachment A.
- b. Authorized on a case-by-case basis by letter from the Executive Officer of the RWQCB subsequent to Waste Discharge Order 76-37.
- c. The RWQCB considers "de-watered sludge" to be a Group 2 waste.
- d. Asbestos is not considered to be a Group 1 waste by the RWQCB.

(Based on the Contra Costa County, Solid Waste Management Plan, 1982.)

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Table 7B
HAZARDOUS/GROUP 1 WASTE CATEGORIES PROPOSED FOR
DISPOSAL AT ACME LANDFILL

CATEGORY NUMBER	NAME OF WASTE CATEGORY	EXAMPLES OF TYPICAL WASTE STREAMS	SHIPPING CONTAINER TYPE & LOAD QUANTITY	PROPOSED DISPOSAL METHOD	ESTIMATED PERCENT LIQUID	PROPOSED MONTHLY QUANTITY TO BE RECEIVED, TONS	a/ EPA/DOHS/RMOCB SIGNIFICANT/ POTENTIAL HAZARDOUS CHARACTERISTICS/COMPONENTS	b/ EPA/DOHS/RMOCB SIGNIFICANT/ POTENTIAL HAZARDOUS CHARACTERISTICS/COMPONENTS
1	SPENT CATALYST FINES	FLUID CATALYTIC CRACKER (FCC) FINES SPENT CATALYST FINES	BULK, COVERED 5-10 TONS	SEPARATE TRENCH LANDFILL	0.0%	700	TRACES HEAVY METAL	
2	INDUSTRIAL SLUDGES AND FILTER CAKES - ALKALINE	CENTRIFUGE WASTES, BLEACHER HOUSE OILY CLAYS RM-17 SLUDGE, ASD FILTER CAKE, TERZO FILTER CAKE, PERMA-16 FILTER CAKE, ALKALINE SLUDGES, LINE SLUDGES, LATEX WASTE	BULK, OPEN 4-20 TONS	CO-DISPOSAL	35%	1,200	XYLENE OILY - MAY BE FLAMMABLE HIGH MOLECULAR WEIGHT ORGANICS SOLVENTS DEGREE OF ALKALINITY EPA - HEAVY METALS DOHS - NOT HAZARDOUS RMOCB - GROUP 2	
3	MUNICIPAL SEWAGE SLUDGES - ALKALINE	FILTER CAKE CENTRIFUGE CAKE	BULK, OPEN 10-15 TONS	CO-DISPOSAL	75%	7,500		
4	ASBESTOS WASTE SOLIDS	ASBESTOS WASTE	SEALED BAGS IN BULK CON- TAINER 10-20 TONS	SEPARATE TRENCH LANDFILL	0.0%	150	EPA - HAZARDOUS DOHS - HAZARDOUS RMOCB - GROUP 3	
5	ALKALINE COMPATIBLE FINE SOLIDS	FLY ASH, BAGHOUSE DUST, SAND BLASTING WASTE, SWEEPINGS FROM INDUSTRIAL PLANTS	BULK, COVERED 5-20 TONS	SEPARATE TRENCH LANDFILL	0.0%	100	HEAVY METALS	
6	SPILL CLEAN-UP MATERIALS	OIL SPILL CLEAN-UP MATERIALS, ALKALINE COMPATIBLE SPILL CLEAN-UP MATERIALS	BULK, OPEN OR COVERED 5-20 TONS	CO-DISPOSAL	50%	200	VARIABLE - DEPENDS ON SPILL MATERIALS, AMOUNT OF OIL, FLAMMABILITY	
7	MISCELLANEOUS ALKALINE COMPATIBLE SOLIDS, SLUDGES OR SLURRIES	BOILER ON-OFF, OILY WASTES, API SEPARATOR BOTTOMS, COOLING TOWER SLUDGE, HEAT EXCHANG- ER BUNDLE CLEANING SLUDGE, TANNERY SCRAPS AND ALKALINE SLUDGES, BAGS WITH MEK, LABO- RATORY REFUSE	BULK, TANK 5-10 TONS	CO-DISPOSAL	25% to 75%	200	CHROMIUM MEK LAB PAKS (SOLVENTS, ACIDS ALKALINES)	

Source: Based on Harding Lawson
Associates, Management Plan for
Group 1 Wastes, Acme FILL Corp.
February 26, 1982, Table 11.

Notes a/ and b/ on following page

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H. PUBLIC HEALTH AND SAFETY (Continued)

FOOTNOTES TO TABLE 7B

a/
Total monthly quantity of 10,050 hazardous/Group 1 wastes differs from monthly quantity of 1500 tons (50 tons-per-day month) inferred throughout this EIR/EIS and in the 1982 Contra Costa County Solid Waste Management Plan which was used as a basis for estimating Acme's daily tonnage in this EIR/EIS. Acme's proposed Total Monthly Quantity of 10,050 tons hazardous/Group 1 wastes includes sewage sludge which is considered separately from hazardous/Group 1 waste throughout the EIR/EIS and Solid Waste Management Plan. (Regional Water Quality Control Board considers dewatered sewage sludge to be a Group 2 waste) Minus the daily average of 180 tons of sewage sludge, the remaining daily average of 155 tons hazardous/Group 1 wastes being proposed by Acme in the Management Plan for Group 1 wastes is to develop parameters for hazardous/Group 1 wastes that could be handled without creating leachate. The increased amount of hazardous/Group 1 wastes specified in the Waste Management Plan would allow for month-to-month variations of waste streams that are received at regular intervals and to allow for future increases of compatible waste streams. (Telephone conversation, Dan Balbiani; Harding Lawson Associates, February 9, 1983.)

b/
Significant Potential Hazardous Characteristics/Components are concerns of the Environmental Protection Agency (EPA) and the California Department of Health Services (DOHS). Unless otherwise indicated, all wastes are considered by the Regional Water Quality Control Board (RWQCB) to be Group 1 waste.

Whether specific wastes proposed by Acme would be considered hazardous by the EPA and DOHS would depend on the results of the EP Toxicity Tests (Extraction Procedure) and CAM (California Assessment Manual), respectively.

Under 40 CFR 122.25, Acme is required to submit a chemical and physical analysis of the hazardous wastes to be handled at the facility as part of the RCRA Part B Permit Application which is due to be submitted to EPA for initial completeness check in the permit review process 1 August 1983. At that time, EPA should determine, on the results of analysis submitted, whether the hazardous waste components identified in Part A of the Permit Application are consistent with components identified in Part B. Quantities of identified hazardous materials should also be identified.

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intent of these classifications is to provide protection to useable ground and surface waters, public health, and wildlife resources.⁴⁷

Group 1 wastes consist of or contain toxic substances which could significantly impair the quality of useable waters. These wastes are usually only permitted for disposal in a Class I or II-1 disposal site. Class II-1 landfills, such as Acme, are sites which are situated above useable ground water where natural geologic conditions are capable of preventing hydraulic continuity between liquids or gases and useable water, or the disposal site has been modified to provide this capability.

For current work management purposes in California, the determination of whether a waste is hazardous depends on different definitions and testing procedures adopted by the DOHS and U. S. Environmental Protection Agency. As broadly defined by the DOHS, hazardous wastes are:⁴⁸

"a waste, or combination of wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may either:

"(a) Cause, or significantly contribute to an increase in mortality or an increase in certain irreversible, or incapacitating reversible illness.

"(b) Pose a substantial present or potential hazard to human health or to the environment when improperly treated, stored, transported, or disposed of, or otherwise managed."

Testing procedures used by the DOHS to determine whether a waste is hazardous are based on California Assessment Manual (CAM).

EPA, however, considers a waste to be hazardous..."if it exhibits any of the characteristics: ignitability, corrosivity, reactivity, and EP Toxicity (Toxicity Extraction Procedure Tests). These are broad characteristics which are further defined by various standards, degrees, and other testing parameters. (40 CFR 261 Subpart C)

Restrictions to Landfilled Wastes - Regulations to restrict the land disposal of wastes which pose great risks to public health and the environment were developed by the DOHS in response to Executive Order B

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H. PUBLIC HEALTH AND SAFETY (Continued)

8881 issued by Governor Brown September 13, 1982. The regulations, adopted on December 23, 1982 and effective 30 days later, establish a new Article 15 to Chapter 30 of Title 22 of the California Administrative Code. The following hazardous wastes are subject to restrictions specified in Article 15:

(a) Liquid hazardous wastes containing free cyanides at concentrations greater than or equal to 1000 mg/l.

(b) Liquid hazardous wastes containing the following dissolved metals (or elements) or compounds of these metals (or elements) at concentrations greater than or equal to those specified below:

Arsenic and/or compounds (as As)	500 mg/l
Cadmium and/or compounds (as Cd)	100 mg/l
Chromium (VI) and/or compounds (as Cr + VI)	500 mg/l
Lead and/or compounds (as Pb)	500 mg/l
Mercury and/or compounds (as Hg)	20 mg/l
Nickel and/or compounds (as Ni)	134 mg/l
Selenium and/or compounds (as Se)	100 mg/l
Thallium and/or compounds (as Th)	130 mg/l

(c) Liquid hazardous wastes having a pH less than or equal to two (2.0).

(d) Liquid hazardous wastes containing polychlorinated biphenyls at concentrations greater than or equal to 50 mg/l.

(e) Hazardous wastes containing halogenated organic compounds in total concentration greater than or equal to 1000 mg/kg.

The regulations establish the following phase-out schedule:⁴⁹

June 1, 1983	Liquid wastes and free liquids associated with solids or sludges containing free cyanides at concentrations above 1000 mg/l;
January 1, 1984	Liquid toxic metal wastes, acid wastes, and liquid wastes containing PCBs at concentrations above 50 mg/l;
January 1, 1985	Liquid wastes containing halogenated organic compounds in total concentrations above 1000 mg/kg;

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July 1, 1985 Organic sludges and solids containing halogenated organic compounds in total concentrations above 1000 mg/kg.

If the DOHS determines that processes will not be available to recycle or substantially treat all of the restricted hazardous wastes in a particular category, the restriction date for that category will be revised so that alternative capacity is available before a regulation becomes effective. Categorical exemptions from this regulation include contaminated soil from cleanup of any hazardous waste site pursuant to approval by the DOHS. A variance procedure is also provided in Article 15 and Emergency Variances may be granted

Whether the restricted materials list and phase-out schedule affect Acme's disposal of hazardous wastes would depend on the concentration levels of these materials as determined by chemical analyses. Acme does not believe that the new restrictions will affect the hazardous wastes it is allowed to receive at its landfill. Since Acme does not accept wastes with PCB's, the PCB restriction would not affect Acme's disposal operations.⁵⁰

Waste Analysis - As part of a Management Plan for Group 1 wastes at Acme's Class II-1 site, the RWQCB requested Acme to provide a detailed, quantitative analysis of the site's containment ability.⁵¹ Continued acceptance of Group 1 wastes is related to Acme's plan and analysis.

The State DOHS requires Acme to obtain a detailed chemical and physical analysis of a representative sample of the hazardous waste being accepted at the site. At a minimum, this analysis is to contain all the information which must be known to treat, store, or dispose of the waste in accordance with the conditions of the Interim Status Document. Moreover, upon the effective date of the Interim Status Document (October 23, 1981) Acme is required to follow a written waste analysis plan which describes the procedures to be used to comply with the chemical and physical analysis sampling procedure. This plan is subject to approval by the California State Department of Health Services.⁵² In November 1982, Acme reported that analyses of the hazardous waste being accepted were then being obtained from the generators. The results of the analyses are to be kept at the landfill office until closure of the facility. The Waste Management Plan was also revised to include a provision that the generator repeat the analyses on an annual basis or whenever the process or operation has changed significantly. A copy of the plan is kept at the landfill office.⁵³ These measures must also be included in Acme's Part B RCRA permit application (40 CFR 122.25). Further analyses of wastes to be accepted at the proposed expansion area may be required by EPA as part of or supplementary to the RCRA Part B Permit Application and by DOHS for the Operations Plan.

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H. PUBLIC HEALTH AND SAFETY (Continued)

Manifest Procedures - Federal and state regulations alike require a thorough documentation of hazardous wastes when hauled from the point of generation to treatment, storage, or disposal (TSD) facilities.^{54,55} This monitoring system, known in the industry as the "cradle-to-grave" manifest system requires records to be kept by the generator, the hauler, and the TSD facility. For each incoming load of waste, the hauler must provide Acme with copies of the manifest. As a TSD facility, Acme must retain one copy on file for 3 years, forward another copy to the DOHS where it is to be matched by computer with the copy sent to the DOHS by the generator, and return a third copy to the generator.

EPA regulations do not require manifesting or disposal in a RCRA-permitted landfill for hazardous wastes from a generator producing less than 1,000 kg per month of hazardous wastes. California, however, requires any quantity of hazardous waste generated and disposed off-site to be manifested, although exemptions can be considered on a case-by-case basis. It is unlikely, therefore, that non-manifested wastes would appear at the Acme Landfill as part of the regular refuse.⁵⁶

Disposal Practices⁵⁷ - In a report, Management Plan for Group 1 Wastes, Acme Fill proposed two management methods for Group 1 waste to the RWQCB: co-disposal landfilling and separate trench landfilling in previously filled areas away from the working face. Both methods are being used at the current operations on the 125-acre site.

Co-Disposal - A majority of Group 1 wastes would be co-disposed with Group 2 or Group 3 waste with the area fill method of landfilling. By volume, Acme receives about 100,000 cubic yards of solid waste monthly. Of this quantity, 75 percent is residential with the balance being commercial and Group 3 waste. This method involves a certain blending of Group 1 wastes with Groups 2 and 3 wastes at the working face.

Separate Trench Landfilling - Group 1 wastes which are dry, dusty solids would be disposed of in separate trenches during rainy or windy weather. Otherwise this material can be co-disposed with Groups 2 and 3 solid wastes. Trenches are formed by excavating through soil cover into previously filled areas to depths of 5, 10, or 15 feet depending on the terrain and nature of material previously buried. Such trenches provide a capacity for one day to as long as one month. Wastes would be covered with previously excavated refuse and soil cover at the end of each day's operation. Based on the current rate of filling, a new area would be ready to adopt trench disposal in 2 to 5 months after operations began. Until that time, material could be trench-filled in the current 125-acre operation if space is available.

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The location of these separate trenches would be random so that the wastes would not be concentrated at any location within the site. In general, these separate trenches will be located adjacent to temporary access roads across the landfill, to facilitate operations by vehicles bringing the wastes to the site and the site operating equipment.

During extreme weather conditions, such as high winds, special dust control procedures would be implemented for the special Group 1 wastes, as necessary. In general, these wastes are hydrophilic in nature, that is, they have an affinity for water. Therefore, dust can be controlled effectively by wetting the surface of the mass of dust with water using the site's dust control water wagon or other available water sources.

The separate trench landfilling for these dry, dusty wastes allows the wastes to remain immobile if the landfill trench remains dry. If the trench becomes wet, some of these wastes may be expected to combine with moisture and become hydrated. The hydrated solids tend to become somewhat cemented together like a very lean concrete mixture. This reaction with moisture tends to render potentially toxic constituents significantly immobile.

A coordinate system is being established for the site. The working face with co-disposal wastes and disposal trenches would be located by coordinates and elevation. The location and dates of operation in these areas is to be recorded in the operating record.⁵⁸

Additional care is required for disposal of asbestos. Asbestos in sealed, nonreturnable containers must be handled, disposed of, and covered without opening, breaking, or rupturing the containers. Asbestos in bulk must be kept moist enough to keep fibers from becoming airborne.⁵⁹

DOHS Interim Status Document requirements also specify that hazardous waste which is to be buried shall be covered within 24 hours of deposition into a burial area with 6 inches of compacted impermeable soil. The final cover must consist of at least 3 feet of compacted impermeable soil. Sufficient measures such as diversion ditches for the control of surface water, rip-rap to prevent erosion, or any other requirements of the RWQCB to prevent ponding, erosion, or downstream sedimentation must be implemented immediately after application of final cover. In addition, all asbestos-containing wastes destined for disposal at the facility must be covered with at least 6 inches of compacted soil or nonhazardous solid waste within 24 hours after receipt at the disposal site.

When the landfill is officially closed, it will be sealed with an impervious "cap" which cannot be disturbed without permission from the agencies having authority over the closure plan(s). This control should prevent accidental contact with buried hazardous wastes.

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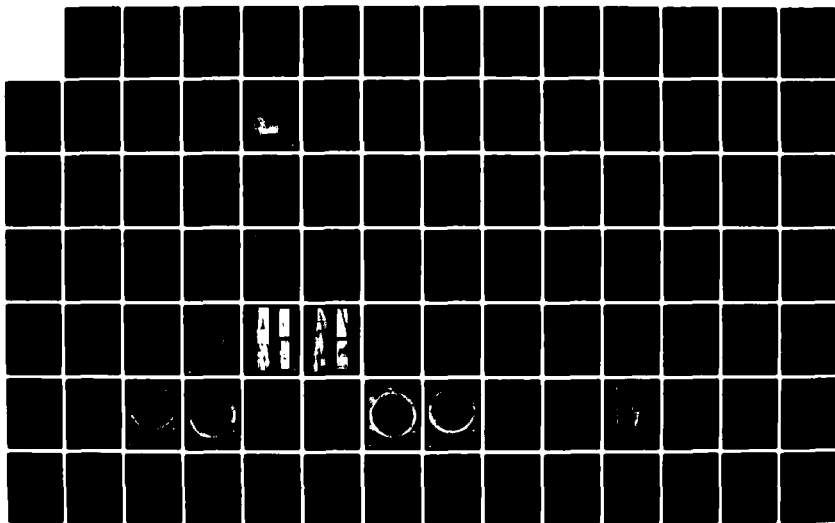
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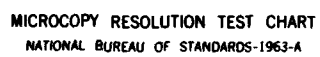
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III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
H. PUBLIC HEALTH AND SAFETY (Continued)

Spill Potential - Hazardous wastes disposed of at Acme Landfill do not have high potential for fume and liquid escape or explosion. Most of these wastes are refinery and chemical sludges produced in Contra Costa County. Powdered wastes, such as fly ash and asbestos wastes, are transported in sealed containers in enclosed vehicles.

Various governmental steps have already been taken and are currently being formulated to identify spill potential, prevent or reduce the risk of spills, and to establish viable response plans in the event of such occurrences. On the federal level, the Hazardous Materials Transportation Act of 1976 gives the Department of Transportation the authority to regulate hazardous materials that are transported except via certain pipelines. HMTA directs the Department of Transportation to classify any material it designates as hazardous, to establish handling procedures, and to set standards for testing and inspecting hazardous materials. DOT has the authority to require records, reports, and other similar information. Within the past year, the State of California, through the Highway Patrol, has required the estimated 2,500 trucks hauling hazardous wastes to obtain licenses and to undergo annual inspections. Also on the state level, the Office of Emergency Services is preparing the State of California Hazardous Material Incident Response Plan, June 1982 draft, which is currently being reviewed before submittal to the Emergency Council in September. On the regional level, the Association of Bay Area Governments (ABAG) has recently completed an 18-month \$112,000 study which investigated spill prevention, risk assessment, spill response capabilities and needs in the 9 Bay Area counties. The results of this effort, a 191-page document, outlines programs that local governments can implement to minimize the dangers of accidents involving hazardous materials.

In Contra Costa County, the Emergency Service Office is the agency designated to plan emergency response and coordinate appropriate local agencies to respond to spills. (More discussion in Mitigations) In June 1982, the Contra Costa County Board of Supervisors approved the formation of 3 committees to attempt to tighten the county's control of hazardous materials within the county. One task force has been directed to study ways to improve the county's regulation of the production, transportation, storage, and disposal of hazardous materials and ways to improve coordination of county health, fire, and police agencies. Another task force is to study the needs of private industry and foster cooperation between industry, governmental and community organizations. These two task forces are expected to contribute to the comprehensive study of hazardous materials in Contra Costa County which is being prepared by the Institute for Local Self-Government in Berkeley. A third committee has been directed to draw up a "Right-to-Know" ordinance for Contra Costa County. Such an ordinance would require handlers of hazardous materials to provide information on the quantity and location of toxic materials.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
H. PUBLIC HEALTH AND SAFETY (Continued)

Accident Prevention and Emergency Response - As a Class II-1 landfill which accepts about 50 tons of hazardous/Group 1 waste a day, Acme is subject to Federal and State regulations that pertain to the disposal of hazardous wastes, particularly 40 CFR 122, 40 CFR, 261, 264, and 265; California Administrative Code Title 22, Division 4, Chapter 30; Health and Safety Code Division 20 Chapters 6.5 and 6.8. Under these regulations, Acme must provide information to EPA and DOHS describing operational procedures and plans to 1) prevent fires, explosions and sudden releases (spills) and 2) emergency measures and equipment that will be used to control spills for clean-up operations.

Acme landfill is preparing two documents which will provide accident prevention and safety measures as well as emergency response measures. One document is the RCRA Part B Permit Application. The other is the Operations Plan prepared for the DOHS. A Contingency Plan dated 1982 has been prepared in accordance with requirements of the Interim Status Document issued by the DOHS.

RCRA Part B permit application is to be submitted to EPA by 1 August 1983. As required by 40 CFR 122.25, this detailed narrative must include, among other information: a description of the security procedures and equipment required by 264.14; a justification of any request for a waiver(s) of the preparedness and prevention requirements of Part 264; a copy of the contingency plan required by 264 Subpart D; a description of procedures, structures or equipment used at the facility to prevent hazards, runoff, contamination of water supplies, to mitigate effects of equipment failure and power outages and to prevent undue exposure of personnel to hazardous waste; description of the precautions to prevent accidental ignition or reaction of ignitable, reactive, or incompatible wastes as required to demonstrate compliance with 264.17; and an outline of both the introductory and continuing training program by owners and operators to prepare or maintain the hazardous waste management facility in compliance with 264.16.

The Operations Plan, which is due to be submitted to the DOHS in mid-April 1983 under Section 66376 of Title 22, must provide, among other information, a general description of operational procedures that will protect public health and safety, domestic livestock and wildlife; a description of procedures for deployment of qualified personnel for supervision of hauling and disposal of hazardous waste; and a Contingency Plan to describe actions, equipment, and manpower to be used to correct an accident as well as emergency evacuation procedures and agency notification.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
H. PUBLIC HEALTH AND SAFETY (Continued)

Information provided by Acme in the RCRA Part B and Operations Plan submitted to EPA and DOHS, respectively, will be used by these agencies in their permit review process and in placing conditions on permits granted.

Specific procedures that have been adopted and special equipment being used to comply with regulations for a hazardous waste disposal facility include:

- 1) In addition to site security measures described in Section 4, Site Security, Acme has posted warning signs in English and Spanish at the entrance gate. Additional signs have been ordered and will be placed around the perimeter of the disposal area.⁶⁰
- 2) In addition to personnel safety measures described in 5. Personnel Safety, site personnel who work with hazardous waste are issued respirators and instructed in their use and maintenance. Respirators are to be worn by personnel during unloading and covering operations involving dusty wastes. Protective clothing to be used during decontamination and spill clean-up operations (boots, gloves, helmets, face plates, and chemical-resistant aprons) is available at the site. Spill control or clean-up equipment normally available on site consists of a 150-gallon fire truck, water trucks, dozers, scrapers, and other earthmoving equipment. This equipment is inspected and maintained regularly.⁶¹ An eye wash and safety shower are located on the site.
- 3) Training jobs have been updated to include job titles and their related descriptions and training requirements for the personnel presently involved in hazardous waste management.⁶²

Contingency Plan - A Contingency Plan for the Acme Landfill dated December 1982 has been prepared and submitted to DOHS as required by the Interim Status Document. A Contingency Plan is also required by 40 CFR 122.25 and by the California Administrative Code Title 22, Chapter 30, Article 4. A copy of the Contingency Plan is maintained at the landfill at all times.

A Contingency Plan is intended to provide a course of action to control and clean-up sudden releases of hazardous waste (spills) to the land, air, or water, or to control a life-threatening disaster such as a fire or explosion. Acme considers an explosion at the landfill to be highly unlikely due to the nonreactive nature of the wastes received. The Acme Contingency Plan therefore focuses on fires which threaten human life or the environment and spills.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
H. PUBLIC HEALTH AND SAFETY (Continued)

The Acme Contingency Plan designates an on-site Emergency Coordinator and specifies: procedures to be used and information to be supplied in notifying local, state, and federal emergency response agencies; emergency procedures including assessment, operation shut-down, and facility evacuation; specific response procedures for fire, spills, personal injury; procedures for preparing post incident reports; and safety equipment available at the site.

Financial Requirements

Under regulations promulgated by the EPA (40 CFR 264 Subpart H) owners and operators of hazardous waste disposal sites must prepare a written estimate of Closure and Post Closure Costs (40 CFR 264.142 and 264.144). These costs must be adjusted annually.

In addition, owners and operators of hazardous waste disposal facilities must establish financial assurance for closure and post-closure care (40 CFR 264.143 and 264.145). Separate assurances for closure and post closure can be selected from options: trust fund, surety bond guaranteeing payment into a trust fund, surety bond guaranteeing performance, letter of credit, insurance, financial test and corporate guarantee, use of multiple financial mechanisms, or use of a financial mechanism for multiple facilities.

Acme is required to submit cost estimates for closure and post closure as well as financial assurances for each phase as part of the RCBA Part B permit application to be submitted to the EPA.

Impacts

Public health and safety risks associated with landfilling Groups 2 and 3 waste resulting from Alternatives A, B, and C are expected to be essentially the same as the current operation.

Hazardous potential associated with landfill operations which dispose of hazardous/Group 1 wastes resulting from Alternatives A, B, and C are expected to be essentially the same as the current operations or possibly reduced as a result of increased federal, state, and county restrictions. In the permit review process, EPA and DOHS may require more extensive analysis of hazardous waste to be accepted at the site than is now available. Based on further information, restrictions may be placed by these agencies on the quantity or type of a hazardous waste or concentration levels of hazardous constituents that can be accepted. The real effect of Executive Order B 8881 and the regulations promulgated to implement it will not be known until consistent analyses of specific hazardous wastes are available and until it is determined that acceptable alternative technology is available prior to the scheduled phase-out date

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
H. PUBLIC HEALTH AND SAFETY (Continued)

for specific concentration levels of restricted materials. Waste Discharge Requirements Orders issued by the RWQCB would restrict Group 1 wastes to those specifically listed at that time for a specific site area. These discharge requirements would be developed on the basis of site-specific hydrogeology.

Any portion of Alternative C that falls within the 2,000-foot restricted area imposed by AB 2370 is assumed to be prohibited from receiving hazardous wastes for disposal under terms in the Interim Status Document issued by the DOHS October 23, 1981.

For Alternative D, hazardous potential could be expected to be similar to that of the existing operation with the additional possible impact resulting from combustion residue disposal. No information indicating the exact composition of the residue which would result from the waste-to-energy facility is available; therefore, the toxic potential of the combustion residue cannot presently be determined.⁶³

Mitigations

The regulatory agencies having control over landfill operations will require future operating controls similar to those now in effect. Acme should conduct its operation in accordance with all applicable Federal, State, and local regulations and permit conditions for Alternatives A, B, and C. In addition, waste discharge requirements issued by the RWQCB should be strictly implemented.

For Alternative D, safety procedures should be adopted at the processing facility and waste-to-energy facility to assure employee safety and to reduce the potential for injury from materials, such as cans and glass, to reduce employee contact with wastes, and to reduce the potential hazard of machinery used in both facilities.

Further testing should be conducted by Central Contra Costa County Sanitary District or other sponsor of a central County waste-to-energy facility to determine the composition of combustion residue from the incineration process in order to formulate appropriate disposal criteria for this residue.

In the case of an accidental spill of any hazardous waste en route to the landfill, emergency response can be provided by designated federal, state, county, and city agencies in addition to pre-contracted private companies. Table 8 lists government agencies and their specific jurisdictions and responsibilities.

III ENVIRONMENTAL SETTING, IMPACTS AND RECOMMENDED MITIGATIONS
H. PUBLIC HEALTH AND SAFETY (Continued)

Table 8

EMERGENCY SPILL RESPONSE POTENTIAL

AGENCY	JURISDICTION/RESPONSIBILITY
United States Coast Guard	Jurisdiction for San Francisco Bay, its tributaries, and the Sacramento-San Joaquin Delta
Environmental Protection Agency	Jursidiction for inland spills
State Department of Fish & Game	Jursidiction for oil spills - 10 gallons and less
Regional Water Quality Control Board	Oil spills in excess of 10 barrels
California Department of Transportation (Caltrans)	Responds to spills on State highways and is responsible for actual spill clean-up. Clean-up pre-contracted to private industry.
California Highway Patrol, Local Police, County Sheriff	Responsibility for safe traffic movement around spill areas. (AB 2019 designates authority for the management of the scene of an on-highway hazaardous substance spill to the appropriate law enforcement agency having primary traffic investigative authority on the roadway where spill occurs.)
California State Office of Emergency Services	Maintains hotline for receiving reports on spill incidents, recording pertinent information, and notifying appropriate response agencies.
Contra Costa County Emergency Services	Responsible for coordinating local government response to spills or other hazardous material emergencies.
Contra Costa County Department of Health Services	Environmental Health Division capable of 24-hour response to hazardous materials spill. Provides aid in identifying the material and assessing the health effects of spilled materials and offering assistance in handling and disposing of spilled material.
Contra Costa County Public Works Department	May be designated to clean spills not on highway.
CHENTREC	24-hour communications center in Washington, D. C. Maintains toll-free phone (800-424-9300). Maintains emergency information on more than 1,000 hazardous materials indexed by chemical and ocmon names. Provides emergency action information and shipper's contact for chemical experts.

Source: Contra Costa County Solid Waste Management Plan (1982), pp. II-9 to II-11.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
H. PUBLIC HEALTH AND SAFETY (Continued)

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III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
H. PUBLIC HEALTH AND SAFETY (Continued)

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H. PUBLIC HEALTH AND SAFETY (Continued)

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H. PUBLIC HEALTH AND SAFETY (Continued)

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H. PUBLIC HEALTH AND SAFETY (Continued)

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III ENVIRONMENTAL SETTING, IMPACTS AND RECOMMENDED MITIGATIONS

I. RESOURCE CONSERVATION AND RECOVERY

1. Material Recovery

Setting

a. Current Efforts

In general, six types of material recycling are currently being conducted in Acme's service area: publicly and semi-publicly sponsored multi-material centers, private industry buy-back operations, continuing or occasional volunteer efforts, landfill salvage, collection company drop box service, and an experimental curbside recycling program.

Of the multi-material centers, the Contra Costa Community Recycling Center (CCCRC) is envisioned by the County as the forerunner of a larger processing center.¹ The CCCRC, which opened in April 1981, is located just outside Martinez in Pacheco near Central Contra Costa Sanitary District's wastewater treatment plant. As of January 1983, the Center was receiving an approximate total of 25 tons a month of mixed materials including aluminum, tin cans, glass, newspaper, cardboard, scrap metal, wine bottles, other recyclable bottles, and motor oil. Contra Costa County, through the Department of Public Works, provides the land. A \$74,150.00 State Solid Waste Management Board (SSWMB) grant in 1981 for paving and fencing was stipulated on the basis that the center would operate at least 5 years. The City of Martinez also contributed \$2,000 to launch the operation and has allocated an additional \$3,000. In addition, the Contra Costa County Board of Supervisors allocated nearly \$9,000 to pay for grant administration, utilities, and miscellaneous construction. Further funding has also been provided by the County for operational subsidies: \$4,050 Fiscal Year 1981-82 and \$3,600 for Fiscal Year 1982-3.³ Storage bins are provided by private industry and the center is operated by volunteers.

Another multi-material drop-off donation center is Many Hands, Inc. located between Antioch and Pittsburg. The center accepts glass, cardboard, newspaper, aluminum, and bi-metal cans. Approximately 50 tons per month of materials are received as donations at the site or by truck which collects regularly from businesses and governmental agencies (currently outside the Acme collection area) in Antioch, Pittsburg, and Brentwood.⁴ Many Hands, Inc. functions primarily as a rehabilitation center for the mentally disabled. Short-Doyle mental health funds are used to pay counselors' salaries and operating expenses. Workers' salaries are derived from revenues from sale of materials to processors. A State Solid Waste Management grant for \$64,513 was used to purchase some capital assets in 1979.⁵

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
I. RESOURCE CONSERVATION AND RECOVERY (Continued)

Unlike the CCCRC and Many Hands, Inc. which operate as donation centers, Valley Disposal is a buy-back operation. Opened in January 1982 on Kazebeer Lane in Walnut Creek, the center is operated by the Mt. Diablo Council Boy Scout troop with proceeds going to the scouts. Land is provided by the City of Walnut Creek and Valley Disposal, the franchised collection company in the area, provided equipment and site improvements. Glass, plastic beverage bottles, aluminum cans, foil, newspaper, and motor oil are purchased at the center.⁶ It is too early to determine volume estimates from this center.

A second major type of recycling is the buy-back approach provided by private industry. These operations include secondary fiber and scrap metal dealers, as well as aluminum, glass, and motor oil buy-back programs. Most of these operations are limited to one kind of material (Reynolds Aluminum) or one type of item such as beverage containers (Coors). Recently, however, Mt. Diablo Paper Stock has evolved from a limited material center which bought various paper stocks to a multi-material center that now also purchases bottles and oil. In addition, the center accepts, but does not purchase, scrap metal and bulky appliances.⁷

A third type of recycling effort is generally volunteer-based and operates on a continuing or occasional basis. Such efforts are conducted by civic, religious, or cultural groups. Collected material is usually sold and proceeds benefit various charities or fund-raising efforts.

Landfill salvage is conducted by Acme at the site. Acme estimates that approximately 50 percent of the cardboard and corrugated and 80 percent of the large metal appliances are culled from the waste stream as collection trucks and private vehicles dispose their contents at the landfill.⁸

Drop box newspaper pick-up service is provided by the Concord and Pleasant Hill-Bayshore Disposal Companies as part of their service. This material is baled and sold directly to processors without having to be hauled to the Acme Landfill.

August 1982, a pilot project curbside recycling program was initiated in Martinez by Martinez Sanitary Service, a private collection company. Launched by MSS as a new venture, Contra Costa Resource Recovery Services began with free twice monthly collection⁹ service to 650 single-family homes south of Highway 4. Subsequently, in December, the service more than doubled by adding nearly 800 homes in southeast Martinez. Materials collected are: newspapers, cardboard, office paper, aluminum and bi-metal cans, used motor oil, car batteries, and copper and glass fixtures. The project is planned to continue for as long as two years before a final decision is reached to adopt it as a permanent program. Continuation beyond this period would depend in part on public response and favorable

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
I. RESOURCE CONSERVATION AND RECOVERY (Continued)

prices for collected materials. Markets for recyclables, which traditionally fluctuate, are currently depressed.¹⁰

Volume estimates of materials recycled through private industry and Acme landfill salvage are generally not available. This information is considered proprietary. Data is also not available regarding recycling achievements of volunteer groups. Californians Against Waste estimates that the recycling rate for aluminum cans is upwards of 30 percent on a national basis.¹¹

It is apparent that there is an interest among the general population and private industry to recycle. It is probable that the people contribute to donation/drop-off recycling efforts primarily to promote environmental and social concerns whereas buy-back efforts may stem, at least in part, from the desire to realize some financial compensation. Private industry on the other hand, faces the economic reality of fluctuating markets and the need to reconcile economic cost/benefits.

b. Planned Developments¹²

The County Solid Waste Management Plan (1982) envisions recycling and waste-to-energy programs as major components of solid waste management aimed at achieving the overall countywide goal of a 30 percent reduction of residential/commercial solid wastes going to landfills by 1990. The Plan recognizes the environmental value of recycling as a way to prolong landfill life and conserve natural resources as well as the social values of community cooperation and common concern inherent in recycling. At the same time, the Plan recognizes waste-to-energy projects as a useful way to tap the energy value of solid waste while conserving natural resources. (Methane recovery is discussed in Section K, Energy.)

For the central county, the major resource conservation recommendations of the Plan set forth in the Planning Statements are:

- Continuation of existing recycling efforts as described in the previous section, a. Current Efforts.
- Operation of an areawide recycling program by 1987. Elements of this program include the development of a central county processing center, curbside collection of recyclables, and a public information program. These elements were all recommended in 1980 Partners for Change - A Scenario for Recycling in Contra Costa County,¹³ a report funded by the SSWMB. Already a multi-material center, the CCCRC, has been established in Pacheco and is envisioned as developing into a larger processing center. Curbside programs are being introduced. The City of Concord, on

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
I. RESOURCE CONSERVATION AND RECOVERY (Continued)

February 22, 1982, adopted an ordinance which would establish a pilot program for curbside collection of recyclables in the City during 1982. In Martinez, a curbside recycling pilot project was initiated in August 1982 and expanded in December. This program, similar to other programs being operated in several Bay Area communities, enables Martinez residents to recycle paper, cans, bottles, and other salvageable materials by placing them on curbs in front of their homes.

- A study for the County Solid Waste Commission to update the Partners for Change report findings and to examine the feasibility of office paper recycling programs. A white office paper recycling pilot program has been in operation for more than a year in the County Administration Building in Martinez.
- Support for recycling and market development of items not regularly recycled such as garden wastes, plastics, and construction wastes.
- Continued support of the Many Hands, Inc. recycling center.
- Construction and operation of the Central Contra Costa Sanitary District waste-to-energy project if economically feasible and capable of operating with pollution control requirements. This project is described later in this Chapter in Section 2, Waste-to-Energy Projects.
- Co-incineration of sewage sludge and solid wastes.
- Cooperation between private industry and public agencies, and between profit and non-profit groups involved in recycling.

This EIR/EIS assumes the continuation of current recycling efforts and focuses on the impacts of the two major components of the County's resource conservation and recovery program: the non-profit, multi-material processing center and the waste-to-energy project proposed by Central Contra Costa Sanitary District.

c. Potential for Material Recovery

For material recovery purposes, it is the residential/commercial portion of the solid waste stream that contains newsprint, glass, ferrous, aluminum, corrugated, and mixed paper. These are the materials that have potential for diversion from landfill by curbside collection, buy-back programs, donation or drop-off centers, and satellite programs.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
I. RESOURCE CONSERVATION AND RECOVERY (Continued)

Of the total 1344 tons disposed daily at Acme landfill in 1980, approximately 777 tons a day (57.8 percent) consisted of residential/commercial solid waste from Acme's service area in Contra Costa County. (This amount does not include 38 TPD residential/commercial solid waste from Benicia in Solano County.)¹⁴ Exhibit III-11 shows the percent by weight of these recyclable materials as estimated for Contra Costa County in 1981.¹⁵

The 1980 Partners for Change study showed a potential landfill diversion rate of 51.5 tons per day of recyclables with a 50 percent participation rate.¹⁶ According to the recycling simulation shown in the County Solid Waste Management Plan (1982) a central county regional recycling center could recover and divert from Acme 77 tons per day of residential/commercial solid wastes generated in central Contra Costa County (Benicia excluded). Including the entire recycling effort that could occur by adding Rodeo to comprise all of Acme's Contra Costa County service area, the waste quantities recovered and diverted from landfill would be 78 tons per day:¹⁷

77	TPD	Central Costa County
1	TPD	Rodeo (diverted to West Contra Costa Recycling Center)
78	TPD	Total Acme Contra Costa County Service Area (Benicia excluded)

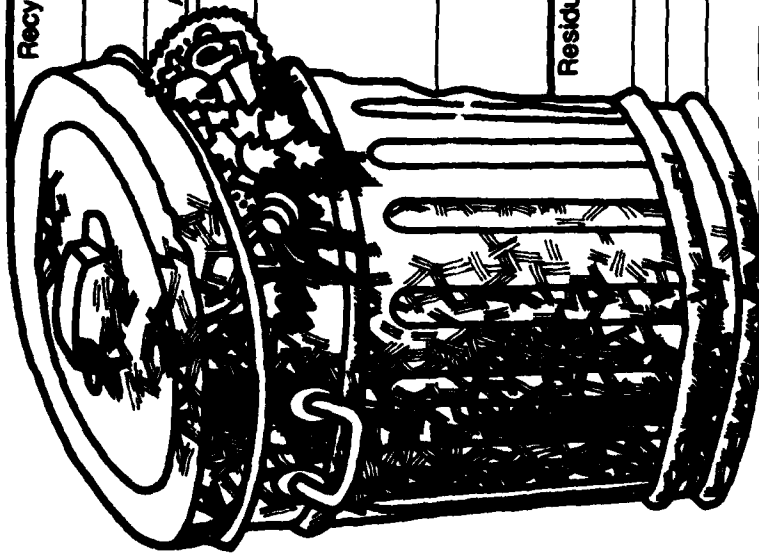
Antioch, which was served by Acme until recently, diverts an additional 1 TPD to Many Hands, Inc. The combined percentage reduction of these tonnages is approximately 10 percent of the residential/commercial wastes of the 777 TPD 1980 wastes received at Acme (Benicia excluded).

The daily tonnage rate used in the simulation study is based on a hypothetical recycling program in the franchised collection areas within Acme's services area. A reduction of the waste generation factor of 20 percent was used for areas, such as Concord and Pleasant Hill, served by a comprehensive recycling program. A reduction of 10 percent was used for areas like Walnut Creek not served by a curbside pick-up but located close enough to bring recyclables to a recycling center, and a reduction rate of 5 percent was used for areas like Clayton and San Ramon, which are served by a satellite station.¹⁸

The impact discussion that follows and the related economic analysis in Section K, Economics, are based on the Partners for Change 50 TPD Central County processing center and the ABAG 77 TPD facility shown in the County Solid Waste Management Plan (1982).

Impacts

Implementing Alternatives A, B, and C would continue existing solid waste disposal methods that emphasize landfills. By providing space for



Recyclable:		PERCENT BY WEIGHT
Aluminum		0.7%
Glass		8.1
Ferrous		5.1
Corrugated Cardboard		6.5
Mixed Paper		32.5
Garden Wastes		13.9
Residual Wastes:		
Miscellaneous Organics		12.8
Rubber, Wood & Other Non-Ferrous		3.7
Miscellaneous Inert Wastes		3.9
Plastic		4.0

Source: Communities Service Department, City of El Cerrito,
 Planning Report: West Contra Costa County Regional
 Recycling Program, November, 1981.

Drawing courtesy of Oakland Scavenger Company.

TORREY & TORREY INC.
 environmental/urban
 planning and design

Estimated Residential/Commercial Waste Composition

Contra Costa County 1980

EXHIBIT
 III-11

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
I. RESOURCE CONSERVATION AND RECOVERY (Continued)

continued landfill operations, these alternatives would reduce somewhat the pressure for recycling activities. With these alternatives, however, it is expected that existing public, semi-public, and private recycling programs would continue to operate, influenced more by market conditions than landfill availability. Landfill capacity would still be required to accommodate nonrecyclables on a continual basis and recyclable materials when markets are depressed.

With the current outlook for continued depression of market prices, it is unlikely that increasing recycling activity is feasible in the near future. In the past year, marketing problems have forced four State Solid Waste Management Board-funded projects to close and prevented two other centers from opening.¹⁹

By itself, the material recovery portion of Alternative D would increase Acme's total site life by one year. Without material recovery, the Solid Waste Management Plan (1982) projects that Acme would be 100 percent full by 1994; with material recovery, the landfill would gain one more year to 1995 before completion.²⁰ This expectancy is based on a 79 TPD material recovery or diversion from landfill and the Plan's Scenario 6 (maximum use of the Acme site. See Section I. Introduction, B. 4. Life Expectancy of Acme Landfill for further explanation).

The ultimate impact of the material recovery and recycling component of Alternative D depends on many factors, including dependable markets and high participation. (Dependable markets are discussed further in Section K, Economics, Costs of Other Methods of Disposal.) High participation can be fostered by public information programs, financial incentives or disincentives, local ordinances and devising and adopting a recycling system that requires minimal time and effort for participants while assuring dependable service. Specifically, these elements include:

Public Information Program

- . A continuous, on-going public information program is needed to create and, as importantly, maintain, an awareness of the benefits of recycling. These benefits can include the conservation and preservation of environmental resources such as non-renewable sources of energy used to create products from virgin materials, and conservation of raw materials such as wood and metals. In addition, a labor-intensive recycling program, that is, one that does not use integrated mechanical recovery systems, can provide a source of employment for many physically or mentally disadvantaged persons. At the present time, the State Department of Rehabilitation places handicapped workers at

III
I.

ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
RESOURCE CONSERVATION AND RECOVERY (Continued)

E.C.ology. Many Hands, Inc. in Antioch/Pittsburg, functions primarily as a rehabilitation center for the mentally disabled. With a greater public awareness of such ancillary benefits of recycling, a greater public participation might be achieved.

Curbside Collection

- The Model Solid Waste Ordinance that is being developed by the Solid Waste Commission should consider the possibility of initiating curbside collection or recyclables.
- Financial incentives, such as lower collection rates for source-separated materials versus mixed garbage, or higher rates for non-separated materials could be used to encourage people to separate materials for curbside collection. Such practices would require cooperation and negotiation between the franchised collectors and the franchising entities.
- It is important to recognize that recycling requires effort, time, and space in a world where all three are becoming increasingly scarce. Traditionally, most bottles and cans must be washed, and labels and extraneous fittings removed. Newspapers must be stacked within specific dimensions and tied. Space is required to store recyclables separately, both within and outside the dwellings. The lack of apartment storage space can inhibit recycling efforts. Curbside collection methods requiring the least amount of preparation and processing are likely to encourage the greatest participation. Despite the obstacles, the curbside collection program conducted by E.C.ology in El Cerrito has obtained a 50 percent participation rate although the newspapers, aluminum, cans, and glass must be bundled separately.²² Another system currently being conducted in Islip, New York, is based on the use of one container for all collectible recyclables and another container for all other household wastes.²² Such a system offers obvious benefits in reducing the effort and time required for individuals to participate in recycling.
- Dependable, regular collections are critical for a successful recycling program. Collections of recyclables on the same day as regular collection ensure a higher participation rate than occasional, or less frequent, collections. The high participation rate of E.C.ology's curbside collection program may be due, in large part, to the weekly pick-up of recyclables on the same day of regular garbage collection. Residents are confused when collection is sporadic and forgetful when

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
I. RESOURCE CONSERVATION AND RECOVERY (Continued)

collection occurs infrequently, such as once a month, even if such collection falls on the same day of the month. Residents who take pride in their property are also reluctant to leave recyclables out for collection only to have these materials linger on the curb if collection does not occur on schedule. Stacked materials can be unsightly and create an aesthetic problem in neighborhoods.

- . Also important to the financial success of a recycling program is the guarantee that items left for curbside collection are collected by officially designated parties. An ordinance, similar to the one adopted in Berkeley in 1974, is one way to help discourage the theft of such materials.
- . Another factor that is critical to the potential impact of Alternative D is the participation and endorsement of the franchised collectors. It is generally agreed that the fastest, least costly method of collection is the pick-up of mixed solid waste. Curbside collection of source-separated materials requires either trucks, designed to accommodate several separated materials, or multiple collections with different vehicles for different materials. In either case, collectors' expenses could increase in order to provide the necessary equipment and labor.

Purchase or Buy Back Program

- . High participation in a recycling program also depends on the number of ways people can participate. While curbside collection can offer a certain degree of convenience, it must be recognized that people would be relinquishing materials that have a certain monetary value in exchange for this convenience. A processing center that would provide a purchase or buy-back program for several materials, such as newspaper, glass, wine bottles, aluminum, bi-metal cans, and motor oil, could attract individuals and groups that recycle to realize financial return.

Satellite Program

- . The potential impact of Alternative D could also be increased by including a Satellite Program such as the one conducted by E.C.ology. As currently practiced by this recycling center, materials are collected from special containers that are maintained in large condominium and apartment complexes.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
I. RESOURCE CONSERVATION AND RECOVERY (Continued)

Office Paper Collection Program

- . Another method to increase the impact of Alternative D would be to continue and expand the high-grade office paper collection pilot program. For this component, white office paper, computer print-out paper, ledger paper, and corrugated cardboard would be collected on a regular basis from county and city offices, office complexes, and special depots and brought to a processing center.

Donation Program

- . Provisions should be made for the generosity and goodwill of people and organizations who wish to preserve the environment and contribute to social goals without financial reward or collection convenience. A processing center can serve as a central collection center for this purpose. Bins should be continually available for donations of traditionally recyclable materials such as newsprint, glass, aluminum, bi-metal cans, and motor oil. In addition, special bins could also be maintained at the processing center for such groups as Goodwill and St. Vincent de Paul to provide one-stop convenience for those who wish to donate items not normally accepted for recycling including clothing, furniture, appliances, and bric-a-brac.

Mitigations

No mitigations required for Alternatives A, B, and C.

As the County Solid Waste Management Plan notes, "...concern has been raised at local and State levels that government-subsidized recycling programs may have an adverse effect on nonsubsidized private businesses. Some of the issues raised include ..., unfair competition, displacement of nonsubsidized workers with subsidized workers, and inefficient use of tax funds."²³ City Councils and public agencies, such as the County Community Services Department and Public Works Department should involve private industry from the beginning of any multi-material recycling project to respond to concerns that public recycling efforts should be integrated with private recycling and salvage industries and minimize potential problems. Such cooperative efforts might be initiated through joint meetings and seminars.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
I. RESOURCE CONSERVATION AND RECOVERY (Continued)

2. Waste-to-Energy Project

(Note: In early 1983 after this text was prepared, the Title 2 waste-to-energy project was turned over to the county to organize the local governments into a Joint Powers Authority to study and implement the project.)

Setting

In the 1970's and early 1980's, Contra Costa Central Sanitary District (CCCSD) examined the feasibility of constructing a waste to-energy project that would incinerate solid waste to produce electricity and incinerate sludge produced by the District's wastewater treatment system. Initial testing was conducted with a grant provided under the Federal Water Pollution Control Act. Subsequently the 1978 San Francisco Regional Wastewater Solids Study recommended a two-stage program to implement a larger scale energy-generating project at CCCSD. A feasibility and predesign engineering study was initiated through a grant from the California State Solid Waste Management Board and District funds, in January 1981.²⁴

Two separate projects, each independent of the other, were identified:²⁵

Title 1 - Sludge Combustion with Limited Solid Waste

This project would retrofit one existing sludge-burning furnace at the treatment plant for starved air combustion of sludge cake, using refuse-derived gaseous fuel from two modular combustion units. These units are both capable of burning solid waste. Title 1 would handle 116 to 260 TPD of solid wastes and incinerate all CCCSD's sludge. Recent Regional Water Quality Control Board reports indicate 180 wet TPD of sludge. The District is considering changing its waste-water treatment procedures; as a result dried sludge may be reduced to 50 TPD. This project is in the design stage, and a construction date is not known. This project could be expanded to produce excess electricity. Construction is estimated to cost \$25 million to build and would employ 24 full-time employees. The tipping fee associated with Title 1 is unknown.

Title 2 - Generation of Electricity by Incinerating Solid Waste

This project would provide two 450-TPD capacity mass burning waterwall furnace/boiler systems and a 20 megawatt steam turbine electric generator. Title 2 would incinerate 884 TPD of solid wastes but does not provide for sludge incineration. It would produce excess electricity for sale to PG&E. The new power generated by the proposed Title 2 project is the equivalent of 215 barrels of oil a day.²⁶

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
I. RESOURCE CONSERVATION AND RECOVERY (Continued)

Capital costs to construct Title 2 would be approximately \$165 million (1986 dollars). It would employ 34 full-time employees. A net tipping fee of \$12.11 per ton (1988 dollars) is estimated in the first full year of operation in 1988.

Both projects use mass burning technology which does not require processing of the wastes before incineration or "front-end" preparation. The system can handle bulky items on its mechanical grate. Materials to be incinerated are moved through the furnace on a continuously metered mechanical grate. Residues are discharged into a water-sealed trough at the other end of the furnace.²⁷

The Title 2 project feasibility study proposes the use of proven technology similar to mass burning waterwall furnace/boiler systems in use in Europe, Japan, and the United States in Saugus, Massachusetts; Nashville; Chicago; Harrisburg, Pennsylvania; and Hampton, Virginia. A final decision on the burning method has not been made. The Title 1 incinerator is used successfully in many facilities in the United States, but the proposed connection of the incinerator to CCCSD's existing sludge burning furnace would be a new application of this technology.^{28,29}

Title 2 assumes an 85 percent availability factor: the facility would not be operational 15 percent of the time because of maintenance. When the facility is non-operational, Title 2 further assumes that the by-passed waste would be disposed of, on a fee basis, at Acme Fill. Combustion ash and other residues would also be disposed of at Acme.

Although the Title 1 project was initially perceived as the first project to be implemented, the findings of the Predesign Engineering investigations indicate that Title 2 should proceed first with Title 1 deferred. Accordingly, no schedule has been set for Title 1³⁰. In Title 2, a Joint Powers Authority is currently being formed to study methods and sources of funding and to examine alternatives to the project.

Impacts

By providing space for continued landfill operations, Alternatives A, B, and C would reduce somewhat the pressure for immediate implementation of waste-to-energy projects.

Alternative D would provide for waste-to-energy conversion. On the basis of the proposed CCCSD Title 1 and Title 2 projects, Alternative D would still require a landfill to accommodate remaining solid wastes, as well as bottom ash and other residues. In addition, a landfill would be required for disposal of all solid wastes generated when the facility is not operating.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
I. RESOURCE CONSERVATION AND RECOVERY (Continued)

- . Title 1 would accommodate a total of 196 TPD comprised of 180 tons of sludge currently being landfilled and 116 tons of other solid waste. On the basis of the 1982 estimated daily tonnage of 1500 tons, 1204 TPD would require a landfill. It is unknown what quantity of ash would remain and require a landfill.
- . Title 2 would incinerate 884 TPD of municipal solid waste. A landfill would be required for approximately 1059 TPD. This total includes 616 TPD solid waste going directly to the landfill plus 443 TPD which would consist of 310 tons combustion ash and other residues and 133 average daily tons by-passed or sent directly to Acme the 15 percent of the time the facility is non-operational. These projections are based on 1982 volume estimates of 1500 tons per day generated in Acme's service area.
- . Title 1 and Title 2 would divert 296 TPD and 884 TPD, respectively, or a total of 1180 TPD of solid wastes. A landfill would be required for 763 TPD consisting of 320 TPD of solid waste going directly to the landfill and 310 TPD bottom ash and other residues as well as an average of 133 daily tons by-passed or sent directly to Acme the 15 percent of the time the facility is non-operational. It is unknown what quantity of combustion residues from Title 1 would require a landfill. These calculations are based on 1982 volume estimates of 1500 tons per day generated in Acme's service area.
- . With respect to extending site life, Title 2 alone would extend Acme's site life by 5 years.³¹ The simulation of the effect of the CCCSD projects showed that the life of Acme Fill would be extended from 1994 to 1999 with the waste-to-energy project alone. This site life is based on the use of the current 125- and 22-acre sites, full use of the 200-acre area (Alternative A), the 178-acre southern parcel (Alternative C), the 20-acre currently non-operational Class I site, and two other areas not now owned by Acme. The simulation assumes that Acme has a remaining capacity of 8,531,000 tons in 1980 and, without the waste-to-energy project, would be completely filled in 1994. A 1985 start-up date for the waste-to-energy facility is also assumed.³²

The mass burning technology that would be used by both Title 1 and Title 2 has the advantageous impact of being able to accept waste as received without having to process it before incineration. In this way, the system design is relatively simple and thereby more reliable and less costly than systems that depend on elaborate "front-end" mechanical processing.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
I. RESOURCE CONSERVATION AND RECOVERY (Continued)

By having the ability to burn most materials, the waste-to-energy project offers a positive impact of enabling the central County's overall solid waste management system, from collection through disposal, to function even when markets for recycling materials are unfavorable. If market conditions are ever depressed enough to seriously threaten material recycling projects, a large portion of the solid waste stream could be processed by the waste-to-energy project. However, not all materials can be processed. Because certain components of the waste stream, such as construction and demolition wastes, cannot be incinerated in waste-to-energy projects, a sanitary landfill would still be required

Title 1 use of a new application of connecting an incinerator to the District's existing sludge burning furnace could require a longer testing period than anticipated, more frequent and longer maintenance periods than planned and, in the worst possible case, could produce a situation where the project is unfeasible and ultimately abandoned. Such situations (with different technology) have occurred in the United States. The most recent was a facility in Milwaukee, Wisconsin. In the case of Central Contra Costa Sanitary District, if Title 1 is closed, 116 TPD of solid wastes and all the District's sludge would require landfill.

A possible adverse impact of any waste-to-energy conversion that uses mass burning is the production of combustion residue that may require special disposal³³. No current information is available to indicate the exact composition of residue (ash) that would remain from either the Title 1 or the Title 2 project. The analysis that has been conducted indicates that some of the ash constituents can vary widely.³⁴

A waste-to-energy conversion plant has the potential for adverse air quality impacts. These impacts differ significantly as a function of various technologies and air pollution control devices used. Environmental review of waste-to-energy projects would be conducted as part of the planning and permit processing for such a facility.

Many obstacles loom in the path of making a Central County waste-to-energy facility a reality. In January 1983 the County agreed to form a Joint Powers Authority to further study alternatives. Even with an immediate decision to proceed, five to six years could be required before such a facility would be operational.³⁵ Costs for a waste-to-energy plant in Contra Costa have been estimated to range from \$100 million to \$142 million.³⁶ Many federal sources intended to fund refuse-to-energy projects, for example, the Energy Security Act, have not been funded³⁷ and high interest rates continue to restrict traditional funding sources. Firm agreements guaranteeing the waste supply and contracts for sale of energy are crucial to the funding operation. Further delays could also occur from environmental concerns raised during the permitting process. Required design modifications could also extend the start-up date. If such delays occur, the 884 TPD of solid waste designated for Title 2 incineration would have to be accommodated by other means of disposal.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
I. RESOURCE CONSERVATION AND RECOVERY (Continued)

Mitigations

Based on current rates of fill, compaction and final slope, Acme is expected to complete the current 125- and 22-acre operational areas by the end of 1983. Additional landfill space should be assured to accommodate solid wastes between 1983 and 1987, the earliest estimated date for Title 2 start-up. Alternative A, by extending Acme's site life to 1991, would provide adequate capacity if delays occur.

Adequate landfill should also be assured to handle both the non-incinerated solid wastes and combustion residues of Title 1 and Title 2 projects for the life of the energy-to-waste facility; these are estimated to be:

Title 1	1228 TPD
Title 2	560 TPD
Title 1 and Title 2 combined	444 TPD

Sufficient landfill capacity should be assured to accommodate the 116 TPD of solid wastes and all the Central Contra Costa Sanitary District's sludge in the event that project experiences unforeseen difficulties resulting in additional maintenance or closure.

Further testing must be conducted by Central Contra Costa Sanitary District or other project sponsor using new EPA protocols and DOHS California Assessment Manual (CAM) tests to determine whether the combustion residue is "hazardous" or requires special disposal.³⁸ Depending on the outcome of such tests, it is possible that additional hazardous/Group 1 disposal space would be required at Acme or another Class I or Class II-1 landfill. Acme Landfill and the District would have to comply with Waste Discharge Orders issued by the Regional Water Quality Control Board (RWQCB) and permit requirements of the State Department of Health Services for the disposal of combustion residue.

To prevent ash from blowing at the landfill, additional procedures, such as placing ash in containers, or wetting and spraying the ash followed by immediate mixing and cover application, may be necessary. Ash disposal practices may need to be modified or suspended on windy days.³⁹

A separate EIR prepared for a waste-to-energy conversion plant would study the potential air quality impacts of such a facility. The Bay Area Air Quality Management District could place conditions on their Authority to Construct and Permit to Operate in order to minimize emissions of "criteria and/or hazardous pollutants" and other potentially deleterious air quality impacts.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
I. RESOURCE CONSERVATION AND RECOVERY (Continued)

3. Combined Material Recovery and Waste-to-Energy Facility

Setting

A comprehensive resource conservation and recovery program would include material recovery as described in the first section of this chapter and waste-to-energy projects. All the current material recovery efforts now being conducted in Acme's service area and the addition of planned programs and features recommended in this EIR/EIS would be included. Waste-to-Energy would consist of both the Title 1 and Title 2 projects.

Impacts

The simulation results shown in the County Solid Waste Management Plan (1982) projected an extension of Acme's site life to 2000 with combined material recovery and waste-to-energy projects. This is one year beyond the 1999 date for waste-to-energy alone, 4 years beyond the 1995 date for material recovery alone, and 6 years beyond the expected 1994 closure without any recovery beyond 1980 levels of material recycling.⁴⁰ The projection assumes the use of Acme's current 125- and 22-acre operations, the full use of the 200-acre parcel (Alternative A), use of the 178-acre southern parcel (Alternative C), use of the currently non-operational Class I site, and use of 2 other parcels not now owned by Acme. Material recovery is assumed at the rate of 79 TPD diverted from Acme Fill. The County Solid Waste Management Plan assumed a waste-to-energy project that would incinerate 900 tons per day of solid waste and 100 tons per day of sewage sludge.

Mitigations

No mitigations are required other than appropriate mitigations recommended for Material Recovery and Waste-to-Energy Facilities.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
I. RESOURCE CONSERVATION AND RECOVERY (Continued)

Footnotes

- ¹Contra Costa County, Solid Waste Management Plan, Draft 12/81 Revised January 1982.
- ²Contra Costa Community Recycling Center, Kathleen Nimr, Telephone Conversation, February 12, 1983.
- ³Contra Costa County, Public Works Department, Environmental Control, David Okita, Telephone Conversation, March 22, 1982 and February 14, 1983.
- ⁴Many Hands, Inc., Bud Ryne, Telephone Conversation, 10 March 1982.
- ⁵Contra Costa County, Solid Waste Management Plan, p. 6-6.
- ⁶Valley Disposal, Telephone Conversation, 2 March 1982.
- ⁷Mt. Diablo Paper Stock, Telephone Conversation, 2 March 1982.
- ⁸Acme Fill Corporation
- ⁹Martinez News Gazette, "Curbside Recycling Program to Begin Monday for 650 Homes". 13 August 1982.
- ¹⁰Martinez News Gazette, "Curbside Recycling Program Expanding," 1 December 1982.
- ¹¹Californians Against Waste, Ross Pumphrey, Telephone Conversation, April 1982.
- ¹²Contra Costa County, Solid Waste Management Plan, Part I, Planning Statements and Part III, Chapter 6, Resource Recovery.
- ¹³Contra Costa County, Community Services Department, Partners for Change: A Scenario for Recycling in Contra Costa, December 1980.
- ¹⁴Association of Bay Area Governments, Computer Program, Solid Waste Projections, 1980.
- ¹⁵City of El Cerrito, Community Service Department, Planning Report: West Contra Costa County Regional Recycling Program, November 1981.
- ¹⁶Contra Costa County, Community Services Department, Partners for Change, p. 7-3.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
I. RESOURCE CONSERVATION AND RECOVERY (Continued)

- ¹⁷Contra Costa County, Solid Waste Management Plan, pp. 6-15 through pp. 6-17.
- ¹⁸Contra Costa County, Solid Waste Management Plan, p. 6-13.
- ¹⁹California Solid Waste Management Board, Waste Resources Report, October/November 1982.
- ²⁰Contra Costa County, Solid Waste Management Plan, Table 8-7, p. 8-13.
- ²¹City of El Cerrito, Community Services Department, Joel C. Witherell, Director, Meeting 3 March 1982.
- ²²Joel C. Witherell, 3 March 1982.
- ²³Contra Costa County, Solid Waste Management Plan, pp. 6-12.
- ²⁴Wegman/Carollo Engineers, Predesign Engineering for Solid Waste-to-Energy Project. Volume 5 Preliminary Environmental Assessment. Draft Final Report. Prepared for Central Contra Costa Sanitary District, Walnut Creek, California, February 1981, pp. 1-1, 1-2.
- ²⁵Central Contra Costa Sanitary District, Jay McCoy, Engineer, Telephone Conversation, 4 March 1982 and Steve McDonald, Associate Engineer, Special Project Engineering Division, Meeting 1 March 1982.
- ²⁶Wegman/Carollo Engineers, p. 5-7.
- ²⁷Ibid., p. 1-4, 1-5.
- ²⁸Loc. Cit.
- ²⁹Contra Costa County Public Works Department, Memorandum from J. Michael Walford, Public Works Director to Internal Operations Committee, Subject: Report on the Central Contra Costa Sanitary District Waste-to-Energy Project, March 1, 1982, p. 2.
- ³⁰Wegman/Carollo Engineers, p. 1-3.
- ³¹Contra Costa County, Solid Waste Management Plan, p. 3.
- ³²Solid Waste Management Plan, pp. 6-21 and 6-23.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
I. RESOURCE CONSERVATION AND RECOVERY (Continued)

³³California State Solid Waste Management Board, Materials and Energy Recovery From Solid Waste - A California Overview, Seminar Manual, January 1980.

³⁴Wegman/Carollo Engineers, p. 4-2.

³⁵Contra Costa County Planning Department, Memorandum from Anthony A. Dehaesus, Director of Planning to M. G. Wingett, County Administration, November 1, 1983, p. 3.

³⁶Contra Costa Times, "142 Million Burner Urged for Contra Cost," December 6, 1982.

³⁷Wade St. Clair, "Funding Cuts to Slow Recovery Project," Solid Wastes Management, Vol 25, No. 1, (January 1982), p. 42.

³⁸Wegman/Carollo Engineers, p. 4-2.

³⁹Ibid, p. 4-4.

⁴⁰Solid Waste Management Plan, pp 8-13.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS

J. ENERGY

1. Site Vehicles Operation

Setting

The following vehicular equipment is currently in operation at Acme Landfill:

- 3 D8K Caterpillar dozers
- 1 D6 Caterpillar dozers
- 1 12E Caterpillar Road Grader
- 1 1214E Huber 3 wheel roller
- 1 C451A Hystar landfill compactor
- 1 370 Rex Trash compactor
- 1 TS18 Terex Euclid scraper
- 1 Rubber tire loader
- 2 water trucks (approximately 1500 gallons each)
- 1 1000-gallon mobile water tank equipped with pump
- 1 1500-gallon water trailer
- 1 fire truck (150 gallon)

Impacts

Current fuel consumption for site vehicular equipment use averages about 35,000 gallons-per-month of diesel fuel. Future fuel use for Alternatives A, B and C is expected to be similar.

Alternatives A, B, and C would require the same equipment, or similar, for continuation of landfill operations. Therefore, no new impacts would be expected for these alternatives. Although Alternative D might require less landfill equipment, other heavy equipment, such as caterpillar dozers, would be required at the waste-to-energy facility. A waste processing facility would require a baler and pick-up truck. Thus, operational vehicle energy consumption with Alternative D would be essentially the same or slightly less than vehicle energy consumption with Alternatives A, B, and C.

If Acme should have more than one site area available at any time, extended disposal operations probably would occur on only one area. Long-term equipment duplication would not be necessary. Temporary increases in equipment use could occur during the periods when a new site is being prepared for use and, later, while the old site is being prepared for closure.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
J. ENERGY (Continued)

Mitigations

No mitigations are required; however, Acme should consider fuel conservation factors when selecting new equipment. In addition, Acme should initiate a frequent and regular preventive maintenance program for existing equipment to keep it operating with as much fuel efficiency as possible.

2. Franchised Collection Trucks and Private Vehicle Operation

Setting

Approximately 800 vehicles including franchised collection trucks and private vehicles use the Acme site on the typical summer weekday. This number increases to approximately 917 on Saturdays.² The current rate of energy consumption by these vehicles is indeterminate.

Impacts

Alternatives A, B, and C, which continue disposal operations on essentially the same level as existing operations, are not expected to have any impact on franchised collection trucks and private vehicle operation and related energy use in terms of Acme landfill. Any increase in traffic generated by Acme landfill and the energy associated with that traffic is expected to result from increased population and solid waste disposal requirements rather than continuing operations at Acme.³

Alternative D would require approximately the same number of collection trucks, but fewer of these would travel to and from a landfill. Most would travel to and from the waste-to-energy facility. If this is located near the CCCSD facility travel distance and related energy consumption for most of these collection vehicles should be somewhat less than current use since the processing facility is approximately 5 miles south of Acme Landfill and closer to most collection areas.

In addition, depending on the method of curbside collection and the extent of other programs (satellite, office paper collection, etc.), the energy required by collection vehicles for the material recovery component of Alternative D might be the same as or greater than current collection vehicle usage. Moreover, the waste-to-energy facility would require truck travel of approximately 24 round trips per day between the facility and a landfill.⁴

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
J. ENERGY (Continued)

Recommended Mitigations

In selecting a curbside collection program and determining the extent of related programs, such as satellite and office paper programs, consideration should be given to the total energy use that would be required by various types of collection systems and programs. If feasible, programs which require the least fuel should be selected.

Preventive vehicular maintenance should be practiced by the collection companies to assure that vehicles perform at their most energy-efficient level.

3. Landfill Electrical Use

Setting

Electricity is supplied to Acme Landfill by PG&E. Permanent light fixtures located around the entrance gate are used at night for security and to light the area for member collector firms who use the site.

Portable lamps are available if necessary for night-time operations.

Impacts

No impacts are expected for Alternatives A, B, or C. Alternative D would require an additional indeterminate amount of lighting at a processing center and a waste-to-energy facility both for operations and security.

Mitigations

None required for Alternatives A, B, or C.

The extent of lighting in new landfill areas should comply with California State Department of Health Services lighting requirements set forth in any permit DOHS issues.

Lighting required for a processing center and a waste-to-energy facility for Alternative D should incorporate energy-efficient technology. Outdoor lighting should be directed away from adjacent activities.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
J. ENERGY (Continued)

4. Methane Recovery

Setting⁵

Virtually every landfill with decaying organic waste produces methane. As the organic material decays, it produces bacteria that release gases. Methane develops in phases. Initially, during a phase which can last several days to months, a relatively high proportion of oxygen in the fill promotes aerobic decomposition which uses the oxygen and produces carbon dioxide as the principle gas. With time, as anerobic conditions prevail, methane and carbon dioxide, with traces of other gases are produced in greater proportion.

Studies conducted for the Methane Recovery Project sponsored by Acme, Getty Synthetic Fuels, Inc. and the Contra Costa County Central Sanitary District show that the gases produced in the current landfill operation are:

Landfill Gas Components

<u>Gas Component</u>	<u>Acme Component⁶ Approximate Percentage</u>	<u>Average Percentage Range⁷</u>
Methane (CH ₄)	57	44** - 70
Carbon Dioxide (CO ₂)	42	30 - 53
Nitrogen (N)	.15	3** - 21
Hydrogen (H)	.7	
Oxygen (O)	.1	Trace
Non-methane Hydrocarbon (C ₂ +)(C ₇ H ₁₆)	< .05	Trace
Toluene (C ₇ H ₈)	***	Trace
Benzene (C ₆ H ₆)	***	Trace

* Found in other landfills

** Mountain View fill

*** Included in non-methane hydrocarbon. It is unclear how toluene and benzene appear in landfill gas since Acme's permit applications, permit conditions, and waste discharge orders do not list these compounds. Whether they appear as natural results of complex decomposition processes or appear as constituents in household wastes such as empty lighter and cleaning fluid and glue containers is not now known.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
J. ENERGY (Continued)

Acme Landfill has entered into an agreement with Getty Synthetic Fuels, Inc. to recover the landfill gas on Acme's current 125-acre operational site for processing and subsequent delivery to Central Sanitary District. Approximately 13 wells have been emplaced in Acme's 125-acre site with ancillary pipes to draw the gas by vacuum to the processing plant. The plant, located on Acme's property, was constructed by Getty between 1981 and 1982. It is in the testing stages.⁸

At the plant, gas is processed to remove water vapor and some trace components, and compressed to 80 pounds per square inch for transmission to the Central Sanitary District via a 3-mile pipeline for use in the District's treatment plant boilers.⁹

Acme and Getty have a five-year contract with provision for one-year renewals on a year-by-year basis. The contract between Getty and the Central Sanitary District is on a guarantee take or pay basis.¹⁰

Methane recovery potential duration for this portion of Acme's property is estimated to range from 7 to 14 years. Between 1 and 2 million cubic feet of landfill gas (57 percent methane) is being recovered per day. This gas provides 550 to 650 Btu's per standard cubic foot.¹¹

Impacts

Alternatives A, B, and C could have a positive energy impact through methane recovery. Acme plans to expand the existing collection system will be expanded to collect gas from the proposed 200-acre site.¹² The contract between Acme and Getty allows for potential expansion of methane recovery operations depending on future feasibility studies and mutual agreement among participating parties. The new processing plant, which can now process approximately 2 million cubic feet of landfill gas per day, is designed for a capacity increase of at least 50 percent with installation of another compressor without changing downstream capacity.

The site's propensity for methane production is a function of many of the factors that are present for the current 125-acre site and would be essentially the same for Alternatives A, B, and C. These factors include:^{13,14} the amount of oxygen available, the organic content of the solid wastes, particle size and degree of compaction, and the amount of moisture available. In general, high organic content and moisture increase gas production. Smaller particle size, by exposing more of the

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
J. ENERGY (Continued)

refuse to bacterial action, may have a similar effect. Densely compacted refuse may decompose at a slower rate than loosely compacted refuse and gas production may be prolonged in densely compacted landfills. Generally, methane formation is enhanced as the moisture content increases. Optimal anaerobic gas production occurs when landfill temperatures are between 90 and 95°F. Another factor which affects landfill gas production is pH. Methanogenic bacteria need a pH near 7.0 to produce optimal amounts of methane. These organisms are severely inhibited when the pH is outside the range of 6 to 8. It is expected that these factors would all be similar in Alternatives A, B, and C to the current 125-acre site conditions.

It is not possible to predict the comparative quantity of methane that could be generated by Alternatives A, B, and C in relation to the amount of energy used for landfill operations since equipment fuel consumption and electrical use are indeterminate at this time.

Alternative D would have a greatly reduced potential for the generation of landfill gas and the energy potential of methane. The sterile ash which would be produced contains none of the typical organic material in refuse which causes odors and produces various gases within landfills. The ash would tend to dilute the remaining municipal refuse deposited at any landfill associated with Alternative D and reduce gas production.¹⁵

Mitigations

None required.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
J. ENERGY (Continued)

Footnotes

- ¹Harding Lawson Associates, Transmittal/Memorandum from Daniel Balbiani, 6 April 1982.
- ²Goodrich Consulting Group, Acme Landfill Traffic Preliminary Draft, p. 4.
- ³Loc. Cit.
- ⁴Wegman/Carollo Engineers, Predesign Engineering for Solid Waste-to-Energy Project. Volume 5 Preliminary Environmental Assessment. Draft Final Report. Prepared for Central Contra Costa Sanitary District, Walnut Creek, California, February 1982, pp. 4-2.
- ⁵Barbara E. Witte, Potential for Methane Gas Recovery in the Bay Area, Report prepared in association with Easley & Brassy Corporation, San Francisco, 1974.
- ⁶Getty Synthetic Fuels, Inc., Paul Stillman, Vice President, Engineering, Telephone Conversations, 15 April, 1 July, 14 July, 1982; 10 February 1983.
- ⁷Barbara Witte.
- ⁸Getty Synthetic Fuels, Inc., James Rawson, Manager, Marketing, Telephone Conversation, March 1982.
- ⁹James Rawson.
- ¹⁰James Rawson.
- ¹¹James Rawson.
- ¹²Letter from Frank C. Boerger, Harding Lawson Associates to District Engineer, U. S. Army Corps of Engineers, San Francisco District, December 8, 1982.
- ¹³California State Solid Waste Management Board. Leachate/Landfill Gas Control Technology. Seminar Manual. Presented by Raymond Vail and Associates, Consulting Engineers, Summer 1980.
- ¹⁴California State Solid Waste Management Board. Landfill Techniques Seminar Manual. Sponsored by the SSWMB and Governmental Refuse Collection and Disposal Association (GRCD), and the California Refuse Removal Council (CRR). Presented by Emcon Associates. 1979.
- ¹⁵Wegman/Carollo Engineers, pp. 4-5.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS

K. ECONOMICS

This section examines the general relationship between Acme Fill Corporation and the economy of Contra Costa County. The County's economy is described in terms of population and housing, employment and income. Public fiscal aspects of Acme's operation are included as well as costs for collection, hauling and landfill in addition to the costs of other methods of disposal.

Acme Landfill is a significant factor in the lives of residents and businesses in the County. By disposing of approximately two-thirds of the County's solid waste, Acme landfill is vital for the efficient functioning of households, businesses, industry, and government.¹ At the present time it is the only means of disposing of large amounts of solid wastes generated in the central county. The service area of the Acme Landfill and the volume it accommodates are discussed in I. Introduction.

The continued growth in population and employment in the County is predicated on a supportive infrastructure. Part of this infrastructure is the proper disposal of solid wastes. Acme Fill and other sanitary landfills in the County are expected to provide a portion of the infrastructure to support the County's continued growth.

Acme's landfill disposes of solid wastes generated by the residential, commercial, industrial, governmental and agricultural sectors of the County's economy. As a Class II-1 landfill site, it receives garbage (food residues) and rubbish originating from residential households. From the commercial sector it receives rubbish (such as metal containers, paper, cardboard, plastics) and food residues. These types of wastes originate from a variety of businesses, including offices, restaurants, retail stores, and wholesalers. Used tires (solid, only) are collected by commercial tire haulers and taken to Acme. Toxic and hazardous wastes from industrial sources, such as the County's petroleum refineries, are accepted by Acme. Non-hazardous industrial wastes, such as food products, construction and demolition materials, and inert solids, are disposed at Acme. The public sector disposes of various types of solid wastes at Acme, including street sweepings, catchbasin debris, litter, dead animals, park and recreation area wastes, and dewatered sewage sludge. Park and recreation area wastes and dewatered sludge are the more significant types of solid wastes generated in the public sector.

There is little disposal of agricultural wastes at Acme. The largest source of agricultural wastes is stubble from field crop production, and open field burning has traditionally been the method of disposal for waste resulting from harvesting and pruning.^{2,3}

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
K. ECONOMICS (Continued)

1. Population and Housing

Setting

The 1980 Census showed a total population for Contra Costa County of 657,252. The total number of housing units in 1980 was 252,226. The number of households in the County in 1980 totaled 241,805. Persons per household in 1980 averaged 2.69 for the entire county.⁴ Population and household statistics for the cities and unincorporated areas in the County for 1980 are listed in the Appendix A.

The total population for the County increased from 1970 to 1980 by 18 percent. The percentage increase in housing units from 1970 to 1980 was significantly greater than the population change. Housing units increased by 42 percent. A breakdown of population and housing units for the cities and unincorporated area in the County for 1970 and 1980 appears in the Appendix A.

Contra Costa County future population estimates were made by the Association of Bay Area Governments (ABAG) as part of their Projections 79.⁵ County population projections for 1980-2000 are presented in Appendix A. These projections were made before the 1980 Census, which explains the small difference in the 1980 population estimate by ABAG with the actual count of the Census. Projections for 1980-2000 reflect a slowing of the high rates of increase that have occurred over past decades. The moderating of growth is due to expected declines in birth rates and in-migration from past levels.

Population estimates for central Contra Costa County were made as part of ABAG's Solid Waste Facilities Study in 1979.*⁶ The estimates for 1975-2000 for the central County are shown in Appendix A. In 1980, the population of the central County was estimated to be 372,900. This number represents more than one-half of the total population in the County. The central County includes the cities of Clayton, Concord, Lafayette, Moraga, Martinez, Pleasant Hill, Walnut Creek, and portions of the unincorporated area.

The pattern of population and housing growth within the County indicates a shifting from the west to the central area of the County. The central County is increasingly attractive as a suburban community for the Bay Area. Rapid growth also occurred in the eastern communities during the 1970's and is expected to continue.

The overall trend for the County points to population growth with an increasing number of housing units, characterized by more dense residential development, and decreasing household size.

*These estimates do not reflect 1980 census data.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
K. ECONOMICS (Continued)

Impacts

Alternatives A, B, C and D would have no direct impact on the County's population and housing or their projected growth in the future. Population and housing growth, however, are predicated on the existence of an infrastructure to support their growth. All existing and future development assumes the satisfactory disposal of solid wastes. Acme Fill provides this necessary requirement. Alternatives A, B, C, and D would continue this support. If no environmentally sound and efficient means of disposal of solid wastes existed, a limit could be imposed on further population growth and urban development.

Mitigations

No mitigations are required.

2. Employment and Income

Setting

County employment is concentrated primarily in the services and retail trade industries. Moreover, Contra Costa County is a regional center of manufacturing activity, with petroleum refining, and chemical and allied products being the most significant. Appendix A presents a breakdown of employment by industry for the 1972-1985 period. This data shows the expected continuation of the trend of employment shifting from manufacturing, construction, and transportation/public utilities industries towards service, trade, and financial industries.

With this pattern of growth in service-oriented employment is the expectation of rapid growth in office space, especially in the central County. From 1971 to 1980 the number of square feet of office space in buildings 5,000 square feet and larger in the central County increased eight-fold from 534,400 to 4,495,500. While this tremendous rate of growth experienced in the 1970's is not expected to continue during the 1980's, supply will continue to increase and there should be a doubling of office space. An additional 5 million square feet of office space are proposed to be built in the central county.⁸ Assuming economic recovery and favorable financing, most of the proposed office space additions should be completed in the early 1980's.

One reason for the expected rapid growth in office space and the increase in service-oriented employment is that the central County's growth is increasing at a greater rate than the growth of the San Francisco/Oakland Standard Metropolitan Statistical Area (SMSA). This five-county SMSA contains the sixth largest concentration of office space in the U.S.A. In 1980 it was one of the ten fastest growing SMSA's in non-agricultural employment in the U.S.A.⁹ A factor contributing to the growth in the central County is the shift in population and employment from San

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
R. ECONOMICS (Continued)

Francisco to suburban areas. For example, supporting office functions of corporations are moving to the central County from San Francisco. It is expected that this shift will accelerate during the 1980's.

A major employer is the County government. Contra Costa County employs a total of 6,500 people, of which 3,350 are estimated to be in the office category.¹⁰ County offices are located throughout the County, with a significant concentration of approximately 1,800 office employees in Martinez. When compared to other industrial activities, agricultural activity in the County is relatively minor. Approximately 90 percent of agricultural production occurs in the northeastern Delta area of the county. The agricultural activity in the Diablo-San Ramon area is expected to change to residential development as urban expansion continues in this rapidly growing area.^{11,12}

Since 1970 the number of jobs within the county have increased faster than the general growth rate of population. The number of business establishments within the county has also experienced significant growth. These two trends are expected to continue into the future. Nevertheless, the number of county residents working outside Contra Costa County increased from 38.8 percent in 1970 to 40.4 percent of the work force in 1975. The largest outside location of employment is Alameda County; the other major employment area is San Francisco.^{13,14} In the future the County will continue to be suburban, and it is expected that a greater percentage of county residents will work inside the county than has occurred during the 1970's. However, it is unknown whether commuting will increase or decrease.¹⁸

Currently, Acme employs an average of 21 full-time employees. Its annual payroll for 1981 averaged \$434,000.

Residents of Contra Costa County are characterized as predominantly affluent. Median household income for the county in 1970 was the fourth highest in California, while at the same time, the county had one of the lowest percentages of residents below poverty level.¹⁵

In 1975 the median annual household income for the overall county was estimated by the County Planning Department to be \$15,026.¹⁶ The median annual income for households in the central county was estimated to be approximately 30 percent higher: \$19,650.¹⁷

Impacts

Alternatives A, B, C, and D would have no direct impact on the industrial, commercial and agricultural growth in the county. Economic growth in these sectors is predicated on the existence of adequate means of disposing of solid wastes generated by these sectors. Alternative D through its material recycling effort would provide an important service to businesses occupying existing offices in the central County and the

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
K. ECONOMICS (Continued)

expected large office space additions in the near future. The recovery and recycling of high grade office papers would be beneficial.

Alternatives A, B, and C would have no direct impact on employment within the county. As stated for the impact on population and housing, existing employment and its future growth are founded on the presence of an infrastructure, which includes the disposal of solid wastes.

Alternative D would increase employment in the County by adding 33 to 63 new jobs. A multi-material recovery and recycling center with curbside collection in central County would create between 10 and 20 new jobs, most of which would be full-time. Both facilities of the waste-to-energy project proposed by Central Sanitary District would create new full-time employment: 23 employees for Title 1 and 34 employees for Title 2.

Alternatives A, B, and C would have no impact on employment at Acme Fill. Continuation of operations elsewhere on Acme's property would be handled by existing numbers of employees.

Alternative D could have an adverse impact on Acme's employment level at the disposal facility because the reduced quantities of waste could result in a corresponding reduction in landfill employment.

The impact of Alternatives A, B, C, and D on construction activity in the county is indeterminate. No estimate has been made of the construction employment that would result from the waste-to-energy facility. As yet, the project sponsor has not prepared an EIR for this facility.

Mitigations

No mitigations required.

3. Public Fiscal Aspects

Setting

Acme creates some demands on public services provided by the County and Special Districts. The landfill uses water from the Contra Costa County Water District (CCCWD) and has normal usage patterns.¹⁹ Acme's major use of water is to control the spreading of dust. Other uses include sprinkling of streets and roadways, drinking water, truck washing, water for showers and one toilet, and fire fighting.²⁰ It places minimum demand upon the CCCWD system.²¹ Acme does not have sanitary sewer service from the Central Contra Costa Sanitary District.²² In the area of public safety, the landfill places little demand on the County's Sheriff Department²³ and the Contra Costa County Consolidated Fire District. The Fire District has noticed a decrease in the number of incidences it must respond to at the disposal site.²⁴

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
K. ECONOMICS (Continued)

Acme does place demands on the County government for Health Services, Public Works, the Planning Department, the Mosquito Abatement District, and the Courts. Acme Fill is under the jurisdiction of the County Department of Health Services, the local enforcement agency which administers Acme's Solid Waste Facilities permit and is responsible for enforcement of health-related regulations. Acme has contributed \$50,000 towards the Fiscal Year (FY) 1981-82 Countywide enforcement program which had a total budget of \$270,000.*²⁵

In February 1982, construction of a new access road to Acme's landfill site and IT Corporation's Class I disposal site in the same area was completed. It cost approximately \$900,000. The County Public Works Department designed the industrial access road. A Community Development Block grant for \$150,000, administered through the Planning Department, was used for design work.^{26,27} As part of the agreement whereby Acme and IT jointly paid for construction and Shell Oil donated land, the County is to provide maintenance of the road. Assuming that the road is designed to accommodate truck traffic, the County would expect normal annual maintenance costs of approximately \$10,000 per 2-lane mile.²⁸ The 2-lane road is approximately 5,870 feet (1.1 miles) in length²⁹ and would expect a maintenance cost of approximately \$11,000 annually.

The quarter-mile stretch of Waterfront Road between I-680 and Waterbird Way requires structural overlay, according the Road Maintenance Division of the Public Works Department. The Division estimates \$50,000 is required to upgrade the road to withstand continuous truck traffic.³⁰

No information is available on any plans to correct the flooding problem on Waterfront Road as described in Section F, Circulation and Traffic. Rectifying this problem would, however, be expensive.³¹

The Waterfront Road/I-680 interchange providing access to Waterbird Way is maintained by the California Department of Transportation (Caltrans). Caltrans expects higher-than-normal maintenance costs on this interchange due to significant deterioration from the expected heavy truck traffic. Caltrans' plans to level and stabilize existing rough pavement may include surfacing and correction of settling at the I-680 interchange. Construction, which is estimated to cost \$500,000, is expected to begin in 1983.³² No annual maintenance costs of the interchange have been estimated.

*All three Class II-1 landfill operators paid a total of \$115,000 in FY 81-82.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
K. ECONOMICS (Continued)

A 72-inch sewer main extends through the 200-acre northeast part of Acme's property. As a result of the slope failure which dislocated and moved this line, Central Sanitary District has filed two lawsuits against Acme; 1) condemnation of property for the sewer main, and 2) recovery of costs to relocate and repair the line.³³

Acme also places demands on the Mosquito Abatement District. The use of the site and potential changes presently require constant surveillance by District personnel and pesticide applications to abate mosquito populations which are above normal for the area.

The current assessed value of Acme's property (land, improvements, and equipment) is approximately \$3,353,000. Almost two-thirds of the assessed value is for land. This assessment appears on the December 10, 1981 tax roll. The total 1981 - 82 property taxes are approximately \$37,000. The average ratio of taxes to total assessed value is 1.1 percent.

Impacts

Alternatives A, B, and C would impose no significant additional demand on public services than Acme's current level.

Alternative D would have a significantly large financial impact on the County and/or Central Sanitary District. Although the impact of the material recycling effort would be relatively small, financing a \$165,000,000 (1986 dollars) waste-to-energy project (Title 2) would have significant financial impact. The fiscal demands on the County and the Central Sanitary District of constructing the waste-to-energy project have not yet been analyzed. Central Sanitary District is currently conducting a feasibility and predesign engineering study of the waste-to-energy project. The District has proposed that the County consider the possibility of implementing the Title 2 project. If the County becomes involved, the first task would be to form a lead agency to seek financing and to supervise the project construction and implementation. While an EIR or a financing plan has not been devised, it is evident that a project of this magnitude would have a significant fiscal impact on the County and the Central Sanitary District.

Alternatives A, B, and C, which would open additional land to landfill, would probably result in an increase in property taxes paid by Acme Fill. The amount of change, however, is indeterminate, since it would depend on the assessed value and on the County's re-assessment of the property. The land to be filled under Alternatives A, B, or C is currently undeveloped, raw land. When it is filled the market value should increase by some amount, since there has been an improvement to the land. At that time, the County Assessor could appraise the filled area to determine a new market value for property taxes.³⁴ After Acme receives permission to expand its operation, the County tax assessor may inspect the property to determine what changes have been involved. Granting of the permit per se, however, would not change the assessment value.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
K. ECONOMICS (Continued)

Alternative D would not result in any additional property taxes. The material recovery and recycling center is assumed to be operated as a non-profit agency on government-owned land. The waste-to-energy facilities would more than likely be publicly owned and would be located on Central Sanitary District property.

Mitigations

As possible mitigations to the large capital and operating costs of a waste-to-energy project, cost-savings measures and the possibility of obtaining federal and state grants should be examined by Central Sanitary District in the EIR that would likely be prepared for the project. Obtaining federal grants can be expected to require considerable expertise. On October 1, 1981, federal regulatory, grant, and technical assistance programs operated by the U. S. Environmental Protection Agency's Office of Solid Waste under subtitle D of the Resource Conservation and Recovery Act of 1976 (RCRA) were eliminated. Subtitle D is that portion of RCRA that deals exclusively with non-hazardous solid wastes.

4. Collection, Hauling and Landfill Costs

Setting

Current average collection and haul costs in Acme's service area are estimated to be \$50 per ton in 1982 dollars for franchised public collectors who use the Acme landfill. These estimates are based on a 20-cubic yard garbage truck with one-way travel distance of 6 to 21 miles between the population centroid of a collection area and the landfill.³⁵

Disposal costs for Acme Fill are estimated to approximately \$6 (1982 dollars) per ton of waste processed.³⁶ Comparing the sizes of the three Class II-1 landfills in Contra County, economies of scale seem to be achieved with the larger landfills having lower costs per ton of waste disposed.

Based on the collection and haul costs combined with Acme's disposal costs, average total solid waste management costs in Acme's service area are estimated to be \$56 (1982 dollars) per ton.³⁷

A detailed analysis of waste management costs is provided in Chapter IV. G. Off-Site Hypothetical Project Alternative Costs.

Impacts

Alternatives A, B, and C would have no direct effect on collection or hauling costs. Disposal costs may increase since the implementation of Alternatives A, B, and C would require privately funded expenditures for construction and installation of facilities and compliance permits. The increased costs of landfilling would be charged to collectors and

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
K. ECONOMICS (Continued)

private persons disposing at the landfill. Any additional charges to collectors would more than likely be passed on to their residential and commercial customers.

The magnitude of increased disposal costs is unknown and indeterminate. Construction and other related costs of Alternatives A, B, and C would be privately incurred by Acme Fill Corporation and are not publicly available.

Comparing initial construction costs for Alternative A with the costs of other alternatives reveals that the construction costs for Alternative B will be almost as much as those for Alternative A. However, the construction costs for Alternative B would be amortized over a shorter time period (almost one-third shorter), thereby resulting in higher annual costs. Also, disposal costs on a unit basis (per ton) would be greater for Alternative B than Alternative A. With respect to Alternative C, construction costs would not be as great as Alternatives A or B. However, since the area being filled under Alternative C is smaller than the areas of Alternatives A and B, the unit costs would be much higher for Alternative C than that for Alternative A and, possibly, for Alternative B. The annual costs for Alternative C would be greater than for Alternative A.³⁸ Costs to develop a new landfill (off-site) are discussed in Section IV. Evaluation of Other Areas For Landfill Use.

Under Alternative D collection costs would not be expected to change from current levels. However, haul costs may change related to the distances between collection areas and the location of the material recycling and recovery center and the waste-to-energy facility when compared to current hauling distances between collection areas and Acme. The magnitude and direction of change in haul costs and the percentage change is indeterminate at the present time and would require an in-depth transit analysis.

Alternative D would reduce the amount of solid wastes being received at Acme. Those costs which vary with the amount of solid wastes received at Acme would be expected to decrease with the reduction in solid wastes; however, many costs are fixed and would not change but continue at the same level regardless of waste quantity received. Overall disposal costs would more than likely be reduced by some unknown amount.

Alternative D would involve additional costs for material recycling and a waste-to-energy facility. These costs are discussed in further detail in the next section, Cost of Other Methods of Disposal.

Alternative E would involve considerable additional costs due to development of an alternative site. See Section IV F. Off-site Hypothetical Project Alternative Costs.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
K. ECONOMICS (Continued)

Mitigations

None required of the applicant.

5. Costs of Other Methods of Disposal

The costs of three methods of disposal other than landfilling are considered in this section: 1) waste reduction, 2) material recovery and recycling, and 3) a waste-to-energy project. General cost estimates for the comprehensive curbside collection/waste processing center are based on data collected from E.C.ology, a program established in 1972 which has operated and expanded continuously since that time.^{39,40,41,42} Cost estimates for the waste-to-energy project are based on the program being proposed by Central Sanitary District.^{43,44}

The three methods are components of Alternative D and are discussed further in Section J, Resource Conservation and Recovery.

Setting

Waste Reduction - A public information program to emphasize the need for people to reduce their generation of solid wastes would depend on the effort of the County, Acme, or other organizations. A relatively small program would consist of inserting waste reduction technique announcements in collector's monthly customer bills. A more extensive public awareness program could include periodic media coverage such as newspaper supplements, occasional public events, and a full- or part-time position in either the Community Services Department or Public Works Department to focus on developing and maintaining a continuous public education program to sustain interest and participation.

Material Recovery and Recycling - This component is a Multi-Material Recycling Project which consists of:

- a. A Processing Center analyzed at two levels of capacity: a 50 ton per day (TPD) processing center as proposed for the central county in the Partners for Change⁴⁵ study and a 77-TPD facility based on the ABAG Recycling Simulation. The processing center is assumed to be operated on a non-profit basis at the site of the current Contra Costa Community Recycling Center (CCCRC) in Pacheco.
- b. Five programs based at and emanating from the Processing Center:
 - curbside collection in five central County cities: Martinez, Concord, Walnut Creek, Pleasant Hill, and Clayton

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
K. ECONOMICS (Continued)

- buy-back or purchase
- donations
- commercial (high-grade) office paper collection, and
- satellite operations

These programs would collect and process materials such as newspaper, aluminum, bi-metal, and glass.

A key factor in the success of a recycling operation, is high participation which requires a combination of dependable, weekly curbside collection and a buyback program which pays the public for materials such as newspaper, aluminum, bottles, and tin. At the same time, dependable market prices for recyclable materials are crucial to the economic success of a recycling program. Prices are determined by external economic events and are set in the market beyond the control of a processing center. Many markets are cyclical in nature, for example, the newspaper market, while other markets are highly competitive such as the market for high quality office paper which has experienced an influx of small, private recyclers.

Waste-to-Energy - The waste-to-energy project being considered by Central Contra Costa Sanitary District is described in Section I, Resource Conservation and Recovery. Essentially it consists of two independent components: Title 1 and Title 2 which both use mass burning technology. For the purposes of the study it is assumed that Title 1 would handle 116 TPD of solid waste and incinerate 180 TPD of wet sludge and Title 2 would incinerate 884 TPD of solid wastes. At the present time, it appears that Title 2 may be implemented before Title 1. Therefore, the discussion focuses on Title 2.

Impacts

Alternatives A, B, and C would not have any impacts on the costs of other methods of disposal. The impacts for Alternative D are described here by component: waste reduction, material recovery and recycling, and waste-to-energy facility.

Waste Reduction - A relatively small program, such as announcements in customer bills or occasional distribution of simple brochures and pamphlets would cost between \$20,000 and \$30,000 per distribution depending on quality of materials used. In 1980 Partners for Change recommended a countywide public awareness and education program budgeted at a rate of 30 cents per household per year to generate \$75,000 annually. Allocation of this sum would provide for a coordinator at \$25,000 and an operating budget of \$50,000. It should be noted that the \$75,000 was assumed to support all county recycling efforts rather than a central county waste-reduction segment only.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS

K. ECONOMICS (Continued)

Material Recovery and Recycling - Construction costs related to a central County Multi-Material Recycling Project would range between \$1,250,000 and \$1,820,000 for a 50 or 77 TPD Center, respectively.

Revenues, expenses, and resulting deficits based on 50 and 77 TPD processing centers, for the total project would be approximately:

	Multi-Material Recycling Project	
	50 TPD Center	77 TPD Center
	(no cost mitigations)	
Revenues	\$ 976,000	\$1,735,000
Expenses	1,747,000	2,611,000
Deficit	(\$ 771,000)	(\$ 876,000)
Deficit per Ton*	(\$42)	(\$31)

Economics of large scale appear possible with the recycling effort. The more tonnage processed, the lower the costs appear to be.

A more detailed discussion of estimated construction costs, revenues, expenses, and the methodology is provided in the Economics Appendix.

Waste-to-Energy Project - The Title 2 component, which is proposed to be implemented before Title 1, is estimated for study purposes to have total project costs of \$165,000,000 (1986 dollars, mid-point construction). Financing is assumed to be 80 percent revenue bonds and 20 percent equity and to have an effective interest rate on the revenue bonds of 10.7 percent, with levelized 21 annual payments.

Annual costs (1988 dollars) in the first year of operation in 1988 are estimated to total \$24,300,000.

Annual revenues (1988 dollars) consist primarily of electricity sales to PG&E and a relatively small amount of interest earnings on reserve fund and are expected to total \$18,300,000. The Public Utilities Regulatory Policies Act of 1978 (PURPA) requires utilities to purchase power from small power producers (under 870 megawatts) at a rate equal to the utilities' avoided cost if it produced the power itself. The future of this requirement is uncertain since the January 1982 Federal Appeals Court decision which struck down this requirement.⁴⁶ Undoubtedly the decision will be appealed. However, with this uncertainty, it would appear that the requirement for PG&E to purchase this electricity is also questionable at this time. Nevertheless, PG&E offers a program to cogenerators and small power producers to purchase electric power at its avoided cost. PG&E and the California Public Utilities Commission, which regulates PG&E and approves its program, appear to be committed to this program and its objectives.

*Divide deficit by TPY = TPD x 7 x 52.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
K. ECONOMICS (Continued)

Comparing the annual revenues with annual costs shows a net annual deficit of almost \$6,000,000 in 1988. According to Central Sanitary District, the waste-to-energy Title 2 facility would produce an annual deficit of \$21.79 per ton (1988 dollars) in the first full year of operation in 1988.* A tipping fee equal to this amount per ton would be required to offset the net annual deficit; however, the inclusion of the tipping fee stabilizer in the bond issue to subsidize the gross tipping fee would in effect lower the tipping fee. This is done to keep costs of burning solid wastes competitive with costs of landfilling. The net tipping fee is the result of offsetting the gross tipping fee with the tipping fee stabilizer. For 1988 the net tipping fee would be \$12.11 per ton.

The 1988 net tipping fee of \$12.11 per ton is expected to be comparable to the cost of landfilling in 1988. The cost of \$12.11 per ton discounted to 1982 dollars, using an annual discount rate of 10 percent, is \$6.84 per ton. This amount is within the range of estimated current disposal costs (per ton) at Acme Fill and other landfills in Contra Costa County. Over the time period of Title 2 operations, it is estimated that the tipping fee would decrease and could eventually be eliminated.

The exact effect of such a tipping fee (net) on collectors delivering solid waste material as input to the facility's incinerators is unknown. Assuming that collectors pass along any additional costs, such as a tipping fee, to their customers, residential and commercial solid waste rates would increase by some unknown, but probably small, amount. The impact on disposal costs caused by diverting solid wastes to the waste-to-energy facility is also indeterminate.

Central Sanitary District states that the Title 1 project could be implemented by the District although it judges that Title 2 is beyond its financing capability. The District has proposed that the County consider the possibility of implementing the Title 2 project.

Detailed breakdowns of this discussion are presented in the Economics Appendix.

Mitigations

Waste Reduction - No mitigations required of the applicant.

Material Recovery and Recycling - None required of the applicant. The cost mitigations are methods of cost savings and revenue-raising. Cost savings mitigations include interest-free loans, grants for collection vehicles, lower labor costs from "workfare" or other subsidy, administrative support from public agencies, lower collection vehicle driver costs, and in-kind services

*\$6 million divided by 85% of 884 TPD x 365 = 274,261 TPY.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
K. ECONOMICS (Continued)

provided by a governmental agency. Revenue-raising mitigations include increasing the average net revenue per ton and franchise fees.

For the total Multi-Material Recycling Project, the deficit would decrease from \$42 and \$31 respectively for 50- and 77-TPD facilities to \$20 and \$14 per ton:

	Comprehensive Regional Recycling Center 50 TPD Center (with cost mitigations)	77 TPD Center
Revenues & Franchise Fees	\$ 1,115,000	\$1,874,000
Expenses	1,488,000	2,272,000
Deficit	(\$ 373,000)	(\$ 398,000)
Deficit per Ton	(\$20)	(\$14)

A detailed discussion is provided in the Economics Appendix.

Waste-to-Energy Project - None required of the applicant. In view of the recent Federal Appeals Court decision which struck down the requirement for utilities to purchase power from small generators, the facility sponsor should establish and maintain close coordination with the California Public Utilities Commission and PG&E regarding the applicability of this decision and PURPA in relation to California utilities, and to monitor continuing litigation related to this issue.

With respect to the waste-to-energy facility, the inclusion of a tipping fee stabilizer in the revenue bond issue to construct the Title 2 facility would subsidize the expected annual deficit and, in effect, lower the tipping fee. This action would be intended to keep costs of burning solid wastes competitive with costs of landfilling. The net tipping fee would be the result of offsetting the gross tipping fee (annual deficit) with the tipping fee stabilizer.

For 1988, the net tipping fee would be \$12.11 per ton or \$6.84 expressed in 1982 dollars. This amount is close to current estimated disposal costs (per ton) at Acme and other landfills in Contra Costa County. Over the operational period of Title 2, Central Sanitary District believes that the tipping fee would decrease and would eventually be eliminated.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
K. ECONOMICS (Continued)

Footnotes

¹Contra Costa County, Public Works Department, Final Draft: County Solid Waste Management Plan, December 1981, with revisions made January 1982.

²Ibid.

³Frank Boerger, P.E., Civil Engineer, Harding Lawson and Associates, Telephone Conversation, July 8, 1981.

⁴U.S. Department of Commerce, Bureau of the Census: 1970 and 1980 Census of Population and Housing.

⁵Association of Bay Area Governments (ABAG), PROJECTIONS 79, April 1979.

⁶Association of Bay Area Governments, Solid Waste Facilities Study for the San Francisco Bay Area, December 1979.

⁷Private Industry Council, Contra Costa County, Industry Employment, May 1981.

⁸Coldwell Banker, "Central Contra Costa County Office Buildings on the Move," July 1981.

⁹Loc Cit.

¹⁰Contra Costa County, Community Services Department, Partners for Change: A Scenario for Recycling in Contra Costa, December 1980.

¹¹Loc Cit.

¹²Contra Costa County, Public Works Department, Final Draft: Solid Waste Management Plan, December 1981 with revisions January 1982.

¹³Contra Costa County, Planning Department, Contra Costa County--A Profile, October 1977.

¹⁴U.S. Department of the Army, San Francisco District, Corps of Engineers, Alhambra Creek: Study of Alternatives, September 1980.

¹⁵Contra Costa County, Planning Department, Contra Costa County--A Profile, October 1977.

¹⁶Contra Costa County Planning Department, 1975 Special Census, Contra Costa County, 1975.

¹⁷Contra Costa County, Community Services Department, Partners for Change.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
K. ECONOMICS (Continued)

- 18 Charles Zahn, Contra Costa County Planning Department, Response to Administrative Draft EIR/EIS Acme Landfill.
- 19 Contra Costa County Water District, Gordon Tormberg, Treated Water Division, telephone conversation, 25 February 1982.
- 20 Frank Boerger.
- 21 Gordon Tormberg, Treated Water Division, Contra Costa County Water District, telephone, 25 February 1982.
- 22 Central Contra Costa Sanitary District, Jay McCoy, Manager, Collection System Engineering and Services Division, telephone conversation, 4 March 1982.
- 23 Contra Costa County, Office of Field Service, Sheriff-Coroner, Warren E. Rupf, Assistant Sheriff, meeting, 23 February 1982.
- 24 Contra Costa County Consolidated Fire District, Gerald Duarte, Assistant Chief, telephone conversation, 25 February 1982.
- 25 Contra Costa County, Department of Health Services, William B. Treadwell, Supervising Environmental Health Inspector, meeting, 23 February 1982.
- 26 Dave Okita, Environmental Control, Public Works Department, Contra Costa County, telephone conversation, July 7, 1982.
- 27 Charles Zahn, Planning Department, Contra Costa County, telephone conversation, July 8, 1982.
- 28 Contra Costa County, Public Works Department, Road Maintenance Division, Maurice Shiu, Assistant Maintenance Engineer, meeting, 23 February 1982.
- 29 Contra Costa County, Draft EIR, Industrial Access Road (CP 79-70), January 1980.
- 30 Maurice Shiu, 22 February 1982.
- 31 California Department of Transportation, Herb Smitton, Superintendent, Maintenance Station, Walnut Creek, telephone, 26 February 1982.
- 32 Herb Smitton, 26 February 1982.
- 33 Jay McCoy, Telephone, 4 March 1982.
- 34 Yosh Nakano, Supervising Appraiser, Assessor's Office, Contra Costa County, meeting, 23 February 1982.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
K. ECONOMICS (Continued)

35Based on Contra Costa County, Solid Waste Management Plan, 12/81 and Metcalf & Eddy Engineers, Contra Costa County Solid Waste Management Plan, December 1975.

36Loc. Cit.

37Loc. Cit.

38Frank Boerger, Harding Lawson Associates, telephone conversation, 19 July 1982.

39City of El Cerrito, Community Services Department, E.C.ology Recycling Center, Joel C. Witherell, Director, meeting, 3 March 1982 and Telephone conversation, 17 March 1982; Trish McConnell, Rehabilitation Counselor, meeting, 3 March 1982, and Janice Wesioly, Plant Manager, meeting, 3 March 1982.

40Contra Costa County, Public Works Department, Staff Report, "Curbside Collection in Central County", March 1982.

41City of El Cerrito, Communities Service Department, Planning Report: West Contra Costa County Regional Recycling Program, November 1981.

42Contra Costa County, Community Services Department, Partners for Change, December 1980.

43Contra Costa County, Public Works Department, "Interoffice Memorandum on Central Contra Costa Sanitary District Waste-to-Energy Project," March 1982.

44Wegman/Carollo, Predesign Engineering for Solid Waste-to-Energy Project Draft Final Report, vols. I, II, III, IV and V, (Central Contra Costa Sanitary District), February 1982.

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46Dr. Alfred B. Scarmamelli, P.E., "Energy Market Key to Project Planning," Solid Wastes Mangement, Vol. 25, No. 4 (April 1982) pp. 16-17.

III ENVIRONMENTAL IMPACTS, SETTING, AND RECOMMENDED MITIGATIONS

L. CULTURAL RESOURCES

Setting

The Acme property is located in an area which was probably an area of intense resource procurement activities and possible seasonal occupation by native peoples of the San Francisco Bay Area. One previously recorded archaeological site is situated one quarter mile from the project site at the base of a highland formerly bordered by marshes. Therefore, the upland portions of the Acme property are considered highly sensitive by the Northwest Information Center, California Archaeological Site Inventory. At this time, no prehistoric or historic cultural resources have been identified on the Acme site.

Impacts

Alternatives A and B are situated on lands which have low archaeological sensitivity because of their status as formerly tidal marshlands. Archaeological field surveys would not be required for either of these alternatives, based on the findings presented in a letter from the California Archaeological site inventory dated 30 July 1981.

Alternative C proposes landfill on upland portions of the site in the southern 178 acres. This area may be considered highly sensitive and may contain archaeological materials such as obsidian, chert flakes, milling equipment, marine or freshwater shells, bones, locally darkened soil and human graves, or historic materials such as foundations, refuse deposits, backfield wells, square nails or sun-tinted glass. The Northwest Information Center recommends that a qualified archaeologist conduct a site survey in this area.

A specific site for Alternative D has not been selected. Therefore, impacts on cultural resources cannot be identified for this alternative.

Mitigations

For Alternatives A, B, and D, and cover excavation operations, a qualified archaeologist should be consulted if any archaeological materials are encountered during development phases of the project.

The Northwest Information Center recommends that a qualified archaeologist conduct a mixed strategy archaeological survey of the area proposed in Alternative C prior to any development phasing. This requirement should extend to the opening of new cover excavation areas. Archaeological resources which may be situated within this area should be identified and recommendations should be offered for their protection and preservation.

The County should make these measures conditions of approval of future Land Use Permit approvals.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS

M. AESTHETICS

Setting

The primary views into the existing landfill are from Waterfront Road which is designated as a scenic route in the Scenic Routes Element (1974) of the Contra Costa County General Plan. Exhibit III-12. The Scenic Routes Element suggests modifications to the zoning ordinance may be necessary to implement a scenic route program. Specific modifications, in the areas of architectural and site design review, screening and landscaping, and land use (including open space), have not been determined. In the meantime, the County is requiring that aesthetics be addressed when projects along planned Scenic Routes are proposed. Views into the site from Waterfront Road at the northeast corner of the site are shown in Exhibit III-13. Landfill operations are visible from the roadway although they are at a considerable distance and are located above the roadway elevation. The earth-covered portion of the landfill appears as an unvegetated hill, and the topography is consistent with the existing hills and flatlands in the immediate area. The proposed expansion area (Alternative A) is seasonally flooded in some areas and densely covered with low vegetation at the higher elevations. There are uninterrupted views from Waterfront Road looking south as far as Mount Diablo.

The remainder of the Acme property is almost completely screened from any view along a public roadway. One notable exception is the view into the southwest corner of the property from Interstate 680. (Exhibit III-14) The relatively small opening between the hills permits a brief glimpse into the property for passing motorists. The hilly terrain screens nearly all views from the Vine Hill neighborhoods into the existing landfill operations and the proposed area.

The current Acme landfill operation controls wind blown litter by the use of portable screens placed around the site where disposal operations occur, hand collection by Acme personnel, and stored cover material berms which catch flying litter. Peripheral site fencing also catches blowing litter.

The proposed expansion area (Alternative A) presently has some debris which has blown from the existing landfill operations, but windblown litter is not a major problem. The strong winds during the dry season tend to blow plastic and paper in a southeasterly direction, and the screens to catch debris are often not adequate to confine all debris to the site. This is considered an ever-present problem which cannot be confined entirely to the site.

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
H. AESTHETICS (Continued)

The current dry season landfill (22 acres) is within 2000 feet of the East Vine Hill neighborhood. The hill located between this landfill operation and the neighborhood serves as both a visual and acoustic buffer. Acme currently plans to preserve the ridgeline of the hill until disposal operations in the south parcel have been completed. The hill would then serve as a borrow area for cover material. LUP 2052-81 requires that Acme erect a fence with wood slats around the site to prevent paper and refuse from blowing onto adjacent property.

Impacts

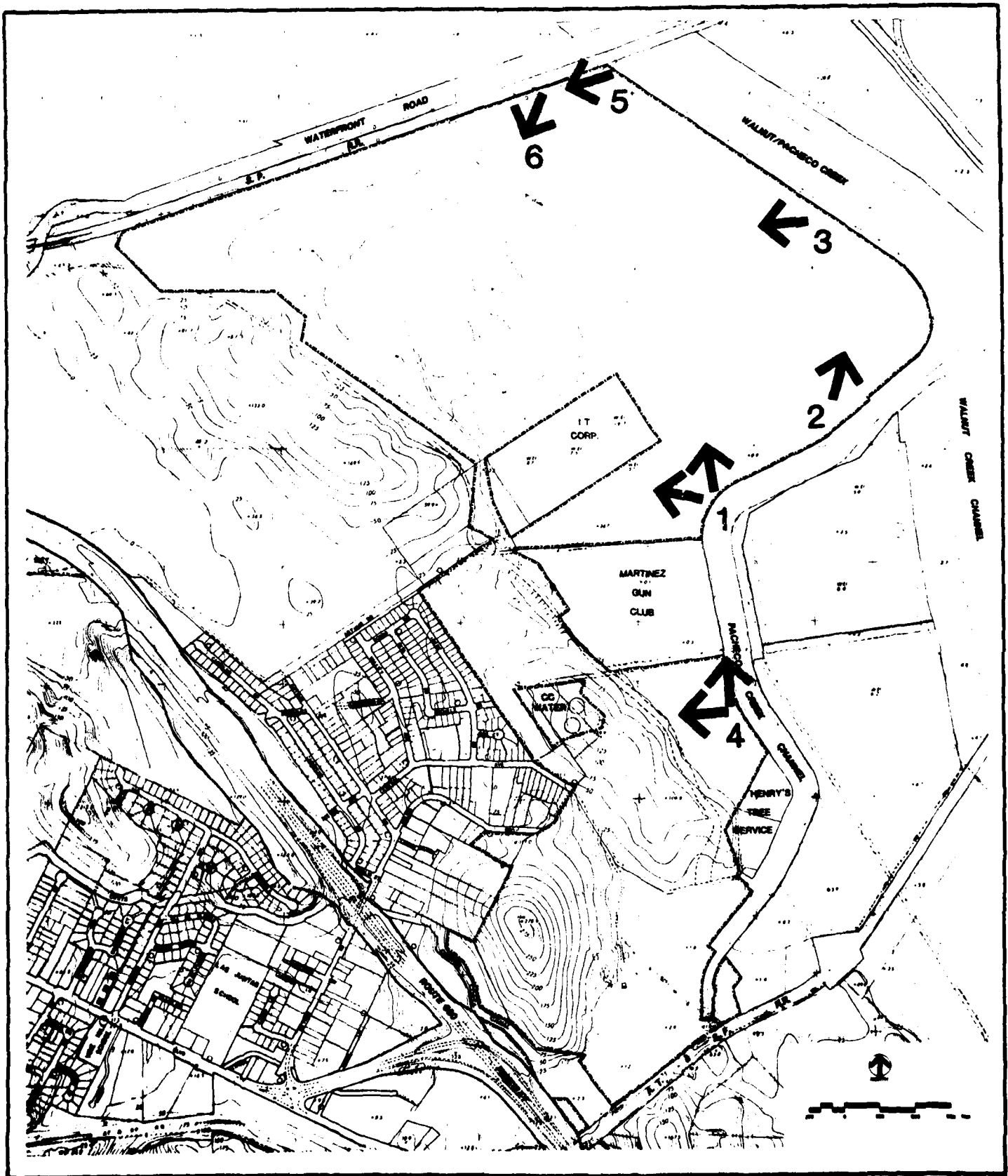
A potentially significant impact of Alternatives A, B, and C would result from borrow excavations on the eastern face of the large hill adjoining I-680 if that were to occur. Although excavations would take place only during part of the landfill's life, the excavated face could be visible from I-680 and as far away as Highway 4 and Solano Way.

The visual interface between the Vine Hill neighborhood and the landfill is presently buffered by the smaller of the two hills in the area. The ridgeline of the smaller hill is to remain while the 22-acre landfill is being filled. The hill is proposed to be reduced to provide cover material for Alternatives A, B, or C, but replaced by a man-made visual and noise buffer according to the conditions of LUP 2052-81. Some unsightly conditions may occur while the new buffer is being installed, and excavation operations on the hill may not be completely buffered. Any remaining visual effects of the landfill would continue only as long as the landfill was in operation or while remedial measures were taking effect.

The aesthetic impacts of Alternatives A and B would also include the short-term unsightly landfill operations viewed from Waterfront Road. This is not significant because the landfill is located in an industrial area. Furthermore this impact would be temporary and it would be eliminated when sufficient cover material had been placed on the site to support new vegetation. The views in the area for both of these alternatives would be changed to one of terraced hills rather than flat, open space. Distant views to the south from Waterfront Road would be reduced because of the additional landfill east of the sewer line. The formation of smooth contours on the landfill would be consistent with the rolling hills visible in the distance.

For Alternative C, the same impact of short-term unsightly landfill operations applies to a small portion of I-680 freeway. Because of the relatively small viewing space, the high speed of traffic along the freeway, and the short-duration (less than 3 years), this impact is not considered significant.

With continued landfill operations in Alternatives A, B, or C, windblown litter would continue to be a cumulative problem.

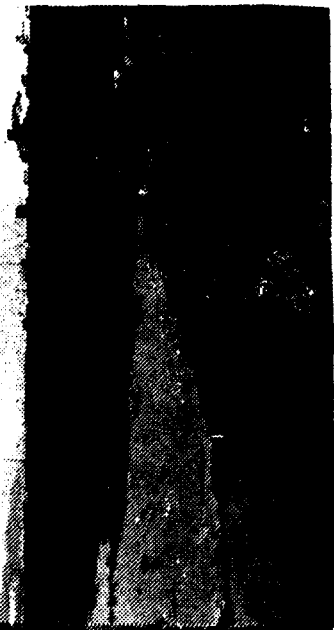


TORREY & TORREY INC.
TT environmental/urban
 planning and design

Location of Views

EXHIBIT
 III-12

1



2



3



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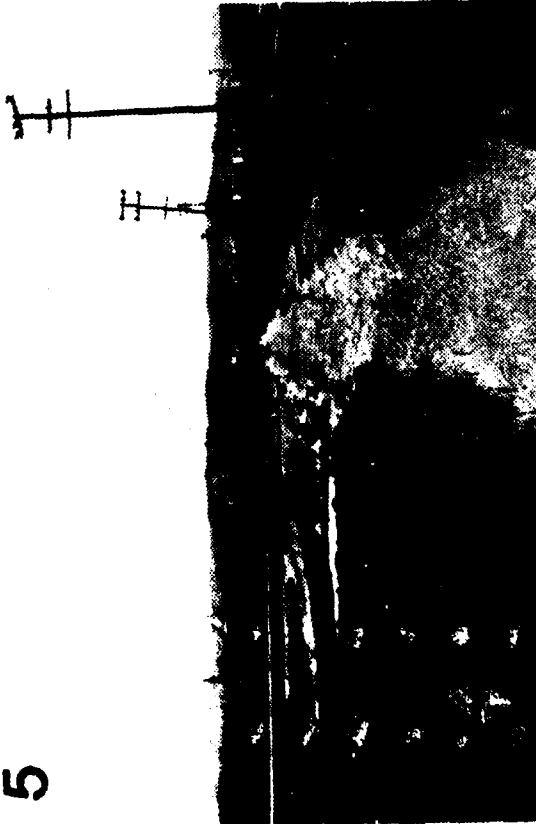
Views at the Site

EXHIBIT
III-13

4



5



6



TORREY & TORREY INC.
2T environmental/urban
planning and design

Views at the Site

EXHIBIT
III-14

III ENVIRONMENTAL SETTING, IMPACTS, AND RECOMMENDED MITIGATIONS
M. AESTHETICS (Continued)

Alternative D would reduce litter at the disposal site since less solid waste would be landfilled. However, there is high potential for uncontrolled litter where recyclables are collected curbside and at the processing center.

Mitigations

For Alternatives A, B, and C, excavation on the large hill should be allowed by county permit only if it is shown that other sources will not provide adequate construction and cover materials under reasonable operating conditions. A buffering program, similar to that required under LUP 2052-81, but with re-grading and re-landscaping provisions, should be required as a condition of approval.

For Alternatives A, B, and C, the visual and noise buffer required by condition 11 of LUP 2052-81 should be implemented as soon as possible.

The closure plans for Alternatives A, B and C, should provide a detailed description of how the closed landfill areas would be contoured and revegetated, and how scenic values along Waterfront Road would be restored. Smooth contours to reflect the rolling, hilly areas adjacent to the site and revegetation with the same grass species that exist on the adjacent hills should be key elements of the plan if the area is to be preserved as open space. The contour requirements of other land uses which may be possible after closure should also be discussed in the plan.

To reduce the impacts of windblown debris, additional movable screens should be placed downwind of the proposed operation area. Screens should be cleared of debris daily and moved as necessary to confine windblown refuse to the site.

Use of the proposed borrow area for Alternatives A, B or C may result in the need for a landscape screen along the access road west of the Martinez Gun Club. Such a buffer would reduce noise, dust and views of trucking operations from the East Vine Hill neighborhood.

For Alternative C, a landscape screen should be planted between the Contra Costa Canal and the landfill operations on the southern parcel to reduce adverse visual impacts from northbound I-680.

For Alternative D, newspapers should be tightly bound and office paper should be boxed, covered or otherwise securely contained before being deposited at collection points. Frequent, regular, and dependable pick-up is also necessary so that paper waiting for collection does not remain uncollected for extended periods subject to the effects of weather, vandalism, or theft. At a processing center, good housekeeping practices should be conducted so that litter is not a problem. The current operation at the CCCRC is an excellent example of a particularly neat operation.

III ENVIRONMENTAL SETTING, IMPACTS AND RECOMMENDED MITIGATIONS

N. RECREATION

Setting

Contra Costa County's General Plan Recreation Element designates Waterfront Road for development of a primary bicycle path. The Interim Bicycle Paths Plan states that primary bicycle paths connect residential neighborhoods and major destinations of bicycle traffic. Ultimately, these paths are desired to be developed as pathways which are physically separated from other trails or from vehicular traffic.

All of the Acme land holdings are located within an "Urban Growth Area" as shown on the Open Space/Conservation Element, another component of the Contra Costa County General Plan. The Interim Trails Plan of the Recreation Element designates an equestrian riding path through the area adjacent to Pacheco Creek. It is assumed that the path would be installed on the flood control levee. There are no current plans for installing the path or trail.

Impacts

None of the alternatives (A through D) would have significant adverse impacts on the primary bicycle path proposed for Waterfront Road, should one be installed prior to the landfill's closure. Short-term adverse impacts may occur due to objectionable odors and unsightly landfill operations for Alternatives A and B. However, after site closure and revegetation, these impacts would be eliminated.

The equestrian riding trail along Walnut/Pacheco Creek could conflict with landfill operations and result in hazardous conditions for trail users should one be installed prior to the landfills's closure. This is considered a temporary impact which would be eliminated after site closure.

Mitigations

No mitigation is required for a Waterfront Road path or trail.

Mitigation for a Walnut/Pacheco Creek path or trail would be warranted only if a path or trail were to be installed while a landfill was being operated in the areas of Alternatives A, B, or C. The mitigation should consist of fencing to separate the level from the landfill and operating the landfill to keep hazardous material disposal set back from the path or trail.

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E

A. USE OF EXISTING LANDFILLS

The preceding parts of the EIR/EIS have concentrated on the on-site alternatives (Alternatives A, B, and C) and on the Other Methods of Disposal alternative (Alternative D) for reasons which were given in Sections I and II. Consideration will be given to off-site alternatives in this section. The analysis which follows concerns the use of existing landfills if Acme must discontinue its landfill operations permanently or for a period of time while its expansion permits are being processed.

These are five existing landfill facilities which could be used to dispose of the solid wastes generated in Acme's service area if Acme were closed. These are:

Contra Costa Waste Sanitary Landfill (and Pittsburg Landfill).

These facilities, and the discontinued Antioch Landfill, are located south of Antioch about 15 miles from Acme. The combined facilities are in the path of residential development and are expected to reach capacity by 1991 according to the County Solid Waste Management Plan. Fill would be limited to Group 2 and 3 materials.

West Contra Costa Sanitary Landfill. This large facility is the County's other major landfill, after Acme. It is located about 20 miles from Acme and is expected to remain in operation until approximately the year 2000. It is a Class II-1 facility with a Class I area. If a waste-to-energy plant being planned by the West County Agency for a nearby location is realized, the landfill's life could be extended.

IT Corporation Environmental Landfill. The IT landfill east of Benicia in Solano County was established in the 1970's after the firm's Class I facility at Antioch (now the Contra Costa Waste Sanitary Landfill) was closed and efforts to establish a replacement in Contra Costa County near Brentwood failed. The IT Benicia landfill is a specialized Class I landfill. Among the wastes it receives are residual materials from the IT Corporation's processing facilities which adjoin Acme. The Benicia landfill is about 10 miles from Acme.

Altamont Landfill. Altamont is a large 1600-acre Class II-1 facility located off I-680 east of Livermore in Alameda County. It is about 45 miles distant from Acme. Altamont will receive San Francisco's solid wastes for a period of years while a new site is found for the city's solid wastes.

Vasco Road Landfill. The Vasco Road landfill, a Class II-2 facility, is located north of the Livermore-Pleasanton area in Alameda County. It is about 10 miles closer to the Acme facility than Altamont landfill. The Vasco Road landfill was given a land use permit to expand in 1982.

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
A. USE OF EXISTING LANDFILLS (Continued)

If Acme were to be closed, either permanently or temporarily, the selection of alternative landfills would be made by the franchised haulers in Acme's service area as business arrangements with the landfill operators (all five landfills are private sector facilities). The County does not franchise the haulers and could intervene in a governmental capacity only in the event an emergency was shown to exist. Long-term arrangements would have to be recognized in the appropriate counties' solid waste management plans.

The reasonable assumptions are that east county solid wastes would be directed to the Contra Costa Waste Sanitary Landfill near Antioch, wastes from central county north of the Walnut Creek area would be diverted to the West Contra Costa County Sanitary Landfill at Richmond and the facility at Antioch, and the solid wastes from the area south of the Walnut Creek area would be diverted to one or both of the Alameda County landfills. Except for the first instance (east County wastes to Antioch), the increased haul distances would warrant transfer stations, but it is doubtful that any permanent stations could be provided for several years. The relatively high-volume/low toxicity Group 1/hazardous waste sludges and solids now going to Acme probably would be directed to the West Contra Costa Sanitary Landfill at Richmond and the IT Corporation landfill near Benicia rather than to the IT Class I "processing" facilities adjoining Acme. The Altamont Class II-1 landfill would be an alternative, but it is located at a much greater distance from the refineries and chemical industries along Contra Costa County's northern shoreline.

The primary effects of using other landfills as an alternative to Acme would be substantially higher hauling costs (which account for about 85% of disposal costs) and a shortening of the longevity expectations for the existing landfills in Contra Costa County. (The cost of using existing landfills other than Acme to dispose of the wastes currently going to Acme Landfill is discussed in Section G. Off-site Hypothetical Project Alternative Costs). The Contra Costa Waste Sanitary Landfill at Antioch would be expected to reach capacity during the 1980's, resulting in the need for a new landfill site (Acme has been regarded as the Antioch facility's successor). On the basis of current rates of fill of Groups 2 and 3 waste alone, approximately 1 year's tonnage now going to Acme would reduce the life of this facility by approximately 7 years. The West Contra Costa Sanitary Landfill would be filled to capacity in early 1990 if it is used to dispose of all wastes which would otherwise be taken to the Acme site. Both the West Contra Costa Sanitary Landfill and the Contra Costa Waste Sanitary Landfill would be filled to capacity by the end of 1990 if no new landfill capacity is created.

Only the Alameda County landfills appear to have the potential for the long-term disposal of solid wastes from central (and eastern) Contra Costa County. The Altamont facility is used as a long-term off-site alternative in the analysis which follows, but the Vasco Road landfill (or both) would be a substitute in the analysis.

B. POTENTIAL AREAS FOR NEW LANDFILL SITES

With Acme's current operational areas expected to be complete by late 1983, only a few months remain for a new disposal area to be ready to receive the 1500 tons Acme accepts on an average daily basis. Yet, selecting new sites for transfer stations and landfills is a complex undertaking that requires extensive planning. A multitude of technical, environmental, social, institutional, and economical factors must be considered and integrated into the planning process. The permit review process and the difficulty of current financing adds to the time required to implement such projects. Because of the complexity of such projects, a 1980 report by the State Solid Waste Management Board recommends initiating plans for locating and developing a new land fill at least two years before an area's existing site is full.¹ A more recent report by the Board states that the necessary permitting and acquisition process for siting a new landfill typically takes about seven years.²

Recently developed facilities in the Bay Area have taken as short a time as one and a half years to as long as 7 years to develop from initial planning to operational start-up. The Marin County Transfer Station, owned and operated by Marin Sanitary Services, Inc. of San Rafael, started operation in September 1981 after planning began early in 1980.³ The facility and site had already been designated by the Marin County Solid Waste Management Plan in 1975.⁴ In comparison, the planning was begun for the Oakland Scavenger San Leandro and Altamont facilities in late 1973/early 1974.⁵ The Altamont landfill opened in late 1980 followed by the opening of the San Leandro Resource Recovery and Transfer Station in late 1981.

Even with material resource recovery and recycling and a waste-to-energy facility, a landfill would be needed to handle about half of the tonnage now going to Acme. Approximately 763 tons a day average would require a landfill. This amount would consist of bottom ash and other residues, material in excess of the waste-to-energy facility's capacity, and material by-passed when the facility is not in operation. The limitations of Contra Costa County's existing landfills in terms of their capacities and locations indicate that a new site or sites will have to be developed by the early 1990's even if Acme's proposed 200-acre expansion is approved.

Future landfill capacity requirements in Contra Costa County will depend upon population growth and the level of resource recovery operations. Assuming the gradual advent of recovery operations (as described in Alternative D), about 680 acre-feet of waste materials must be disposed annually. A new site should have a minimum life expectancy of 10 years (capable of providing for at least 6800 acre-feet of waste.) With an average fill height of 40 feet, about 170 acres would be required for the fill alone. Additional acreage must be provided for excavating cover material and buffering. Therefore, a new site would have to be 200 to 500 acres in size as a minimum, depending upon various other factors.

Contra Costa County conducted several surveys since the mid-1950's in an effort to identify potential sanitary landfill sites. A large number of potential sites were identified in these surveys. However, no proposed sites were adopted in the last two decades and none now have official status. The most recent survey focused upon potential landfill sites in the eastern portion of the county which could be used to service both the east county and the central county when the present landfill sites reach capacity. This survey evaluated specific sites in an effort to determine general suitability for landfill operations.

For Alternative E in this EIR/EIS, Contra Costa County in conjunction with the Corps of Engineers decided to use an area approach. Four areas in the county with potential for sanitary landfill use were identified, Exhibit S-7. Each of these areas contains two or more sites identified in previous studies or field checks. Although these areas do not contain all previously identified sites, they do reflect the areas where the highest concentrations of sites have been identified. Individual sites with apparently suitable characteristics are also located outside of these study areas. The areas were also selected because of their locations on the periphery of substantial residential development and good accessibility via the existing major road system.

A fifth area of study is the Altamont Landfill in Alameda County. It was chosen for evaluation because of its large capacity (1600 acres) and high potential for fitting into a possible future system.

Each identified area has characteristics which may be considered beneficial to development of a landfill site.

Evaluation must necessarily be general due to the large areas involved. The diameter of each area is the same, about five miles, which facilitates comparisons. A brief outline of characteristics for each area is given on the following pages.

Footnotes

¹State Solid Waste Management Board. Sanitary Landfill Site Section/Alternatives to Landfills. Seminar Manual. Fall 1980.

²Office of Policy and Program Analysis, State Solid Waste Management Board. Garbage . . . Crisis of the 80's. Report on the Solid Waste Management Board Landfill Survey. September 1982.

³Guido Zanotti, President, Marin Sanitary Service, Inc., Telephone Conversation, July 19, 1982.

⁴Mark Kostielney, Marin County, Environmental Health, Telephone Conversation, July 20, 1982.

⁵Sam Clark, Engineer; Oakland Scavenger Company, July 19, 1982.

ADDENDUM

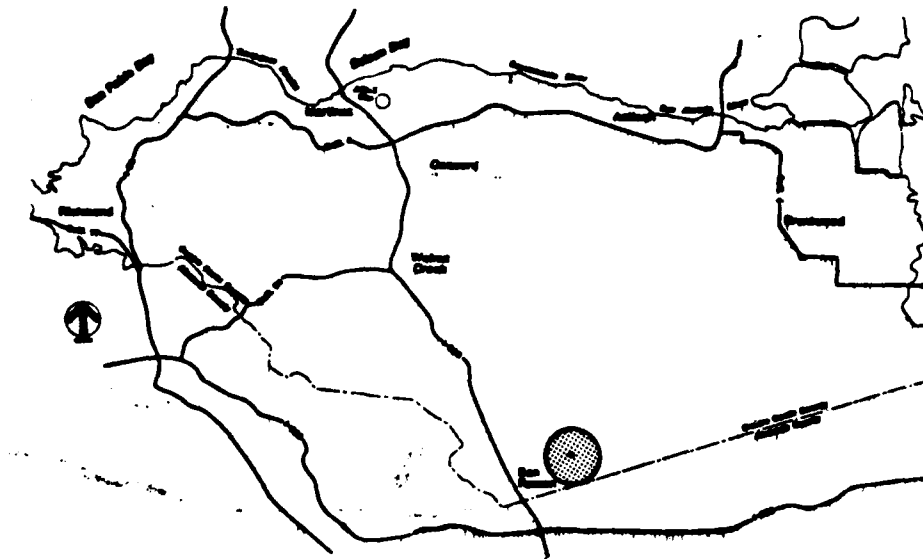
Acme Fill Corporation announced at the May 18, 1983 meeting of the Contra Costa County Solid Waste Commission that it had purchased an option to acquire a property for a prospective landfill site in accordance with the policy directions of the County's Solid Waste Management Plan. The property was identified as a 640-acre tract located south of the City of Brentwood. Subsequently, Acme identified the property as "Section 11" in the southwest quadrant of the Walnut Avenue-Vasco Road/Camino Diablo intersection. It is approximately 30 road miles from the present Acme landfill and it is located in the Southeast Area (analysis area) described in pages 196 and 198-214 of this report.

The subject property was optioned for investigation as a long-range successor to the present Acme site rather than as an alternative to the expansion of the present Acme site which is evaluated in this EIR/EIS. The County's 1982 Solid Waste Management Plan provides that the "private sector" is to seek a successor site to Acme, to report progress by 1983, and identify a site by 1985. However, the Commission urged Acme to advance the schedule and Acme responded.

At this time (June 1, 1983), no studies have been performed on the property to confirm its suitability for a landfill and to serve as a basis for the various permit applications that Acme will have to submit. These studies will require months, or possibly years, of elapsed time to prepare, and several will be prerequisites to the environmental evaluation and permit review processes which would have to be accomplished before a landfill facility could be developed.

The optioned property is, as noted, in the Southeast Area, but it is not one of the sites within this area which was identified and investigated in the County's previous site studies. Depending on whether a Class II-1 facility classification is sought, development costs can be expected to be similar to those outlined in Section G of this chapter and the costs of disposal similar to those presented in case 7 on page 226 (which involves a new landfill and a transfer station).

IV
C. EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
CHARACTERISTICS OF SELECTED AREAS



1. South Central Area

Topography: Low rolling hills; elevation range 500-1000 feet; predominant slopes of 0-30%; numerous landslides in steep areas; two prominent alluvial valleys along Alamo and Tassajara Creeks

Present Land Use: Undeveloped, primarily grazing

Primary General Plan Designations: Agricultural Preserve; Open Space; Public/Semi-public

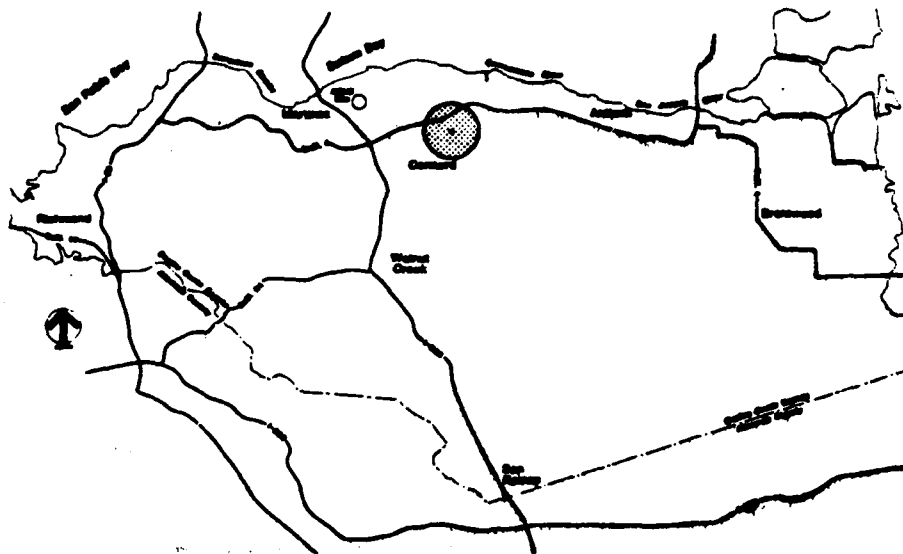
Primary Access Roads: Tassajara Road; Dougherty Road; Lawrence Road

Nearest Freeway Interchanges: I-580/Tassajara; I-680/Alcosta; I-680/Sycamore Valley

Geologic Faults: None

Soil Characteristics: Predominantly clay soils; 13 types; generally slow permeability; moderate to high shrink-swell; moderately-well to well drained; depth to bedrock 1 to greater than 5 feet,

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
C. CHARACTERISTICS OF SELECTED AREAS



2. North Central Area

Topography: Three distinctive land forms; 1) Terrace and marshlands along Suisun Bay; 2) moderate to steep (9-30%) hills with incised canyons; 3) flat stream valley along Mt. Diablo Creek

Present Land Uses: Concord Naval Weapons Station; some industrial and residential; Port Chicago Military Reservation

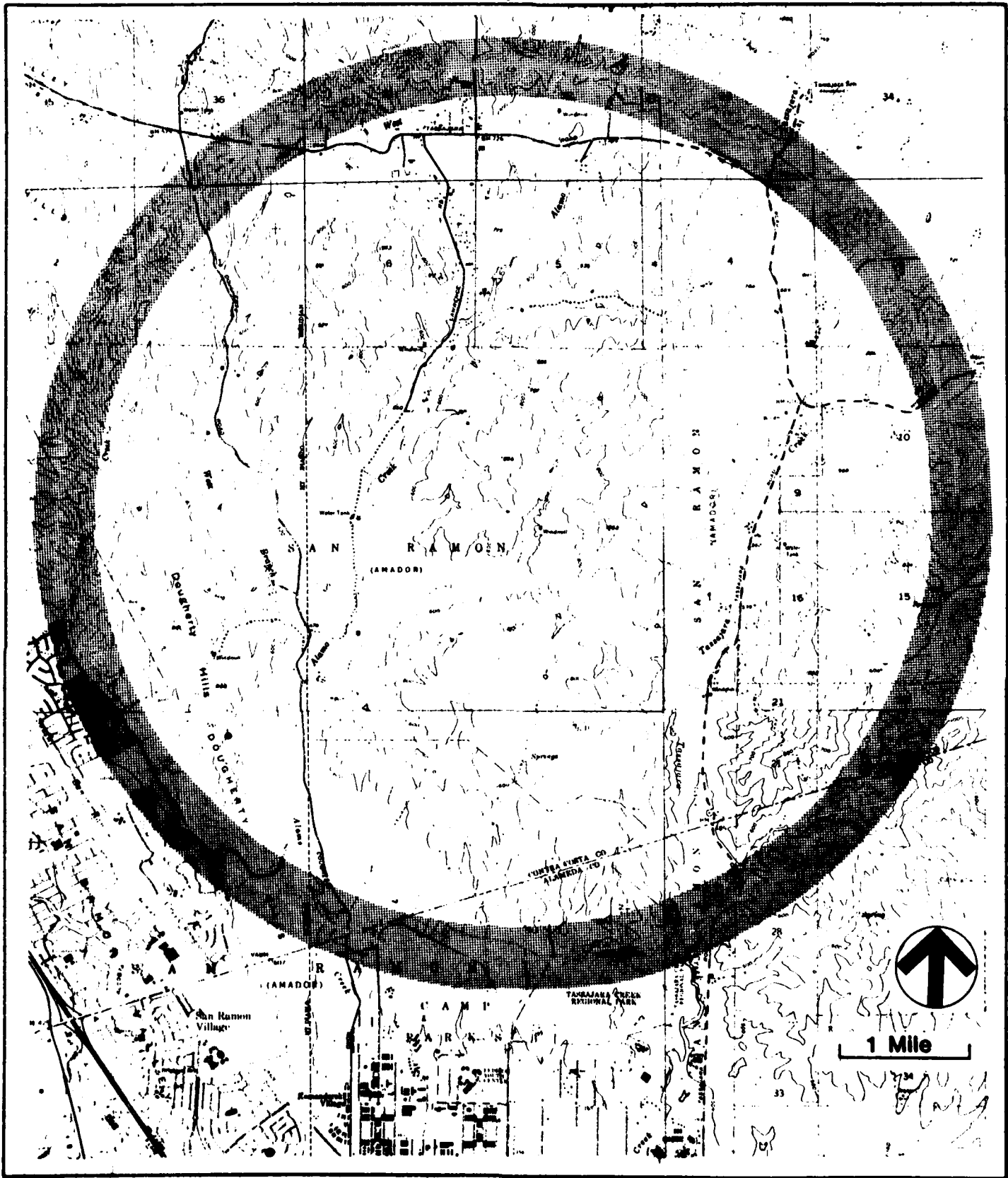
Primary General Plan Designations: Open Space; Public-Semi Public; Residential; Industrial

Primary Access Roads: State Highway 4; Willow Pass Road; Port Chicago Highway

Nearest Freeway Interchanges: Highway 4/Willow Pass; Highway 4/Port Chicago

Geologic Faults: Clayton Fault (unknown activity)

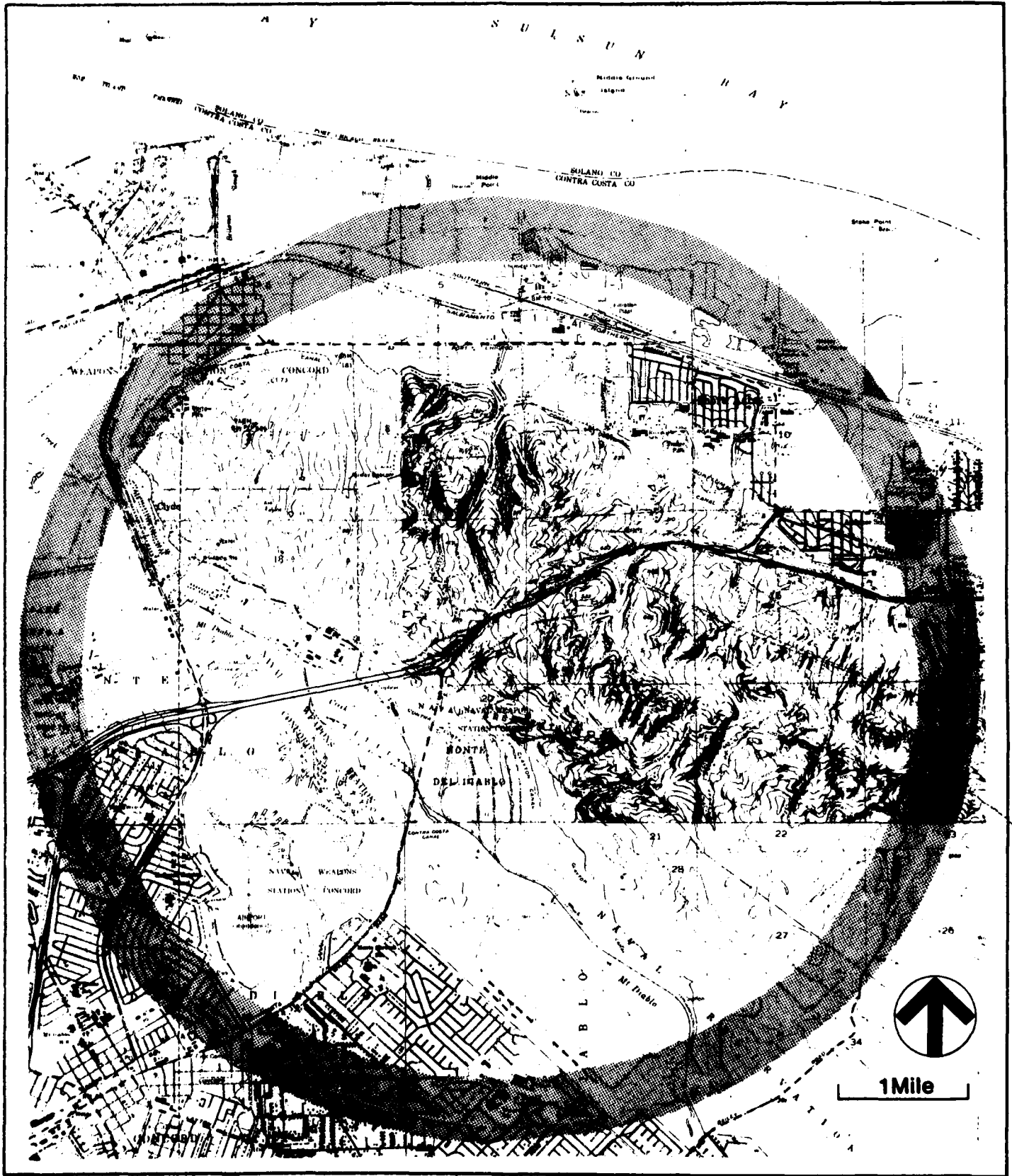
Soil Characteristics: Predominantly clay soils; 11 major types; well drained; moderate shrink-swell potential; depth to bedrock 1 to greater than 5 feet; possible liquefaction potential along Suisun Bay; moderate landslide potential.



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South Central Area

EXHIBIT
IV-1

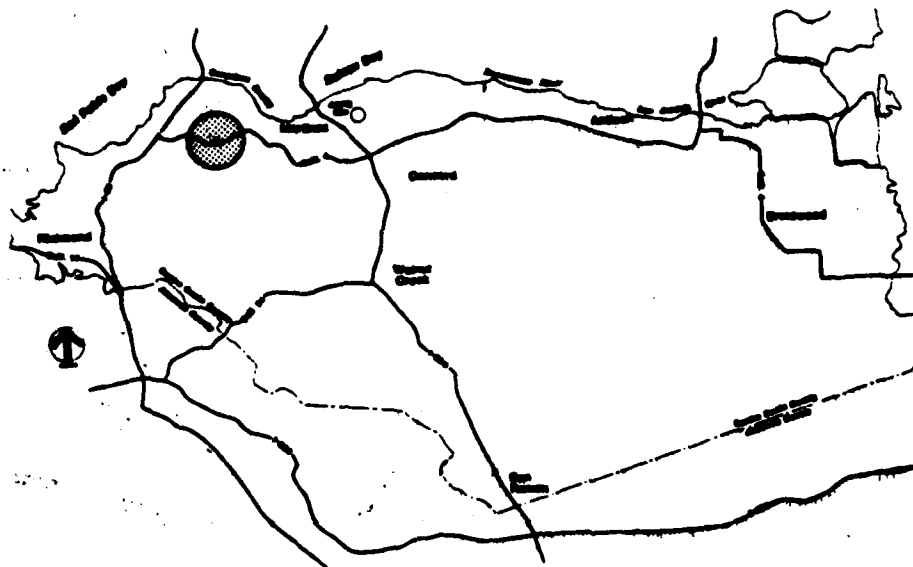


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North Central Area

EXHIBIT
 IV-2

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
C. CHARACTERISTICS OF SELECTED AREAS



3. Northwest Area

Topography: Moderate to steep terrain; elevation range 200-800 feet; deeply incised stream valleys with narrow valley floors; Franklin Canyon (Rodeo Creek) is widest (1/2 mile) valley

Present Land Uses: Primarily undeveloped; some residential in northwest corner

Primary General Plan Designations: Open space; industrial; residential; city limits of Hercules

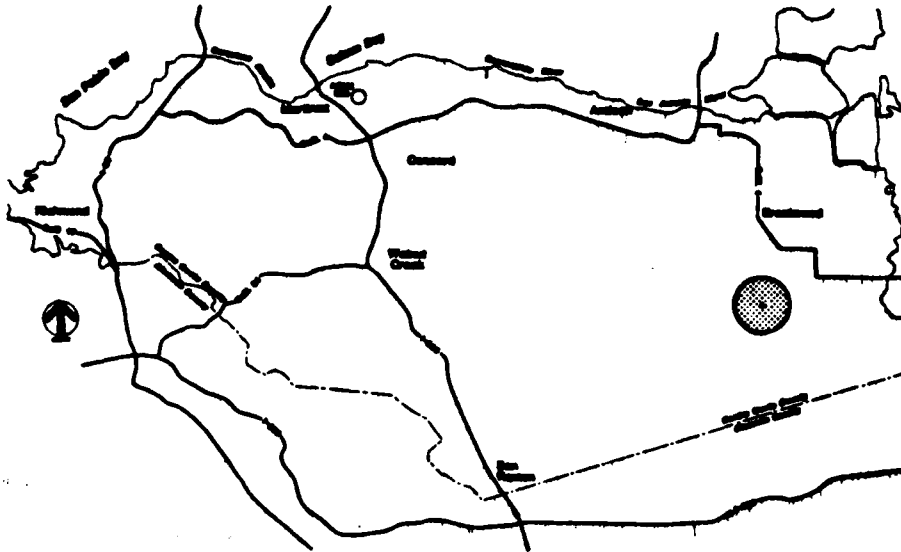
Primary Access Roads: Pinole Valley Road; Franklin Canyon Road (State Highway 4); Cummings Skyway

Nearest Freeway Interchanges: I-80/John Muir Parkway; John Muir Parkway/Cummings Skyway

Geologic Faults: Franklin Fault

Soil Characteristics: Predominantly clay soils; 10 major types; well to moderately-well drained; moderate to slow permeability; depth to bedrock 1-1/2 to greater than 5 feet

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
C. CHARACTERISTICS OF SELECTED AREAS



4. Southeast Area

Topography: Northeast portion (about 1/3 of the area) nearly flat but rising from the east to the west; southwest portion (about 2/3 of the area) of low rolling hills dissected by small streams; flat valleys up to 1/2 mile wide along Marsh and Kellogg Creeks; elevation range 50-900 feet

Present Land Uses: Primarily undeveloped; agricultural uses in northeast portion; grazing in southwest hills; Marsh Creek Reservoir

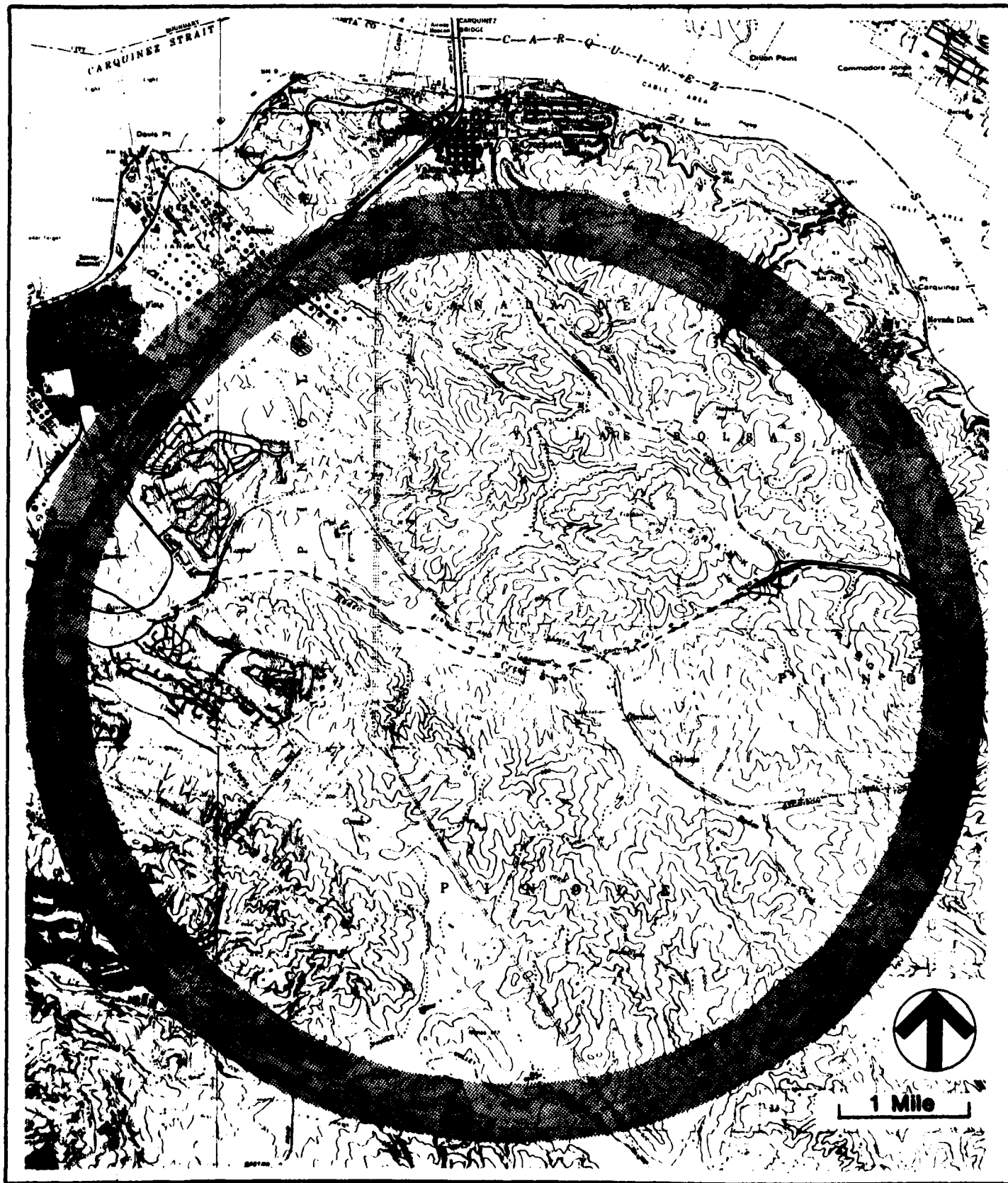
Primary General Plan Designations: Agricultural Core; Agricultural Reserve; Open Space; Public and Semi-public

Primary Access Roads: Marsh Creek Road; Vasco Road; Camino Diablo; Byron Highway

Nearest Freeway Interchanges: I-580/Vasco; Highway 4/Hillcrest

Geologic Faults: Antioch Fault; Midland Fault

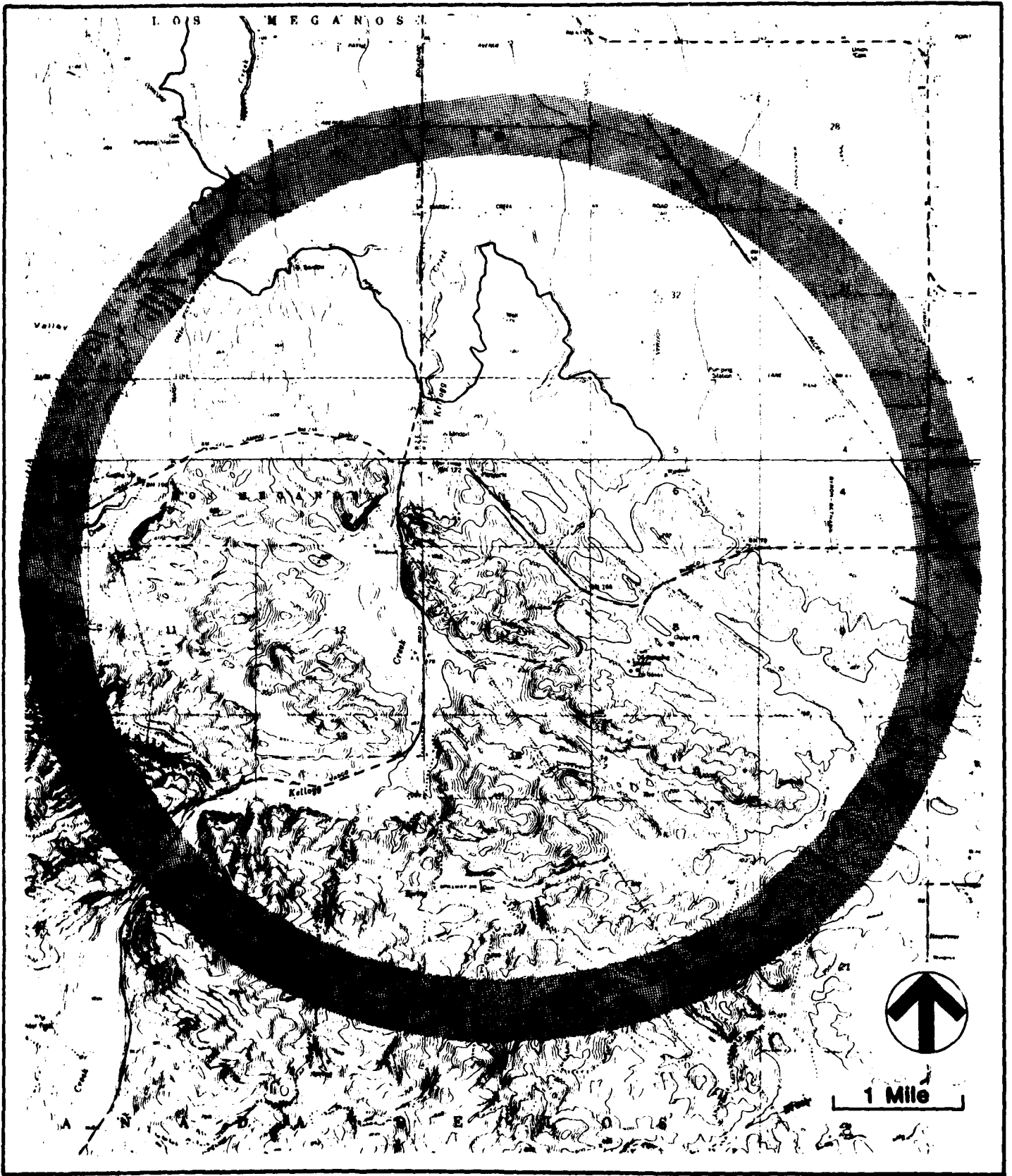
Soil Characteristics: Predominantly clay soils; 10 major types; well-drained; generally slow permeability; depth to bedrock 0 to greater than 5 feet.



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Northwest Area

EXHIBIT
IV-3

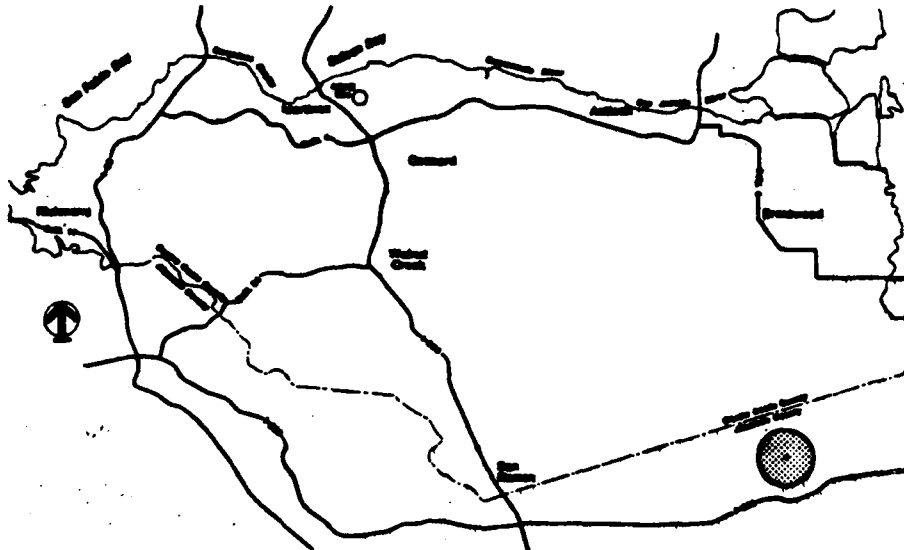


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Southeast Area

EXHIBIT
IV-4

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
C. CHARACTERISTICS OF SELECTED AREAS



5. Altamont Landfill

Topography: Moderate to steep rolling hills with narrow valleys; 1600 acres; elevation range 500 - 1260 feet.

Present Land Uses: Active landfill site; agricultural grazing on undeveloped portions

Primary Access Roads: Altamont Pass Road; Dyer Road

Nearest Freeway Interchanges: Altamont Pass/I-580

Geologic Faults: The Greenville Fault is located 2 miles west of the area

Soil Characteristics: Altamont and Pescadero clays.

Altamont Clay: well-drained; slowly permeable high shrink-swell potential; depth to bedrock 1-1/2 to 4 feet

Pescadero: imperfectly drained; very slowly permeable; high shrink-swell potential; depth to bedrock greater than 6 feet

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E

D. CRITERIA FOR EVALUATING SUITABILITY OF AREAS

Basic criteria for evaluating potential disposal sites were developed in a county report, "Geotechnical Services for the Contra Costa County Solid Waste Management Plan" prepared by Cooper and Clark Consulting Engineers in 1975. These basic criteria have been expanded and modified to establish a means whereby the five areas selected by the county may be evaluated and a relative comparison of suitability can be made.

The following categories provide an outline of the criteria used in this evaluation. A discussion of the constraints imposed within each area follows each category, and a relative ranking of suitability summarizes how well each area meets the established criteria.

1. Land Use Relationships

Criteria

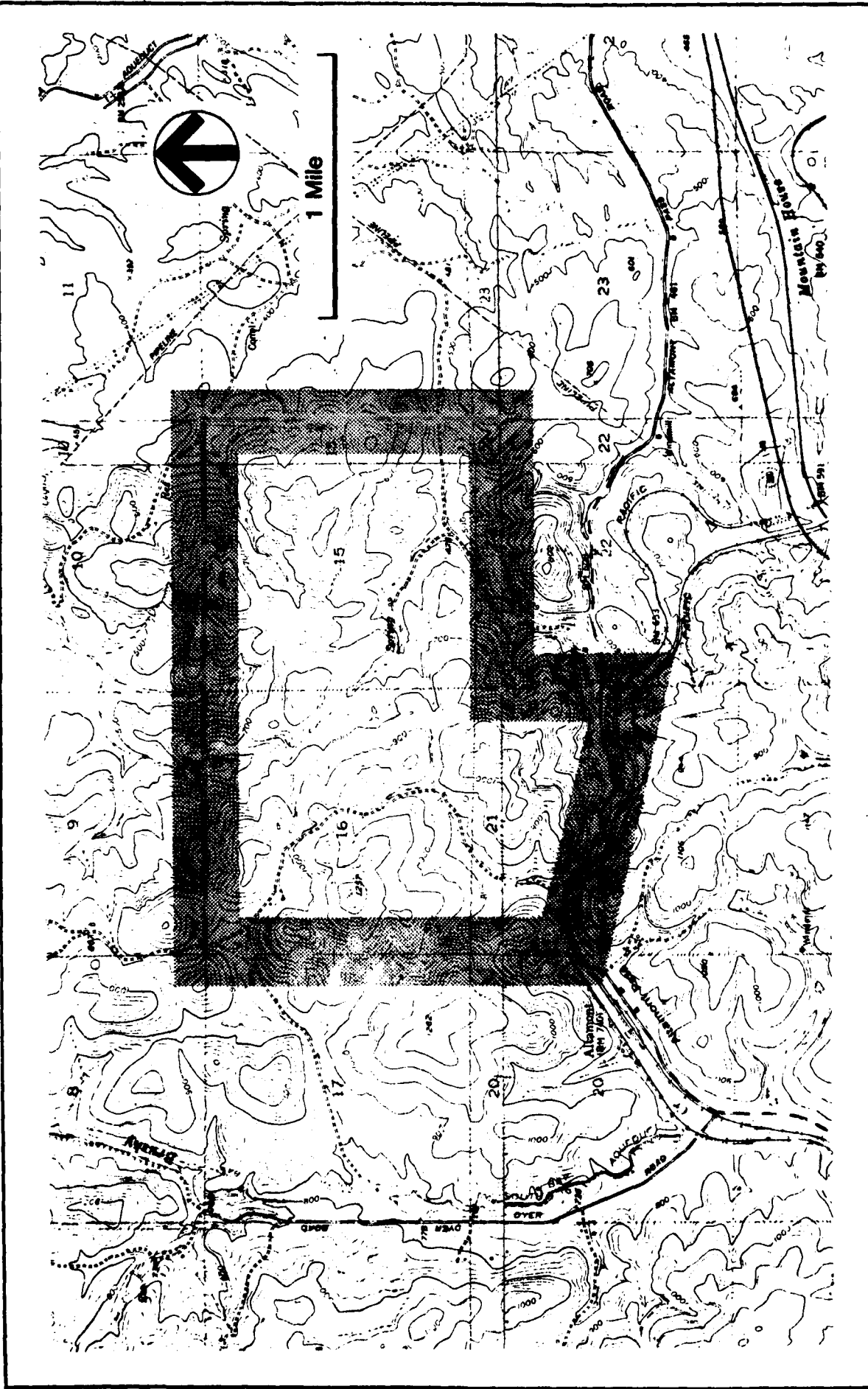
- Avoids conflicts with surrounding land uses and other agency jurisdictions
- Avoids areas near intensive residential development
- Avoids conflicts with future land uses set forth in the Contra Costa County General Plan
- Avoids prime agricultural lands

Discussion

Most of the stated land use criteria were used as the basis for selecting the alternative areas. Therefore, all of the areas have locations which satisfy the stated criteria. However, some areas have extensive land use constraints in terms of the total acreage available for a new landfill.

The North Central area has extensive acreage under jurisdiction of the U. S. Navy (U. S. Naval Magazine Concord within the city limits of Concord, and U. S. Naval Magazine Port Chicago). At this time, it is not known if these areas would be feasible for a landfill operation. A portion of this area is within the city limits of Pittsburg and also includes the residential areas of West Pittsburg.

The Southeast area has considerable land designated as agricultural core and agriculture-residential in the General Plan. Both of these designations would place constraints on a potential landfill site. The agricultural-core designation would probably have more constraints due to the presence of prime agricultural soils. The community of Byron located within the southeast area would also place constraints on landfill locations.



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Altamont Landfill

EXHIBIT
IV-5

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
D. CRITERIA FOR EVALUATING SUITABILITY OF AREAS (Continued)

The South Central area adjoins residential areas in the San Ramon and Sycamore Valleys. Large-lot residential development has been occurring along Tassajara Road. The majority of the area is under agricultural preserve contracts with the county. Portions are under ownership of the Army.

Since the South Central area was originally selected for study in early 1982, a series of development projects and General Plan changes have been proposed within it. These include one very large planned unit development. In addition, the U. S. Army has proposed reactivating part of the former Camp Parks as a reserve training facility. Even if these projects do not materialize in the short-term, they reflect strong development potentials which severely restrict the prospects for landfill facilities being created in the area.

A constraint within the northwest area is the inclusion of land presently within the city limits of Hercules which includes a residential area.

The Altamont site would have the fewest land use constraints by virtue of its existing operations.

All of the areas have designated open space (General Plan) which could be used for siting a landfill.

Given these land use constraints, the relative ranking of the five areas in terms of available acreage is as follows:

Least Constraints			Most Constraints	
Altamont	Northwest	Southeast	South Central	North Central

2. Traffic and Hauling Distance

Criteria

- Located near Service Area to limit direct hauling costs
- Avoids problem access: residential neighborhoods, steep grades, twisting narrow roads, congested traffic areas
- Requires transfer stations to reduce hauling costs

Discussion

The North Central and South Central areas are both located within the present central county service area and would, therefore, be favored in terms of providing direct haul capabilities. The situation in the South Central area, however, is complicated by freeway interchange congestion

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
D. CRITERIA FOR EVALUATING SUITABILITY OF AREAS (Continued)

and inadequately improved major County roads. In 1982, the County was forced to abandon the maintenance of Dougherty Road because it could not afford to rebuild the road. The Southeast area and Altamont site are considerably outside the service area and would both have long hauling distances. The Northwest area has an intermediate location just outside the service area, but has access problems due to topography constraints and rapidly expanding residential areas. The South Central and Southeast areas have access problems because of passage through neighborhoods and distance to freeway interchanges respectively. Access to the Northwest, South Central and Southeast areas would be limited by the existing narrow 2-lane roads. These areas would also have a relatively high potential for spills enroute to a site.

Given these constraints the relative ranking of the five areas is as follows:

Least Constraints			Most Constraints	
North Central	Altamont	Northwest	South Central	Southeast

3. Regulatory and Policy Concerns

Criteria

- Requirements and considerations for Class II-1 landfill classification
- Avoids areas within 10,000 feet of airport runways for turbojet aircraft, or 5,000 feet for piston aircraft

Discussion

The permit requirements for a Class II-1 landfill in any of the four areas within Contra Costa County would be the same as those for Acme. See Section I.D. Regulatory Permit Requirements. An exception would be the Army Corps of Engineers permit because only the North Central area has areas (along Suisun Bay) under Corps jurisdiction which are not covered by a nationwide permit. In addition, the north central site may require a permit from the U. S. Navy for either access or site approval. The South Central area may require authorization from the Army because of lands in their ownership. The Southeast area is within the jurisdiction of the Central Valley Regional Water Quality Control Board which would issue waste discharge requirements. All other areas are within the jurisdiction of the San Francisco Regional Water Quality Control Board.

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
D. CRITERIA FOR EVALUATING SUITABILITY OF AREAS (Continued)

Although the Altamont Landfill site is permitted and operational as a Class II-1 disposal facility, exporting Groups 2 and 3 waste from Acme's service area to Altamont would require some amendments and revisions to planning documents and permits. These include:

- Alameda County Solid Waste Management Plan

The Alameda County Solid Waste Management Plan consists of two parts; Objectives and Policies (Chapter 3) and a Facilities Program (Chapter 4). The Alameda County Solid Waste Management Authority, a Joint Powers Agency, would have to amend the Facilities Program and the amendment would require approval by the State Solid Waste Management Board. Further, it would be necessary to determine if importation of solid waste from Contra Costa County conforms with the objectives and policies. If a policy requires amendment it must be approved by cities with a majority of Alameda County population.

- Solid Waste Facilities Permit

The Solid Waste Facilities Permit issued by Alameda County Health Care Services would have to be amended. This amendment would require approval by the State Solid Waste Management Board.

- Conditional Land Use Permit

The Alameda County Planning staff would determine whether a revision to the Conditional Land Use Permit would be required. If revision is required it would need approval of the Alameda County Planning Commission.

- Environmental Impact Report

As part of the permit process, an environmental impact report was prepared by the Alameda County Planning Department for the Altamont Landfill. The Planning Department staff would determine whether an EIR or Negative Declaration would be required for importation of solid waste from Contra Costa County.

- Waste Discharge Requirements Order

Additional Groups 2 and 3 wastes diverted to Altamont would not require a change in the current waste discharge requirements order.

- Authority to Construct/Permit to Operate

Bay Area Air Quality Management District

On the basis of the provisions and conditions of the current permits issued for the Altamont Landfill by the BAAQMD, modifications would not be required by the District for disposal of solid wastes from Contra Costa County.

In order for the Altamont Landfill to accept the Group 1 wastes that Acme currently disposes on its 125-acre site, the following documents would be reviewed by the appropriate agency:

- Identification Number

Environmental Protection Agency

- Interim Status Document

State Department of Health Services

- Waste Discharge Requirement Order

Central Valley Regional Water Quality Control Board

The Federal Aviation Administration Order 5200.5 prohibits new sanitary landfills within specified distances of airports to avoid hazards to planes by birds that might be attracted to a potential source of forage. In effect, these regulations prohibit a disposal facility within 10,000 feet of any airport runway used by turbojet aircraft or within 5,000 feet of any airport runway used by only piston type aircraft.

On the basis of the FAA regulation, it appears that the North Central area may fall, at least partially, within the FAA's distance limits from Buchanan Field in Concord. A better determination could be made when a specific site is selected within that area.

The relative ranking of the five sites is as follows:

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
D. CRITERIA FOR EVALUATING SUITABILITY OF AREAS (Continued)

Least Constraints		Most Constraints	
Altamont	Southeast Northwest	South Central	North Central

4. Public Health and Safety.

Criteria

- Minimizes potential for hazards from explosive gases
- Minimizes fire hazard potential
- Accessible to fire-fighting facilities and personnel
- Minimizes attraction for and generation of vectors
- Minimizes hazards associated with land disposal of Group 1 wastes on a Class II-1 site

Discussion

All areas would rank equally in terms of potential for on-site gas hazards and off-site gas migration.

The estimated number of days per year of critical fire weather are shown in the Contra Costa County General Plan Safety Element. As noted in the Safety Element, fire hazard is increased by atmospheric humidity, slope steepness, vegetation type, exposure to solar radiation, wind speed and direction, accessibility to human activities, and accessibility to fire-fighting equipment. Critical fire days are rated on a scale of I, II, and III with Class III being the most hazardous. Of the 4 study areas shown in Contra Costa County, the Southeast area lies within the Class III district: 9.5 or more days of critical fire weather per year. The other 3 Contra Costa County sites are within area designated as Class II: 1 to 9.5 critical fire weather days per year. In addition, the Contra Costa County Consolidated Fire District has noted the fire problem of vegetation in the Northwest, the South Central and Southeast study areas. In terms of Critical Fire Days, the most critical area is the southeast study area. The Northwest and South Central would be ranked as slightly less critical. While the North Central area is within the Class II designation, it would be ranked slightly less critical than the other 3 areas on the basis of discussions with the Fire District. The number of critical fire days at Altamont is unknown.

Of the 4 study areas within Contra Costa County, only the North Central area has water mains and hydrants. In the Northwest study area, mains and hydrants would be available in only that part of the area which lies within the jurisdiction of the cities of Pinole, Rodeo, and Hercules. The distance to an actual site would probably make extension of lines

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
D. CRITERIA FOR EVALUATING SUITABILITY OF AREAS (Continued)

economically unfeasible. No mains and hydrants are available in the South Central and Southeast areas. Therefore, while the Northwest area might include some water lines, it would rely generally on wells and water trucked to the site while the South Central and Southeast areas would rely entirely on wells and imported water.

At the time Altamont was developed, a 4-inch water line was installed from the South Bay Aqueduct. Water is lifted more than 700 feet to a reservoir at the site. The capacity of this reservoir is 5 to 6 truckloads with each truck holding approximately 3800 gallons. Trucks are filled by gravity flow from the reservoir. A water truck used for dust control has outlets for water hoses for fire-fighting. This truck and fire trucks are always available.

In respect to water availability, the North Central area would have the least constraint. Altamont, with its specially designed and constructed water system which has served the site for almost 2 years, could rank virtually equally to the North Central area.

The availability of suitable soil for fire-fighting is unknown at all 4 Contra Costa areas. Soil is available at Altamont.

All of the study areas lie within the jurisdiction of at least two fire services jurisdictions. The actual jurisdiction would have to be determined at the time any site location was selected.

With the exception of the North Central study area and the Altamont site, all other study areas have at least one fire agency that is a volunteer operation. The Southeast area lies within the jurisdictions of the Byron and Brentwood Fire Protection Districts. Both districts are primarily volunteer operations. Under Mutual Aid Agreements, it is possible that the California State Division of Forestry, which operates a fire station on Marsh Creek Road near the study area, would respond to a fire, if requested. Of the three responsible agencies in the South Central area, two are volunteer operations. One of the 4 jurisdictions in the Northwest area is volunteer-based.

According to the Safety Element, "City fire services and fire districts are prepared to extinguish...wildfire. All have tanker trucks to be used in areas which do not have a municipal water supply, and districts which include large rural or undeveloped areas also have 4-wheel drive trucks for negotiating steep roads and fire trails." Mutual aid agreements have been signed by all jurisdictions in the County.

The North Central study area would have the fewest constraints on the basis of existing fire protection services and locations of full-time staff. Altamont would rank about equally as the site is currently in operation with its own reservoir connected to an aqueduct. Third ranked

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
D. CRITERIA FOR EVALUATING SUITABILITY OF AREAS (Continued)

would be the Northwest study area. The areas with the most constraints would be the South Central and the Southeast study areas, approximately equal, on the basis of the predominantly volunteer basis of their fire protection services.

All 5 areas would rank equally with respect to vector attraction and generation. Depending on site location, the southeast study area could have a constraint with respect to bird attraction and the Byron Airpark.

All 5 areas would rank equally at this stage of evaluation in terms of potential for hazards from Group 1 wastes.

The relative ranking of the five areas with respect to public health and safety is as follows:

<u>Least Constraints</u>	<u>Most Constraints</u>
North Central	Northwest
Altamont	South Central
	Southeast

5. Topography and Soils

Criteria

- Avoid areas with greater than 15% slope
- Avoid areas with high potential for soil loss
- Avoid areas with high potential for landslides or slope failures

Discussion

Land considered to be suitable for disposal areas should generally have slopes of 15 percent or less. Lands inside an alternate area with slopes greater than 15 percent were generally eliminated from future consideration.

With extensive lands comprised of steep slopes greater than 15 percent, the Northwest and Altamont areas were given lower rankings. The North Central, South Central and Southeast areas also have lands with slopes of 15 percent or greater but they contain enough land of suitable topography to be given better ratings.

Areas with adverse topography may be used for landfill operation, but would require additional site preparation and are given lower rankings.

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
D. CRITERIA FOR EVALUATING SUITABILITY OF AREAS (Continued)

Areas of expansive soils are not considered to adversely affect landfill operations. Areas with high liquefaction potential and compressible soils will require additional engineering studies and site preparation to mitigate these potential problems, but they can be used for disposal sites. Areas with high potential for landslides and slope failures are generally considered to be unsuitable for disposal sites without major modifications.

The Northwest area was ranked lower due to extensive landslide and mudflow potential. Parts of the North Central area were downgraded because of the presence of compressible and liquefiable soils. The South Central, Southeast and Altamont areas will not be adversely affected by soil and foundation conditions.

Potential erosion impacts at the five alternative sites may be determined using the universal soil equation. The equation evaluates potential soil loss in terms of rainfall energy, soil erodibility, length and steepness of slope, and control measures in use. In applying the model, the Northwest site was considered in the Los Osos-Millsholm-Los Gatos soil association while the other four sites were located in the Altamont-Diablo-Fontana association. A standard slope length of 100 feet and a slope steepness of 3:1 (three feet horizontally to one foot vertically, equivalent to an angle of 18 degrees above level) were used at all sites. The potential amount of soil lost to erosion per year both during landfill operation and after closure with a covering of annual grasses is given below. An annual loss of 5.0 tons per acre is considered tolerable in agriculture.

**Potential Soil Loss
(tons/acre/year)**

		<u>During Operation</u>	<u>After Closure</u>
1.	Northwest	24.6	4.1
2.	North Central	16.2	2.7
3.	South Central	34.2	5.7
4.	Southeast	21.6	3.6
5.	Altamont	22.8	3.8

Given these topography and soil constraints, the relative ranking of the five sites is as follows:

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
D. CRITERIA FOR EVALUATING SUITABILITY OF AREAS (Continued)

Least Constraints			Most Constraints	
South Central	Southeast	North Central	Altamont	Northwest

6. Geology and Seismicity

Criteria

- Avoids areas of fracture zones, rock outcrops, old mine shafts and close proximity to active or potentially active faults

Discussion

All areas would be submitted to the same relative degree of ground shaking potential. Lands underlain by active or potentially active faults may be subject to ground rupture and are generally considered less suitable for landfill operations. These areas could be used for landfill operations, but would require additional geologic investigation to determine the risk factor to the facility. Lands subject to tsunamis, seiches or inundation from dam or levee failures were considered to have more constraints.

The Northwest, North Central and Southeast areas have lands underlain by potentially active faults and are subsequently rated negative. Also, the North Central area has limited lands subject to tsunamis and seiches along with a small zone that may be inundated from the failure of Mallard Reservoir. This, too, is considered to be a site constraint.

Given these geology and seismicity constraints, the relative ranking of the five sites is as follows:

Least Constraints		Most Constraints	
Altamont	South Central	North Central	Northwest Southeast

7. Groundwater and Surface Water

Criteria

- Avoid areas with high surface runoff
- Avoid areas with high leachate generation potential
- Avoid areas within watersheds of reservoirs, or sensitive areas of San Pablo Bay
- Avoid areas subject to the 100-year flood

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
D. CRITERIA FOR EVALUATING SUITABILITY OF AREAS (Continued)

Discussion

Potential surface water impacts associated with sanitary landfill operations can be related to the amount of runoff produced in an area. The more runoff an area experiences, the higher the potential for surface contamination by flow over or through the refuse. The amount of surface runoff on each of the five alternative areas is indicated below. The values ranged from a high of 3.0 inches at the Northwest area to a low of 0.7 inches at the North Central site.

		<u>Annual Surface Runoff</u> <u>(Inches/Year)</u>	<u>Potential</u> <u>Leachate</u> <u>Generation</u> <u>(Inches/Year)</u>
1.	Northwest	3.0	-5.9
2.	North Central	0.7	-13.2
3.	South Central	1.0	-16.7
4.	Southeast	1.0	-18.4
5.	Altamont	1.1	-16.7

A major potential impact of operating a sanitary landfill is the leaching of water through the landfill material resulting in groundwater contamination. To evaluate the leachate generation potential in each of the five alternate sites, a water balance study was made comparing the amount of average annual precipitation to the amount of potential evaporation. (Potential evaporation is the amount of water lost to the air as a result of climatic factors such as air temperature and hours of sunshine.) In the analysis, data from the following weather stations were used, Northwest site: Richmond; North Central: Martinez Fire Station; South Central and Altamont: Livermore; and Southeast: Antioch. The potential leachate generation shown above is the difference between the amount of precipitation and the amount of potential evaporation. The negative numbers indicate that more potential evaporation is available at each site than precipitation. In assessing the alternatives, the higher the negative number, the lower the potential for leachate generation. For example, the Southeast area (-18.4) has the lowest potential for leachate generation and associated leachate impacts.

The number of reservoirs or sensitive aquatic areas along San Pablo Bay indicate severe constraints for the placement of a landfill due to increased potential for contaminating surface water. The Northwest, North Central and Southeast areas all have major reservoirs or sensitive aquatic areas. The South Central and Altamont areas do not have reservoirs. The North Central and Southeast areas have lands subject to inundation from the 100-year flood.

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
D. CRITERIA FOR EVALUATING SUITABILITY OF AREAS (Continued)

Given these hydrologic constraints, the relative ranking of the five areas is as follows:

Least Constraints			Most Constraints	
Altamont	South Central	Southeast	North Central	Northwest

8. Air Quality

Criteria

- Avoids areas with high dust potential due to excessive winds
- Avoids areas with high odor potential due to lack of winds
- Avoids excessive hauling distances to reduce vehicle emissions

Discussion

The potential for dust generation problems is mainly determined by wind strength and the proximity of sensitive receptors such as residences. Assuming that a specific fill site can be found in each area that is not close to residences, all of the five alternative areas have a lesser potential for dust problems when compared to the Acme site. The South Central area would have the least dust problem potential, due to its relatively sheltered location.

The most important variable that determines odor potential (outside of the quality of the landfill operation) is the frequency of light winds. Under light winds odors are not diluted and travel to neighboring properties. The South Central area would have the highest potential for odor problems due to its sheltered location. The other 4 areas are all fairly exposed to winds through the Delta and mountain passes, and would have a lower frequency of calms. Thus, these 4 areas would be preferred locations in terms of this criterion.

Vehicle emissions for the Altamont, Southeast and South Central study areas would be much greater than for either the northwest or North Central study areas. While trip generation would be similar at each area, average trip length to the southern areas would be much longer.

Given these air quality constraints, the relative ranking of the five areas is as follows:

Least Constraints		Most Constraints	
Northwest	North Central	South Central	Southeast
		Altamont	

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
D. CRITERIA FOR EVALUATING SUITABILITY OF AREAS (Continued)

9. Flora and Fauna

Criteria

- Avoids areas of habitat for endangered plant and animal species
- Avoids aquatic habitats both freshwater and saltwater

Discussion

As the Altamont site is already in operation, it would be preferred, since existing wildlife habitats would not be affected. A tidal marsh habitat exists downstream from the North Central area and could potentially be affected by landfill activities.

In the Southeast area the endangered San Joaquin kit fox may be affected by landfill operations. The relatively large grassland habitat required by this species presents a high potential for conflict with landfill operations.

A relative ranking of the five potential sites with respect to flora and fauna is as follows:

Least Constraints		Most Constraints	
Altamont	South Central Northwest	North Central	Southeast

10. Aesthetics

Criteria

- Avoids areas with high visibility from neighborhoods and major roads
- Avoids designated or proposed scenic highways

Discussion

All of the alternative areas have locations which would be inconspicuous and would not be aesthetically displeasing to passing motorists. Highway 4 in the North Central and Northwest areas is designated as a scenic route. The Cummings Skyway in the Northwest area is a minor scenic thoroughfare. The Southeast and South Central areas also have minor scenic thoroughfares. All of these scenic roadways (designated in the

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
D. CRITERIA FOR EVALUATING SUITABILITY OF AREAS (Continued)

Scenic Routes Element of the Contra Costa County General Plan) present minor constraints to locating a landfill. The Altamont site is the only area which would not have aesthetic impacts because of the existing landfill operations.

A relative ranking based on aesthetics is as follows:

<u>Least Constraints</u>	<u>Most Constraints</u>
Altamont	Northwest North Central Southeast South Central

11. Energy

Criteria

- Avoid areas requiring excessive on-site energy use and expenditure of energy to transport wastes
- Avoid areas with high potential for future energy development

Discussion

The North Central site would be approximately equal to the current Acme operation in terms of energy for franchised collection and private haulers using the site. Use of the Northwest and South Central areas would require approximately 50 percent greater vehicular energy use, the Southeast would require 200 percent more vehicular energy use than for vehicles using Acme's current site. Use of Altamont for collection and trucks and private vehicles without a transfer station would require 250 percent more vehicular energy use than is currently needed.

All sites would require approximately the same or similar equipment that Acme is now using at its present landfill operations. It is possible, however, that Altamont would present economies of scale and not require complete duplication of landfill operation equipment.

Therefore, Altamont ranks highest in terms of energy savings for disposal equipment with the other 4 sites ranked lower and equally.

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
D. CRITERIA FOR EVALUATING SUITABILITY OF AREAS (Continued)

The Southeast alternate site has been an area of active exploration for oil and gas with a number of wells drilled and abandoned. Producing gas wells exist in the Brentwood Oil-Gas Field approximately 4 miles northwest of the area. A thermal spring is reported at Byron Hot Springs just southeast of the area perimeter. The Mount Diablo area has been designated by the California Energy Resources Conservation and Development Commission in 1976 as "lands valuable prospectively for geothermal resources." Locating a landfill in the southeast area would preclude future energy development.

The relative ranking of the five areas is as follows:

Least Constraints		Most Constraints	
North Central	Altamont	Northwest South Central	Southeast

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E

E. SUMMARY OF AREA SUITABILITY

Table 9 summarizes the suitability of the five identified areas for potential landfill use based upon the established criteria. The Acme site is also included for comparative purposes using the site characteristics discussed in other sections of this report. The first five subject areas (Land Use; Traffic and Hauling Distance, Regulatory and Policy Concerns; Public Health and Safety; Topography and Soils) are probably the most important criteria in this study in terms of selecting a general area for a landfill. Therefore, the summary discussion emphasizes these subjects in an attempt to identify the most suitable area.

In general, the locations with the fewest constraints are the Altamont and Acme sites. Use of the Altamont site would require the construction of a transfer station, probably in Central Contra Costa County, and amendments to the present permits which authorize solid waste disposal at Altamont. The county's Solid Waste Management Plan indicates that it is not economical to build a transfer station in the central county at this time for the Acme site, although it does state that a transfer station will be needed when the Acme site closes.

Of the areas within the Contra Costa County, the Acme site and the North Central Area appear to have the fewest constraints with respect to traffic, and hauling distance. A transfer station would not be necessary to use these areas. However, the numerous jurisdictions in the North Central Area (U. S. Navy, City of Concord, City of Pittsburg) indicate that many land use, regulatory and policy constraints would be present.

The Northwest area also has relatively few constraints and would probably not require a transfer station, but this area does have constraints due to access and steep topography.

The South Central area is intermediate among the areas evaluated and would also not require a transfer station. Access, nearby residential areas and other agency jurisdictions present major constraints to this alternative.

The Southeast area has the most constraints and would also require a transfer station. A major concern is vehicular access because of the long distances to major freeways along narrow two-lane roads.

In summary, the Altamont and Acme sites appears to have the fewest constraints, but Altamont would require construction of a transfer station. Further studies should be completed to thoroughly evaluate feasibility of using the Altamont site, if the Acme site is closed or the permit is denied.

Table 9
SUMMARY OF AREA SUITABILITY
FOR A SANITARY LANDFILL

	Least Constraints				Most Constraints			
	Altamont Acme	Northwest	Southeast	South Central	North Central	North Central	North Central	North Central
1. Land Use								
2. Traffic and Hauling Distance,	North Central Acme	Altamont	Northwest	South Central	Northwest	South Central	South Central	Southeast
3. Regulatory and Policy Concerns	Altamont Acme	Southeast Northwest	South Central	North Central	North Central			
4. Public Health and Safety	North Central Altamont Acme			Northwest				South Central Southeast
5. Topography and Soils	South Central Acme	Southeast	North Central	Altamont	Northwest			
6. Geology and Seismicity	Altamont	South Central						North Central Northwest Southeast Acme
7. Groundwater and Surface Water	Altamont	South Central	Southeast	North Central	Northwest			
8. Air Quality	Northwest North Central Acme							South Central Southeast Altamont
9. Flora and Fauna	Altamont	South Central Northwest	North Central	Southeast	Acme			
10. Aesthetics	Altamont Acme							Northwest North Central Southeast South Central
11. Energy	North Central Acme	Altamont	Northwest South Central					Southeast

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E

F. HYPOTHETICAL SANITARY LANDFILL PROJECT ASSUMPTIONS

Costs are very important considerations in comparing the relative merits of a proposed on-site landfill expansion with the alternative of developing a new facility elsewhere. The characteristics of Acme's proposed expansion (Alternative A) are known and those of other on-site alternatives (Alternatives B and C) have been derived from it, but those of an actual off-site alternative are variable. Therefore, an off-site project, consisting of a landfill and a transfer station, has been hypothesized for comparative purposes.

This hypothetical project could be located within any of the identified alternative areas. Contra Costa County has determined that the site should have the following characteristics based on the current needs within the Acme service area:

1. Minimum life expectancy of at least 10 years
2. Minimum 400 acres for landfill (200 acre landfill, 200-acre buffer/cover borrow area)
3. Within one-half mile of major access, power and water
4. Class II-1 permit capability
5. Adequate on-site source of cover material
6. Serviced by at least one transfer station (500 ton-per-day capacity)
7. Dispose of all solid waste currently going to Acme (approximately 1,500 TPD or 547,500 TPY).

G. OFF-SITE HYPOTHETICAL PROJECT ALTERNATIVE COSTS

Land Acquisition Costs. The first cost to identify is the cost of land acquisition for the new sanitary landfill (400 acres) and a new transfer station. Table 10 provides an estimate of acreage costs based upon recent sales recorded in the County Assessors Office. These values reflect the current (1982) development pressures in the South Central area where raw, rural land costs are highest and the much higher costs of industrial land for a transfer station. Because of the small number of such land sales, the land values cited here may be understated; however, a landfill may be possible on less expensive marginal land. The estimated cost of acquiring land for the hypothetical landfill within each area would be as indicated, assuming a midpoint with the range of values for each area.

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PROPOSED EXPANSION OF ACME LANDFILL OPERATIONS CONTRA
COSTA COUNTY CALIFORNIA VOLUME 1(U) CORPS OF ENGINEERS
SAN FRANCISCO CA SAN FRANCISCO DISTRICT JUN 83

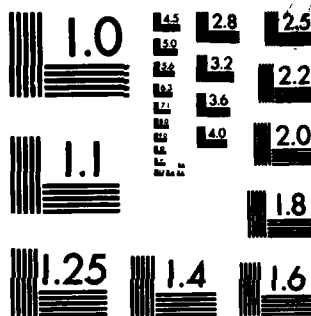
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IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
 G. OFF-SITE HYPOTHETICAL PROJECT ALTERNATIVE COSTS (Continued)

Table 10

ESTIMATED LAND COSTS FOR A HYPOTHETICAL 400-ACRE LANDFILL AND 5-ACRE
 TRANSFER STATION

	Recorded Land Values (1982) per acre	Estimated Acquisition (Cost (1982) dollars)
Northwest Area	\$3,500 - 4,500	\$1,600,000
North Central Area	2,500 - 3,000	1,100,000
South Central Area	5,000 - 7,500	2,500,000
Southeast Area	2,500 - 3,000	1,100,000
Transfer Station	20,000 - 40,000	150,000

Source: Contra Costa County Assessors Office

Landfill Development Costs. The cost to develop a new landfill within any of the identified areas can be broken down into the following components: site selection, detailed field investigation, permit approval process, EIR, additional roadway access, water and power line extensions, and site preparation.

There are a number of cost items which would be about the same for developing a landfill regardless of the alternative area selected. Minimum costs are estimated in Table 11 and would be in addition to the land acquisition costs.

Project Costs. Table 12 shows the project costs related to planning, design, construction, and start-up of a new sanitary landfill and transfer station. Land costs come from Table 10 and site development costs come from Table 11. Equipment costs are estimated on the basis of current prices for equipment currently at Acme.

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
 G. OFF-SITE HYPOTHETICAL PROJECT ALTERNATIVE COSTS (Continued)

Table 11

ESTIMATED SITE DEVELOPMENT COSTS (1982 DOLLARS)
 WHICH WOULD APPLY TO ANY NEW LANDFILL SITE AND TRANSFER STATION SITE

	<u>Planning</u>	<u>Landfill</u>	<u>Transfer Station</u>
1. Site selection and identification	\$50,000	- \$100,000	\$10,000 - \$20,000
2. Detailed on-site field investigation and borings	200,000	- 400,000	10,000 - 20,000
3. Permit Approval Process	75,000	- 125,000	10,000 - 20,000
4. EIR	<u>75,000</u>	- <u>125,000</u>	<u>30,000</u> - <u>50,000</u>
Sub-Total	\$400,000	- \$750,000	\$60,000 - \$110,000
<u>Development</u>			
5. One-half mile of new roadway access	500,000	- 750,000	----- - -----
6. One-half mile of utilities extension	100,000	- 150,000	----- - -----
7. Site preparation	<u>400,000</u>	- <u>500,000</u>	<u>500,000</u> - <u>800,000</u>
Sub-Total	\$1,000,000	- \$1,400,000	\$500,000 - \$800,000
Total:	<u>\$1,400,000</u>	- <u>\$2,150,000</u>	<u>\$560,000</u> - <u>\$910,000</u>

Source: Contra Costa County Public Works Department Torrey & Torrey, Inc.

Table 12

ESTIMATED PROJECT COSTS (1982 DOLLARS)

<u>Item</u>	<u>Cost</u>	<u>Comment</u>
<u>Landfill</u>		
1. Land Acquisition	\$ 1,600,000	\$ 4,000/acre
2. Planning	575,000	
3. Site Development	1,200,000	
4. Equipment	1,630,000	
5. Facilities	200,000	
6. Pollution Control*	3,000,000	
7. Contingency	1,231,000	15% of Items 3-6
8. Engineering, Legal Administration	1,415,000	15% of Items 3-7
9. Contractors' Overhead Profit	\$ 1,415,000	15% of Items 3-7
Total:	\$12,266,000	
<u>Transfer Station</u>		
1. Land Acquisition	\$ 150,000	
2. Planning	85,000	
3. Site Development	650,000	
4. Equipment	785,000	
5. Facilities	1,138,000	
6. Miscellaneous	300,000	
7. Contingency	431,000	15% of Items 3-6
8. Engineering, Legal, Administration	330,000	10% of Items 3-7
9. Contractors' Overhead, Profit	496,000	15% of Items 3-7
Total:	\$4,365,000	

*NOTE: The \$3 million figure for pollution control includes a cost of \$1,960,000 (@ \$1.50 per square foot) for a RCRA-type liner under a 30-acre cell which would be used for limited Group 1/hazardous materials. It is assumed that lining the full 200-acre disposal area would be prohibitively expensive at \$13 million. (The full liner would increase the capital cost of the landfill facility to \$22,266,000 and the per-ton cost to \$12.50.)

Source: Contra Costa County Public Works Department Estimates Derived from Recent Solid Waste Project Costs

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
6. OFF-SITE HYPOTHETICAL PROJECT ALTERNATIVE COSTS (Continued)

Financing Costs. To complete the project requires the raising of necessary funds. Table 13 shows the financing costs to secure these funds. For simplicity, financing costs are estimated on the basis of a public development bond issue. The financing assumptions are as follows:

Interest rate: 12%
 Type of debt: 100% Bond Issue
 Length of maturity: 10 years for landfill
 20 years for transfer station

Table 13

ESTIMATED FINANCING COSTS
1982 DOLLARS

<u>Item</u>	<u>Landfill</u>	<u>Transfer Station</u>
Assumptions:		
Capital Cost	\$ 12,300,000	\$ 4,400,000
Bond Issue	17,300,000	5,900,000
<hr/>		
Interest during construction (12% for 1 year)	3,100,000	790,000
Reserve Funds:		
Bond Reserve	1,700,000	590,000
Contingency		
Issuance Costs	<u>200,000</u>	<u>100,000</u>
TOTAL:	\$ 5,000,000 (29% Bond Issue)	\$ 1,480,000 (25% Bond Issue)

Source: Contra Costa County Public Works Departments

IV
6. EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
OFF-SITE HYPOTHETICAL PROJECT ALTERNATIVE COSTS (Continued)

Capital Costs. The total capital costs are the sum of the estimated project costs, estimated financing costs, and the expected return to the equity investor (profit). Table 14 shows the estimated total capital costs.

Table 14

ESTIMATED CAPITAL COSTS
1982 DOLLARS

<u>Item</u>	<u>Landfill</u>	<u>Transfer Station</u>
Project Costs	\$ 12,300,000	\$ 4,400,000
Financing Costs	<u>5,000,000</u>	<u>1,500,000</u>
Total Capital Costs	\$ <u>17,300,000</u>	\$ <u>5,900,000</u>

Operation and Maintenance Costs. The operation and maintenance costs that can be expected annually to be incurred by the landfill and transfer station operator are shown in Table 15. All annual amounts are expressed in 1982 dollars.

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
 G. OFF-SITE HYPOTHETICAL PROJECT ALTERNATIVE COSTS (Continued)

Table 15

ESTIMATED ANNUAL OPERATION AND MAINTENANCE COSTS
 1982 DOLLARS

<u>Landfill</u>		<u>Transfer Station</u>	
1. Labor Equipment	\$ 277,000	1. Labor	\$ 570,000
2. Operation/Maintenance	400,000	2. Utilities	8,000
3. Administration	100,000	3. Operation Transfer	42,000
4. Reserve	100,000	4. Vehicles	186,000
5. Fees	150,000	5. Fees	1,643,000 @ \$9 ton
6. Monitoring	30,000	6. Vector Control	18,000
7. Insurance	80,000	7. Administration	12,000
8. Bonding	30,000	8. Insurance	40,000
9. Engineering	100,000	9. Bonding Equipment	13,000
10. Contingency	175,000	10. Reserve	40,000
		11. Contingency	<u>70,000</u>
	<u>\$1,442,000</u> (\$2.63 Per Ton)		<u>\$2,642,000</u> (\$14.48 Per Ton)

Source: Contra Costa County Public Works Department Estimates Derived from Recent Solid Waste Project Costs.

Annual Costs. The annual costs in 1982 dollars that could be expected with the new landfill and transfer station are presented in Table 16.

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
 6. OFF-SITE HYPOTHECTICAL PROJECT ALTERNATIVE COSTS (Continued)

Table 16

ESTIMATED ANNUAL COSTS
 1982 DOLLARS

<u>Item</u>	<u>Landfill</u>	<u>Transfer Station</u>
Capitall Costs	\$ 3,100,000	\$ 790,000
Interest and principal payments to debt holders		
Operation and Maintenance Costs	\$ 1,442,000	\$ 2,642,000
	<hr/>	<hr/>
TOTAL ANNUAL COSTS:	\$ 4,542,000 (\$ 8.30 per ton)	\$ 3,432,000 (\$ 18.81 per ton)

Collection and Haul Costs. The cost to collect solid waste and haul it from the place of origin to a disposal site or transfer station in a standard compactor truck is estimated to be \$40/ton + \$1/ton per mile hauled. This cost is based on the County Solid Waste Management Plan figures and is confirmed by surveys conducted by the California Waste Management Board.

Haul costs from the transfer station to the disposal site are estimated to be \$0.5 per ton per mile (distance round-trip). The costs for annual operations and maintenance in Table 16 are for a round-trip distance of 20 miles. For transfer haul distances greater than 20 miles additional hauling costs have been added to the operating and maintenance costs.

IV
6. EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
OFF-SITE HYPOTHETICAL PROJECT ALTERNATIVE COSTS (Continued)

Tipping Fee. The charge (tipping fee) to dispose of waste at a sanitary landfill generally includes the cost of operation and maintenance of the site and also annual capital costs for the initial investment to develop the site. Effective November 1, 1983 the Altamont landfill in Alameda County will charge the private collectors licensed by the County and City of San Francisco \$12.00 per ton which will include a \$3.00 per ton surcharge distributed to the cities in Alameda County using the landfill. The eastern Alameda County Solid Waste Disposal site located on Vasco Road charges \$6.85 per compacted ton. Presumably, Alameda County would also impose the \$3.00 surcharge fee if Contra Costa County were to use the facility on a long-term basis.

The tipping fee for a new hypothetical landfill in one of the alternative areas would probably lie within these known charges. For the purpose of this EIR/EIS an estimate of \$8.30 per ton (1982 dollars) is used.

Cost of Mitigation Area The proposed Acme Landfill expansion (Alternative A) will require a mitigation area of at least 160 acres and Alternative C may require an off-site mitigation area. It is not known if any of the off-site alternatives would require mitigation, but it is assumed here that none would.

The costs of a mitigation area are highly variable because the land may be marginal for other purposes and the site may or may not require enhancement. Discussion with California Department of Fish and Game indicates that the mitigation site for Alternative A would have the following average value based on recent Bay Area costs:

Land:	\$ 1,000 - \$ 2,000 per acre
Enhancement:	\$ 2,000 - \$ 4,000 per acre
Average:	\$ 4,000 per acre
Site (160 acres):	\$ 640,000

Combined Costs of Facility System Alternatives. The costs of hauling, transfer and disposal make up the total cost of service for a particular disposal facility system. Seven alternative facility systems (covered in this EIR/EIS) can be identified for Contra Costa County, including the present system consisting of the Acme, Contra Costa Waste Sanitary, and West Contra Costa Sanitary landfill facilities. These systems and their costs have been described as follows by the Contra Costa County Public Works Department:

1) Cost of Current System

This is a cost estimate of 1500 tons per day of solid wastes hauled directly to Acme Landfill:

Collection Costs:	1500 tons X \$50/ton = \$ 75,000
Disposal Fee:	1500 tons X \$ 6/ton = <u>9,000</u>
	\$ 84,000/day

2) Cost of System Without Acme Landfill (Alternative E)

This is a cost estimate of 1500 tons per day (TPD) of solid wastes hauled to existing landfills other than Acme. The following distribution is assumed:

800 TPD to Antioch	(Contra Costa Waste Sanitary Landfill)
500 TPD to Richmond	(West Contra Costa Sanitary Landfill)
200 TPD to Altamont	(Altamont Landfill)

Collection Costs:	800 tons X \$60/ton = \$ 48,000
	500 tons X \$60/ton = 30,000
	200 tons X \$60/ton = <u>12,000</u>
	\$ 90,000

Disposal Costs:	800 tons X \$8.50/ton = 6,800
	500 tons X \$8.50/ton = 4,250
	200 tons X \$ 12/ton = <u>2,400</u>
	\$ 13,450

Total:	\$ 103,450/day
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If this system were implemented, the Contra Costa Waste Landfill in Antioch would reach capacity in approximately 1986, about seven years earlier than expected. The West Contra Costa Landfill in Richmond would reach capacity in approximately 1996, about six years earlier than expected. The effect on the capacity of Altamont Landfill is negligible.

3) Cost of System With Acme 200-Acre Expansion (Alternative A)

Development of the 200-acre expansion area according to the development plan proposed by Acme would result in costs similar to the costs of the current system (\$84,000 per day). In effect, a landfill operation similar to that being used on the 22-acre area would be continued on a large contiguous area already owned by Acme.

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
6. OFF-SITE HYPOTHETICAL PROJECT ALTERNATIVE COSTS (Continued)

For the purposes of this comparison, it is assumed that Acme would be amortizing the costs of site development, including an off-site mitigation area (nominally \$640,000) and a 30-acre cell lined to RCRA standards (\$3,000,000), over a 10-year period. As was the case in the analysis for a new landfill site (Table I3), it was concluded that a full liner for a 200-acre area (\$13 million) would be prohibitively expensive. The resulting costs are:

Collection Costs:	1500 tons X \$50/ton = \$ 75,000
Disposal Fee:	1500 tons X \$7.33/ton = <u>11,000</u>

Total: \$ 86,000/day

4) Cost of System With Acme 100-Acre Expansion (Alternative B)

This cost estimate is similar to the costs for the 200-acre expansion, except that the disposal fee is increased because the costs for site development are amortized for a shorter time period. No off-site mitigation area would be required and it is assumed that a smaller hazardous/Group 1 waste cell would be developed.

Collection Costs:	1500 tons X \$50/ton = \$ 50,000
Disposal Fee:	1500 tons X \$12/ton = <u>18,000</u>

Total: \$ 96,000/day

No costs for Alternative C have been estimated because of its small area and highly variable attendant costs.

5) Cost of System Using Altamont Landfill With Transfer Station (Alternative E)

This is a cost estimate of 1500 tons per day of solid wastes disposed of at Altamont Landfill with 1000 tons per day being taken to a transfer station located at vicinity of Highway 24/I-680.

Collection Costs:	1000 tons X \$50/ton = \$ 50,000
	500 tons X \$70/ton = <u>35,000</u>

\$ 85,000

Transfer Station Costs:

Basic transfer station costs	\$ 19.00/ton
Additional transfer haul costs	2.30/ton
Additional disposal costs	<u>3.00/ton</u>

\$ 24.30/ton

Disposal Fee:	1000 tons X \$24.30/ton = \$ 24,300
	500 tons X \$12 /ton = <u>6,000</u>

Total: \$ 115,300/day

6) Cost of System Using an Off-Site Alternative With No Transfer Station (Alternative E)

This is a cost estimate of 1500 tons per day of solid wastes disposed of at an off-site alternative to Acme Landfill which is close enough that a transfer station is not required.

Collection Costs:	1500 tons X \$60/ton = \$ 90,000
Disposal Costs:	1500 tons X \$8.30/ton = <u>12,450</u>

Total: \$ 102,450/day

7) Cost of System Using an Off-Site Alternative With Transfer Station (Alternative E)

This is a cost estimate of 1500 tons per day of solid wastes disposed of at an off-site alternative to Acme Landfill which is at a distance that a transfer station is required. It's assumed that 500 tons per day would be hauled directly to the landfill and that the transfer station is located in the vicinity of Highway 24/I-680.

Collection Costs:	1000 tons X \$50/ton = \$ 50,000
	500 tons X \$70/ton = <u>35,000</u>

\$ 85,000

Transfer Station Costs:

Basic transfer station costs	\$ 19.00/ton
Additional transfer haul cost	<u>2.30/ton</u>

\$ 21.30/ton

Disposal Fee	1000 tons X \$21.30/ton = \$ 21,300
	500 tons X \$ 8.30/ton = <u>4,150</u>

Total: \$ 110,450/day

The overall daily costs of these alternative facility systems are summarized in Table 17.

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
 G. OFF-SITE HYPOTHETICAL PROJECT ALTERNATIVE COSTS (Continued)

TABLE 17

SUMMARY COMPARISON OF TOTAL DAILY COSTS FOR ALTERNATIVE FACILITY SYSTEMS

	<u>Total Cost</u>	<u>Cost Per Ton</u>	<u>Percentage Above Current System</u>
1. Current System	\$ 84,000	\$ 56	--
2. Existing Landfills w/o Acme Alternative E	103,000	69	23
3. 200-Acre Expansion Alternative A	86,000	57	2
4. 100-Acre Expansion Alternative B	96,000	64	14
5. Altamont Alternative E	115,000	77	38
6. New Site without Transfer Station Alternative E	102,000	68	21
7. New Site with Transfer Station Alternative E	110,000	73	30

Source: Contra Costa County Public Works Department.

These costs are rough estimates for comparative purposes. They show that the on-site expansion alternatives have cost advantages when compared with the off-site options, largely because the land has been acquired and the operation established, and that the 200-acre expansion (the largest acreage expansion) would be the most cost efficient.

An inference of the analysis is that Central Contra Costa County disposal costs will increase whenever landfilling at Acme is completed and solid wastes must be transported to new or more distant existing facilities.

IV EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E

H. OTHER COST CONSIDERATIONS

There are a number of potential costs which would result from the selection of a landfill project alternative but would not necessarily be project costs for the public sector. These include:

Flood Control Levee Reinforcement or Removal.

If the 100-acre on-site mitigation area were open to tidal action, there may be detrimental effects on the levees of Walnut/Pacheco Creek according to the County Public Works Department. If the tidal action results in frequent inundation of the 100 acres, the erosive nature of tidal action will warrant modifications to the levees. The modification to the levees could range from providing slope protection on the interior of the levees to relocating the levees adjacent to the 100-acre landfill area. The costs cannot be estimated at the current level of project detail.

Dredged Material Disposal Costs.

The use of a part of Acme's proposed 200-acre expansion area for the disposal of dredged material from the adjoining Walnut/Pacheco Creek channel would reduce costs for the County's Flood Control District for about 5 years. It is anticipated that the site proposed for landfilling under Alternative A could accept about 500,000 cubic yards for a first dredging project in 1984 and about 250,000 cubic yards of material each for two subsequent dredging projects at two-year intervals, for a total of about 1 million cubic yards. It is possible that some additional dredged material might be accommodated (e. g., another 250,000 cubic yards) to fill perimeter buffer area if that is required.

The District's evident alternatives to the use of Acme's site under Alternative A would be used out of a nearby dredged material disposal site, such as the United Towing property across Waterfront Road, or the Carquinez Straits (aquatic) disposal area. The estimated overall costs of these options to the District for the disposal of 1 million cubic yards are:

Portion of Acme Site	@ \$ 1.50/cy	\$ 1,500,000
Alternative Land Disposal Site	@ \$ 3.50/cy	\$ 3,500,000
Carquinez Straits Aquatic Disposal	@ \$ 6.00/cy	\$ 6,000,000

The unit cost of using an alternative land disposal site includes the cost of leasing the discharge site and the cost of excavating dried dredged material and hauling it to a permanent disposal site in order to maintain the capacity of the discharge site.

The unit cost for using the Carquinez Straits aquatic disposal site includes the costs of hydraulically pumping the dredged material over one mile to a barge at the mouth of Walnut Creek and transporting the material by barge to the disposal site.

IV
H. EVALUATION OF OTHER AREAS FOR LANDFILL USE - ALTERNATIVE E
OTHER COST CONSIDERATIONS (Continued)

In addition to the cost advantage to the District of disposing of its dredged materials at Acme, the materials would provide Acme with much of the cover material it would require for the landfill. If the dredged material is discharged at another nearby land site, the material might still be available for use as cover material at the Acme Landfill.

Waterbird Way Improvements and Maintenance. The estimated costs for a new landfill in Table 11 include 1/2 mile of new road in the \$500,000 - 750,000 range. In the case of Acme, a new access road was installed in 1982 at the cost of about \$900,000, much of which was paid for by Acme and the IT Corporation, with some land contributed by the Shell Oil Corporation and \$180,000 in public costs. Annual maintenance costs will be about \$11,000 per year. The discontinued use of the Acme property for a landfill would result in low intensity uses of the site which probably would not justify the new road on the basis of lowered traffic volumes. The new road would continue to take the IT Corporation's hazardous waste traffic off residential streets, and it would someday provide a segment of a future north-south industrial road.

V UNAVOIDABLE ADVERSE IMPACTS

The proposed project (Alternative A) and Alternatives B, C, D, and E would have some unavoidable adverse impacts which cannot be mitigated to a level of insignificance. The following summary indicates the impacts which are associated with each alternative.

Alternative A

- Reduction of local habitat and wildlife populations if the selected mitigation area is outside Contra Costa County
- Loss of potential for local wetlands restoration on about 200 acres
- Short-term impact on proposed bike path and equestrian trail if these facilities are developed prior to landfill closure
- Short-term impact on views along Waterfront Road
- Episodes of odor releases, grading noise, and slope grading in the viewshed may affect parts of the Vine Hill neighborhood in the short-term

Alternative B

- Loss of potential for local wetlands restoration on about 100 acres
- Short-term impact on proposed bike path and equestrian trail if these facilities develop prior to landfill closure
- Short-term impact on views along Waterfront Road
- Episodes of odor releases, grading noise, and slope grading in the viewshed may affect part of the Vine Hill neighborhood in the short-term

Alternative C

- Conflict with FAA regulations prohibiting sanitary landfill operations within 10,000 feet of runways
- Hazardous wastes may have to be disposed of at another site due to DOHS regulations prohibiting disposal of hazardous wastes within 2000 feet of residences
- Loss of potential for wetlands restoration on about 25 acres
- Episodes of odor releases, grading noise, and slope grading in the viewshed may affect parts of the Vine Hill neighborhood in the short-term

Alternative D

- Need for landfill capacity would not be significantly reduced in the short-term and would not be eliminated in the long-term

Alternative E

- Significant unavoidable adverse impacts, if any, would depend on the particular site(s) selected

VI LOCAL SHORT-TERM USES VERSUS LONG-TERM PRODUCTIVITY

Timing of the Project

The Acme landfill expansion has been proposed at this time because of the immediate need for additional landfill capacity to dispose of solid waste in Central Contra Costa County. The existing site is expected to reach capacity in late 1983. Therefore, an expansion of the existing site must be approved or a suitable alternative facility identified as soon as possible.

Future Land Uses

A discussion of future land uses must be limited to those alternatives which propose specific sites. Alternatives A, B, and C involve specific parcels owned by Acme. No specific sites have been identified for Alternatives D or E. The following future land uses would be the result of implementing the indicated alternative:

Alternative A

- Loss of potential to restore local wetlands habitat on about 200 acres.
- Gain of land capability for possible industrial, recreational or open space uses on about 200 acres due to the raised elevation of the site.

Alternative B

- Loss of potential to restore local wetlands habitat on about 100 acres
- Gain of land capability for possible industrial, recreational or open space uses on about 100 acres due to the raised elevation of the site.

Alternative C

- Loss of potential to restore local wetland habitat on about 25 acres
- Gain of land capability for possible industrial, recreational or open space uses on about 25 acres due to the raised elevations of the site.

Long-Term Risks to Health and Safety and to Environmental Quality

The long-term risks of Alternatives A, B, C, and E relate directly to the high concentration of wastes and hazardous substances in one location. Each of these alternatives presents significant long-term risks to the health and safety of individuals in the vicinity of the landfill sites and to the quality of the surrounding environment. However, the recommended mitigation measures would effectively reduce those risks and, at the same time, would reduce the immediate health and safety hazards and impacts on environmental quality which could result if adequate means of waste disposal are not provided.

Alternative D would reduce the volume of wastes landfilled and would therefore reduce the area of land on which the landfilled wastes are concentrated for a given length of time. Some toxic substances may be produced or concentrated by the incineration of wastes in the waste-to-energy facility. In addition, some hazardous/Group 1 wastes may not be suitable for incineration and would continue to be landfilled. The net result of Alternative D may therefore be a higher concentration of hazardous wastes within a smaller area as compared to the other alternatives.

VII SIGNIFICANT IRREVERSIBLE CHANGES IN THE ENVIRONMENT

The proposed project and alternatives would result in some irreversible changes to the environment. The changes associated with each alternative are indicated below:

Alternative A

- Conversion of about 200 acres of seasonal wetland and lowland grassland habitat to a large hill composed of wastes and soil
- Disposal of about 1500 tons of solid waste per day (1980 rate) for 8 years resulting in the loss of potential uses of the material and energy content of the wastes
- Concentration of large quantities of wastes resulting in a permanent potential environmental hazard

Alternative B

- Conversion of 100 acres of seasonal wetland and lowland grassland habitat to a large hill composed of wastes and soil
- Disposal of about 1500 tons of solid waste per day (1980 rate) for 4 years resulting in the loss of potential uses of the material and energy content of the wastes
- Concentration of large quantities of wastes resulting in a permanent potential environmental hazard

Alternative C

- Conversion of about 25 acres of seasonal wetland and lowland grassland habitat to a hill composed of wastes and soil
- Disposal of about 1500 tons of solid waste per day (1980 rate) for 2.5 years resulting in the loss of potential uses of the material and energy content of the wastes
- Concentration of large quantities of wastes resulting in a permanent potential environmental hazard

Alternative D

- No significant irreversible changes to the environment are evident unless a waste-to-energy facility is built.
- A waste-to-energy facility could result in the loss of re-usable combustible materials.

Alternative E

- Alteration of an undetermined type of habitat and acreage of land
- Disposal of about 1500 tons of solid waste per day (1980 rate) resulting in the loss of potential uses of the material and energy content of the wastes
- Concentration of large quantities of wastes resulting in a permanent potential environmental hazard

VIII GROWTH-INDUCING IMPACTS

Alternatives A, B, and C would not have direct growth-inducing impacts. Each of these alternatives would continue operations of an existing solid waste disposal facility for a relatively short period of time. The expansion of the Acme Landfill would not have growth incentives because rapid growth would decrease the life expectancy of the site and increase the need for a new landfill.

Alternative D is intended to provide a system for recovering resources from the solid waste stream to reduce the volume of waste going to landfills. This alternative attempts a long-range solution to the problem of solid waste management. Implementation of this alternative would not eliminate the need for a landfill. Therefore, Alternative D cannot be considered growth-inducing.

The growth-inducing impacts of alternative E would depend on the particular site(s) selected for waste disposal. Use of existing landfill sites would not have direct growth-inducing effects. Use of a new landfill site could have growth-inducing effects if new or improved access routes or utility extensions facilitate the development of other areas.

Alternatives A, B, C, and the use of existing landfill sites under Alternative E would resolve the immediate need for landfill capacity for disposal of wastes from central Contra Costa County on a short-term basis. Alternative D and the use of new landfill sites under Alternative E would resolve this need on a long-term basis. All of these alternatives (A - E) would avoid the constraints to growth which would otherwise be imposed by a lack of adequate landfill capacity and may therefore be considered indirectly growth-inducing. However, the constraints imposed by a lack of adequate landfill capacity would also have detrimental effects on existing development in central Contra Costa County.

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XI PUBLIC INVOLVEMENT

Public involvement in the review of the Acme Landfill project has been (or will be) solicited by the Corps of Engineers and Contra Costa County through the actions described below. In combination, they provide notices to agencies, organizations, and concerned individuals to participate in the review process through national, state, and local means of notification.

- | | |
|-------------------|---|
| December 19, 1978 | Public Notice No. 12517-10 issued by Corps of Engineers for Acme's first application (which was denied on December 12, 1980). |
| July 2, 1981 | Notice of Intent to Prepare a Draft EIS for Acme's current application was published in the Federal Register by the Corps of Engineers to invite participation in the scoping process. |
| July 8, 1981 | Notice of Preparation of a Draft EIR was issued by Contra Costa County inviting participation in the scoping process. Copies were sent to parties on the County's mailing list for the project. |
| | Notice of Intent to Prepare a Draft EIS was mailed by the Corps of Engineers to agencies, organizations, and individuals. |
| July 22, 1981 | Joint Corps of Engineers/Contra Costa County public scoping meeting was held in Martinez. |
| August 31, 1981 | Contra Costa County issued a revised Notice of Preparation, inviting additional comments, following the public scoping meeting. |
| August 5, 1982 | Circulation of the Draft EIR/EIS was initiated. |
| August 6, 1982 | CEQA Notice of Completion was filed with the State Clearinghouse (SCH 82081001). |
| August 13, 1982 | A Notice of Availability of the Draft EIR/EIS was published in the Federal Register by the Environmental Protection Agency. |
| | Public Notice No. 13881E59 was issued by the Corps of Engineers for Acme's current application. |
| September 7, 1982 | A Public Hearing on the Draft EIR/EIS was held before the Contra Costa County Planning Commission. |

- September 27, 1982 The general Comment Period on the Draft EIR/EIS closed. Several parties requested and were granted extensions.
- June/July, 1983 Notices of Availability of the Final EIR/EIS will be issued by the Corps of Engineers and published in the Federal Register by the Environmental Protection Agency concurrent with circulation of the Final EIR/EIS.
- The Corps of Engineers will receive comments on the Final EIR/EIS for a 30-day period following publication of the Notice of Availability in the Federal Register.

XII. FINAL EIR/EIS DISTRIBUTION LIST

A. FEDERAL AGENCIES

U. S. Department of the Army
Headquarters
Washington, D. C.

U. S. Army Corps of Engineers
Sacramento District
Sacramento, CA

Advisory Council on
Historic Preservation
Washington, D. C.

Centers for Disease Control
Center for Environmental Health
Atlanta, CA

U. S. Department of Health
and Human Services
Washington, D. C.

U. S. Department of the Interior
Director, Office of
Environmental Project Review
Washington, D. C.

U. S. Environmental Protection
Agency
Washington, D. C.

Federal Aviation Administration
Regional Director
Los Angeles, CA

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Division of Ecological Services
sacramento, CA

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U. S. Army Engineer Division
South Pacific
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Defense Technical Information Center
Alexandria, VA

Agriculture Stabilization and
Conservation Service
Davis, CA

U. S. Department of Energy
Washington, D. C.

U. S. Department of Housing and
Urban Development
Regional Environmental Officer
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Agency
Region IX
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Region 5
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Department of Health Services
Sacramento, CA

Office of Historic Preservation
Sacramento, CA

Department of Housing and
Community Development
San Francisco, CA

Department of Water Resources
Sacramento, CA

Department of Conservation
Sacramento, CA

Division of Mines & Geology
Sacramento, CA

Office of Planning & Research
Sacramento, CA

Department of Health Services
Berkeley, CA

Office of Local Government
Affairs
Sacramento, CA

Solid Waste Management Board
Sacramento, CA

California Archaeological
Inventory
Rohnert Park, CA

C. REGIONAL AGENCIES

Association of Bay Area Governments
Berkeley, CA

Regional Water Quality Control
Board
Oakland, CA

San Francisco Bay Conservation
and Development Commission
San Francisco, CA

Bay Area Air Quality Management
District
San Francisco, CA

Regional Water Quality Control
Board
Sacramento, CA

East Bay Regional Park District
Oakland, CA

D. CONTRA COSTA COUNTY AGENCIES

Board of Supervisors

Health Services Department

County Planning Commission

Solid Waste Commission

XII. FINAL EIR/EIS DISTRIBUTION LIST (Continued)

Community Services Department

County Administrator

County Counsel

Public Works Department

Library (system)

Office of Emergency Services

E. OTHER LOCAL AGENCIES

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Local Agency Foundation Commission
Martinez, CA

Contra Costa County
Consolidated Fire District
Pleasant Hill, CA

Contra Costa County Resources
Conservation District
Clayton, CA

Contra Costa County Flood Control
District
Martinez, CA

Contra Costa County Airport
Land Use Commission
Martinez, CA

Suisun Resources Conservation Dist.
Redwood City, CA

Solano County Planning Department
Fairfield, CA

Contra Costa Mosquito Abatement
District
Concord, CA

Contra Costa Water District
Concord, CA

Mountain View Sanitary District
Martinez, CA

Richmond Library
Richmond, CA

Central Contra Costa County
Sanitary District
Walnut Creek, CA

Alameda Co. Solid Waste
Management Authority
Hayward, CA

F. CITIES

Antioch

Brentwood

Concord

Danville

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Pleasant Hill

Pinole

Pittsburg

XII. FINAL EIR/EIS DISTRIBUTION LIST (Continued)

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Save San Francisco Bay Association
Berkeley, CA

California Waterfowl Association
Menlo Park, CA

Sierra Club, San Francisco Bay
Chapter
Oakland, CA

Citizens for a Better Environment
San Francisco, CA

Vine Hill Improvement Association
Martinez, CA

East Vine Hill Improvement
Preservation Committee
Martinez, CA

Vine Hill Neighborhood Association
Martinez, CA

National Solid Waste Management
Association
Washington, DC

H. INDUSTRIES

Acme Fill Corporation
Martinez, CA

Shell Oil Company
Martinez, CA

IT Corporation
Martinez, CA

Southern Pacific Pipe Line, Inc.
Concord, CA

Getty Synthetic Fuels, Inc.
Martinez, CA

Martinez Auto Dismantlers
Martinez, CA

Southern Pacific Transportation Co.
San Francisco, California

Oakland Scavenger Co. (Altamont
landfill)
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Tosco Corporation
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XII. FINAL EIR/EIS DISTRIBUTION LIST (Continued)

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